

# LAND AT 12 THORPE LANE, SOUTH HYKEHAM

## Arboricultural Implications Assessment

DATE OF REPORT: 31ST OCTOBER 2023

APPLICANT: MICHELLE ROBINSON

DESCRIPTION OF PROPOSAL: THE ERECTION OF TWO DETACHED DWELLINGS WITH  
SHARED ACCESS OFF THORPE LANE

# CONTENTS

SUMMARY .....	1
<b>1 INTRODUCTION .....</b>	<b>2</b>
1.1 THE WRITER .....	2
1.2 INSTRUCTIONS .....	2
1.3 PROJECT CONTEXT .....	3
1.4 SOURCE DATA .....	3
1.5 COMPLIANCE WITH BS5837:2012.....	4
<b>2 CONSTRAINTS.....</b>	<b>5</b>
2.1 SITE CONTEXT .....	5
2.2 STATUTORY PROTECTION .....	6
2.3 ARBORICULTURAL SURVEY .....	6
2.4 ECOLOGICAL CONSIDERATIONS.....	9
<b>3 NATIONAL AND LOCAL POLICY, RESEARCH AND GUIDANCE .....</b>	<b>10</b>
3.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF) .....	10
3.2 OTHER RELEVANT RESEARCH AND SOURCES OF GUIDANCE.....	10
3.3 COUNCIL LOCAL PLAN/ POLICIES.....	11
3.4 CONCLUSIONS.....	12
<b>4 CRITERIA .....</b>	<b>13</b>
4.1 PROTECTION OF ROOT SYSTEM.....	13
4.2 PROTECTION OF TREE ABOVE GROUND .....	14
<b>5 IMPLICATIONS ANALYSIS.....</b>	<b>15</b>
5.1 SITE LAYOUT .....	15
5.2 ENGINEERING, DRAINAGE AND SERVICES.....	16
5.3 LIVABILITY.....	17
5.4 FUTURE GROWTH AND PRESSURE TO PRUNE .....	17
<b>6 TREE REMOVALS AND WORKS .....</b>	<b>18</b>
6.1 TREE REMOVALS.....	18
6.2 FACILITATING WORKS .....	18
<b>7 CONCLUSIONS .....</b>	<b>19</b>
7.1 DESIGN .....	19
7.2 PROTECTION.....	19
7.3 DEMOLITION .....	20
7.4 CONSTRUCTION METHODS .....	20
7.5 CONSTRUCTION SITE MANAGEMENT .....	20
7.6 POST CONSTRUCTION .....	20
Appendix A – Tree Survey Explanatory Notes .....	ii
Appendix B – Tree Survey Data.....	iii
Appendix C – Arboricultural Implications Plan .....	ix
Appendix D - Mid-Summer Shade Plan.....	x

## DOCUMENT HISTORY

Revision	Layout Assessed	Author	Reviewer	Date
0	J2011-PL-01	AMB	TC	31/10/2023

### FILE REFERENCES:

This Report File Ref: 4360.12 Thorpe Lane.2.Origin.AIA

Arboricultural Implications Plan: 4360.Thorpe.2.Origin.AIP

## SUMMARY

### Proposal:

It is my opinion that the proposed scheme is supportable from an arboricultural perspective.

The trees on or adjoining the site are average to below average at best.

Shading has been illustrated in accordance with BS5837 and requires the reader to take account of the time of day when viewing the shade patterns. To date, shade appears to have been assessed by others as only a negative aspect of the retained trees whereas the British Standard recommends that all aspects are considered, including reducing summer temperatures and reducing solar gain into dwellings.

The specific implications of the proposal are:

- Several trees on this site are in very poor condition and are clearly in decline.
- The proposed development requires the loss of a short section of the hedge at the front of the property, and two low-quality trees are shown for removal due to their condition.
- Protection of the retained trees must be detailed in an Arboricultural Method Statement, secured through an appropriately-worded Condition attached to any Consent.

Signed:



A M Belson  
Dip.Arb.RFS, M.Arbor.A, Tech.Cert.Arbor.A

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# 1 INTRODUCTION

## 1.1 The writer

### Andrew Belson. Dip.Arb.RFS, M.Arbor.A, Tech.Cert.Arbor.A

I am a Professional Member of the Arboricultural Association. (Arboricultural Association Professional Member: PR00659) and have worked as a consultant for over 20 years.

I hold the Arboricultural Association's Technician's Certificate and the Royal Forestry Society's Professional Diploma, which is a level 6 qualification equivalent to an Honours degree.

From a background in the Landscape and Treework industry, my experience encompasses roles as an Arboricultural Officer for a Borough Council and as a specialist contractor for a Unitary Authority, specifically handling insurance claims involving trees. I have also conducted a Tree Preservation Order Review for a Unitary Authority.

My clients include national and regional planners, architects, developers, and statutory undertakers, non-governmental organizations, local authorities, and individual householders.

I also undertake health & safety inspections; mortgage, insurance and homeowner assessments; Tree Preservation Order and Conservation Area-related work; and provide general legal and practical advice, including representation at Committee and for the purposes of Appeal.

## 1.2 Instructions

- 1.2.1 This assessment was commissioned by the Applicant because trees are a material consideration and this report is required to support an outline planning application.
- 1.2.2 The first instruction was to survey the trees on or adjoining the site in line with the recommendations of BS5837: 2012 and to provide a plan of arboricultural constraints in the first instance to inform design.
- 1.2.3 The second instruction was to draw a plan showing the tree constraints overlaid to the planning drawing so that the implications could be assessed, and to write an Arboricultural Implications Assessment report for the indicative proposed development.

