



# BLDAconsultancy

PROVIDING IN DEPTH KNOWLEDGE FOR THE CONSTRUCTION INDUSTRY

Updated Daylight, Sunlight and  
Overshadowing Assessment

at

New Deck Car Park, Campus West  
Welwyn Garden City  
AL8 6BX

for

Welwyn Hatfield Borough Council

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## **1.0 Executive Summary**

- 1.1 BLDA Consultancy have carried out an updated technical daylight, sunlight and overshadowing assessment in relation to the impact of the proposed revised car park development at Campus West, Welwyn Garden City, AL8 6BX, on the neighbouring residential dwellings at Woodside House, as well as the sun/shadow levels to the neighbouring amenity area.
- 1.2 The updated assessment has been carried out as a result of the reduced scale and massing of the proposed car park development. Following an extensive consultation with Welwyn Hatfield Borough Council and local residents, the height has been reduced from two storeys to a single-storey structure. Therefore, this assessment supersedes the original assessment carried out for the previous structure and presented in the Daylight, Sunlight and Overshadowing Assessment report dated October 2020.
- 1.3 For the purpose of the assessment, a three-dimensional computer model has been updated. The model, as with the original assessment, is based on a high-definition 3D laser scan survey of the site and surroundings.
- 1.4 The technical assessment has quantified the potential loss of daylight and sunlight to the neighbouring residential dwellings resulting from the implementation of the revised car park development.
- 1.5 The results of the updated daylight assessment have shown that **c. 98%** of the windows tested will fully comply with the Vertical Sky Component (VSC) test while **100%** and **c. 99%** of the habitable rooms tested will fully comply the Daylight Distribution/No-Sky Line (DD/NSL) and Average Daylight Factor (ADF) test respectively. These results represent an improvement to the original assessment, namely a 3% improvement for VSC and a 2% improvement for ADF. The 100% compliance ratio for DD remains unchanged.
- 1.6 Furthermore, in terms of the updated sunlight effects, all (**100%**) of the south-orientated neighbouring windows will, as for the original assessment, fully comply with both the annual and winter sunlight criteria.
- 1.7 Finally, with regards to the updated overshadowing effects to the communal amenity area at Woodside House, the revised development will cause no adverse effect and the garden will remain well sunlit throughout the year. The same effects were concluded in relation to the original scheme.
- 1.8 Overall, the revised development offers reduced impacts not only with regards to visual amenity and overlooking but also in terms of the current daylight condition within the neighbouring residential buildings.
- 1.9 Therefore, it is concluded that the proposed revised car park development is fully acceptable in daylight, sunlight and overshadowing terms, in the context of the site, BRE guidance and relevant planning policy.

## 2.0 Introduction

2.1 BLDA Consultancy have been instructed by Welwyn Hatfield Borough Council to carry out an updated technical assessment of the potential daylight, sunlight and overshadowing impacts of the proposed revised development at the Campus West car park site ('revised car park development'), Welwyn Garden City, AL8 6BX, on the neighbouring residential dwellings, as well as the sun/shadow levels to the neighbouring amenity spaces. Therefore, this assessment supersedes the original assessment carried out for the previous structure and presented in the Daylight, Sunlight and Overshadowing Assessment report dated October 2020 ('original assessment').

2.2 The revised scheme represents a reduction in scale and massing when compared with the previous proposals ('original scheme'). The original scheme entailed two storeys, whereas the current revised scheme entails only one storey. The reduction in height follows from an extensive consultation with Welwyn Hatfield Borough Council as well as local residents.

2.3 As for the original assessment, this updated assessment has been undertaken in accordance with the guidelines set out in the Building Research Establishment (BRE) report "Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice" (October 2011) ('the BRE Guide'). The BRE guide is based on a suburban (two-storey) type of development and should be treated with flexibility within more urban town centre locations. The document states in its introduction:

*"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values. For example, in a historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings."*

2.4 The need for a flexible approach to the BRE guide is now clearly recognised within the adopted national and regional planning policies; and it is particularly emphasised in the context of ensuring an efficient use of available land. As a result, a more holistic context-based approach is now required from the Local Authorities in determining planning.

2.5 The updated assessment has been prepared using the following information:

- Revised planning application drawings and 3D model, received from BrightSpace Architects on 23.06.21 and 02.07.21;
- 3D land survey of the Site and surroundings, carried out for the original assessment on 4<sup>th</sup> May 2020;



- Photographic survey of the site and surroundings, carried out for the original assessment on 4<sup>th</sup> May 2020;
- Aerial photography of the site and surrounding; and
- Detailed site observations.

2.6 The report is supported by a series of appendices which contain images of the assessment model (existing and proposed condition), daylight distribution contour drawings, results tables and sunlight contour plans. The information is contained at Appendices 1-7.

### **3.0 Planning Policy and Guidance**

- 3.1 This section of the report outlines the relevant national and regional planning policy relating to the impact of new developments on the levels of residential amenity within neighbouring residential dwellings.

#### **National Planning Policy**

##### National Planning Policy Framework (NPPF) (February 2019)

- 3.2 The National Planning Policy Framework sets out the national planning policies and how they should be applied. It provides a framework within which the Local Authorities should produce their local plans.
- 3.3 The revised National Planning Policy Framework of February 2019 stresses the need to promote an efficient use of land through relevant planning policies. Specifically, it recommends at paragraph 123 under 'Achieving appropriate densities' in Chapter 11 ('Making effective use of land') 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)."*

- 3.4 The revised NPPF, therefore, recognises that the Local Authorities need to now apply a flexible approach to the BRE guidance in determining planning applications in order to make an efficient use of available land and deliver much-needed housing across the country.
- 3.5 The NPPF is supported by the National Planning Practice Guidance which contains advice on how the policies should be applied.

#### **Regional Planning Policy**

- 3.6 The current planning policies for the Borough of Welwyn Hatfield, which form the development plan, comprise the saved policies of the Welwyn Hatfield District Plan, the Hertfordshire Waste Local Plan and the Hertfordshire Minerals Local Plan.

##### Welwyn Hatfield District Plan – Saved Policies (2005)

- 3.7 The Welwyn Hatfield District Plan ('WHDC') is the current adopted Local Plan for the Borough. It provides a framework within which planning decision are made. It was adopted in 2005 and a number of policies have been 'saved' until it is replaced by the new Local Plan. Therefore, these saved policies continue to be part of the development plan.

- 3.8 The saved 'District-Wide Policies – Design' of the WHDC state that all developments should confirm to the 'Design Principles'; however, there are also other design policies which are applicable to all new developments. These include daylight and sunlight matters, which are outlined within the Supplementary Design Guidance.

Supplementary Design Guidance (February 2005)

- 3.9 The 'Sunlight and Daylight' section of the Supplementary Design Guidance ('SDG') supplements Policy D1 ('Quality of Design') in the WHDC. It states in paragraph 3.18 that *"all new developments should be designed and built to ensure that there is satisfactory level of sunlight and daylight to both the new development and surrounding developments and/or open spaces"*. In this context, it further argues that access to daylight and sunlight levels not only *"improves the interior and exterior appearance of a building, it also improves the standard of living or workspace for the residents or users of a building"*.
- 3.10 The SDG states that *"advice on site layout planning to achieve good sunlight and daylight within buildings and open spaces between them is set out in the Building Research Establishment's document entitled, 'Site Layout Planning for Daylight and Sunlight: a guide to good practice', 1991"*. We can confirm that latest methodology and guidance outlined by the BRE guide, published in 2011, have formed the basis of this assessment.

New Welwyn Hatfield Local Plan

- 3.11 The current WHDC forms part of the statutory development plan; however, a new Draft Local Plan was published in August 2016. The new Local Plan for Welwyn Hatfield will shape the future development of the Borough until 2032. Its aim will be to support the growth of Welwyn Hatfield and ensure its economic growth.
- 3.12 The Local Plan, following rounds of public consultation, is undergoing examination and a receipt of Inspector's report and Plan to be formally adopted was originally scheduled for Spring/Summer 2020. The process is ongoing; however, due to its advanced status, it is now a material consideration for WHBC in determining planning applications.
- 3.13 The Policy SADM<sup>1</sup> 11 ('Amenity and Layout') states that *"all proposals will be required to create and protect a good standard of amenity for buildings and external open space in line with the Council's Supplementary Design Guidance, and in particular should ensure ... the levels of sunlight and daylight within buildings and open spaces, and garden areas in particular, are satisfactory"*. It also states that new developments should not be *"overbearing upon existing buildings and open spaces"*.
- 3.14 Furthermore, the Policy states that *"the outlook and visual amenity afforded from within buildings and private/communal garden areas should be satisfactory, taking account of the relationship with neighbouring buildings and the wider street scene, including the design of parking, boundary treatments and landscaping"*.

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<sup>1</sup> SADM is an acronym for the Site Allocation or Development Management Policies.

- 3.15 In terms of specific policies related to car park developments, Welwyn Hatfield Parking Standards Supplementary Planning Guidance (January 2004) and Interim Car Parking and Garage Policy (August 2014) are adopted policies in this regard. Both documents primarily relate to car parking standards and do not contain any specific guidelines in relation to impact on neighbouring amenity caused by multi-storey structures.

**BRE Guidance**

- 3.16 As noted in the Introduction, the assessment has been undertaken in accordance with the guidelines contained within the Building Research Establishment (BRE) report 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice (BR 209), 2<sup>nd</sup> Edition, 2011.
- 3.17 The BRE guide provides advice, various testing methodologies and numerical target values in relation to site layout planning to achieve good daylight and sunlight levels within buildings and at open spaces such as amenity areas. However, it is based on a suburban (two-storey) type of development and, therefore, it needs to be treated with flexibility in higher density urban/town centre locations. Its rigid application when determining planning applications in these more urban locations often results in departures from the guidelines, which may inhibit otherwise acceptable development.

#### **4.0 Site, Surroundings and Proposed Development**

- 4.1 The development site is an open car park site located to the west/south-west of the Campus West complex, AL8 6BX, which contains entertainment and leisure facilities. The site is located within the Handside Ward of the Borough of Welwyn Hatfield, Hertfordshire County. It is also located within the Welwyn Garden City Conservation Area. It comprises an open car park serving Campus West. The site is also characterised by a high hedge stretching along its western boundary, mixed with some mature deciduous and evergreen trees. This is an important characteristic of the site, which should be considered as a context for the daylight and sunlight assessment. The trees are also located to the south and north of the site, although they are all deciduous and more scattered in those locations.
- 4.2 The site is bounded to the north by the Ayot Greenway. To the east/north-east are the buildings forming the Campus West complex, while to the south-east is the Campus Roundabout with the green space beyond. The Site is bounded to the south by Bridge Road, with two-storey pitched-roof properties of various scale and form. Finally, to the west, the site shares the boundary with the Woodside House estate, which was until recently owned by the Welwyn Garden City Housing Association and now forms part of the First Garden Cities Homes Limited organisation. The Woodside House estate contains several multi-storey blocks of flats and bungalows which contain one-bed, two-bed and studio flats, as well as communal amenity areas. The estate's specific mission is to provide high-quality housing for elderly population.
- 4.3 The proposed revised development comprises the erection of a new multi-storey car park containing one upper parking deck. As outlined in the Introduction, this is a (noticeable) reduction in height as the original scheme entailed two upper parking decks. The reduction in height is a result of an extensive consultation with the Council and local residents, and it has aimed to further minimise visual impact and overlooking in relation to the Woodside House properties located to the west of the site. The resulting reduction in the development's scale and massing is visually represented below, with the previous original scheme shown at Figure 2 and the current revised scheme shown at Figure 3.
- 4.4 The height of the revised development will be now lower than the closest buildings of the Campus West complex and at around the level of the 1<sup>st</sup>/2<sup>nd</sup> floor of the 96-106 Woodside House property. To be more precise, the reduction in height offered by the revised scheme ranges from c. 3.1 metres at the deck level to c. 2.3 metres at the stair core level. Due to the reduced height of the development, whilst headlight screening is maintained to the first floor, the 1.8 metres privacy screening is no longer required. On the other hand, the vertical fins have been retained to ensure a consistent elevational design approach.
- 4.5 Furthermore, to reiterate, the structure will be located a sufficient distance away from the 96-106 Woodside House property due to the location of the communal amenity space serving the residents in between. When it comes to the 107-110 Woodside House property, its eastern flank wall is located in closer proximity to the site; however, a particular focus

has been placed on minimising an adverse effect on the current levels of amenity to its occupiers. As stated in the preceding section, there is currently a high hedge with a mix of deciduous and evergreen mature trees placed along the boundary and of the height which is taller than the height of the 107-110 Woodside House property itself. This boundary planting has been introduced primarily to for the reasons of privacy and screening off the views onto the car park/associated noise. This, however, has in reality an effect on the current levels of daylight and sunlight reaching the windows/rooms within the Woodside House properties. Notwithstanding this, for the assessment, we have followed a 'worst-case' scenario in accordance with the BRE guide and omitted any vegetation from the computer model. This is further explained in later sections of the report.

4.6 Plan and 3D views of our computer model showing the site condition and proposed revised car park development are contained at Appendix 1, with selected 3D views shown below.

