LOVE
DESIGN
STUDIO

DAYLIGHT AND SUNLIGHT STUDY

Tormead, 27 Dene Road
by Love Design Studio

January 2023
PR442_V4

CONTENTS

EXECUTIVE SUMMARY

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the proposed development at Tormead, 27 Dene Road, Northwood. This is to assess the on-site daylight and sunlight access to rooms deemed habitable based on relevant industry guidance.

The current daylight and sunlight assessment has been undertaken following request from Hillingdon Council to assess the impact of surrounding trees to the proposed development in accordance with the Building Research Establishment's publication "Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice" (2022) (the "BRE Guidelines").

Love Design Studio have previously prepared a daylight and sunlight assessment as part of the planning application for the proposed development (Reference: 422_27 Dene Road_Daylight and Sunlight Study_220608). The previous assessment used the superseded BRE Guidelines (published 2011), due to the report having been prepared before June 2022.

The original and current report only assesses proposed rooms closest to surrounding trees, including Flat A, Flat B, and the ground floor of Flat C, as per Pre-App advice from Hillingdon Council.

Daylight and sunlight access is typically desirable for occupants within residential 'habitable' rooms. This is acknowledged within the BRE guidelines, which place the most emphasis on these uses; mainly living rooms.

20 windows and 11 adjoining habitable rooms were identified in Flats A, B, and C as part of habitable spaces for the assessments. Two Living/kitchen/dining rooms (LKDs) and nine bedrooms were identified for the assessment at lower ground and ground floors.

This report sets out the daylight and sunlight assessment for Flats A, B, and C with and without factoring in the impact from surrounding trees.

Please see below a concise summary of the study.

PROPOSED SCHEME DAYLIGHT ACCESS

Assessments were made of the 'Daylight Factor' for measure of daylight. The BRE guidelines state that a target daylight factor should be achieved across a minimum of 50% of the reference plane target daylight factor is dependent on room use, in which bedrooms, living rooms, and kitchens have a target of 0.7%, 1.1%, and 1.4%, respectively. As the proposed scheme contains LKDs, a target daylight factor of 1.1% for living rooms was used, as recommended in Appendix C of the BRE guidelines.

Appendix G of the BRE guidelines states the following regarding daylight targets and surrounding trees:

- If daylight targets are met in both the summer and winter, daylight is considered adequate.
- If daylight targets are not met in both the summer and winter, daylight is considered inadequate.
- If daylight targets are not met in the summer but are met in the winter, daylight is considered adequate. This is because daylight is most valuable in the winter and natural lux levels are highest in the summer.

The daylight factor analysis indicates that seven of the 11 rooms assessed exceed daylight targets in the summer and eight of the rooms exceed daylight targets in the winter.

The BRE guidelines place a higher priority on achieving daylight targets in living rooms over other habitable rooms, and daylight is appreciated more in the winter than the summer. Both LKDs to Flats A and B (Flat C LKD not included within assessment) exceed daylight targets in the winter months.

Overall, three bedrooms fall short of daylight targets, namely two out of the three bedrooms assessed in Flat A and one out of the three bedrooms in Flat C. Additionally, all bedrooms within Flat B exceed daylight targets. Thus, all assessed dwellings have a minimum of one bedroom receiving adequate daylight in the winter.

Assessments were made of 'Sunlight Exposure' for measure of sunlight. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21st in at least one habitable room, preferably a main living room.

The sunlight exposure assessment indicates that Flats, A, B, and C meet the minimum requirement of 1.5 hours of sunlight on March 21 in at least one habitable room per dwelling; thus, the sunlight targets have been met.

Furthermore, it is also important to point out the environmental factors that play a crucial role in building design that should be weighed alongside daylight and sunlight concerns. Trees provide natural shade in the summer for mitigating overheating risk and are associated with strong levels of health, well-being, and quality of life for the occupants. Furthermore, natural lux levels are highest during the summer so diffused daylight will be higher in summer; subsequently, daylight expected in rooms will be higher if unshaded.

Therefore, when fully considering the overall benefit of trees to the occupants, all dwellings receive an acceptable amount of daylight and sunlight.

INTRODUCTION

Love Design Studio are appointed to prepare a daylight and sunlight assessment for the proposed development at Tormead, 27 Dene Road, Northwood, HA6 2BX; this is to assess the on-site daylight and sunlight access to rooms deemed habitable at Flat A (lower ground floor), Flat B, and Flat C (ground floor only), based on relevant industry guidance

The proposal is for a 2.5-storey front, side, and rear extension to the main building (Tormead) to provide 5 self-contained flats with associated parking, cycle and bin storage, and landscape works.

Figure 1: Existing Site (Tormead, 27 Dene Road, Red)

METHODOLOGY

MODELLING METHODOLOGY

Using hand-drawn architectural drawings prepared by GNP Architects and google maps observations, 3D models were created in industry accepted daylight and sunlight software. These included the on-site existing structures within the site boundary and the proposed development.

The 3D model includes the window locations and internal configurations of Flat A (lower ground floor) and Flats B and C (ground floor only) of the proposed development.

The guidelines for modelling and testing the scheme's daylight and sunlight access were provided by the BRE's "Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" by PJ Littlefair (2022); accepted as good practice by Planning Authorities when assessing the applications for new schemes. For further guidance on the methodology please see the BRE's document[1].

Assessments were made using the Daylight Factor method to measure internal daylight provision. For interior daylight of new developments in the UK, the BRE guidelines are intended to be used with The British Standard "Daylight in buildings" (BS EN 17037) and its National Annex.

BS EN 17037 states that a target daylight factor should be achieved across a minimum of 50% of the reference plane. The target daylight factor is dependent on room use, in which bedrooms, living rooms, and kitchens have a target of 0.7%, 1.1%, and 1.4%, respectively.

As the proposed scheme contains LKDs, a target daylight factor of 1.1% for living rooms was used, as recommended in Appendix C of the BRE guidelines.

[1] https://www.bregroup.com/services/testing/indoor-environment-testing/natural-light/

A table of the scheme's target daylight factor values are set out below:

Table 1: The proposed scheme target daylight factor values

Item	Target Daylight Factor	% area of the assessment grid	Comment
Bedrooms	0.7%	50%	As per BS EN 17037
Living, Kitchen & Dining Rooms	1.1%	50%	As per BS EN 17037

Assumptions of the reflectance and other modelling variables are set out below:

Table 2: The proposed scheme variables.

Item	Value	Comment
Maintenance factor	96%	Based on Suburban, vertical glazing
Frame factor	70%	-
Room reflectance	0.63	-

Assessments were made of Sunlight Exposure for measure of sunlight. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21 in at least one habitable room, preferably a main living room.

The government wish to densify sites to maximise the delivery of housing for the UK and maximise the sustainability credentials by maximising the use on-site. The NPPF states at para.123 in relation to achieving appropriate densities that:

"LOCAL PLANNING AUTHORITIES SHOULD REFUSE APPLICATIONS WHICH THEY CONSIDER FAIL TO MAKE EFFICIENT USE OF LAND, TAKING INTO ACCOUNT THE POLICIES IN THIS FRAMEWORK. IN THIS CONTEXT, WHEN CONSIDERING APPLICATIONS FOR HOUSING, AUTHORITIES SHOULD TAKE A FLEXIBLE APPROACH IN APPLYING POLICIES OR GUIDANCE RELATING TO DAYLIGHT AND SUNLIGHT, WHERE THEY WOULD OTHERWISE INHIBIT MAKING EFFICIENT USE OF A SITE (AS LONG AS THE RESULTING SCHEME WOULD PROVIDE ACCEPTABLE LIVING STANDARDS)."

IMPACT OF SURROUNDING TREES METHODOLOGY

Trees and hedges are not usually considered within daylight and sunlight assessments due to their irregular shapes making it difficult to accurately model. However, Appendix G of the BRE guidelines states that trees should be considered if large existing trees surround a proposed development.

As per Appendix G of the BRE guidelines, the surrounding trees were considered by modelling a representative shape of the trees using data collected on site of the tree profiles.

The Arboriculture Report for the proposed site (Prepared by Simon Pryce, January 2022) and the proposed site plan detailing tree location and crown spreads (Prepared by Simon Pryce, Received January 2023), were used to model the relevant surrounding trees on site. See Appendix C the Arboriculture Report and Site Plan.

A total of 19 trees on-site were identified to have a possible impact on the daylight and sunlight access to the proposed development.

Additional surrounding trees off-site were also deemed to have a possible impact on the daylight and sunlight access to the proposed development; the trees were modelled using google maps observations.

Regarding daylight, the daylight factor assessment was undertaken twice to represent the summer, when trees are in full leaf, and in winter, when deciduous trees are bare. The amount of daylight that passes through the tree's crown during summer and winter is represented in the model by applying the relevant transparency to the crown, based on Appendix G of the BRE guidelines.

For example, the BRE guidelines state an English Oak would have a low transparency (20%) in the summer when the tree is in full leaf but would have high transparency (55%) in the winter when its branches are bare.

Evergreen trees do not have a listed transparency within the BRE guidelines, so the lowest transparency (10%) was applied to the evergreen green trees on-site. However, in the Arboriculture Report, five evergreen trees on site were stated to have 'sparse foliage'; therefore, a higher transparency of 20% was assumed for those trees.

Additionally, trees have different reflectance values throughout the seasons. Following the values set out in Appendix G of the BRE guidelines, all deciduous trees were modelled with a reflectance of 20 and 10 in the summer and winter, respectively. All evergreen trees were modelled with a reflectance value of 10 throughout the year.

Please see Appendix A for the full detailed tree summary, which sets out the tree dimensions, transparency and reflectance values, and assumptions used to model the trees for this daylight and sunlight assessment.

To consider the impact of surrounding trees on sunlight access, Appendix G of the BRE guidelines states that the sunlight exposure assessment should first be conducted with all surrounding trees modelled as opaque structures. Then, the assessment is run again with all deciduous trees removed; this produces a range of possible sunlight hours the room could achieve.

