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DAYLIGHT & SUNLIGHT REPORT

Avondale Drive Estate
Hayes, London UB3 3PP

Our Ref: 4900

1 December 2021

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Report details

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Date of issue: 01/12/21

1 Introduction

- 1.1.1 This daylight and sunlight report has been prepared by eb7 in support of a Hybrid Planning Application submitted to the Hillingdon Council by the Applicant, London Borough of Hillingdon for the regeneration of the Avondale Drive Estate, Hayes, London UB3 3PP (hereafter referred to as 'the Site').
- 1.1.2 This report should be read in conjunction with other supporting documents submitted with the planning application, including the Planning Statement and Development Specification Statements prepared by Savills and the Design and Access Statement prepared by PTE which explain the Proposed Development in more detail and relate it to the surrounding context and planning policy framework for the Site.
- 1.1.3 We, eb7 have been instructed to assess the effect of proposed development at the Avondale Drive Estate on daylight and sunlight to the existing surrounding properties and neighbouring amenity spaces as well as daylight and sunlight within the proposal itself. These assessments consider the latest PTE architects proposals dated November 2021.
- 1.1.4 The current Hybrid Planning Application comprises the following:
- "Development in outline (with all matters reserved) for residential floorspace (Class C3) to comprise: demolition of all existing buildings and structures; erection of new buildings; new pedestrian and vehicular accesses; associated amenity space, open space, landscaping; car and cycle parking spaces; plant, refuse storage, servicing area and other works incidental to the proposed development; and*
- Detailed planning consent for Block A comprising 30 residential units (Class C3); new pedestrian access; associated amenity space and landscaping; cycle parking, refuse storage, and other associated infrastructure."*
- 1.1.5 The methodology and criteria used for these assessments is provided by Building Research Establishment's (BRE) guidance 'Site layout planning for daylight and sunlight: A guide to good practice' (BRE 209 2nd edition, 2011).
- 1.1.6 In order to carry out an assessment, we have generated a 3D computer model (Test Environment) of the existing site, the key surrounding properties and the proposed scheme. Using this model and our specialist software, we have calculated the daylight and sunlight levels in both the existing and proposed conditions for the relevant neighbouring buildings.
- 1.1.7 In this case, for our technical assessments we have been instructed to consider 2 scheme scenarios for our daylight and sunlight testing. Firstly, a Maximum Parameter Scheme which provides a maximum design envelope and thus a 'worst- case' condition in terms of daylight and sunlight amenity. Secondly, an Illustrative Masterplan Scheme, which represents a refined / articulated scheme which is more

likely to be built out. These schemes include the Detailed First Phase (Phase 1A) which is fixed across both scenarios and are illustrated in our plots within Appendix 1.

- 1.1.8 As well as considering the daylight and sunlight to neighbouring properties, we have also quantified the overshadowing effects to neighbouring amenity areas, again considering both the existing and proposed conditions.
- 1.1.9 As the proposed development will include residential accommodation, the daylight and sunlight to rooms within the proposal has also been considered. Our detailed internal assessments for this application are though limited to the detailed element of the scheme known as Phase 1A as the remaining Phases 1B & 2 are limited to outline at this stage. In addition to this, overshadowing to proposed amenity spaces within the scheme has been assessed.
- 1.1.10 The numerical criteria suggested within the BRE guidelines has been applied to each of the assessments mentioned above. It is important to note that these guidelines are not a rigid set of rules, but are advisory and need to be applied flexibly according to the specific context of a site.

2 Guidance

2.1 Daylight & sunlight for planning

'Site layout planning for daylight and sunlight: A guide to good practice', BRE 2011

- 2.1.1 The Building Research Establishment (BRE) Report 209, *'Site layout planning for daylight and sunlight: A guide to good practice'*, is the reference document used by most local authorities for assessing daylight and sunlight in relation to new developments. Commonly referred to as 'the BRE guidelines', it provides various testing methodologies to calculate the potential light levels received by neighbours of a development site and provided within proposed new development.
- 2.1.2 The guidance given within the BRE document makes direct reference to the British Standard BS8206 Part 2: Code of Practice for Daylighting (2008) and the CIBSE (Chartered Institute of Building Services Engineers) guide LG10: Daylighting – a guide for designers (2014). It is intended to be used in conjunction with these guides as they provide more detailed background to the assessments and methodologies used for assessment of proposed dwellings.
- 2.1.3 The European Standard EN17037 was published in 2018 and is intended to replace the British Standard BS8206 Part 2: Code of Practice for Daylighting. Current policy and guidance from most planning authorities still refers to the BRE guide and its methodologies, which in turn are based upon the BS8206 document. As such, we continue to base our daylight and sunlight assessments for proposed new dwellings on the BRE, British Standard and CIBSE guidance until planning policy dictates otherwise.

Daylight and Sunlight to Neighbouring Properties

Detailed daylight assessments

- 2.1.4 The guidance outline three detailed methods for calculating daylight: the Vertical Sky Component (VSC), the No-Sky Line (NSL) and the Average Daylight Factor (ADF).
- 2.1.5 The VSC and NSL are primarily used for the assessment of existing buildings, while the ADF test is generally recommended for proposed rather than existing dwellings. The ADF test may sometimes be useful as a supplementary analysis for existing buildings, particularly newer ones, and a number of local authorities request this as a standard measurement for impact assessments. It can help in judging whether impacts to daylight, which might otherwise be deemed 'noticeable', are nonetheless acceptable if affected rooms continue to receive levels of daylight sufficient for their use..
- 2.1.6 Where new developments are proposed on adjacent properties, but not yet built or occupied, the BRE guide suggests using the ADF test rather than the VSC and NSL tests. The ADF test will have been used during the design of these apartments to

establish whether a suitable amount of daylight is provided. The ADF test is therefore used to determine the continuing acceptability of daylight conditions within them.

2.1.7 The BRE guide gives the following in this regard: -

"Appendix F – paragraph F8

However, there are some situations where meeting a set ADF target value with the new development in place could be appropriate as a criterion for loss of light:

(ii) as a special case of (i), where the existing building is proposed and not built. A typical situation might be where the neighbouring building has received planning permission but not yet been constructed."

2.1.8 The VSC test measures the amount of sky that is visible to a specific point on the outside of a property, which is directly related to the amount of daylight that can be received. It is measured on the outside face of the external walls, usually at the centre point of a window.

2.1.9 The NSL test calculates the distribution of daylight within rooms by determining the area of the room at desk / work surface height (the 'working plane') which can and cannot receive a direct view of the sky and hence 'sky light'. The working plane height is set at 850mm above floor level within residential property.

2.1.10 For the above methods, the guidance suggests that existing daylight may be noticeably affected by new development if: -

- Windows achieve a VSC below 27% and are reduced to less than 0.8 times their former value; and / or;
- Levels of NSL within rooms are reduced to less than 0.8 times their former values.

2.1.11 Where rooms are greater than 5m in depth and lit from only one side, the guidance recognises that *"a greater movement of the no sky-line may be unavoidable"* (page 8, paragraph 2.2.10).

Daylight to new buildings

2.1.12 The ADF method calculates the average illuminance within a room as a proportion of the illuminance available to an unobstructed point outdoors under a sky of known luminance and luminance distribution. This is the most detailed of the daylight calculations and considers the physical nature of the room behind the window, including window transmittance and surface reflectivity. The BRE guidance references the former British Standard BS8206 Part 2 and sets the following recommended ADF levels for habitable room uses: -

Bedrooms	1% ADF
Living rooms & dining rooms	1.5% ADF
Kitchens	2% ADF

- 2.1.13 For multi-purpose living / kitchen / diner arrangements the higher 2% 'kitchen' target can be difficult to achieve due to the depth of internal space. In such cases, it is generally accepted that the 1.5% target for living rooms be used instead as this represents the predominant use of the space.
- 2.1.14 Where parts of the proposed hybrid planning application are outline parameters, it has not been possible to calculate the ADFs as the rooms and windows are not yet defined. These outline blocks will help to inform and control the detailed design of the later phases which will be progressed through later reserved matters applications.
- 2.1.15 Therefore, for the outline areas of the scheme, we have undertaken a VSC façade analysis to measure the daylight potential at instances across the proposed facades. Similar to the standard VSC assessment set out above, this calculates amount of visible sky available at points on the façade of the building to confirm the potential daylight levels for future units.

Detailed sunlight assessments

- 2.1.16 For sunlight, the Annual Probable Sunlight Hours (APSH) test calculates the percentage of probable hours of sunlight received by a window or room over the course of a year.
- 2.1.17 In assessing sunlight effects to existing properties surrounding a new development, only those windows orientated within 90° of due south and which overlook the site require assessment. The main focus is on living rooms, with bedrooms and kitchens deemed less important.
- 2.1.18 The British Standard guidance BS8206 part 2 advises that the degree of satisfaction for occupants is related to the expectation of sunlight, so if a room is north facing, or if the building is in a densely-built urban area, the absence of sunlight is more acceptable than where its exclusion seems arbitrary.

"The degree of satisfaction is related to the expectation of sunlight. If a room is necessarily north facing or if the building is in a densely-built urban area, the absence of sunlight is more acceptable than when its exclusion seems arbitrary."

- 2.1.19 The guidelines suggest that the main living rooms within new buildings should achieve at least 25% of annual sunlight hours, with 5% during the winter period. For neighbouring buildings, the guide suggests that occupiers will notice the loss of sunlight if the APSH to main living rooms is both less than 25% annually (with 5% during winter) and that the amount of sunlight, following the proposed development, is reduced by more than 4%, to less than 0.8 times its former value.

Sunlight to gardens and outdoor spaces

- 2.1.20 Where sunlight to an amenity space may be affected by new development, the BRE guidelines recommend that an overshadowing assessment is conducted. The key analysis is the '2hr sun on ground' test, which quantifies the proportion of an amenity area (e.g. rear gardens, parks and playing fields, public squares etc.) receiving at least

2hrs of sun on the 21st of March.

- 2.1.21 The BRE guidance recognises that different types of amenity space may have different sunlighting requirements. Generally, the guidelines suggest that if at least 50% of an amenity area receives at least 2hrs of sun on 21st March, then it is likely to be adequately lit throughout the year. If an existing neighbouring open space receives less than 50%, then the guidelines suggest that the loss in sunlight may be noticeable if it is reduced below 0.8 times its former value.

3 Application of the guidance

3.1 Scope of assessment

Impact analysis for neighbouring buildings

- 3.1.1 The BRE guidelines advise that, when assessing any potential effects on surrounding properties, only those windows and rooms that have a 'reasonable expectation' of daylight and sunlight need to be considered. At paragraph 2.2.2 it states: -

"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed."

- 3.1.2 Our assessments have therefore consider focussed on the neighbouring residential properties, which the BRE recognises have the highest expectation for natural light. We have tested the impact on the main rooms in each residential property and ignored non-habitable space (e.g. staircases, hallways, bathrooms, toilets, stores etc.) as per BRE guidance.

Assessment for proposed accommodation

- 3.1.3 Our assessment has considered all of the proposed residential units within the scheme. The daylight assessment considers all of the main habitable rooms (bedrooms, living rooms, kitchens etc.), toilets, hallways and staircases are not considered habitable use.
- 3.1.4 For sunlight the BRE acknowledges that windows with a predominantly northern orientation are unlikely to satisfy its targets and that main living rooms are most important. Therefore, our sunlight assessment focusses on the relevant living areas with windows facing within 90° of due south only.

"The overall sunlighting potential of a large residential development may be initially assessed by counting how many dwellings have a window to a main living room facing south, east or west. The aim should be to minimise the number of dwellings whose living rooms face solely north, north east or north west, unless there is some compensating factor such as an appealing view to the north."

3.2 Application of the numerical criteria

- 3.2.1 The opening paragraphs of the BRE guidelines state:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as 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”.

3.2.2 It is therefore very important to apply the BRE guidance sensibly and flexibly, with careful consideration of the specific site context. Its numerical targets theoretically apply to any built environment, from city centres to rural villages. However, in more tightly constrained environments, achieving the default BRE targets can be very challenging and conflict with other beneficial factors of site layout design.

3.2.3 With the above in mind, rigid adherence to the BRE in certain situations could easily result in an inappropriate form of development. In which case it may be appropriate to adopt lower target values more appropriate to the location concerned. This is acknowledged in the BRE guidance at paragraph 2.2.3 (page 7):

“Note that numerical values given here are purely advisory. Different criteria maybe used, based on the requirements for daylighting in an area viewed against other site layout constraints.

3.2.4 For buildings that neighbour a new development, the guidance suggests that daylight will be adversely affected by the development, if either; its windows achieve a VSC below 27% and have their levels reduced to less than 0.8 times their former value, or the levels of NSC within rooms are reduced to less than 0.8 times their former values.

3.2.5 Some recent planning decisions by the Mayor of London¹ and Planning Inspectorate² have suggested that retained levels of daylight (VSC) between 10% and 20% can be considered acceptable for residential properties neighbouring new developments in Central London. Further to these decisions, recent guidance from the Mayor of London (Draft SPG ‘Good Quality Homes for all Londoners’) suggests that residential properties in Central London can typically expect VSC values of between 13% and 18%. We have therefore assessed the severity of impacts to the neighbouring residential properties in light of this guidance.

Appendix F – Setting alternative target values

3.2.6 In certain situations, the BRE guidance suggests that alternative target values may be set for the assessment of daylight and sunlight to neighbouring buildings.

“F1 Sections 2.1, 2.2 and 2.3 give numerical target values in assessing how much light from the sky is blocked by obstructing buildings. These values are purely advisory and different targets may be used based on the special requirements of

¹ Monmouth House, Islington (Ref.: D&P/3698/02)

² Whitechapel Estate (Ref: APP/E5900/W/17/3171437)

the proposed development or its location. Such alternative targets may be generated from the layout dimensions of existing development, or they may be derived from considering the internal layout and daylighting needs of the proposed development itself."

"F5. A similar approach may be adopted in cases where an existing building has windows that are unusually close to the site boundary and taking more than their fair share of light. Figure F3 shows an example, where side windows of an existing building are close to the boundary. To ensure that new development matches the height and proportions of existing buildings, the VSC and APSH targets for these windows could be set to those for a 'mirror-image' building of the same height and size, an equal distance away on the other side of the boundary."

- 3.2.7 As suggested above, alternative target values may be set where the context of development is of a dense urban scale, where new buildings need to match the height and proportions of other existing buildings or where neighbouring buildings are set very close to the boundary.

Assessment of dwellings with balconies

- 3.2.8 Care must be taken when assessing the impact of a development proposal upon neighbouring properties that have been provided with external overhanging or recessed balconies. These balconies are intended to provide additional outdoor amenity to the apartments, but they also inhibit the access to/potential for daylight and sunlight. The BRE guidance gives the following statements in this regard:

"2.2.11 - Existing windows with balconies above them typically receive less daylight. Because the balcony cuts out light from the top part of the sky, even a modest obstruction opposite may result in a large impact on the VSC, and on the area receiving direct skylight (NSC). One way to demonstrate this would be to carry out an additional calculation of the VSC and the area receiving direct skylight for both existing and proposed situations without the balcony in place."

"2.2.12 - A larger relative reduction in VSC may also be unavoidable if the existing window has projecting wings on one or both sides of it, or if it is recessed into the building so that it is obstructed on both sides as well as above."

- 3.2.9 It is therefore often relevant and necessary to conduct assessments of the surrounding properties with their balconies omitted, so that the impact upon the potential for good daylight and sunlight can be fully understood. Full results of these assessments can be found in the appendix.

4 Planning Policy

4.1.1 We have considered local, regional and national planning policy relating to daylight and sunlight. In general terms, planning policy advises that new development will only be permitted where it is shown not to cause unacceptable loss of daylight or sunlight amenity to neighbouring properties.

4.1.2 The need to protect amenity of neighbours is echoed within recent publications from the Mayor of London and the Secretary of State for Housing, Communities and Local Government. Although, these documents also stress that current guidance needs to be used flexibly where developments are located in urban areas and intend to achieve higher densities. Specifically, these documents suggest that the nationally applicable criteria given within the BRE guidance needs to be applied in consideration of the development's context.

4.2 London Borough of Hillingdon Local Plan: Part 2 – Development Management Policies (Adopted January 2020)

4.2.1 Paragraph 5.41 of the Local Plan Part 2 states that:

"The Council will aim to minimise the impact of the loss of daylight and sunlight and unacceptable overshadowing caused by new development on habitable rooms, amenity space and public open space. The Council will also seek to ensure that the design of new development optimises the levels of daylight and sunlight. The Council will expect the impact of the development to be assessed following the methodology set out in the most recent version of the Building Research Establishments (BRE) "Site layout planning for daylight and sunlight: A guide to good practice".

Local Plan: Part 2

Policy DMHB 11: Design of New Development

"B) Development proposals should not adversely impact on the amenity, daylight and sunlight of adjacent properties and open space.

4.3 The London Plan – The Mayor of London (March 2021)

4.3.1 The Mayor of London's New London Plan gives the following: -

Policy D6 Housing quality and standards

"C. Housing development should maximise the provision of dual aspect dwellings and normally avoid the provision of single aspect dwellings. A single aspect dwelling should only be provided where it is considered a more appropriate design solution to meet the requirements of Part B in Policy D3 Optimising site capacity through the design-led approach than a dual aspect dwelling, and it can be demonstrated that it will have adequate passive ventilation, daylight and privacy, and avoid overheating."

"D. The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context, whilst avoiding overheating, minimising overshadowing and maximising the usability of outside amenity space."

4.4 The Housing SPG – The Mayor of London (March 2016)

- 4.4.1 The London Plan Housing SPG confirms the flexibility that should be applied in the interpretation of the BRE guidelines having regard to the 'need to optimise capacity; and scope for the character and form of an area to change over time.'

1.3.45. Policy 7.6Bd requires new development to avoid causing 'unacceptable harm' to the amenity of surrounding land and buildings, particularly in relation to privacy and overshadowing and where tall buildings are proposed. An appropriate degree of flexibility needs to be applied when using BRE guidelines to assess the daylight and sunlight impacts of new development on surrounding properties, as well as within new developments themselves. Guidelines should be applied sensitively to higher density development, especially in opportunity areas, town centres, large sites and accessible locations, where BRE advice suggests considering the use of alternative targets. This should take into account local circumstances; the need to optimise housing capacity; and scope for the character and form of an area to change over time.

1.3.46 The degree of harm on adjacent properties and the daylight targets within a proposed scheme should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London. Decision makers should recognise that fully optimising housing potential on large sites may necessitate standards which depart from those presently experienced but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm.

4.5 Draft SPG 'Good Quality Homes for all Londoners' – The Mayor of London (October 2020)

- 4.5.1 The Mayor of London has produced a draft SPG which includes the following: -

C5.3 Daylight, sunlight and overshadowing

Applying BRE guidelines in relation to neighbouring homes

"Decision-makers should recognise that fully optimising housing potential on sites may necessitate standards which depart from those presently experienced, but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm.

Guidelines should be applied sensitively to higher density development, where BRE advice suggests considering the use of alternative targets. This should take into account local circumstances, the need to optimise housing capacity, and the scope for the character and form of an area to change over time.

The BRE guidelines apply nationwide, and the default numerical targets provided are purely advisory. These are based on a uniform, 25-degree development angle (vertical obstruction angle) typical of a low-rise suburban location. This corresponds to the Vertical Sky Component (VSC) target of 27 per cent cited in the guidelines. Typical development angles in a city or central urban location are considerably higher. In Central London, development angles of 40 degree or 50 degree are common and can, if well planned, deliver successful schemes. A uniform development angle of 40 degree corresponds to a VSC target of 18 per cent, and 50 degree gives a VSC target of 13 per cent. Such daylight levels have been accepted in many desirable central areas for well over a century. Module A: Optimising Site Capacity - A Design-led Approach therefore adopts a 50-degree development angle to determine offset distances.

Even with access to good levels of daylight on the outside of a building, it is possible to have low levels of daylight within a building due to design features such as small windows, recessed windows, poor placement of balconies or deep rooms. Therefore, consideration of the retained target VSC should be the principal consideration. Where this is not met in accordance with BRE guidance, it should not be less than 0.8 times its former value (which protects areas that already have low daylight levels).

Less weight should be given to the room-based measures of daylight such as 'no-sky-line' or average daylight factor as these are dependent on the design of the neighbouring property. Except in exceptional circumstances, design features of neighbouring properties (referred to above) should not hamper the development potential of a site."

Applying BRE guidelines in relation to proposed homes

"It may be possible to mitigate lower external daylight VSC levels by using design features such as larger windows, roof lights and light coloured internal and external surfaces to ensure reasonable internal daylight levels. Therefore, room based measures of daylight and sunlight are most appropriate for judging the acceptability of a proposed development, as these encourage good daylight design. Appropriate 3D modelling should be used to demonstrate acceptable levels.

BRE guidelines confirm that the acceptable minimum average daylight factor target value depends on the room use. That is 1 per cent for a bedroom, 1.5 per cent for a living room and 2 per cent for a family kitchen. In cases where one room serves more than one purpose, the minimum ADF should be that for the room type with the higher value. Notwithstanding this, the independent daylight and sunlight review states that in practice, the principal use of rooms designed as a 'living room/kitchen/dining room' is as a living room. Accordingly, it would be reasonable to apply a target of 1.5 per cent to such rooms.

The need for balconies to be a minimum depth so as to function as usable amenity space, (see C4 Dwelling Space Standards), can have significant bearing on the daylight and sunlight levels reaching nearby windows and rooms.

Inevitably, any window or room under a balcony will receive much lower daylight and sunlight levels, although the adjacent balcony space will typically have excellent levels of daylight and sunlight amenity. Given this, the Mayor encourages boroughs to allow the daylight levels on the balcony to contribute to the ADF of the adjacent living space."

4.6 The National Planning Policy Framework - Department for Housing, Communities and Local Government (July 2021)

- 4.6.1 The latest version of the National Planning Policy Framework was issued in February 2021. The document sets out planning policies for England and how these are expected to be applied. In respect of daylight and sunlight it stresses the need to make optimal use of sites and to take a flexible approach to daylight and sunlight guidance. Para 125 States: -

11. Making effective use of land

Achieving appropriate densities

"125. Area-based character assessments, design guides and codes and masterplans can be used to help ensure that land is used efficiently while also creating beautiful and sustainable places. Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances:

c) 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).

4.7 The Whitechapel Estate (Ref: APP/E5900/W/17/3171437) - The Planning Inspectorate (2017)

- 4.7.1 In his decision to overturn the Local Authority's reasons for refusal and to grant planning permission, the inspector commented on daylight and sunlight as follows: -

"112. The figures show that a proportion of residual Vertical Sky Component ('VSC') values in the mid-teens have been found acceptable in major developments across London. This echoes the Mayor's endorsement in the pre-SPG decision at Monmouth House, Islington that VSC values in the mid-teens are acceptable in an inner urban environment. They also show a smaller proportion in the bands below 15%. Even if there were some discrepancy in the appellants' figures for this lower band at Whitechapel Central, which is disputed, the VSC outcomes for the appeal proposal would in general be very similar to

those of the other major schemes. The appeal proposal would therefore appear to be in compliance with the LP as amplified by the SPG and as it is being interpreted by the Mayor. The GLA responses to the planning application did not raise any concern about neighbours' amenity."

"113. I acknowledge that a focus on overall residual levels could risk losing sight of individual problem areas. It is accepted that light is only one factor in assessing overall levels of amenity, but I consider that the trade-off with other factors, such as access to public transport or green space, is likely to be of more relevance to an occupier of new development than to an existing neighbour whose long-enjoyed living conditions would be adversely affected by new buildings. However, I also consider that Inner London is an area where there should generally be a high expectation of development taking place. This is particularly so in the case of the appeal site, where the WVM and the OAPF have flagged the desirability of high density development. Existing residents would in my view be prepared for change and would not necessarily expect existing standards of daylight and sunlight to persist after development."

"125. I conclude that the proposal would result in some significant individual reductions in daylight and sunlight levels, but that this is almost unavoidable in achieving the policy requirement for high density development in a confined urban setting. The new buildings would for the most part be comparable in height with the existing and would re-define traditional street frontages. Retained levels of daylight and sunlight would be adequate and comparable with existing and emerging urban conditions. The effects would appear very comparable with those recently allowed by the Council at Whitechapel Central. There would be minimal adverse losses of outlook and increases in overlooking. Taken as a whole, the proposal would not result in unacceptably harmful effects on living conditions and would comply with the development plan in this respect."

4.8 Tall Buildings

- 4.8.1 Under the London Borough of Hillingdon's local plan and the London Plan, where tall buildings are proposed at sites policy states that consideration should be had for the proposals to ensure that adverse impacts are not experienced in line with Policy DMHB 10: High Buildings and Structures and the London Plan Policy D9.
- 4.8.2 Paragraph 5.33 of the Hillingdon Local Plan acknowledges that high buildings and structures are likely to have greater effect on their surroundings than other building types in terms of visual impact, impact on the transport network, microclimate and surrounding occupiers' daylight and sunlight but can offer the potential to regenerate an area and create or emphasise a point of civic or visual significance.
- 4.8.3 The Hillingdon Local Plan Part 2 - Policy DMHB 10 gives the following in respect of daylight and sunlight and tall buildings:

Local Plan: Part 2

Policy DHMB 10: High Buildings and Structures

"Any proposal for a high building or structure will be required to respond to the local context and satisfy the criteria listed below.

It should:

vi) not adversely impact on the microclimate (i.e. wind conditions and natural light) of the site and that of the surrounding areas, with particular focus on maintaining useable and suitable comfort levels in public spaces;"

- 4.8.4 The Mayor of London's London Plan provides the following in regards to tall buildings: -

London Plan (March 2021)

Policy D9: Tall Buildings

"C Development proposals should address the following impacts:

3) Environmental impact

a) wind, daylight, sunlight penetration and temperature conditions around the building(s) and neighbourhood must be carefully considered and not compromise comfort and the enjoyment of open spaces, including water spaces, around the building"

5 Sources of Information & Assumptions

- 5.1.1 A measured survey, an architect's 3D model of the scheme, parameters plan drawings, site photographs and Ordnance Survey information have all been used to create a 3D computer model of the proposed schemes in the context of the existing site and surrounding buildings.
- 5.1.2 Where survey or planning information was unavailable, the position of the neighbouring property elevations has been estimated based upon brick counts from site photographs. Window positions and dimensions used directly affect the results of all assessment methods.
- 5.1.3 We have not sought access to the surrounding properties and, unless we have been able to source floor layouts via public records, the internal configuration and floor levels have been estimated. Unless the building form dictates otherwise, we assume room depths of c. 4.2m for principal living space. Room layouts used directly affect the results of the NSL and ADF assessments.
- 5.1.4 Where possible neighbouring building use has been identified via online research, including Valuation Office Agency (VOA) searches, and/or external observation.
- 5.1.5 The full list of source of information used in this assessment is as follows: -

5.1 Survey Solutions

2D Measured Survey – Plans and Elevations

3212-LSS-ZZ-3D-X-DR-0003 - 3D-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0004 - BUILDING 1 - NORTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0005 - BUILDING 1 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0006 - BUILDING 2 - NORTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0007 - BUILDING 2 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0008 - BUILDING 3&4 - EAST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0009 - BUILDING 3&4 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0010 - BUILDING 3&4 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0011 - BUILDING 5 - EAST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0012 - BUILDING 5 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0013 - BUILDING 5 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0014 - BUILDING 6 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0015 - BUILDING 6 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0016 - BUILDING 7 - EAST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0017 - BUILDING 7 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0018 - BUILDING 8 - EAST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0019 - BUILDING 8 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0020 - BUILDING 8 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0021 - BUILDING 9 - EAST-001.dwg

3212-LSS-ZZ-ELE-X-DR-0022 - BUILDING 9 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0023 - BUILDING 9 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0024 - BUILDING 10-13 - EAST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0025 - BUILDING 10-15 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0026 - BUILDING 13-15 - WEST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0027 - BUILDING 16-18 - EAST-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0028 - BUILDING 16-18 - SOUTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0029 - SITE - NORTH-001.dwg
 3212-LSS-ZZ-ELE-X-DR-0030 - SITE - WEST-001.dwg
 3212-LSS-ZZ-EX-X-DR-0001 - SITE A-001.dwg
 3212-LSS-ZZ-EX-X-DR-0002 - SITE B-001.dwg
 EB7 EXPORT_3212-LSS-ZZ-3D-X-M3-X-0001-001.dwg
 Received 21/10/21

5.2 PTE Architects

2D drawings – Parameter Plans

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
 Received 04/11/21

2D drawings – Detailed Scheme (Phase 1A)

AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project_detached - Floor Plan - Block BCD - Ground Floor.dwg
 AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project_detached - Floor Plan - Block BCD - Level 01.dwg
 AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project_detached - Floor Plan - Block BCD - Level 02.dwg
 AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project_detached - Floor Plan - Block BCD - Level 03.dwg
 AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project_detached - Floor Plan - Block BCD - Level 04.dwg
 AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project_detached - Floor Plan - Block BCD - Level 05.dwg
 Received 21/10/21

3D Model – Detailed Scheme (Phase 1A)

AVD-PTE-ZZ-XX-M3-A-00002_Avondale Drive Project.rvt
 Received 21/10/21

5.3 Promap

Ordnance Survey map

5.4 Eb7

Site photographs

6 The Site and Proposal

- 6.1.1 The site comprises 1.04 hectares and is occupied by the existing Avondale Drive Estate ("the Site"). The estate consists of three 13-storey blocks of flats, each containing 48 units (total 144 homes). Between each tower are large covered car parking areas. To the west of the blocks is an area of garages and additional car parking.

