

ARBORICULTURAL REPORT

ON

A PROPOSED DEVELOPMENT AT

USDAW, 188 WILMSLOW ROAD

FALLOWFIELD M14 6LJ

ON BEHALF OF

WATKIN JONES GROUP LIMITED

Author: Glyn Thomas

Our Ref: CW/9914-R-8

LPA Ref: 129020/FO/202

Appeal Ref: APP/B4215/W/21/3286831

Date: 15 February 2022

Copyright © 2021 Cheshire Woodlands Limited. All rights reserved

CONTENTS

1. Introduction
2. The Planning Application
3. The Trees
4. The Consil Daylight & Sunlight Assessment
5. Shading Impacts on Trees
6. Discussion
7. Third Party Objections
8. Conclusions

APPENDICES

1. Consil Limited Technical Note - Wilmslow Road, Manchester – Daylight & Sunlight to Trees (9 December 2021)
2. Extract - Tree Species Selection for Green Infrastructure: A Guide for Specifiers

1. INTRODUCTION

- 1.1. I am Glyn Thomas, senior consultant with Cheshire Woodlands Limited and my area of expertise is arboriculture.
- 1.2. This report supports an appeal against the refusal of a planning application for purpose built student accommodation at 188 Wilmslow Road in Fallowfield.
- 1.3. My report evaluates the likely shading effects of a proposed tower building on a group of off-site trees in Platt Fields Park. Some third-party arboricultural objections are identified and considered.
- 1.4. My evaluation considers the following documents:
 - Technical Note by Consil Limited dated 9 December 2021: Wilmslow Road, Manchester – Daylight & Sunlight to Trees. As appended
 - Officer Report to Planning Committee (26 August 2021)
 - Planning Decision Notice (3 September 2021)
 - Cheshire Woodlands Arboricultural Statement CW/9914-AS-1. As submitted with the planning application subject to appeal

2. THE PLANNING APPLICATION

- 2.1. Planning application 129020/FO/202 (the Application) was submitted on 23 December 2020 and refused by Manchester City Council (the Council) on 3 September 2021.
- 2.2. The Application was supported by an Arboricultural Statement CW/9914-AS-1 (the Statement).
- 2.3. The Planning Decision Notice includes six reasons for refusal. Reason 4 cites an absence of evidence that the potential shading effects of a new 13-storey tower building would not

adversely affect adjacent trees in Platt Fields Park. No other matters relating to arboricultural impacts are referenced in Reason 4 or any other reason for refusal.

- 2.4. Reason 4 is purportedly informed by the technical comments of the Council's Arborist (as statutory consultee) and other third party objector comments, as set out in the Officer Report to Planning Committee (the Officer Report).
- 2.5. The Council's Arborist's original conclusion is reported at page 21 of the Officer Report that '*...although this [the shading effects of the tower] would have some negative impact on the trees (which are used to mostly direct sunlight) it would not cause the trees to fail.*'
- 2.6. This report includes additional information to address Reason 4 in respect of this alleged negative impact.
- 2.7. The third-party arboricultural objections are included in the Officer Report and can be summarised as follows:
- A lack of clarity regarding the impact of the development on tree numbers; and
 - Concerns around the potential for construction damage to the roots of mature trees at the boundary with Platt Fields Park.

3. THE TREES

- 3.1. The trees the subject of Reason 4 comprise an off-site linear group of eight mature Sycamore, Horse Chestnut and Beech trees listed as group G1 in the Statement.
- 3.2. The trees are not protected by a tree preservation order.
- 3.3. G1 is listed as 'high quality' A category in Appendix 1 of the Statement, described as '*Trees the retention of which is most desirable and that have an estimated useful life expectancy of at least 40 years*'.

- 3.4. The trees' 'vitality' – a measure of their physiological condition – is listed as within '*normal range for the species and age*'. Their 'visual prominence' is listed as '*high*'.
- 3.5. Sycamore and Beech are 'tolerant' to shade. Horse chestnut are 'moderately tolerant' (Hirons & Sjöman 2019)¹. (See Appendix 2)

4. THE CONSIL DAYLIGHT & SUNLIGHT ASSESSMENT

4.1. Daylight

- 4.1.1. Daylight levels to 26 of the 30 analysed points would remain largely unaffected by the development.
- 4.1.2. The development would cause significant reductions in daylight levels at points P3, P6 and P9, and a more modest reduction at P12. At points P3, P6 and P9 the average Vertical Sky Component (VSC) would be reduced from 36.53% to 2.45%. At point P12 the VSC would be reduced from 26.84% to 17.34%.
- 4.1.3. However the daylight results do not account for reflected light from the glazed elements of the northern elevation of the new building, which would substantially increase the daylight to the trees.
- 4.1.4. The analysis assumes the trees are solid objects rather than complex variable surfaces.

4.2. Sunlight

- 4.2.1. The development would have a minimal effect on the area at ground level receiving at least 2 hours of direct sunlight on March 21st.
- 4.2.2. On June 21st, the area at ground level receiving at least 2 hours of direct sunlight would be unaffected.

¹ Hirons, A.D. and Sjöman, H. (2019) Tree Species Selection for Green Infrastructure: A Guide for Specifiers, Issue 1.3. Trees & Design Action Group pp. 74, 86 & 164

4.2.3. On December 21st, the area at ground level receiving at least 2 hours of direct sunlight would reduce from 75% to 62%.