Furthermore, to model a representative shape of the surrounding trees, the trees were identified to be either an ellipsoid or cone-like shape. For example, Figure 2 illustrates an example of a Lawson Cypress, which was a species of tree found across the proposed site and was accordingly modelled using a cone-like shape. Comparatively, the English Oak tree, which was another species of tree found across the proposed site, was accordingly modelled using as an ellipsoid shape. Although the trees were modelled using simplified shapes, the dimensions extracted from the Arboriculture Report were still applied for each individual tree.

Figure 2: Example of a Lawson Cypress (©Tree Guide UK) and English Oak (©GardenersWorld) illustrated with their representative shape used for modelling

ASSUMPTIONS & LIMITATIONS

Drawings used to model the scheme are based on hand-drawn architectural drawings prepared by GNP Architects.

The tree profile and placement of the surrounding trees were taken from the Arboriculture report and site plan, prepared by Simon Pryce Arboriculture (see Appendix C).

Where limited access or information is available, assumptions have been made which may affect the conclusions reached in this report. Namely, the surrounding trees off-site were modelled using google maps observations and their transparency and reflectance values were assumed to replicate evergreen trees as a worst-case scenario.

The BRE guide emphasises that trees are difficult to model due to their irregular shapes, which may lead to misleading results.

The report provided is solely for the use of the client and no liability to anyone else is accepted and this report is based upon and subject to the scope of work set out in Love Design Studio's terms and conditions

MODEL IMAGES

For reference, please see below images of the constructed model from the relevant software; this is for illustrative purposes only.

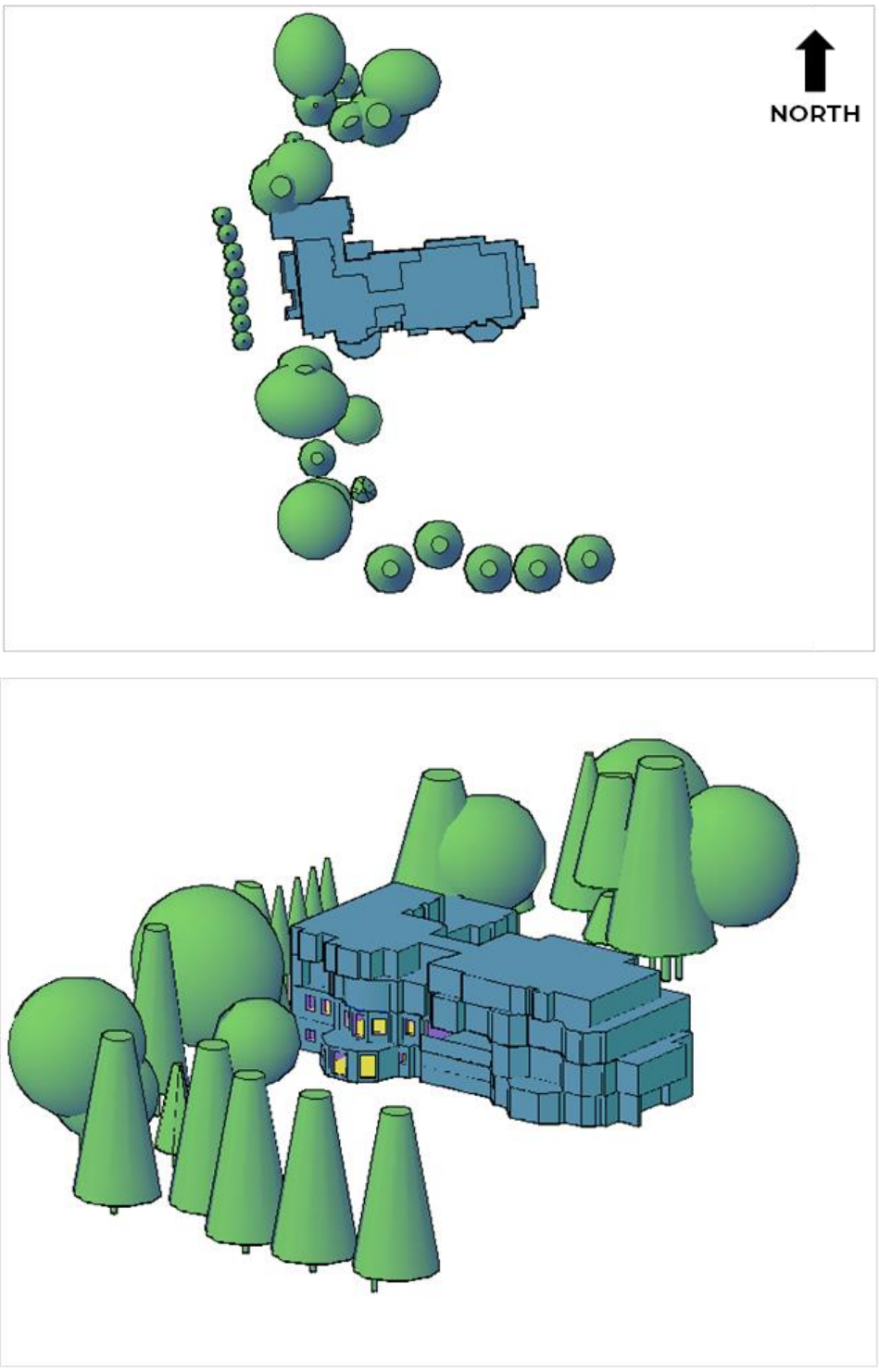


Figure 3: Aerial views of the daylight and sunlight model for the proposed development and surrounding trees (plan view, top; southeast view, bottom)

SCHEME DRAWINGS USED FOR MODELLING

For reference, please see below images of the pdf drawings used to model the internal layouts.

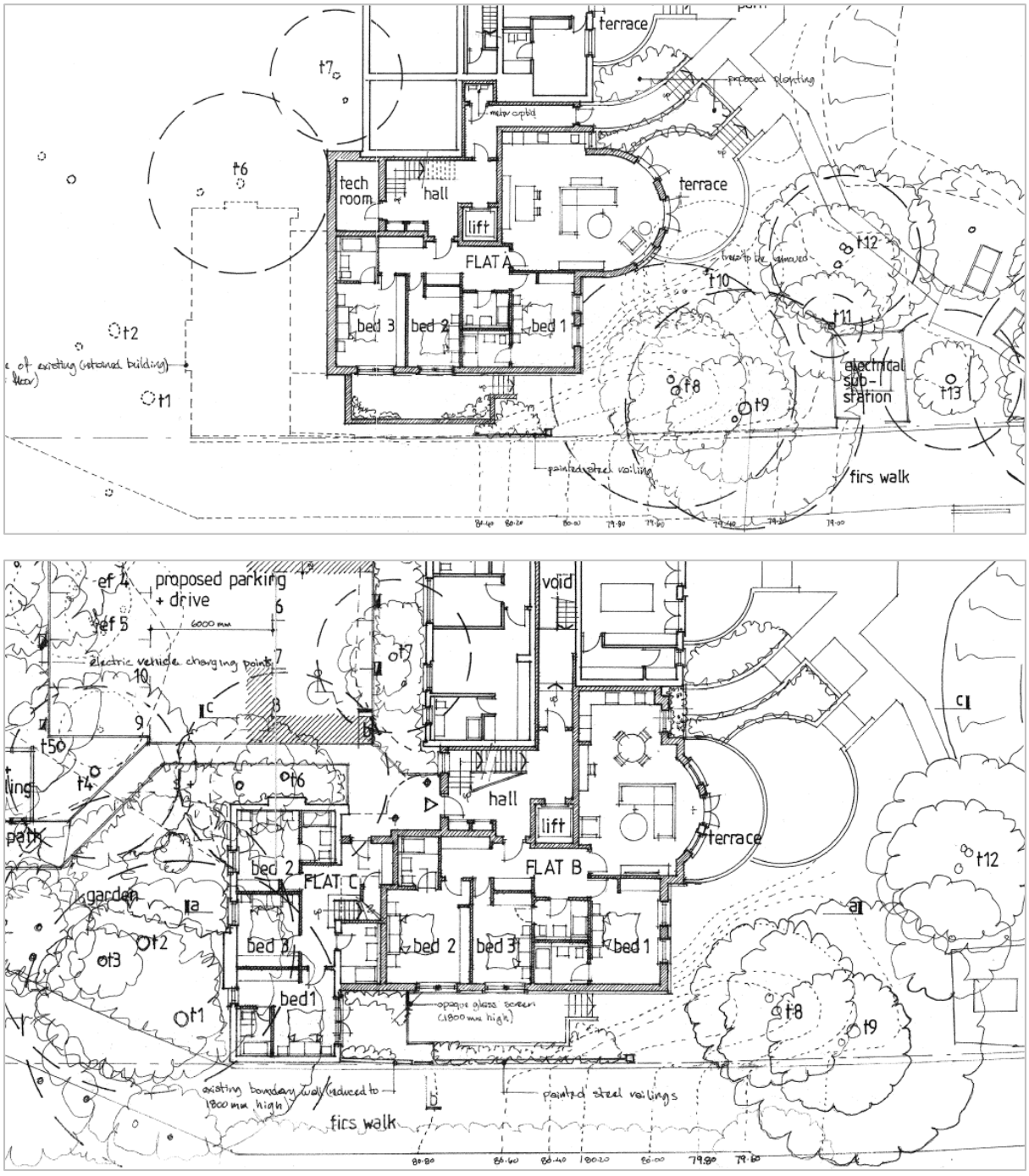


Figure 4: GNP Architects Lower Ground Floor rooms at Flat A (top) and Ground Floor rooms at Flats B and C (bottom).

PROPOSED SCHEME SUMMARY

Assessments were made of the Daylight Factor for measure of daylight, wherein a target daylight factor should be achieved across a minimum of 50% of the reference plane. The target daylight factor is dependent on room use, in which bedrooms, living rooms, and kitchens have a target of 0.7%, 1.1%, and 1.4%, respectively. As the proposed scheme contains LKDs, a target daylight factor of 1.1% for living rooms was used, as recommended in Appendix C of the BRE guidelines.