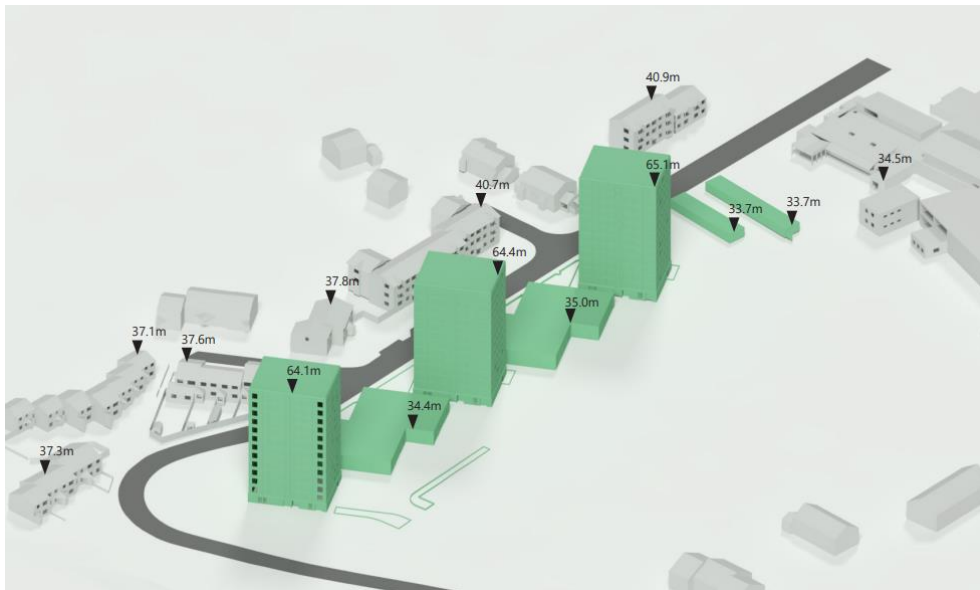


Image 1 - 3D view of the existing site and the nearest neighbouring properties

- 6.1.2 The Estate is bound by Avondale Drive to the south and Abbotsway Way to the east. Pedestrian access is provided onto Abbotsway Way from the estate. Both pedestrian and vehicular access is provided onto Avondale Drive to the south. Minet Junior School is located directly to the west, directly to the north of the estate is Hitherboom Park, which forms part of a Site of Nature Conservation Importance (Borough Grade 1). To the south of the estate is low rise housing.
- 6.1.3 This Application is being submitted as a hybrid proposal which seeks permission for development of 240 units overall. It comprises elements in detail (the Detailed First Phase) and in outline (the Outline Area). The detailed element at Phase 1A comprises 30 units and the outline elements at Phase 1B & 2 (appearance, landscaping, layout and scale and access reserved) for the development of 210 units including car and cycle parking and open space. These elements are defined on the indicative phasing plan below.
- 6.1.4 The Detailed First Phase is being submitted in full and sits outside the outline parameters. However, the detailed design has been developed in conjunction with the outline parameters and principles to ensure overall a comprehensive approach to the redevelopment of the estate in line with LBH's vision.



Image 2 - Indicative phasing plan for the proposed scheme

- 6.1.5 The Outline Area is being submitted with all matters reserved. Notwithstanding this an illustrative scheme has been prepared across the Outline Area to demonstrate one way in which the outline components could come forward in future in line with the parameters..
- 6.1.6 Both the Outline Area and the Detailed First Phase combined form "The Avondale Drive Estate Illustrative Masterplan". This has been submitted as part of the application for indicative purposes only and is based upon the proposed parameters. It therefore sits within the envelope of development assessed as part of the application.



Image 3 - 3D view of the proposed development (Illustrative Masterplan)

- 6.1.7 For our daylight and sunlight assessments, we have considered the potential impacts

based on a Maximum Parameter Scheme defined by Parameter Plan 3 and also the Illustrative Masterplan Scheme which is purely indicative for the Outline Area but comprises the Detailed First Phase as a fixed element and therefore serves as a demonstration of how the regeneration of the estate could be delivered in the future in line with the parameter plans.

7 Assessment results

7.1 Daylight and sunlight to neighbouring buildings

- 7.1.1 Full results of the daylight and sunlight assessments are attached within Appendix 2. Drawings to show the existing and proposed buildings in the context of the neighbouring properties as well as window maps showing individual window references are attached within Appendix 1.
- 7.1.2 Our assessment has considered all of the closest neighbouring residential properties with windows overlooking the proposed development. These are shown on the following image: -



Image 4 - Plan of the existing site and the neighbouring properties considered for daylight and sunlight

- | | |
|------------------------------------|------------------------------------|
| 1. Minet Infant and Junior School | 2. 1 – 17 Clivesdale Drive |
| 3. 66 Gade Close | 4. 1 – 24 Gade Close |
| 5. 29 – 33 Avondale Drive (odds) | 6. 127 – 133 Avondale Drive (odds) |
| 7. 113 – 125 Avondale Drive (odds) | 8. 135 – 143 Avondale Drive (odds) |
- 7.1.3 The following assessments have considered 2 scenarios, a Maximum Parameter scheme and an Illustrative Masterplan Scheme. The illustrative Masterplan is a defined scheme which has carefully considered the scale and massing of the scheme whilst the Maximum Parameter scheme illustrates a maximum extents which is a monolithic block massing.

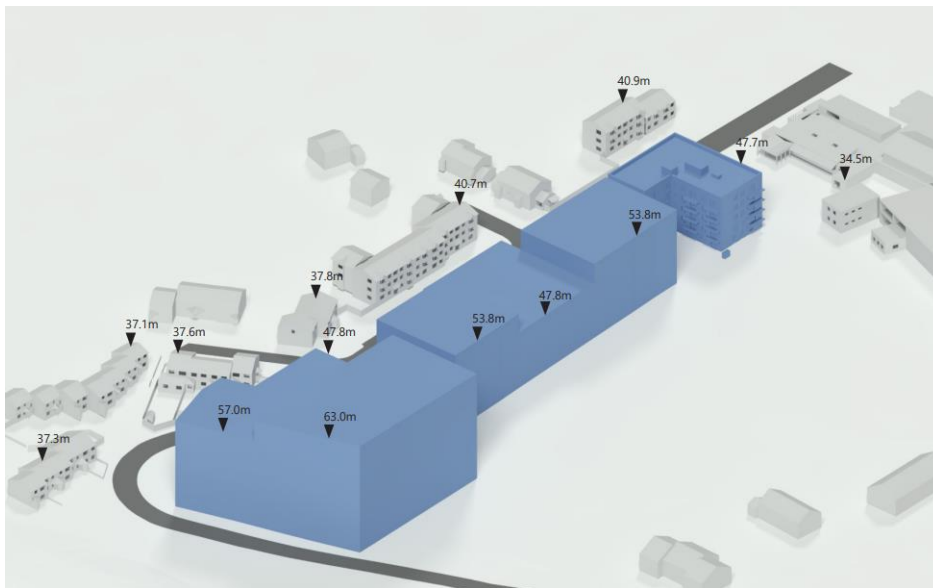


Image 5 - Maximum Parameter scheme, 3D view



Image 6 - Illustrative Masterplan Scheme, 3D view

- 7.1.4 The maximum parameters are unlikely to be delivered to the full extents of the development zone as block separation distances and other planning considerations would need to be adhered to therefore the Illustrative Masterplan presents a more 'real world' picture of the daylight and sunlight amenity to the neighbouring properties and within.
- 7.1.5 It should be noted that the Maximum Parameter Scheme is subject to an upper tolerance of +1m. This is to allow for roof plant or any other incidental elements which may exceed the current roof levels set out above. Given the incremental amount, it is unlikely to result in a material shift from the daylight/sunlight effects based on the current proposals thus we have not considered the potential differential in this regard.

Minet Infant and Junior School



Image 7 - The Minet Infant and Junior School, Eastern elevations

- 7.1.6 This primary school is arranged across 1 to 2-storeys and adjoins the Avondale Drive Estate to the west. There are a number of windows within the eastern elevations that will overlook the Phase 1 element of the proposals and will enjoy unusually high levels of daylight in their current condition.
- 7.1.7 Whilst the neighbouring school is non-residential, the BRE guidelines may also be applied to certain non-domestic neighbouring buildings where the occupants have a reasonable expectation of daylight, including schools therefore we have considered the potential effects to this building.

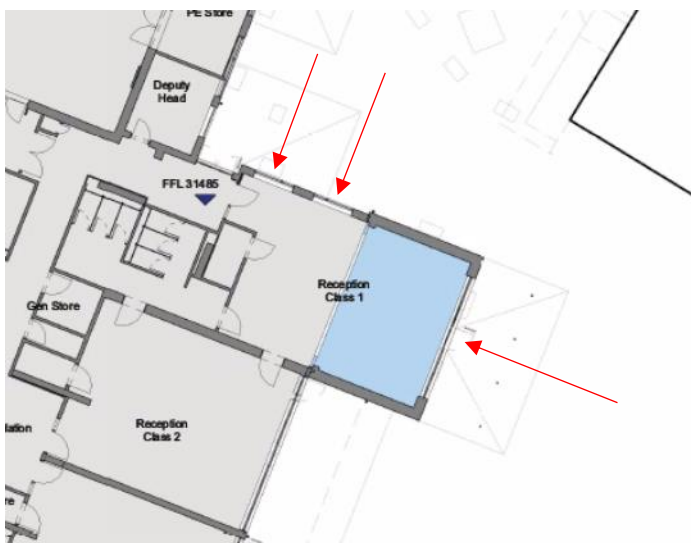


Image 8 - Proposed extension to the infant school showing the additional glazing

- 7.1.8 Our understanding of this property has been informed by planning drawings

available from the Hillingdon planning portal (REF: 2297/APP/2021/2704). Whilst consent was recently granted for the extensions and refurbishment of the existing nursery and school, we have considered the effects to the school based on the current condition as only a small portion of the infant school overlooking the site will be extended. If this extension is built out in the future, the daylight condition will only improve where additional glazing is being proposed (shown above).

Daylight – Illustrative Masterplan Scheme

- 7.1.9 Our VSC results based on the Illustrative Masterplan show that the majority of windows will retain 0.8 times their former level with the proposals in place and therefore satisfy the BRE target levels. Where effects occur below this level, these are limited to windows facing towards the scheme set beneath a canopy. As a result, these windows are reliant upon low levels sky views across the site such that any meaning development at the site would result in changes below the BRE recommendations.
- 7.1.10 Whilst there are site facing windows below the BRE guidelines, the 3 rooms served by these windows are lit by additional windows to the rear of the space and also rooflights in respect of rooms R2 & R3. As such, these effects are more of a technical deviation rather than a material alteration in light and retained daylighting levels to the rooms will remain comparable with the existing condition.
- 7.1.11 This is reflected in the NSL results where no noticeable change is recorded to the rooms in terms of daylight penetration to the space.

Daylight – Maximum Parameter Scheme

- 7.1.12 The VSC / NSL results with the Maximum Parameter scheme in place show that the effects are similar with only isolated deviations recorded to individual windows beneath the canopy and there is no noticeable shift in daylight distribution to the space.
- 7.1.13 As the effects are limited to technical deviations in regard to the VSC, and these classrooms experience no noticeable change in daylight penetration to the space, the effects are considered in line with the BRE guidelines for VSC/NSL daylight.

Sunlight – Illustrative Masterplan Scheme

- 7.1.14 As the site facing windows are within 90° of due south, we have also considered the school for sunlighting effects under the Annual Probable Sunlight Hours (APSH) criteria.
- 7.1.15 Based upon the Illustrative Masterplan scheme our results show that all rooms will either meet the BRE targets of at least 25% for total annual sunlight levels and 5% for winter, retain at least 0.8 times their former level or are limited to changes within 4%. There will be no material effect on sunlight as a result of the Illustrative Masterplan scheme.

Sunlight – Maximum Parameter Scheme

- 7.1.16 The results are comparable for this building based upon the Maximum Parameter scheme with all rooms demonstrating full adherence with the BRE recommendations for APSH.
- 7.1.17 The Illustrative Masterplan scheme and the Maximum Parameter scheme therefore demonstrate full compliance with the BRE guidelines for direct sunlight effects to the neighbours.

1-17 Clivesdale Drive



Image 9 - Street view of 1-17 Clivesdale Drive, front elevation

- 7.1.18 This part 3 / part 2-storey block of flats is situated to the south west of the site and currently enjoys an open outlook across between the school and the existing Glenlister House. As there are number of windows overlooking the site to the north, we have considered the effects to the front elevation of this property.
- 7.1.19 As the front elevation windows face due north, it has not been necessary to consider this property for sunlight effects in line with the BRE guidelines.
- 7.1.20 The internal configurations of this property are based upon estate agent plans and site photographs as information was limited on the Hillingdon planning portal.

Daylight – Illustrative Masterplan Scheme

- 7.1.21 The results for the Illustrative Masterplan scheme show that there will be no noticeable change in daylight to this property in respect of the sky view to the windows or the daylight penetration to the space with all rooms retaining at least 0.8 times their existing level for VSC and NSL daylight.

Daylight – Maximum Parameter Scheme

- 7.1.22 The daylight effects based upon the Maximum Parameter Scheme are virtually the same given the Detailed First Phase of the application remains the same across both the Illustrative and Maximum parameters.
- 7.1.23 The effects to this neighbouring building are therefore considered consistent with the recommendations for VSC / NSL daylight under the BRE guidelines.

66 Gade Close



Image 10 - View of 66 Gade Close from the site, front elevation

- 7.1.24 This 2-storey terrace is located to the south of the site along Avondale Drive. All of the windows are located within the principal elevations facing away from the scheme such that they would be limited to oblique views of the scheme. We have therefore limited our assessment of this property to the nearest ground level window to understand the potential effects to this terrace.
- 7.1.25 We have modelled the internal layouts of this property from existing plans available from the Hillingdon planning portal (REF: 35342/APP/2008/784). These show that nearest ground level room to be a single aspect reception room.
- 7.1.26 Given this neighbouring property is located to the south of the proposals, it has not been necessary to consider this property for sunlight effects.

Daylight – Illustrative Masterplan scheme

- 7.1.27 Due to the orientation of this property and the breaks between the Illustrative scheme, the results of our assessments show that there will be a minor improvement in VSC/NSL as a result of the Illustrative Masterplan scheme coming forward where these currently have a view of the existing tower blocks along Avondale Drive.

Daylight – Maximum Parameter Scheme

- 7.1.28 Based on the Maximum Parameter scheme, there are slight alterations recorded in the VSC to window as a result of the scheme though this is exceptionally minor and comfortably within 0.8 times their former level. No change is recorded in respect of daylight penetration to the room.
- 7.1.29 The daylight effects to this property are considered fully in line with the BRE guidelines in regards to both the Illustrative Masterplan and Maximum Parameters

1 – 24 Gade Close



Image 11 - Front elevation of 1-24 Gade Close, North elevation

- 7.1.30 This 3-storey block of flats is located to the south of the development site, approximately 20m across Avondale Drive. The front elevation contains a number of windows across all floors that overlook the existing site.
- 7.1.31 Estate agency layouts have been used to inform our understanding of this building's internal arrangement. These show that the rooms overlooking the site comprise a mixture of living spaces, bedrooms, kitchens and circulation space. Hallways and stairways are not relevant for assessment under the BRE guidelines given their non-habitable use. In addition, the plans show small 'galley style' kitchens between c.6-8m² – the Mayor of London's Housing Supplementary Planning Guidance refers to kitchens below 13-15m² as 'non-habitable' such that they are considered less sensitive than principal living spaces.
- 7.1.32 These neighbours currently enjoy a low angle sky views across the single storey car park between Glenlister House and Fitzgerald House therefore any reasonable development will result in a degree of change from the prevailing daylight levels. Given the high existing light levels, this will inevitably lead to a larger proportional change as a result of the proposal.
- 7.1.33 As the property overlooks the site to the north, this property is not relevant for sunlight assessment under the BRE guidelines.

Daylight – Illustrative Masterplan Scheme

- 7.1.34 Based on the Illustrative Masterplan scheme, the results of our Vertical Sky Component (VSC) assessment demonstrates that all but 3 of the windows across the front elevation will retain levels within 0.8 times the existing position and therefore comply with the BRE targets. These 2 windows at ground and first floor (W13 & W19) are secondary windows to bays and have low VSC levels in their existing condition due to their enclosed / recessed position. The BRE state that the main windows of bays should be the focus when considering the VSC effects and as these main windows experience no noticeable reductions retaining 0.8 times their former level,

these effects fully meet the BRE target levels for VSC.

- 7.1.35 The 1 remaining deviation is a minor change in sky view to a kitchen at ground level (W5) at 0.7 its existing level. Given the window serves a small kitchen at c.6m² this is not considered to result in significant harm – particularly as absolute VSC levels are retained at c.19% in which is in excess of the mid-teens level considered to be broadly typical of urban development.
- 7.1.36 In respect of daylight distribution to the rooms, our NSL results show that most of the habitable rooms retain daylight levels in accordance with the BRE guidelines retaining 0.8 times their former level or are limited minor shifts at 0.7. Where proportional reductions are beyond this level, these are isolated to 4 ‘galley style’ kitchens and 3 living rooms between ground and second level. The kitchen effects will have limited impact on the use and amenity of the space given their size and whilst there are reductions in daylight penetration to a sample of living spaces, retained daylight levels are reasonable with c.50% of the room area maintains sky visibility and retained VSCs are upwards of 20%. Retained daylight levels are therefore above that typically accepted for developing urban environments.
- 7.1.37 It is clear that the proportional reductions are exacerbated due to the high existing levels across the single-storey car park area. Both the BRE guidance and the Mayor of London’s recent draft housing SPG ‘Good Quality Homes for all Londoners’ recognise that flexibility should be applied and room-based assessments should not hamper the development potential at sites.
- 7.1.38 Overall, whilst some limited effects are experienced below the BRE recommendations, these are principally driven by the underdeveloped nature of the existing site such that a degree of change is inevitable. Retained daylight levels are considered commensurate with those considered typical of an urban location and, given the overall compliance for VSC, the effects are not considered to result in unacceptable levels of harm and are in line with the BRE guidelines and local planning policies.

Daylight – Maximum Parameter Scheme

- 7.1.39 In terms of the effects based on the Maximum Parameter scheme, the VSC results confirm a large majority of the principal windows overlooking the site will retain at least 0.8 or be limited to minor transgressions in sky view at 0.7 times their existing level. Retained VSC levels are though in the high teens upwards and therefore exceed that considered broadly typical of urban locations.
- 7.1.40 When considering the effects in daylight penetration to the room, 6 of the rooms will maintain comparable levels of daylight in line with the BRE recommendations retaining 0.8 times their former level. The rooms below the targets are living rooms and kitchens with levels between at 0.3-0.6 their existing level. These are driven principally by the monolithic nature of the Maximum Parameter massing extending almost the entire width of the Phase 2 boundary.

- 7.1.41 It is important to acknowledge that the full extent of the Maximum Parameter massing will not be developed in its entirety and will be developed in detailed design to reflect the design code and planning guidance. Further detailed design and articulation would be required at Reserved Matters stage to refine the scheme massing for the provision of appropriate landscaping, parking, circulation spaces. This future detailed design at the outline areas would inevitably lead to breaks between the buildings and subsequently increase daylight / sunlight availability closer in line with that of the Illustrative Masterplan scheme.

29-33 Avondale Drive (odd)



Image 12 - Streetview of 29 – 33 Avondale Drive

- 7.1.42 These 2-storey dwellings are located to the south of the site along Avondale Drive and enjoy their principal aspect between the 2 existing towers at the site Glenlister & Fitzgerald House.
- 7.1.43 Internal information was limited for these neighbouring properties therefore we have assumed the internal configurations from external inspection.
- 7.1.44 As the windows overlooking the site face due north, it has not been necessary to consider these neighbouring properties for sunlight under the BRE guidelines.

Daylight – Illustrative Masterplan Scheme

- 7.1.45 Our VSC results based on the Illustrative Masterplan scheme demonstrate limited changes in the sky view to the windows where all windows serving habitable space comfortably meet the BRE target levels retaining at least 0.9 times their former level.
- 7.1.46 All of the habitable rooms maintain comparable levels of daylight distribution to the rooms with all spaces retaining at least 0.8 times their former levels in terms of the No-Sky Line.
- 7.1.47 The effects of the Illustrative Masterplan scheme fully adhere with the BRE recommendations in terms of VSC/NSL daylight effects to the neighbours.

Daylight – Maximum Parameter Scheme

- 7.1.48 When considering the effects based on the Maximum Parameters, all of the windows serving habitable space retain at least 0.8 times their former level and therefore meet the BRE recommendations. Half of the rooms will meet the BRE target levels for NSL to the room retaining 0.8 times their existing level. Despite the remaining rooms reducing below the BRE target levels, these affected rooms will maintain sky visibility to c.50% of the space with absolute VSC levels in the 'mid-teens' upwards thus considered acceptable for an urban location.

127- 133 Avondale Drive (odds)



Image 13 - Aerial view of 127-133 Avondale Drive, rear elevations

- 7.1.49 These 2-storey dwellings are situated to the south of the Avondale Drive Estate site with the rear elevation overlooking the site. The majority of these rear elevations are orientated such that they enjoy outlook past the proposals across Avondale Drive though 133 Avondale Drive is recessed and somewhat blinkered by the neighbouring property 131 Avondale Drive.
- 7.1.50 Existing floorplans were available for no.127 on the Hillingdon planning portal (REF: 59904/APP/2004/2426) therefore we have used these to inform our modelling of this property. As 133 Avondale Drive is a similar construction with the entranceway to the side of the property, we have assumed a similar layout for this neighbouring property. For 129 & 131 Avondale Drive, the internal configurations have been assumed from external inspection.
- 7.1.51 As the windows overlooking the site are within 90° of due north, it has not been necessary to consider this property for sunlight effects under the BRE guidelines.

Daylight – Illustrative Masterplan Scheme

- 7.1.52 Our results for the Illustrative Masterplan scheme show that the large majority of windows meet the BRE recommendations achieving at least 0.8 timer their existing level. While there are site facing windows below the targets at the ground level of 133 Avondale Drive, these effects are to secondary windows. The rooms served by these windows are principally lit by windows within the eastern elevation which retain VSCs between 25-26% which is high and in excess of the 'mid-teens' level broadly considered to be typical of urban locations.
- 7.1.53 This is verified by our No-Sky Line (NSL) assessments which show that none of the habitable rooms will experience a material shift in daylight penetration to the room

retaining at least 0.9 times their former level.

- 7.1.54 As the principal windows serving the space enjoy good levels of sky visibility with no material change recorded in daylight distribution to the room, the Illustrative Masterplan scheme is not considered to have a material effect upon the daylight to this property.

Daylight - Maximum Parameter Scheme

- 7.1.55 Based on the Maximum Parameter scheme, properties 127-131 Avondale Drive experience no noticeable change in daylight from the existing position when compared with the Illustrative Masterplan. All windows and rooms retain at least 0.8 times their former level for the VSC and NSL.
- 7.1.56 There is an added sensitivity at 133 Avondale Drive based on the Maximum Parameter scheme as there are no breaks between the massing proposals at Phase 1B. Notwithstanding this the principal windows serving the rooms continue to achieve absolute VSC levels in region of c.23-24%. This is well in excess of the 'mid-teens' levels that is considered broadly typical in urban locations and NSL results show that there will be no noticeable shift in daylight penetration to the room.
- 7.1.57 The effects are therefore considered acceptable under the Maximum 'worse case' scenario.

113-125 Avondale Drive (odd)



Image 14 - Street view of 113 – 125 Avondale Drive, front elevations

- 7.1.58 These 2-storey residential properties are located towards the south-east corner of the site and will have views of Phase 1B of the proposals. Despite a number of properties having a view towards the site, these properties are c.40m away from the scheme such that effects will be limited.
- 7.1.59 Internal information was limited for these neighbouring properties on the planning portal although an estate agent's floorplan was available for 115 Avondale Drive and we have adopted this layout for the properties where window arrangements are the same. Where the front elevations differed at no.117 & 119, we have assumed the layouts from external inspection.
- 7.1.60 As these properties are within 90° of due north, these are not relevant for sunlight assessment under the BRE guidelines.

Daylight – Illustrative Masterplan Scheme

- 7.1.61 The results of our VSC and NSL assessments for this property show that all habitable windows / rooms will see no material change in daylight retaining at least 0.8 times their existing level.
- 7.1.62 The properties therefore fully comply with the BRE recommendations for daylight to the neighbours under the VSC and NSL criteria.

Daylight – Maximum Parameter Scheme

- 7.1.63 When considering the effects of the Maximum Parameter scheme upon these properties, our results show that all the neighbouring windows will retain comparable levels of sky view to the existing condition all retaining at least 0.8 times their former level.
- 7.1.64 For NSL, the vast majority of rooms will retain at least 0.8 times their former level in the Maximum Parameter scenario with 4 rooms experiencing minor reductions from the target at 0.7. These rooms are somewhat sensitive given their high existing levels and given retained VSC levels are upwards of 22% and the rooms maintain daylight penetration to over 60% of the room, retained levels are considered good for an urban location and t wholly acceptable.

135-143 Avondale Drive (odd)



Image 15 - Street view of 135-143 Avondale Drive, front elevations

- 7.1.65 These 2-storey dwellings are offset to the south east of the site facing north towards Abbotswood Way. They currently enjoy an open outlook to the right of the existing tower at the site Wellings House.
- 7.1.66 No internal layouts were available for this property from the Hillingdon planning portal therefore we have assumed the internal configurations from external inspection.
- 7.1.67 The elevations of these properties with views of the site are orientated north such that they are not relevant for sunlight assessment under the BRE guidelines.

Daylight – Illustrative Masterplan Scheme

- 7.1.68 Our results show that there will be very little change in daylight from existing condition with all windows retaining at least 0.8 times their former level and meeting the BRE targets.
- 7.1.69 In terms of the daylight penetration to the rooms (NSL), no noticeable shifts in daylight are recorded with changes limited to 2-3 sq. ft from the existing condition.
- 7.1.70 These neighbouring properties therefore experience no material change in daylight and meet the BRE criteria in terms of VSC/NSL based on the Illustrative Masterplan scheme.

Daylight – Maximum Parameter Scheme

- 7.1.71 Based on the Maximum Parameter scheme there is a slightly greater sensitivity when compared to the Illustrative Masterplan. The Maximum Parameters plans have no breaks between the buildings but nevertheless, all windows and rooms still comfortably exceed the BRE recommendations retaining at least 0.9 times their former level.
- 7.1.72 The effects to these properties therefore fully adhere with the BRE guidelines VSC/NSL daylighting based on the Maximum Parameters.

7.2 Overshadowing to neighbouring amenity

- 7.2.1 In addition to the daylight and sunlight assessments to the neighbouring properties, we have assessed the potential overshadowing effects to the neighbouring open spaces.
- 7.2.2 This has considered the sunlight / overshadowing effects to the Minet School playground to the west and the Hitherbroom Park to the north east of the site.
- 7.2.3 Similar to our effects upon the neighbouring properties, we have considered the potential overshadowing based on both the Illustrative Masterplan scheme and the Maximum Parameter Scheme.
- 7.2.4 Our assessment utilises the 2-hour sun on ground / sunlight amenity assessment in line with the BRE guidelines. The results of this analysis are shown within appendix 3.

Sunlight Amenity Assessment (2-hour sun on ground)

- 7.2.5 We have used the BRE recommended '2-hour sun contour' analysis. For both the existing and proposed scenarios, this involves dividing the areas that can receive at least two hours of sunlight on ground (shaded in yellow on the drawings) from those that receive less than two hours on 21 March (the equinox). The sunlight exposure indicator on the plots illustrates the degree of sun hours received by the area graded from blue to yellow (0-2+ hours). The percentage of each amenity space receiving at least two hours sunlight is shown in the tables below the drawings.



Image 16 - BRE 2-hour sun contour assessment for the Illustrative Masterplan scheme

Illustrative Masterplan Scheme

- 7.2.6 Our overshadowing results based on the Illustrative scheme show that both the Hitherbroom Park and the Minet School playground will continue to enjoy high levels of direct sunlight throughout the year with at least 97% of the space receiving at least 2 hours direct sunlight on the 21st March.
- 7.2.7 The neighbouring amenity spaces therefore comfortably exceed the BRE recommendations of at least 50% of the space receiving at least 2 hours sunlight on the 21st March and meet the BRE guidelines for sunlight amenity / overshadowing.

Maximum Parameter Scheme

- 7.2.8 Due to the less articulated massing of the Maximum Parameter scheme, there will be further shading effects to the Hitherbroom Park when compared against the Illustrative Masterplan scheme though all of the amenity spaces retain sunlight levels well in excess of the BRE target of 0.8 times their former level and continue to satisfy the BRE recommendations for sunlight amenity / overshadowing to the neighbours.