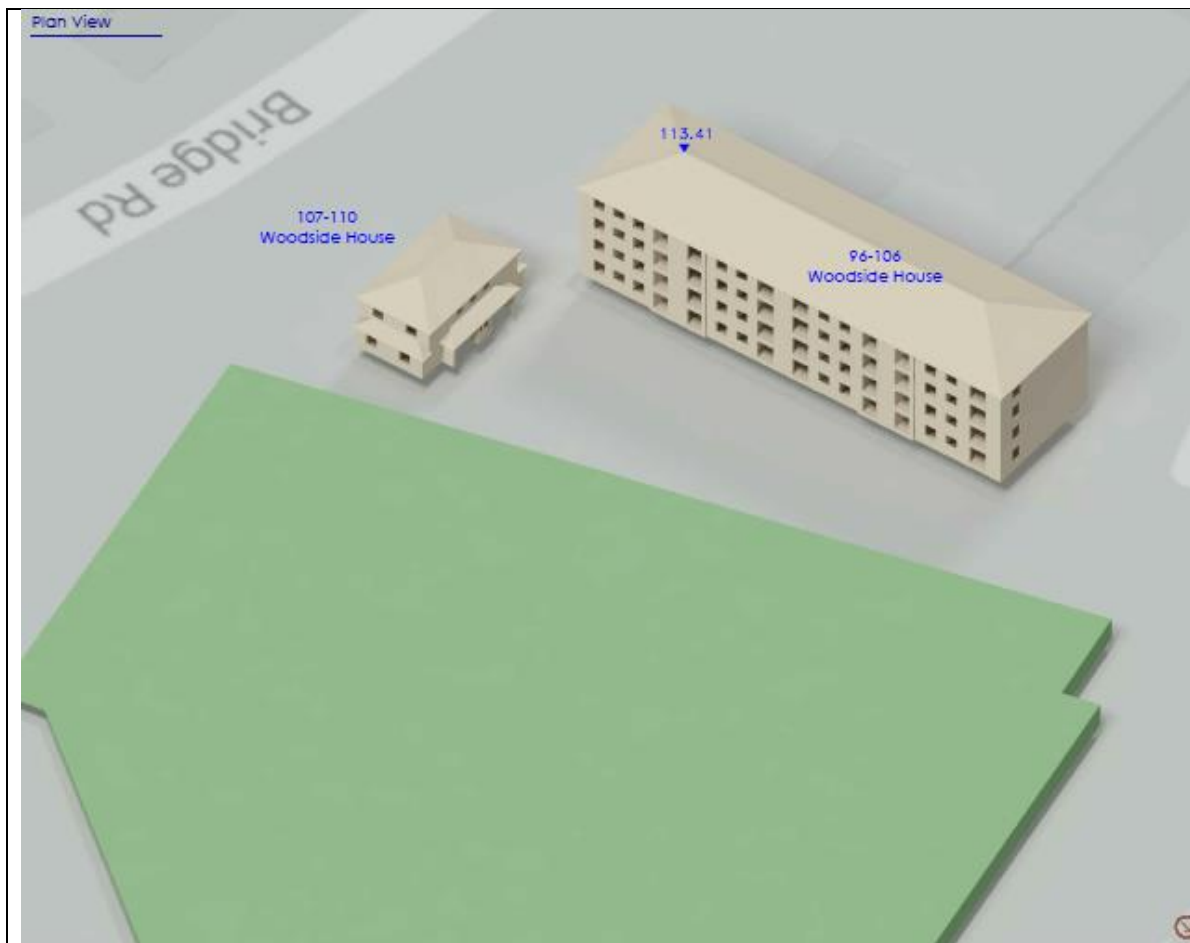


Figure 1: Computer model view showing the current site condition

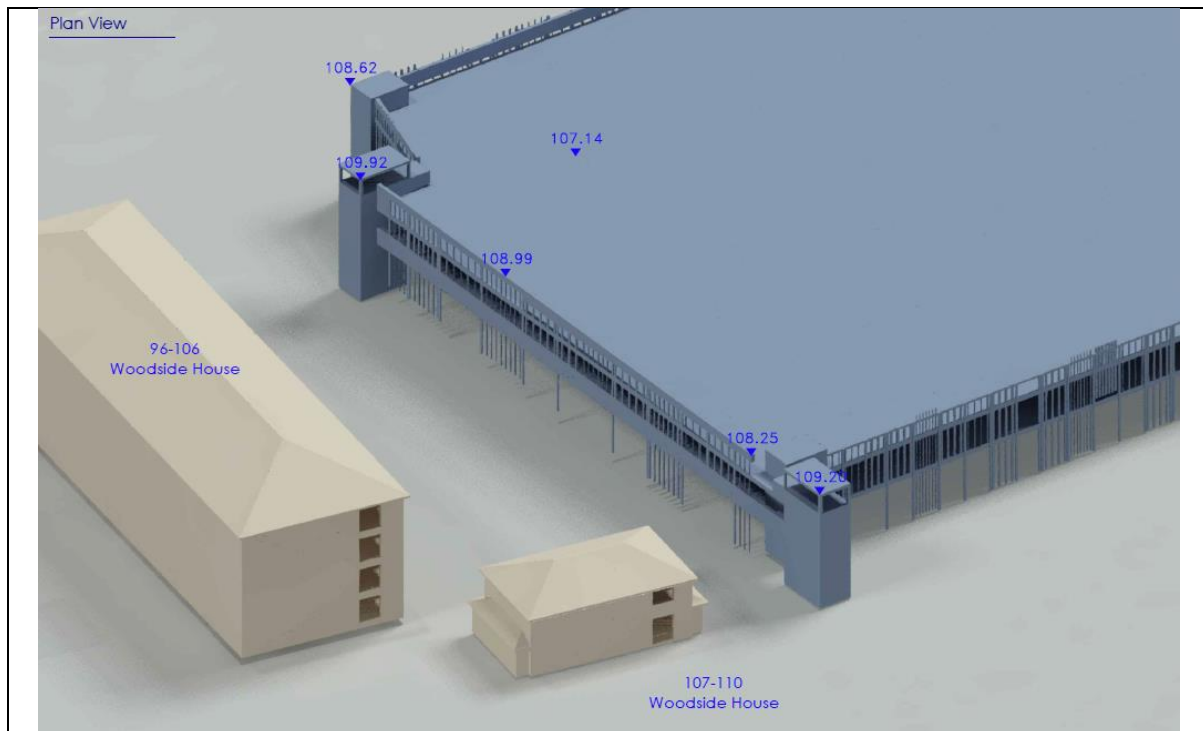


Figure 2: Computer model view showing the previous original scheme

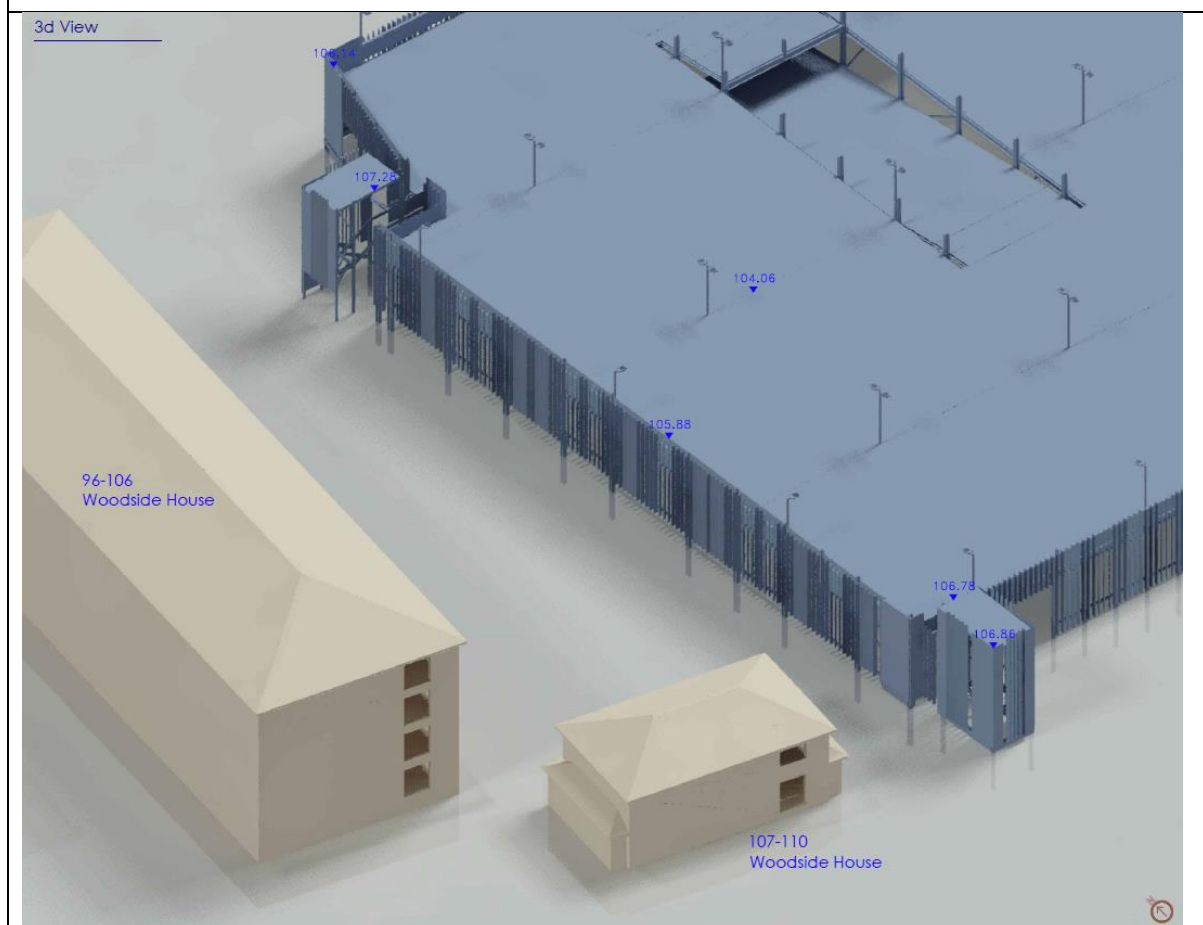


Figure 3: Computer model view showing the current revised scheme

## **5.0 Scope of Assessment**

- 5.1 In terms of the neighbouring properties tested, the surrounding area is characterised by a mixture of residential properties with gardens/communal amenity spaces, large areas of public realm and commercial and civic buildings of various uses.
- 5.2 Overall, the same properties have been considered for this updated daylight and sunlight assessment; and, as with the original assessment, only the site-facing windows/rooms have been tested:
- 107-110 Woodside House – flank and front elevations of this bungalow property (9 windows/7 rooms); and
  - 96-106 Woodside House – rear elevation of this block of flats (72 windows/64 rooms).
- 5.3 Overall, the assessment has considered the effects of the proposed revised development on 81 windows serving 71 habitable rooms of the neighbouring residential properties. Of the 81 windows tested, six are orientated within 90° of due south and have been also tested in terms of the impact on the current levels of direct sunlight.
- 5.4 It also needs to be reiterated here that windows/rooms serving non-habitable uses (i.e. toilets, bathrooms, stairwells, communal areas) need not be tested for daylight and sunlight as per the BRE guide; and, therefore, have not been included in the assessment.
- 5.5 The aforementioned properties are the only existing neighbouring properties relevant for the assessment. They are labelled with blue on the plan and 3D views contained at Appendix 1, and the 3D views shown at Figs. 1 and 2/3. Other properties are either non-residential in use and, therefore, need not be considered for the assessment as per the BRE guide (i.e. Campus West buildings) or are located a sufficient distance away from the site to be unaffected by the proposed development in daylight and sunlight terms (i.e. Bridge Road properties).
- 5.6 In terms of neighbouring amenity spaces, the communal garden at Woodside House, located between the common boundary and 96-106 Woodside House has been again tested in terms of the impact of the proposed revised development on its current direct sunlight/shadow levels.



## 6.0 Methodology

### Daylight to Dwellings

- 6.1 The impact of the proposed revised development on the neighbouring residential dwellings has been measured via three separate tests: Vertical Sky Component (VSC), Daylight Distribution (DD) which is also referred to as No-Sky Line (NSL) and Average Daylight Factor (ADF). The daylight assessment has been carried out using Waldram Tools daylight and sunlight software (MBS Software Ltd).
- 6.2 The VSC test calculates, in terms of the distance/height ratio, all physical obstructions to light paths with reference to a subject position. These obstructions are then plotted against the light distribution from a CIE Standard Overcast Sky<sup>2</sup> as defined by the Commission Internationale de l'Eclairage (CIE).
- 6.3 The BRE guide sets a target of 27% of VSC for existing and new developments, and if a window is less than 27% and less than 0.8 times its former (pre-development) value with the development in place, it is considered that the window is adversely affected and the change in the level of light reaching the window will be noticeable. However, the BRE guide also recognises that VSC is a simplistic method of daylight assessment which only measures the level of obstruction to light from the sky on the face of a window (based on a reference point being in the centre of the subject window). Therefore, it is inevitable that windows within larger housing developments and/or within higher density urban/town centre locations would fall below this target which is based on a suburban (two-storey) type of development. Furthermore, windows located behind/beneath balconies or blinkered by its own massing (i.e. overhanging eaves, side extensions) also often do not meet the BRE guide levels for VSC in the existing condition, even in suburban types of development in some cases. In this instance, therefore, one needs to look at the VSC results in the context of the amenity benefits offered by the balconies and/or self-hampering character of the design features.
- 6.4 The need for a flexible approach to the VSC test is now also recognised in the NPPF. Furthermore, the Local Authorities are now increasingly accepting the VSC value of 15% as a more applicable target in higher density urban locations including town centres. This also directly refers to the BRE guide which states that adequate light would be achieved in new dwellings if the VSC values are in the region of 15% (or more) as long as “*special measures (larger windows, changes to layout)*” are applied.
- 6.5 The DD test is a more sophisticated daylight test as it considers the distribution of light within a room served by a window(s) tested. As mentioned above, it is also referred to as No-Sky Line test as it measures the area of the room which can receive unobstructed view

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<sup>2</sup> This is a completely overcast sky, the mathematical definition of which is given at Appendix H of the BRE guide as a luminance ratio.

of sky, calculated at the working plane level (850mm). The BRE DD target values for existing and new developments is 80% of the room area receiving unobstructed view of sky, and, again, the BRE guide allows for a 20% reduction if this level of DD is not achieved by a neighbouring room with a new development in place. Furthermore, these are, again, flexible targets which inevitably are hard to achieve in higher density urban locations. The Local Authorities, therefore, are now increasingly accepting the retained DD value of 50% as being more applicable to urban developments including town centre locations.

- 6.6 The DD calculations take into account the size of the room (and the size and number of its windows) and, therefore, the internal layout information is required to carry out the analysis. This is also required for the ADF test, which is considered as the most comprehensive daylight test by the BRE guide.
- 6.7 The ADF methodology takes account of the angle of obstruction to skylight on the window face, area of all the room's surfaces, area of all the glazing serving the room but also the reflectance of the surfaces<sup>3</sup> and transmittance of the glazing<sup>4</sup>. ADF is primarily a test for new/recently constructed developments, where the required parameters for the calculation formula are known. However, it is also often relied on as a supplementary daylight test in relation to all existing neighbouring buildings, and standard parameters contained in the BRE guide may be used.
- 6.8 The BRE guide sets minimum ADF values for habitable rooms as per the room use:
- Kitchens; kitchen/diners (KDs): 2%
  - Living/kitchen/diners (LKDs): 2%
  - Living rooms; living/diners (LDs): 1.5%
  - Bedrooms: 1%
- 6.9 The BRE guide states that a room with the ADF of 5% or more will not need to rely on artificial lighting at any time of the day while the ADF value of 2% would indicate that artificial lighting would be required for parts of a day. On the other hand, a room with the ADF of 6% or more may have problems with overheating, especially in relation to the south-orientated rooms during the summer period.
- 6.10 As with the VSC and DD target values, the ADF targets are discretionary and often difficult to meet in higher density developments. The Local Authorities acknowledge this; and it is commonly accepted to apply the living room ADF target of 1.5% in relation to large/deep LKDs in more urban areas.

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<sup>3</sup> The standard 0.5 internal reflectance value has been applied in relation to all the neighbouring rooms, as per the BRE guide.

<sup>4</sup> A value of 0.68 is typical for double-glazed clear glass.

### Sunlight to Dwelling

- 6.11 The calculation of access to sunlight is based on the sun light protractor method and sunlight availability indicator for 51.5° N as set out in Appendix A of the BRE guide. As with the daylight calculations, the sunlight assessment has been carried out using Waldram Tools daylight and sunlight software (MBS Software Ltd).
- 6.12 This method considers sunlight at a reference point of the window tested. On looking out from the reference point, the angular size of an obstructing building is assessed by reference to its ratio of distance/height relative to the reference point. The composite obstruction profile is plotted using this ratio. The resultant plot of obstructions for any given reference point is then overlaid on the BRE's sunlight availability indicator for 51.5 degrees north.
- 6.13 The concept of available sunlight takes into account the probability of cloud obscuring the sun from a given reference point in addition to the change of sunrise and sunset times. Very approximately at 51.5 degrees north, BRE anticipate an average of 4 hours and 4 minutes of sunlight per day throughout the year on the basis only of cloud as an obstruction. The sunlight indicator takes into account the lower sun angles of the winter months.
- 6.14 The resultant assessment provides a percentage of annual probable sunlight hours at a given point. This assessment is for sunlight on the outside face of a building.
- 6.15 As with the daylight assessment, the BRE guide sets discretionary target values of 25% of annual probable sunlight hours, with at least 5% to be received during the winter months (between 21<sup>st</sup> September and 21<sup>st</sup> March), and it, again, allows for a 20% reduction to the existing sunlight values within the neighbouring buildings if they fall below the targets with the development place. Furthermore, the BRE guide states that if the reduction of annual loss as a result of new development is less than 4%, the impact is still considered acceptable.
- 6.16 The BRE guide also states:
- "In housing, the main requirement for sunlight is in living rooms, where it is valued at any time of day but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens, where people prefer it in the morning rather than the afternoon."*
- 6.17 Furthermore, the windows which face within 90° of due south *"will, in general, receive most sunlight"* whereas the north-orientated windows *"will only receive it on a handful of occasions (early morning and late evening in summer)"*. Therefore, usually the south-orientated windows or rooms with at least one south-orientated window are considered for anticipated sunlight availability as those windows/rooms would have an expectation to be reasonably sunlit. Therefore, there is no requirement to assess north-facing windows.

### **Sun/Shadow to Amenity Spaces**

- 6.18 The sun/shadow test is quite simple as it determines only by the presence or absence of physical obstruction to sunlight (i.e. the concept of annual probable hours is not used). An assessment is made of direct sunlight reaching the subject amenity space at the equinox date of 21<sup>st</sup> March.
- 6.19 The test measuring the levels of direct sunlight reaching an amenity space is also referred to as 2-hour sun-on-ground test. This relates to the principle of the test where the BRE guidance suggests that for an amenity to appear adequately sunlit throughout the year, at least 50% of its area should receive at least 2 hours of sunlight on 21<sup>st</sup> March. As with the daylight and sunlight tests to windows/rooms, the BRE guide allows for a 20% reduction to a neighbouring amenity space as a result of a new development, if the amenity falls below 50% of direct sunlight with the development in place. The date of 21<sup>st</sup> March is a preferred date for the overshadowing assessment, in accordance with the BRE guide, as it represents average levels of sunlight throughout the year. However, the BRE guide also recommends carrying out a supplementary sun/shadow test on 21<sup>st</sup> June. Its results are commonly accepted by the Local Authorities in relation to higher density developments where lower levels of sunlight usually reach the amenity spaces on the ground level during the winter months (when the sun is at a lower angle) due to the proposed massing at/around the site/site constraints. The aim of the 21<sup>st</sup> June supplementary test is to demonstrate these more constrained amenity spaces would still receive adequate levels of sunlight during the summer months when they are expected to be mostly enjoyed by the occupiers/wider public.
- 6.20 Finally, in terms of the amenity spaces which are to be tested, these would normally include gardens, courtyards, playgrounds or sitting out areas. Balconies are not usually tested; however, large terraces or communal rooftop terraces are usually included.

## **7.0 Daylight to Neighbouring Residential Dwellings**

- 7.1 The revisions to the proposed car park development have been implemented with the main aim to further minimise adverse effects on the current levels of visual amenity and overlooking; but were also aimed to reduce adverse effects on the current levels of natural light received at the neighbouring properties. Still, the assessment results need to be considered in the context of the town centre location of the site, suburban basis of the BRE guidance and design/proximity of the neighbouring buildings themselves.
- 7.2 The following table provides a summary of the updated daylight results (VSC, DD and ADF) obtained for the residential dwellings within the neighbouring properties. The results are set out in full at Appendices 3, 4 and 5. Also, a full set of updated daylight distribution contour drawings is contained at Appendix 2. On the drawings, parts of the rooms tested which receive unobstructed view of sky in the existing condition are enclosed by the contour coloured green while parts of the rooms which continue to receive unobstructed view of sky with the proposed development in place are enclosed by the contour coloured red. In most cases, the red contour is shown closer to the window(s) serving the room than the green contour because one would need to move closer to the window(s) to see the sky after the implementation of a development. However, a development could also cause an improvement to the neighbouring properties, which would be shown by having the red contour further back from the window(s) than the green contour. The area of loss (or gain) of the view of sky from within the rooms as a result of a development is shaded yellow.
- 7.3 The contour drawings also show the updated ADF values for each room, which are placed under the room reference and its use labels, and they are for the existing and proposed condition.