## 1.3 Project context

- 1.3.1 Previous unsuccessful applications have been made by the Applicant for larger developments on this site. The current application provides for two detached dwellings.
- 1.3.2 All decisions to date have referenced “unacceptable” levels of shading from retained trees as a key factor for refusal. This has been based upon the assumed impact the shade would have on livability in the dwellings, despite a Technical Report commissioned by the Applicant which clearly demonstrated that the 5 proposed plot gardens in the original scheme would experience more than adequate levels of sunlight. (Technical Report: Sunlight Hours Analysis in Residential Gardens, 2021).
- 1.3.3 I surveyed the trees on and adjoining this site in line with BS5837 on 15<sup>th</sup> June 2021 and then revised my survey on 25<sup>th</sup> October 2023 to account for significant felling undertaken by the neighbouring landowner in 2022. The results of the revised tree survey are found at Appendix B.
- 1.3.4 This report and the accompanying Plan present an assessment of the proposal for 2 dwellings including an informed analysis of the shade cast by the remaining trees on the site; consideration of the role of trees in the context of addressing climate change; national and local policy recommendations and guidance; and a reasoned assessment of livability in the indicative dwellings.

## 1.4 Source data

- 1.4.1 The data that have been used to inform this implications assessment comprises:

SOURCE	ANY ISSUES	CONCLUSION
TOPOGRAPHICAL SURVEY: J1801-PL-03	None.	I consider that the survey drawing is sufficient for the purposes of the application.
BS5837 TREE SURVEY	I revisited the site and revised my previous survey in October 2023	I consider the results of that survey to be appropriate for the purposes of this application and to demonstrate the significant changes to the site following the felling of trees.
PROPOSED SITE PLAN: J2011-PL-10	None. Based on dimensions of the topographical survey.	This drawing was adequate for the purposes of the AIA

- 1.4.2 Note: This assessment is specific to the drawings listed above and cannot be generalised.

## 1.5 Compliance with BS5837:2012

- 1.5.1 This is an assessment of the elements recommended by BS5837: 2012 'Trees in relation to design, demolition and construction'.
- 1.5.2 Evidence of a tree survey conducted to BS5837:2012, including tree categorisation (BS5837 section 4.4 and 4.5) can be found in Appendix A (explanatory notes) and Appendix B (Survey Data Table).
- 1.5.3 An Arboricultural Implications Plan showing the trees and their RPAs overlaid to the proposed layout, indicating trees for retention and removal. (BS5837 section 4.5 and 4.6) can be found in Appendix C.
- 1.5.4 Consideration of any relevant policy, legislation or statutory protection affecting the site. (BS5837 section 5.2.3) (see section 3)
- 1.5.5 Throughout the report there is evidence of my assessment of the implication of the proposal and its acceptability based upon:

The relationship between the trees and the proposed layout.

Indicated tree losses (BS5837 section 5.2.3 and 5.4.3)

The potential impact of RPA incursions (BS5837 section 5.3.1 and 5.3.2)

Factors which may affect the reasonable enjoyment of the proposed structures such as shading, screening and privacy (BS5837 section 5.3.4)

Future growth and/or pressures for removal or pruning (BS5837 section 5.3.4)

Factors that may affect foundation design (BS5837 Annex A)

Foreseeable issues with the planned demolition/construction of the proposed layout such as working space and access. (BS5837 section 5.4.2)

## 2 CONSTRAINTS

### 2.1 Site context

#### Overview

- 2.1.1 The trees inspected are growing both within the site and on neighbouring land.
- 2.1.2 The site comprises the grounds of 12 Thorpe Lane.

#### Topography

- 2.1.3 The site is generally level.

#### Soil and Geology

- 2.1.4 With reference to Figure 4.3, Volume 1 'Tree Root Damage to Buildings' (P G Biddle), some soils can have shrinkable characteristics (i.e., they are susceptible to volume changes in response to variations in moisture content).
- 2.1.5 Understanding the impact of trees on soil moisture content and considering the potential effects of changes in soil volume on foundations are critical for ensuring both the stability of the built environment and the preservation of retained trees. Chapter 4.2 of the National House Building Council Standards specifically addresses the requirements and considerations related to trees and shrinkable soils. It offers guidance to developers, engineers, and builders on how to assess the risks associated with trees and shrinkable soils in a development site and implement appropriate measures to mitigate these risks effectively.
- 2.1.6 The British Geological Survey of England and Wales identifies the bedrock geology at this location as Charmouth Mudstone Formation - Mudstone with superficial deposits of Balderton Sand and Gravel Member - Sand and gravel.
- 2.1.7 The bedrock geology will give rise to a fine-grained soil which would be easily damaged through compaction although sandy soils are much more resistant.
- 2.1.8 This data may not be accurate at a site level but it is considered adequate to inform the project at this stage and it provides a general context that can be used to inform an Arboricultural Method Statement. An engineer may require more specific information to inform foundation design and engineer drainage, road construction and other built structures.



## 2.2 Statutory protection

- 2.2.1 This site does not lie within a Conservation Area.
- 2.2.2 None of the trees surveyed are included in a Tree Preservation Order.

## 2.3 Arboricultural survey

### Main features

- 2.3.1 The trees inspected are growing both within the site and on neighbouring land.
- 2.3.2 The site is long and narrow. As a result, the main views of the trees are as 'skyline features'.
- 2.3.3 The trees on the north and west of the site offer mainly group value but there is one good individual Oak at the north of the site and one in the centre.

## Specific notes

- 2.3.4 The full table of survey data can be found in Appendix B.
- 2.3.5 The group formed by Oaks NT3 – NT8 contains two trees of reasonable quality and condition but the trees at the north of the group are very poor, with asymmetric crowns and low vigour (see Fig 1 below)



Fig 1. Picture showing Oak NT8 viewed from the east. Note foliage colour and density compared to tree in left of picture (NT6)

- 2.3.6 Group C comprising hedge remnants of Myrobalan Plum is in poor condition and has been categorized 'U'. It should be removed.

2.3.7 Oak tag 8377 is in poor condition, having been damaged in a fire historically and now showing symptoms of dieback and low vigour. (see fig 2 below). It should be felled and replaced.



Fig 2. Picture showing Oak 8377 viewed from the west. Note low foliage density.

2.3.8 The deadwood seen in the crowns of some of the trees presents a hazard of falling debris, with the level of risk affected by the activity below or near the tree. I consider that in the context of development, it would be prudent to remove all significant dead wood (greater than 25mm diameter).