7.3 Overshadowing to the proposed amenity space and communal areas

- 7.3.1 In addition, to the overshadowing effects to the neighbouring gardens, we have considered the sunlight amenity / overshadowing to the proposed courtyards at podium level and the wider ground level amenity spaces to the front of the site.
- 7.3.2 The results of these BRE 2-hour sun contour assessments are located in Appendix 4.
- 7.3.3 When considering the Illustrative Masterplan scheme, we have considered the following shared amenity spaces within the scheme:
- Courtyard amenity space at Phase 1A;
 - The proposed podium amenity at Phases 2 & 1B; and,
 - The wider ground level amenity across the front of the site.
- 7.3.4 With regards to the Maximum Parameter scheme, we have focussed solely on the wider ground level amenity fronting Avondale Drive as further articulation / detailed design would be required to allow sunlight to penetrate the indicative courtyards at Phases 2 & 1B set out in the Maximum Parameter plans.
- 7.3.5 The Maximum Parameter scheme provides only indicative courtyards which are fully enclosed or closed off to the south and therefore do not present a realistic position. Further technical assessments will be required to confirm appropriate levels of sunlighting to these spaces as part of a future Reserved Matters applications.

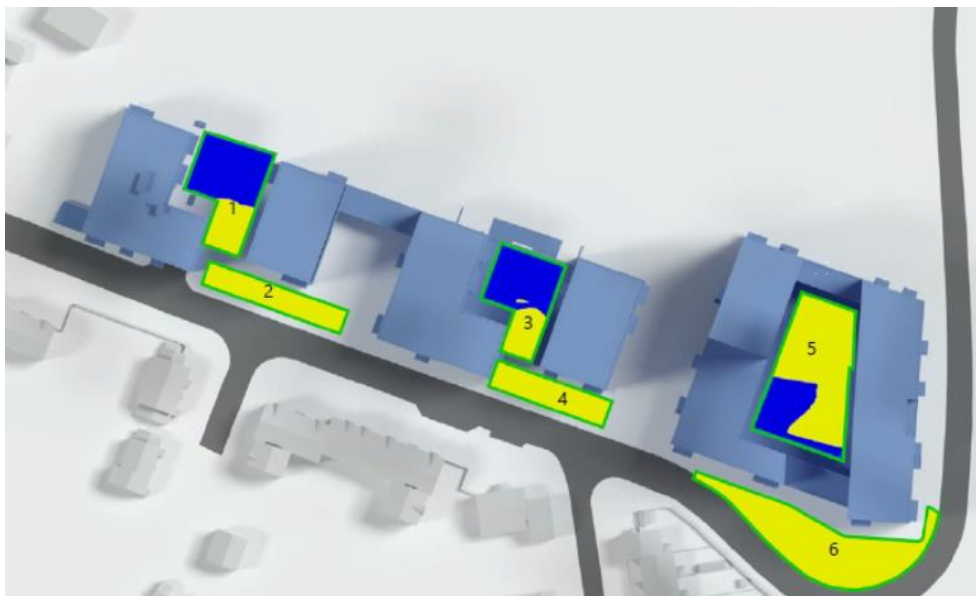


Image 17 - Image showing the proposed amenity areas considered for the 2-hour sun contour assessments

Illustrative Masterplan Scheme

- 7.3.6 The results of our 2-hour sun contour assessments on the 21st March show that all of the proposed amenity areas across the front of the site and the podium space at Phase 1B will experience good levels of sunlight on the 21st March exceeding the BRE recommendations of at least 50% of the area receiving 2 or more hours of direct

sunlight. Areas 2, 4 & 6 across the ground level receive at least 2 hours of sunlight to all of the space with Area 5 receiving at least 2 hours sunlight to 72% of the space.

7.3.7 Our results for the courtyards at Phase 1A & 2 on the 21st March show that these amenity spaces will receive the following:

- **Area 1** receives at least 2 hours sunlight to 30% of the space; and,
- **Area 3** receives at least 2 hours of sunlight to 30% of the space.

7.3.8 Whilst these 2 courtyard spaces deviate from the BRE recommendations on the 21st March, such constraints are typical in residential courtyard blocks. The residents will have access to the wider ground level amenity during the earlier parts of the year including the Hitherbroom Park all of which will enjoy high levels of sunlight throughout the year.

7.3.9 Throughout the pre-application process we have worked closely with the architects to optimise the levels of the sunlight to these courtyards by opening the courtyards to the south. When considering the proposed development as a whole, the scheme demonstrates good levels of sunlight to the amenity spaces with well over half of the total amenity area receiving 2 hours or more direct sunlight on the 21st March. Our results show that 71% of the space meets the BRE recommendations.

7.3.10 While 2 courtyards are below the target on the 21st March, our sunlight exposure diagrams are useful in illustrating that the vast majority of the courtyards are actually only just below the recommended 2-hour threshold on the 21st March between 1.6-2 hours as indicated by the areas graded yellow to orange (below). As such, these courtyards are considered only marginally short of the BRE target levels.

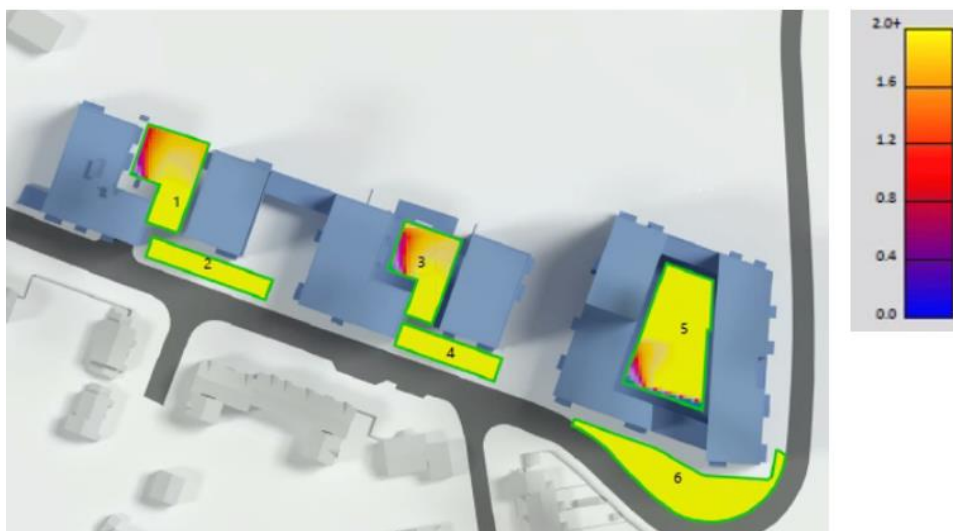


Image 18 - Image showing the sunlight exposure to the proposed amenity on the 21st March (0-2+ hours)

7.3.11 In addition to our assessments on the 21st March, we have also considered the sunlight to the proposed amenity areas on the 21st June when the space may most be used and the expectation of sunlight will be higher. Our assessments on this date

show that the vast majority of the space (96%) will enjoy in excess of 2 hours sun meeting the BRE target levels (shown below).

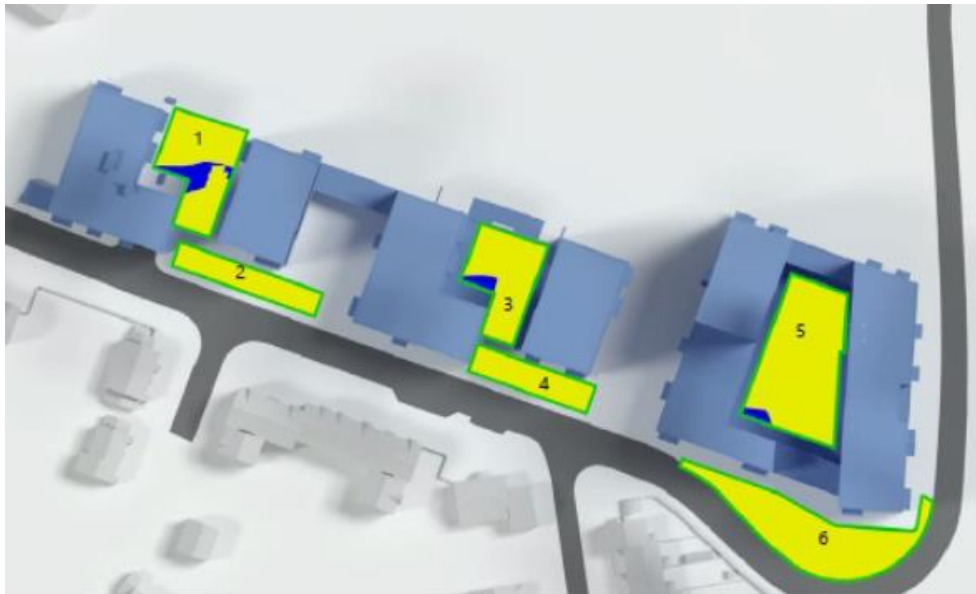


Image 19 - BRE 2 hour sun contour assessment on the 21st June

- 7.3.12 Overall, whilst there will be deviations in terms of sunlight / overshadowing within the scheme, the majority of the courtyard spaces will enjoy sunlight levels very close to the 2-hour target on the 21st March as illustrated by our sunlight exposure diagrams above such that they are unlikely to have a material impact on the quality / use of the space. Furthermore, where levels are below the recommendations at the phase 1A & 2 courtyards, the residents will have access to the wider shared amenity which will provide well sunlit areas in the earlier parts of the year including the Hitherbroom Park. Almost all of the proposed amenity spaces will enjoy more than 2 hours of direct sunlight on the 21st June during the summer when the space will be most used.
- 7.3.13 Given most of the areas will either meet the BRE recommendations or be very close to on the 21st March, and there will be opportunity to enjoy sunlight in the earlier parts of the year across the ground level, the sunlight amenity to the proposed development is considered acceptable and in line with the intentions of the BRE guidelines for sunlight / overshadowing.

Maximum Parameter Scheme

- 7.3.14 With regards to the Maximum Parameter scheme, our sunlight / overshadowing assessments show that all (100%) of the wider ground level amenity to the front of the site will enjoy more than 2 hours of sunlight on the 21st March and fully satisfy the BRE guidelines for sunlight amenity. The results of these assessments can also be found in appendix 4 of this report.

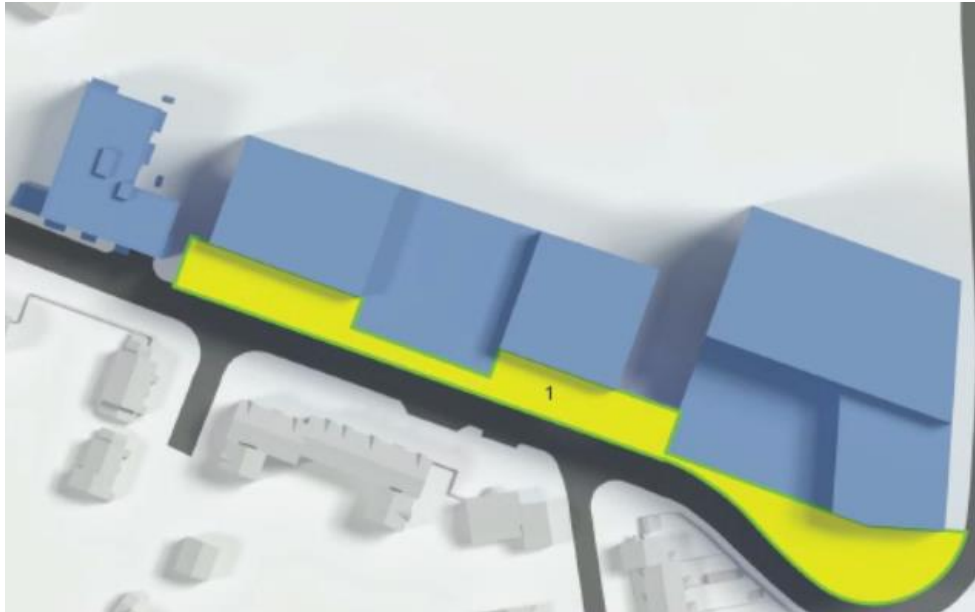


Image 20 - BRE 2-hour sun contour assessment on the 21st March based on the Maximum Parameter scheme

- 7.3.15 Our sunlight assessments therefore demonstrate that sufficient levels of sunlight could be achieved based on the Maximum Parameter heights though further detailed design would be required at Reserved Matters stage to ensure that appropriate levels of sunlight are achieved to the proposed courtyards at Phases 2 & 1B.

7.4 Daylight and sunlight within the proposal

- 7.4.1 The daylight and sunlight amenity provided within the proposed residential accommodation has been assessed using the ADF and APSH tests following the methodology of the BRE guidance.
- 7.4.2 Full results of the daylight and sunlight assessments within the proposed apartments, along with drawings to show the layout of rooms and windows, are attached within Appendix 5.
- 7.4.3 Our internal amenity assessments for the proposed accommodation are based upon the detailed drawings and fixed unit layouts for the Detailed First Phase (Phase 1A). In giving consideration to the emerging / future context at the site, we have undertaken our assessments under 2 conditions, firstly within the Illustrative Masterplan scheme in place at Phases 2 & 1B and secondly with the Maximum Parameter scheme in place as there are marginal differences in the articulation and footprint of the neighbouring blocks between these scenarios.

Daylight

- 7.4.4 In calculating the ADF for the proposed habitable rooms we have applied the following parameters:
- Maintenance factor: 0.92
 - Window transmittance: 0.68
 - Framing factor: 0.8
 - Internal wall reflectance: 0.81
 - Internal ceiling reflectance: 0.85
 - Internal floor reflectance: 0.4

Daylight – Illustrative Masterplan Scheme

Room Type	ADF Target	Total No. of Rooms	Rooms That Meet ADF Target
Kitchen or Kitchen / Diner	2%	11	10 (90%)
L/K/D or Living room	1.5%	30	30 (100%)
Bedroom	1%	62	62 (100%)
Total		103	102 (99%)

Table 1 - Summary ADF results for proposed accommodation

- 7.4.5 The results of our ADF assessments based on the Illustrative Masterplan scheme show that 102 (99%) of the 103 habitable rooms achieve at least 2% for a kitchen, 1.5% for a main living space and 1% for a bedroom. This is an excellent level of compliance for internal daylight amenity.

- 7.4.6 Where 1 habitable room is below the targets, this is a single kitchen at ground level (R3) where ADF levels are 1.8%. This transgression equates to just 0.2% ADF below the 2.0% target for this room use which would not be perceptible to the occupant.
- 7.4.7 As such, the detailed phase 1 proposals are considered fully in line with the BRE guidelines for internal daylight based on the illustrative Masterplan proposals.

Daylight – Maximum Parameter Scheme

Room Type	ADF Target	Total No. of Rooms	Rooms That Meet ADF Target
Kitchen or Kitchen / Diner	2%	11	10 (90%)
L/K/D or Living room	1.5%	30	28 (93%)
Bedroom	1%	62	62 (100%)
Total		103	100 (96%)

Table 2 - Summary ADF results for proposed accommodation

- 7.4.8 The results for the Phase 1 detailed scheme with the Maximum Parameter scheme in place show 100 (96%) of the habitable rooms will meet the BRE recommendations for their respective room use under the ADF criteria.
- 7.4.9 The 3 rooms which fall below the BRE target levels are the ground level kitchen / dining room (R3) and 2 L/K/D rooms at first and second level (First R20; Second R18). These are all similarly deviations of between 0.1-0.2% ADF and would not be noticeable to the occupants. Given the isolated nature of these effects these are considered acceptable and in line with the BRE recommendations for internal daylight amenity.

Sunlight

- 7.4.10 The focus of the BRE sunlight guidelines is on main living rooms, rather than bedrooms and kitchens, which the guide views as less important: - ***“3.1.2 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”***
- 7.4.11 The BRE guidance suggests that the number of north facing living rooms should be minimised and the scheme has been developed to optimise the sunlight to the main living spaces providing dual / southerly aspect where possible. There are however inevitably a small number of living spaces which face principally north / north east due to the layout of the site. The BRE guidelines acknowledge that for large flatted development, it may not be possible to have every main living room enjoying a southerly aspect and therefore the guidelines should be interpreted flexibly and viewed on balance against other site constraints.
- 7.4.12 The majority of the main living rooms are served by external balconies which limit the sunlight availability to the units. There is a recognised trade-off within the BRE in

regards to balconies as whilst they limit sunlight availability, they enhance the quality / amenity of the units – particularly given the balconies themselves will enjoy good levels of sunlight. The need for flexibility in respect of such design constraints is reflected in the BRE guidelines and more recently by the Mayor of London in the draft Housing SPG 'Good Quality Homes for all Londoner's SPG.

7.4.13 The results of our internal sunlight assessments can be found in Appendix 5.

Sunlight – Illustrative Masterplan Scheme

Room Type	Total No. of rooms	Rooms that meet APSH/WPSH criteria	Total No. of rooms (within 90° of due south)	Rooms that meet APSH/WPSH criteria
L/K/Ds or living rooms	30	17 (56%)	23	16 (c.70%)

Table 3 - Summary APSH results for proposed accommodation

7.4.14 The results of the sunlight assessment have shown that 17 (56%) of the 30 main living rooms achieve the recommended levels of 25% APSH and 5% WPSH. 5 of these rooms below the recommendations are outside of 90° of due south and are recognised as being in an orientation where lower sunlight levels will be experienced.

7.4.15 When focussing on the main living rooms within 90° of due south, 16 (c.70%) of the 23 living spaces fully meet the BRE criteria for APSH sunlight. This is a good level of compliance for a flatted development in an urban location. In addition, the results show that of the 7 rooms below the targets, all of these will receive a degree of direct sunlight during the day in line with the Mayor of London's recommendations in the draft Housing SPG.

7.4.16 Overall, levels of sunlight compliance are considered good for an urban location and whilst there are deviations from the recommended targets levels, these are either limited to that do not benefit from a southerly aspect or units served by balconies. Both of which, the BRE and the Mayor of London recognise should be afforded flexibility. Given this and the excellent levels of compliance for internal daylighting (ADF), the scheme is fully in line with the intentions of the BRE guidelines and relevant planning guidance.

Sunlight – Maximum Parameter Scheme

Room Type	Total No. of rooms	Rooms that meet APSH/WPSH criteria	Total No. of rooms (within 90° of due south)	Rooms that meet APSH/WPSH criteria
L/K/Ds or living rooms	30	17 (56%)	23	16 (c.70%)

Table 4 - Summary APSH results for proposed accommodation

7.4.17 When considering the internal sunlight levels based with the Maximum Parameters in place, the results are comparable where 17 (56%) of the main living rooms meet the BRE recommendations for APSH. The results are therefore comparable with the

Illustrative Masterplan scheme.

- 7.4.18 Based on only the south facing living spaces, 16 (c.70%) of the 23 main living rooms achieve the BRE target levels of at least 25% for total annual sunlight levels and 5% for the winter.

Internal Façade Analysis

- 7.4.19 Phases 2 and 1B of the proposed application are for outline massing parameters and as such, the detailed design of these blocks is not yet fixed in terms of façade detail and internal room configurations. For these outline elements, we have therefore undertaken a VSC façade study to demonstrate the daylight potential for the future proposed accommodation.
- 7.4.20 This façade study considers the VSC at points along the outline facades to understand the potential sky visibility in areas where the scheme windows and rooms are yet to be defined. This helps to ensure that good levels of amenity will be enjoyed within the proposed accommodation.
- 7.4.21 For these assessments we have considered the daylight potential for both the Illustrative Masterplan massing and also the Maximum Parameter scheme at Phases 2 & 1B.
- 7.4.22 As the intention of the Maximum Parameters are primarily to fix the extents to which the future phases can be designed within, we have limited the analysis to the outward facing elevations for the Maximum Parameter scheme. This is because further articulation / detailed design of the blocks would be required to open up the courtyards and allow daylight / sunlight to penetrate the courtyards and internal facades. These areas will be subject to further detailed testing at Reserved Matters stage.
- 7.4.23 The courtyard spaces have been tested in the Illustrative Masterplan scheme as these present a more realistic interpretation of the form of development that may come forward having consideration for both internal daylight potential and sunlight amenity / overshadowing to the courtyards.
- 7.4.24 The results of our VSC façade analysis are illustrated in Appendix 6.

Illustrative Masterplan Scheme

- 7.4.25 The results of our preliminary VSC façade analysis for the Illustrative Masterplan scheme show that the vast majority of elevations at Phases 2 & 1B will enjoy high levels of daylight availability in excess of 27% - shaded yellow in the diagrams. This is particularly the case for all of the outward facing elevations.
- 7.4.26 Whilst isolated areas of the internal courtyards are somewhat more constrained, these are limited to small areas within the corners of courtyards and are typical for such courtyard development (shaded red). Notwithstanding this, the VSC levels in these locations are between c.13%-20% such that they are appropriate for an urban location and will not pose significant constraints in terms of achieving good internal

amenity levels during detailed design.

- 7.4.27 The Illustrative Masterplan scheme has therefore shown that the current proposals have the potential to provide good levels of internal amenity in line with that shown at Phase 1A through careful and considered design.

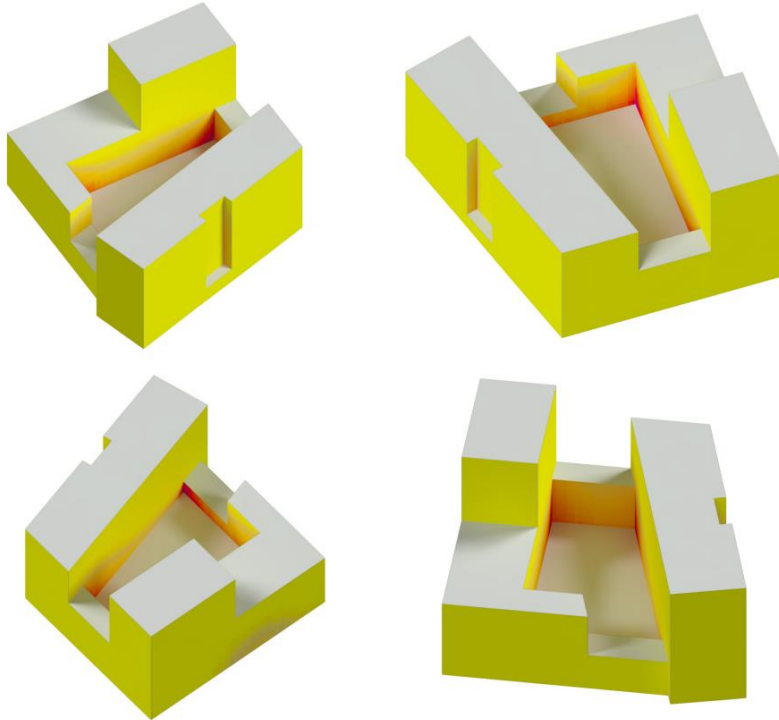


Image 21 - Façade analysis showing the VSC levels across Phase 1B in the Illustrative Masterplan scheme

Maximum Parameter Scheme

- 7.4.28 Our VSC façade analysis based on the Maximum Parameter scheme show that similarly all of the outward facing elevations will achieve high levels of daylight availability above 27% where most of the elevations are predominantly yellow.
- 7.4.29 The only areas where material shifts are demonstrated in the VSC are to the north east corner of Phase 2 (shown below) where the relationship between Phase 2 & 1B blocks becomes narrower when compared with the Illustrative Masterplan scheme

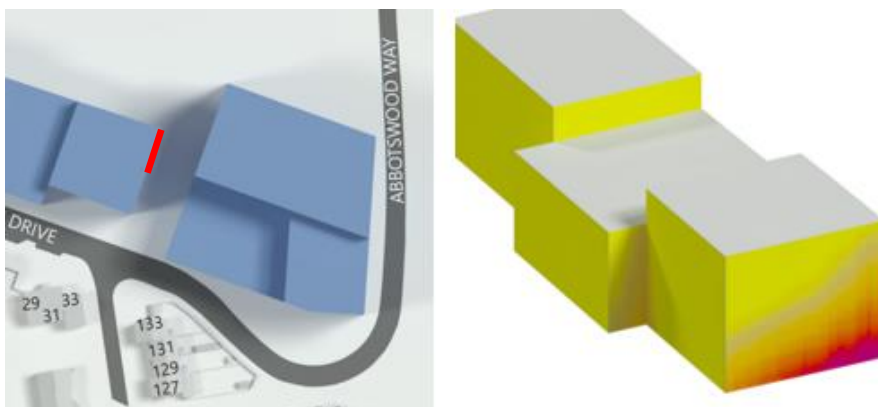


Image 22 - Image showing the constrained corner of Phase 2 under the Maximum Parameter scheme

- 7.4.30 Where VSC levels are shaded red to purple, this pinch point will require appropriate consideration to ensure any space in this location is less sensitive / non-habitable space or alternatively dual aspect space lit by additional windows within the northern elevation which enjoys high levels of daylight. That said, the vast majority of the elevation is in excess of 13% and are considered suitable for an urban context.
- 7.4.31 Overall, the majority of the principal elevations demonstrate good levels of daylight availability across both the Illustrative Masterplan scheme and the Maximum Parameter scheme with the large majority of elevations achieving high levels of VSC in excess of 27%. Whilst there are lower levels in some instances, these are isolated pinch points to the corner of courtyards or to corner of Phase 2 which can be addressed through further detailed design. Given the VSC performance across the principal elevations and the isolated nature of the pinch points, we would expect good levels of compliance as part of the future detailed design in line with that established at the detailed Phase 1A part of the application.

8 Conclusions

- 8.1.1 This practice has undertaken a detailed assessment of the potential daylight and sunlight effects of the proposed development at the Avondale Drive site on the key neighbouring properties. As part of our assessments, we have also considered the provision of daylight and sunlight within the scheme and the potential sunlight / overshadowing effects of the proposed development.
- 8.1.2 Our assessments have considered the potential effects of a defined Illustrative Masterplan scheme and the Maximum Parameter scheme which defines the extents within which future Reserved Matters applications may come forward.

8.2 Daylight and sunlight impact to neighbouring properties

- 8.2.1 Our assessments have been undertaken using the VSC, NSL (daylight) and APSH (sunlight) tests set out within the BRE guidance 'Site layout planning for daylight and sunlight: A guide to good practice' (2011). It's important to note that the BRE recommendations are purely guidelines and should be interpreted sensibly and flexibly based on the site-specific context and wider regeneration benefits of the scheme. This flexible application of the BRE guidelines for housing in developing urban locations is supported in the NPPF, the Mayor of London's Housing SPG and the more recent consultation draft housing SPG 'Good Quality Homes for All Londoners' to ensure that the developments make optimal use of sites for housing.
- 8.2.2 Estate regeneration projects will inevitably lead to a degree of change from the prevailing daylight and sunlight levels in order to fully optimise the land use for housing delivery however the proposals have been developed to respond appropriately to the neighbouring receptors.
- 8.2.3 Whilst a degree of change is inevitable as a result of a significant regeneration scheme, the results of our assessments show that the proposals respond well in terms of daylight and sunlight to the neighbours with a large number of neighbouring properties demonstrating full compliance with the BRE guidelines based on both the illustrative Masterplan scheme and the Maximum Parameters.
- 8.2.4 The effects are limited based on the Illustrative Masterplan where the scheme is virtually fully compliant for the VSC to the windows. There is 1 minor effect recorded to a small kitchen at 1-24 Gade Close and effects to secondary windows at dual aspect rooms within 133 Avondale Drive and the Minet Infant School which will nevertheless experience no material change in daylight penetration to the rooms.
- 8.2.5 For the No-Sky Line to the rooms, only 1-24 Gade Close experiences effects below the BRE recommendations. These are somewhat exacerbated by the high existing daylight levels and are either limited to 'non-habitable' kitchens such that they are unlikely to have a material impact on the use / amenity of the space or, a small number of living spaces. All of these living spaces maintain daylight to over 50% of

the space with principal windows maintaining VSCs in the region of c.20% upwards therefore retained daylight levels are considered good and in excess of that typically expected in urban locations.

- 8.2.6 The results based on the Maximum Parameters are broadly the same with most of the properties experience no noticeable loss in VSC daylight or are limited to minor transgressions at 1-24 Gade Close.
- 8.2.7 There is an added sensitivity in terms of the NSL to 1-24 Gade Close based on the Maximum Parameter scheme though this is inevitable given the more monolithic nature of the maximum parameter massing to a currently underdeveloped area of the site. Further detailed design would be required at Reserved Matters stage to refine the scheme to allow for parking, landscaping, circulation spaces and also allow daylight / sunlight to penetrate the proposed units and shared courtyards. The 'real world' effects of any final detailed scheme is therefore likely to reduce materially from this position closer in line with that of the Illustrative Masterplan.
- 8.2.8 Overall, when considering the Maximum Parameter Scheme and the Illustrative Masterplan there are inevitably deviations from the BRE recommendations but these are isolated and unlikely to have a significant impact on the pattern of use and amenity of the neighbouring properties. Retained amenity levels are considered appropriate and typical for an urban regeneration scheme in London thus aligning with the intentions of the BRE guidelines and relevant planning policy for daylight /sunlight to the neighbours – Policy DHMB 10 & DHMB 11, the NPPF 2021, the Mayor of London's Housing SPG and the more recent consultation draft housing SPG 'Good Quality Homes for All Londoners'.
- 8.2.9 Whilst the Maximum Parameter scheme is subject to an upper tolerance of +1m this is unlikely to be built to the full extents of the footprint as this is purely for the provision of roof plant. The provision of roof plant is unlikely to have a material bearing on the current daylight and sunlight position. We have therefore not considered the differential in this regard as it will not result in a materially greater effect upon the neighbours.

8.3 Overshadowing impact to neighbouring amenity space

- 8.3.1 The assessment of sunlight amenity (overshadowing) upon the nearest neighbouring gardens has shown that there will be virtually no change from the existing sunlight levels to the school playground to the west and the Hitherbroom Park to the north east.
- 8.3.2 Almost all of these spaces will continue to enjoy over 2 hours of direct sunlight on the 21st March and will not experience material overshadowing as a result of the proposals.