Table 7-1: Summary of Daylight Results for Neighbouring Properties

Vertical Sky Component (VSC) Summary	No. Windows Assessed	No./% Above BRE Guide		No./% Below BRE Guide	
107-110 Woodside House	9	7	c. 78%	2	c. 22%
96-106 Woodside House	72	72	100%	0	0%
<i>Total</i>	<i>81 windows</i>	<i>79</i>	<i>c. 98%</i>	<i>2</i>	<i>c. 2%</i>
Daylight Distribution (DD) Summary	No. Rooms Assessed	No./% Above BRE Guide		No./% Below BRE Guide	
107-110 Woodside House	7 rooms	7	100%	0	0%
96-106 Woodside House	64 rooms	64	100%	0	0%
<i>Total</i>	<i>71 rooms</i>	<i>71</i>	<i>100%</i>	<i>0</i>	<i>0%</i>
Average Daylight Factor (ADF) Summary	No. Rooms Assessed	No./% Above BRE Guide		No./% Below BRE Guide	
107-110 Woodside House	7 rooms	6	c. 86%	1	c. 14%
96-106 Woodside House	64 rooms	64	100%	0	0%
<i>Total</i>	<i>71 rooms</i>	<i>70</i>	<i>c. 99%</i>	<i>1</i>	<i>c. 1%</i>

7.4 Overall, the results of the updated daylight assessment demonstrate that out of the 81 windows serving habitable rooms of the existing neighbouring properties, 79 windows (**c. 98%**) will fully comply with the BRE guide levels for VSC after the construction of the proposed development. This is a very good overall compliance ratio for a development in an urban area, and an improvement from the c. 95% compliance ratio for the original scheme. The two windows which will still fall below the BRE targets are both located on the ground floor and within the flank wall of the 107-110 Woodside House property, and they directly look onto the development site. However, the retained values of both windows are well above 15% of VSC, despite their positioning underneath the overhanging eave, which should be considered acceptable in a town centre location. Furthermore, one of these windows is secondary to the dual-aspect ground-floor living room which has their main window looking away from the site, and it will maintain good levels of light distribution across the room. The remaining window serves a secondary habitable room to the ground floor dwelling tested. Unfortunately, we could not discern the use of the latter room from the survey scan data, but we have assumed that it might be a sitting room or an extension to the living room tested. Finally, it is important to reiterate that for the assessment we have applied the 'worst-case' scenario and have not included the high hedge with the deciduous and evergreen trees along the boundary. This vegetation is higher than the 107-110 property itself and it will in reality almost completely screen off the views towards the development for most of the year, assuming that the current boundary condition will be



maintained. Therefore, the VSC impact to these two isolated windows is likely to be negligible in reality. The current boundary condition is illustrated in the below images.



Figure 4: Flank elevation at 107-110 Woodside House



Figure 5: 107-110 Woodside House

- 7.5 As outlined in the Methodology section, the VSC test is a simplistic method of calculating daylight levels to dwellings as it only measures the level of obstruction on the face of a window. In contrast, the interior daylight calculations of DD and ADF are more sophisticated as they are based on the internal layout information. DD takes into account the size/shape of the room and size/positioning of the window(s) serving it. ADF is the most comprehensive daylight test as it also takes into account the internal reflectance values of the room's surfaces as well as the light transmittance of its glazing.
- 7.6 In this context, the DD results demonstrate that 71 of the 71 rooms tested (**100%**) will fully comply with the BRE targets for DD, including the aforementioned two rooms at 107-110 Woodside House. This is considered a very good level of compliance for a development in town centre location.
- 7.7 Finally, with regards to the ADF calculations, the results of the assessment show that **c. 99%** of the habitable rooms within the neighbouring properties will either retain the minimum ADF targets for their room uses with the proposed development in place or will experience reductions within the allowable 20% as per the BRE guide. The latter part of the sentence is important to bear in mind while interpreting the ADF results as there are several site-facing rooms which are already below the ADF targets in the existing condition as a result of their own design.
- 7.8 One isolated room which will still fall below the ADF criteria is the aforementioned ground-floor secondary habitable rooms within the tested ground-floor dwelling at 107-110 Woodside House (red-enclosed window at Fig. 4). However, again, this is a secondary room, or an extension to the fully-compliant living room. Furthermore, the existing ADF is just above the ADF target in the existing condition due the location of the window serving the room beneath the overhanging eave. Furthermore, as mentioned above, the high

hedge stretching along the development site's boundary is likely causing an adverse impact already on the current sky visibility from within the room; which would, in reality, remove the impact of the revised car park development.

- 7.9 Overall, the updated daylight results for the neighbouring residential properties are, as concluded for the original scheme, considered fully acceptable in the context of the site, BRE guidance and relevant planning policy.



## 8.0 Sunlight to Neighbouring Residential Dwellings

8.1 The following table provides a summary of the updated sunlight results (APSH, WPSH) obtained for the residential dwellings within the neighbouring properties. As stated in Section 5, only windows which face within 90° of due south are to be considered for the sunlight assessment. The results are set out in full at Appendix 3.

*Table 8-1: Summary of Sunlight Results for Neighbouring Properties*

<b>Annual Sunlight (APSH) Summary</b>	<b>No. Windows Assessed</b>	<b>No./% Above BRE Guide</b>		<b>No./% Below BRE Guide</b>	
107-110 Woodside House	2	2	100%	0	0%
96-106 Woodside House	4	4	100%	0	0%
<i>Total</i>	<i>6 windows</i>	6	100%	0	0%
<b>Winter Sunlight (WPSH) Summary</b>	<b>No. Windows</b>	<b>No./% Above BRE Guide</b>		<b>No./% Below BRE Guide</b>	
107-110 Woodside House	2	2	100%	0	0%
96-106 Woodside House	4	4	100%	0	0%
<i>Total</i>	<i>6 windows</i>	6	100%	0	0%

8.2 The sunlight results demonstrate that six of the six site-facing windows tested which face within 90° of due south (**100%**) will fully comply with both the annual and winter sunlight criteria with the development in place.

8.3 Therefore, the proposed revised car park development will, as concluded for the original scheme, not cause an adverse effect on the current sunlight availability at the neighbouring properties.

## 9.0 Overshadowing to Amenity Spaces

9.1 As mentioned in Section 5, we have also tested again the communal amenity area at Woodside House, located between the common boundary and the 96-106 Woodside House property, in terms of the impact of the proposed development on its current direct sunlight/shadow levels.

9.2 The following table summarises the updated overshadowing results. The 2-hour sunlight contour plans showing the extent of the area receiving at least 2 hours of direct sunlight on 21<sup>st</sup> March in the existing and proposed condition are contained at Appendix 6. As mentioned in Section 6, results for 21<sup>st</sup> March represent average levels of direct sunlight received throughout the year.

Table 9-1: Summary of Overshadowing Results for Neighbouring Amenity Space

Amenity	Floor/ Ref.		Amenity Area	Existing Lit Area	Proposed Lit Area	Ratio of Change	Meets BRE Guide
Woodside House communal amenity	Ground/ A1	Area	893.03	865.59	857.52	0.99	Yes
		Percentage		97%	96%		

9.3 The updated overshadowing results show that the proposed car park development will, as concluded for the original scheme, not cause an adverse effect on the current levels of direct sunlight reaching the communal garden at Woodside House. In fact, there will be, again, a minimal 1% reduction to the area of the garden currently receiving 2 hours of direct sunlight all year-round as a result of the revised development.

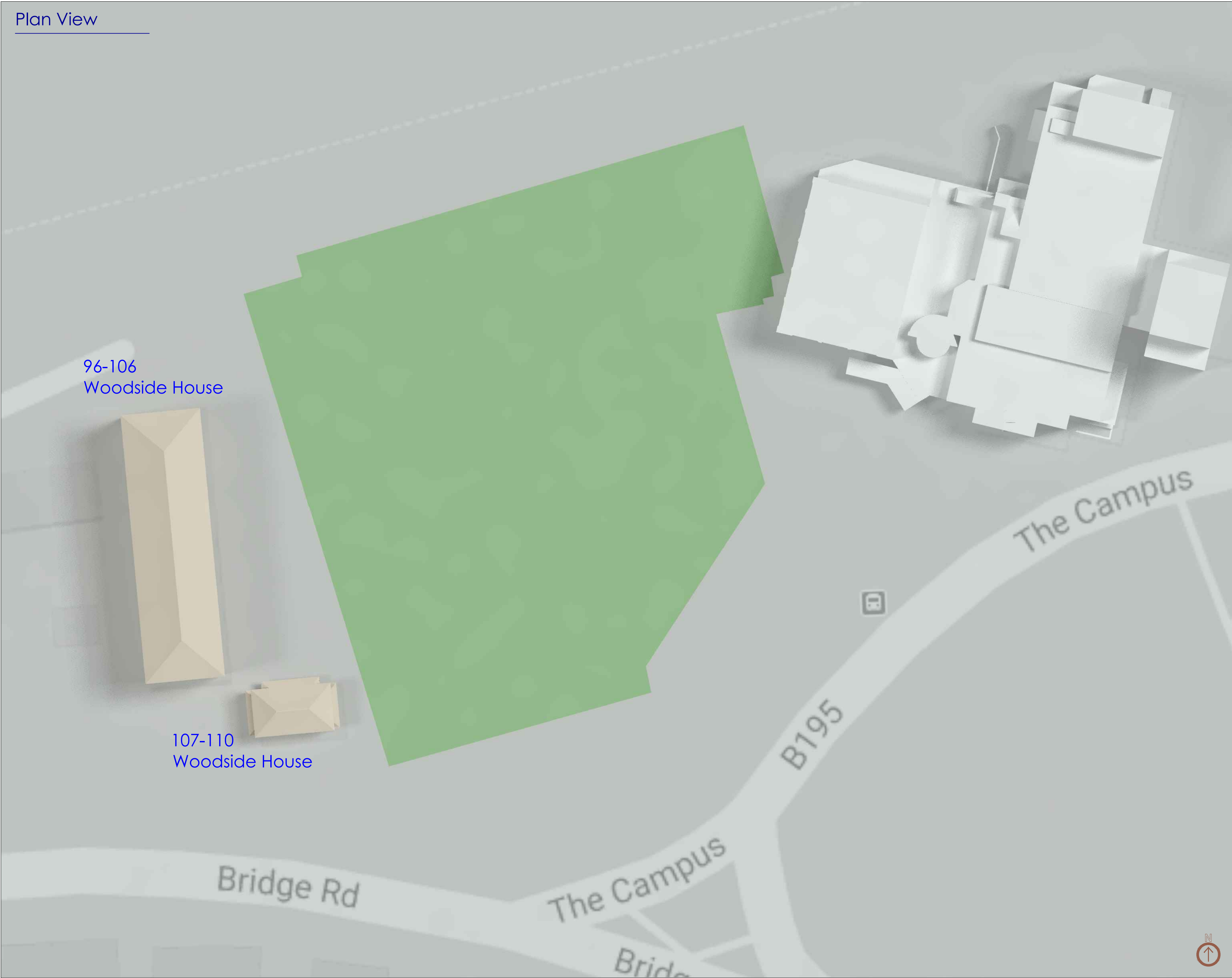
## **10.0 Conclusions**

- 10.1 The updated assessment has considered the effects of the proposed revised development at the Campus West car park site, Welwyn Garden City, AL8 6BX, on the neighbouring residential dwellings, as well as the sun/shadow levels to the neighbouring amenity space.
- 10.2 The proposed revisions are a result of an extensive consultation with Welwyn Hatfield Borough Council and local residents, and the aim has been to further minimise any adverse effects on current visual amenity and overlooking. The current revised proposals entail a single-storey car park structure, whereas the previous original scheme comprised two storeys of decked car park structure.
- 10.3 Overall, the assessment has considered the impact of the proposed revised development on the daylight levels to 81 windows serving 71 habitable rooms within the neighbouring residential dwellings at Woodside House; which represent the same number of windows and rooms as tested for the original scheme. Again, of the windows tested, six are orientated within 90° due south and have also been considered in terms of the impact on the sunlight availability. Finally, the communal garden at Woodside House has been again tested in terms of the overshadowing impact.
- 10.4 In summary, the updated daylight results show that 79 of the 81 windows tested (**c. 98%**) will fully comply with the BRE guide levels for VSC. The remaining two windows falling below the BRE guidelines are a secondary window to a larger dual-aspect living room and a window to a secondary habitable room. Furthermore, both windows are looking directly onto the site and are blinkered by the overhanging eave; however, they will still retain acceptable VSC values in the context of the BRE guide. Furthermore, the results of the interior daylight test demonstrate that 71 of the 71 rooms (**100%**) will fully comply with the BRE targets for DD while 70 rooms (**c. 99%**) will meet the ADF criteria, with the ground-floor secondary habitable room being the only two room falling below the ADF criteria.
- 10.5 Overall, the updated daylight results are considered fully acceptable in the context of the site's town centre location, nature/use of the impacted rooms, inherent flexibility of the BRE guidance and relevant planning policy. They also represent an improvement when compared with the results of the original assessment for the previous scheme. Finally, due to the existence of the high hedge/mature trees along the common boundary; these windows/rooms will in reality have the view of the site almost completely screened off for most of the year.
- 10.6 For sunlight, the results of the assessment demonstrate that all six site-facing windows which are orientated within 90° of due south (**100%**) fully comply with both the annual and winter sunlight criteria with the development in place. Therefore, the proposed revised car park development will not cause an adverse impact on the current levels of sunlight availability within the neighbouring residential dwellings. These are unchanged results when compared with the results for the original scheme.

- 10.7 Finally, the overshadowing results demonstrate that the development will not result in an adverse effect on the current direct sunlight levels reaching the communal garden at Woodside House. Again, these are the same results as presented in relation to the original scheme.
- 10.8 Overall, the daylight effects have improved as a result of the reduction of the height of the car park structure and, therefore, the revised development offers reduced impacts not only with regards to visual amenity and overlooking but also the current daylight condition within neighbouring residential buildings.
- 10.9 In conclusion, the results of the updated daylight, sunlight and overshadowing assessment demonstrate, as with the original assessment, that the proposed revised Campus West car park development is fully acceptable in the context of the site, BRE guidance and relevant planning policy.

# Appendix 1

Plan and 3D Views of Assessment Model  
(Existing and Proposed Condition)



NOTES:  
No dimensions are to be scaled from this drawing.  
All dimensions are to be checked on site, where  
discrepancy occurs between specification and  
drawings the supervising officer must be notified.