## 2.4 Ecological considerations

- 2.4.1 Protected species such as nesting birds, bats, dormice, and reptiles play important roles in local ecosystems and are safeguarded by various laws and regulations.
- 2.4.2 The Applicant will need to ensure that appropriate advice regarding the protection of wildlife and other ecological matters is sought before any tree work proceeds on site.

## 3 NATIONAL AND LOCAL POLICY, RESEARCH AND GUIDANCE

### 3.1 National Planning Policy Framework (NPPF)

3.1.1 The NPPF (updated in July 2021) contemplates the importance of trees in the context of development and sets out principles and requirements to inform planning decisions. The policy elements relevant to this project are:

“Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure ... that existing trees are retained wherever possible.” (Section 12: Achieving well-designed places, Paragraph 131)

“Once Green Belts have been defined, local planning authorities should plan positively to ... retain and enhance landscapes, visual amenity and biodiversity; or to improve damaged and derelict land.” (Section 13: Protecting Green Belt land, Paragraph 145)

“Planning policies and decisions should contribute to and enhance the natural and local environment by.... recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland” (Section 15: Conserving and enhancing the natural environment, Paragraph 174b).

### 3.2 Other relevant research and sources of guidance

3.2.1 In their Local Plan (see below), North Kesteven District Council reference the Government’s intention to create the Future Buildings Standard (FBS), which will come into effect by 2025. This Standard will require new homes to be highly energy efficient and zero-carbon ready. (see <https://www.gov.uk/government/consultations/the-future-buildings-standard>). In the second stage of the consultation, the Government’s response to question 81 regarding the risk of overheating in new residential buildings was: “The risk to health, well-being and productivity from our homes overheating cannot be ignored. Neither can the potential loss of life that may occur if action isn’t taken. We therefore recognise the necessity of tackling overheating in homes.”

- 3.2.2 The consultation for the Future Buildings Standard (FBS) concluded that the use of curtains, blinds and tree cover in the mitigation of overheating should not form part of a dynamic thermal assessment relating to compliance with the standard. This is because “trees can be easily removed or trimmed to make them less effective as a means of shading”. However, this consultation recognized the contribution that trees can make to mitigate overheating.
- 3.2.3 Other councils and planning authorities are recognizing the importance of addressing changes in the UK climate, and the contribution that trees can make in providing shade in the summer months. In particular, Stratford-on-Avon District Council produced the “Development Requirements Supplementary Planning Document (SPD) Part V: Climate Change Adaptation and Mitigation” in July 2020. This emphasizes that climate change is expected to lead to increased temperatures and more extreme heat events, which pose a greater risk of heat-related mortality, especially for vulnerable groups like the elderly and disabled. To tackle this issue, the document introduces a “Cooling Hierarchy” to guide the design of new residential and non-residential developments in a sustainable and energy-efficient manner. This includes the need for applicants to prioritise the potential of passive design elements, such as shading from trees.

### 3.3 Council Local Plan/ Policies

- 3.3.1 During the planning application process, North Kesteven District Council will evaluate whether the proposed development complies with the objectives and requirements set out in the Central Lincolnshire Local Plan 2018-2040 (adopted April 2023). The following policies are relevant to this proposal:

Policy S7: Reducing Energy Consumption – Residential Development is based upon the Council’s desire for applicants to demonstrate that they are creating homes with ‘ultra-low’ levels of forecast energy use (para. 3.2.6).

Policy S66: Tree, Woodland and Hedgerows requires applicants to show that trees have been assessed as a material consideration and that a BS5837 tree survey, Implications Assessment and Method Statement have been produced. The Council states that proposals should seek to retain trees that “make a significant contribution to the landscape or biodiversity value of the area, provided this can be done without compromising the achievement of good design for the site.

## 3.4 Conclusions

- 3.4.1 This proposal meets NPPF requirements in general terms by ensuring that the trees at this site have been a material consideration, and that construction techniques will be used to assure the protection and retention of the trees where possible. (Section 12: Achieving well-designed places, Paragraph 131).
- 3.4.2 Full details of a tree protection methodology can be provided in an Arboricultural Method Statement and Tree Protection Plan, secured by way of an appropriately worded Condition of any Consent.
- 3.4.3 This application meets the requirements in Policy S66 in the 2018-2040 Local Plan by providing evidence of a survey and implications assessment to BS5837. In addition, there are only a few trees on site that make a 'significant contribution to the landscape' and these are retained in this proposal.
- 3.4.4 Other guidance noted in this section has been considered and informs my assessment.

## 4 CRITERIA

### 4.1 Protection of root system

#### 4.1.1 Construction activities can cause damage to the root system of a tree in several ways:

Physical damage Excavation for construction or the digging of trenches to install underground utilities can result in root damage such as the loss of bark, splits or complete severance.

Changes in ground levels. Elevating soil levels can lead to root death through asphyxiation. Reducing soil levels can result in the loss of the beneficial humus layer and root loss.

Soil compaction. Heavy machinery or vehicles operating near trees can lead to soil compaction. The degree to which this is significant will depend on the soil on the site but in principle, compactions reduces or removes pore spaces in the soil structure. This in turn can lead to root death through asphyxiation. During construction, ground can be protected from damage through the use of barriers or a suitable ground protection system.

Soil contamination. construction materials, Materials such as fuel, chemicals, lime, cement, and waste water can cause root death, either through chemical action or asphyxiation. A site must be organized in such a way to prevent damage.

Heat. Fires can not only damage the tree above ground but the heat can also cause root death. Fires should ideally be avoided on most sites but on larger sites, it may be practical to accommodate a fire, providing it is a suitable distance from retained trees.

4.1.2 In its simplest form, the Root Protection Area (RPA) is a circle which is drawn on plans to indicate an area that is adequate for a tree's normal needs such as anchorage, moisture and nutrient absorption. It is described in British Standard 5837 as a "layout design tool" and in most cases the radius of the circle is calculated by multiplying the diameter of the main stem of the tree by 12. The shape can be adjusted to account for the possible or absolute effect of sub-surface features on the rooting environment. The Arboricultural Implications Plan (see Appendix C) shows the Root Protection Area (RPA) as a magenta circle or polygon around each tree or group of trees.