4.2.4. At the level of the tree crowns, the amount of sunlight would be higher.

5. SHADING IMPACTS ON TREES

5.1. The Council's Arborist has raised no objections to the proposed development.

5.2. The following comments summarising the advice of the Council's Arborist are included on page 44 of the Officer Report:

- *'....a lack of natural light would have some negative impact but how much of a negative impact is difficult to determine'; and*
- *'....they [the Council's Arborists] are not aware of a test that would give a definite answer due to the sheer number of variables to take into consideration....'*

5.3. Recommendations and guidance on the relationship between trees and design, demolition and construction processes are set out in British Standard 5837:2012², which *'sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.'* That there is no mention in BS5837 of the shading effects of new buildings on adjacent trees, and no requirement to consider it as part of an arboricultural evaluation of a development proposal, suggests that such impacts are insignificant.

5.4. The shading effects of the new tower building on sunlight to the trees would be 'minimal'. The December 21st sunlight findings - as identified in the Consil report - can be discounted as the Sycamore, Beech and Horse Chestnut trees will be out of leaf.

5.5. The four easternmost trees in group G1 would be substantially unaffected by the shading effects of the new tower building on both sunlight and daylight.

² British Standard 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*

- 5.6. The new tower building would cause significant localised reductions in daylight levels in the lower crowns on the south side of the three westernmost trees (two Sycamores and a Horse Chestnut) and a more modest localised reduction in daylight levels to the adjacent tree to the east (a Horse Chestnut).
- 5.7. The tops and the north, east and west sides of the crowns of the four westernmost trees would be substantially unaffected, retaining between 78% and 100% of existing daylight levels.
- 5.8. The glazed elements of the tower would substantially increase the daylight to the trees.

6. DISCUSSION

- 6.1. Trees differ in their ability to survive under shaded environments because of variations in their morphological and physiological traits. The lower leaf-mass ratios, lower whole-plant respiration rates, higher plasticity in crown architecture and lower light compensation points of shade-tolerant species allow them a net carbon gain in shaded environments (Franklin, K.A. and Whitlam, G.C. 2005)³ and (Yong Luo and Han Y.H. Chen 2011)⁴.
- 6.2. Photosynthetic output from plant leaves never reaches an optimum due to various limiting factors (Fitter, A.H. and Hay, R.K.M. 1987)⁵, and in shade-tolerant species maximum photosynthesis occurs at light intensities as low as 5% to 10% of full sunlight (Kozlowski, T.T. et al. 1991)⁶.
- 6.3. The canopy of a tree is a complex variable surface rather than a solid object. Wind currents allow daylight to reach the lower levels of the tree canopy; 'shade avoidance

³ Franklin, K.A. and Whitlam, G.C.(2005) Phytochromes and Shade-avoidance Responses in Plants. *Annals of Botany* 96: 169–175, 2005

⁴ Yong Luo and Han Y. H. Chen (2011) Competition, species interaction and ageing control tree mortality in boreal forests *Journal of Ecology* 99, p1470–1480

⁵ Fitter, A.H. and Hay, R.K.M. *Environmental Physiology of Plants* (1987) p330-331

⁶ Kozlowski, T.T. et al. *The Physiological Ecology of Woody Plants* (1991) p137

syndrome' (Martinez-Garcia, J.F. et al. 2010)⁷ allows a tree to adjust individual leaf angles to intercept as much light as possible. Trees, although having dense multi-layered canopies, will always try to orientate their leaves to capture as much light as possible (Kozlowski T.T., Pallardy, S.G. 1997)⁸.

- 6.4. 'Sectoral transfer' allows woody plants to transfer resources from more productive areas to less productive parts. So as photosynthesis reduces in one part of the system, resources become available to other leaves, which can then increase their own photosynthetic output (Watson, M.A. and Caspar, B.B. 1984)⁹. Low light levels do not preclude leaves from photosynthesising and there is nearly always opportunity for increasing photosynthetic efficiency in other parts of the tree canopy.
- 6.5. Light intensity alters the structure of leaves, especially in trees where there is a large variation in light intensity within the crown. Leaves on the outside of the canopy are exposed to high intensity light, which results in the production of 'sun leaves'. Leaves within the canopy develop as 'shade leaves', which are thinner and larger with more efficient chloroplasts (Fink, S. 1999)¹⁰.
- 6.6. In temperate deciduous trees the production of sun or shade leaves is brought about during the laying down of new growth buds for the following growth season, typically by the end of July (Kozlowski. T.T. et al. 1991)¹¹.
- 6.7. The ability to maintain photosynthesis to supply energy for growth, reproduction and defence is critical, especially in long lived organisms like trees, which unlike animals are unable to 'move to more favourable locations'. To this end, trees have evolved

⁷ Martinez-Garcia, J.F. et al. Regulatory Components of Shade Avoidance Syndrome (2010) *Advances in Botanical Research*, Volume 53, 2010, Pages 65-116

⁸ Kozlowski T.T., Pallardy, S.G. *Growth Control in Woody Plants*, (1997) Chapter 5

⁹ Watson, M.A. and Caspar, B.B. (1984) Morphogenetic constraints on patterns of carbon distribution in plants *Ann. Rev. Ecol. Syst.* 15, p233-58

¹⁰ Fink, S. *Pathological and Regenerative Plant Anatomy* (1999) p473

¹¹ Kozlowski. T.T. et al. *The Physiological Ecology of Woody Plants* (1991) page 154

mechanisms to mitigate changes in light levels caused by changes to their light environment.

- 6.8. The technical evidence above shows that trees can adapt to lower light levels by altering leaf orientation and leaf morphology to increase overall leaf surface area, and by metabolic changes to increase photosynthetic output from other parts of the tree. These physiological and metabolic changes can take place over relatively short periods, with changes to sun or shade leaves occurring from the end of one growing season to the start of the next.
- 6.9. Impacts on tree vitality will be limited and of short duration, even more so with tree species that are already shade tolerant or moderately shade tolerant, and when the reduced light levels only impact a small part of a tree's crown as is the case here.