Analysis  
Produced using Wildtram Tools  
MBS Survey Software Ltd (www.mbs-software.co.uk)  
Existing Model & Surrounding Model  
Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west - Proposed Model - Planning - 3D View.dwg  
Received 02.07.2021

REV:	NOTES:	DRWN:	DATE:

**BLDA**consultancy

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Email: consultancy@blda.co.uk

CLIENT:  
Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Existing Plan View

SCALE @ A1: <b>NTS</b>	DATE: 04.07.21	DRAWN: MBS
	CHECKED: DW	

DRAWING NUMBER: 6480-02-01	REV: .
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CLIENT:  
Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Proposed Plan View

SCALE @ A1: <b>NTS</b>	DATE: 04.07.21	DRAWN: MBS
		CHECKED: DW

DRAWING NUMBER: 6480-02-02	REV: .
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107-110  
Woodside House

96-106  
Woodside House

100.10  
▼

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Analysis  
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Email: consultancy@blda.co.uk

CLIENT:  
Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Existing 3d View  
Looking South West

SCALE @ A1: <b>NTS</b>	DATE: 04.07.21	DRAWN: <b>MBS</b>
		CHECKED: <b>DW</b>

DRAWING NUMBER: 6480-02-03	REV: .
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107-110  
Woodside House

96-106  
Woodside House

106.86

106.78

105.88

107.28

104.06

106.14

NOTES:  
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Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west\_Proposed Model - Planning - 3D View.dwg  
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Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

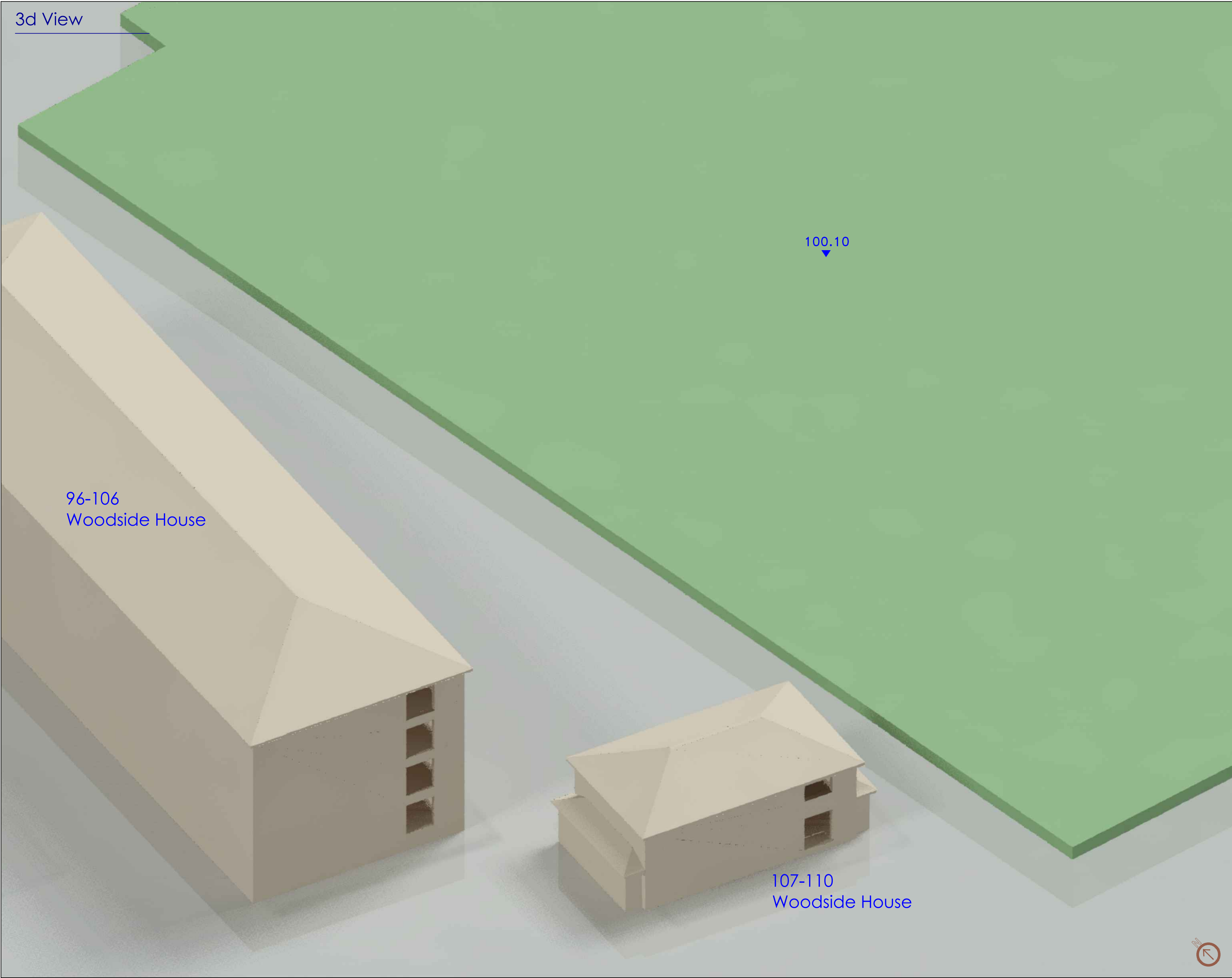
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Proposed 3d View  
Looking South West

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		CHECKED: <b>DW</b>

DRAWING NUMBER: 6480-02-04	REV: .
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3d View



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Analysis  
Produced using Wildram Tools  
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Existing Model & Surrounding Model  
Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west\_Proposed Model - Planning - 3D View.dwg  
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PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Existing 3d View  
Looking North East

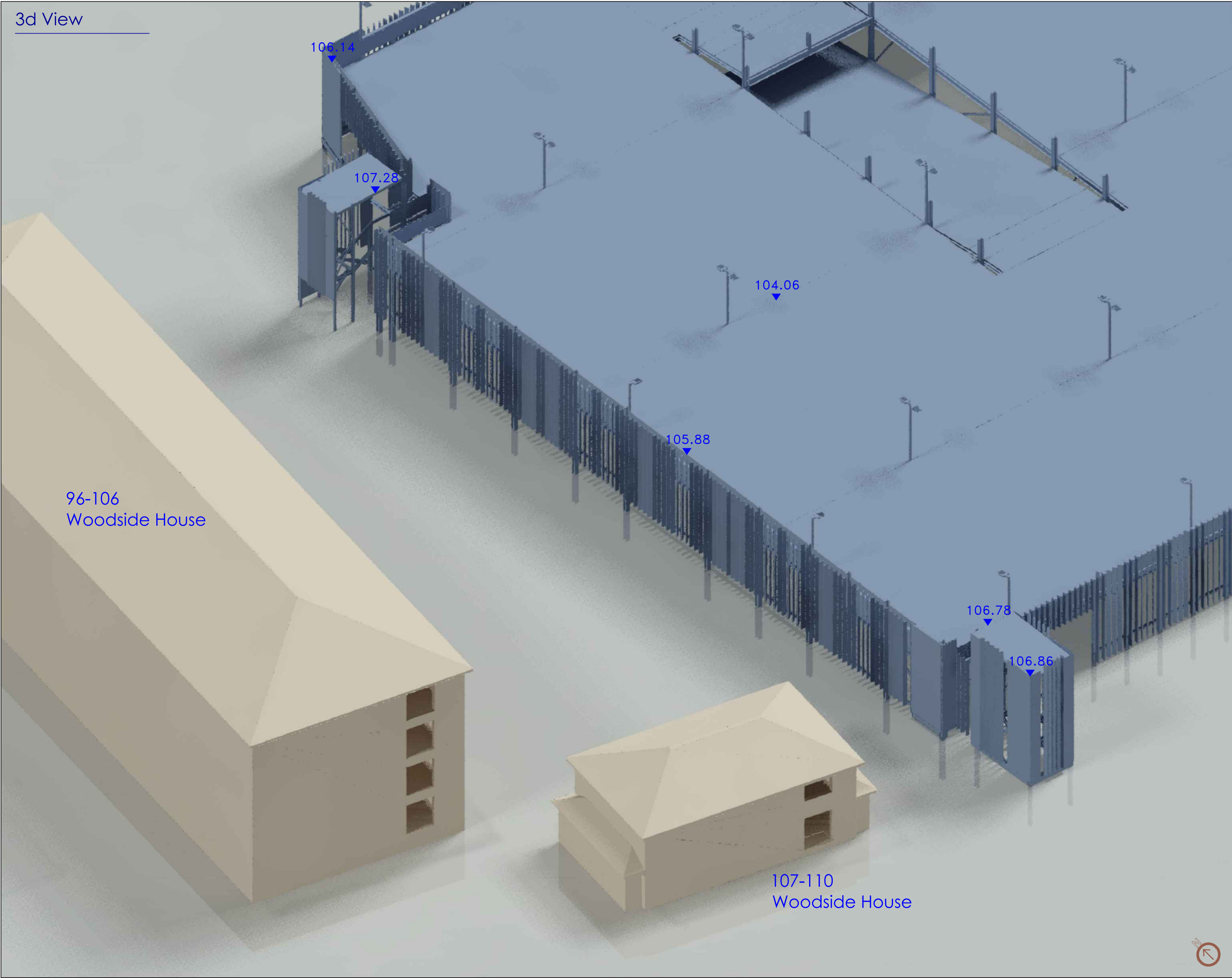
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3d View



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MBS Survey Software Ltd (www.mbs-software.co.uk)  
Existing Model & Surrounding Model  
Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west, Proposed Model - Planning - 3D View.dwg  
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PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Proposed 3d View  
Looking North East

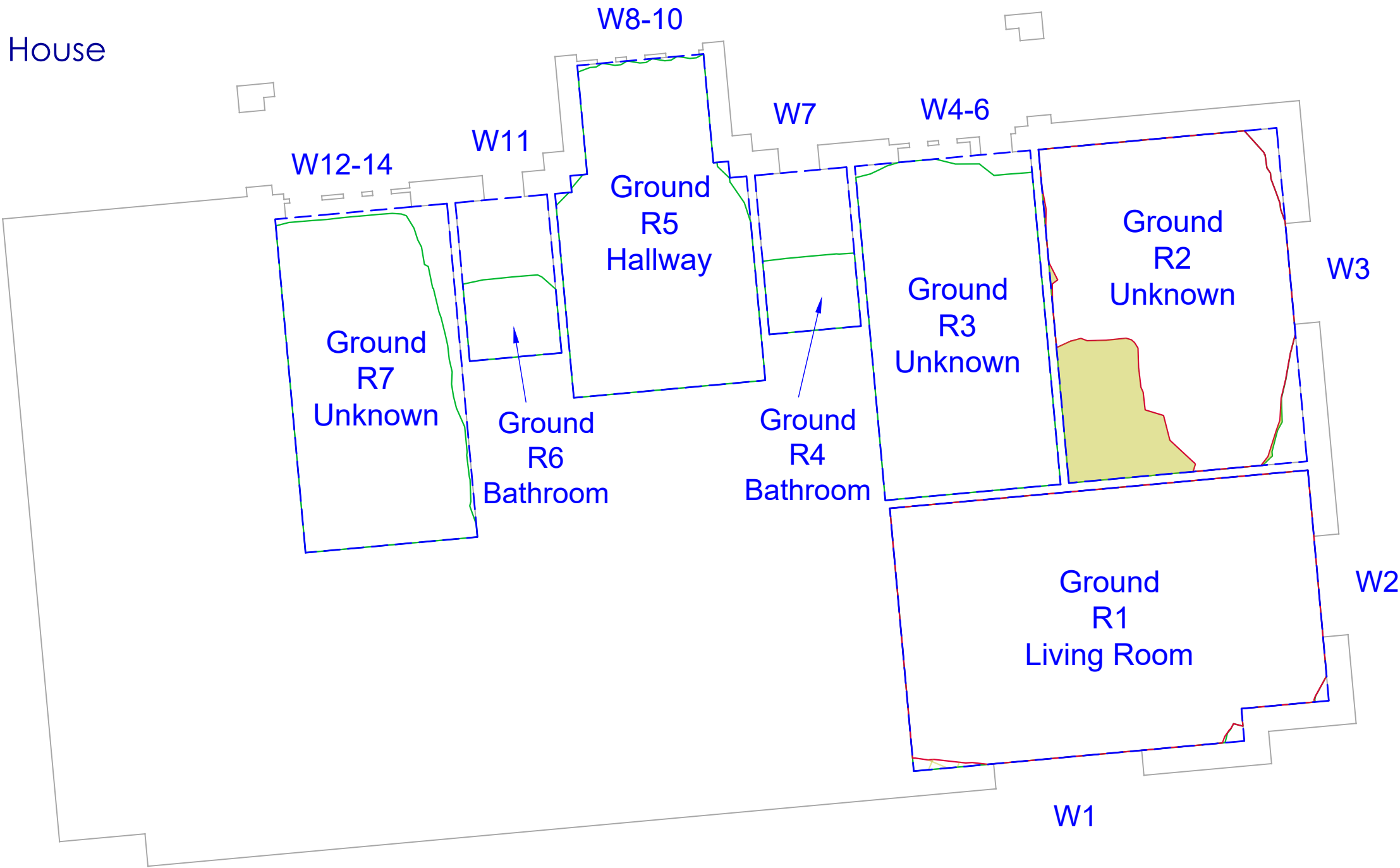
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DRAWING NUMBER: 6480-02-06	REV: .
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# Appendix 2

Daylight Distribution Contour Drawings with  
Average Daylight Factor Values for  
Neighbouring Habitable Rooms

Ground Floor  
107-110 Woodside House

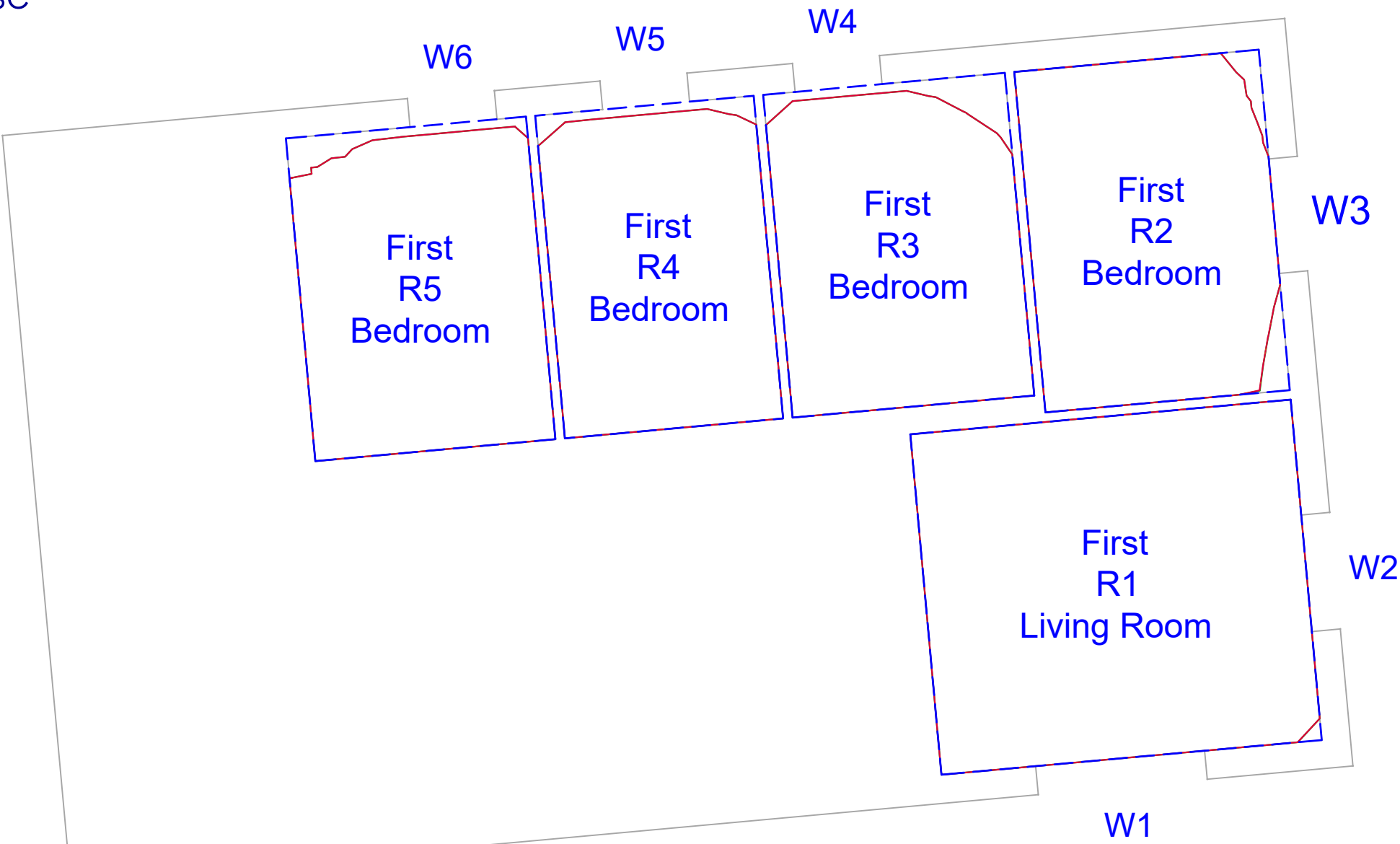


NOTES:  
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All dimensions are to be checked on site, where  
discrepancy occurs between specification and  
drawings the supervising officer must be notified.