Appendix G of the BRE guidelines states the following regarding daylight targets and surrounding trees:

- If daylight targets are met in both the summer and winter, daylight is considered adequate.
- If daylight targets are not met in both the summer and winter, daylight is considered inadequate.
- If daylight targets are not met in the summer but are met in the winter, daylight is considered adequate. This is because daylight is most valuable in the winter and natural lux levels are highest in the summer.

Assessments were made of the Sunlight Exposure for measure of sunlight. The BRE guidelines states that a dwelling must receive a minimum of 1.5 hours of sunlight on March 21 in at least one habitable room, preferably a main living room. To consider the impact of surrounding trees, Appendix G of the BRE guidelines states that the sunlight exposure assessment should first be conducted with all surrounding trees modelled as opaque structures. Then, the assessment is run again but removing all deciduous trees; this produces a range of possible sunlight hours the room could achieve.

20 windows and 11 adjoining habitable rooms were identified in Flats A, B, and C as part of habitable spaces. Two Living/kitchen/dining (LKD) rooms and 9 bedrooms were identified for the assessment at ground floor and first floor. The full set of calculations of the daylight and sunlight access are set out in the table below.

Table 3: Full Daylight and Sunlight Test results for the proposed development

Reference*	Target Daylight Factor Area Achieved (%)		Pass Daylight Fact test?		Range of Sunlight Exposure (Hours)
	Summer	Winter	Summer	Winter	
Flat A/LGF/Bed/R1	22%	27%	No	No	3-3.9
Flat A /LGF/Bed/R2	60%	61%	Yes	Yes	2.5-2.6
Flat A /LGF/Bed/R3	47%	48%	No	No	2.9
Flat A/LGF/LKD/R4	47%	50%	No	Yes	5.6-7.9
Flat B/GF/Bed/R1	88%	94%	Yes	Yes	3.7-5
Flat B/GF/Bed/R2	100%	100%	Yes	Yes	4.2
Flat B/GF/Bed/R3	98%	98%	Yes	Yes	4.2
Flat B/GF/LKD/R7	66%	73%	Yes	Yes	6.6-7.5
Flat C/GF/Bed/R4	100%	100%	Yes	Yes	4.7
Flat C/GF/Bed/R5	42%	44%	No	No	0
Flat C/GF/Bed/R6	55%	56%	Yes	Yes	0

*X/XX(X)/XX/XX – Flat No./Floor/Room Use/Room Ref

The daylight factor analysis indicates that seven of the 11 rooms assessed exceed daylight targets in the summer and eight of the rooms exceed daylight targets in the winter.

The BRE guidelines place a higher priority on achieving daylight targets in living rooms over other habitable rooms; also, daylight is appreciated more in the winter than the summer. Both the LKDs to Flats A and B (Flat C LKD not assessed) exceed daylight targets in the winter months.

Overall, three bedrooms fall short of daylight targets, namely two out of the three bedrooms assessed in Flat A and one out of the three bedrooms in Flat C. Additionally, all bedrooms within Flat B exceed daylight targets. Thus, all assessed dwellings have a minimum of one bedroom receiving adequate daylight in the winter.

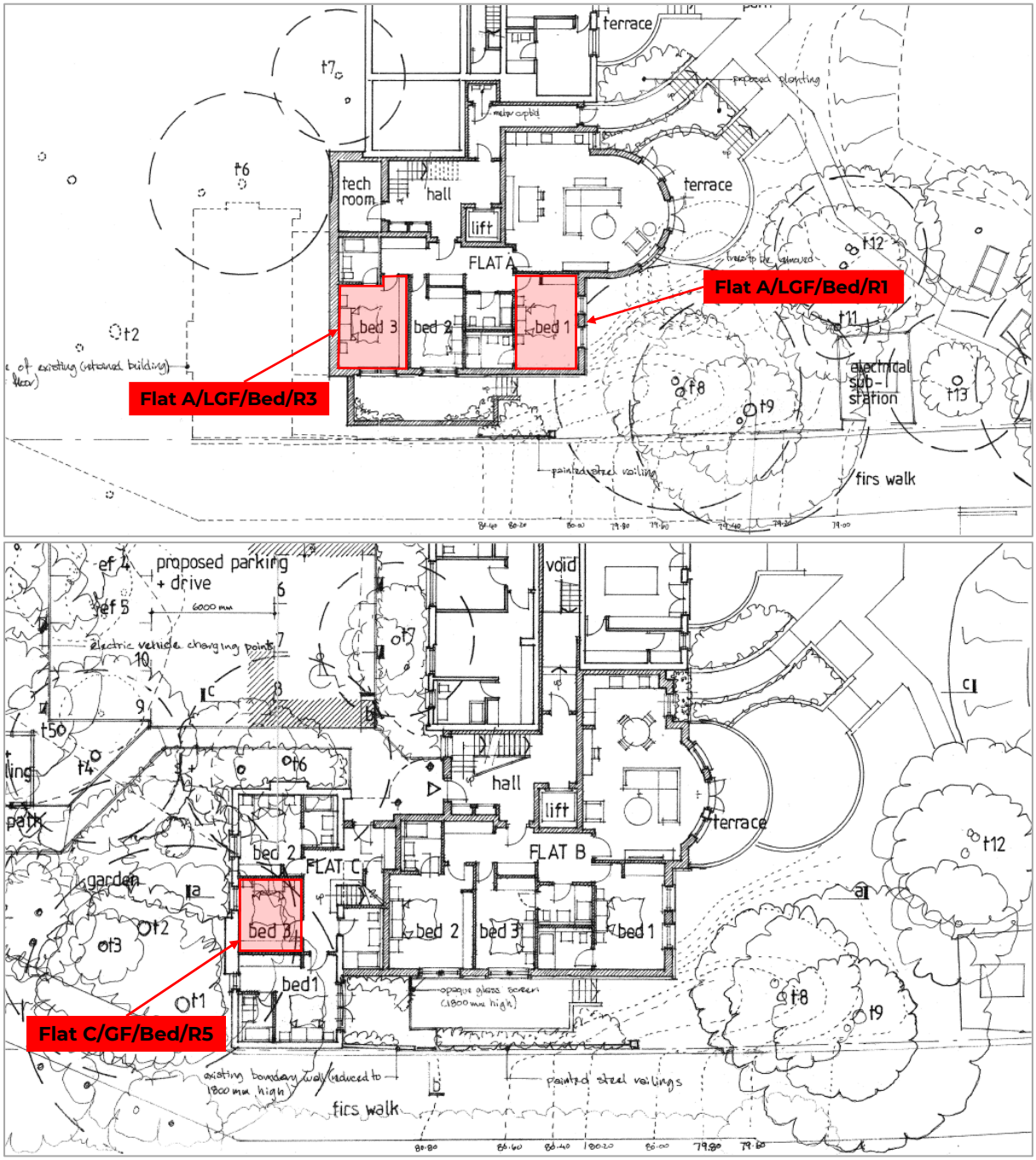


Figure 5: GNP Architects Lower Ground Floor rooms in Flat A (top) and Ground Floor rooms in Flats B and C (bottom) illustrating the rooms impacted by the surrounding trees in the winter (red).

However, it is also important to point out the environmental factors that play a crucial role in building design that should be weighed alongside daylight and sunlight concerns. Trees provide natural shade in the summer for mitigating overheating risk and are associated with strong levels of health, well-being, and quality of life for the occupants. Furthermore, natural lux levels are highest

during the summer so diffused daylight will be higher in summer; subsequently, daylight expected in rooms will be higher if unshaded.

Regarding sunlight, the sunlight exposure assessment indicates the LKDs belonging to Flat A and Flat B meet the minimum requirement of 1.5 hours of sunlight on March 21; thus, the sunlight target for each dwelling has been met.

The LKD belonging to Flat C is not included within this daylight and sunlight assessment. Of the three bedrooms assessed within Flat C, one bedroom exceeds the minimum sunlight requirements. The two remaining bedrooms adjoin north facing windows; in this case the BRE guidelines state that achieving sunlight targets is unlikely. Overall, as Flats A, B, and C have at least one habitable room receiving 1.5 hours of sunlight on March 21, the proposed development meets the minimum sunlight requirements under BRE guidelines.

Therefore, when the overall benefit of trees to the occupants are fully considered, all habitable rooms receive an acceptable amount of daylight and sunlight.

APPENDIX A – SURROUNDING TREES DETAILED SUMMARY

Table 4: Full summary of the surrounding trees modelled for the daylight and sunlight assessment

Tree Reference	Common Name	Evergreen or Deciduous	Transparency of Tree Crown to Solar Radiation (%)		Reflectance of Tree (%)		Total Tree Height (m)	Base Crown Height (m)	Trunk Diameter (m)	Comments
			Summer	Winter	Summer	Winter				
1	Austrian Pine	Evergreen	20	10	10	10	19	7	0.67	Sparse foliage*
2	Cedar of Lebanon	Evergreen	20	10	10	10	18	6	0.64	Sparse foliage*
3	Lawson Cypress	Evergreen	10	10	10	10	14	5	0.22	-
8	Lawson Cypress	Evergreen	10	10	10	10	18	4	0.32 0.32 0.37	-
9	Oak	Deciduous	20	55	20	10	19	4	0.56	Sparse foliage*
11	Variegated Holly	Evergreen	10	10	10	10	7	2	0.16	-
12	Ash	Deciduous	25	65	20	10	12	3	0.13 0.13 0.21 0.21	-
13	Lawson Cypress	Evergreen	10	10	10	10	18	3	0.38	-
14	Leyland Cypress	Evergreen	10	10	10	10	10	2	0.22	-
15	Yew	Evergreen	10	10	10	10	10	2	0.1	-
16	Oak	Deciduous	20	55	20	10	18	5	0.57	-
17	Lawson Cypress	Evergreen	10	10	10	10	15	5	0.2	-
19	Blue Cedar	Evergreen	20	10	10	10	19	5	0.37	Sparse foliage*
20	Holm Oak	Deciduous	20	55	20	10	19	4	0.41 0.35	-
21	Laurel	Evergreen	10	10	10	10	8	2	0.13 0.22	-
22	Holly	Evergreen	10	10	10	10	7	3	0.1 0.1 0.1 0.1	-
23	Blue Cedar	Evergreen	20	20	10	10	19	9	0.41	Sparse foliage*
25	Austrian Pine	Evergreen	10	10	10	10	21	4	0.64	-