7. THIRD PARTY OBJECTIONS

- 7.1. The third-party objections refer to a lack of clarity regarding the impact of the development on tree numbers, and the potential for damage to the roots of retained trees during construction. Both are addressed in the Statement submitted with the planning application.
- 7.2. Tree numbers are included in the schedule and on the drawings appended to the Statement. 37 trees were surveyed, comprising 11 individual trees and 6 tree groups. Trees in group G4 were not counted or surveyed individually as it was not considered necessary for planning purposes. 12 trees (T4 to T7, T11, G2, G3 and G6) and group G4 would be removed for the development.
- 7.3. The Council acknowledges in the Officer Report that *'The trees listed for removal within the site grounds would not be considered for TPO due to their suppressed form as a result of being positioned so close to each other and lack of prominence within the site.'*

- 7.4. 25 trees (T1 to T3, T8 to T10, G1, G5 and G7) would be retained, and a detailed methodology for their protection during demolition and construction is included with the Statement. The Council's Arborist has raised no objection to the protection methodology, subject to appropriate supervision by an arboricultural consultant and resolution of some engineering details.
- 7.5. The residual engineering safeguards – as set out in sections 10.8 to 10.10 of the Statement – can be resolved by the imposition of suitably worded planning conditions.

8. CONCLUSIONS

- 8.1. The four easternmost trees in G1 and most of the crowns of the four westernmost trees would be substantially unaffected by the shading effects of the new tower.
- 8.2. The shading effects of the new tower on sunlight to the trees would be 'minimal'.
- 8.3. The tower would cause significant localised reductions in daylight levels in sections of the lower crowns on the south side of the four westernmost trees in G1.
- 8.4. At reduced light intensities, trees can adapt over time by producing shade leaves, which operate more efficiently at lower light levels, and by increasing photosynthetic activity in unaffected parts of the crown.
- 8.5. 'Shade tolerant' and 'moderately shade tolerant' trees – such as the affected Sycamores and Horse Chestnuts - generally cope better with reduced light levels than trees that are 'partially tolerant' or 'intolerant' to shade.
- 8.6. It is generally accepted that trees with good vitality – in good physiological condition – such as the affected trees, cope better with sudden changes to their environment than trees with reduced or poor vitality.

- 8.7. In consideration of the shade tolerance and physiological vitality of the trees, the very localised shading effects of the tower (affecting relatively small sections of the trees' crowns), and the mitigating effects of the glazed elements of the building on daylight levels, I anticipate that the long-term shading impacts of the new tower on the four westernmost trees will be minor and localised.
- 8.8. Third-party objections around the potential for construction damage to retained trees and lack of clarity on the impact of the development on tree numbers are dealt with in the arboricultural information submitted with the planning application. The residual tree protection details can be resolved by planning condition.

APPENDIX 1

Technical Note

From: Consil Limited
To: Cheshire Woodlands
Date: 9 December 2021
Subject: Wilmslow Road, Manchester – Daylight & Sunlight to Trees

Introduction

In accordance with Watkin Jones instructions, Consil have undertaken additional daylight and sunlight analysis of the effect the proposed development at Wilmslow Road, Manchester would have on the daylight and sunlight received to the trees immediately north of the scheme.

This assessment is a technical assessment and does not consider the effects that any reduction in natural light may have on the trees in question.

The drawings at Appendix A show the trees considered and detail the results of our assessment.

Methodology

Sunlight to the area north of the proposed development has been assessed using the sun hours on ground test which measures the amount of direct sunlight received to an external area. For sunlight amenity, the Building Research Establishment (BRE) recommend that at least 50% of a garden or amenity area should receive at least 2 hours of direct sunlight on 21st March. Therefore, the test measures the area north of the site (at ground level) that receives at least 2 hours of direct sunlight.

The assessment has been undertaken in the existing and proposed conditions on 21st March, 21st June and 21st December.

Daylight to the trees has been assessed by testing the Vertical Sky Component (VSC) and Average Lux received at various points on the trees. The points on the edges of the trees have been tested at 90-degrees relative to the ground level and the points at the tops of the trees face upwards.

VSC and Average Lux have been assessed using bespoke daylight software which analyses the daylight at various points on the trees. VSC has been assessed to a total of thirty points on the trees and Average Lux has been assessed to four points, on the south facing sides of the trees, which directly face the proposed development. The Average Lux has been assessed on 21st March at 12pm, assuming a clear sky.

The analysis assumes that the other trees provide solid obstructions to daylight and does not account for any reflected light from surrounding surfaces, such as the proposed building itself, which would substantially increase the daylight to the trees.

Results

The VSC results are presented on drawing D+S/1/307 and the sunlight results on drawings D+S/1/402 to 404.

The VSC results show that the proposed development would cause significant reductions in VSC to points P3, P6 and P9, together with a more modest reduction to P12. At points P3, P6 and P9 the average VSC would be reduced from 36.53% to 2.45% and at P12 the VSC reduced from 26.84% to 17.34%. Daylight to the remaining twenty six points analysed will remain largely unaffected by the proposed development.