8.4 Daylight and sunlight within the proposed residential units

- 8.4.1 The assessment of daylight (ADF) to the detailed proposal at Phase 1A has shown that the all but 1 of the habitable rooms receive good levels of amenity in line with the BRE recommendations with the Illustrative Masterplan in place. Whilst 1 room is below the 2% BRE target for a kitchen this is a minor transgression which would not be recognisable to the residents thus acceptable.
- 8.4.2 With the Maximum Parameters in place, all but 3 of the rooms achieve the BRE targets levels with 3 rooms below the recommendations for ADF. These are similarly limited to exceptionally minor deviations of between 0.1-0.2% which would not be perceptible to the occupants.
- 8.4.3 Sunlight levels for proposed accommodation is naturally lower for flatted developments in urban locations as sunlight availability is driven by the orientation of the building. Given the layout of the site, inevitably there are spaces with a less southerly aspect but the scheme has been developed to maximise the number of units provided with dual aspect and / or a southerly outlook where possible.
- 8.4.4 Sunlight compliance is comparable with both the Illustrative Masterplan and the Maximum Parameters in place. When considering all of the main living spaces, 56% of the living spaces achieve the BRE recommendations for APSH. When considering only the living rooms within 90° of due south, which the BRE acknowledge are the main the focus for sunlighting, compliance levels increase to c.70%. This is a good level of compliance for an urban regeneration scheme and is indicative of the high-quality design.
- 8.4.5 Where there are units below the targets for sunlight, these are due to the provision of private balconies which both the BRE and the Mayor of London recognise should be given flexibility as whilst these enhance the quality of the units, these do inevitably lead to lower amenity levels.
- 8.4.6 Our VSC façade analysis for the outline areas based on the Illustrative Masterplan scheme and the Maximum Parameters demonstrate that there is potential for the detailed proposals to achieve high levels of compliance for internal daylighting. The vast majority of elevations receive VSCs in excess of 27% and where there are lower levels, these are mainly isolated to the corners of courtyards which are typical for courtyard development or to a corner of the Maximum Parameters Phase 2. In both instances, these could be addressed through considered detailed design adopting similar principles to that demonstrated in phase 1A detailed application.

8.5 Overshadowing / sunlight within the proposed amenity areas

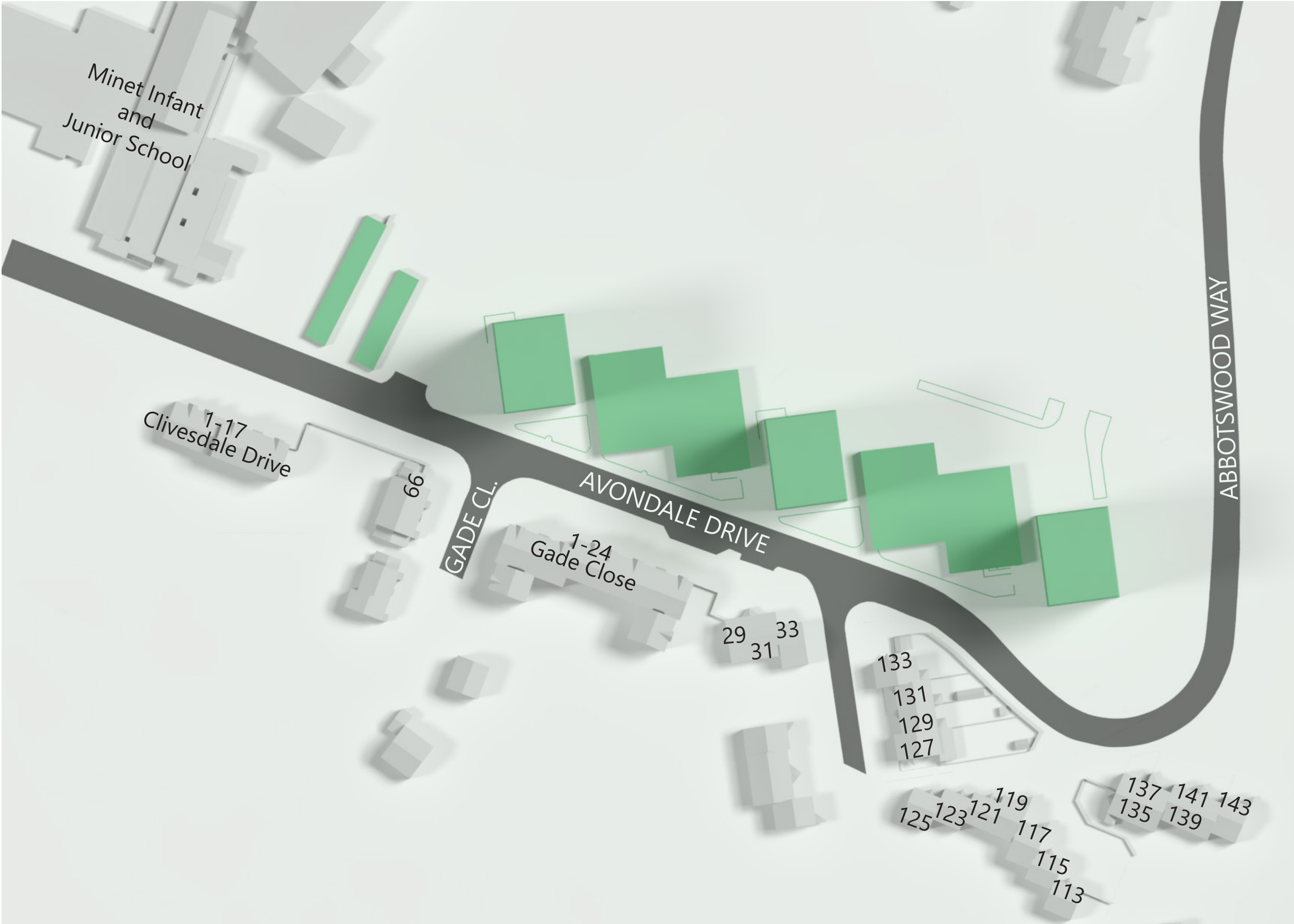
- 8.5.1 The assessment of sunlight (overshadowing) within the proposed amenity areas has shown the wider ground level amenity space will enjoy high levels of sunlight throughout the year in accordance with the BRE recommendations in the Illustrative Masterplan and Maximum Parameter scenario.

- 8.5.2 The shared courtyard space at the podium of Phase 1B also demonstrates good levels of sunlight on the 21st March, comfortably exceeding the BRE recommendations with 72% of the space receiving 2 or more hours of sunlight.
- 8.5.3 Whilst the proposed courtyard spaces at Phase 1A & 2 will experience sunlight levels below the recommended targets on the 21st March, our sunlight exposure diagrams on this date illustrate that large areas are on the cusp of the 2 hour threshold with at least 85% of the spaces achieving at least 2 hours of sunlight on the 21st June during the summer when they may most be used. Given large areas of the courtyards will be just below the 2-hour threshold, these deviations are considered minor and would have little impact on the quality / use of the space across the year.
- 8.5.4 When considering the proposed amenity areas as a whole, at least 71% of the entire amenity provided within the proposed development will achieve at least 2 hours sunlight on the 21st March and will meet the BRE recommendations for sunlight amenity. This increases to 96% of the total amenity space achieving at least 2 hours direct sunlight on the 21st June during the summer.
- 8.5.5 The proposals provide a varied mix of landscaping / amenity areas and any shading is unlikely to significantly harm the amenity of the space across the year. Residents will have access to a mix of private and public amenity areas as well as the Hitherbroom Park thus overall, the sunlight amenity effects are fully acceptable in the context of the site.
- 8.5.6 As set out in the BRE guidelines, daylight and sunlight availability are just one of the many factors in site layout design such that a degree of flexibility is appropriate in the application of the guidance. This is echoed in the NPPF 2021 which makes it clear that efficient use of sites, particularly for housing delivery, should not be hampered by technical constraints.
- 8.5.7 Overall, the proposed development is considered to respond well to the site and neighbouring context and demonstrates acceptable levels of daylight and sunlight to neighbours. In addition, the proposals demonstrate that good levels of amenity will be provided for future residents. Overall, the proposals are considered to be in line with the intentions of the BRE guidelines and relevant planning policy in respect of daylight and sunlight.



Appendix 1

Drawings of the existing, proposed and surrounding buildings



Sources of information

Survey Solutions
31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards
AVD-PTE-ZZ-XX-M3-A-00002_Avondale
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Received 21/10/2021

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Site Photographs
Ordnance Survey

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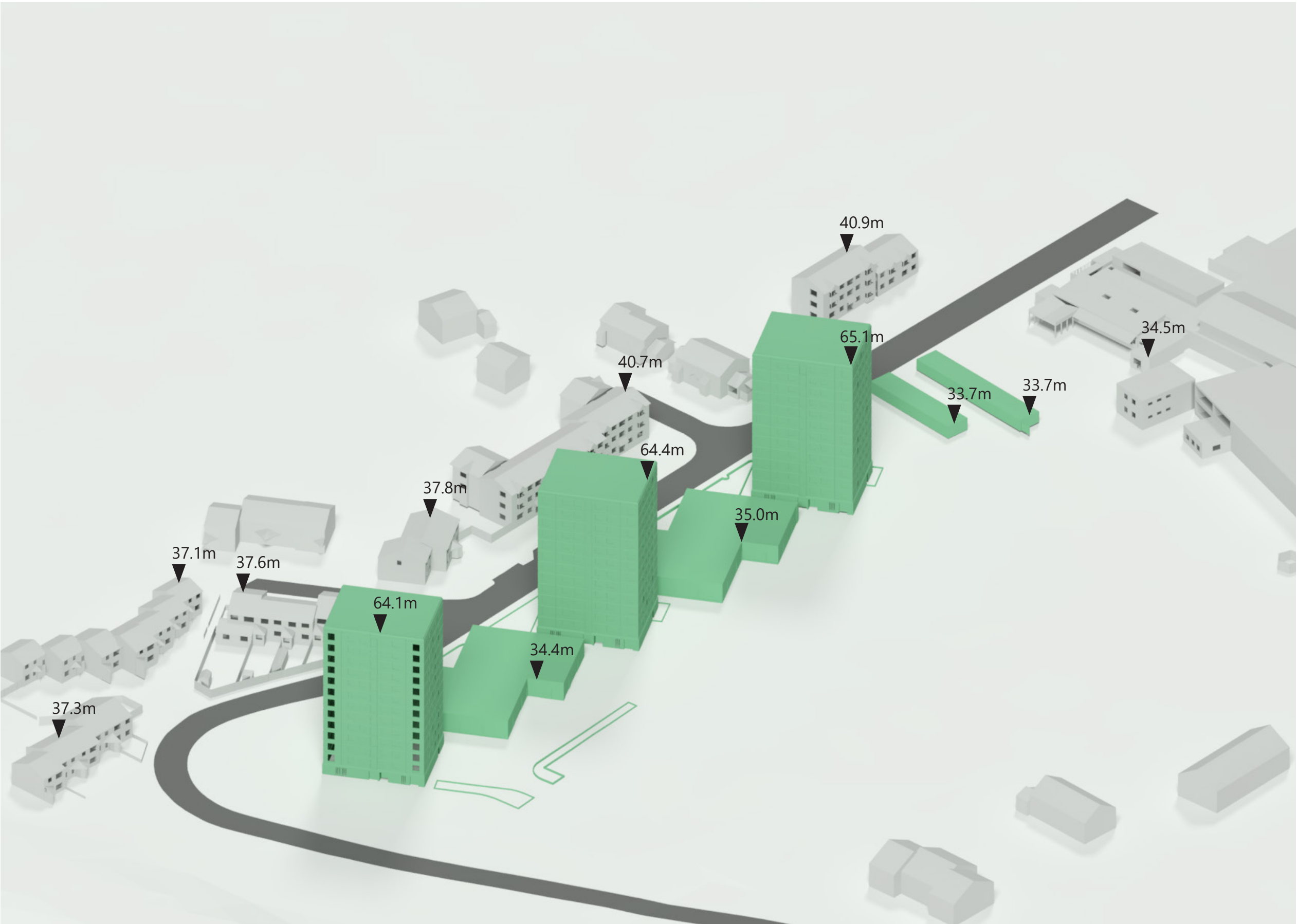
Project Avondale Drive
Hayes
UB3 3PW

Title Existing Condition
Plan View

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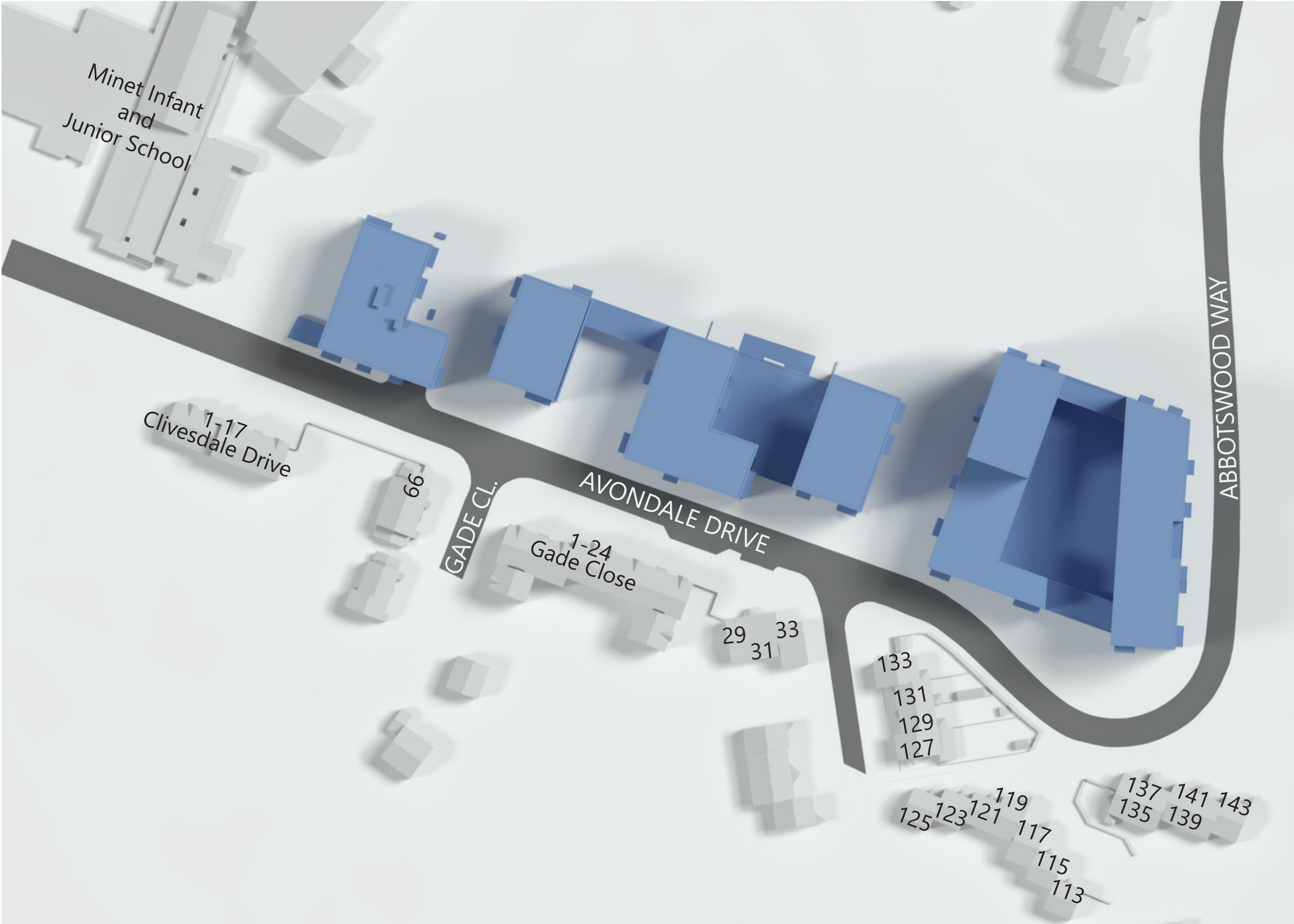
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UB3 3PW

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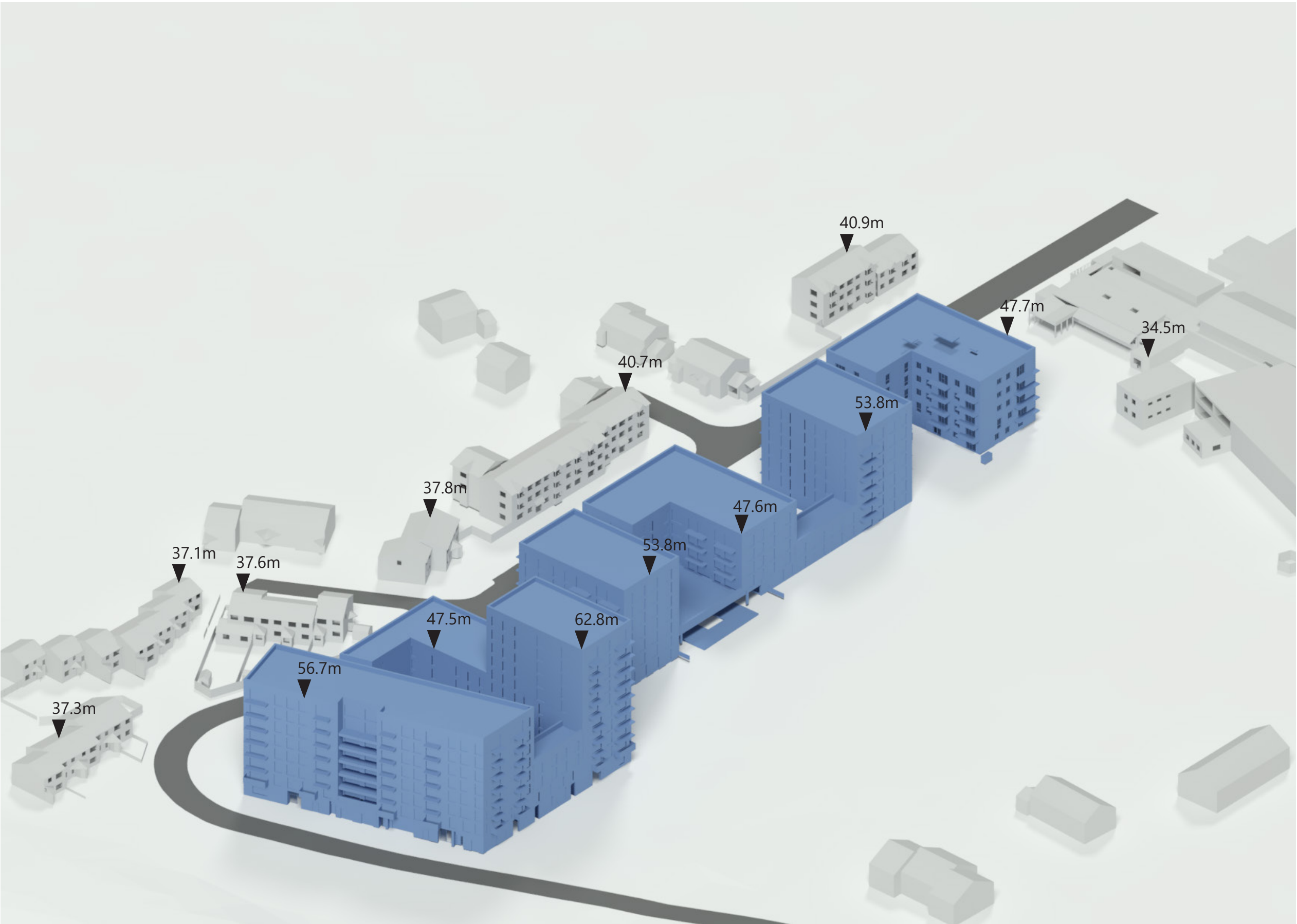
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Hayes
UB3 3PW

Title Proposed Development
Illustrative Masterplan Scheme
Plan View

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Date 13/11/2021 Project 4900

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Sources of information

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Site Photographs
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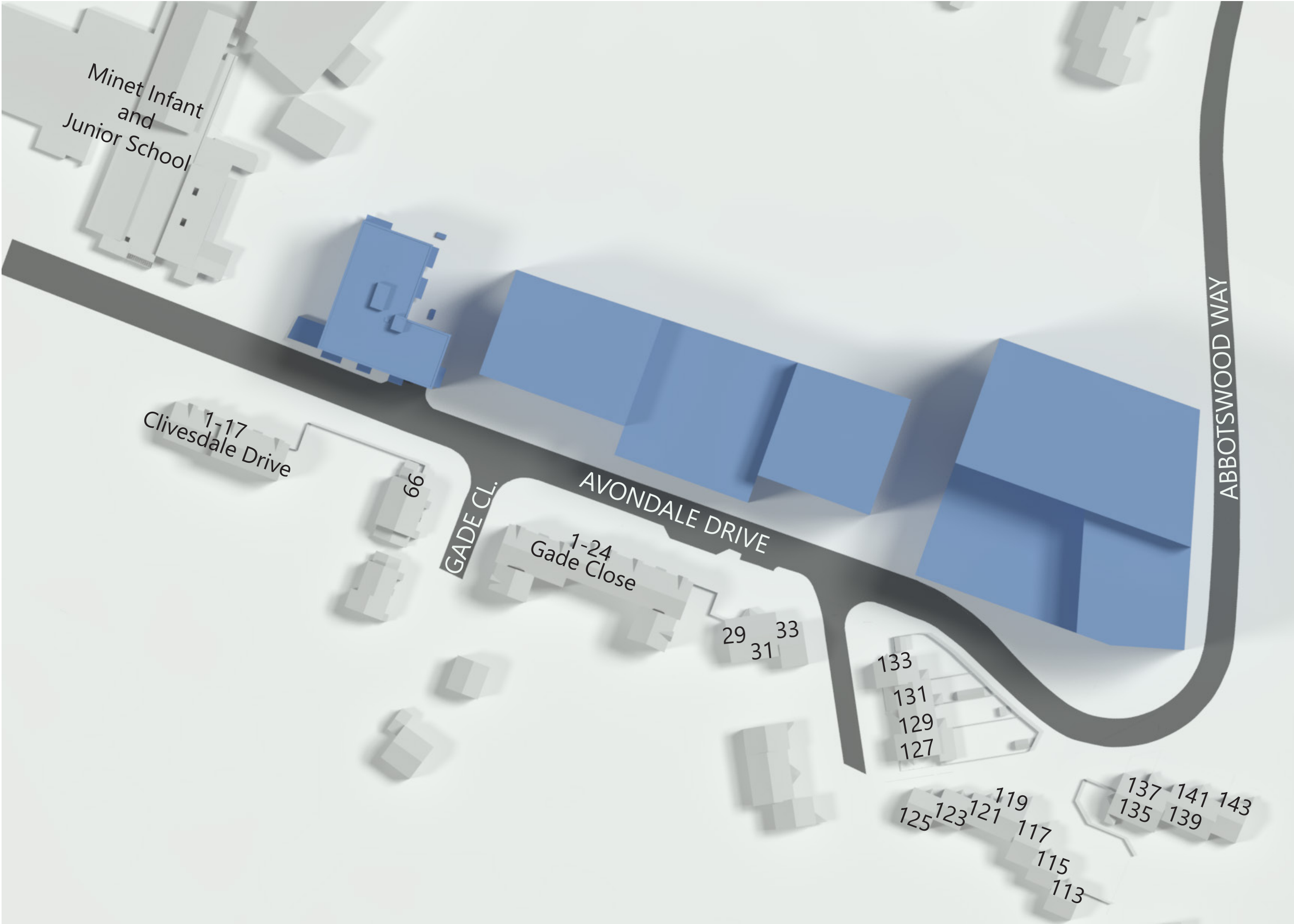
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Project Avondale Drive
Hayes
UB3 3PW
Title Proposed Development
Illustrative Masterplan Scheme
3D View

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Date 13/11/2021 Project 4900

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Sources of information

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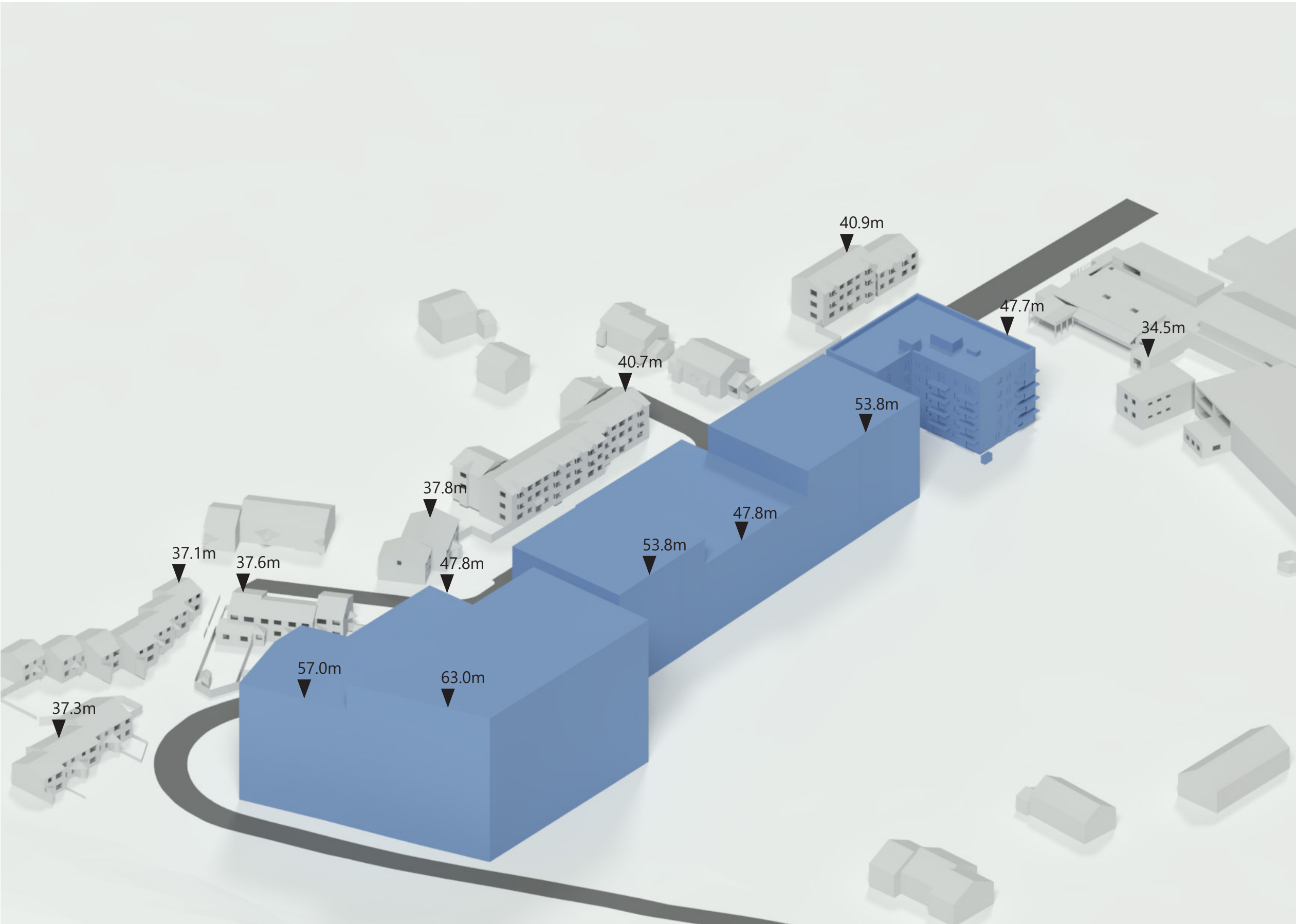


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Sources of information

Survey Solutions
31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards
AVD-PTE-ZZ-XX-M3-A-00002_Avondale
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Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd
Site Photographs
Ordnance Survey

Key:

 Proposed

Project	Avondale Drive Hayes UB3 3PW		
Title	Proposed Development Maximum Parameter Scheme 3D View		

Drawn	AP	Checked	--
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Date	13/11/2021	Project	4900
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Appendix 2