Analysis  
Produced using Walktram Tools  
MBS Survey Software Ltd (www.mbs-software.co.uk)  
Existing Model & Surrounding Model  
Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west\_ Proposed Model - Planning - 3D View.dwg  
Received 02.07.2021

- KEY
- Room Area (Measured Layout)
  - Room Area (Assumed Layout)
  - Existing No Sky Area
  - Proposed No Sky Area
  - Area of Loss/Gain

First Floor  
107-110 Woodside House



REV:	NOTES:	DRWN:	DATE:

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CLIENT:  
Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Daylight Distribution  
Contours

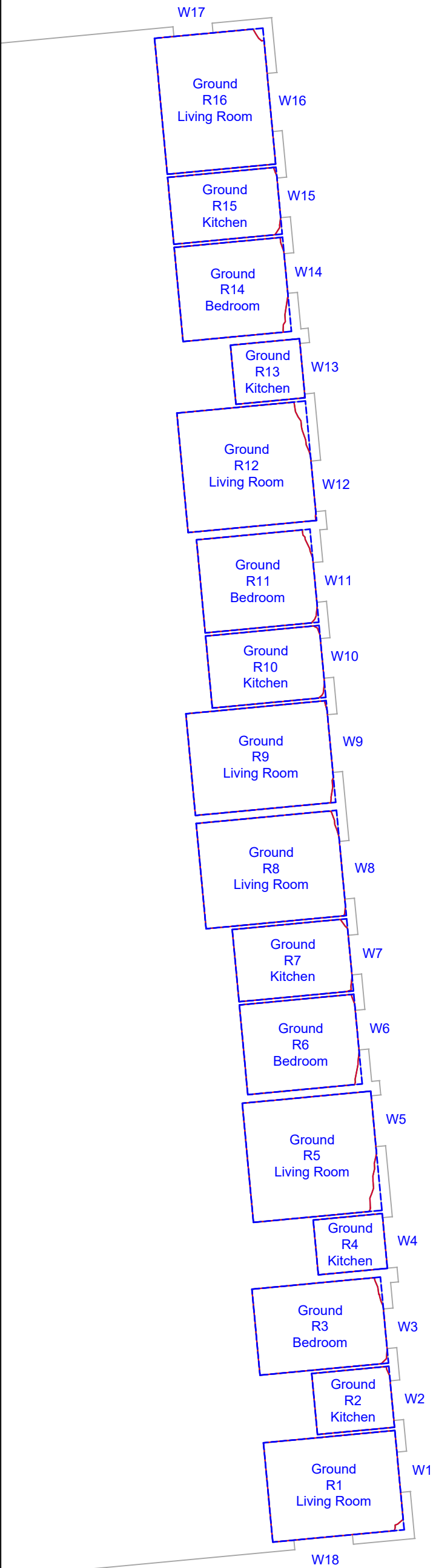
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DRAWING NUMBER: 6486-01-07	REV: .
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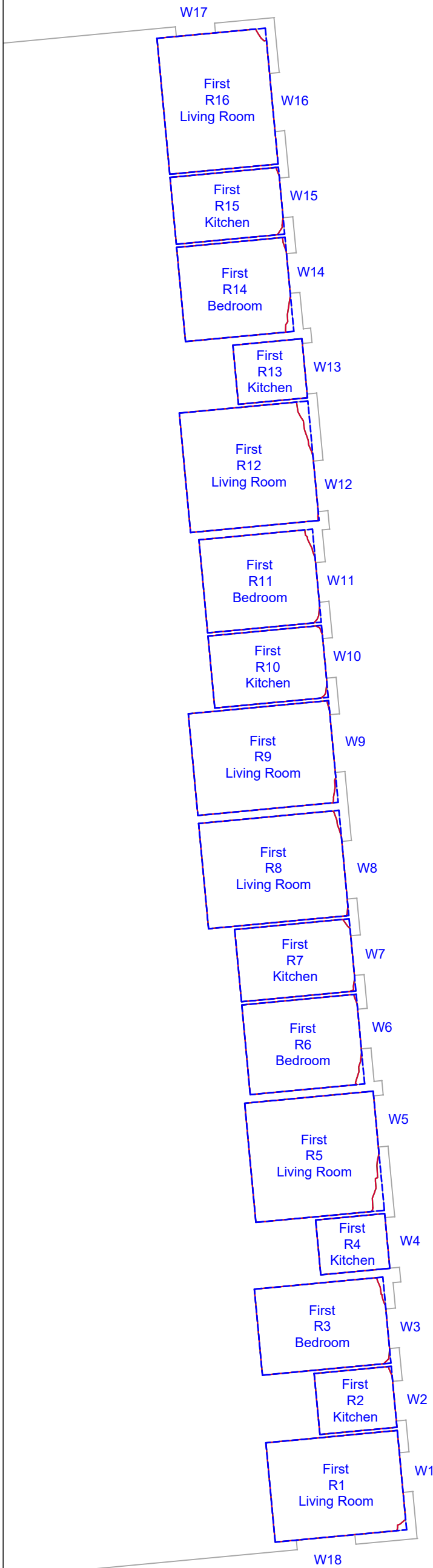




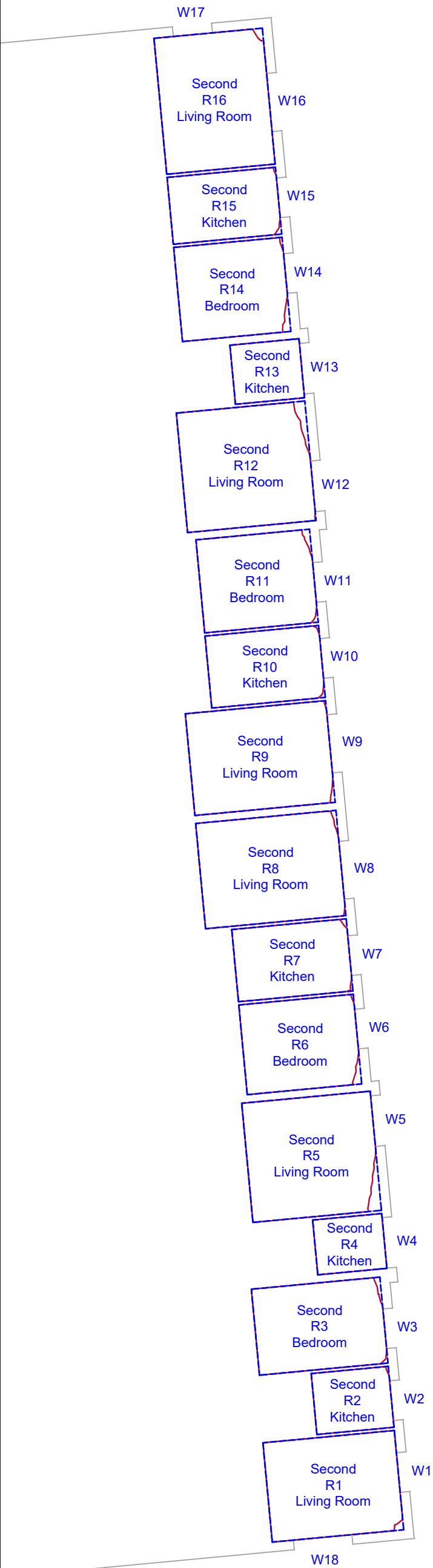
Ground Floor  
96-106 Woodside House



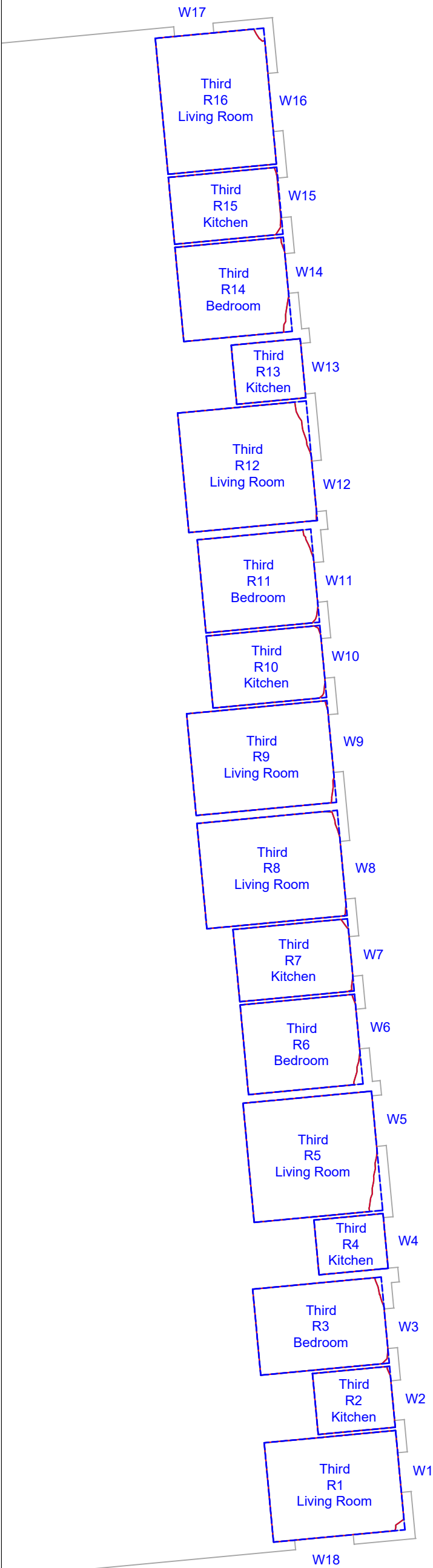
First Floor  
96-106 Woodside House



Second Floor  
96-106 Woodside House



Third Floor  
96-106 Woodside House



NOTES:  
No dimensions are to be scaled from this drawing.  
All dimensions are to be checked on site, where  
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Analysis  
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MBS Survey Software Ltd (www.mbs-software.co.uk)  
Existing Model & Surrounding Model  
Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west\_ Proposed Model - Planning - 3D View.dwg  
Received 02.07.2021

KEY  
Room Area (Measured Layout)  
Room Area (Assumed Layout)  
Existing No Sky Area  
Proposed No Sky Area  
Area of Loss/Gain

REV:	NOTES:	DRWN:	DATE:

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CLIENT:  
Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
Daylight Distribution  
Contours

SCALE @ A1: <b>1:100</b>	DATE: 04.07.21	DRAWN: MBS
		CHECKED: DW

DRAWING NUMBER: 6486-01-08	REV: .
-------------------------------	-----------



# Appendix 3

## Vertical Sky Component and Sunlight Results for Neighbouring Habitable Rooms

Project Name: New Deck Car Park, Campus West, WGC Project No.: 6480-02 Report Title: Daylight & Sunlight - Neighbour Analysis Date of Analysis: 04/07/2021																				
Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.		VSC	Pr/Ex	Meets BRE Criteria	Window Orientation	Annual	Pr/Ex	Meets BRE Criteria	Winter	Pr/Ex	Meets BRE Criteria	Total Suns per Room Annual	Meets BRE Criteria	Total Suns per Room Winter	Meets BRE Criteria	
107-110 Woodside House																				
Ground	R1	Residential	Living Room	W1	Existing	39.26	1.00	YES	175	87.00	1.00	YES	30.00	1.00	YES	92.00 89.00	YES	30.00 30.00	YES	
				W2	Existing Proposed	39.24 35.66	0.70	NO	85°N	87.00 39.00	*North	*North	30.00 11.00	*North	*North					11.00
	R2	Residential	Unknown	W3	Existing Proposed	35.69 21.30	0.60	NO	85°N	39.00 27.00	*North	*North	11.00 9.00	*North	*North					
																*North		*North		
First	R1	Residential	Living Room	W1	Existing	33.81	1.00	YES	175	76.00	1.00	YES	30.00	1.00	YES	86.00 82.00	YES	30.00 30.00	YES	
				W2	Existing Proposed	34.01 29.69	0.87	YES	85°N	76.00 39.00	*North	*North	30.00 11.00	*North	*North					11.00
	R2	Residential	Bedroom	W3	Existing Proposed	33.99 28.32	0.83	YES	85°N	38.00 32.00	*North	*North	10.00 8.00	*North	*North					
																	*North		*North	
	R3	Residential	Bedroom	W4	Existing Proposed	28.28 26.76	0.95	YES	355°N	1.00 0.00	*North	*North	0.00 0.00	*North	*North					
																	*North		*North	
R4	Residential	Bedroom	W5	Existing Proposed	27.59 26.32	0.95	YES	355°N	1.00 0.00	*North	*North	0.00 0.00	*North	*North						
																*North		*North		
R5	Residential	Bedroom	W6	Existing Proposed	26.64 25.56	0.96	YES	355°N	1.00 0.00	*North	*North	0.00 0.00	*North	*North						
																*North		*North		
96-106 Woodside House																				
Ground	R1	Residential	Living Room	W1	Existing	35.73	0.93	YES	85°N	44.00	*North	*North	9.00	*North	*North	89.00 88.00	YES	27.00 27.00	YES	
				W18	Existing Proposed	33.19 37.17	1.00	YES	175	43.00 83.00	1.00	YES	9.00 27.00	1.00	YES					27.00
	R2	Residential	Kitchen	W2	Existing Proposed	36.74 34.00	0.93	YES	85°N	46.00 45.00	*North	*North	11.00 11.00	*North	*North					
																	*North		*North	
	R3	Residential	Bedroom	W3	Existing Proposed	36.94 33.81	0.92	YES	85°N	47.00 45.00	*North	*North	13.00 12.00	*North	*North					
																	*North		*North	
	R4	Residential	Kitchen	W4	Existing Proposed	37.56 33.87	0.90	YES	85°N	48.00 46.00	*North	*North	13.00 12.00	*North	*North					
																	*North		*North	
	R5	Residential	Living Room	W5	Existing Proposed	38.05 34.02	0.89	YES	85°N	49.00 47.00	*North	*North	14.00 13.00	*North	*North					
																	*North		*North	
	R6	Residential	Bedroom	W6	Existing Proposed	38.11 34.22	0.90	YES	85°N	43.00 41.00	*North	*North	10.00 9.00	*North	*North					
																	*North		*North	
	R7	Residential	Kitchen	W7	Existing Proposed	38.42 34.53	0.90	YES	85°N	46.00 44.00	*North	*North	12.00 11.00	*North	*North					
																	*North		*North	
	R8	Residential	Living Room	W8	Existing Proposed	38.49 34.06	0.89	YES	85°N	48.00 44.00	*North	*North	14.00 12.00	*North	*North					
																	*North		*North	
R9	Residential	Living Room	W9	Existing Proposed	38.61 33.98	0.88	YES	85°N	48.00 44.00	*North	*North	14.00 12.00	*North	*North						
																*North		*North		
R10	Residential	Kitchen	W10	Existing Proposed	38.73 34.41	0.89	YES	85°N	48.00 46.00	*North	*North	14.00 13.00	*North	*North						
																*North		*North		
R11	Residential	Bedroom	W11	Existing Proposed	38.61 34.05	0.88	YES	85°N	48.00 44.00	*North	*North	14.00 12.00	*North	*North						
																*North		*North		
R12	Residential	Living Room	W12	Existing Proposed	38.82 33.81	0.87	YES	85°N	49.00 45.00	*North	*North	14.00 12.00	*North	*North						
																*North		*North		
R13	Residential	Kitchen	W13	Existing Proposed	38.86 33.83	0.87	YES	85°N	49.00 45.00	*North	*North	14.00 12.00	*North	*North						
																*North		*North		
R14	Residential	Bedroom	W14	Existing Proposed	38.76 34.17	0.88	YES	85°N	44.00 40.00	*North	*North	11.00 9.00	*North	*North						
																*North		*North		
R15	Residential	Kitchen	W15	Existing Proposed	38.89 34.59	0.89	YES	85°N	46.00 41.00	*North	*North	12.00 10.00	*North	*North						
																*North		*North		
R16	Residential	Living Room	W16	Existing	38.90	0.88	YES	85°N	48.00	*North	*North	14.00	*North	*North	91.00 91.00	YES	29.00 29.00	YES		
			W17	Existing Proposed	34.39 39.47	1.00	YES	355°N	43.00 13.00	*North	*North	12.00 0.00	*North	*North					0.00	
																*North		*North		
R1	Residential	Living Room	W1	Existing	38.03	0.98	YES	85°N	48.00	*North	*North	13.00	*North	*North	91.00 91.00	YES	29.00 29.00	YES		
			W18	Existing Proposed	37.09 38.66	1.00	YES	175	48.00 85.00	1.00	YES	13.00 28.00	*North	*North					13.00 28.00	
R2	Residential	Kitchen	W2	Existing Proposed	38.32 37.36	0.97	YES	85°N	47.00 47.00	*North	*North	13.00 13.00	*North	*North						
																*North		*North		