Tree Reference	Common Name	Evergreen or Deciduous	Transparency of Tree Crown to Solar Radiation (%)		Reflectance of Tree (%)		Total Tree Height (m)	Base Crown Height (m)	Trunk Diameter (m)	Comments
			Summer	Winter	Summer	Winter				
26	Oak	Deciduous	20	55	20	10	18	5	0.4	-
Surrounding Off-Site trees to the West	-	Evergreen	10	10	10	10	11	2	0.2	Assumed dimensions based off proposed drawings and google maps observations
Surrounding Off-Site trees to the South	-	Evergreen	10	10	10	10	19	4	0.2	Assumed dimensions based off proposed drawings and google maps observations

*Extracted from Arboriculture Report submitted with planning application, prepared by Simon Pryce (January 2022)

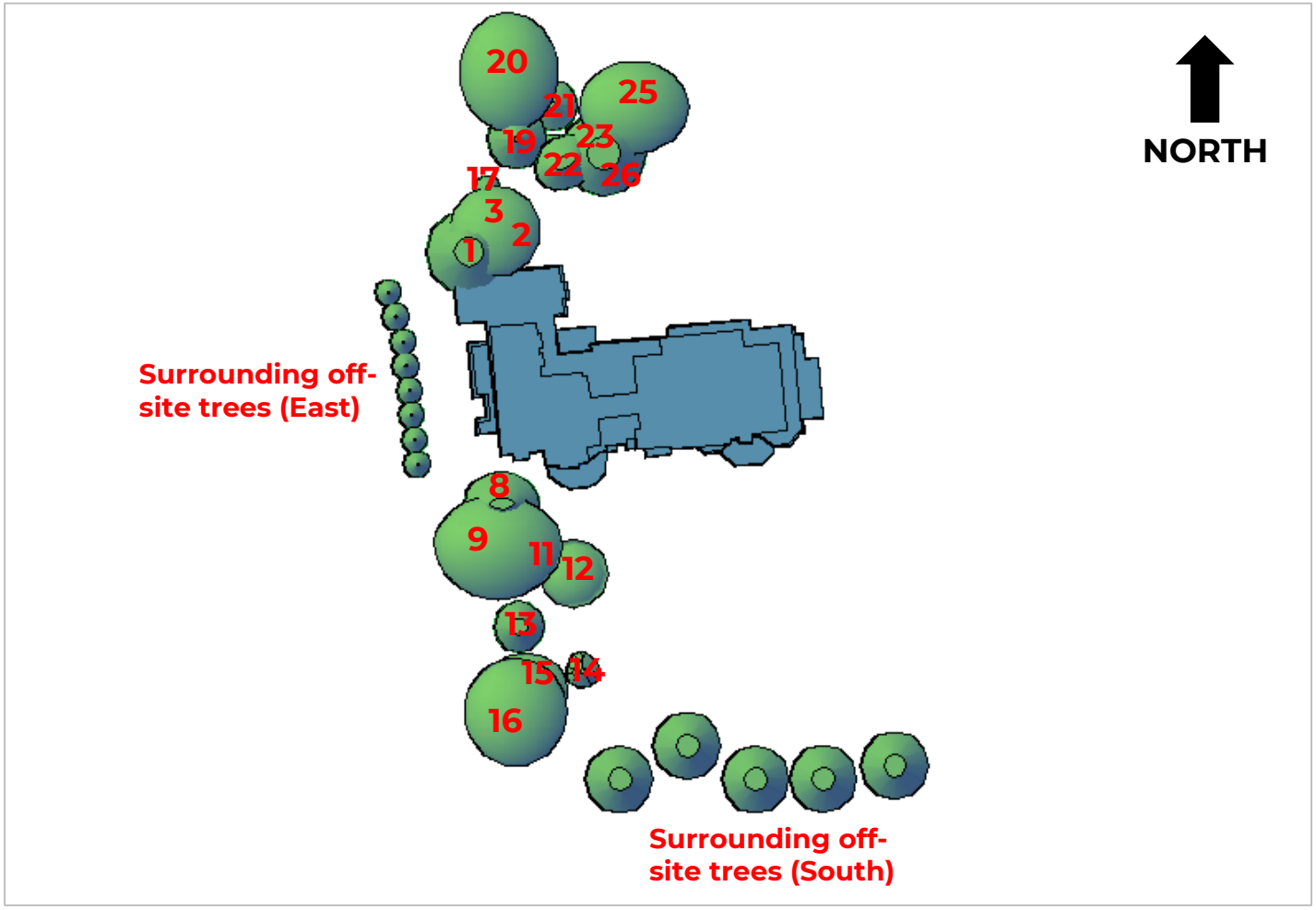


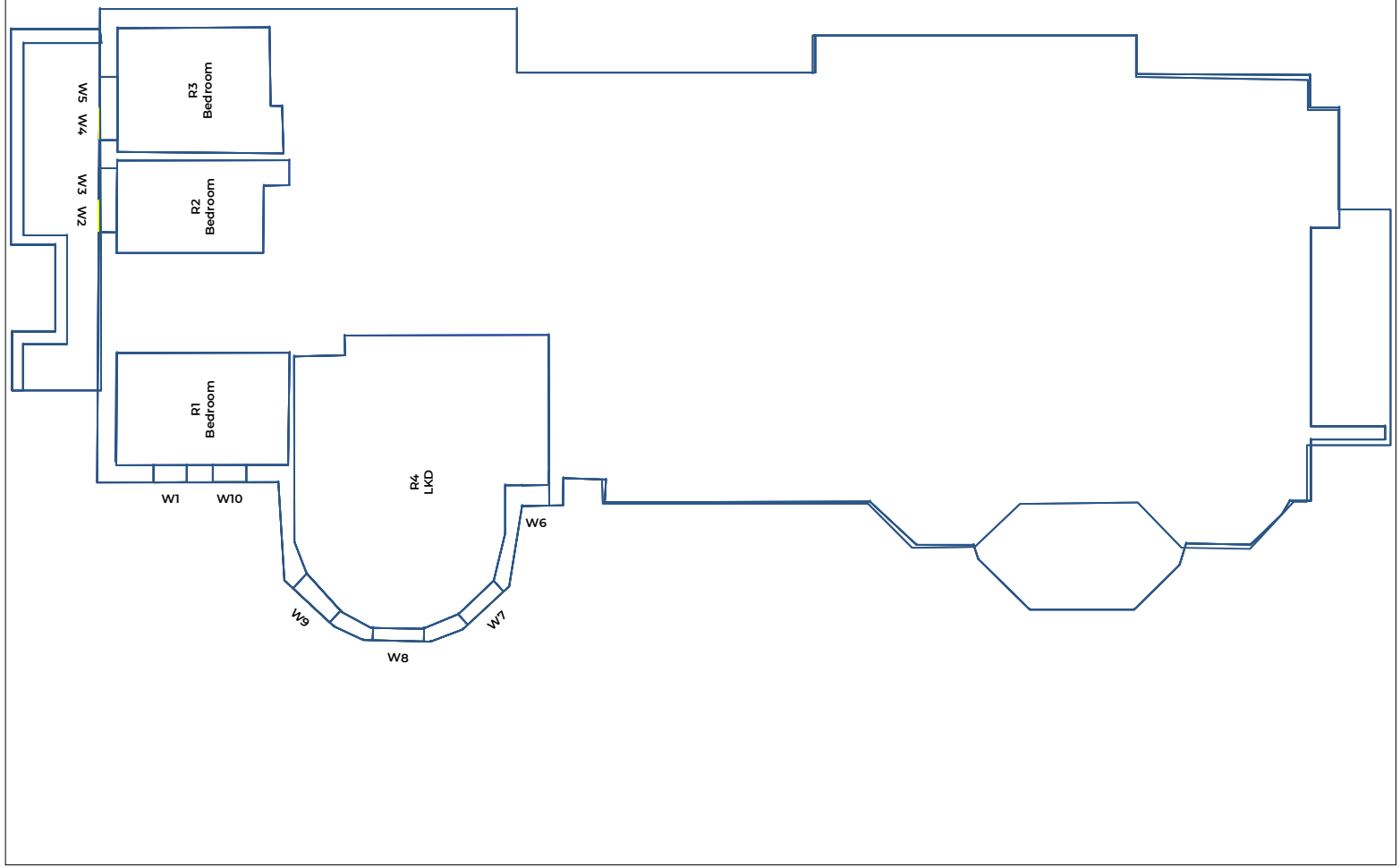
Figure 6: Plan view of the proposed site with the modelled surrounding trees

APPENDIX B - WINDOW AND ROOM LOCATIONS

The following images reference the window and room locations as per the results tables from earlier sections.