4.1.3 Trees rely on their root systems to absorb water, nutrients, and provide stability. Severe root damage can lead to decline, poor growth, or even the eventual death of the tree. The degree of damage also depends on the health of the tree, its age, the species, and the overall site conditions. The results of damage can take several years to become evident.



- 4.1.4 BS5837 (paragraph 5.3.1) states that the RPA is the area where, if the trees are retained, ideally no excavation should take place; the soil level should not be raised or lowered; no materials should be stacked; there must be no contamination and no services should be routed. However, trees are remarkably resilient, and some root loss can typically be tolerated in a tree of normal health and vigour.
- 4.1.5 An incursion into a Root Protection Area can be superficial (as with a driveway constructed over the existing ground level for example) or may involve partial or complete root loss within the area. BS5837 contemplates the possibility that there may be justification for construction within the RPA and that technical solutions can be used to mitigate the effects of an incursion. The Project Arboriculturalist is charged with demonstrating that the tree can remain viable, that the area lost to encroachment can be compensated for elsewhere, and to propose mitigation methods.

## 4.2 Protection of tree above ground

- 4.2.1 The Arboricultural Implications Plan (see Appendix C) shows the tree canopy as an indented green circle or dashed polygon which takes account of any variations in crown spread at the four cardinal points.
- 4.2.2 During construction, the aerial parts of the tree are at risk from potential physical damage due to contact with plant or vehicles. This can be avoided through effective site management, pruning to create sufficient space for the vehicles to pass under, or using protective barriers to create a safe distance between construction activities and tree canopies. The height of the lower crown above ground is shown in the Tree Survey Table (Appendix B).

## 5 IMPLICATIONS ANALYSIS

### 5.1 Site layout

- 5.1.1 The proposed site layout is for a development of 2 detached residential dwellings and a shared access road.
- 5.1.2 Highway access is to be gained via the existing driveway for 12 Thorpe Lane.
- 5.1.3 The proposal is to provide a 'no-dig' formation using a cellular confinement geoweb, constructed over the existing ground in the vicinity of Silver Birch NT2 and Oak NT3. All the area proposed as drive within the RPA of Silver Birch NT2 is already used as a driveway.
- 5.1.4 A driveway with a moisture-and-air permeable surface will allow the root system to respire and absorb moisture and nutrients in the same way it has been used to, so it does not represent a change in the rooting environment. This is a significant improvement over a traditional block paved driveway (for example) which might have been constructed without the need for any consent outside of this planning proposal.
- 5.1.5 Detailed implications of the proposed site layout are as-per the following table:

Tree reference	Species	Category	Implications	Justification	Mitigation
NT1	Mountain Ash	C1	Driveway partially within RPA	Existing drive is already in RPA	Build driveway within depth of existing driveway formation
NT2	Silver Birch	B1	Driveway partially within RPA	Existing drive is already in RPA	Build driveway within depth of existing driveway formation
NT3	Oak	C1/C2	Driveway partially within RPA	Incursion is a tolerable percentage of the RPA and the tree has adequate space for compensatory rooting. The local soil is sandy and resistant to compaction.	Build driveway over the existing ground level so far as is practical using a moisture and air permeable surface.
8377	Oak	C1	Lies partially within the footprint of Plot 2	Already identified for removal due to condition	Compensatory planting

Tree reference	Species	Category	Implications	Justification	Mitigation
Group D	Various	C2	Section must be removed for new car parking for 12 Thorpe Lane	Most of the front hedge can be retained.	Compensatory planting

## 5.2 Engineering, drainage and services

5.2.1 Proposed service trench locations are shown on the drawing. These are entirely beyond the RPA of any retained tree.

5.2.2 General principles will apply as follows:

Foundations will be designed in accordance with NHBC Chapter 4.2 or in accordance with the Project Engineer's calculations.

Subject to engineering constraints, trenching for the installations of piped services, cables and conduits will be located beyond the Root Protection Areas drawn. Where trenching in Root Protection Areas is unavoidable, the trench will be excavated under arboricultural supervision using a method that minimises root loss.

5.2.3 There appears to be room to site any new soakaways required without affecting any trees.

## 5.3 Livability

### Screening

- 5.3.1 Screening provides a means to create separation, privacy, and aesthetic enhancement in both residential and commercial contexts. It helps shield properties from unwanted views, reduces noise pollution, and can contribute to the overall visual character of the area.
- 5.3.2 The proposal does not affect any of the extant screening.

### Shade

- 5.3.3 The shade footprint that may be cast by the trees has been shown as a grey hatch on the Arboricultural Implications Plan (see Appendix C) and on the Mid-Summer Shade Plan (see Appendix D).
- 5.3.4 The shade area on the Arboricultural Implications Plan is based on a solar inclination of 45 degrees in line with the median suggested by BS5837: 2012 that covers the main daylight hours. This simplifies the actual shade area that may affect the site, but it is considered to be a good representation of the area in question.
- 5.3.5 The shade areas on the Mid-Summer Shade Plan demonstrate the sun's angle of inclination calculated for the site location in June and use the actual crown dimensions to calculate the shade footprints shown. This data was provided by SunCalc.org. I conclude that:
- Plot 1 will only be affected by minor shading in the first part of the day.
- There would be minor morning shade cast by Oak 8378 to the front of Plot 2 and moderate shade in the afternoon cast by the trees on the western boundary.
- 5.3.6 When considering the effects of shade in planning decisions, the potential drawbacks must be weighed against the advantages. Some shading may be welcomed in the summer when solar gain can make room temperatures uncomfortable. Shade from trees can reduce heat buildup in urban areas and promote energy efficiency by lowering cooling demands for buildings. See section 3 of this report for a review of national and local policy and guidance.
- 5.3.7 When interpreting the shade drawn, it should also be noted that deciduous trees only cast shade for seven or eight months of the year, depending on species.