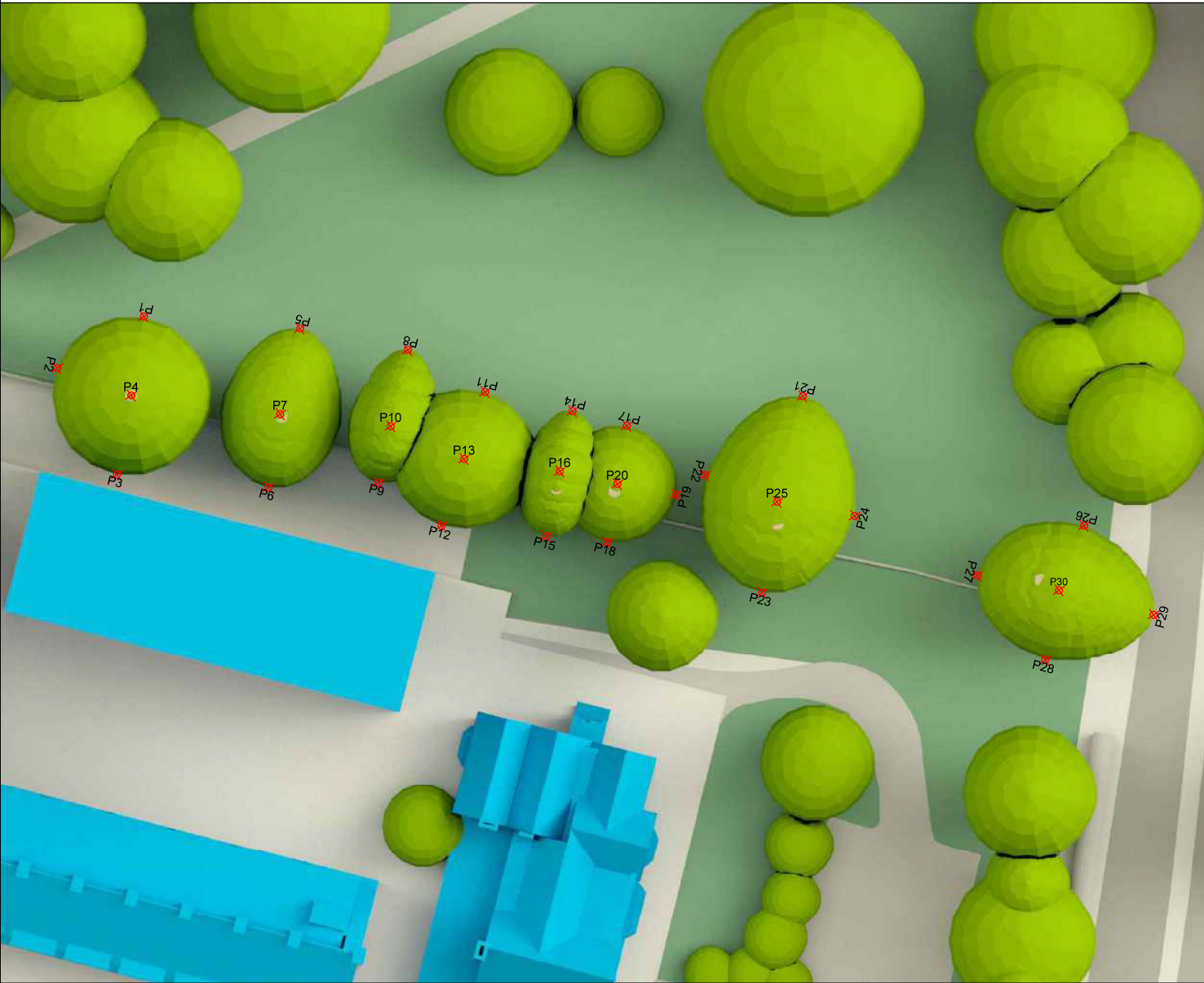
The Average Lux has been assessed to the four points directly facing the site and the analysis results are detailed in the table below.

Test Point	Average Lux (Existing Conditions)	Average Lux (Proposed Conditions)
P3	3,063.74	402.93
P6	3236.89	521.32
P9	3049.67	991.67
P12	2433.95	1803.99

Turning to sunlight the analysis shows that the development would have a minimal effect on the area at ground level receiving at least 2 hours of direct sunlight on March 21st. On June 21st, the area would not be affected and on December 21st, the area reduced from 75% to 62%. At crown level of the trees the amount of sunlight received would be higher.

APPENDIX A

Vertical Sky Component (VSC) Results			
Point Ref.		VSC	Retained Ratio
Trees			
P1	Existing	25.24	1.00
	Proposed	25.24	
P2	Existing	35.78	0.97
	Proposed	34.61	
P3	Existing	38.21	0.02
	Proposed	0.62	
P4	Existing	99.89	0.81
	Proposed	80.63	
P5	Existing	31.11	1.00
	Proposed	31.11	
P6	Existing	36.43	0.03
	Proposed	1.00	
P7	Existing	99.27	0.78
	Proposed	77.80	
P8	Existing	35.27	1.00
	Proposed	35.27	
P9	Existing	34.95	0.16
	Proposed	5.73	
P10	Existing	99.87	0.86
	Proposed	86.15	
P11	Existing	36.03	1.00
	Proposed	36.03	
P12	Existing	26.84	0.65
	Proposed	17.34	
P13	Existing	99.86	0.90
	Proposed	90.07	
P14	Existing	35.77	1.00
	Proposed	35.77	
P15	Existing	16.39	1.57
	Proposed	25.69	
P16	Existing	99.84	0.95
	Proposed	95.16	
P17	Existing	34.48	1.00
	Proposed	34.48	
P18	Existing	15.33	1.30
	Proposed	19.87	
P19	Existing	15.32	1.00
	Proposed	15.32	
P20	Existing	98.79	0.97
	Proposed	95.41	
P21	Existing	33.33	1.00
	Proposed	33.33	
P22	Existing	25.11	0.99
	Proposed	24.86	
P23	Existing	31.65	1.00
	Proposed	31.60	
P24	Existing	30.85	1.00
	Proposed	30.85	
P25	Existing	99.72	0.99
	Proposed	98.83	
P26	Existing	23.78	1.00
	Proposed	23.78	
P27	Existing	32.97	0.96
	Proposed	31.77	
P28	Existing	23.56	0.99
	Proposed	23.22	
P29	Existing	32.52	1.00
	Proposed	32.52	
P30	Existing	99.29	1.00
	Proposed	99.11	



COPYRIGHT NOTICE
THIS DRAWING MAY NOT BE COPIED (IN WHOLE OR IN PART),
REPRODUCED OR DISCLOSED WITHOUT THE PRIOR WRITTEN
CONSENT OF CONSIL.