LOVE DESIGN STUD/O

Tormead, 27 Dene Rod
Lower Ground Floor
Window Ref
Room Ref



NOT TO SCALE
ILLUSTRATIVE ONLY

Date: 01/06/2022
Drawing: 442-27DR-WR/RR-LGF
Issue: 00A

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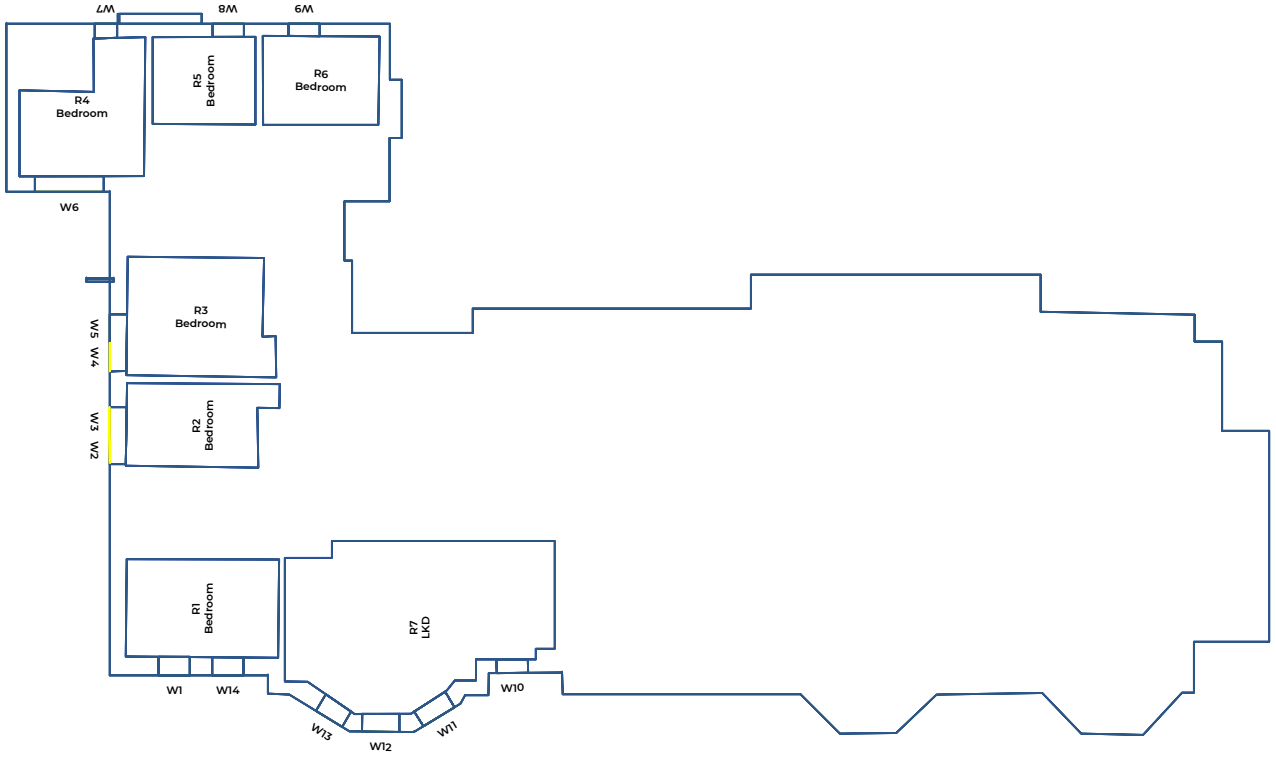
mail@lovedesignstudio.co.uk

LOVE DESIGN STUD/O

Tormead, 27 Dene Rod
Ground Floor
Window Ref
Room Ref



NOT TO SCALE
ILLUSTRATIVE ONLY

Date: 01/06/2022
Drawing: 442-27DR-WR/RR-GF
Issue: 00A

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APPENDIX C – ARBORICULTURE REPORT

Simon Pryce Arboriculture

Arboricultural Method Statement and Tree Protection Plan

Client:	**Mr P Sander**
Site:	**Tormead, 27 Dene Road, Northwood, HA6 2BX**
Inspection date:	**4 December 2020**
Document date:	**16 January 2022**
Reference:	**21/018 MS**
Author:	**Simon Pryce, BSc, FArborA, RCArborA, CBiol, MICFor**

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AA Registered CONSULTANT trees.org.uk

1 Introduction

1.1 This report, method statement and plans been prepared on the instructions of Mr Paul Sander in connection with building work at Tormead, 27 Dene Road, Northwood, HA6 2BX.

1.2 Following a pre-application Hillingdon Council have asked for an updated arboricultural report including an Arboricultural Method Statement and Tree Protection Plan following the guidelines in BS5837:2012, Trees in relation to design, demolition and construction

1.3 Tree protection measures are specified in detail in the method statement forming Part 2 of this document and illustrated on the plan showing the proposed layout, which serves as the tree protection plan (TPP) specified by BS5837.

Survey method

1.4 This report is based on a site visit and survey of the trees on 4 December 2020. The original trees 1 - 16 in the previous reports were reinspected to update the information on them and additional ones at the front added as numbers 17 - 36. The inspections were visual and made from ground level, with no climbing or test boring as these were not warranted.

1.5 The trees were measured, their maturity, health and structural condition assessed and each was assigned to one of the four retention categories [A,B,C,U] specified by BS5837. The individual descriptions and other relevant information are contained in the attached schedule and they are shown on the attached plans, based on a topographic survey by DB Surveys and plans by GNP Architects showing the proposed layout.

2 Background

The site

2.1 Tormead is a large detached house that has been converted into flats. In 2015 some building work was carried out at the rear and the parking at the front was modified to provide additional spaces. My previous reports dealt with the arboricultural aspects of the work on the parking area and proposals to extend the west side, (right as seen from the front).

Proposed work

2.2 The current proposal is shown on the drawing by GNP Architects and the outline is shown in orange on the site plans with this report. The original scheme was reduced in the light of feedback from Hillingdon's planning department and the current layout makes some modifications. The existing outbuilding to the front is incorporated, as before and there is a bay at the rear opening onto a small patio at lower ground floor level.

2.3 I gather that the excavation is to be carried out by forming the walls with contiguous piles then digging out the contained material, so the excavation is confined to the new building footprint. As a result there are no proposed level changes around the retained trees.

2.4 As in the most recent previous scheme there is no new parking to the rear, but more spaces are provided at the front. The existing drive entrance at the western end is narrowed to provide pedestrian access to the car park and a bin store. A new driveway and separate pedestrian/cycle entrance are formed at the eastern end and the existing car park is extended to provide more spaces on the north side and western end.

3 Trees

3.1 The grounds contain assorted mature trees, including a redwood and belt of mature conifers at the end of the rear lawn. However this survey and report deal only with those to the rear right and right of the house and across the front which might be affected by the proposal. Some of the better trees are to the rear right and include four out of the six B category trees, a Lawson cypress, two oaks and a yew. These are less likely to be affected by this proposal than the previous ones, particularly with the parking now at the front. Significant trees to the front include an Austrian pine and cedar of Lebanon near the large outbuilding and a holm oak next to the drive entrance. This holm oak and the lime on the verge to the east are the only B category trees to the front. The bank across the front has a dense lower storey of laurel and other evergreens. There are some prominent trees among them, but most are not particularly good specimens and some are dead or dying and need to be removed, notably 24, a dead red cedar and 32, a large birch.

3.2 The trees are covered by Hillingdon Council's tree preservation area reference TPO 737, which was made by reference to the area concerned, so it covers all the trees growing when it was made on 18 February 2015. This also means that the trees are material considerations in any planning application, irrespective of their condition or amenity value.

4 Discussion

General comments

4.1 The two main functions of tree roots are 1) physical support and 2) the supply of water and nutrients from the soil. Roots will grow wherever conditions are favourable i.e. there is a suitable supply of air and water, so most tend to be in about the upper 600mm of the soil and even shallow excavation or minor level changes can be harmful. Construction near trees can also be harmful in less direct ways, such as soil compaction caused by heavy machinery and spillage of toxic materials such as diesel oil and cement.

Root protection areas

4.2 British Standard 5837: 2012, Tree in relation to design, demolition and construction – Recommendations, specifies measures to avoid or minimise construction damage to trees. One of these is that root protection areas (RPAs) are established round retained trees and fenced to exclude construction access. No ground work should take place within them unless suitable alternative measures are taken, such as installing protection on soft ground to prevent contamination or compaction.

4.3 The starting point is that a single trunked tree's RPA has an area equivalent to a circle with a radius 12 times the trunk diameter measured at 1.5m above ground. Where existing site conditions indicate that root spread is asymmetrical the RPA shape can be adjusted to a polygon of the same area, provided this reflects a sound assessment of likely root distribution.

Implications for this proposal

4.4 With this layout none of the trees are directly affected by the extension, but some are under the new car park, so could not be retained. Some of these are U category, so would need to be removed in any event. The others are all C category and many are barely significant or would be better removed, such as the remnants of the yew hedge at the front. All six of the B category trees are retained. A total of 19 C and U category trees are removed out of the 36 in the survey, but that covers only trees that might be affected by the proposal, so the large group on the rear lawn and other to the sides of the property are completely undisturbed, so the overall effect on tree cover will be less than the survey numbers might suggest.

4.5 Some of the removed trees are suppressed by larger ones so new ones would not establish in the same place. However suitable new trees planted in the more open areas as part of the landscaping that is being prepared will mature to make a comparable or better contribution to the area in the longer term. The tree protection plan shows suggested locations for new trees as direct replacements for trees 32, 34 and 35 and shrubs or a hedge to replace the yew hedge, item 33. It also shows supplementary shrub planting if needed to thicken the front boundary screening.

4.6 The implications for individual trees are set out in detail in the main table below and summarised in the smaller one following it.