## 5.4 Future growth and pressure to prune

- 5.4.1 I would not expect any significant future growth in the retained trees.

## 6 TREE REMOVALS AND WORKS

### 6.1 Tree removals

6.1.1 Trees which are recommended for removal regardless of any proposed development are indicated on the Arboricultural Implications Plan (see Appendix C) by way of an orange dashed line and listed below:

REF.	SPECIES
Group C	Myrobalan Plum
8377	Oak

6.1.2 Trees which are implicated for removal as a result of the proposed development are indicated on the Arboricultural Implications Plan (see Appendix C) by way of a red dashed line and listed below:

REF.	SPECIES
Group D (section)	Various

### 6.2 Facilitating works

6.2.1 Cut Groups A and D as a hedge.

6.2.2 Remove deadwood greater than 25mm in diameter from the following trees:

REF.	SPECIES
NT4	Oak
8373	Oak
8374	Oak
8378	Oak

## 7 CONCLUSIONS

### 7.1 Design

- 7.1.1 The current indicative layout has been achieved through an informed design process.
- 7.1.2 The layout indicated respects the best trees on the site which can be retained to maturity without the need for any arboricultural intervention.
- 7.1.3 It appears possible to provide dwellings in the approximate locations without any significant conflict.

### 7.2 Protection

- 7.2.1 At this stage of planning, a detailed Tree Protection Scheme has not been prepared. The following list covers the aspects that might be required for successful management and protection of trees:

- Establish roles and responsibilities.

- Hold meetings between the Project Arboriculturalist, site contractors and site management before works and as required.

- Adopt sound site management principles.

- Carry out tree work.

- Erect barriers.

- Lay ground protection.

- Carry out site operations near trees with care.

- Install special surfaces.

- 7.2.2 The order in which the works are implemented will need to be carefully considered in order to provide the most successful tree protection scheme.
- 7.2.3 A high standard of site management will be essential to avoid damage to retained trees.
- 7.2.4 The retention of an Arboricultural Clerk of Works is recommended to enable works near trees to progress without damaging retained trees.
- 7.2.5 An Arboricultural Method Statement can be secured by way of an appropriately worded Condition of any Consent.

## 7.3 Demolition

7.3.1 The demolition of the existing buildings involves work close to the retained trees. Therefore, the methods of demolition must be controlled through site management, and the plant, equipment and staff involved.

## 7.4 Construction methods

7.4.1 If required, It is entirely practical to install services within the rootzones of the retained trees because the soil is sandy and ideally suited to AirSpade excavation.

7.4.2 It is entirely practical to provide a driveway over the existing ground level by using a cellular confinement geoweb.

## 7.5 Construction site management

7.5.1 Space will be at a premium for the receipt, storage and handling of materials and for the movement of plant and machinery. Therefore, in order to avoid accidental damage, a suitable tree protection scheme must be implemented before development begins.

## 7.6 Post construction

7.6.1 The detail of the landscape scheme and how it will be maintained can be secured by Condition of any Consent.

# Appendices



## Appendix A – Tree Survey Explanatory Notes

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### Identification

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All significant trees within and adjoining the site were surveyed in accordance with British Standard 5837.

Most of the significant individual trees within the site were tagged with numbered aluminium tags, attached to the tree with two nails at around head height. Inaccessible or neighbouring trees have been designated the prefix 'NT' and numbered. Groups of trees were identified and designated a letter. Reference to the trees' locations can be made using the plans appended to this report.

### Limitations

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The tree survey was carried out for the purpose of informing the planning process. Relevant structural defects and aspects of tree condition are noted in the tree survey table in Appendix B; however, a full hazard assessment has not been carried out.

As trees and shrubs are living organisms whose health and condition can change rapidly, conclusions and recommendations are only valid for one year. The health, condition and safety of trees should be checked regularly, preferably annually.

It may have been necessary to estimate some measurements when assessing trees on neighbouring land. This will not generally affect the conclusions of this report.

No invasive investigations were carried out to assess the internal condition of the trees. Should this be required, it will be highlighted in the report.

The soil was not examined and no soil samples were taken. Should soil analysis be indicated, this will be recommended in the report.

## Appendix B – Tree Survey Data





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### Key

Age Class	Y = Young (Less than 1/3 of normal expected life) OM = Over-mature or in decline SM = Semi-mature (1/3 – 2/3 of normal expected life) V = Veteran M = Mature
Main Stem Diameter	Measured at 1.5 metres above ground or in accordance BS5837: 2012 Annex C and D
Height	Estimated or measured with clinometer where considered critical (m)
Crown spread	At cardinal points (m)
RPA (Radius)/(Area)	Distance in metres from centre of tree to achieve a circular Root Protection Area/ Root Protection Area in square metres.
Remaining Contribution	Estimated number of years the tree may contribute in a safe condition
Category	See table overleaf for definitions

Note: This survey is an assessment of the existing site and any recommendations are preliminary and do not reflect a particular layout or proposal

BS5837:2021 Cascade Chart for Tree Quality Assessment Trees to be considered for retention

Category and definition	Criteria (including subcategories where appropriate)			Identification on Plan
<b>Trees unsuitable for retention</b>				
<b>Category U</b> Trees in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality			
NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly cultural values, including conservation	
<b>Category A</b> Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	
<b>Category B</b> Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for detention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	
<b>Category C</b> Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	

ref.	Species	Age Class	Observations: Factors affecting the quality and value of the trees	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m <sup>2</sup> )	Remaining Contribution (yrs)	Category	Preliminary management recommendations
NT1	Mountain Ash	M	Tree on neighbouring property therefore not closely inspected. Previously pruned	190	6	2	6	2.5	2.5	2.5	2.5	2.28	16.33	20+	C1	No work required.
NT2	Silver Birch	M	Tree on neighbouring property therefore not closely inspected.	450	12	2.5	12	5	5	5	5	5.4	91.62	20+	B1	No work required.
Group A	Cherry Laurel, Leyland Cypress, Euonymus	SM	Regularly maintained at present dimensions.	100	2	0	2	0.7	0.7	0.7	0.7	1.2	4.52	40+	C2	Cut as a hedge.
NT3	Oak	SM	Tree on neighbouring property therefore not closely inspected. Poor form. Lower Eastern limb recently removed	500	10	1.5	18	2.5	6	3	5.5	6	113.11	40+	C1/C2	No work required.
NT4	Oak	SM	Tree on neighbouring property therefore not closely inspected. Scattered minor dead wood throughout crown.	550	12	6	12	2	5	5	5	6.6	136.87	40+	B1/B2	Remove dead wood greater than 25mm in diameter