DO NOT SCALE

SOURCES OF INFORMATION:
Tim Groom Architects proposed
scheme received on 03/12/2020

Cheshire Woodlands tree survey
received on 06/10/2020

Accuties surrounding model received
on 18/03/2020

Consil site photography taken on
27/10/2020

KEY

- Analysed properties
- Surrounding buildings
- Test Point Location

REV DETAILS DATE BY

A	*	*	*

CLIENT
Watkin Jones

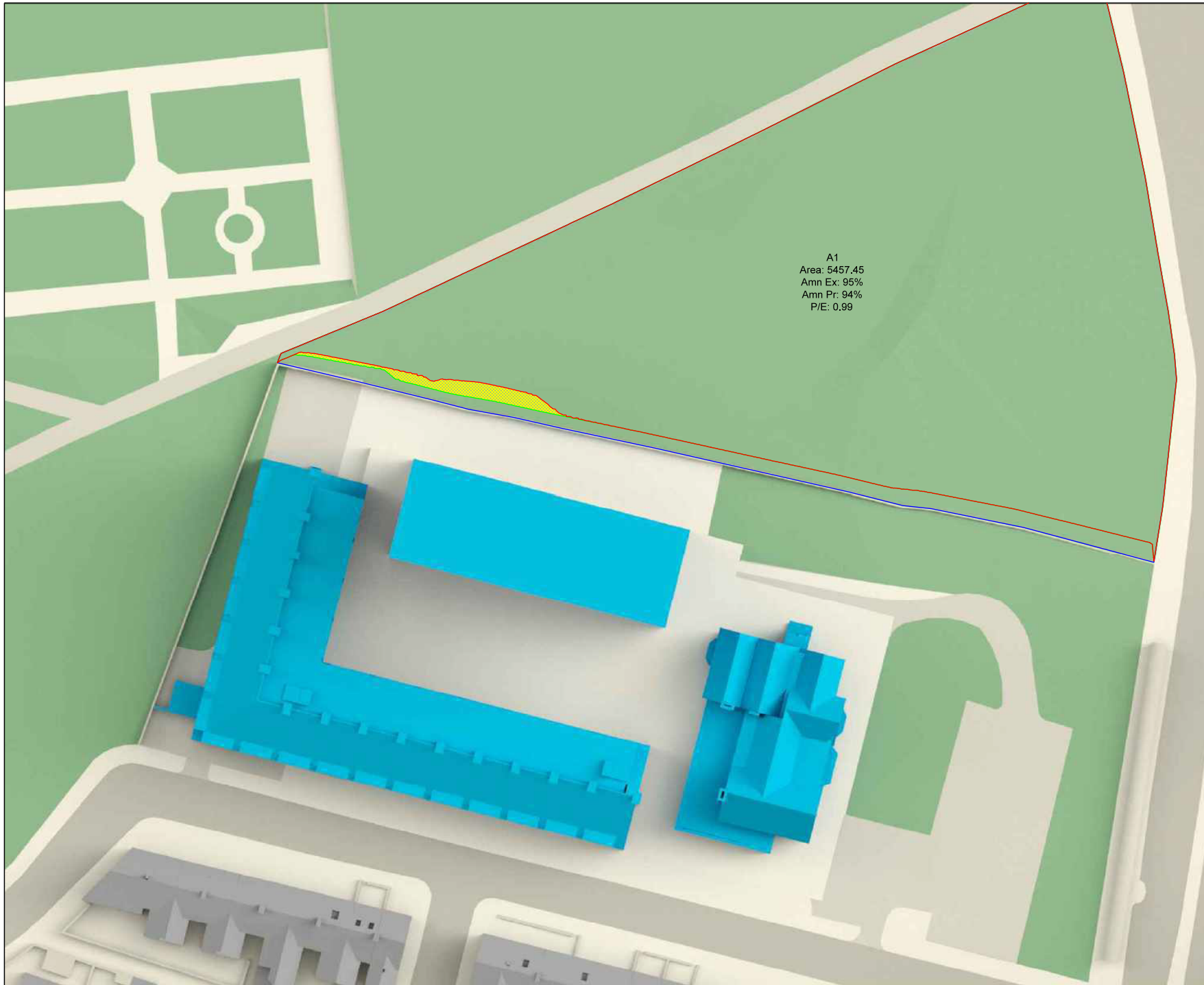
PROJECT
188 Wilmslow Road, Fallowfield,
Manchester M14 6LJ

DRAWING TITLE
Test Point Maps

SCALE Not to Scale	DATE 20/10/2021
DRAWN BY BG	CHECKED BY DR

DWG No. D+S/1/ 307	REV.
-----------------------	------

CONSIL



COPYRIGHT NOTICE
THIS DRAWING MAY NOT BE COPIED (IN WHOLE OR IN PART),
REPRODUCED OR DISCLOSED WITHOUT THE PRIOR WRITTEN
CONSENT OF CONSIL.