Results of the daylight and sunlight assessments
within neighbouring properties

Address	Room	Window	Room Use	Existing VSC	Proposed VSC	Loss	Proportion Retained	Room Area	Existing NSC	Proposed NSC	Loss	Proportion Retained	Existing APSH Total	Winter	Proposed APSH Total	Winter	Total Retained	Winter Retained
143 Avondale Drive																		
Ground	R1	W1	Residential	36.6	34.8	1.8	1.0	146.2	145.3	145.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	37.8	36.4	1.4	1.0	41.4	39.6	39.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	37.6	36.1	1.6	1.0	146.2	145.3	145.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
141 Avondale Drive																		
Ground	R1	W1	Residential	29.5	27.6	1.9	0.9	135.4	131.8	131.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	18.5	18.1	0.4	1.0	86.2	83.6	83.5	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	30.4	28.7	1.7	0.9	135.4	133.4	133.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	32.8	31.0	1.8	0.9	41.3	39.2	39.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
139 Avondale Drive																		
Ground	R1	W1	Hallway	17.9	15.6	2.4	0.9	85.8	83.3	80.6	2.7	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	35.3	32.7	2.6	0.9	136.9	136.1	135.8	0.3	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	32.9	30.8	2.1	0.9	41.2	39.0	37.7	1.3	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	33.6	31.3	2.3	0.9	136.9	136.1	135.9	0.2	1.0	N/F	N/F	N/F	N/F	N/F	N/F
137 Avondale Drive																		
Ground	R1	W1	Residential	28.5	25.6	2.9	0.9	149.2	145.7	145.7	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	18.4	16.4	2.0	0.9	91.9	89.4	88.6	0.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	32.0	29.4	2.6	0.9	149.2	147.7	147.7	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	35.8	32.7	3.1	0.9	39.8	37.9	37.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
135 Avondale Drive																		
Ground	R1	W1-L W1-U W2	Residential	29.1	25.0	4.1	0.9											
				34.4	29.9	4.5	0.9	191.8	190.4	190.3	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3	Hallway	17.8	17.5	0.3	1.0	94.1	67.6	67.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W4	Residential	31.1	30.8	0.4	1.0	34.0	32.9	33.0	-0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	35.8	32.1	3.7	0.9	120.7	120.4	120.3	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	35.4	31.4	4.1	0.9	52.3	50.2	50.3	-0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W3	Stairwell	34.2	34.1	0.2	1.0	104.6	58.3	65.7	-7.3	1.1	N/F	N/F	N/F	N/F	N/F	N/F
113 Avondale Drive																		
Ground	R1	W1	Kitchen	31.8	30.2	1.6	0.9	90.9	90.1	90.1	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	15.1	13.9	1.3	0.9	29.8	29.2	29.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3	Stairwell	21.3	20.0	1.3	0.9	41.6	21.6	21.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	30.8	29.5	1.4	1.0	29.5	29.2	29.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	28.8	27.7	1.0	1.0	13.4	12.3	12.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
115 Avondale Drive																		
Ground	R1	W1	Kitchen	31.0	29.3	1.7	0.9	90.8	90.0	90.0	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	10.8	9.0	1.8	0.8	29.8	20.9	20.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3-L W3-U	Stairwell	21.5	19.3	2.2	0.9	41.0	23.4	23.5	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	32.8	31.1	1.7	0.9	29.5	29.3	29.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	30.7	29.4	1.3	1.0	13.4	12.2	12.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
117 Avondale Drive																		
Ground	R1	W1	Hallway	7.4	5.6	1.8	0.8	91.1	68.5	61.6	6.9	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2-L W2-U	Residential	22.8	21.6	1.2	0.9	157.5	133.8	145.2	-11.4	1.1	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	30.2	28.0	2.2	0.9	39.7	37.8	37.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	24.5	23.8	0.7	1.0	157.5	146.9	150.7	-3.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
119 Avondale Drive																		
Ground	R1	W1 W2	Hallway	15.8	13.3	2.5	0.8											
				19.9	17.3	2.6	0.9	89.1	61.5	45.3	16.1	0.7	N/F	N/F	N/F	N/F	N/F	N/F

Address	Room	Window	Room Use	Existing	Proposed	Loss	Proportion	Room	Existing	Proposed	Loss	Proportion	Existing APSH		Proposed APSH		Total	Winter
				VSC	VSC		Retained	Area	NSC	NSC		Retained	Total	Winter	Total	Winter	Retained	Retained
Ground	R2	W3	Residential	32.5	29.8	2.7	0.9	150.0	149.2	145.8	3.4	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	28.7	26.5	2.2	0.9	39.8	37.4	37.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	30.0	27.8	2.3	0.9	150.0	149.1	146.4	2.7	1.0	N/F	N/F	N/F	N/F	N/F	N/F
121 Avondale Drive																		
Ground	R1	W1	Stairwell	19.7	18.7	0.9	1.0	41.7	25.3	25.2	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2 W3 W4	Hallway	20.4 22.6 14.5	18.2 19.9 12.4	2.2 2.6 2.1	0.9 0.9 0.9	29.8	27.4	28.0	-0.6	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W5	Kitchen	31.5	28.9	2.6	0.9	90.8	89.9	87.1	2.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	28.9	26.7	2.2	0.9	13.4	12.3	12.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	29.4	27.1	2.3	0.9	29.5	28.2	28.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
123 Avondale Drive																		
Ground	R1	W1	Stairwell	19.6	18.9	0.6	1.0	41.3	26.8	26.7	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Kitchen	29.6	27.7	1.9	0.9	90.8	89.8	88.0	1.9	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	28.3	26.1	2.2	0.9	13.4	12.3	12.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	28.8	26.7	2.1	0.9	29.5	29.3	29.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
125 Avondale Drive																		
Ground	R1	W1	Stairwell	18.5	18.5	0.0	1.0	41.3	26.7	26.8	-0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Kitchen	25.4	25.2	0.2	1.0	90.8	69.5	79.9	-10.4	1.1	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	26.5	25.9	0.6	1.0	13.4	13.1	13.1	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	26.5	26.7	-0.2	1.0	29.5	29.1	29.1	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
127 Avondale Drive																		
Ground	R1	W1 W3	Kitchen	31.5 18.4	29.6 18.4	1.9 0.0	0.9 1.0	168.8	164.6	163.3	1.3	1.0	73	18	72	18	1.0	1.0
Ground	R2	W2	Dining Room	31.5	29.4	2.1	0.9	230.0	225.6	220.2	5.3	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	32.5	30.9	1.6	1.0	48.1	47.6	47.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	32.5	30.8	1.7	0.9	119.0	119.0	118.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
129 Avondale Drive																		
Ground	R1	W1 W2-L W2-U	Hallway	28.3 11.7	26.1 11.3	2.3 0.4	0.9 1.0	44.3	43.3	43.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3	Residential	28.0	26.6	1.4	1.0	100.7	99.0	93.7	5.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	31.5	29.7	1.8	0.9	101.0	100.3	94.4	5.8	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	29.4	27.5	1.9	0.9	100.7	100.1	95.2	4.9	1.0	N/F	N/F	N/F	N/F	N/F	N/F
131 Avondale Drive																		
Ground	R1	W1 W2-L W2-U	Hallway	29.5 16.3	27.4 12.0	2.2 4.3	0.9 0.7	37.8	37.6	37.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3	Residential	30.1	27.2	2.9	0.9	94.1	93.1	83.6	9.5	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	29.8	27.7	2.1	0.9	94.4	94.1	87.3	6.9	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	27.7	25.4	2.3	0.9	94.1	92.5	83.5	9.0	0.9	N/F	N/F	N/F	N/F	N/F	N/F
133 Avondale Drive																		
Ground	R1	W1 W2-L W2-U	Residential	29.7 17.3	26.4 11.7	3.3 5.6	0.9 0.7	41.7	41.7	41.7	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3 W5 W6-L W6-U	Residential	29.1 2.9 8.2	25.4 0.9 5.7	3.7 2.0 2.5	0.9 0.3 0.7	186.0	182.8	161.4	21.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W4	Hallway	16.3	14.4	1.9	0.9	94.7	45.7	47.7	-2.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	24.1	21.6	2.6	0.9	118.4	118.1	108.8	9.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	27.7	24.7	3.0	0.9	48.2	46.8	46.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W3-L W3-U	Stairwell	31.0	27.8	3.2	0.9	106.2	70.9	50.8	20.1	0.7	N/F	N/F	N/F	N/F	N/F	N/F
33 Avondale Drive																		

Address	Room	Window	Room Use	Existing VSC	Proposed VSC	Loss	Proportion Retained	Room Area	Existing NSC	Proposed NSC	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
Ground	R1	W1	Hallway	25.2	23.5	1.7	0.9	82.7	67.5	63.0	4.6	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	23.7	22.1	1.6	0.9	23.3	17.9	21.7	-3.8	1.2	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3	Residential	17.9	16.4	1.5	0.9	106.1	103.5	93.3	10.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Stairwell	34.2	31.5	2.7	0.9	99.6	89.9	90.3	-0.4	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	25.4	24.2	1.2	1.0	62.1	59.2	58.0	1.3	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W3-L W3-U	Residential	21.6	20.2	1.4	0.9	124.2	123.6	116.7	6.8	0.9	N/F	N/F	N/F	N/F	N/F	N/F
31 Avondale Drive																		
Ground	R1	W1-L W1-U	Residential	26.4	24.8	1.6	0.9	107.7	105.0	97.0	8.0	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	25.1	23.7	1.4	0.9	23.3	22.5	22.2	0.3	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3	Hallway	6.8	3.4	3.4	0.5	83.3	65.1	50.2	14.9	0.8	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	25.2	24.3	0.9	1.0	125.0	124.4	115.5	8.8	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	24.1	23.4	0.7	1.0	62.4	58.6	61.4	-2.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
29 Avondale Drive																		
Ground	R1	W1	Hallway	14.1	11.8	2.4	0.8	83.3	73.9	27.5	46.4	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	23.0	23.1	-0.1	1.0	23.3	21.5	20.3	1.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3-L W3-U	Residential	24.3	23.2	1.1	1.0	106.9	106.6	81.2	25.4	0.8	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	24.2	23.5	0.6	1.0	62.4	57.8	61.4	-3.6	1.1	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	24.6	23.8	0.8	1.0	125.0	124.7	103.9	20.8	0.8	N/F	N/F	N/F	N/F	N/F	N/F
1-24 Gade Close																		
Ground	R1	W1 W2-L W2-U	Living Room	31.2 25.6	31.2 20.3	0.0 5.3	1.0 0.8	208.3	207.5	202.7	4.9	1.0	54	17	55	17	1.0	1.0
Ground	R2	W3	Kitchen	26.1	19.8	6.2	0.8	73.8	73.3	36.0	37.3	0.5	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W4-L W4-U	Stairwell	18.6	12.2	6.4	0.7	95.4	95.2	33.8	61.4	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R4	W5	Kitchen	26.4	19.7	6.7	0.7	66.8	66.1	28.8	37.3	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R5	W6-L W6-U W7-L W7-U W8-L W8-U	Living Room	13.1 28.4 14.1	13.3 21.4 13.5	-0.2 7.0 0.6	1.0 0.8 1.0	218.5	208.5	115.1	93.4	0.6	14	0	13	0	0.9	0.0
Ground	R6	W9	Kitchen	28.0	21.7	6.4	0.8	68.0	67.3	44.5	22.9	0.7	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R7	W10-L W10-U	Living Room	27.4	21.5	5.9	0.8	144.6	143.5	110.6	32.9	0.8	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R8	W11-L W11-U	Living Room	27.6	22.6	5.0	0.8	144.6	143.4	122.2	21.1	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R9	W12	Kitchen	28.5	24.4	4.2	0.9	71.7	71.1	66.1	4.9	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R10	W13-L W13-U W14-L W14-U W15	Living Room	3.8 26.3 14.7	2.2 23.4 14.2	1.6 2.9 0.5	0.6 0.9 1.0	215.2	198.0	167.8	30.2	0.8	1	0	1	0	1.0	0.0
Ground	R11	W16	Kitchen	25.9	23.6	2.3	0.9	66.8	66.6	66.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R12	W17-L W17-U	Stairwell	19.0	17.2	1.8	0.9	97.3	97.2	97.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R13	W18	Kitchen	26.8	25.2	1.6	0.9	73.0	70.7	72.7	-2.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R14	W19 W20-L W20-U	Living Room	26.5 34.8	25.4 32.9	1.2 1.9	1.0 0.9	210.3	210.0	208.6	1.4	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U W2-L W2-U W3-L W3-U W4-L W4-U	Living Room	33.7 17.0 28.7 15.5	33.9 17.5 24.1 14.3	-0.2 -0.5 4.6 1.3	1.0 1.0 0.8 0.9	208.3	207.7	203.9	3.7	1.0	57	19	59	19	1.0	1.0
First	R2	W5-L W5-U	Kitchen	28.4	23.4	5.0	0.8	73.8	73.8	39.0	34.7	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W6-L W6-U	Stairwell	29.3	23.8	5.5	0.8	95.4	95.2	48.5	46.7	0.5	N/F	N/F	N/F	N/F	N/F	N/F

Address	Room	Window	Room Use	Existing	Proposed	Loss	Proportion Retained	Room Area	Existing	Proposed	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
				VSC	VSC				NSC	NSC			Total	Winter	Total	Winter		
First	R4	W7	Kitchen	29.1	23.4	5.7	0.8	66.8	66.8	33.6	33.1	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R5	W8-L W8-U W9-L W9-U W10-L W10-U	Living Room	14.0	14.5	-0.5	1.0	218.5	208.3	115.9	92.4	0.6	14	0	13	0	0.9	0.0
				30.3	24.0	6.3	0.8											
				14.6	14.2	0.4	1.0											
First	R6	W11	Kitchen	29.3	23.8	5.5	0.8	68.0	67.6	46.7	20.9	0.7	N/F	N/F	N/F	N/F	N/F	N/F
First	R7	W12-L W12-U W13-L W13-U W14-L W14-U	Living Room	13.6	13.7	-0.1	1.0	144.6	142.9	105.4	37.5	0.7	13	0	12	0	0.9	0.0
				30.8	25.3	5.5	0.8											
				12.5	12.7	-0.2	1.0											
First	R8	W15-L W15-U W16-L W16-U W17-L W17-U	Living Room	11.7	11.6	0.1	1.0	144.6	142.8	117.8	25.0	0.8	13	0	11	0	0.8	0.0
				30.9	26.4	4.5	0.9											
				16.2	16.4	-0.2	1.0											
First	R9	W18	Kitchen	29.7	26.3	3.4	0.9	71.7	71.2	67.2	4.0	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R10	W19-L W19-U W20-L W20-U W21-L W21-U	Living Room	4.2	2.7	1.5	0.6	215.2	197.8	172.2	25.6	0.9	1	0	1	0	1.0	0.0
				28.0	25.7	2.3	0.9											
				15.6	15.4	0.2	1.0											
First	R11	W22	Kitchen	28.8	27.3	1.5	0.9	66.8	66.7	66.7	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R12	W23-L W23-U	Stairwell	29.1	28.1	1.1	1.0	97.3	97.3	97.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R13	W24	Kitchen	28.6	28.0	0.6	1.0	73.0	70.3	72.5	-2.2	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R14	W25-L W25-U W26-L W26-U W27-L W27-U W28-L W28-U	Living Room	15.1	14.4	0.7	1.0	210.3	210.0	208.6	1.4	1.0	45	10	46	10	1.0	1.0
				29.2	28.8	0.4	1.0											
				20.6	19.0	1.6	0.9											
				36.8	35.2	1.5	1.0											
Second	R1	W1-L W1-U W2-L W2-U W3-L W3-U W4-L W4-U	Living Room	35.0	35.5	-0.5	1.0	216.0	215.5	213.1	2.5	1.0	58	20	60	20	1.0	1.0
				14.1	14.9	-0.8	1.1											
				29.1	26.6	2.5	0.9											
				14.6	13.9	0.7	1.0											
Second	R2	W5	Kitchen	26.3	23.4	2.9	0.9	73.8	73.7	48.9	24.8	0.7	N/F	N/F	N/F	N/F	N/F	N/F
Second	R3	W6-L W6-U	Stairwell	27.0	23.8	3.3	0.9	95.4	95.0	60.8	34.2	0.6	N/F	N/F	N/F	N/F	N/F	N/F
Second	R4	W7	Kitchen	26.9	23.4	3.6	0.9	66.8	66.8	43.5	23.3	0.7	N/F	N/F	N/F	N/F	N/F	N/F
Second	R5	W8-L W8-U W9-L W9-U W10-L W10-U	Living Room	13.5	14.3	-0.9	1.1	218.5	208.0	125.8	82.2	0.6	13	0	12	0	0.9	0.0
				30.8	26.7	4.1	0.9											
				14.2	14.2	-0.1	1.0											
Second	R6	W11	Kitchen	27.0	23.6	3.4	0.9	68.0	67.0	51.9	15.1	0.8	N/F	N/F	N/F	N/F	N/F	N/F
Second	R7	W12-L W12-U W13-L W13-U W14-L W14-U	Living Room	13.0	13.5	-0.6	1.0	152.2	150.6	120.7	29.9	0.8	12	0	12	0	1.0	0.0
				31.1	27.8	3.4	0.9											
				12.1	12.8	-0.6	1.1											
Second	R8	W15-L W15-U W16-L W16-U W17-L W17-U	Living Room	11.2	11.5	-0.3	1.0	152.4	150.6	130.5	20.1	0.9	11	0	11	0	1.0	0.0
				31.2	28.7	2.5	0.9											
				14.3	14.9	-0.6	1.0											
Second	R9	W18	Kitchen	27.2	25.7	1.6	0.9	71.7	71.0	69.2	1.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Second	R10	W19-L W19-U W20-L W20-U W21-L W21-U	Living Room	6.0	4.8	1.1	0.8	215.2	198.7	181.6	17.0	0.9	3	0	3	0	1.0	0.0
				29.8	29.1	0.7	1.0											
				14.2	14.4	-0.2	1.0											
Second	R11	W22	Kitchen	24.4	24.4	0.0	1.0	66.8	66.0	66.0	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Second	R12	W23-L	Stairwell	25.7	26.1	-0.4	1.0											

Address	Room	Window	Room Use	Existing	Proposed	Loss	Proportion Retained	Room Area	Existing	Proposed	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained	
				VSC	VSC				NSC	NSC			Total	Winter	Total	Winter			
W23-U								97.3	97.3	97.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Second	R13	W24	Kitchen	24.2	25.0	-0.8	1.0	73.0	70.3	72.9	-2.6	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Second	R14	W25-L	Living Room	14.1	13.9	0.2	1.0												
		W25-U		29.6	30.7	-1.0	1.0												
		W26-L																	
		W26-U																	
		W27-L																	
		W27-U		17.5	16.4	1.1	0.9												
		W28-L		37.8	36.7	1.2	1.0												
		W28-U						217.8	217.5	217.5	0.1	1.0	44	9	46	9	1.0	1.0	
66 Gade Close																			
Ground	R1	W1-L	Living Room	19.8	20.8	-0.9	1.0												
		W1-U							92.3	92.2	92.3	-0.1	1.0	27	4	26	4	1.0	1.0
1-17 Clivesdale Drive																			
Ground	R1	W1	Living Room	33.4	32.9	0.5	1.0												
		W2			34.2	28.7	5.5	0.8	208.2	207.8	207.8	0.0	1.0	57	18	57	18	1.0	1.0
Ground	R2	W3	Kitchen	34.4	29.4	4.9	0.9	69.5	69.4	68.6	0.9	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Ground	R3	W4-L	Stairwell	27.5	22.9	4.6	0.8												
		W4-U							88.8	88.8	88.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R4	W5	Kitchen	34.6	30.2	4.4	0.9	69.5	69.4	69.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Ground	R5	W6	Living Room	15.1	13.7	1.4	0.9												
		W7			36.7	32.9	3.8	0.9											
		W8			13.9	13.9	0.0	1.0	218.0	213.3	190.7	22.7	0.9	10	0	9	0	0.9	0.0
Ground	R6	W9	Kitchen	36.5	33.4	3.1	0.9	77.4	76.7	76.7	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Ground	R7	W10-L	Living Room	35.4	32.7	2.8	0.9												
		W10-U							157.4	155.9	155.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R8	W11-L	Living Room	35.7	33.3	2.3	0.9												
		W11-U							157.4	155.6	155.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R9	W12	Kitchen	37.0	34.9	2.0	0.9	77.2	77.0	77.0	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
First	R1	W1-L	Living Room	34.9	34.7	0.2	1.0												
		W1-U			18.5	17.9	0.6	1.0											
		W2-L																	
		W2-U																	
		W3-L				36.7	32.1	4.6	0.9										
		W3-U		18.7	18.7	0.0	1.0												
		W4-L						208.2	207.7	207.7	0.0	1.0	60	20	60	20	1.0	1.0	
		W4-U																	
First	R2	W5	Kitchen	35.8	31.8	4.1	0.9	69.5	69.4	69.2	0.2	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
First	R3	W6-L	Stairwell	36.5	32.8	3.7	0.9												
		W6-U							88.8	88.8	88.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R4	W7	Kitchen	36.1	32.8	3.3	0.9	69.5	69.4	69.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
First	R5	W8-L	Living Room	15.7	14.8	1.0	0.9												
		W8-U			37.5	34.5	3.0	0.9											
		W9-L																	
		W9-U																	
		W10-L		17.3	17.3	0.0	1.0												
		W10-U						218.0	214.7	203.0	11.7	0.9	9	0	10	0	1.1	0.0	
First	R6	W11	Kitchen	37.0	34.5	2.5	0.9	77.4	77.2	77.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
First	R7	W12-L	Living Room	17.2	16.3	0.9	0.9												
		W12-U			37.5	35.2	2.3	0.9											
		W13-L																	
		W13-U																	
		W14-L		19.5	19.5	0.0	1.0												
		W14-U						157.4	155.3	155.3	0.0	1.0	11	0	12	0	1.1	0.0	
First	R8	W15-L	Living Room	15.9	15.1	0.8	0.9												
		W15-U			37.6	35.8	1.9	1.0											
		W16-L																	
		W16-U																	
		W17-L		23.3	23.3	0.0	1.0												
		W17-U						157.4	155.1	155.2	-0.1	1.0	14	0	15	0	1.1	0.0	
First	R9	W18	Kitchen	37.7	36.0	1.7	1.0	77.2	77.1	77.1	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Second	R1	W1-L	Living Room	35.9	36.1	-0.2	1.0												
		W1-U			16.0	15.8	0.1	1.0											
		W2-L																	
		W2-U																	
		W3-L				36.9	33.6	3.4	0.9										
		W3-U																	
		W4-L		16.7	16.7	0.0	1.0												
		W4-U						217.0	216.5	216.5	0.0	1.0	60	20	61	20	1.0	1.0	
Second	R2	W5	Kitchen	30.9	27.9	3.0	0.9	69.5	69.4	69.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Second	R3	W6-L	Stairwell	32.6	29.8	2.7	0.9												
		W6-U							88.8	88.8	88.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Second	R4	W7	Kitchen	30.0	27.6	2.4	0.9	69.5	68.5	68.5	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F	
Second	R5	W8-L	Living Room	13.9	13.4	0.5	1.0												
		W8-U																	

Address	Room	Window	Room Use	Existing VSC	Proposed VSC	Loss	Proportion Retained	Room Area	Existing NSC	Proposed NSC	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
													Total	Winter	Total	Winter		
		W8-U		37.9	35.7	2.2	0.9	218.0	214.5	209.0	5.5	1.0	11	0	13	0	1.2	0.0
		W9-L																
		W9-U																
		W10-L		18.8	18.8	0.0	1.0											
		W10-U																
Minet Infant and Junior School																		
Ground	R1	W1	Class Room	1.1	0.6	0.5	0.5	1384.1	1327.0	1069.1	257.9	0.8	94	25	95	25	1.0	1.0
		W2		0.0	0.0	0.0	0.0											
		W3		1.2	0.7	0.5	0.6											
		W4		35.5	32.3	3.2	0.9											
		W5		1.7	1.0	0.7	0.6											
		W6		0.0	0.0	0.0	0.0											
		W27		33.8	33.8	0.0	1.0											
		W28		34.0	34.0	0.0	1.0											
		W29		33.9	33.9	0.0	1.0											
		W35		77.6	77.7	-0.1	1.0											
		W36		35.4	35.1	0.3	1.0											
		W37		35.1	34.8	0.3	1.0											
Ground	R2	W7	Class Room	3.7	1.7	2.0	0.5	576.5	576.5	573.4	3.1	1.0	98	28	96	27	1.0	1.0
		W8		0.1	0.1	0.0	1.0											
		W9		5.0	2.2	2.7	0.4											
		W10		0.1	0.1	0.0	1.0											
		W11		5.5	2.8	2.7	0.5											
		W12		0.1	0.1	0.0	1.0											
		W13		4.7	2.5	2.3	0.5											
		W14		0.2	0.2	0.0	1.0											
		W25		99.0	98.5	0.5	1.0											
		W30		33.9	33.9	0.0	1.0											
		W31		33.8	33.8	0.0	1.0											
		Ground		R3	W15	Class Room	6.1											
W16	0.1		0.1		0.0		1.0											
W17	6.3		3.8		2.5		0.6											
W18	0.1		0.1		0.0		1.0											
W19	7.5		5.1		2.4		0.7											
W20	0.1		0.1		0.0		1.0											
W21	11.0		9.0		2.0		0.8											
W22	1.1		1.1		0.0		1.0											
W26	98.9		98.5		0.4		1.0											
W32	33.7		33.7		0.0		1.0											
W33	33.7		33.7		0.0		1.0											
W34	33.7		33.7		0.0		1.0											
Ground	R4	W23-L	Office	32.8	29.4	3.5	0.9	178.6	178.4	148.8	29.5	0.8	57	18	51	13	0.9	0.7
		W23-U																
		W24-L		31.9	28.4	3.5	0.9											
Ground	R5	W38	Class Room	26.7	24.5	2.2	0.9	139.2	121.0	110.5	10.5	0.9	39	5	37	3	0.9	0.6
Ground	R6	W39	Class Room	36.6	33.9	2.6	0.9	306.4	305.0	305.0	0.0	1.0	95	26	92	23	1.0	0.9
		W40		36.7	33.6	3.1	0.9											
		W41		36.9	33.1	3.7	0.9											
		W42		35.0	30.1	4.9	0.9											
Ground	R7	W43	Class Room	35.1	30.8	4.2	0.9	304.6	290.1	271.8	18.3	0.9	64	19	57	12	0.9	0.6
		W44		34.4	34.4	0.1	1.0											
		W45		32.8	32.7	0.1	1.0											
		W46		30.1	30.0	0.0	1.0											
Ground	R8	W47	Class Room	31.3	31.4	0.0	1.0	622.6	622.6	622.6	0.0	1.0	81	19	82	20	1.0	1.1
		W48		26.6	26.9	-0.3	1.0											
Ground	R9	W49	Staff Area	18.3	17.5	0.8	1.0	1114.6	1077.5	870.4	207.1	0.8	76	20	73	17	1.0	0.9
		W50		34.4	32.0	2.5	0.9											
		W51		35.0	32.7	2.3	0.9											
		W52		35.4	33.2	2.1	0.9											
		W53		27.6	27.5	0.1	1.0											
First	R1	W1	Stairwell	38.5	37.2	1.3	1.0	139.0	128.0	128.0	0.0	1.0	76	26	73	23	1.0	0.9
		W2		38.1	36.5	1.6	1.0											
		W3		37.6	35.6	2.0	0.9											
First	R2	W4	Class Room	38.4	36.3	2.1	0.9	306.4	305.0	305.0	0.0	1.0	96	26	93	23	1.0	0.9
		W5		38.4	35.9	2.5	0.9											
		W6		38.3	35.3	3.0	0.9											
		W7		35.7	31.9	3.8	0.9											
First	R3	W8	Class Room	35.8	32.5	3.3	0.9	304.6	290.1	273.3	16.8	0.9	64	19	60	15	0.9	0.8
		W9		37.8	37.8	0.1	1.0											
		W10		37.3	37.3	0.0	1.0											
		W11		36.3	36.3	0.0	1.0											
First	R4	W12	Class Room	37.0	36.9	0.1	1.0	622.6	622.6	622.6	0.0	1.0	96	26	97	27	1.0	1.0
		W13		35.1	34.5	0.6	1.0											
First	R5	W14	Class Room	36.3	35.2	1.1	1.0	626.0	626.0	626.0	0.0	1.0	69	22	69	22	1.0	1.0

Address	Room	Window	Room Use	Existing VSC	Proposed VSC	Loss	Proportion Retained	Room Area	Existing NSC	Proposed NSC	Loss	Proportion Retained	Existing APSH Total	Winter	Proposed APSH Total	Winter	Total Retained	Winter Retained
143 Avondale Drive																		
Ground	R1	W1	Residential	36.6	34.1	2.5	0.9	146.2	145.3	145.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	37.8	35.7	2.0	0.9	41.4	39.6	39.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	37.6	35.3	2.3	0.9	146.2	145.3	145.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
141 Avondale Drive																		
Ground	R1	W1	Residential	29.5	26.8	2.6	0.9	135.4	131.8	131.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	18.5	17.9	0.5	1.0	86.2	83.6	83.5	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	30.4	28.0	2.4	0.9	135.4	133.4	133.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	32.8	30.2	2.6	0.9	41.3	39.2	39.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
139 Avondale Drive																		
Ground	R1	W1	Hallway	17.9	14.7	3.2	0.8	85.8	83.3	78.6	4.7	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	35.3	31.8	3.5	0.9	136.9	136.1	134.3	1.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	32.9	30.0	2.9	0.9	41.2	39.0	36.7	2.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	33.6	30.5	3.1	0.9	136.9	136.1	134.7	1.5	1.0	N/F	N/F	N/F	N/F	N/F	N/F
137 Avondale Drive																		
Ground	R1	W1	Residential	28.5	24.6	3.9	0.9	149.2	145.7	145.6	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	18.4	16.0	2.5	0.9	91.9	89.4	88.0	1.5	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	32.0	28.4	3.6	0.9	149.2	147.7	147.6	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	35.8	31.5	4.3	0.9	39.8	37.9	37.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
135 Avondale Drive																		
Ground	R1	W1-L W1-U W2	Residential	29.1	23.4	5.7	0.8											
				34.4	28.0	6.4	0.8	191.8	190.4	185.7	4.7	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3	Hallway	17.8	16.8	1.0	0.9	94.1	67.6	67.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W4	Residential	31.1	30.5	0.7	1.0	34.0	32.9	32.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	35.8	30.6	5.2	0.9	120.7	120.4	114.7	5.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	35.4	29.6	5.8	0.8	52.3	50.2	47.3	2.9	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W3	Stairwell	34.2	33.1	1.1	1.0	104.6	58.3	55.9	2.4	1.0	N/F	N/F	N/F	N/F	N/F	N/F
113 Avondale Drive																		
Ground	R1	W1	Kitchen	31.8	29.2	2.6	0.9	90.9	90.1	87.3	2.7	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	15.1	12.9	2.3	0.8	29.8	29.2	29.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3	Stairwell	21.3	19.8	1.5	0.9	41.6	21.6	21.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	30.8	28.5	2.3	0.9	29.5	29.2	29.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	28.8	26.7	2.1	0.9	13.4	12.3	12.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
115 Avondale Drive																		
Ground	R1	W1	Kitchen	31.0	28.0	3.0	0.9	90.8	90.0	83.6	6.4	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Hallway	10.8	8.1	2.7	0.8	29.8	20.9	20.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3-L W3-U	Stairwell	21.5	19.1	2.5	0.9	41.0	23.4	23.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	32.8	29.8	3.0	0.9	29.5	29.3	29.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	30.7	28.1	2.6	0.9	13.4	12.2	12.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
117 Avondale Drive																		
Ground	R1	W1	Hallway	7.4	4.1	3.4	0.5	91.1	68.5	30.9	37.6	0.5	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2-L W2-U	Residential	22.8	20.3	2.5	0.9	157.5	133.8	101.9	31.9	0.8	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	30.2	26.4	3.8	0.9	39.7	37.8	37.8	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	24.5	22.2	2.3	0.9	157.5	146.9	104.7	42.2	0.7	N/F	N/F	N/F	N/F	N/F	N/F
119 Avondale Drive																		
Ground	R1	W1 W2	Hallway	15.8	11.3	4.5	0.7											
				19.9	15.3	4.6	0.8	89.1	61.5	22.5	39.0	0.4	N/F	N/F	N/F	N/F	N/F	N/F