Implications for individual trees

Tree no:	Species	RPA area m^2	Area affected m^2	% of RPA	Comments	Cat
1	Austrian pine	202	0	-	New extension is clear of the tree and the parking spaces within the RPA are on the existing drive, so the sub base can be retained protecting roots beneath. In the long term returning some of the drive to soft ground would be beneficial but would need to be done carefully in order to minimise and incidental damage	C
2	Cedar	183	0	-	Also clear of the new extension and parking spaces nearby are on the existing drive.	C
3	Lawson cypress	22	0	-	RPAs clear of new building and drive.	C
4	Blue cedar	56	11.4	20%	New parking space is in RPA and close to trunk. Levels will need to be reduced and the tree is unlikely to survive.	C
5	Holm oak	56	19	34%	New parking space takes up a large part of the RPA and involves disturbance very close to the trunk. Low branch over the drive would also have needed removing for clearance together with felling the conifer and cherry plum nearby.	C
6	Lawson cypress	17	17		Corner of the building is in the RPA. Some of the existing hard surface would be returned to soft ground but the tree is already declining and needs to be removed.	U
7	Lawson cypress	46	0	-	Clear of the footprint but there are significant landscaping changes nearby, so it would be hard to protect effectively so is to be removed. New landscaping compensates for this.	C
8	Lawson cypress	152	5.3	3.5%	Slight incursion into RPA by the extension. Will need protection during the work but that would not be difficult.	B
9	Oak	140	0	-	Clear of the new building, will be safeguarded by protective measures for trees 8 + 12.	B
10	Yew gp	29	0	-	Near the new building, poor quality trees.	C

Tree no:	Species	RPA area m²	Area affected m²	% of RPA	Comments	Cat
11	Holly	11.5	0	-	Small tree protected by growing among others.	C
12	Ash gp	54	0	-	As above. Healthy at present but might be lost to ash die-back.	C
13	Lawson cypress	51	0	-	Well clear of the new building and access routes and will be covered by protective measures for nearer trees.	C
14	Leyland cypress	14	0	-	As above	C
15	Yew	163	0	-	As above, one of the better trees.	B
16	Oak	132	0	-	As above, also one of the better trees.	B
17	Lawson cypress	18	0	-	Not a very good specimen but not affected by the proposal.	C
18	Lawson cypress	-	-	-	Poor specimen that needs to be removed	U
19	Blue cedar	61	-	-	Only ground work in this tree's RPA is returning some of the existing drive surface to soft ground. The tree will need to be safeguarded against incidental damage from that.	C
20	Holm oak	133	-	-	Only ground work in the RPA is converting some of the drive to soft ground. Very small corner of bin store in RPA, but that will be a lightweight structure.	B
21	Laurel	58	2.4	0.4%	Minimal incursion by bin store. Not outstanding but useful low screening.	C
22	Holly	18	1.2	6%	Slight incursion by bin store, also provides low - mid level screening	C
23	Blue cedar	77	7	9%	Small incursion by bin store and minimal one by parking spaces. Tree can be protected.	C
24	Red cedar	-	-	-	Dead and needs to be removed in any event.	U
25	Austrian pine	180	27 pkg 10 bin	25% 5%	Significant amount under parking space, direct effects can be ameliorated by suitable low impact methods and permeable surface.	C
26	Oak	72	4.5	6%	Relatively minor amount under parking spaces. Tree misshapen but could be improved and has reasonable life expectancy, probably longer than 25.	C
27	Yew	125	57	46%	High percentage and trunk is under the hard surface so could not be retained.	C
28	Lawson cypress	16	14	87%	Tree is under new hard surface , so would have to be removed, but is a small, poor specimen.	C
29	Juniper	11	11	100%	Declining and needs to be removed	U
30	Lawson cypress	-	-		Dead and needs to be removed	U
31	Lawson cypress	77	28	36%	High percentage in RPA and involves significant ground work near the trunk. Tree is declining. Removed.	C

Tree no:	Species	RPA area m²	Area affected m²	% of RPA	Comments	Cat
32	Birch	83	48	57%	High percentage but the tree needs to be removed in any event.	U
33	Yews	-	-	100%	Neglected and overgrown hedge, beyond practical remedial work, most of it under the new parking spaces. Can be replaced as part of the new landscaping.	C
34	Austrian pine	202	29 pkg 22 fp	14% 11%	Disturbance is significant, even with the path rerouted. Quite prominent, but not particularly healthy or vigorous. Removed to make new path.	C
35	Ash leaf maple	117	c.60	51%	Large amount of disturbance from the foot / cycle path, even with less invasive methods the tree would be severely affected unless the path was rerouted. However it is not a prominent or good specimen.	C
36	Lime	174	12	7%	One of the better trees, healthy and one of the more resilient species. Foot / cycle path goes through the RPA, well away from the trunk and can be laid with non or minimally invasive methods and a permeable surface	B

Summary of removals

Category	No of trees	No removed	Comments
A	0	0	N/A
B	6	0	None of these vulnerable directly or indirectly and can be protected easily.
C	24	13	Most small, poor specimens, including neglected hedge. Most of the larger ones are not very good. Rerouting the path might save 35 but it is a poor specimen.
U	6	6	Four directly affected, the other two need to go anyway

Tree protection

4.7 The retained trees will be safeguarded with fencing and ground protection, as detailed in the method statement below and shown on the attached tree protection plan.

5 Summary and conclusions

5.1 This proposal has been amended from earlier versions and reduces the impact on the trees.

5.2 All six of the B category trees are now retained and can be safeguarded during the works with the 13 C category ones that are kept. A total of 19 trees are removed, of which 6 are U category and would need to be removed in any event. Most the 11 C category trees are small, poor specimens including a neglected hedge and some of the larger ones are showing signs of decline.

5.3 There are more trees in the grounds of Tormead and surrounding gardens than were included in the survey, which covered only trees that might be affected, so the removal of 17 will have less impact than the numbers might suggest.

5.4 Suitable new trees will mitigate the tree removals and mature to provide a comparable or better contribution to local amenity.

5.5 Tree protection measures are specified in detail in the method statement forming Part 2 of this document and illustrated on the plan showing the proposed layout, which serves as the tree protection plan (TPP) specified by BS5837.

Simon Pryce

Simon Pryce, BSc, FArborA, RCArborA, CBiol, MICFor

Part 2 - Arboricultural method statement

This document is to be read in conjunction with the survey report and tree protection plan [TPP]. Any queries are to be referred to the arboriculturist.

Preliminaries

1. Before any demolition or building starts the contractor and arboriculturist are to agree all work affecting trees, particularly protective fencing, access routes and storage areas.

2. Any preliminary exploratory excavation within RPAs is to be done by hand or using an air spade. See also clause 16 below.

Tree work

3. The trees scheduled for removal are to be felled and the root systems dug or ground out.

4. All tree work is to be carried out in accordance with BS3998: 2010, Recommendations for Treework, by an arboricultural contractor with appropriate third party and public liability insurance. The Arboricultural Association has a list of approved contractors, at https://www.trees.org.uk/ARB-Approved-Contractor-Directory .

Fencing

5. Protective fencing is to be erected so as to provide continuous barriers round the trees to be retained, as shown on the TPP. If it is more practical or convenient distances from the trees may be increased, but they must not be reduced without the agreement of the arboriculturist.

6. Fencing is to be at least 2m high and sectional welded mesh fencing [e.g. Heras], or plywood, on a scaffolding framework as in figure 1. Diagonal braces are to be anchored to scaffold poles driven into the ground or the proprietary concrete weighted base plates.

7. Each run of fence is to have at least one warning sign, as shown in figure 2, or a suitable alternative giving the same information.

Ground protection

8. Where it is necessary to move or work within tree protection areas the options for ground protection are:

- for pedestrian movements only, a single thickness of scaffold boards or 18mm min plywood placed either on top of a driven scaffold frame to form a suspended walkway, or on a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a Terram ® or similar geotextile membrane (fig 3);

- for pedestrian-operated plant up to 2t gross, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geotextile membrane. Alternatively use one of the proprietary systems, as below.

- for any plant over 2t gross, either a proprietary system rated for that load or a one-off such as pre-cast reinforced concrete slabs engineered in conjunction with arboricultural advice, to accommodate the likely loads. Figure 4 shows a typical proprietary system.

9. No fencing or other tree protection is to be moved or dismantled without the agreement of the arboriculturist.

Work methods

Hard surfaces

10. Hard surfaces within protected areas are to be broken out and taken up by hand or with hand operated power tools. If powered machinery needs to be used it is to remain on the hard surface and work backwards away from the cleared ground.

11. Roots will have acclimatised to local conditions, so if existing sub bases are serviceable they can be retained and reused in order to minimise root disturbance. With impermeable existing sub bases any new surface can be used. With permeable sub bases, e.g. hard core, the new hard surface is to be permeable and constructed with a no-dig method, such as "Cellweb", illustrated at Figure 5. Guidance on this is in the Arboricultural Association guide.[1]

Underground services

12. In order to avoid root disturbance new services should connect to existing ones where possible. Otherwise installation is to follow the guidelines in the National Joint Utilities Group (NJUG) publication and operatives handbook[2].

General

13. No work is to take place within fenced areas without the prior agreement of the arboriculturist and without suitable alternative protective measures.

14. No equipment, machinery or structure shall be attached to or supported by any retained tree.

15. Outside fenced and protected areas there are no arboricultural constraints on working methods.

16. Any roots found outside protected areas are unlikely to be significant, but any over 25mm diameter and not obviously from recently felled trees should be covered to prevent them drying out and the arboriculturist notified. Smaller roots can be cut cleanly.

17. Cement and concrete mixing must take place as far as possible from protected areas, over a suitable hard surface to prevent soil contamination from spillage or washing out into rooting zones.

18. Any fires must be lit only in approved areas well away from trees, as directed by the arboriculturist and in accordance with any relevant legislation.

Storage

19. No materials are to be stored within RPAs except on existing impermeable hard surfaces.

20. Potential contaminants such as diesel oil and cement must be stored as far from rooting areas as practical, with provision made for any spillage or run off to be contained away from rooting areas.

Landscaping

21. Tree protection measures are to remain in place until all demolition, construction and hard landscaping are complete.

[1] Arboricultural Association (2020) The use of cellular confinement systems near trees: A guide to good practice ISBN 978-0-900978-65-4

[2] National Joint Utilities Group (NJUG) (2007) Volume 4, Installation and maintenance of utility apparatus in proximity to trees. Guide and operatives' handout

22. Outside the protected areas there are no arboricultural restrictions on hard landscaping.

23. Within the protected areas only soft landscaping is to take place. No levels are to be changed beyond what is required for planting and any irrigation pipes are to be above ground or dug in by hand.

24. No persistent soil acting herbicides are to be used.

Completion

25. Once site work is complete the trees are to be reinspected and any necessary final pruning or other work is to be carried out.

Supervision timetable

26. Pro forma inspection schedule and report forms for this are attached.

Timing	Purpose
Pre-start	Check tree protection measures are in place and fit for purpose. Confirm access routes, work and storage areas, and any other queries.
Monthly	Routine check of protection measures and any other matters requiring attention. These can be more frequent if appropriate, e.g. on complex projects.
As required	One off checks as required, for instance if work schedule requires protection layout to be altered or if large roots are encountered unexpectedly. Supervision of potentially damaging operations such as exploratory excavation near trees.
Completion	Final check of tree condition, assess the need for any pruning or other work.