DO NOT SCALE

SOURCES OF INFORMATION:

Tim Groom Architects proposed
scheme received on 03/12/2020

Cheshire Woodlands tree survey
received on 06/10/2020

Accuities surrounding model received
on 18/03/2020

Consil site photography taken on
27/10/2020



KEY

- Amenity area
- Existing area of direct sunlight
- Proposed area of direct sunlight
- Area of loss / gain

REV	DETAILS	DATE	BY
A	*	*	*

CLIENT
Watkin Jones

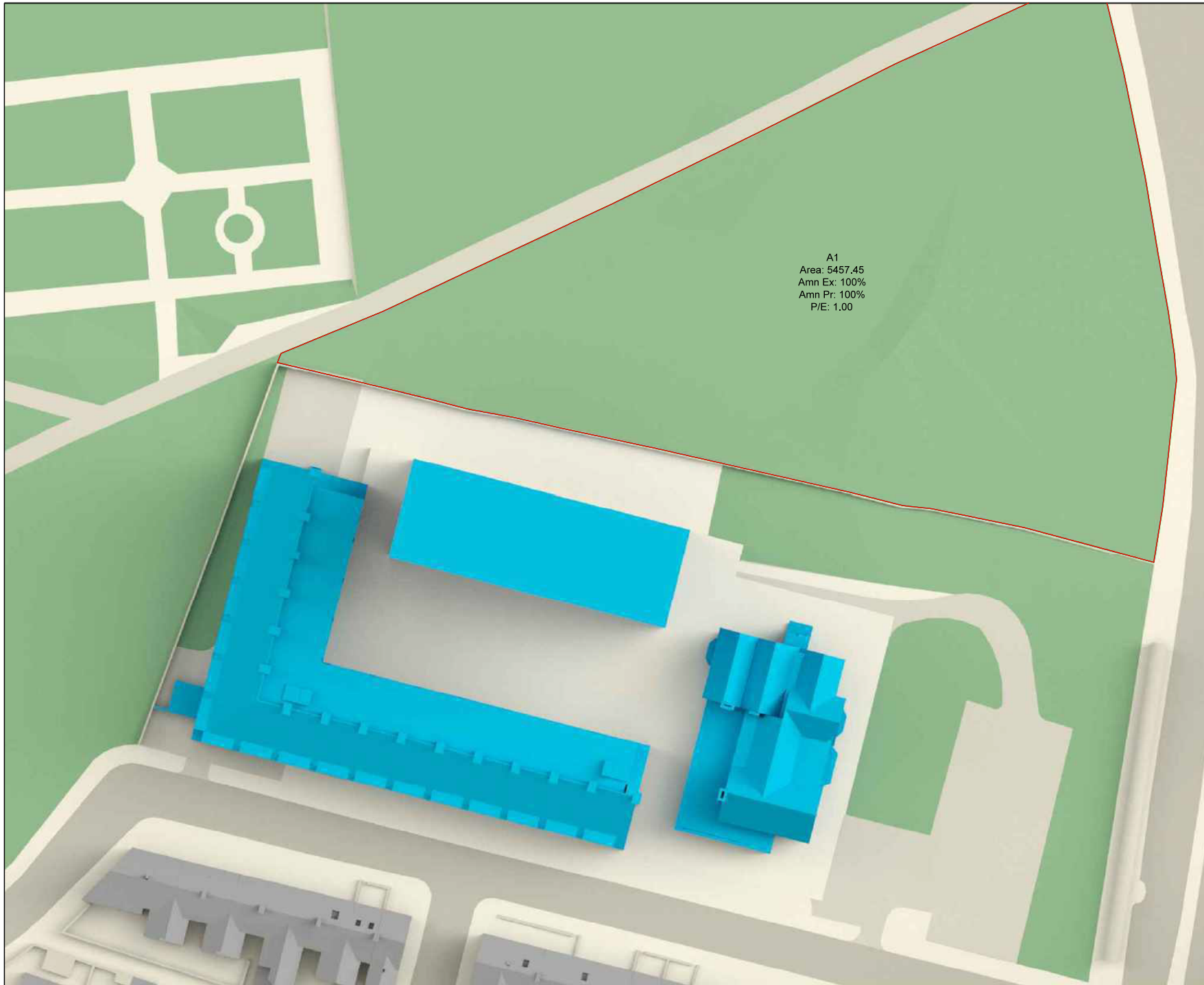
PROJECT
188 Wilmslow Road, Fallowfield,
Manchester M14 6LJ

DRAWING TITLE
Permanent Overshadowing
21st March

SCALE [Not to Scale]	DATE 12/10/2021
DRAWN BY BG	CHECKED BY DR

DWG No. D+S/1/ 402	REV.
------------------------------	-------------

CONSIL



COPYRIGHT NOTICE
THIS DRAWING MAY NOT BE COPIED (IN WHOLE OR IN PART), REPRODUCED OR DISCLOSED WITHOUT THE PRIOR WRITTEN CONSENT OF CONSIL.

DO NOT SCALE

SOURCES OF INFORMATION:
Tim Groom Architects proposed scheme received on 03/12/2020
Cheshire Woodlands tree survey received on 06/10/2020
Accuties surrounding model received on 18/03/2020
Consil site photography taken on 27/10/2020

N

KEY

- Amenity area
- Existing area of direct sunlight
- Proposed area of direct sunlight
- Area of loss / gain