ref.	Species	Age Class	Observations: Factors affecting the quality and value of the trees	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m <sup>2</sup> )	Remaining Contribution (yrs)	Category	Preliminary management recommendations
NT5	Oak	SM	Tree on neighbouring property therefore not closely inspected. Lower Eastern limb recently removed	550	14	6	14	5	5	7	6	6.6	136.87	40+	B1/B2	No work required.
NT6	Oak	Y	Tree on neighbouring property therefore not closely inspected. Suppressed.	450	12	4	12	4	2	6	6	5.4	91.62	40+	C1/C2	No work required.
NT7	Oak	Y	Tree on neighbouring property therefore not closely inspected. Suppressed.	320	12	4	12	3	1.5	1	4	3.84	46.33	40+	C1/C2	No work required.
NT8	Oak	Y	Tree on neighbouring property therefore not closely inspected. Low vigour. Suppressed. Neighbouring building constructed to northwest of main stem	450	12	4	12	6	1.5	5	6	5.4	91.62	40+	C1/C2	No work required.

ref.	Species	Age Class	Observations: Factors affecting the quality and value of the trees	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m <sup>2</sup> )	Remaining Contribution (yrs)	Category	Preliminary management recommendations
8373	Oak	M	Scattered minor dead wood throughout crown. Lower limbs recently removed. Fire damaged in lower northern crown.	850	17	6	17	9	11	9	9	10.2	326.89	40+	B1	Could be retained with space. Remove dead wood greater than 25mm in diameter.
NT9	Silver Birch	Y	Tree on neighbouring property therefore not closely inspected. Dead.	100	5	1	5	1.5	1	1.5	1.5	1.2	4.52	<10	U	Fell and replace.
8377	Oak	SM	Scattered minor dead wood throughout crown. Barbed wire enveloped in bark on main stem. Historic fire damage in lower Western crown. Low foliage density.	500	15	8	15	5	4	5	6	6	113.11	20+	C1	Fell and replace.
8378	Oak	SM	Scattered minor dead wood throughout crown. Recently pruned in lower crown. Extensive epicormic growth on main stem, which can be an indication of stress	380	12	8	12	4	4	3	3	4.56	65.33	40+	C1	Could be retained. Remove dead wood greater than 25mm in diameter.

ref.	Species	Age Class	Observations: Factors affecting the quality and value of the trees	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m <sup>2</sup> )	Remaining Contribution (yrs)	Category	Preliminary management recommendations
8380	Silver Birch	M	Multi-stemmed form. No visible defects seen.	520	13	2	13	6	6	6	6	6.24	122.34	20+	B1	Could be retained. No work required.
8381	Oak	SM	No visible defects seen. Historically cut at 2.5m	492	13	2	13	4	4	4	4	5.9	109.37	20+	C1/C2	Could be retained with space. No work required.
8382	Sweet Chestnut	SM	No visible defects seen. Historically cut at 1.2m	400	10	1	10	4	4	4	5	4.8	72.39	20+	C1/C2	Could be retained with space. No work required.
Group C	Myrobalan Plum	M	Old hedge remnants	100	3	0	3	2.5	2.5	2.5	2.5	1.2	4.52	<10	U	Fell and replace.
Group D	Privet, Elder, Lilac, Cotoneaster	M	Regularly maintained at present dimensions.	100	1.2	0	1.2	0.4	0.4	0.4	0.4	1.2	4.52	40+	C2	Could be retained. Cut as a hedge.
NT17	Holly	M	No visible defects seen.	350	7	1.5	7	3	3	3	3	4.2	55.42	40+	B1	Could be retained. No work required.
NT6	Oak	Y	Tree on neighbouring property therefore not closely inspected. Suppressed.	450	12	4	12	4	2	6	6	5.4	91.62	40+	C1/C2	No work required.

## Appendix C – Arboricultural Implications Plan

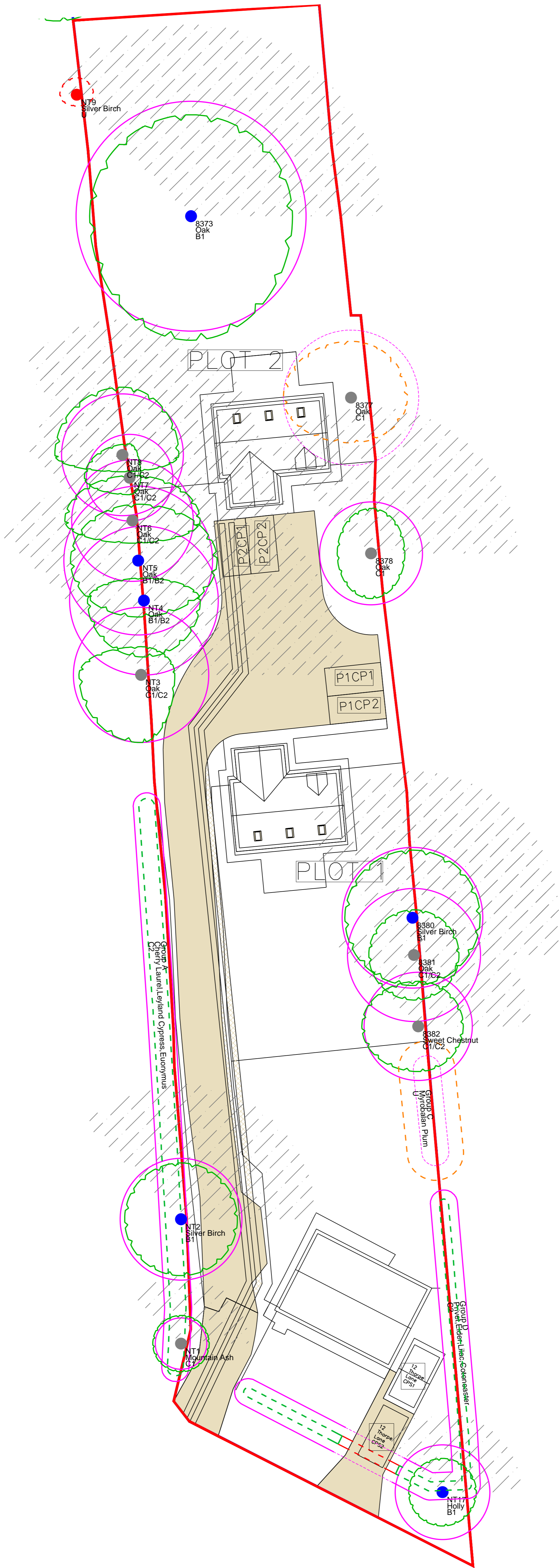
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1:200 Plan follows. To be printed in colour on A1.