Address	Room	Window	Room Use	Existing	Proposed	Loss	Proportion Retained	Room Area	Existing	Proposed	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
				VSC	VSC				NSC	NSC			Total	Winter	Total	Winter		
Ground	R2	W3	Residential	32.5	27.9	4.6	0.9	150.0	149.2	102.7	46.4	0.7	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	28.7	24.6	4.1	0.9	39.8	37.4	37.4	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	30.0	25.9	4.1	0.9	150.0	149.1	104.0	45.1	0.7	N/F	N/F	N/F	N/F	N/F	N/F
121 Avondale Drive																		
Ground	R1	W1	Stairwell	19.7	17.2	2.5	0.9	41.7	25.3	25.2	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2 W3 W4	Hallway	20.4 22.6 14.5	16.6 18.3 10.9	3.9 4.3 3.7	0.8 0.8 0.7	29.8	27.4	23.7	3.7	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W5	Kitchen	31.5	27.3	4.2	0.9	90.8	89.9	64.4	25.5	0.7	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	28.9	25.1	3.9	0.9	13.4	12.3	12.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	29.4	25.5	3.9	0.9	29.5	28.2	28.2	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
123 Avondale Drive																		
Ground	R1	W1	Stairwell	19.6	17.7	1.9	0.9	41.3	26.8	26.7	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Kitchen	29.6	26.4	3.2	0.9	90.8	89.8	66.5	23.3	0.7	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	28.3	24.6	3.7	0.9	13.4	12.3	12.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	28.8	25.2	3.6	0.9	29.5	29.3	29.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
125 Avondale Drive																		
Ground	R1	W1	Stairwell	18.5	17.6	0.9	1.0	41.3	26.7	26.8	-0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Kitchen	25.4	24.5	0.9	1.0	90.8	69.5	67.9	1.6	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Bathroom	26.5	24.6	1.9	0.9	13.4	13.1	13.1	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Bathroom	26.5	25.5	1.0	1.0	29.5	29.1	29.1	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
127 Avondale Drive																		
Ground	R1	W1 W3	Kitchen	31.5 18.4	28.6 18.4	2.9 0.0	0.9 1.0	168.8	164.6	162.8	1.8	1.0	73	18	72	18	1.0	1.0
Ground	R2	W2	Dining Room	31.5	28.4	3.1	0.9	230.0	225.6	217.7	7.9	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	32.5	29.9	2.6	0.9	48.1	47.6	47.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	32.5	29.7	2.8	0.9	119.0	119.0	118.9	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
129 Avondale Drive																		
Ground	R1	W1 W2-L W2-U	Hallway	28.3 11.7	25.0 10.6	3.4 1.1	0.9 0.9	44.3	43.3	43.3	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3	Residential	28.0	26.0	2.0	0.9	100.7	99.0	91.8	7.1	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	31.5	28.5	3.0	0.9	101.0	100.3	92.4	7.8	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	29.4	26.3	3.1	0.9	100.7	100.1	93.2	6.9	0.9	N/F	N/F	N/F	N/F	N/F	N/F
131 Avondale Drive																		
Ground	R1	W1 W2-L W2-U	Hallway	29.5 16.3	26.1 10.2	3.4 6.1	0.9 0.6	37.8	37.6	37.6	0.0	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3	Residential	30.1	25.7	4.4	0.9	94.1	93.1	80.9	12.1	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	29.8	26.5	3.3	0.9	94.4	94.1	84.9	9.2	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	27.7	24.2	3.5	0.9	94.1	92.5	81.1	11.4	0.9	N/F	N/F	N/F	N/F	N/F	N/F
133 Avondale Drive																		
Ground	R1	W1 W2-L W2-U	Residential	29.7 17.3	24.8 9.0	4.9 8.2	0.8 0.5	41.7	41.7	41.6	0.1	1.0	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W3 W5 W6-L W6-U	Residential	29.1 2.9 8.2	23.5 0.7 5.1	5.6 2.2 3.1	0.8 0.3 0.6	186.0	182.8	155.3	27.4	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W4	Hallway	16.3	13.4	2.9	0.8	94.7	45.7	44.7	0.9	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	24.1	20.1	4.1	0.8	118.4	118.1	105.9	12.2	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	27.7	23.0	4.7	0.8	48.2	46.8	45.2	1.6	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W3-L W3-U	Stairwell	31.0	25.0	6.1	0.8	106.2	70.9	42.8	28.1	0.6	N/F	N/F	N/F	N/F	N/F	N/F
33 Avondale Drive																		

Address	Room	Window	Room Use	Existing VSC	Proposed VSC	Loss	Proportion Retained	Room Area	Existing NSC	Proposed NSC	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
Ground	R1	W1	Hallway	25.2	20.4	4.8	0.8	82.7	67.5	31.0	36.5	0.5	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	23.7	19.0	4.7	0.8	23.3	17.9	16.5	1.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3	Residential	17.9	13.4	4.5	0.8	106.1	103.5	50.7	52.8	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Stairwell	34.2	30.4	3.8	0.9	99.6	89.9	88.4	1.5	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	25.4	21.2	4.2	0.8	62.1	59.2	51.9	7.3	0.9	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W3-L W3-U	Residential	21.6	17.3	4.3	0.8	124.2	123.6	73.7	49.9	0.6	N/F	N/F	N/F	N/F	N/F	N/F
31 Avondale Drive																		
Ground	R1	W1-L W1-U	Residential	26.4	21.7	4.7	0.8	107.7	105.0	53.8	51.2	0.5	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	25.1	20.7	4.5	0.8	23.3	22.5	19.9	2.6	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3	Hallway	6.8	0.7	6.1	0.1	83.3	65.1	17.0	48.2	0.3	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U	Residential	25.2	21.2	4.0	0.8	125.0	124.4	63.5	60.9	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2	Residential	24.1	20.4	3.7	0.8	62.4	58.6	56.3	2.3	1.0	N/F	N/F	N/F	N/F	N/F	N/F
29 Avondale Drive																		
Ground	R1	W1	Hallway	14.1	9.8	4.4	0.7	83.3	73.9	19.8	54.1	0.3	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R2	W2	Residential	23.0	20.5	2.4	0.9	23.3	21.5	19.4	2.2	0.9	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W3-L W3-U	Residential	24.3	20.7	3.6	0.9	106.9	106.6	63.1	43.5	0.6	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1	Residential	24.2	20.6	3.5	0.9	62.4	57.8	56.4	1.4	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R2	W2-L W2-U	Residential	24.6	21.3	3.3	0.9	125.0	124.7	77.8	46.8	0.6	N/F	N/F	N/F	N/F	N/F	N/F
1-24 Gade Close																		
Ground	R1	W1 W2-L W2-U	Living Room	31.2 25.6	30.6 19.2	0.7 6.5	1.0 0.7	208.3	207.5	197.7	9.9	1.0	54	17	54	17	1.0	1.0
Ground	R2	W3	Kitchen	26.1	18.9	7.2	0.7	73.8	73.3	29.2	44.1	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R3	W4-L W4-U	Stairwell	18.6	11.3	7.3	0.6	95.4	95.2	28.2	67.0	0.3	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R4	W5	Kitchen	26.4	18.8	7.6	0.7	66.8	66.1	26.0	40.1	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R5	W6-L W6-U W7-L W7-U W8-L W8-U	Living Room	13.1 28.4 14.1	12.9 20.2 12.8	0.2 8.2 1.3	1.0 0.7 0.9	218.5	208.5	65.4	143.0	0.3	14	0	10	0	0.7	0.0
Ground	R6	W9	Kitchen	28.0	19.8	8.3	0.7	68.0	67.3	27.8	39.6	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R7	W10-L W10-U	Living Room	27.4	18.9	8.5	0.7	144.6	143.5	58.9	84.6	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R8	W11-L W11-U	Living Room	27.6	18.9	8.7	0.7	144.6	143.4	59.0	84.3	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R9	W12	Kitchen	28.5	20.1	8.5	0.7	71.7	71.1	30.4	40.7	0.4	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R10	W13-L W13-U W14-L W14-U W15	Living Room	3.8 26.3 14.7	2.1 19.0 13.7	1.7 7.2 1.1	0.5 0.7 0.9	215.2	198.0	73.4	124.6	0.4	1	0	1	0	1.0	0.0
Ground	R11	W16	Kitchen	25.9	19.2	6.6	0.7	66.8	66.6	31.1	35.5	0.5	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R12	W17-L W17-U	Stairwell	19.0	12.6	6.4	0.7	97.3	97.2	29.9	67.3	0.3	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R13	W18	Kitchen	26.8	20.6	6.2	0.8	73.0	70.7	31.9	38.7	0.5	N/F	N/F	N/F	N/F	N/F	N/F
Ground	R14	W19 W20-L W20-U	Living Room	26.5 34.8	20.7 32.6	5.8 2.1	0.8 0.9	210.3	210.0	207.2	2.8	1.0	N/F	N/F	N/F	N/F	N/F	N/F
First	R1	W1-L W1-U W2-L W2-U W3-L W3-U W4-L W4-U	Living Room	33.7 17.0 28.7 15.5	33.2 16.8 22.8 14.0	0.5 0.2 5.8 1.6	1.0 1.0 0.8 0.9	208.3	207.7	199.4	8.2	1.0	57	19	57	19	1.0	1.0
First	R2	W5-L W5-U	Kitchen	28.4	22.4	6.0	0.8	73.8	73.8	33.7	40.1	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R3	W6-L W6-U	Stairwell	29.3	22.8	6.5	0.8	95.4	95.2	44.3	50.9	0.5	N/F	N/F	N/F	N/F	N/F	N/F

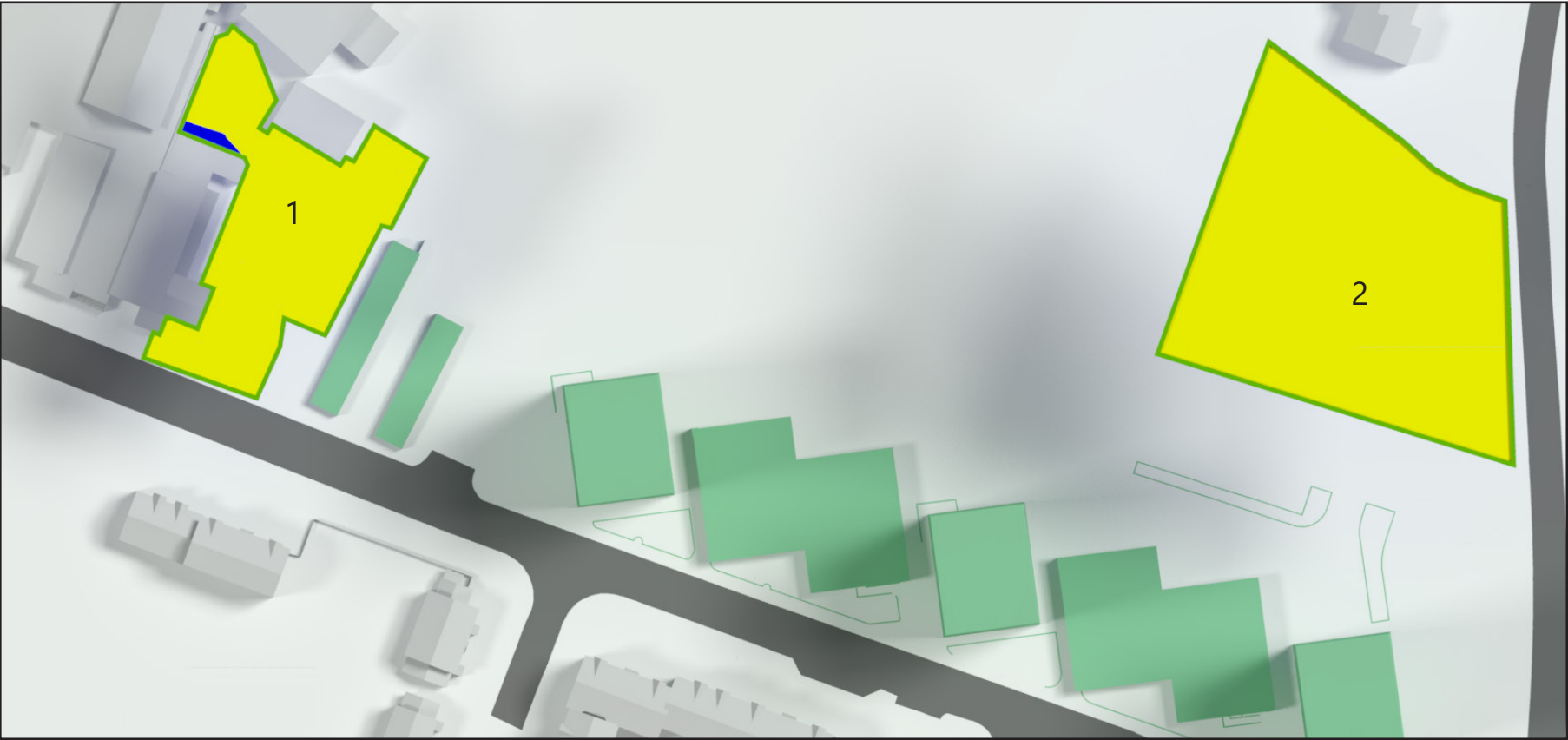
Address	Room	Window	Room Use	Existing	Proposed	Loss	Proportion Retained	Room Area	Existing	Proposed	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
				VSC	VSC				NSC	NSC			Total	Winter	Total	Winter		
First	R4	W7	Kitchen	29.1	22.4	6.8	0.8	66.8	66.8	31.9	34.8	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R5	W8-L W8-U W9-L W9-U W10-L W10-U	Living Room	14.0	14.1	0.0	1.0	218.5	208.3	67.5	140.9	0.3	14	0	11	0	0.8	0.0
				30.3	22.8	7.5	0.8											
				14.6	13.5	1.1	0.9											
First	R6	W11	Kitchen	29.3	21.9	7.4	0.7	68.0	67.6	32.3	35.4	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R7	W12-L W12-U W13-L W13-U W14-L W14-U	Living Room	13.6	13.3	0.3	1.0	144.6	142.9	52.7	90.1	0.4	13	0	11	0	0.8	0.0
				30.8	22.7	8.0	0.7											
				12.5	11.7	0.8	0.9											
First	R8	W15-L W15-U W16-L W16-U W17-L W17-U	Living Room	11.7	11.3	0.4	1.0	144.6	142.8	53.2	89.6	0.4	13	0	11	0	0.8	0.0
				30.9	22.7	8.2	0.7											
				16.2	15.5	0.7	1.0											
First	R9	W18	Kitchen	29.7	22.1	7.6	0.7	71.7	71.2	35.3	36.0	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R10	W19-L W19-U W20-L W20-U W21-L W21-U	Living Room	4.2	2.6	1.6	0.6	215.2	197.8	83.1	114.7	0.4	1	0	1	0	1.0	0.0
				28.0	21.5	6.4	0.8											
				15.6	14.9	0.7	1.0											
First	R11	W22	Kitchen	28.8	23.1	5.7	0.8	66.8	66.7	36.2	30.5	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R12	W23-L W23-U	Stairwell	29.1	23.7	5.4	0.8	97.3	97.3	48.4	48.9	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R13	W24	Kitchen	28.6	23.5	5.0	0.8	73.0	70.3	34.7	35.6	0.5	N/F	N/F	N/F	N/F	N/F	N/F
First	R14	W25-L W25-U W26-L W26-U W27-L W27-U W28-L W28-U	Living Room	15.1	13.6	1.5	0.9	210.3	210.0	207.6	2.3	1.0	45	10	46	10	1.0	1.0
				29.2	24.3	4.9	0.8											
				20.6	18.7	1.9	0.9											
				36.8	35.0	1.7	1.0											
				35.0	34.9	0.2	1.0											
Second	R1	W1-L W1-U W2-L W2-U W3-L W3-U W4-L W4-U	Living Room	14.1	14.3	-0.2	1.0	216.0	215.5	211.1	4.4	1.0	58	20	59	20	1.0	1.0
				29.1	25.3	3.7	0.9											
				14.6	13.6	1.0	0.9											
				26.3	22.3	3.9	0.8											
Second	R2	W5	Kitchen	26.3	22.3	3.9	0.8	73.8	73.7	45.2	28.6	0.6	N/F	N/F	N/F	N/F	N/F	N/F
Second	R3	W6-L W6-U	Stairwell	27.0	22.7	4.3	0.8	95.4	95.0	58.1	37.0	0.6	N/F	N/F	N/F	N/F	N/F	N/F
Second	R4	W7	Kitchen	26.9	22.3	4.6	0.8	66.8	66.8	42.4	24.4	0.6	N/F	N/F	N/F	N/F	N/F	N/F
Second	R5	W8-L W8-U W9-L W9-U W10-L W10-U	Living Room	13.5	13.9	-0.4	1.0	218.5	208.0	84.8	123.2	0.4	13	0	11	0	0.8	0.0
				30.8	25.5	5.3	0.8											
				14.2	13.6	0.6	1.0											
Second	R6	W11	Kitchen	27.0	21.6	5.3	0.8	68.0	67.0	43.7	23.3	0.7	N/F	N/F	N/F	N/F	N/F	N/F
Second	R7	W12-L W12-U W13-L W13-U W14-L W14-U	Living Room	13.0	13.1	-0.2	1.0	152.2	150.6	79.9	70.7	0.5	12	0	11	0	0.9	0.0
				31.1	25.3	5.9	0.8											
				12.1	11.8	0.3	1.0											
Second	R8	W15-L W15-U W16-L W16-U W17-L W17-U	Living Room	11.2	11.2	0.0	1.0	152.4	150.6	73.8	76.8	0.5	11	0	11	0	1.0	0.0
				31.2	25.2	6.1	0.8											
				14.3	14.1	0.2	1.0											
Second	R9	W18	Kitchen	27.2	21.7	5.5	0.8	71.7	71.0	45.5	25.5	0.6	N/F	N/F	N/F	N/F	N/F	N/F
Second	R10	W19-L W19-U W20-L W20-U W21-L W21-U	Living Room	6.0	4.8	1.2	0.8	215.2	198.7	102.6	96.1	0.5	3	0	3	0	1.0	0.0
				29.8	25.3	4.5	0.8											
				14.2	13.9	0.2	1.0											
Second	R11	W22	Kitchen	24.4	20.5	3.9	0.8	66.8	66.0	44.6	21.5	0.7	N/F	N/F	N/F	N/F	N/F	N/F
Second	R12	W23-L	Stairwell	25.7	22.0	3.7	0.9											

Address	Room	Window	Room Use	Existing VSC	Proposed VSC	Loss	Proportion Retained	Room Area	Existing NSC	Proposed NSC	Loss	Proportion Retained	Existing APSH		Proposed APSH		Total Retained	Winter Retained
													Total	Winter	Total	Winter		
		W8-U		37.9	35.7	2.2	0.9	218.0	214.5	209.0	5.5	1.0	11	0	13	0	1.2	0.0
		W9-L																
		W9-U																
		W10-L		18.8	18.8	0.0	1.0											
		W10-U																
Minet Infant and Junior School																		
Ground	R1	W1	Class Room	1.1	0.6	0.5	0.5	1384.1	1327.0	1069.1	257.9	0.8	94	25	95	25	1.0	1.0
		W2		0.0	0.0	0.0	0.0											
		W3		1.2	0.7	0.5	0.6											
		W4		35.5	32.3	3.2	0.9											
		W5		1.7	1.0	0.7	0.6											
		W6		0.0	0.0	0.0	0.0											
		W27		33.8	33.8	0.0	1.0											
		W28		34.0	34.0	0.0	1.0											
		W29		33.9	33.9	0.0	1.0											
		W35		77.6	77.7	-0.1	1.0											
		W36		35.4	35.1	0.3	1.0											
		W37		35.1	34.8	0.3	1.0											
Ground	R2	W7	Class Room	3.7	1.7	2.0	0.5	576.5	576.5	573.4	3.1	1.0	98	28	96	27	1.0	1.0
		W8		0.1	0.1	0.0	1.0											
		W9		5.0	2.2	2.7	0.4											
		W10		0.1	0.1	0.0	1.0											
		W11		5.5	2.8	2.7	0.5											
		W12		0.1	0.1	0.0	1.0											
		W13		4.7	2.5	2.3	0.5											
		W14		0.2	0.2	0.0	1.0											
		W25		99.0	98.5	0.5	1.0											
		W30		33.9	33.9	0.0	1.0											
		W31		33.8	33.8	0.0	1.0											
		Ground		R3	W15	Class Room	6.1											
W16	0.1		0.1		0.0		1.0											
W17	6.3		3.8		2.5		0.6											
W18	0.1		0.1		0.0		1.0											
W19	7.5		5.1		2.4		0.7											
W20	0.1		0.1		0.0		1.0											
W21	11.0		9.0		2.0		0.8											
W22	1.1		1.1		0.0		1.0											
W26	98.9		98.5		0.4		1.0											
W32	33.7		33.7		0.0		1.0											
W33	33.7		33.7		0.0		1.0											
W34	33.7		33.7		0.0		1.0											
Ground	R4	W23-L	Office	32.8	29.3	3.5	0.9	178.6	178.4	148.1	30.3	0.8	57	18	51	13	0.9	0.7
		W23-U		31.9	28.4	3.5	0.9											
Ground	R5	W38	Class Room	26.7	24.5	2.3	0.9	139.2	121.0	110.3	10.7	0.9	39	5	37	3	0.9	0.6
Ground	R6	W39	Class Room	36.6	33.9	2.6	0.9	306.4	305.0	305.0	0.0	1.0	95	26	92	23	1.0	0.9
		W40		36.7	33.6	3.1	0.9											
		W41		36.9	33.1	3.7	0.9											
		W42		35.0	29.9	5.1	0.9											
Ground	R7	W43	Class Room	35.1	30.6	4.5	0.9	304.6	290.1	271.8	18.3	0.9	64	19	56	11	0.9	0.6
		W44		34.4	34.4	0.1	1.0											
		W45		32.8	32.7	0.1	1.0											
		W46		30.1	30.0	0.1	1.0											
Ground	R8	W47	Class Room	31.3	31.4	0.0	1.0	622.6	622.6	622.6	0.0	1.0	81	19	82	20	1.0	1.1
		W48		26.6	26.7	0.0	1.0											
Ground	R9	W49	Staff Area	18.3	17.5	0.8	1.0	1114.6	1077.5	860.9	216.6	0.8	76	20	71	15	0.9	0.8
		W50		34.4	31.7	2.8	0.9											
		W51		35.0	32.4	2.6	0.9											
		W52		35.4	32.9	2.5	0.9											
		W53		27.6	27.5	0.1	1.0											
First	R1	W1	Stairwell	38.5	37.2	1.3	1.0	139.0	128.0	128.0	0.0	1.0	76	26	73	23	1.0	0.9
		W2		38.1	36.5	1.6	1.0											
		W3		37.6	35.6	2.0	0.9											
First	R2	W4	Class Room	38.4	36.3	2.1	0.9	306.4	305.0	305.0	0.0	1.0	96	26	93	23	1.0	0.9
		W5		38.4	35.9	2.5	0.9											
		W6		38.3	35.3	3.0	0.9											
		W7		35.7	31.7	4.0	0.9											
First	R3	W8	Class Room	35.8	32.3	3.5	0.9	304.6	290.1	273.3	16.8	0.9	64	19	60	15	0.9	0.8
		W9		37.8	37.8	0.1	1.0											
		W10		37.3	37.2	0.0	1.0											
		W11		36.3	36.3	0.1	1.0											
First	R4	W12	Class Room	37.0	36.9	0.1	1.0	622.6	622.6	622.6	0.0	1.0	96	26	97	27	1.0	1.0
		W13		35.1	34.3	0.7	1.0											
First	R5	W14	Class Room	36.3	35.0	1.3	1.0	626.0	626.0	626.0	0.0	1.0	69	22	69	22	1.0	1.0

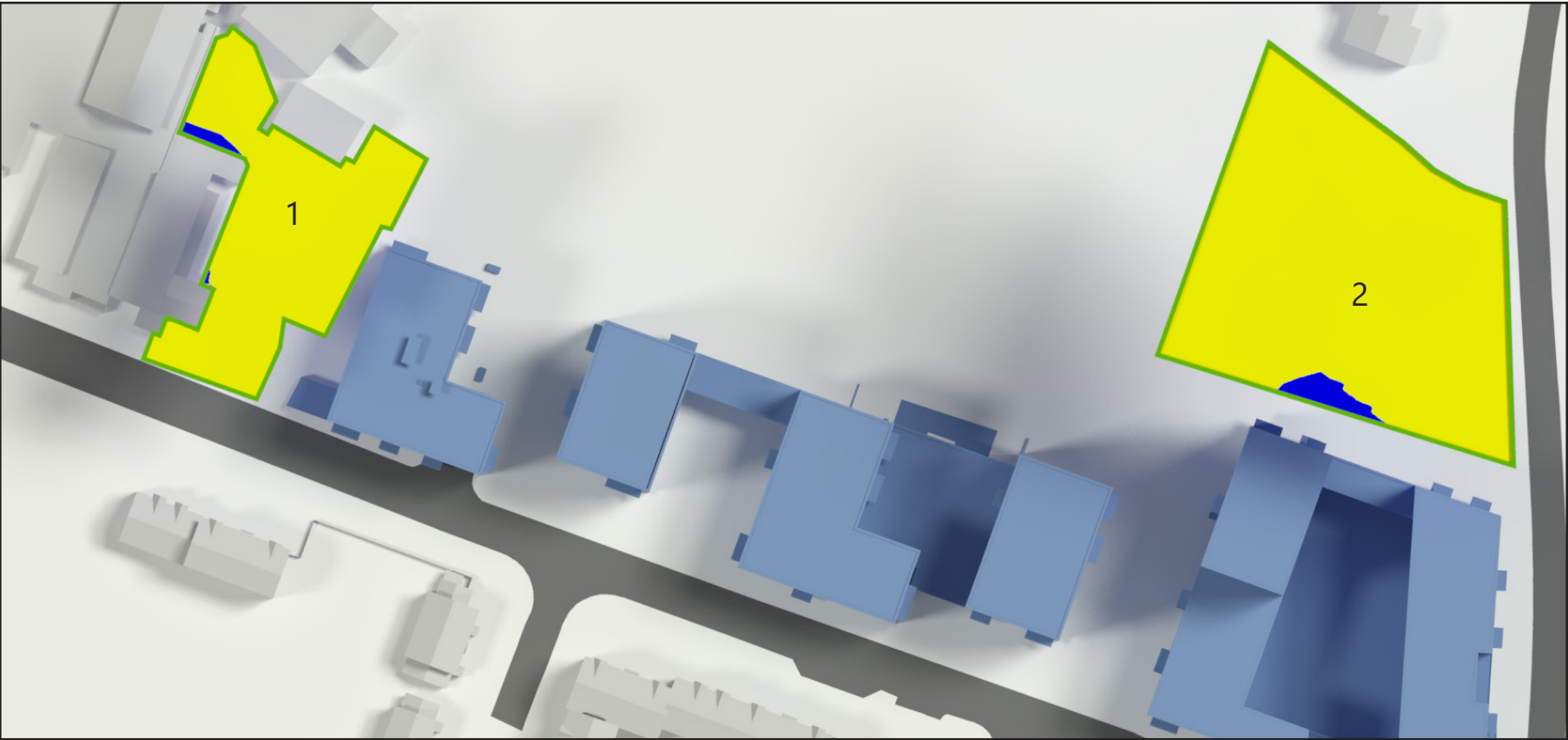


Appendix 3

Results of the sunlight amenity assessments
to the neighbouring amenity spaces



Existing Scenario - March 21st



Proposed Scenario - March 21st

Area	Total Area (sq.m)	Existing Scenario Area recieving more than two hours of sun		Proposed Scenario Area recieving more than two hours of sun		Proportion Retained
		(m²)	%	(m²)	%	
1 - Minet Infant and Junior School	953.09	931.09	98.0	929.17	97.0	1.00
2 - Hitherbroom Park	2501.92	2501.92	100.0	2440.95	98.0	0.98