REV	DETAILS	DATE	BY
A	*	*	*

CLIENT
Watkin Jones

PROJECT
188 Wilmslow Road, Fallowfield, Manchester M14 6LJ

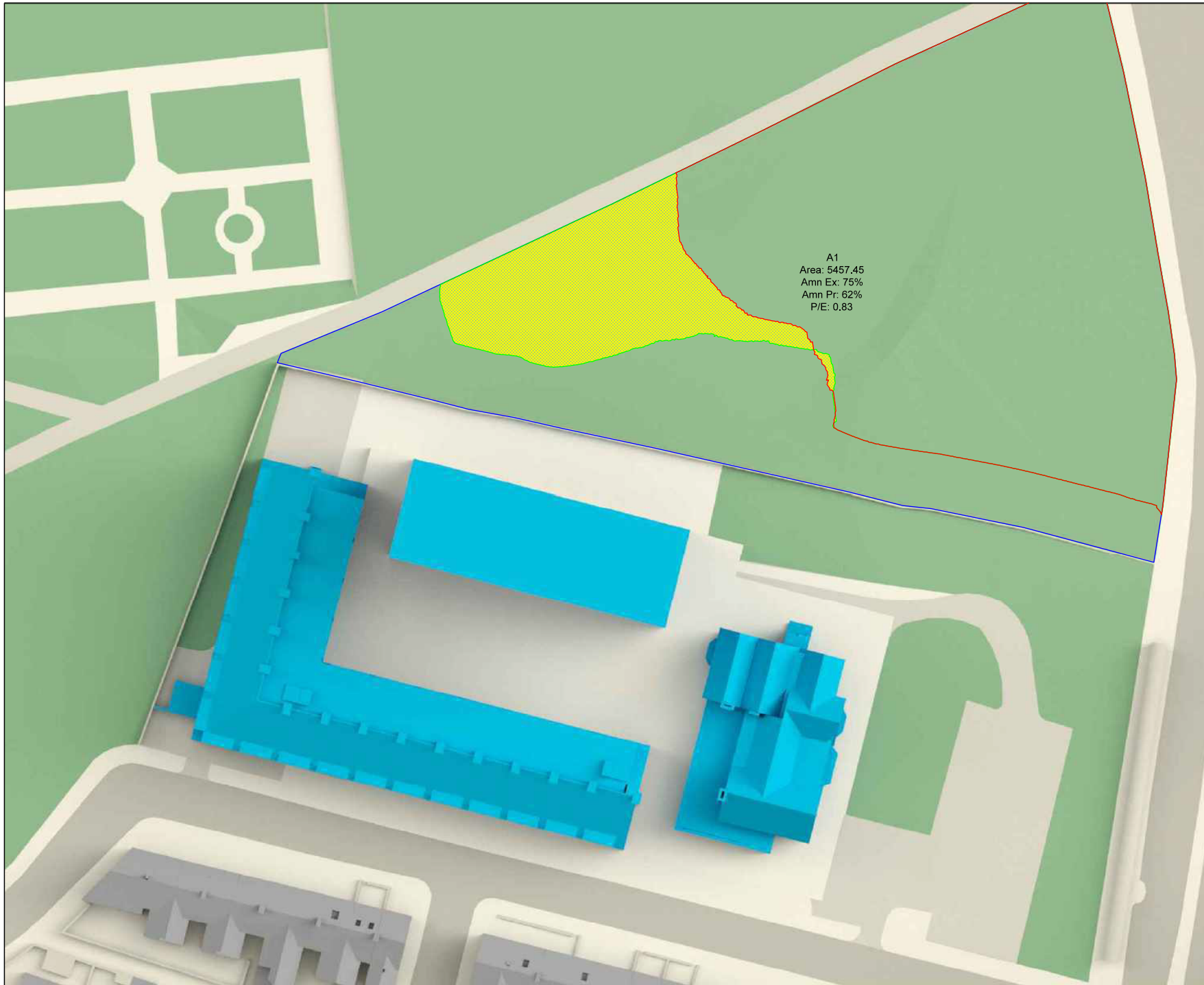
DRAWING TITLE
Permanent Overshadowing
21st June

SCALE	DATE
[Not to Scale]	12/10/2021

DRAWN BY	CHECKED BY
BG	DR

DWG No.	REV.
D+S/1/ 403	

CONSIL



COPYRIGHT NOTICE
THIS DRAWING MAY NOT BE COPIED (IN WHOLE OR IN PART), REPRODUCED OR DISCLOSED WITHOUT THE PRIOR WRITTEN CONSENT OF CONSIL.

DO NOT SCALE

SOURCES OF INFORMATION:

Tim Groom Architects proposed scheme received on 03/12/2020

Cheshire Woodlands tree survey received on 06/10/2020

Accuties surrounding model received on 18/03/2020

Consil site photography taken on 27/10/2020



KEY

-  Amenity area
-  Existing area of direct sunlight
-  Proposed area of direct sunlight
-  Area of loss / gain

REV	DETAILS	DATE	BY
A	*	*	*

CLIENT
Watkin Jones

PROJECT
188 Wilmslow Road, Fallowfield,
Manchester M14 6LJ

DRAWING TITLE
Permanent Overshadowing
21st December

SCALE [Not to Scale]	DATE 12/10/2021
DRAWN BY BG	CHECKED BY DR

DWG No. D+S/1/ 404	REV.
------------------------------	-------------

CONSIL

APPENDIX 2



Acer pseudoplatanus (Sycamore)

- Contents page
- Alphabetical Index

Tree Selector

- Use potential
- Mature size
- Crown form
- Crown density
- Environmental tolerance
- Ornamental qualities

Use potential



Park



Coastal

Tree size and crown characteristics



15-25M

A potentially massive tree capable of reaching 40m in favourable conditions. Cultivars are often much smaller.



Ovoid to globular. Broad crown capable of exceeding 20m in width.



A dense crown.

Natural habitat



Native to cool-temperate continental Europe and parts of western Asia, naturalised in the British Isles. Found in deciduous woodland habitat up to 1500m. In drier regions of its range, it prefers the cooler north facing slopes. It can cope with a wide range of soils, including calcareous, but does not tolerate consistently wet, waterlogged sites. Also found in coastal regions where it can withstand salt-laden winds.

Environmental tolerance



Tolerant to shade.



Moderately sensitive to drought.



Moderately sensitive to waterlogging.

Ornamental qualities



LATE SPRING

Yellowish green flowers held on pendulous racemes.