Contact details

Position	Name	Phone	Mobile	e mail
Owner	Paul Sander		07860 626000	snk@aol.com
Arboriculturist	Simon Pryce	01923 467600	07710 224906	info@simonpryce.co.uk
Architect	GNP Architects	01908 200002	07711 671129	GNPArchitects@aol.com
Planning consultant	HGH Consulting	020 3409 7755		lmanoharan@hghconsulting.com
Main contractor	TBA			
Site manager	TBA			

Figure 1 - Tree protection fence details - after BS5837 2012

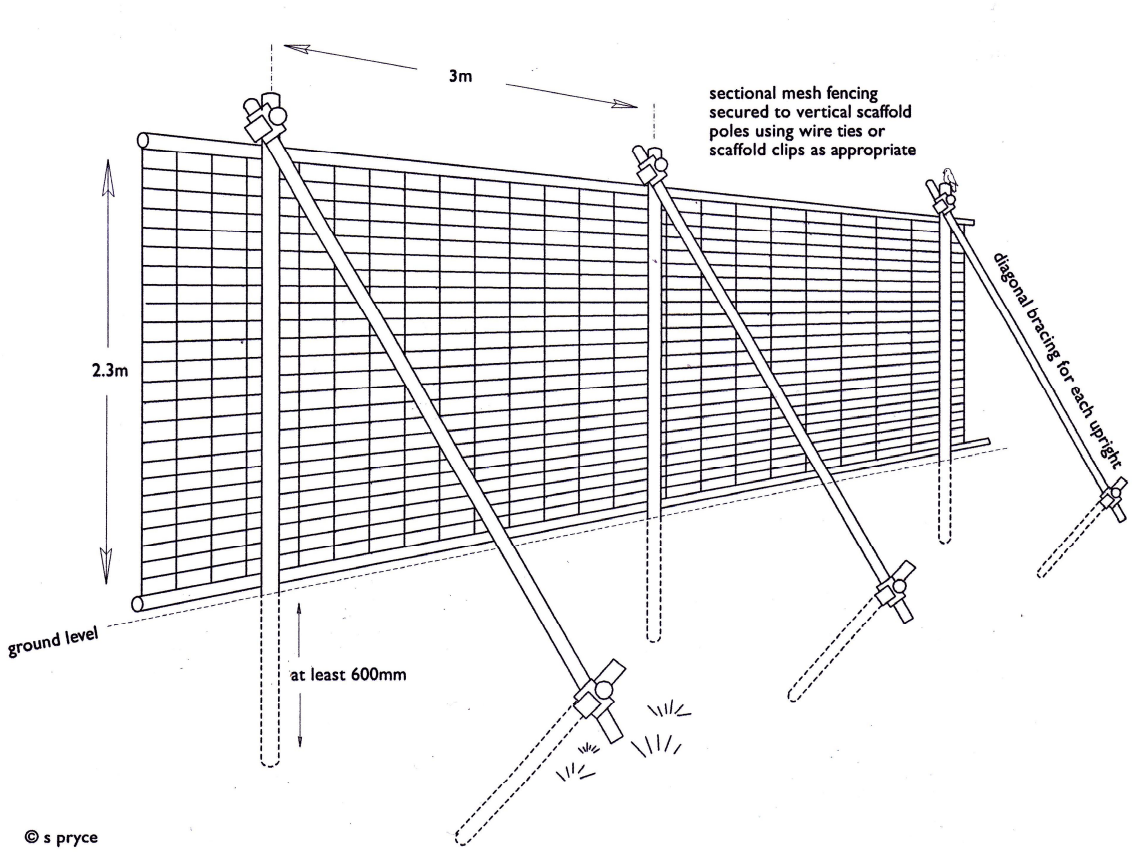


Figure 2 - Warning sign for tree protection fence

Figure 3 - Ground protection within the RPA [based on BS5837:2005]

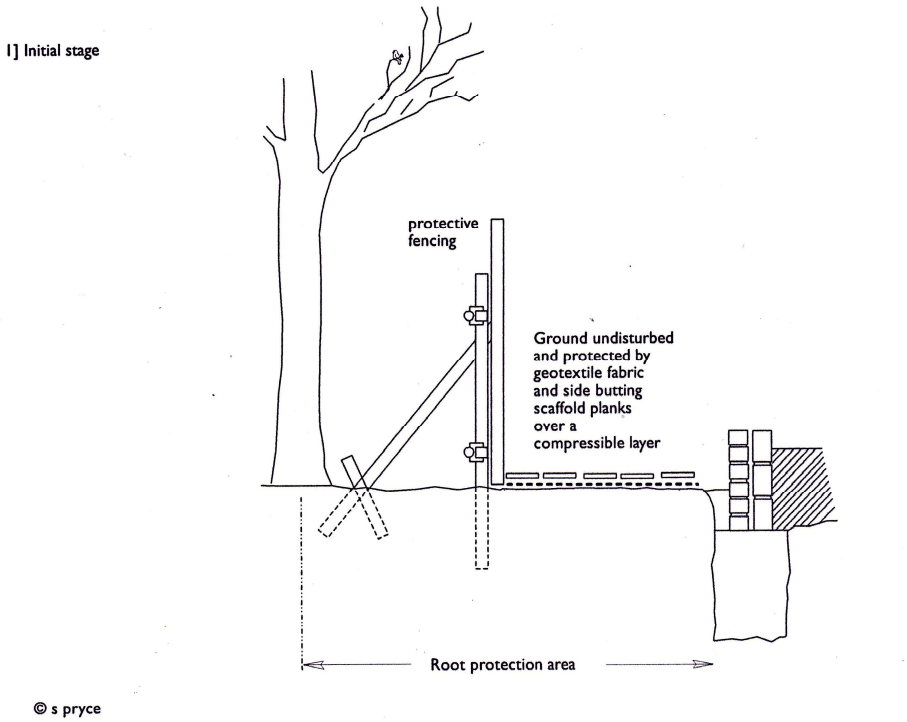


Figure 4 - Proprietary ground protection system

Figure 5 - details of cellular confinement system (Cellweb)

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.

Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

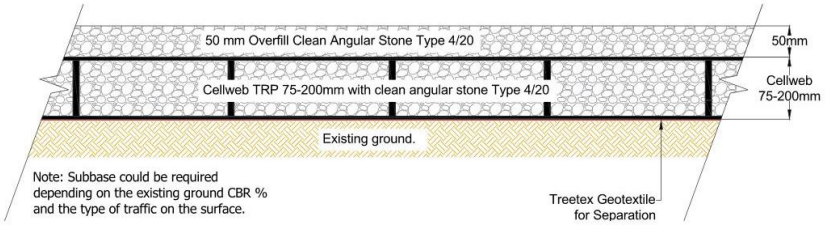
Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

Indicative Cellweb with overfill



More at: http://www.geosyn.co.uk/product/cellweb-tree-root-protection

See also the Arboricultural Association Guide, full reference in the section on hard surfaces above.

Simon Pryce Arboriculture

Site monitoring schedule

Site	Tormead, 27 Dene Rd, HA6 2BX	**Ref**		**Date**	
Client	Paul Sander				
Site contact		**Tel**			
Date / phase	**Comments**				
Initial	Check tree protection measures are in place and fit for purpose. Confirm access routes, work and storage areas, address any other queries.				
	Add or delete rows as required				
Completion	Final check of tree condition, assess the need for any pruning or other work.				

Standard schedule - may be modified in the Method Statement

Timing	**Purpose**
Pre-start	Check tree protection measures are in place and fit for purpose. Confirm access routes, work and storage areas, and any other queries.
Monthly	Routine check of protection measures and any other matters requiring attention. These can be more frequent if appropriate, e.g. on complex projects.
As required	One off checks as required, for instance if work schedule requires protection layout to be altered or if large roots are encountered unexpectedly. Supervision of potentially damaging operations such as exploratory excavation near trees.
Completion	Final check of tree condition, assess the need for any pruning or other work.

Simon Pryce Arboriculture

Site monitoring record

One to be completed for each visit

Site	Tormead, 27 Dene Rd, HA6 2BX	**Ref**		**Date**	
Inspector					
Observations and comments - incl. previous recommendations					
Recommendations					
Next visit		**Signed**			

Simon Pryce Arboriculture,
CP House,
Otterspool Way,
Watford,
WD25 8HP tel 01923 467600 email info@simonpryce.co.uk

Site: **Tormead, 27 Dene Road, Northwood, HA6 2BX**

Inspection date: **4 December 2020 by Simon Pryce**

Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m^2	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
Trees 1 - 16 are described as in previous surveys starting near the drive and going to the rear of the site, with information updated as appropriate. The more recent ones from no.17 onwards start next to the drive and go across the front of the site from left to right, as seen from the house.													
1	Austrian pine *Pinus nigra nigra*	M/L	19	5	5	5	5	670	8.0	202	7	No signs of decay or structural problems. Foliage sparse, but little change since previous surveys.	C
2	Cedar of Lebanon *Cedrus libani*	M/L	18	6	6	6	5	640	7.6	183	6	Has sparse foliage, but is healthier looking than the pine. Has some scars on the trunk and broken stumps, but still in reasonable condition.	C
3	Lawson cypress *Chamaecyparis lawsoniana*	MA/L	14	1.5	1	1	1	220	2.7	22	5	Drawn up and one sided due to growing near the other trees, otherwise in reasonable condition.	C
4	Blue cedar *Cedrus Atlantica glauca*	MA/L	18	4	5	2	3	370	4.4	61	5	Has slightly sparse foliage and some dead wood, otherwise fair. Dead conifer and small suppressed cherry plum leaning over the drive should be removed.	C
5	Holm oak *Quercus ilex*	MA/N	17	3	10	3	5	380	4.6	66	5	Sound and healthy but has a single low branch extending over the drive. This has some wounds from vehicle impacts and there is a small wound low on the trunk.	C
6	Lawson cypress *Chamaecyparis lawsoniana*	MA/N	17	2.5	2.5	3.5	1.5	430	5.2	83	2	Divides into multiple trunks from about 2m. Foliage very sparse and is declining. • *Remove*	U
7	Lawson cypress *Chamaecyparis lawsoniana*	MA/N	16	4 x 2.5				320	3.8	46	5	Has sparse foliage, fair otherwise.	C
8	Lawson cypress *Chamaecyparis lawsoniana*	M/N	18	3	5	5	4	320 320 370	7.0	152	4	Large dominant specimen with two main upright trunks and a large lateral branch on the NE side. Has some dead wood but that is normal in a tree of this age. Ivy is becoming heavy. • *Cut ivy, fell small suppressed ash nearby.*	B
9	Oak *Quercus robur*	MA/N	19	4	8	9	7	560	6.7	140	4	Slightly one sided and has some minor dead wood but is sound and healthy, ivy also becoming heavy. • *Cut ivy.*	B
10	Yew group *Taxus baccata*	MA/N	9	3	3	4	4	150 - 250	3.0	29	1	Remaining part of a hedge that has had the northern end removed fairly recently and provides little amenity or screening.	C
11	Variegated holly *Ilex aquifolium*	MA/N	7	3	1	2	2	160	1.9	11.5	2	Small specimen with a sinuous trunk, but is sound and healthy, no change since previous surveys.	C