Sources of information

Survey Solutions
31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards
AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

EB7 Ltd
Site Photographs
Ordnance Survey



- Key:
- Existing building
 - Proposed development
 - Area of assessment
 - Area recieving more than two hours of sun on March 21st
 - Area recieving less than two hours of sun on March 21st

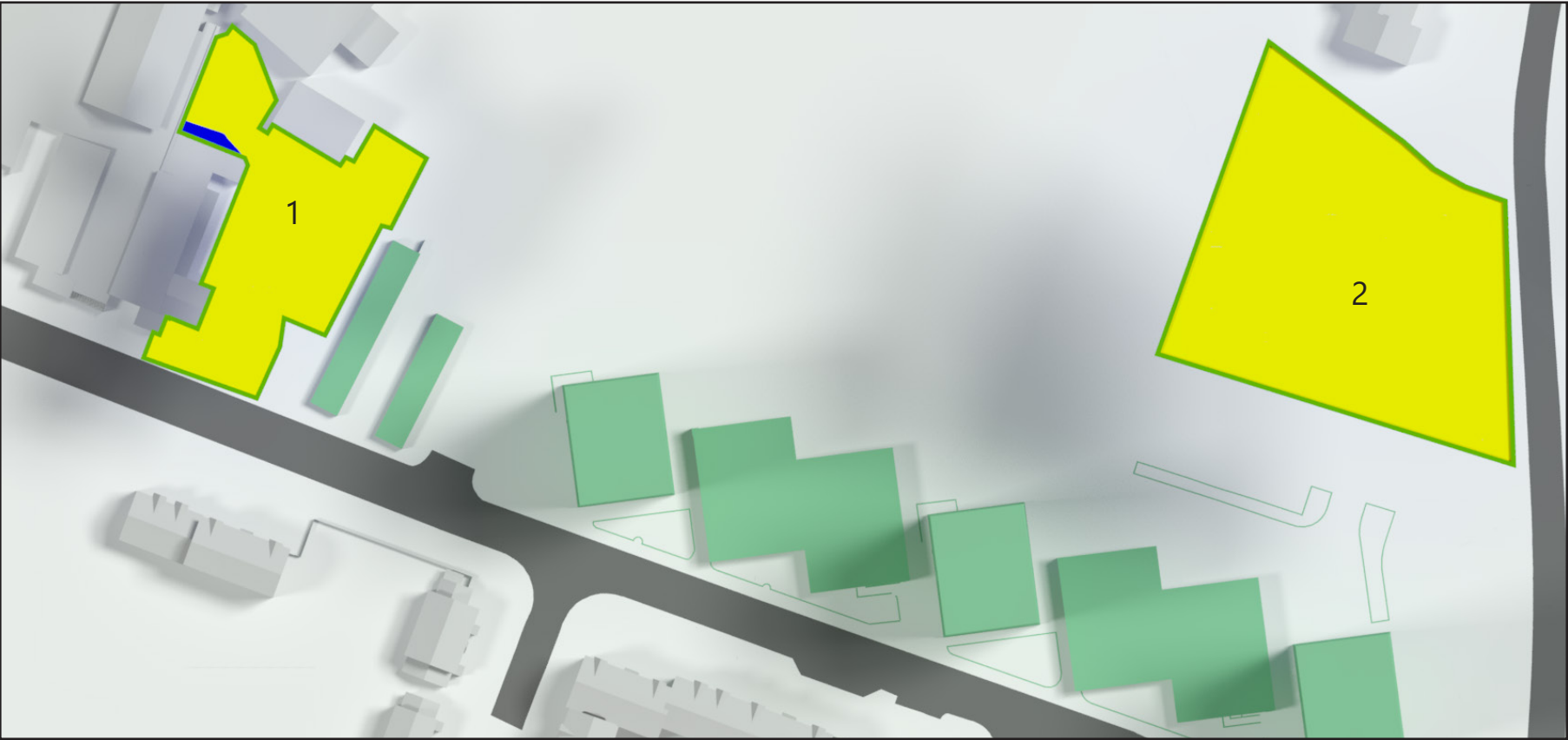
Project Avondale Drive
Hayes
UB3 3PW

Title Sunlight Amenity Study
Existing vs Proposed 21st March
Illustrative Masterplan Scheme

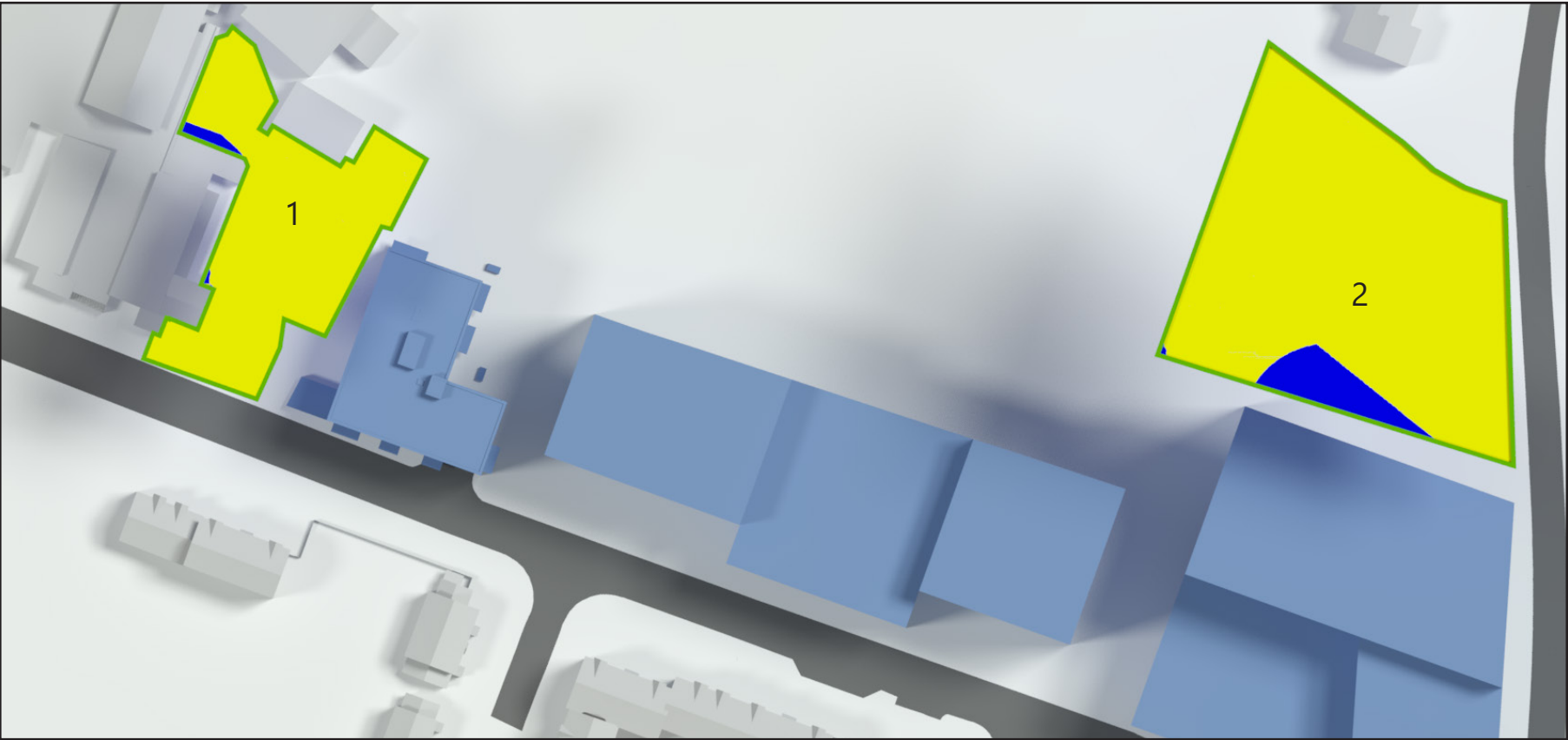
Drawn AP Checked --

Date 16/11/2021 Project 4900

Rel no. 05 Prefix SA06 Page no. 01



Existing Scenario - March 21st



Proposed Scenario - March 21st

Area	Total Area (sq.m)	Existing Scenario Area recieving more than two hours of sun		Proposed Scenario Area recieving more than two hours of sun		Proportion Retained
		(m²)	%	(m²)	%	
1 - Minet Infant and Junior School	1195.82	1173.71	98.0	1171.64	97.0	1.00
2 - Hitherbroom Park	2501.92	2501.92	100.0	2334.05	93.0	0.93

Sources of information

Survey Solutions
31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards
AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd
Site Photographs
Ordnance Survey



Key:

- Existing building
- Proposed development
- Area of assessment
- Area recieving more than two hours of sun on March 21st
- Area recieving less than two hours of sun on March 21st

Project Avondale Drive
Hayes
UB3 3PW

Title Sunlight Amenity Study
Existing vs Proposed 21st March
Maximum Parameter Scheme

Drawn AP Checked --

Date 16/11/2021 Project 4900

Rel no. 05 Prefix SA05 Page no. 01



Appendix 4

Results of the sunlight amenity assessment
to the proposed amenity spaces

Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

EB7 Ltd

Site Photographs
Ordnance Survey

Key:

 Proposed

 Area of assessment

NORTH



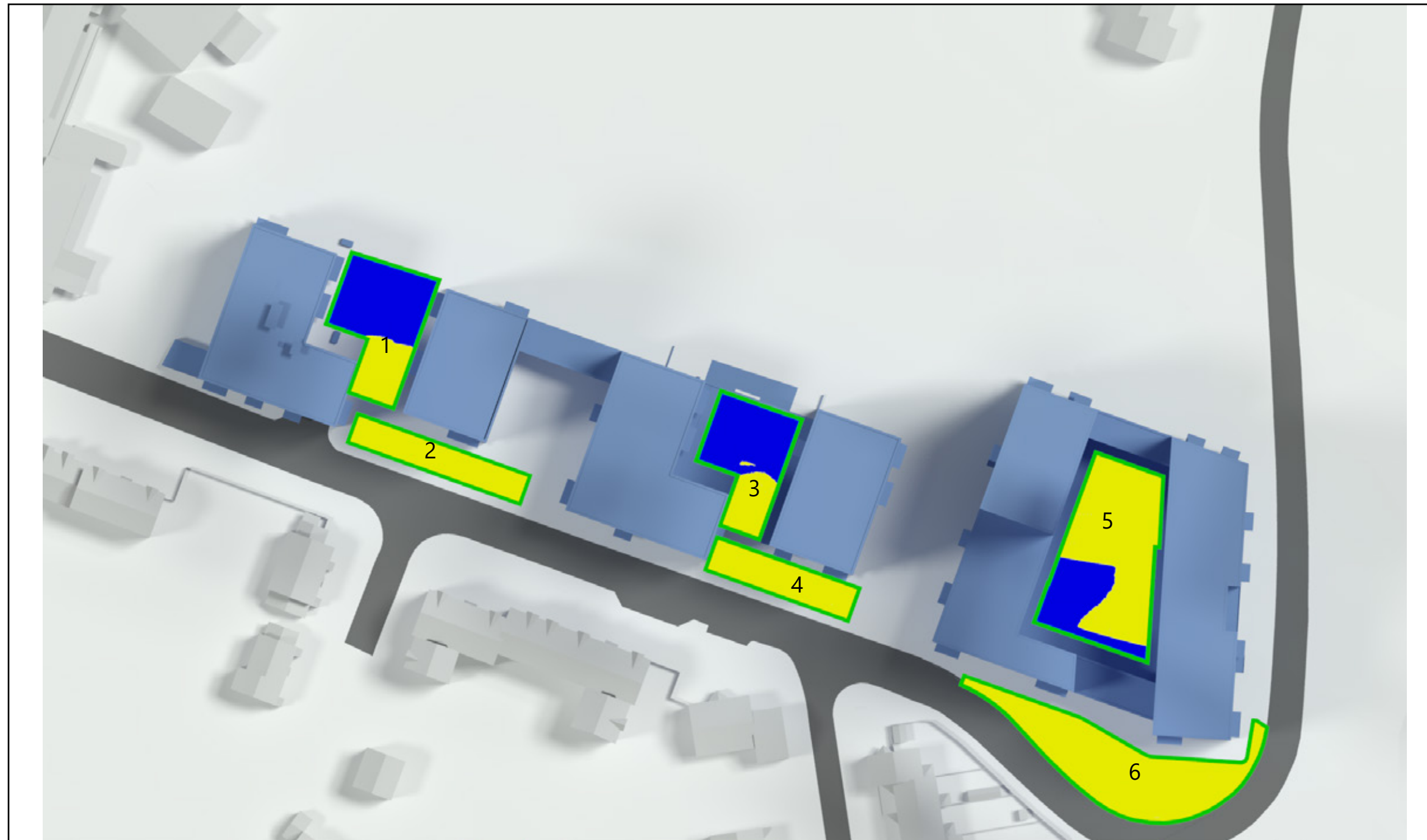
Project Avondale Drive
Hayes
UB3 3PW

Title Sunlight Amenity Study
Illustrative Masterplan Scheme
21st March

Drawn AP Checked --

Date 25/11/2021 Project 4900

Rel no. 08 Prefix SA02 Page no. 01



Area	Total Area (sq.m)	Area more than 2 hours (sq.m)	Area % more than 2 hours
1	341.26	103.63	30
2	190.52	190.52	100
3	295.22	87.87	30
4	180.65	180.65	100
5	594.88	427.41	72
6	516.43	516.43	100
Total	2118.96	1506.50	71

BRE's Sun On Ground
Area seeing at least two hours of sunlight

YES

NO

Day: 21st March
Latitude: 51.4°N
Effective day length: 10 hours
*Min solar angle 10°
(BR209 3.3.8)

Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

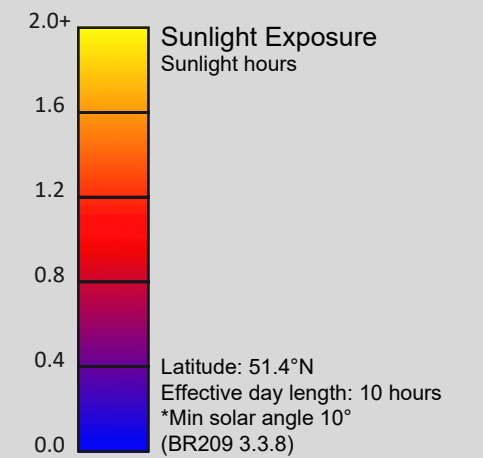
Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

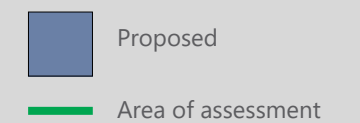
AVD-PTE-VD-XX-DR-A-10002-1.0-.dwg
Received 04/11/2021

EB7 Ltd

Site Photographs
Ordnance Survey



Key:



NORTH



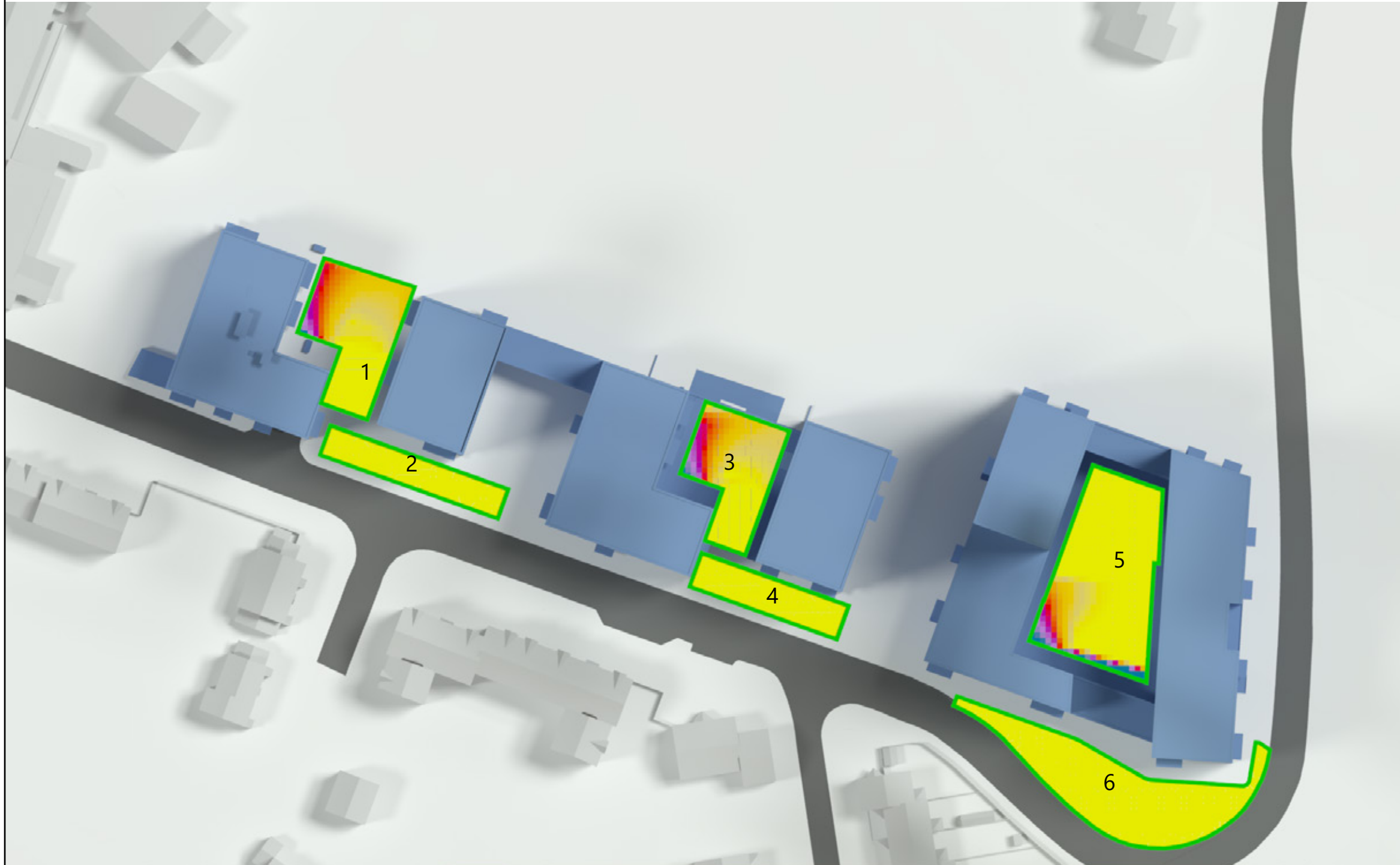
Project Avondale Drive
Hayes
UB3 3PW

Title Sunlight Amenity Study
Illustrative Masterplan Scheme
21st March

Drawn AP Checked --

Date 25/11/2021 Project 4900

Rel no. 05 Prefix SA10 Page no. 01



Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

EB7 Ltd

Site Photographs
Ordnance Survey

Key:

Proposed

Area of assessment

NORTH



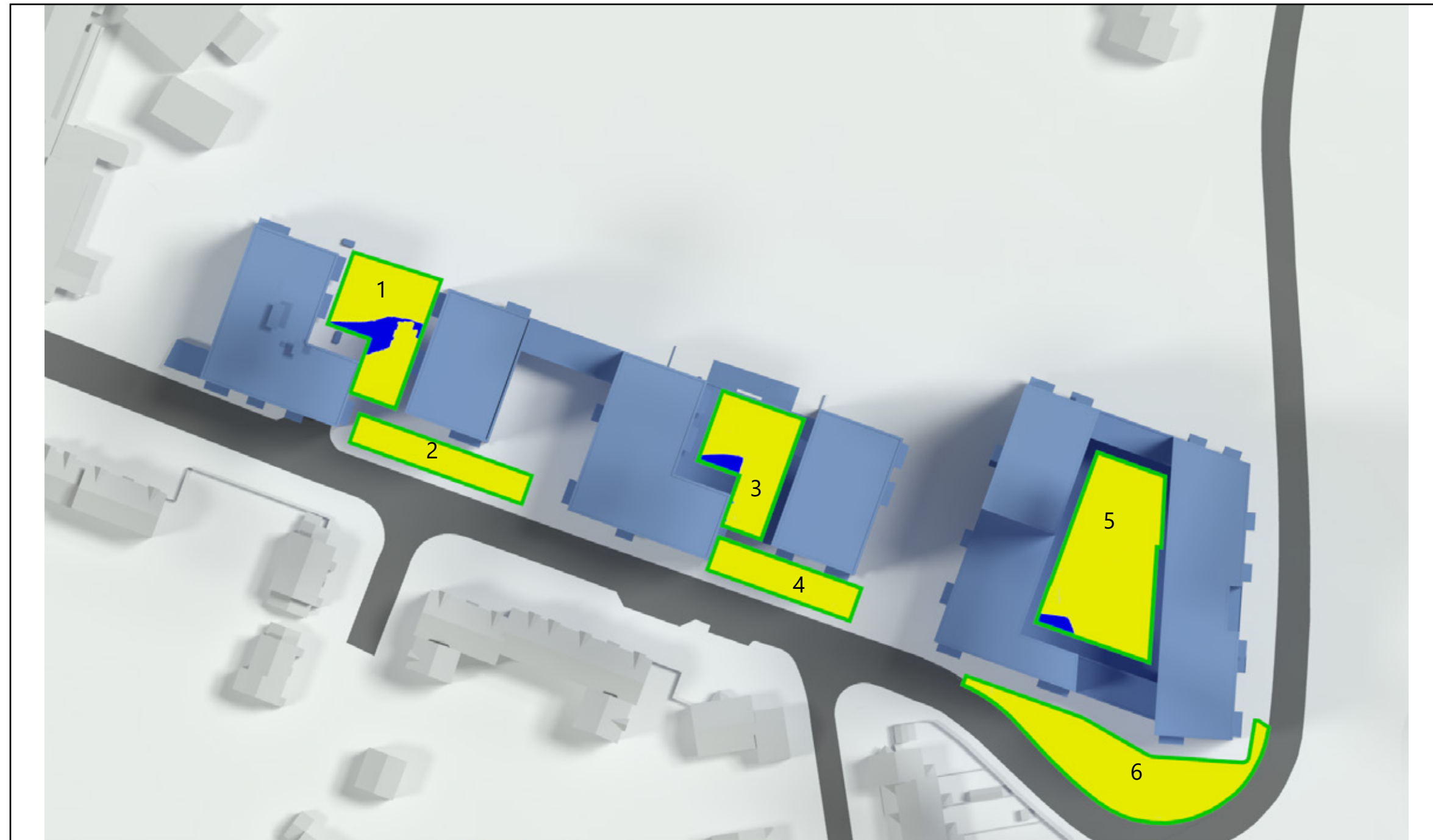
Project Avondale Drive
Hayes
UB3 3PW

Title Sunlight Amenity Study
Illustrative Masterplan Scheme
21st June

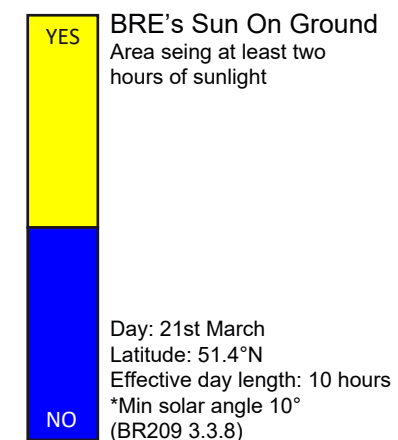
Drawn AP Checked --

Date 25/11/2021 Project 4900

Rel no. 05 Prefix SA09 Page no. 01



Area	Total Area (sq.m)	Area more than 2 hours (sq.m)	Area % more than 2 hours
1	341.26	290.61	85
2	190.52	190.52	100
3	295.22	273.96	93
4	180.65	180.65	100
5	594.88	578.41	97
6	516.43	516.43	100
Total	2118.96	2030.57	96



Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
AVD-PTE-VD-XX-DR-A-10007-1.0-.dwg
Received 04/11/2021

EB7 Ltd

Site Photographs
Ordnance Survey

Key:

- Proposed
- Area of assessment

NORTH



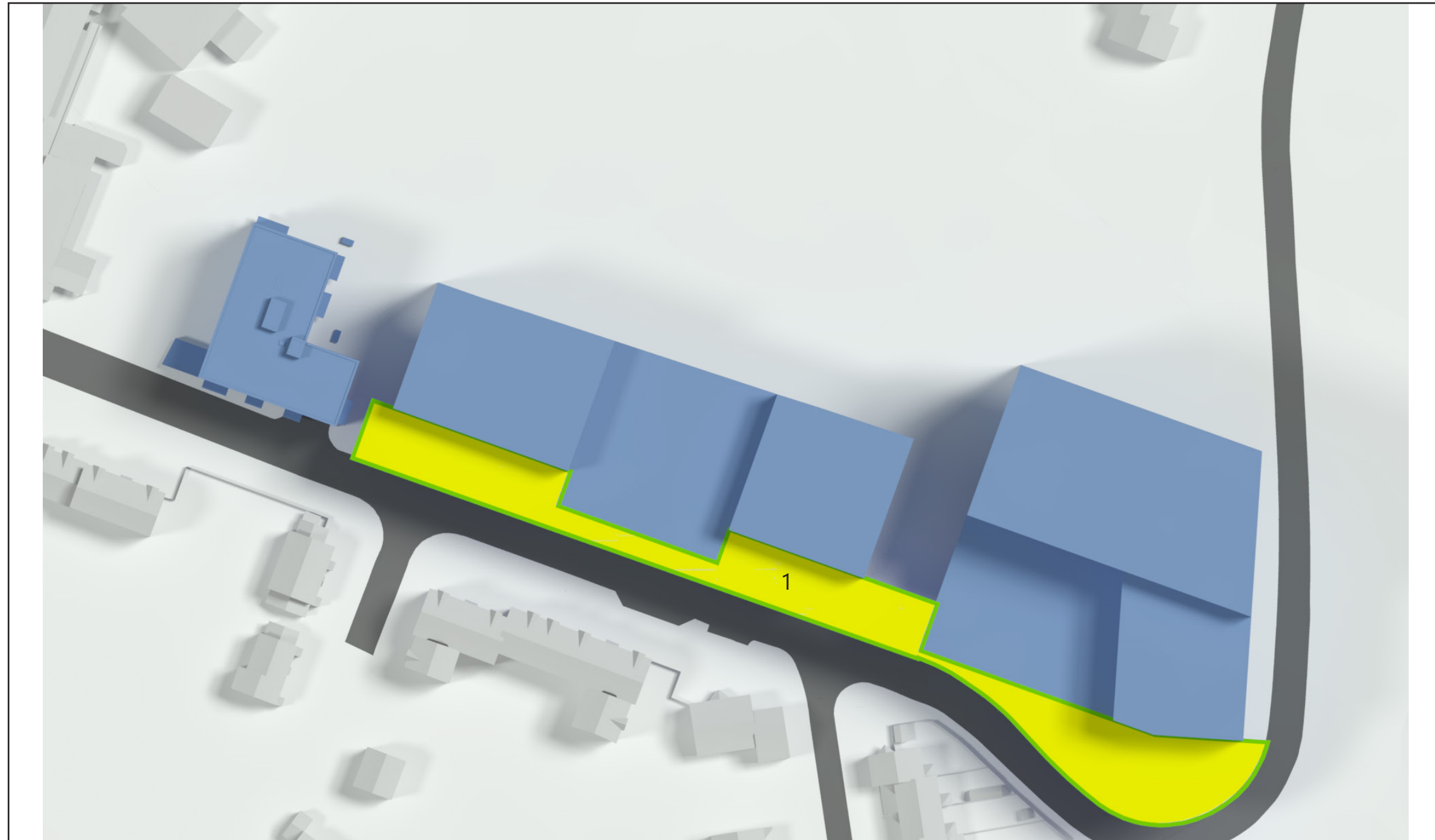
Project Avondale Drive
Hayes
UB3 3PW

Title Sunlight Amenity Study
Maximum Parameter Scheme
21st March

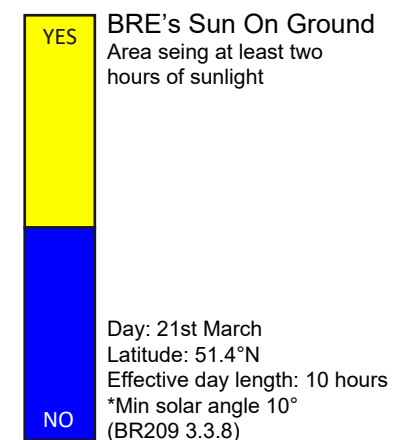
Drawn AP Checked --

Date 18/11/2021 Project 4900

Rel no. 05 Prefix SA01 Page no. 01



Area	Total Area (sq.m)	Area more than 2 hours (sq.m)	Area % more than 2 hours
1	1622.08	1621.22	100





Appendix 5

Results of the daylight and sunlight assessment within
the proposed development (Detailed Phase 1A)

Survey Solutions

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd
Site Photographs
Ordnance Survey



Rel no.	Prefix	Page no.
05	ID01	01



Sources of information

Survey Solutions
31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards
AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd
Site Photographs
Ordnance Survey