Project Name: New Deck Car Park, Campus West, WGC Project No.: 6480-02 Report Title: Daylight & Sunlight - Neighbour Analysis Date of Analysis: 04/07/2021																				
Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.		VSC	Pr/Ex	Meets BRE Criteria	Window Orientation	Annual	Pr/Ex	Meets BRE Criteria	Winter	Pr/Ex	Meets BRE Criteria	Total Suns per Room Annual	Meets BRE Criteria	Total Suns per Room Winter	Meets BRE Criteria	
First	R3	Residential	Bedroom	W3	Existing Proposed	38.19 37.03	0.97	YES	85°N	48.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
	R4	Residential	Kitchen	W4	Existing Proposed	38.57 37.10	0.96	YES	85°N	49.00 49.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
	R5	Residential	Living Room	W5	Existing Proposed	38.75 37.14	0.96	YES	85°N	49.00 49.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
	R6	Residential	Bedroom	W6	Existing Proposed	38.62 37.18	0.96	YES	85°N	43.00 43.00	*North	*North	10.00 10.00	*North	*North		*North		*North	
	R7	Residential	Kitchen	W7	Existing Proposed	38.82 37.46	0.96	YES	85°N	46.00 46.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
	R8	Residential	Living Room	W8	Existing Proposed	38.84 37.03	0.95	YES	85°N	47.00 47.00	*North	*North	13.00 13.00	*North	*North		*North		*North	
	R9	Residential	Living Room	W9	Existing Proposed	38.89 36.97	0.95	YES	85°N	47.00 46.00	*North	*North	13.00 13.00	*North	*North		*North		*North	
	R10	Residential	Kitchen	W10	Existing Proposed	38.93 37.35	0.96	YES	85°N	47.00 46.00	*North	*North	13.00 12.00	*North	*North		*North		*North	
	R11	Residential	Bedroom	W11	Existing Proposed	38.80 37.03	0.95	YES	85°N	47.00 47.00	*North	*North	13.00 13.00	*North	*North		*North		*North	
	R12	Residential	Living Room	W12	Existing Proposed	39.04 36.91	0.95	YES	85°N	49.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
	R13	Residential	Kitchen	W13	Existing Proposed	39.06 36.88	0.94	YES	85°N	49.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
	R14	Residential	Bedroom	W14	Existing Proposed	38.89 37.03	0.95	YES	85°N	44.00 44.00	*North	*North	11.00 11.00	*North	*North		*North		*North	
	R15	Residential	Kitchen	W15	Existing Proposed	38.99 37.31	0.96	YES	85°N	46.00 46.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
	R16	Residential	Living Room	W16 W17	Existing Proposed Existing Proposed	39.03 39.42 37.04 39.37	0.95 1.00	YES YES	85°N 355°N	47.00 13.00 47.00 13.00	*North *North	*North *North	13.00 0.00 13.00 0.00	*North *North	*North *North		*North		*North	
	Second	R1	Residential	Living Room	W1 W18	Existing Proposed Existing Proposed	39.03 39.26 38.98 39.25	1.00 1.00	YES YES	85°N 175	48.00 87.00 48.00 87.00	*North 1.00	*North YES	14.00 30.00 14.00 30.00	*North 1.00	*North YES	92.00 92.00		30.00 30.00	
		R2	Residential	Kitchen	W2	Existing Proposed	38.96 38.92	1.00	YES	85°N	47.00 47.00	*North	*North	14.00 14.00	*North	*North		*North		*North
R3		Residential	Bedroom	W3	Existing Proposed	38.76 38.71	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
R4		Residential	Kitchen	W4	Existing Proposed	39.21 39.13	1.00	YES	85°N	48.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
R5		Residential	Living Room	W5	Existing Proposed	39.20 39.13	1.00	YES	85°N	48.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
R6		Residential	Bedroom	W6	Existing Proposed	38.80 38.74	1.00	YES	85°N	43.00 43.00	*North	*North	10.00 10.00	*North	*North		*North		*North	
R7		Residential	Kitchen	W7	Existing Proposed	38.89 38.84	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
R8		Residential	Living Room	W8	Existing Proposed	38.95 38.86	1.00	YES	85°N	46.00 46.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
R9		Residential	Living Room	W9	Existing Proposed	38.95 38.85	1.00	YES	85°N	46.00 46.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
R10		Residential	Kitchen	W10	Existing Proposed	38.90 38.82	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
R11		Residential	Bedroom	W11	Existing Proposed	38.81 38.71	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North	
R12		Residential	Living Room	W12	Existing Proposed	39.18 39.05	1.00	YES	85°N	48.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
R13		Residential	Kitchen	W13	Existing Proposed	39.19 39.02	1.00	YES	85°N	48.00 48.00	*North	*North	14.00 14.00	*North	*North		*North		*North	
R14		Residential	Bedroom	W14	Existing Proposed	38.85 38.76	1.00	YES	85°N	44.00 44.00	*North	*North	11.00 11.00	*North	*North		*North		*North	

Project Name: New Deck Car Park, Campus West, WGC Project No.: 6480-02 Report Title: Daylight & Sunlight - Neighbour Analysis Date of Analysis: 04/07/2021																			
Floor Ref.	Room Ref.	Property Type	Room Use.	Window Ref.		VSC	Pr/Ex	Meets BRE Criteria	Window Orientation	Annual	Pr/Ex	Meets BRE Criteria	Winter	Pr/Ex	Meets BRE Criteria	Total Suns per Room Annual	Meets BRE Criteria	Total Suns per Room Winter	Meets BRE Criteria
	R15	Residential	Kitchen	W15	Existing Proposed	38.91 38.86	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North
	R16	Residential	Living Room	W16 W17	Existing Proposed Existing Proposed	39.00 38.90 39.23 39.23	1.00	YES	85°N 355°N	46.00 46.00 13.00 13.00	*North	*North	12.00 12.00 0.00 0.00	*North	*North				
Third	R1	Residential	Living Room	W1 W18	Existing Proposed Existing Proposed	34.82 34.82 36.77 36.77	1.00	YES	85°N 175	39.00 39.00 82.00 82.00	*North	*North	11.00 11.00 30.00 30.00	*North	*North	88.00 88.00	YES	30.00 30.00	YES
	R2	Residential	Kitchen	W2	Existing Proposed	33.04 33.04	1.00	YES	85°N	35.00 35.00	*North	*North	10.00 10.00	*North	*North		*North		*North
	R3	Residential	Bedroom	W3	Existing Proposed	34.73 34.73	1.00	YES	85°N	38.00 38.00	*North	*North	10.00 10.00	*North	*North				
	R4	Residential	Kitchen	W4	Existing Proposed	38.98 38.98	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North
	R5	Residential	Living Room	W5	Existing Proposed	38.98 38.98	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North				
	R6	Residential	Bedroom	W6	Existing Proposed	34.74 34.74	1.00	YES	85°N	38.00 38.00	*North	*North	10.00 10.00	*North	*North		*North		*North
	R7	Residential	Kitchen	W7	Existing Proposed	33.02 33.02	1.00	YES	85°N	35.00 35.00	*North	*North	10.00 10.00	*North	*North				
	R8	Residential	Living Room	W8	Existing Proposed	36.58 36.58	1.00	YES	85°N	39.00 39.00	*North	*North	11.00 11.00	*North	*North		*North		*North
	R9	Residential	Living Room	W9	Existing Proposed	36.58 36.58	1.00	YES	85°N	39.00 39.00	*North	*North	11.00 11.00	*North	*North				
	R10	Residential	Kitchen	W10	Existing Proposed	33.02 33.02	1.00	YES	85°N	35.00 35.00	*North	*North	10.00 10.00	*North	*North		*North		*North
	R11	Residential	Bedroom	W11	Existing Proposed	34.74 34.74	1.00	YES	85°N	38.00 38.00	*North	*North	10.00 10.00	*North	*North				
	R12	Residential	Living Room	W12	Existing Proposed	38.91 38.91	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North		*North		*North
	R13	Residential	Kitchen	W13	Existing Proposed	38.91 38.91	1.00	YES	85°N	45.00 45.00	*North	*North	12.00 12.00	*North	*North				
	R14	Residential	Bedroom	W14	Existing Proposed	34.75 34.75	1.00	YES	85°N	38.00 38.00	*North	*North	10.00 10.00	*North	*North		*North		*North
	R15	Residential	Kitchen	W15	Existing Proposed	33.01 33.01	1.00	YES	85°N	35.00 35.00	*North	*North	10.00 10.00	*North	*North				
	R16	Residential	Living Room	W16 W17	Existing Proposed Existing Proposed	36.62 36.62 34.95 34.95	1.00	YES	85°N 355°N	39.00 39.00 9.00 9.00	*North	*North	11.00 11.00 0.00 0.00	*North	*North		*North		*North

# Appendix 4

## Daylight Distribution Results for Neighbouring Habitable Rooms

Project Name: New Deck Car Park, Campus West, WGC Project No.: 6480-02 Report Title: Daylight Distribution - Neighbour Analysis Date of Analysis: 04/07/2021									
Floor Ref.	Room Ref.	Room Attribute	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Pr/Ex	Meets BRE Criteria
107-110 Woodside House									
Ground	R1	Assumed	Living Room	Area m2	15.41	15.35	15.27		
				% of room		99.58%	99.10%	1.00	YES
Ground	R2	Assumed	Unknown	Area m2	11.43	10.93	9.02		
				% of room		95.61%	78.86%	0.82	YES
First	R1	Assumed	Living Room	Area m2	14.32	14.29	14.29		
				% of room		99.80%	99.80%	1.00	YES
First	R2	Assumed	Bedroom	Area m2	9.20	8.84	8.83		
				% of room		96.03%	96.01%	1.00	YES
First	R3	Assumed	Bedroom	Area m2	8.62	8.07	8.07		
				% of room		93.55%	93.55%	1.00	YES
First	R4	Assumed	Bedroom	Area m2	7.79	7.50	7.50		
				% of room		96.22%	96.22%	1.00	YES
First	R5	Assumed	Bedroom	Area m2	8.57	8.16	8.16		
				% of room		95.26%	95.26%	1.00	YES
96-106 Woodside House									
Ground	R1	Assumed	Living Room	Area m2	12.66	12.59	12.59		
				% of room		99.49%	99.49%	1.00	YES
Ground	R2	Assumed	Kitchen	Area m2	4.56	4.54	4.54		
				% of room		99.68%	99.68%	1.00	YES
Ground	R3	Assumed	Bedroom	Area m2	10.72	10.60	10.60		
				% of room		98.91%	98.91%	1.00	YES
Ground	R4	Assumed	Kitchen	Area m2	3.67	3.67	3.67		
				% of room		99.99%	99.99%	1.00	YES
Ground	R5	Assumed	Living Room	Area m2	14.85	14.49	14.49		
				% of room		97.60%	97.60%	1.00	YES
Ground	R6	Assumed	Bedroom	Area m2	9.96	9.83	9.83		
				% of room		98.74%	98.74%	1.00	YES
Ground	R7	Assumed	Kitchen	Area m2	8.02	7.96	7.96		
				% of room		99.31%	99.31%	1.00	YES
Ground	R8	Assumed	Living Room	Area m2	14.32	14.24	14.24		
				% of room		99.45%	99.45%	1.00	YES
Ground	R9	Assumed	Living Room	Area m2	13.84	13.77	13.77		
				% of room		99.49%	99.49%	1.00	YES
Ground	R10	Assumed	Kitchen	Area m2	7.93	7.88	7.88		
				% of room		99.43%	99.43%	1.00	YES
Ground	R11	Assumed	Bedroom	Area m2	10.25	10.10	10.10		
				% of room		98.55%	98.55%	1.00	YES
Ground	R12	Assumed	Living Room	Area m2	14.89	14.57	14.57		
				% of room		97.84%	97.84%	1.00	YES
Ground	R13	Assumed	Kitchen	Area m2	3.96	3.96	3.96		
				% of room		99.93%	99.93%	1.00	YES
Ground	R14	Assumed	Bedroom	Area m2	9.89	9.72	9.72		
				% of room		98.25%	98.25%	1.00	YES
Ground	R15	Assumed	Kitchen	Area m2	7.02	6.97	6.97		
				% of room		99.28%	99.28%	1.00	YES
Ground	R16	Assumed	Living Room	Area m2	14.28	14.20	14.20		
				% of room		99.44%	99.44%	1.00	YES
First	R1	Assumed	Living Room	Area m2	12.66	12.59	12.59		
				% of room		99.49%	99.49%	1.00	YES
First	R2	Assumed	Kitchen	Area m2	4.56	4.54	4.54		
				% of room		99.68%	99.68%	1.00	YES
First	R3	Assumed	Bedroom	Area m2	10.72	10.60	10.60		
				% of room		98.91%	98.91%	1.00	YES
First	R4	Assumed	Kitchen	Area m2	3.67	3.67	3.67		
				% of room		99.99%	99.99%	1.00	YES

Project Name: New Deck Car Park, Campus West, WGC Project No.: 6480-02 Report Title: Daylight Distribution - Neighbour Analysis Date of Analysis: 04/07/2021										
Floor Ref.	Room Ref.	Room Attribute	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Pr/Ex	Meets BRE Criteria	
First	R5	Assumed	Living Room	Area m2	14.85	14.51	14.51			
				% of room		97.69%	97.69%	1.00	YES	
First	R6	Assumed	Bedroom	Area m2	9.96	9.81	9.81			
				% of room		98.55%	98.55%	1.00	YES	
First	R7	Assumed	Kitchen	Area m2	8.02	7.96	7.96			
				% of room		99.33%	99.33%	1.00	YES	
First	R8	Assumed	Living Room	Area m2	14.32	14.24	14.24			
				% of room		99.45%	99.45%	1.00	YES	
First	R9	Assumed	Living Room	Area m2	13.84	13.77	13.77			
				% of room		99.49%	99.49%	1.00	YES	
First	R10	Assumed	Kitchen	Area m2	7.93	7.88	7.88			
				% of room		99.43%	99.43%	1.00	YES	
First	R11	Assumed	Bedroom	Area m2	10.25	10.10	10.10			
				% of room		98.55%	98.55%	1.00	YES	
First	R12	Assumed	Living Room	Area m2	14.89	14.57	14.57			
				% of room		97.85%	97.85%	1.00	YES	
First	R13	Assumed	Kitchen	Area m2	3.96	3.96	3.96			
				% of room		99.93%	99.93%	1.00	YES	
First	R14	Assumed	Bedroom	Area m2	9.89	9.72	9.72			
				% of room		98.25%	98.25%	1.00	YES	
First	R15	Assumed	Kitchen	Area m2	7.02	6.97	6.97			
				% of room		99.28%	99.28%	1.00	YES	
First	R16	Assumed	Living Room	Area m2	14.28	14.20	14.20			
				% of room		99.44%	99.44%	1.00	YES	
Second	R1	Assumed	Living Room	Area m2	12.66	12.59	12.59			
				% of room		99.49%	99.49%	1.00	YES	
Second	R2	Assumed	Kitchen	Area m2	4.56	4.54	4.54			
				% of room		99.68%	99.68%	1.00	YES	
Second	R3	Assumed	Bedroom	Area m2	10.72	10.60	10.60			
				% of room		98.91%	98.91%	1.00	YES	
Second	R4	Assumed	Kitchen	Area m2	3.67	3.67	3.67			
				% of room		99.99%	99.99%	1.00	YES	
Second	R5	Assumed	Living Room	Area m2	14.85	14.47	14.47			
				% of room		97.42%	97.42%	1.00	YES	
Second	R6	Assumed	Bedroom	Area m2	9.96	9.81	9.81			
				% of room		98.55%	98.55%	1.00	YES	
Second	R7	Assumed	Kitchen	Area m2	8.02	7.96	7.96			
				% of room		99.33%	99.33%	1.00	YES	
Second	R8	Assumed	Living Room	Area m2	14.32	14.24	14.24			
				% of room		99.45%	99.45%	1.00	YES	
Second	R9	Assumed	Living Room	Area m2	13.84	13.77	13.77			
				% of room		99.52%	99.52%	1.00	YES	
Second	R10	Assumed	Kitchen	Area m2	7.93	7.88	7.88			
				% of room		99.43%	99.43%	1.00	YES	
Second	R11	Assumed	Bedroom	Area m2	10.25	10.10	10.10			
				% of room		98.55%	98.55%	1.00	YES	
Second	R12	Assumed	Living Room	Area m2	14.89	14.57	14.57			
				% of room		97.85%	97.85%	1.00	YES	
Second	R13	Assumed	Kitchen	Area m2	3.96	3.96	3.96			
				% of room		99.93%	99.93%	1.00	YES	
Second	R14	Assumed	Bedroom	Area m2	9.89	9.72	9.72			
				% of room		98.25%	98.25%	1.00	YES	
Second	R15	Assumed	Kitchen	Area m2	7.02	6.97	6.97			
				% of room		99.28%	99.28%	1.00	YES	
Second	R16	Assumed	Living Room	Area m2	14.28	14.20	14.20			
				% of room		99.44%	99.44%	1.00	YES	
Third	R1	Assumed	Living Room	Area m2	12.66	12.59	12.59			
				% of room		99.45%	99.45%	1.00	YES	
Third	R2	Assumed	Kitchen	Area m2	4.56	4.54	4.54			
				% of room		99.67%	99.67%	1.00	YES	

Project Name: New Deck Car Park, Campus West, WGC  
Project No.: 6480-02  
Report Title: Daylight Distribution - Neighbour Analysis  
Date of Analysis: 04/07/2021

Floor Ref.	Room Ref.	Room Attribute	Room Use.		Room Area	Lit Area Existing	Lit Area Proposed	Pr/Ex	Meets BRE Criteria
Third	R3	Assumed	Bedroom	Area m2	10.72	10.60	10.60		
				% of room		98.86%	98.86%	1.00	YES
Third	R4	Assumed	Kitchen	Area m2	3.67	3.67	3.67		
				% of room		99.99%	99.99%	1.00	YES
Third	R5	Assumed	Living Room	Area m2	14.85	14.46	14.46		
				% of room		97.41%	97.41%	1.00	YES
Third	R6	Assumed	Bedroom	Area m2	9.96	9.81	9.81		
				% of room		98.50%	98.50%	1.00	YES
Third	R7	Assumed	Kitchen	Area m2	8.02	7.96	7.96		
				% of room		99.29%	99.29%	1.00	YES
Third	R8	Assumed	Living Room	Area m2	14.32	14.24	14.24		
				% of room		99.39%	99.39%	1.00	YES
Third	R9	Assumed	Living Room	Area m2	13.84	13.76	13.76		
				% of room		99.46%	99.46%	1.00	YES
Third	R10	Assumed	Kitchen	Area m2	7.93	7.88	7.88		
				% of room		99.39%	99.39%	1.00	YES
Third	R11	Assumed	Bedroom	Area m2	10.25	10.09	10.09		
				% of room		98.50%	98.50%	1.00	YES
Third	R12	Assumed	Living Room	Area m2	14.89	14.56	14.56		
				% of room		97.82%	97.82%	1.00	YES
Third	R13	Assumed	Kitchen	Area m2	3.96	3.96	3.96		
				% of room		99.93%	99.93%	1.00	YES
Third	R14	Assumed	Bedroom	Area m2	9.89	9.71	9.71		
				% of room		98.19%	98.19%	1.00	YES
Third	R15	Assumed	Kitchen	Area m2	7.02	6.94	6.94		
				% of room		98.88%	98.88%	1.00	YES
Third	R16	Assumed	Living Room	Area m2	14.28	14.20	14.20		
				% of room		99.41%	99.41%	1.00	YES