Site: **Tormead, 27 Dene Road, Northwood, HA6 2BX**

Inspection date: **4 December 2020 by Simon Pryce**

Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m^2	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
12	Ash group *Fraxinus excelsior*	Y/N	12	4	5	4	4	4 no. 130 - 210	4.2	54	3	Multiple trunked group, possibly cut down and regrown in the past with narrow forks, potentially weak trunks between some of the trunk bases. There is also a laurel growing among them. No signs of die back at present.	C
13	Lawson cypress *Chamaecyparis lawsoniana*	MA/N	18	3	3	3	3	380	4.6	66	3	Healthy but has heavy ivy up to about ¾ height which is starting to compete with it and increasing its weight and wind resistance. • *Cut ivy*	C
14	Leyland cypress *Cupressus x leylandii*	Y/N	10	2	2	3	1	220	2.7	22	2	Healthy, vigorous young specimen, significant growth since 2015.	C
15	Yew *Taxus baccata*	M/N	10	5	4	5	5	m/s av. 100	7.2	163	2	Large bushy specimen, topped at about 2m in the past and regrown with numerous small stems.	B
16	Oak *Quercus robur*	MA/N	18	7	6	5	7	570	6.9	148	5	Large healthy specimen, has some dead wood but that is normal.	B
17	Lawson cypress *Chamaecyparis lawsoniana*	MA/L	15	4x1.5				200	2.5	18	5	Drawn up and has sparse foliage due to growing among the other trees.	C
18	Lawson cypress *Chamaecyparis lawsoniana*	D	10	1	0	0.5	0.5	160	1.9	11.5	4	Suppressed by others, damaged at the base and is dying.	U
19	Blue cedar *Cedrus Atlantica glauca*	MA/L	19	3	5	4	3	370	4.4	61	5	Has sparse foliage and is one sided due to growing near other trees.	C
20	Holm oak *Quercus ilex*	MA/N	19	9	3	6	6	410+ 350	6.5	133	4	Twin trunked from ground level but sound and healthy and is one of the better trees.	B
21	Laurel *Prunus laurocerasus*	MA/N	8	5	2	3	3	130 - 220	4.3	58	2	Bushy specimen providing screening.	C
22	Holly *Ilex aquifolium*	M/N	7	0	5	3	2	4x100	2.4	18	3	Leans due to growing near the laurel, otherwise fair	C
23	Blue cedar *Cedrus Atlantica glauca*	M/N	19	7	2	5	6	410	5.0	77	9	Distorted and drawn due to growing among the others and has sparse foliage. Otherwise fair.	C
24	Red cedar *Thuja plicata*	D	18	3	4	2	6	540	-	-	6	Dead. • *Remove*	U

Site: **Tormead, 27 Dene Road, Northwood, HA6 2BX**

Inspection date: **4 December 2020 by Simon Pryce**

Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m^2	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
25	Austrian pine *Pinus nigra nigra*	M/N	21	5	6	5	5	640	7.6	180	4	Top slightly misshapen but reasonably sound and healthy.	C
26	Oak *Quercus robur*	MA/N	18	11	0	9	5	400	4.8	72	5	Leans very heavily over the road due to growing near the pine, but sound and healthy otherwise and could outlast the pine. • *Could be improved by shortening growth over the road to give a more balanced shape*	C
27	Yew *Taxus baccata*	M/N	15	4	9	5	5	530	6.3	125	3	Leans over the drive but sound and healthy.	C
28	Lawson cypress *Chamaecyparis lawsoniana*	M/N	14	1	2	2	1	190	2.3	16	3	One sided due to growing near others, but sound and healthy apart from that.	C
29	Juniper *Juniperus* sp	M/L	9	0	5	1	1	160	1.9	11	2	Very heavy lean over the drive. Alive but foliage is sparse and has no real potential to improve. • *Fell*	U
30	Lawson cypress *Chamaecyparis lawsoniana*	D	12	1.5	2	2	2	50 - 100	-	-	3	Dead. • *Fell*	U
31	Lawson cypress *Chamaecyparis lawsoniana*	M/N	18	2	2	2	2	410	5.0	77	2	In a prominent location but the foliage is becoming sparse, particularly when compared with photos from 2015.	C
32	Birch *Betula pendula*	M/L	15	5	7	3	3	430	5.2	83	4	Declining and is beyond any remedial work.	U
33	Yews *Taxus baccata*	MA/N	4 - 6	0.5 - 1.5				200	2.4	-	1.5	Double row either side of the footpath, all with topping points at 1 - 1.5m indicating that they were planted as a hedge, that has been neglected and left to grow on. Shaded and suppressed by larger trees and would be difficult to get back into good condition.	C
34	Austrian pine *Pinus nigra nigra*	M/L	17	5	6	6	6	670	8.0	202	6	Has sparse foliage and some major dead wood, otherwise fair.	C
35	Ash leaf maple *Acer negundo*	M/N	14	0	10	5	5	510	6.1	117	3	Leans heavily over the lawn due to shade from the tree behind and is carrying heavy ivy but is in reasonable condition otherwise. • *Cut ivy if retained.*	C

Site: **Tormead, 27 Dene Road, Northwood, HA6 2BX**

Inspection date: **4 December 2020 by Simon Pryce**

Tree no.	Species	Age / vigour	Ht. m	Spread				Dia. mm	RPA rad m	RPA area m^2	Crwn ht. m	Comments and recommendations	Cat
				N	S	E	W						
36	Lime *Tilia x europaea*	M/N	19	5	5	5	5	620	7.4	174	3	Possibly in other ownership but could be affected by work on the Tormead frontage. Pollarded at about 3m when younger and crown reduced at about 7m more recently, following which it has grown on. Sound, healthy and one of the better and more prominent specimens.	**B**

Simon Pryce

Simon Pryce, BSc, FArborA, RCArborA, CBiol, MICFor

Site: **Tormead, 27 Dene Road, Northwood, HA6 2BX**

Inspection date: **4 December 2020 by Simon Pryce**

Notes

Observations are made from ground level unless stated otherwise.
Trunk diameters are measured in millimetres at 1.5m above ground or at the narrowest point between the root buttresses and branch flare in multiple trunked trees; in such cases this is indicated by [c].
Crown spreads are taken from the trunk centre to the end of the longest live branches in the directions indicated [usually the four cardinal compass points]
Crown height is the clearance under the lowest significant branches.

Tree ages are estimated as below, based on the normal life expectancy of a tree of the species concerned on the site:

Immature.	[IM]	Newly planted or self-set tree.
Young	[Y]	Young tree that is established but has not yet attained the size or form of a fully developed example of its type.
Middle aged	[MA]	Between one third and two thirds of its estimated lifespan.
Mature	[M]	Over two thirds of it's estimated life span.
Veteran	[V]	Old tree with characteristic features including hollow trunk, old wounds etc. that give high landscape, ecological and cultural value.
Dying/Dead	[D]	Dead/dying or so badly decayed that it should be removed without delay if a potential threat.

Vigour is assessed on the basis of what is normal for that the species concerned as:

High	[H]
Normal	[N]
Low	[L]
Dead / dying	[D]

Root protection areas [RPAs] - BS5837:2012

For single trunked trees these are calculated as an area equivalent to a circle with a radius 12 times the trunk diameter at 1.5m. For multiple trunked trees it is based on the diameter of a single trunk that would have the same cross sectional area at 1.5m.

Any deviation from a circular plot should take into account the following factors whilst still providing adequate protection for the roots.

- The shape and disposition of the root system when known to be influenced by past or existing site conditions, such as the presence of roads, structures and underground services.
- Topography and drainage.
- The soil type and structure.
- The likely tolerance of the tree to root disturbance based on factors such as species, age and past management.

Site: **Tormead, 27 Dene Road, Northwood, HA6 2BX**

Inspection date: **4 December 2020 by Simon Pryce**

Tree categories – based on BS5837: 2012, Trees in relation to design, demolition and construction - Recommendations

Trees for removal				
Category and definition				**Colour code**
Category U				**Red**
Those 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 in the foreseeable future, including any that will become unviable after the removal of other U category trees. (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning.) • Trees that are dead or showing signs of significant immediate and irreversible decline. • Trees infected with pathogens significant to the health and/or safety of other trees nearby, or very low quality trees suppressing better ones nearby. *NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve.*			
Trees for retention				
Category and definition	**Criteria – sub categories**			**Colour code**
	1 – mainly arboricultural values	**2 – mainly landscape values**	**3 – mainly cultural / conservation values**	
Category A				
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 historical, commemorative or conservation value. (e.g. veteran trees or wood -pasture)	**Green**
Category B				
Trees of moderate quality with an estimated remaining life expectancy 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 retention 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 benefits.	**Blue**
Category C				
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 benefit.	**Grey**

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