KEY

- GRADE A TREES
- GRADE B TREES
- GRADE C TREES
- GRADE U TREES
- ROOT PROTECTION AREA
- CANOPY OUTLINE - INDIVIDUAL TREE
- CANOPY OUTLINE - GROUPS
- TREES TO BE REMOVED
- ROOT PROTECTION AREA OF TREES TO BE REMOVED
- TREES NOT SUITABLE FOR RETENTION
- INDICATIVE SHADE AREA FOR DAYLIGHT HOURS BASED ON BS5837



Rev	Description	Date

Purpose of Issue  
**Planning**

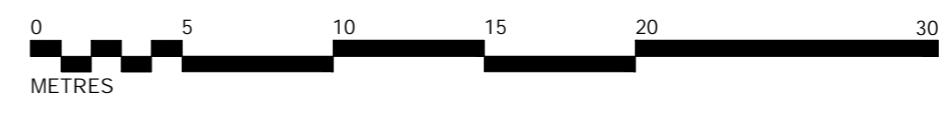
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Client  
**Michelle Robinson**

Project  
**Land at 12 Thorpe Lane, South Hykeham**

Drawing Title  
**ARBORICULTURAL IMPLICATIONS PLAN**

Drawn	Checked	Reviewed	Date
AMB	--	--	27/10/2023
Job No.	Scale	Sheet Size	Revision
4360	1:200	A1	
Drawing Number			
4360.Thorpe.2.Origin.AIP			



## Appendix D - Mid-Summer Shade Plan

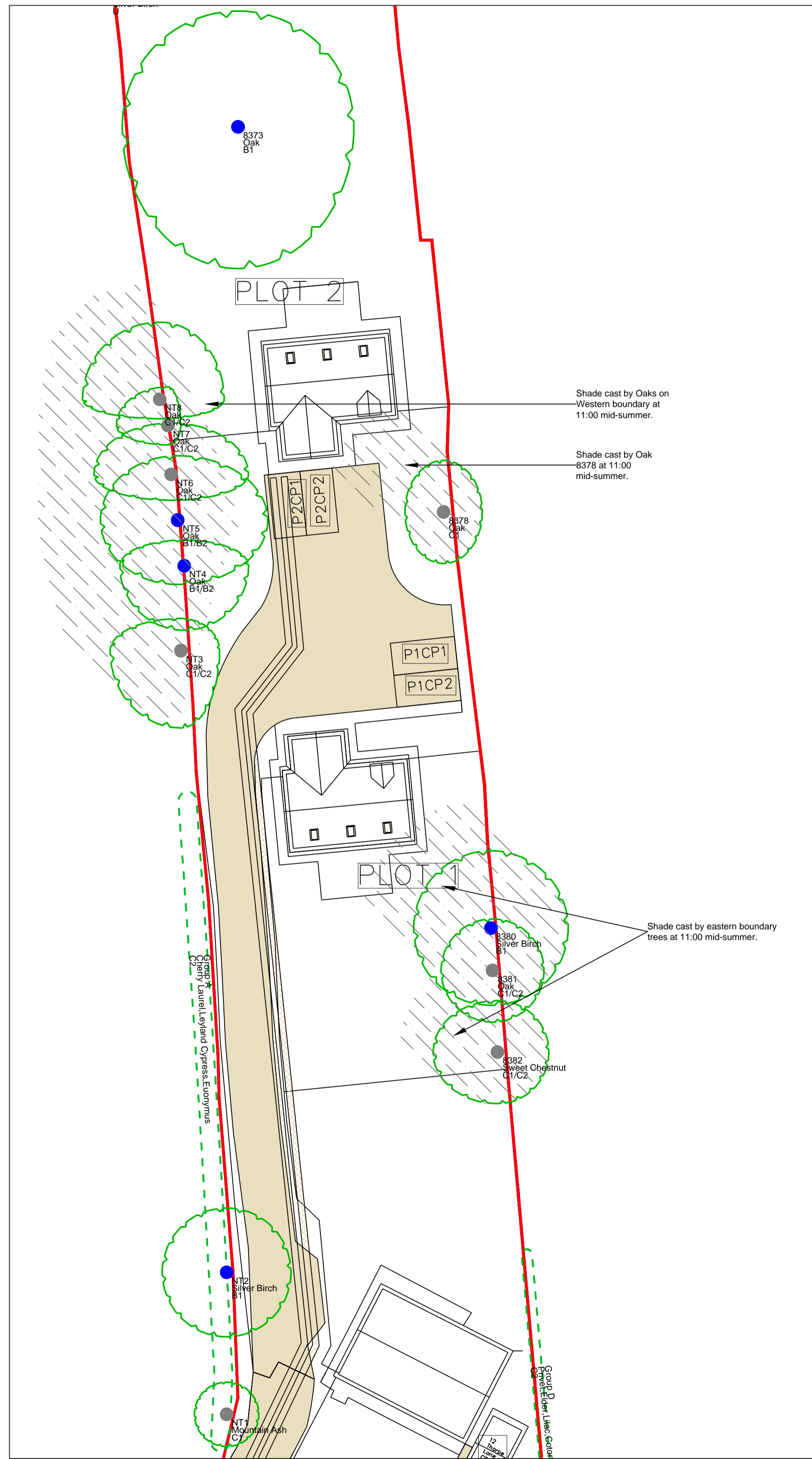
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1:250 Plan follows. To be printed in colour on A1.