# Appendix 5

## Average Daylight Factor Results for Neighbouring Habitable Rooms

Project Name: New Deck Car Park, Campus West, WGC  
Project No.: 6480-02  
Report Title: Average Daylight Factor - Neighbour Analysis  
Date: 04/07/2021

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Existing	ADF Proposed	Req'd Value	Pr/Ex	Meets BRE Criteria												
107-110 Woodside House																												
Ground	R1	Living Room	W1-L	0.68	1.00	1.29	87.62	87.62	69.22	0.50	0.15	0.22	0.22															
		Living Room	W1-U	0.68	1.00	1.86	85.47	85.47	69.22	0.50	1.00	2.09	2.09															
		Living Room	W2-L	0.68	1.00	0.16	81.17	59.98	69.22	0.50	0.15	0.03	0.02															
		Living Room	W2-U	0.68	1.00	1.27	71.77	54.35	69.22	0.50	1.00	1.19	0.90															
												3.52	3.23	1.50	0.92	YES												
Ground	R2	Unknown	W3-L	0.68	1.00	0.16	81.19	53.46	55.10	0.50	0.15	0.03	0.02															
		Unknown	W3-U	0.68	1.00	1.26	71.71	48.44	55.10	0.50	1.00	1.49	1.01															
														1.52	1.03	1.50	0.68	NO										
First	R1	Living Room	W1-L	0.68	1.00	0.19	80.59	80.59	60.47	0.50	0.15	0.03	0.03															
		Living Room	W1-U	0.68	1.00	1.71	66.73	66.73	60.47	0.50	1.00	1.71	1.71															
		Living Room	W2-L	0.68	1.00	0.08	79.73	69.50	60.47	0.50	0.15	0.02	0.01															
		Living Room	W2-U	0.68	1.00	1.18	67.42	60.44	60.47	0.50	1.00	1.20	1.07															
												2.96	2.83	1.50	0.96	YES												
First	R2	Bedroom	W3-L	0.68	1.00	0.08	79.71	66.39	44.24	0.50	0.15	0.02	0.02															
		Bedroom	W3-U	0.68	1.00	1.16	67.40	58.27	44.24	0.50	1.00	1.60	1.39															
														1.62	1.40	1.00	0.86	YES										
First	R3	Bedroom	W4	0.68	1.00	0.74	57.82	55.48	42.17	0.50	1.00	0.92	0.88															
												0.92	0.88	1.00	0.96	YES												
First	R4	Bedroom	W5	0.68	1.00	0.74	56.77	54.81	39.48	0.50	1.00	0.97	0.93															
												0.97	0.93	1.00	0.97	YES												
First	R5	Bedroom	W6	0.68	1.00	0.74	55.40	53.71	41.99	0.50	1.00	0.89	0.86															
												0.89	0.86	1.00	0.97	YES												
96-106 Woodside House																												
Ground	R1	Living Room	W1-L	0.68	1.00	0.24	76.74	71.26	59.08	0.50	0.15	0.04	0.04															
		Living Room	W1-U	0.68	1.00	1.22	76.67	72.00	59.08	0.50	1.00	1.44	1.35															
		Living Room	W18-L	0.68	1.00	1.17	81.61	81.60	59.08	0.50	0.15	0.22	0.22															
		Living Room	W18-U	0.68	1.00	1.77	80.56	80.55	59.08	0.50	1.00	2.19	2.19															
												3.89	3.80	1.50	0.98	YES												
Ground	R2	Kitchen	W2	0.68	1.00	1.15	78.10	72.80	29.32	0.50	1.00	2.77	2.58															
												2.77	2.58	2.00	0.93	YES												
Ground	R3	Bedroom	W3-L	0.68	1.00	0.24	80.18	73.12	52.83	0.50	0.15	0.05	0.05															
		Bedroom	W3-U	0.68	1.00	1.20	79.12	73.20	52.83	0.50	1.00	1.63	1.51															
														1.68	1.55	1.00	0.92	YES										
Ground	R4	Kitchen	W4-L	0.68	1.00	1.01	82.38	73.89	25.47	0.50	0.15	0.44	0.40															
		Kitchen	W4-U	0.68	1.00	1.53	80.95	74.19	25.47	0.50	1.00	4.42	4.05															
														4.86	4.44	2.00	0.91	YES										
Ground	R5	Living Room	W5-L	0.68	1.00	1.01	83.67	74.32	65.95	0.50	0.15	0.17	0.16															
		Living Room	W5-U	0.68	1.00	1.54	81.92	74.51	65.95	0.50	1.00	1.74	1.58															
														1.91	1.73	1.50	0.91	YES										
Ground	R6	Bedroom	W6-L	0.68	1.00	0.24	83.58	74.42	49.79	0.50	0.15	0.05	0.05															
		Bedroom	W6-U	0.68	1.00	1.20	81.85	74.22	49.79	0.50	1.00	1.79	1.62															
														1.85	1.67	1.00	0.91	YES										
Ground	R7	Kitchen	W7	0.68	1.00	1.15	81.86	74.05	43.35	0.50	1.00	1.96	1.77															
												1.96	1.77	2.00	0.90	YES												
Ground	R8	Living Room	W8-L	0.68	1.00	1.15	85.41	74.94	64.59	0.50	0.15	0.21	0.18															
		Living Room	W8-U	0.68	1.00	1.75	83.17	74.89	64.59	0.50	1.00	2.04	1.84															
														2.25	2.02	1.50	0.90	YES										
Ground	R9	Living Room	W9-L	0.68	1.00	1.15	85.76	74.81	63.09	0.50	0.15	0.21	0.19															
		Living Room	W9-U	0.68	1.00	1.75	83.44	74.76	63.09	0.50	1.00	2.10	1.88															
														2.31	2.06	1.50	0.89	YES										
Ground	R10	Kitchen	W10	0.68	1.00	1.15	82.47	73.76	43.00	0.50	1.00	1.99	1.78															
												1.99	1.78	2.00	0.89	YES												
Ground	R11	Bedroom	W11-L	0.68	1.00	0.24	84.80	74.09	50.73	0.50	0.15	0.05	0.05															
		Bedroom	W11-U	0.68	1.00	1.20	82.86	73.85	50.73	0.50	1.00	1.78	1.59															
														1.83	1.63	1.00	0.89	YES										
Ground	R12	Living Room	W12-L	0.68	1.00	1.01	85.73	74.07	66.07	0.50	0.15	0.18	0.15															
		Living Room	W12-U	0.68	1.00	1.53	83.50	74.18	66.07	0.50	1.00	1.76	1.56															
														1.93	1.71	1.50	0.89	YES										
Ground	R13	Kitchen	W13-L	0.68	1.00	1.01	85.82	74.11	26.67	0.50	0.15	0.44	0.38															
		Kitchen	W13-U	0.68	1.00	1.53	83.58	74.17	26.67	0.50	1.00	4.35	3.86															
														4.79	4.24	2.00	0.89	YES										
Ground	R14	Bedroom	W14-L	0.68	1.00	0.24	85.03	74.35	49.42	0.50	0.15	0.06	0.05															
		Bedroom	W14-U	0.68	1.00	1.20	83.06	74.02	49.42	0.50	1.00	1.83	1.63															
														1.89	1.68	1.00	0.89	YES										
Ground	R15	Kitchen	W15	0.68	1.00	1.15	82.80	74.11	39.68	0.50	1.00	2.17	1.94															
												2.17	1.94	2.00	0.90	YES												
Ground	R16	Living Room	W16-L	0.68	1.00	1.17	86.26	75.67	64.33	0.50	0.15	0.21	0.19															
		Living Room	W16-U	0.68	1.00	1.76	83.94	75.36	64.33	0.50	1.00	2.08	1.87															
		Living Room	W17-L	0.68	1.00	0.24	86.16	86.01	64.33	0.50	0.15	0.04	0.04															
		Living Room	W17-U	0.68	1.00	1.19	84.07	83.84	64.33	0.50	1.00	1.41	1.40															
												3.75	3.50	1.50	0.94	YES												
First	R1	Living Room	W1-L	0.68	1.00	0.24	82.32	79.63	59.08	0.50	0.15	0.05	0.04															
		Living Room	W1-U	0.68	1.00	1.20	81.34	79.50	59.08	0.50	1.00	1.50	1.47															
		Living Room	W18-L	0.68	1.00	1.17	85.43	85.41	59.08	0.50	0.15	0.23	0.23															
		Living Room	W18-U	0.68	1.00	1.77	83.75	83.72	59.08	0.50	1.00	2.28	2.28															
												4.05	4.01	1.50	0.99	YES												
First	R2	Kitchen	W2	0.68	1.00	1.15	81.54	79.52	29.32	0.50	1.00	2.89	2.82															
												2.89	2.82	2.00	0.98	YES												
First	R3	Bedroom	W3-L	0.68	1.00	0.24	83.20	79.82	52.83	0.50	0.15	0.05	0.05															
		Bedroom	W3-U	0.68	1.00	1.20	81.86	79.58	52.83	0.50	1.00	1.69	1.64															
														1.74	1.69	1.00	0.97	YES										
First	R4	Kitchen	W4-L	0.68	1.00	1.01	84.87	80.55	25.47	0.50	0.15	0.46	0.43															
		Kitchen	W4-U	0.68	1.00	1.53	83.09	80.52	25.47	0.50	1.00	4.53	4.39															
														4.99	4.83	2.00	0.97	YES										
First	R5	Living Room	W5-L	0.68	1.00	1.02	85.47	80.74	65.95	0.50	0.15	0.18	0.17															
		Living Room	W5-U	0.68	1.00	1.55	83.43	80.65	65.95	0.50	1.00	1.78	1.72															
														1.96	1.89	1.50	0.96	YES										



Project Name: New Deck Car Park, Campus West, WGC  
Project No.: 6480-02  
Report Title: Average Daylight Factor - Neighbour Analysis  
Date: 04/07/2021

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Existing	ADF Proposed	Req'd Value	Pr/Ex	Meets BRE Criteria
First	R6	Bedroom Bedroom	W6-L	0.68	1.00	0.24	84.91	80.59	49.79	0.50	0.15	0.06	0.05			
			W6-U	0.68	1.00	1.20	83.01	80.14	49.79	0.50	1.00	1.82	1.75			
												1.87	1.81	1.00	0.96	YES
First	R7	Kitchen	W7	0.68	1.00	1.15	82.81	79.89	43.35	0.50	1.00	1.98	1.91			
												1.98	1.91	2.00	0.96	YES
First	R8	Living Room Living Room	W8-L	0.68	1.00	1.15	86.53	81.14	64.59	0.50	0.15	0.21	0.20			
			W8-U	0.68	1.00	1.75	84.03	80.85	64.59	0.50	1.00	2.06	1.98			
												2.27	2.18	1.50	0.96	YES
First	R9	Living Room Living Room	W9-L	0.68	1.00	1.15	86.69	81.02	63.09	0.50	0.15	0.21	0.20			
			W9-U	0.68	1.00	1.75	84.12	80.75	63.09	0.50	1.00	2.11	2.03			
												2.33	2.23	1.50	0.96	YES
First	R10	Kitchen	W10	0.68	1.00	1.15	83.02	79.63	43.00	0.50	1.00	2.00	1.92			
												2.00	1.92	2.00	0.96	YES
First	R11	Bedroom Bedroom	W11-L	0.68	1.00	0.24	85.45	80.21	50.73	0.50	0.15	0.06	0.05			
			W11-U	0.68	1.00	1.20	83.35	79.78	50.73	0.50	1.00	1.79	1.71			
												1.84	1.76	1.00	0.96	YES
First	R12	Living Room Living Room	W12-L	0.68	1.00	1.01	86.45	80.30	66.07	0.50	0.15	0.18	0.17			
			W12-U	0.68	1.00	1.53	83.97	80.24	66.07	0.50	1.00	1.77	1.69			
												1.95	1.85	1.50	0.95	YES
First	R13	Kitchen Kitchen	W13-L	0.68	1.00	1.01	86.49	80.23	26.67	0.50	0.15	0.44	0.41			
			W13-U	0.68	1.00	1.53	83.99	80.16	26.67	0.50	1.00	4.38	4.18			
												4.82	4.59	2.00	0.95	YES
First	R14	Bedroom Bedroom	W14-L	0.68	1.00	0.24	85.57	80.17	49.42	0.50	0.15	0.06	0.05			
			W14-U	0.68	1.00	1.20	83.43	79.71	49.42	0.50	1.00	1.84	1.76			
												1.90	1.81	1.00	0.95	YES
First	R15	Kitchen	W15	0.68	1.00	1.15	83.14	79.56	39.68	0.50	1.00	2.18	2.08			
												2.18	2.08	2.00	0.96	YES
First	R16	Living Room	W16-L	0.68	1.00	1.17	87.01	81.22	64.33	0.50	0.15	0.22	0.20			
		Living Room	W16-U	0.68	1.00	1.76	84.30	80.73	64.33	0.50	1.00	2.09	2.00			
		Living Room	W17-L	0.68	1.00	0.24	86.31	86.17	64.33	0.50	0.15	0.04	0.04			
		Living Room	W17-U	0.68	1.00	1.19	84.08	83.99	64.33	0.50	1.00	1.41	1.40			
											3.76	3.65	1.50	0.97	YES	
Second	R1	Living Room	W1-L	0.68	1.00	0.24	85.74	85.50	59.08	0.50	0.15	0.05	0.05			
		Living Room	W1-U	0.68	1.00	1.20	83.75	83.68	59.08	0.50	1.00	1.54	1.54			
		Living Room	W18-L	0.68	1.00	1.17	87.69	87.65	59.08	0.50	0.15	0.24	0.24			
		Living Room	W18-U	0.68	1.00	1.77	85.12	85.12	59.08	0.50	1.00	2.31	2.31			
											4.14	4.14	1.50	1.00	YES	
Second	R2	Kitchen	W2	0.68	1.00	1.15	83.43	83.36	29.32	0.50	1.00	2.96	2.95			
												2.96	2.95	2.00	1.00	YES
Second	R3	Bedroom Bedroom	W3-L	0.68	1.00	0.24	85.33	85.07	52.83	0.50	0.15	0.05	0.05			
			W3-U	0.68	1.00	1.20	83.41	83.31	52.83	0.50	1.00	1.72	1.72			
												1.77	1.77	1.00	1.00	YES
Second	R4	Kitchen Kitchen	W4-L	0.68	1.00	1.01	86.78	86.33	25.47	0.50	0.15	0.47	0.46			
			W4-U	0.68	1.00	1.53	84.33	84.21	25.47	0.50	1.00	4.60	4.59			
												5.07	5.06	2.00	1.00	YES
Second	R5	Living Room Living Room	W5-L	0.68	1.00	1.01	86.84	86.39	65.95	0.50	0.15	0.18	0.18			
			W5-U	0.68	1.00	1.53	84.33	84.22	65.95	0.50	1.00	1.78	1.77			
												1.96	1.95	1.50	1.00	YES
Second	R6	Bedroom Bedroom	W6-L	0.68	1.00	0.24	85.78	85.51	49.79	0.50	0.15	0.06	0.06			
			W6-U	0.68	1.00	1.20	83.72	83.61	49.79	0.50	1.00	1.83	1.83			
												1.89	1.89	1.00	1.00	YES
Second	R7	Kitchen	W7	0.68	1.00	1.15	83.41	83.30	43.35	0.50	1.00	2.00	2.00			
												2.00	2.00	2.00	1.00	YES
Second	R8	Living Room Living Room	W8-L	0.68	1.00	1.15	87.10	86.58	64.59	0.50	0.15	0.21	0.21			
			W8-U	0.68	1.00	1.75	84.57	84.45	64.59	0.50	1.00	2.08	2.07			
												2.29	2.28	1.50	1.00	YES
Second	R9	Living Room Living Room	W9-L	0.68	1.00	1.16	87.11	86.53	63.09	0.50	0.15	0.22	0.22			
			W9-U	0.68	1.00	1.76	84.57	84.43	63.09	0.50	1.00	2.14	2.14			
												2.36	2.36	1.50	1.00	YES
Second	R10	Kitchen	W10	0.68	1.00	1.15	83.40	83.22	43.00	0.50	1.00	2.01	2.01			
												2.01	2.01	2.00	1.00	YES
Second	R11	Bedroom Bedroom	W11-L	0.68	1.00	0.24	85.79	85.36	50.73	0.50	0.15	0.06	0.06			
			W11-U	0.68	1.00	1.20	83.71	83.53	50.73	0.50	1.00	1.80	1.79			
												1.85	1.85	1.00	1.00	YES
Second	R12	Living Room Living Room	W12-L	0.68	1.00	1.01	86.89	86.10	66.07	0.50	0.15	0.18	0.18			
			W12-U	0.68	1.00	1.53	84.31	84.12	66.07	0.50	1.00	1.77	1.77			
												1.95	1.95	1.50	1.00	YES
Second	R13	Kitchen Kitchen	W13-L	0.68	1.00	1.01	86.89	85.98	26.67	0.50	0.15	0.45	0.44			
			W13-U	0.68	1.00	1.53	84.31	84.08	26.67	0.50	1.00	4.39	4.38			
												4.84	4.82	2.00	1.00	YES
Second	R14	Bedroom Bedroom	W14-L	0.68	1.00	0.24	85.79	85.33	49.42	0.50	0.15	0.06	0.06			
			W14-U	0.68	1.00	1.20	83.71	83.52	49.42	0.50	1.00	1.84	1.84			
												1.90	1.90	1.00	1.00	YES
Second	R15	Kitchen	W15	0.68	1.00	1.15	83.40	83.30	39.68	0.50	1.00	2.18	2.18			
												2.18	2.18	2.00	1.00	YES
Second	R16	Living Room	W16-L	0.68	1.00	1.17	87.14	86.35	64.33	0.50	0.15	0.22	0.21			
		Living Room	W16-U	0.68	1.00	1.76	84.57	84.44	64.33	0.50	1.00	2.10	2.10			
		Living Room	W17-L	0.68	1.00	0.24	86.21	86.20	64.33	0.50	0.15	0.04	0.04			
		Living Room	W17-U	0.68	1.00	1.19	84.08	84.08	64.33	0.50	1.00	1.41	1.41			
											3.76	3.76	1.50	1.00	YES	
Third	R1	Living Room	W1-L	0.68	1.00	0.24	80.73	80.73	59.08	0.50	0.15	0.04	0.04			
		Living Room	W1-U	0.68	1.00	1.20	68.08	68.08	59.08	0.50	1.00	1.26	1.26			
		Living Room	W18-L	0.68	1.00	1.17	83.60	83.60	59.08	0.50	0.15	0.22	0.22			
		Living Room	W18-U	0.68	1.00	1.77	68.58	68.58	59.08	0.50	1.00	1.86	1.86			
											3.39	3.39	1.50	1.00	YES	
Third	R2	Kitchen	W2	0.68	1.00	1.15	67.09	67.09	29.32	0.50	1.00	2.38	2.38			
												2.38	2.38	2.00	1.00	YES
Third	R3	Bedroom Bedroom	W3-L	0.68	1.00	0.24	80.48	80.48	52.83	0.50	0.15	0.05	0.05			
			W3-U	0.68	1.00	1.20	67.97	67.97	52.83	0.50	1.00	1.40	1.40			
												1.45	1.45	1.00	1.00	YES
Third	R4	Kitchen Kitchen	W4-L	0.68	1.00	1.01	86.40	86.40	25.47	0.50	0.15	0.47	0.47			
			W4-U	0.68	1.00	1.53	80.36	80.36	25.47	0.50	1.00	4.38	4.38			
											4.85	4.85	2.00	1.00	YES	