LATE SUMMER

Samara fruits maturing in later summer.



Deciduous broadleaved tree. Leaves usually five lobed and dark green. Poor autumn colour.



Single-stemmed. Young stems have smooth to finely-fissured bark whilst mature stems have large elongated bark scales that peel off to reveal reddish brown layer underneath.

Issues to be aware of



Invasive in some regions. Horses eating seeds or seedlings may develop atypical myopathy. *A. pseudoplatanus* release a lot of pollen so have high allergenicity potential during the flowering period.

Notable varieties

Species-type habit	'Negenia'.
Upright/columnar habit	'Erectum'.
Red/Purple foliage	'Spaethii', 'Autropurpureum'.
Yellow	'Worley', 'Brilliantissimum' (starting with pink hue ending up as a yellow/light-green).
Variegated	'Leopoldii'.

Notes

- Well established trees grow fast. They cast a deep shade so not much will grow underneath them.
- Observed to have some resistance to air pollution.

The tree and its features



A mature *Acer pseudoplatanus* with a broad, globular crown.

© Andrew Hirons



Left: Large bark scales are characteristic of mature stems in *Acer pseudoplatanus*. © Andrew Hirons

Right: *Acer pseudoplatanus* 'Brilliantissimum' has young leaves that emerge pink before turning light-green. © Andrew Hirons



Aesculus hippocastanum

(Horse chestnut)

- Contents page
- Alphabetical Index

Tree Selector

- Use potential
- Mature size
- Crown form
- Crown density
- Environmental tolerance
- Ornamental qualities

Use potential



Park

Tree size and crown characteristics



>25M

A massive tree capable of reaching 30m in favourable environments.



A globular to ovoid crown that can exceed 20m in width.



A dense crown.

Natural habitat



Native to the Balkan peninsula. Found in the subalpine zone in humid, warm valleys in 'ravine forests'. All *Aesculus* spp. enjoy deep, moist and well-drained soils.

Environmental tolerance



Moderately tolerant to shade.



Moderately sensitive to drought.



Moderately sensitive to waterlogging.

Ornamental qualities



LATE SPRING

White flowers with yellow, then red patches, held in 20-30cm upright clusters. Appearing in late spring to early summer. Highly ornamental.



EARLY AUTUMN

Spiny husks containing lustrous brown nuts, known as 'conkers'. Mature in early autumn.



Deciduous broadleaved tree. Palmately compound leaves with five to seven leaflets.



Single-stemmed. Grey-brown bark, smooth at first becoming scaly with age.

Issues to be aware of



Conkers create significant 'litter' in autumn that has caused problems on streets with high pedestrian traffic.

Notable varieties

Double flowered	'Baumannii'.
No conkers	'Baumannii'.
Upright/Columnar	'Pyramidalis'.

Notes

- *Aesculus hippocastanum* faces a wide range of pests and pathogens. Therefore it is not recommended.
- Casts a deep shade so not much will grow underneath it.
- *Aesculus flava* and *A. indica* are better candidates if you want a 'horse chestnut' look.

The tree and its features



Left: A mature *Aesculus hippocastanum* in a park situation. © Henrik Sjöman



Right: Expanding leaves and flower bud of *Aesculus hippocastanum*. © Andrew Hiron



Left: *Aesculus hippocastanum* has highly ornamental upright flower clusters. © Duncan Slater



Right: The characteristic 'conker' fruit of *Aesculus hippocastanum*. © Duncan Slater



Fagus sylvatica (Common beech)

- Contents page
- Alphabetical Index

Tree Selector

- Use potential
- Mature size
- Crown form
- Crown density
- Environmental tolerance
- Ornamental qualities

Use potential



Park

Tree size and crown characteristics



>25M

A massive tree capable of reaching 30m in its natural habitat.



A globular to broad ovoid crown form.



A dense crown.

Natural habitat



Native to much of temperate Europe (including the British Isles). A canopy tree of mixed or pure forests, from sea level to 2700m. It can cope with a wide variety of soils, including calcareous, providing they are humus-rich and well drained. As a shade tolerant tree it is difficult to establish in the open.

Environmental tolerance



Tolerant to shade.



Moderately sensitive to drought.



Sensitive to waterlogging.

Ornamental qualities



LATE SPRING

Male and female flowers are separate but born on the same tree. Of little ornamental value.



EARLY AUTUMN

Small nuts held in a bristly husk are most apparent in early autumn. Some years fruiting is much heavier than other years (masting behaviour).



Deciduous broadleaved tree with simple leaves. Some years will see a beautiful yellow-golden autumn colour.



Single-stemmed. Smooth, grey bark.

Issues to be aware of



Potentially a very large, spreading tree.

Notable varieties

Cut leaved	'Asplenifolia', 'Rohanii'.
Columnar	'Dawyck', 'Dawyck Gold', 'Dawyck Purple'.
Yellow leaved	'Dawyck Gold', 'Zlatia'.
Weeping	'Pendular', 'Black Swan', 'Purple Fountain'.
Copper/Purple	'Dawyck Purple', 'Purpurea', 'Rohanii', 'Black Swan', 'Riversii', 'Purple Fountain'.

Notes

- As a shade tolerant tree it is difficult to establish in the open.
- Numerous cultivars are available, most widely supplied are cited here.
- *Fagus* spp. are known to be high emitters of Biogenic Volatile Organic Compounds (BVOCs).

The tree and its features



A mature *Fagus sylvatica* in a parkland situation.

© Andrew Hirons



Left: *Fagus sylvatica* 'Asplenifolia' has attractive cut-leaves, shown here in autumn. © Andrew Hirons

Right: Small 'beech nuts' are held in a bristly husk and are most apparent in early autumn.

© Duncan Slater