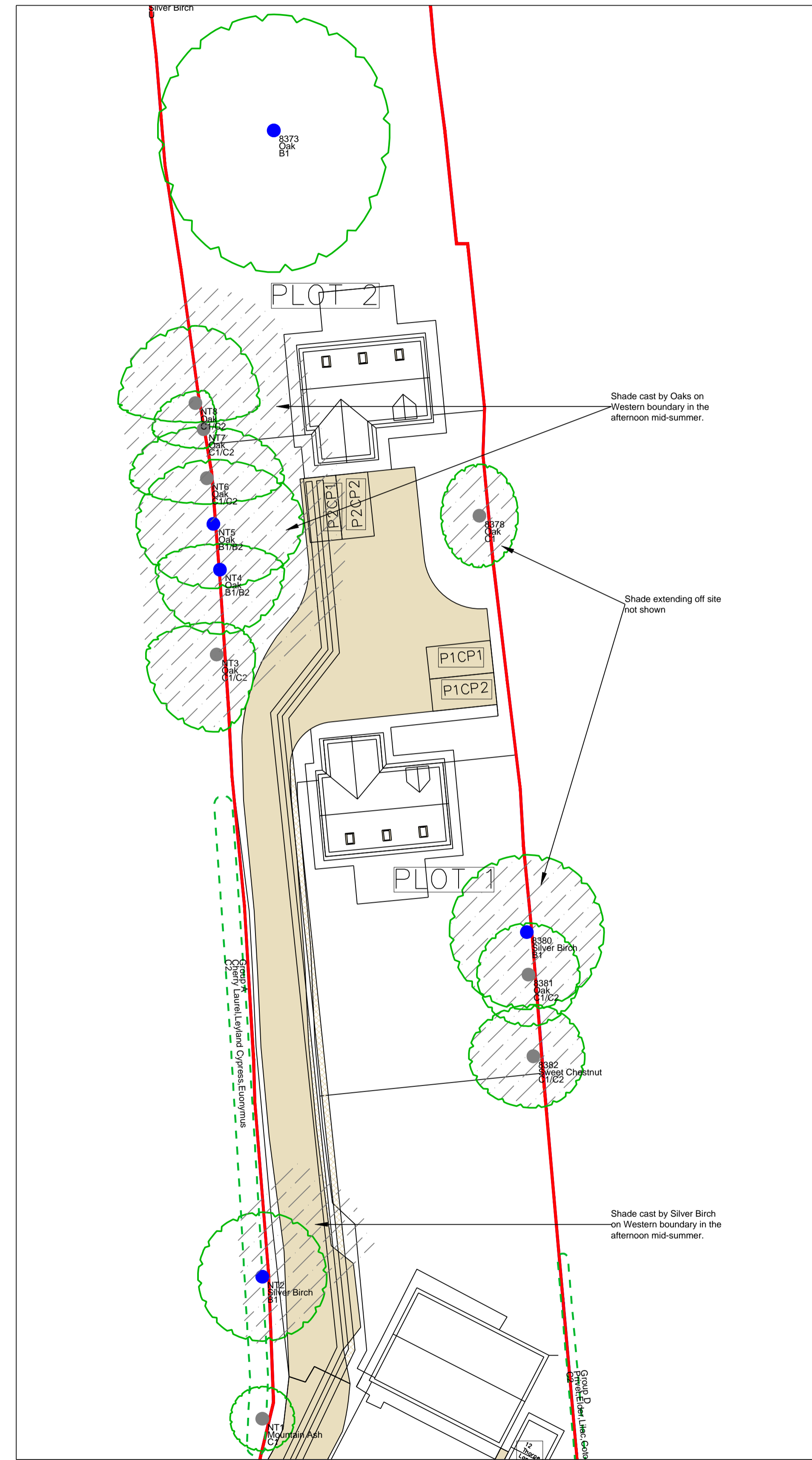
This drawing is the property of Andrew Belson Arbicultural Consultant. Copyright is reserved by him and the drawing is issued on the condition that it is not copied, reproduced, retained or disclosed to any unauthorised person either wholly or in part without the consent of Andrew Belson.

NOTES: Based on survey drawing J1801-PL-03 and Proposed Site Plan J2011-PL-10  
The original of this drawing was produced in colour – a monochrome copy should not be relied upon

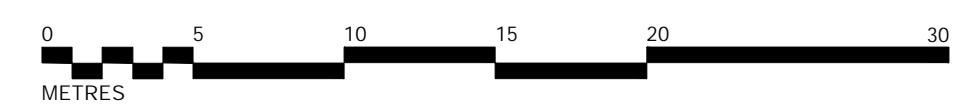
- KEY**
- GRADE A TREES
  - GRADE B TREES
  - GRADE C TREES
  - GRADE U TREES
  - ROOT PROTECTION AREA
  - CANOPY OUTLINE - INDIVIDUAL TREE
  - SEASON AND TIME SPECIFIC SHADE AREA



Mid-Summer Shade AM



Mid-Summer Shade PM



Rev	Description	Date
..	..	..

Purpose of Issue  
**Planning**

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Drawing Title  
**MID-SUMMER SHADE**

Drawn	Checked	Reviewed	Date
AMB	..	..	27/10/2023

Job No.	Scale	Sheet Size	Revision
4360	1:250	A1	..

Drawing Number  
4360.Thorpe.2.Origin.Shade Plan