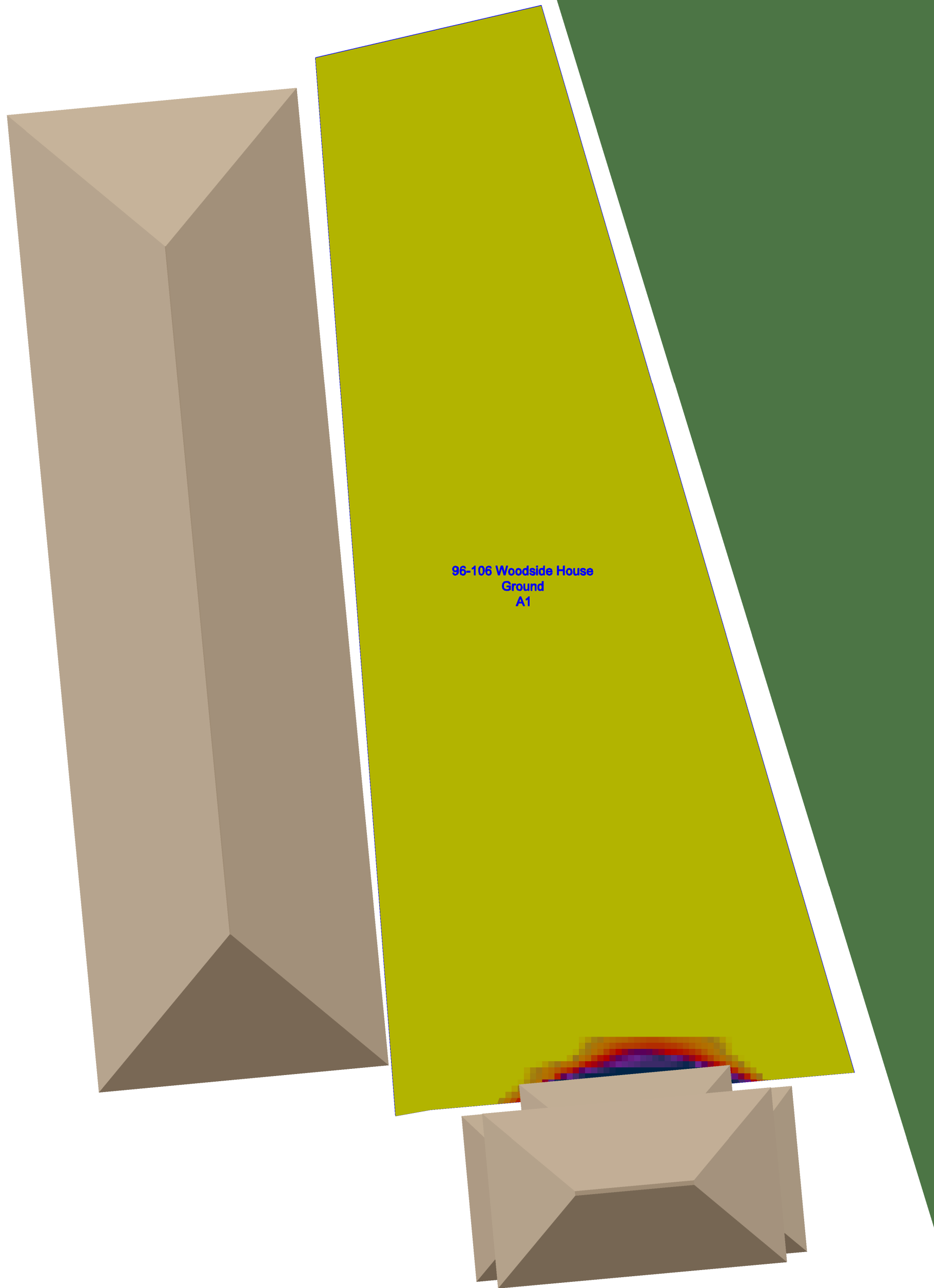
Project Name: New Deck Car Park, Campus West, WGC  
Project No.: 6480-02  
Report Title: Average Daylight Factor - Neighbour Analysis  
Date: 04/07/2021

Floor Ref.	Room Ref.	Room Use.	Window Ref.	Glass Transmittance	Maintenance Factor	Glazed Area	Clear Sky Angle Existing	Clear Sky Angle Proposed	Room Surface Area	Average Surface Reflectance	Below Working Plane Factor	ADF Existing	ADF Proposed	Req'd Value	Pr/Ex	Meets BRE Criteria
Third	R5	Living Room	W5-L	0.68	1.00	1.01	86.41	86.41	65.95	0.50	0.15	0.18	0.18	1.50	1.00	YES
		Living Room	W5-U	0.68	1.00	1.53	80.36	80.36	65.95	0.50	1.00	1.69	1.69			
												1.87	1.87			
Third	R6	Bedroom	W6-L	0.68	1.00	0.24	80.71	80.71	49.79	0.50	0.15	0.05	0.05	1.00	1.00	YES
		Bedroom	W6-U	0.68	1.00	1.20	68.06	68.06	49.79	0.50	1.00	1.49	1.49			
												1.54	1.54			
Third	R7	Kitchen	W7	0.68	1.00	1.15	67.08	67.08	43.35	0.50	1.00	1.61	1.61	2.00	1.00	YES
												1.61	1.61			
Third	R8	Living Room	W8-L	0.68	1.00	1.15	83.19	83.19	64.59	0.50	0.15	0.20	0.20	1.50	1.00	YES
		Living Room	W8-U	0.68	1.00	1.75	68.30	68.30	64.59	0.50	1.00	1.68	1.68			
												1.88	1.88			
Third	R9	Living Room	W9-L	0.68	1.00	1.15	83.19	83.19	63.09	0.50	0.15	0.21	0.21	1.50	1.00	YES
		Living Room	W9-U	0.68	1.00	1.75	68.30	68.30	63.09	0.50	1.00	1.72	1.72			
												1.92	1.92			
Third	R10	Kitchen	W10	0.68	1.00	1.15	67.07	67.07	43.00	0.50	1.00	1.62	1.62	2.00	1.00	YES
												1.62	1.62			
Third	R11	Bedroom	W11-L	0.68	1.00	0.24	80.69	80.69	50.73	0.50	0.15	0.05	0.05	1.00	1.00	YES
		Bedroom	W11-U	0.68	1.00	1.20	68.05	68.05	50.73	0.50	1.00	1.46	1.46			
												1.51	1.51			
Third	R12	Living Room	W12-L	0.68	1.00	1.01	86.27	86.27	66.07	0.50	0.15	0.18	0.18	1.50	1.00	YES
		Living Room	W12-U	0.68	1.00	1.53	79.71	79.71	66.07	0.50	1.00	1.68	1.68			
												1.86	1.86			
Third	R13	Kitchen	W13-L	0.68	1.00	1.01	86.27	86.27	26.67	0.50	0.15	0.44	0.44	2.00	1.00	YES
		Kitchen	W13-U	0.68	1.00	1.53	79.71	79.71	26.67	0.50	1.00	4.15	4.15			
												4.60	4.60			
Third	R14	Bedroom	W14-L	0.68	1.00	0.24	80.69	80.69	49.42	0.50	0.15	0.05	0.05	1.00	1.00	YES
		Bedroom	W14-U	0.68	1.00	1.20	68.05	68.05	49.42	0.50	1.00	1.50	1.50			
												1.55	1.55			
Third	R15	Kitchen	W15	0.68	1.00	1.15	67.07	67.07	39.68	0.50	1.00	1.75	1.75	2.00	1.00	YES
												1.75	1.75			
Third	R16	Living Room	W16-L	0.68	1.00	1.17	83.21	83.21	64.33	0.50	0.15	0.21	0.21	1.50	1.00	YES
		Living Room	W16-U	0.68	1.00	1.76	68.30	68.30	64.33	0.50	1.00	1.70	1.70			
		Living Room	W17-L	0.68	1.00	0.24	80.95	80.95	64.33	0.50	0.15	0.04	0.04			
		Living Room	W17-U	0.68	1.00	1.19	68.28	68.28	64.33	0.50	1.00	1.14	1.14			
												3.08	3.08			

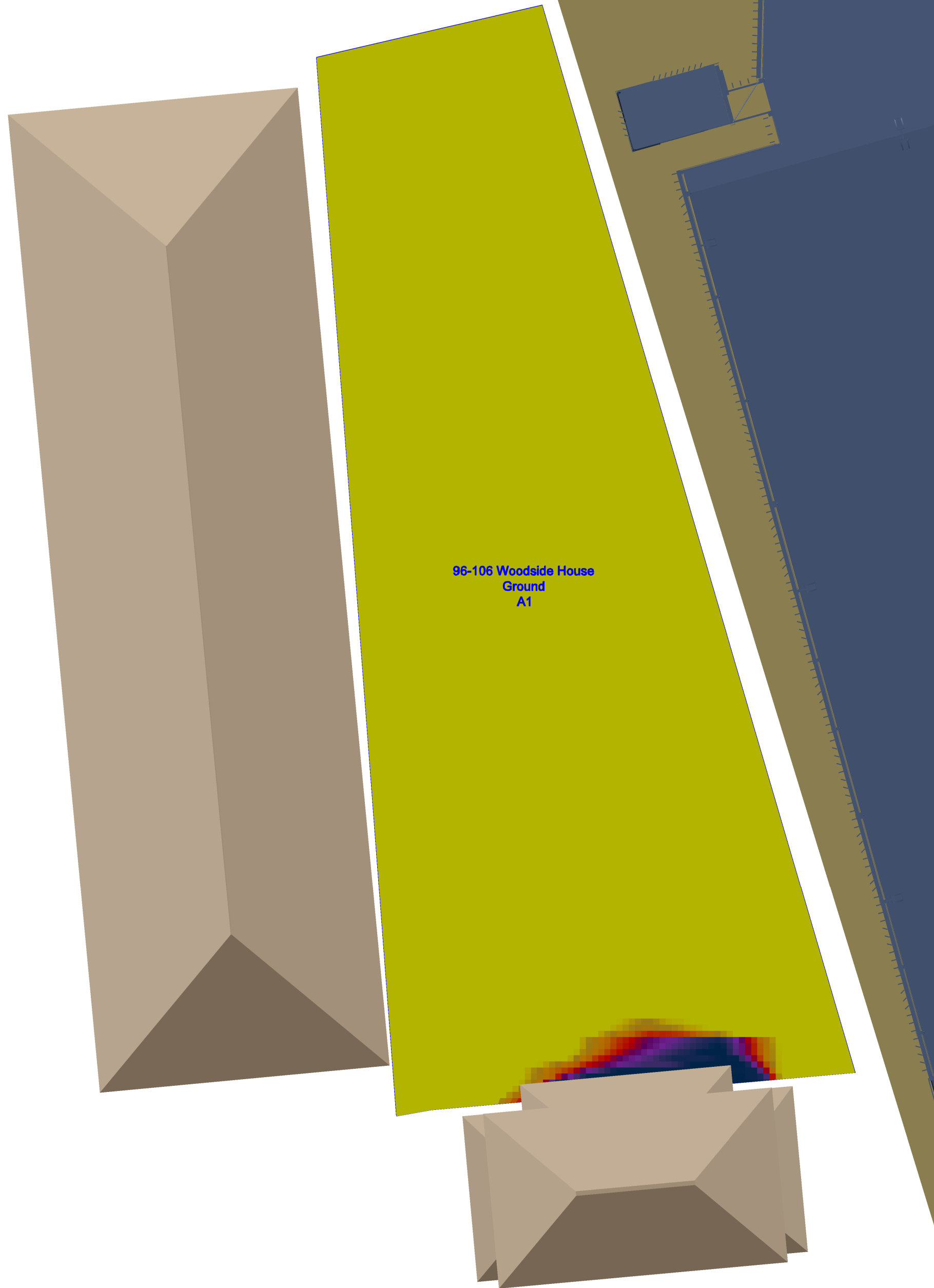
# Appendix 6

## 2-hr Sunlight Contour Plans for Neighbouring Amenity Areas

Ground Floor  
Exisitng



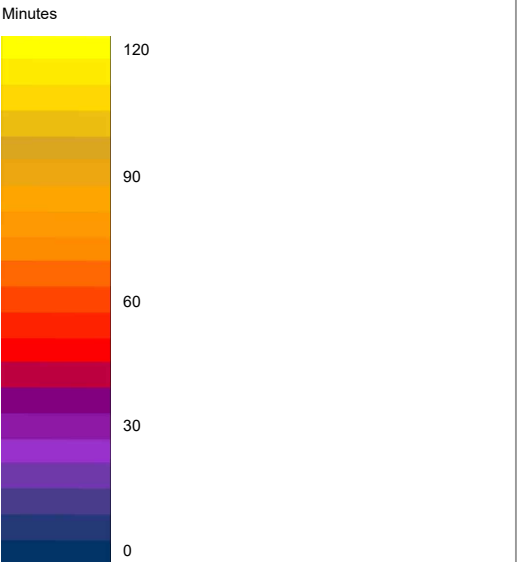
Ground Floor  
Proposed



NOTES:  
No dimensions are to be scaled from this drawing.  
All dimensions are to be checked on site, where  
discrepancy occurs between specification and  
drawings the supervising officer must be notified.

Analysis  
Produced using Walktram Tools  
MBS Survey Software Ltd (www.mbs-software.co.uk)  
Existing Model & Surrounding Model  
Models derived from 3d terrestrial laser scan survey  
pointcloud.  
Proposed Model  
Campus west\_ Proposed Model - Planning - 3D View.dwg  
Received 02.07.2021

KEY  
Existing Area receiving more  
than two hours of sunlight  
on 21st March  
Proposed Area receiving more  
than two hours of sunlight  
on 21st March



REV:	NOTES:	DRWN:	DATE:

**BLDA**consultancy  
PROVIDING IN DEPTH KNOWLEDGE FOR THE CONSTRUCTION INDUSTRY

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Tel: 0207 838 555  
Email: consultancy@blda.co.uk

CLIENT:  
Welwyn Hatfield Borough Council

PROJECT:  
New Deck Car Park,  
Campus West,  
Welwyn Garden City

DRAWING TITLE:  
2hr Sunlight to Amenity  
Existing & Proposed

SCALE @ A1: <b>1:100</b>	DATE: 04.07.21	DRAWN: MBS
	CHECKED: DW	

DRAWING NUMBER: 6486-01-09	REV: •
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# Appendix 7

Photographic Survey of Site  
and Neighbouring Properties

Site





Woodside House 96-106





Woodside House 107-110





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