Project Avondale Drive
Hayes
UB3 3PW

Title First Floor
Room Layout

Drawn AP Checked --

Date 16/11/2021 Project 4900

Rel no. 05 Prefix ID01 Page no. 02



Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd

Site Photographs
Ordnance Survey

NORTH



Project Avondale Drive
Hayes
UB3 3PW

Title Second Floor
Room Layout

Drawn AP Checked --

Date 16/11/2021 Project 4900

Rel no. 05 Prefix ID01 Page no. 03



Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd

Site Photographs
Ordnance Survey

NORTH



Project Avondale Drive
Hayes
UB3 3PW

Title Third Floor
Room Layout

Drawn AP Checked --

Date 16/11/2021 Project 4900

Rel no. 05 Prefix ID01 Page no. 04



Sources of information

Survey Solutions

31652BWLS-01.dwg
3103-DGM-ZZ-3D-X-M3-X-0001-001.rvt
Received 02/08/2021

3212-LSS-ZZ-3D-X-M3-X-0001-001.rvt
Received 21/10/2021

Pollard Thomas Edwards

AVD-PTE-ZZ-XX-M3-A-00002_Avondale
Drive Project.rvt
Received 21/10/2021

AVD-PTE-VD-XX-DR-A-10006-1.0-.dwg
Received 04/11/2021

EB7 Ltd

Site Photographs
Ordnance Survey

NORTH



Project Avondale Drive
Hayes
UB3 3PW

Title Fourth Floor
Room Layout

Drawn AP Checked --

Date 16/11/2021 Project 4900

Rel no. 05 Prefix ID01 Page no. 05

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
Proposed								
Ground	R1	W1-L	KD	0.0				
		W1-U	KD	1.5				
		W2	KD	1.9	3.4			
Ground	R2	W3-L	LKD	0.0				
		W3-U	LKD	1.8	1.8		52	21
Ground	R3	W4	KD	1.8	1.8			
Ground	R4	W5-L	Living Room	0.8				
		W5-U	Living Room	3.5	4.3		26	4
Ground	R5	W6-L	Bedroom	0.0				
		W6-U	Bedroom	3.2	3.2			
Ground	R6	W7-L	Bedroom	0.7				
		W7-U	Bedroom	3.3	4.1			
Ground	R7	W8-L	Bedroom	0.0				
		W8-U	Bedroom	4.0	4.0			
Ground	R8	W9-L	Kitchen	0.7				
		W9-U	Kitchen	3.2	3.9			
Ground	R9	W10-L	LD	0.8				
		W10-U	LD	3.3				
		W11-L	LD	0.0				
		W11-U	LD	1.2	5.3		29	6
Ground	R10	W12-L	Bedroom	0.0				
		W12-U	Bedroom	2.8	2.8			
Ground	R11	W13-L	Bedroom	0.0				
		W13-U	Bedroom	4.0	4.0			
Ground	R12	W14-L	LKD	0.4				
		W14-U	LKD	1.3				
		W15	LKD	0.9	2.6		20	3
Ground	R13	W16-L	Living Room	0.6				
		W16-U	Living Room	2.4	3.0		0	0
First	R1	W1-L	Bedroom	0.7				
		W1-U	Bedroom	3.2	3.9			
First	R2	W26-L	Bedroom	0.0				
		W26-U	Bedroom	4.4	4.4			
First	R3	W2-L	LKD	0.7				
		W2-U	LKD	2.2	2.8		37	25
First	R4	W3-L	Bedroom	0.0				
		W3-U	Bedroom	3.1	3.1			
First	R5	W4-L	Bedroom	0.0				
		W4-U	Bedroom	1.6	1.6			
First	R6	W5-L	Bedroom	0.5				
		W5-U	Bedroom	2.3	2.8			
First	R7	W6-L	Bedroom	0.0				
		W6-U	Bedroom	2.9	2.9			
First	R8	W7-L	Bedroom	0.6				
		W7-U	Bedroom	2.0	2.6			
First	R9	W8-L	Bedroom	0.0				
		W8-U	Bedroom	3.5	3.5			
First	R10	W9-L	Bedroom	0.8				
		W9-U	Bedroom	3.5	4.3			
First	R11	W10-L	Bedroom	0.0				

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
First	R12	W10-U	Bedroom	3.3	3.3	24	2	
		W11-L W11-U	Bedroom Bedroom	0.7 3.3	4.0			
First	R13	W12-L W12-U	Bedroom Bedroom	0.0 4.5	4.5			
First	R14	W13-L W13-U	Kitchen Kitchen	0.7 3.0	3.7			
First	R15	W14-L W14-U W15-L W15-U	LD LD LD LD	0.5 2.2 0.7 2.4	5.9			
First	R16	W16-L W16-U	Bedroom Bedroom	0.0 3.0	3.0			
First	R17	W17-L W17-U	Kitchen Kitchen	1.1 4.7	5.8			
First	R18	W18-L W18-U	LD LD	0.6 1.8	2.5			
First	R19	W19-L W19-U	Bedroom Bedroom	0.0 1.9	1.9			
First	R20	W20-L W20-U	LKD LKD	0.4 1.1	1.5			
First	R21	W21-L W21-U	Bedroom Bedroom	0.0 1.3	1.3			
First	R22	W22-L W22-U	Bedroom Bedroom	0.3 1.3	1.6			
First	R23	W23-L W23-U	Bedroom Bedroom	0.5 2.5	3.0			
First	R24	W25-L W25-U	Bedroom Bedroom	0.0 2.1	2.1			
Second	R1	W1-L W1-U W2-L W2-U	LKD LKD LKD LKD	0.4 1.4 0.4 1.7	4.0			
Second	R2	W3-L W3-U	LKD LKD	0.7 2.2	2.9			
Second	R3	W4-L W4-U	Bedroom Bedroom	0.0 3.2	3.2			
Second	R4	W5-L W5-U	LKD LKD	0.7 2.2	2.9			
Second	R5	W6-L W6-U	Bedroom Bedroom	0.0 3.1	3.1			
Second	R6	W7-L W7-U W8	LKD LKD LKD	0.6 2.0 1.5	4.1			
Second	R7	W9-L W9-U	Bedroom Bedroom	0.0 3.5	3.5			
Second	R8	W10-L W10-U	Bedroom Bedroom	0.7 3.1	3.9			
Second	R9	W11-L W11-U	Bedroom Bedroom	0.0 3.6	3.6			
Second	R10	W12-L W12-U	Bedroom Bedroom	0.8 3.5	4.3			

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
Second	R11	W13-L W13-U	Bedroom Bedroom	0.0 4.7	4.7			
Second	R12	W14-L W14-U	Kitchen Kitchen	0.7 3.4	4.1			
Second	R13	W15-L W15-U W16-L W16-U	LD LD LD LD	0.5 2.3 0.8 2.6	6.1		24	2
Second	R14	W17-L W17-U	Bedroom Bedroom	0.0 3.2	3.2			
Second	R15	W18	Kitchen	3.9	3.9			
Second	R16	W19-L W19-U	LD LD	0.7 1.9	2.6		19	4
Second	R17	W20-L W20-U	Bedroom Bedroom	0.0 2.1	2.1			
Second	R18	W21-L W21-U	LKD LKD	0.4 1.1	1.5		9	0
Second	R19	W22-L W22-U	Bedroom Bedroom	0.0 1.4	1.4			
Second	R20	W23-L W23-U	Bedroom Bedroom	0.0 1.4	1.4			
Second	R21	W24-L W24-U	Bedroom Bedroom	0.5 2.1	2.5			
Second	R22	W25-L W25-U	Bedroom Bedroom	0.0 2.1	2.1			
Third	R1	W1-L W1-U W2-L W2-U	LKD LKD LKD LKD	0.5 1.5 0.4 1.7	4.1		72	30
Third	R2	W3-L W3-U	LKD LKD	0.7 2.3	3.0		39	27
Third	R3	W4-L W4-U	Bedroom Bedroom	0.0 3.3	3.3			
Third	R4	W5-L W5-U	LKD LKD	0.7 2.3	3.0		41	27
Third	R5	W6-L W6-U	Bedroom Bedroom	0.0 3.2	3.2			
Third	R6	W7-L W7-U W8	LKD LKD LKD	0.6 2.1 1.5	4.2		50	27
Third	R7	W9-L W9-U	Bedroom Bedroom	0.0 3.5	3.5			
Third	R8	W10-L W10-U	Bedroom Bedroom	0.7 3.2	3.9			
Third	R9	W11-L W11-U	Bedroom Bedroom	0.0 3.6	3.6			
Third	R10	W12-L W12-U	Bedroom Bedroom	0.8 3.5	4.3			
Third	R11	W13-L W13-U	Bedroom Bedroom	0.0 4.7	4.7			
Third	R12	W14-L	Kitchen	0.8				

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
		W14-U	Kitchen	3.4	4.1			
Third	R13	W15-L	LD	0.5				
		W15-U	LD	2.3				
		W16-L	LD	0.8				
		W16-U	LD	2.6	6.1		24	2
Third	R14	W17-L	Bedroom	0.0				
		W17-U	Bedroom	3.2	3.2			
Third	R15	W18	Kitchen	3.9	3.9			
Third	R16	W19-L	LD	0.7				
		W19-U	LD	2.1	2.8		24	6
Third	R17	W20-L	Bedroom	0.0				
		W20-U	Bedroom	2.2	2.2			
Third	R18	W21-L	LKD	0.5				
		W21-U	LKD	1.3	1.8		15	1
Third	R19	W22-L	Bedroom	0.0				
		W22-U	Bedroom	1.7	1.7			
Third	R20	W23-L	Bedroom	0.0				
		W23-U	Bedroom	1.6	1.6			
Third	R21	W24-L	Bedroom	0.5				
		W24-U	Bedroom	2.2	2.7			
Third	R22	W25-L	Bedroom	0.0				
		W25-U	Bedroom	2.3	2.3			
Fourth	R1	W1-L	LKD	0.6				
		W1-U	LKD	2.6				
		W2-L	LKD	0.4				
		W2-U	LKD	1.7	5.3		80	30
Fourth	R2	W3-L	LKD	0.8				
		W3-U	LKD	3.4	4.3		67	27
Fourth	R3	W4-L	Bedroom	0.0				
		W4-U	Bedroom	3.4	3.4			
Fourth	R4	W5-L	LKD	0.8				
		W5-U	LKD	3.4	4.3		67	27
Fourth	R5	W6-L	Bedroom	0.0				
		W6-U	Bedroom	3.4	3.4			
Fourth	R6	W7-L	LKD	0.8				
		W7-U	LKD	3.2				
		W8	LKD	1.5	5.5		75	27
Fourth	R7	W9-L	Bedroom	0.0				
		W9-U	Bedroom	3.5	3.5			
Fourth	R8	W10-L	Bedroom	0.7				
		W10-U	Bedroom	3.2	3.9			
Fourth	R9	W11-L	Bedroom	0.0				
		W11-U	Bedroom	3.6	3.6			
Fourth	R10	W12-L	Bedroom	0.8				
		W12-U	Bedroom	3.5	4.3			
Fourth	R11	W13-L	Bedroom	0.0				
		W13-U	Bedroom	4.7	4.7			
Fourth	R12	W14-L	Kitchen	0.8				
		W14-U	Kitchen	3.4	4.1			
Fourth	R13	W15-L	LD	0.5				
		W15-U	LD	2.3				
		W16-L	LD	1.0				

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
		W16-U	LD	4.0	7.8		24	2
Fourth	R14	W17-L W17-U	Bedroom Bedroom	0.0 3.3	3.3			
Fourth	R15	W18	Kitchen	3.9	3.9			
Fourth	R16	W19-L W19-U	LD LD	0.9 3.9	4.8		44	11
Fourth	R17	W20-L W20-U	Bedroom Bedroom	0.0 2.7	2.7			
Fourth	R18	W21-L W21-U	LKD LKD	0.6 2.8	3.4		40	8
Fourth	R19	W22-L W22-U	Bedroom Bedroom	0.0 2.2	2.2			
Fourth	R20	W23-L W23-U	Bedroom Bedroom	0.0 1.8	1.9			
Fourth	R21	W24-L W24-U	Bedroom Bedroom	0.5 2.4	3.0			
Fourth	R22	W25-L W25-U	Bedroom Bedroom	0.0 2.5	2.5			

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
Proposed								
Ground	R1	W1-L	KD	0.0				
		W1-U	KD	1.4				
		W2	KD	1.9	3.4			
Ground	R2	W3-L	LKD	0.0				
		W3-U	LKD	1.8	1.8		52	21
Ground	R3	W4	KD	1.8	1.8			
Ground	R4	W5-L	Living Room	0.8				
		W5-U	Living Room	3.5	4.3		26	4
Ground	R5	W6-L	Bedroom	0.0				
		W6-U	Bedroom	3.2	3.2			
Ground	R6	W7-L	Bedroom	0.7				
		W7-U	Bedroom	3.3	4.1			
Ground	R7	W8-L	Bedroom	0.0				
		W8-U	Bedroom	4.0	4.0			
Ground	R8	W9-L	Kitchen	0.7				
		W9-U	Kitchen	3.2	3.9			
Ground	R9	W10-L	LD	0.8				
		W10-U	LD	3.3				
		W11-L	LD	0.0				
		W11-U	LD	1.2	5.3		29	6
Ground	R10	W12-L	Bedroom	0.0				
		W12-U	Bedroom	2.8	2.8			
Ground	R11	W13-L	Bedroom	0.0				
		W13-U	Bedroom	4.0	4.0			
Ground	R12	W14-L	LKD	0.4				
		W14-U	LKD	1.2				
		W15	LKD	0.8	2.4		17	2
Ground	R13	W16-L	Living Room	0.5				
		W16-U	Living Room	2.3	2.9		0	0
First	R1	W1-L	Bedroom	0.7				
		W1-U	Bedroom	3.2	3.9			
First	R2	W26-L	Bedroom	0.0				
		W26-U	Bedroom	4.4	4.4			
First	R3	W2-L	LKD	0.7				
		W2-U	LKD	2.2	2.8		37	25
First	R4	W3-L	Bedroom	0.0				
		W3-U	Bedroom	3.1	3.1			
First	R5	W4-L	Bedroom	0.0				
		W4-U	Bedroom	1.6	1.6			
First	R6	W5-L	Bedroom	0.5				
		W5-U	Bedroom	2.3	2.8			
First	R7	W6-L	Bedroom	0.0				
		W6-U	Bedroom	2.9	2.9			
First	R8	W7-L	Bedroom	0.6				
		W7-U	Bedroom	2.0	2.6			
First	R9	W8-L	Bedroom	0.0				
		W8-U	Bedroom	3.5	3.5			
First	R10	W9-L	Bedroom	0.8				
		W9-U	Bedroom	3.5	4.3			
First	R11	W10-L	Bedroom	0.0				

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
		W10-U	Bedroom	3.3	3.3			
First	R12	W11-L W11-U	Bedroom Bedroom	0.7 3.3	4.0			
First	R13	W12-L W12-U	Bedroom Bedroom	0.0 4.5	4.5			
First	R14	W13-L W13-U	Kitchen Kitchen	0.7 3.0	3.7			
First	R15	W14-L W14-U W15-L W15-U	LD LD LD LD	0.5 2.2 0.7 2.4	5.9	24	2	
First	R16	W16-L W16-U	Bedroom Bedroom	0.0 3.0	3.0			
First	R17	W17-L W17-U	Kitchen Kitchen	1.1 4.7	5.8			
First	R18	W18-L W18-U	LD LD	0.6 1.8	2.4	10	1	
First	R19	W19-L W19-U	Bedroom Bedroom	0.0 1.8	1.8			
First	R20	W20-L W20-U	LKD LKD	0.3 1.0	1.3	4	0	
First	R21	W21-L W21-U	Bedroom Bedroom	0.0 1.2	1.2			
First	R22	W22-L W22-U	Bedroom Bedroom	0.3 1.2	1.5			
First	R23	W23-L W23-U	Bedroom Bedroom	0.5 2.4	2.9			
First	R24	W25-L W25-U	Bedroom Bedroom	0.0 2.0	2.0			
Second	R1	W1-L W1-U W2-L W2-U	LKD LKD LKD LKD	0.4 1.4 0.4 1.7	3.9	72	30	
Second	R2	W3-L W3-U	LKD LKD	0.7 2.2	2.9	39	27	
Second	R3	W4-L W4-U	Bedroom Bedroom	0.0 3.2	3.2			
Second	R4	W5-L W5-U	LKD LKD	0.7 2.2	2.9	41	27	
Second	R5	W6-L W6-U	Bedroom Bedroom	0.0 3.1	3.1			
Second	R6	W7-L W7-U W8	LKD LKD LKD	0.6 2.0 1.5	4.1	50	27	
Second	R7	W9-L W9-U	Bedroom Bedroom	0.0 3.5	3.5			
Second	R8	W10-L W10-U	Bedroom Bedroom	0.7 3.1	3.9			
Second	R9	W11-L W11-U	Bedroom Bedroom	0.0 3.6	3.6			
Second	R10	W12-L W12-U	Bedroom Bedroom	0.8 3.5	4.3			

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
Second	R11	W13-L W13-U	Bedroom Bedroom	0.0 4.7	4.7			
Second	R12	W14-L W14-U	Kitchen Kitchen	0.7 3.4	4.1			
Second	R13	W15-L W15-U W16-L W16-U	LD LD LD LD	0.5 2.3 0.8 2.6	6.1		24	2
Second	R14	W17-L W17-U	Bedroom Bedroom	0.0 3.2	3.2			
Second	R15	W18	Kitchen	3.9	3.9			
Second	R16	W19-L W19-U	LD LD	0.6 1.8	2.4		14	3
Second	R17	W20-L W20-U	Bedroom Bedroom	0.0 1.9	2.0			
Second	R18	W21-L W21-U	LKD LKD	0.4 1.0	1.4		5	0
Second	R19	W22-L W22-U	Bedroom Bedroom	0.0 1.4	1.4			
Second	R20	W23-L W23-U	Bedroom Bedroom	0.0 1.3	1.4			
Second	R21	W24-L W24-U	Bedroom Bedroom	0.4 2.0	2.4			
Second	R22	W25-L W25-U	Bedroom Bedroom	0.0 2.0	2.0			
Third	R1	W1-L W1-U W2-L W2-U	LKD LKD LKD LKD	0.5 1.5 0.4 1.7	4.0		73	30
Third	R2	W3-L W3-U	LKD LKD	0.7 2.3	3.0		39	27
Third	R3	W4-L W4-U	Bedroom Bedroom	0.0 3.3	3.3			
Third	R4	W5-L W5-U	LKD LKD	0.7 2.3	3.0		41	27
Third	R5	W6-L W6-U	Bedroom Bedroom	0.0 3.2	3.2			
Third	R6	W7-L W7-U W8	LKD LKD LKD	0.6 2.1 1.5	4.2		50	27
Third	R7	W9-L W9-U	Bedroom Bedroom	0.0 3.5	3.5			
Third	R8	W10-L W10-U	Bedroom Bedroom	0.7 3.2	3.9			
Third	R9	W11-L W11-U	Bedroom Bedroom	0.0 3.6	3.6			
Third	R10	W12-L W12-U	Bedroom Bedroom	0.8 3.5	4.3			
Third	R11	W13-L W13-U	Bedroom Bedroom	0.0 4.7	4.7			
Third	R12	W14-L	Kitchen	0.8				

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
		W14-U	Kitchen	3.4	4.1			
Third	R13	W15-L	LD	0.5				
		W15-U	LD	2.3				
		W16-L	LD	0.8				
		W16-U	LD	2.6	6.1		24	2
Third	R14	W17-L	Bedroom	0.0				
		W17-U	Bedroom	3.2	3.2			
Third	R15	W18	Kitchen	3.9	3.9			
Third	R16	W19-L	LD	0.7				
		W19-U	LD	2.0	2.7		21	5
Third	R17	W20-L	Bedroom	0.0				
		W20-U	Bedroom	2.1	2.1			
Third	R18	W21-L	LKD	0.4				
		W21-U	LKD	1.2	1.6		11	1
Third	R19	W22-L	Bedroom	0.0				
		W22-U	Bedroom	1.6	1.6			
Third	R20	W23-L	Bedroom	0.0				
		W23-U	Bedroom	1.5	1.5			
Third	R21	W24-L	Bedroom	0.5				
		W24-U	Bedroom	2.2	2.6			
Third	R22	W25-L	Bedroom	0.0				
		W25-U	Bedroom	2.2	2.2			
Fourth	R1	W1-L	LKD	0.6				
		W1-U	LKD	2.5				
		W2-L	LKD	0.4				
		W2-U	LKD	1.7	5.2		80	30
Fourth	R2	W3-L	LKD	0.8				
		W3-U	LKD	3.4	4.3		67	27
Fourth	R3	W4-L	Bedroom	0.0				
		W4-U	Bedroom	3.4	3.4			
Fourth	R4	W5-L	LKD	0.8				
		W5-U	LKD	3.4	4.3		67	27
Fourth	R5	W6-L	Bedroom	0.0				
		W6-U	Bedroom	3.4	3.4			
Fourth	R6	W7-L	LKD	0.8				
		W7-U	LKD	3.2				
		W8	LKD	1.5	5.5		75	27
Fourth	R7	W9-L	Bedroom	0.0				
		W9-U	Bedroom	3.5	3.5			
Fourth	R8	W10-L	Bedroom	0.7				
		W10-U	Bedroom	3.2	3.9			
Fourth	R9	W11-L	Bedroom	0.0				
		W11-U	Bedroom	3.6	3.6			
Fourth	R10	W12-L	Bedroom	0.8				
		W12-U	Bedroom	3.5	4.3			
Fourth	R11	W13-L	Bedroom	0.0				
		W13-U	Bedroom	4.7	4.7			
Fourth	R12	W14-L	Kitchen	0.8				
		W14-U	Kitchen	3.4	4.1			
Fourth	R13	W15-L	LD	0.5				
		W15-U	LD	2.3				
		W16-L	LD	1.0				

Floor	Room ID	Window ID	Room Use	ADF	TOTAL ADF		ROOM TOTAL APSH	ROOM WINTER APSH
		W16-U	LD	4.0	7.8		24	2
Fourth	R14	W17-L W17-U	Bedroom Bedroom	0.0 3.3	3.3			
Fourth	R15	W18	Kitchen	3.9	3.9			
Fourth	R16	W19-L W19-U	LD LD	0.9 3.8	4.7		41	9
Fourth	R17	W20-L W20-U	Bedroom Bedroom	0.0 2.6	2.7			
Fourth	R18	W21-L W21-U	LKD LKD	0.6 2.7	3.3		37	7
Fourth	R19	W22-L W22-U	Bedroom Bedroom	0.0 2.2	2.2			
Fourth	R20	W23-L W23-U	Bedroom Bedroom	0.0 1.8	1.8			
Fourth	R21	W24-L W24-U	Bedroom Bedroom	0.5 2.4	2.9			
Fourth	R22	W25-L W25-U	Bedroom Bedroom	0.0 2.4	2.4			



Appendix 6

Results of the internal façade analysis (Outline Areas)

Sources of information

Survey Solutions

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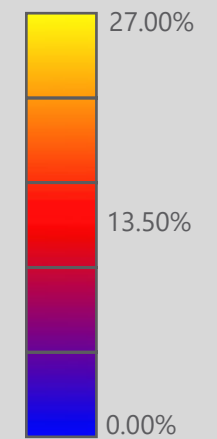
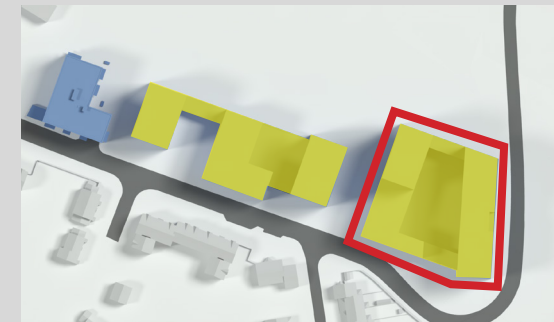
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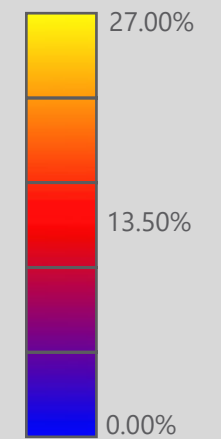
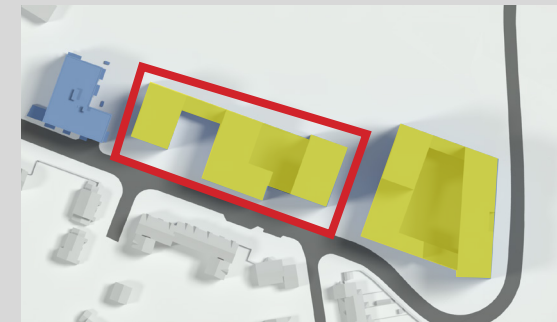
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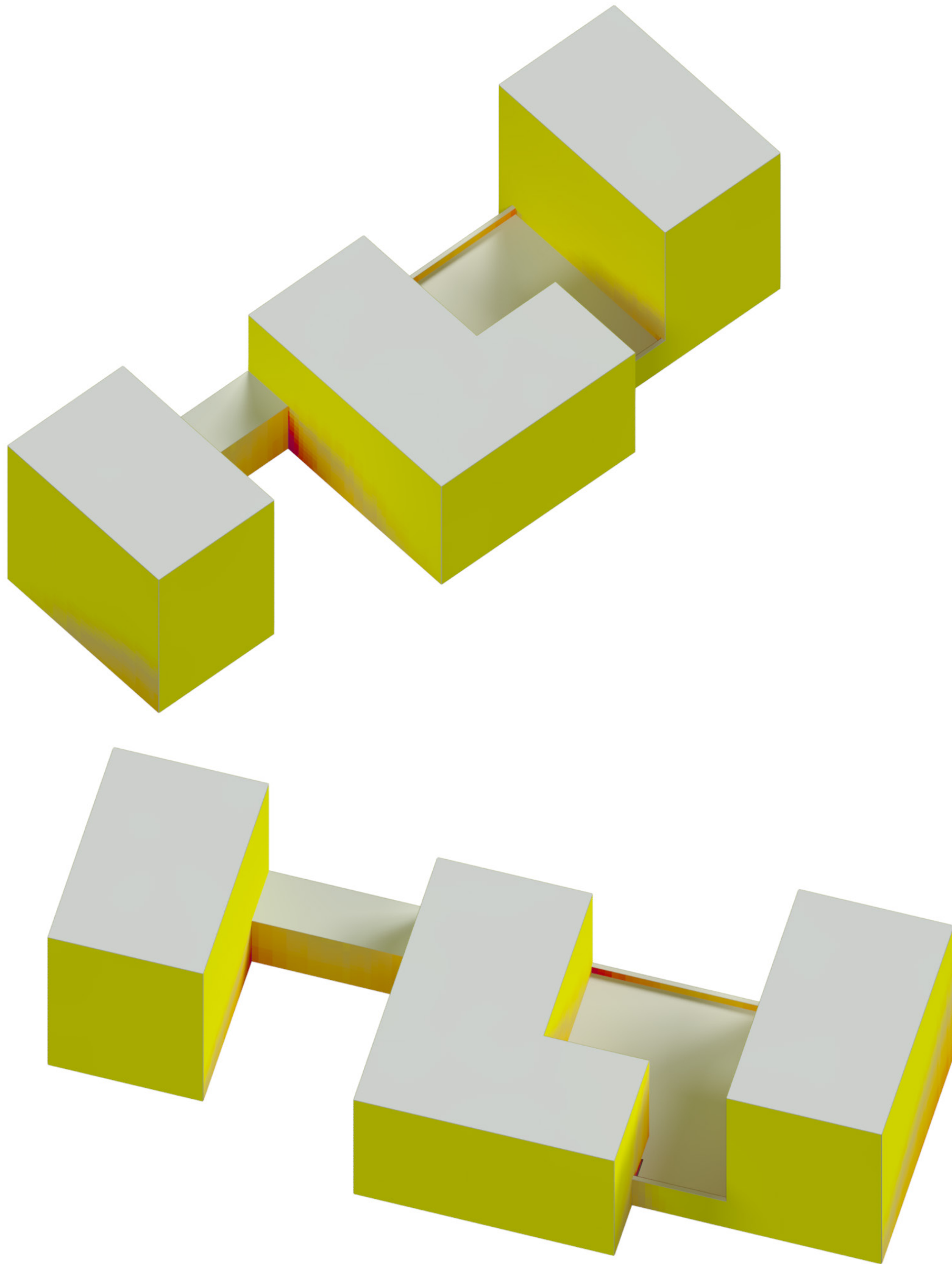
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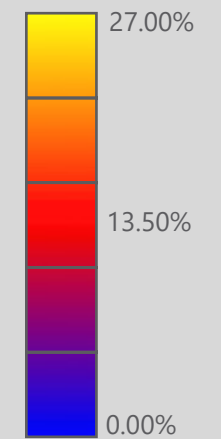
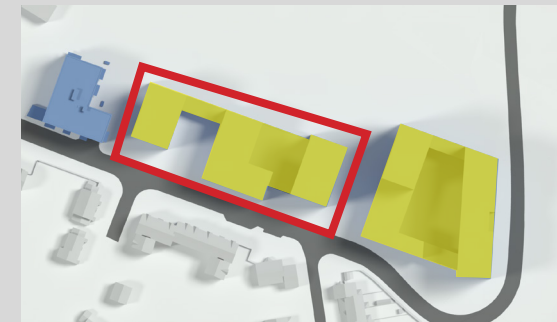
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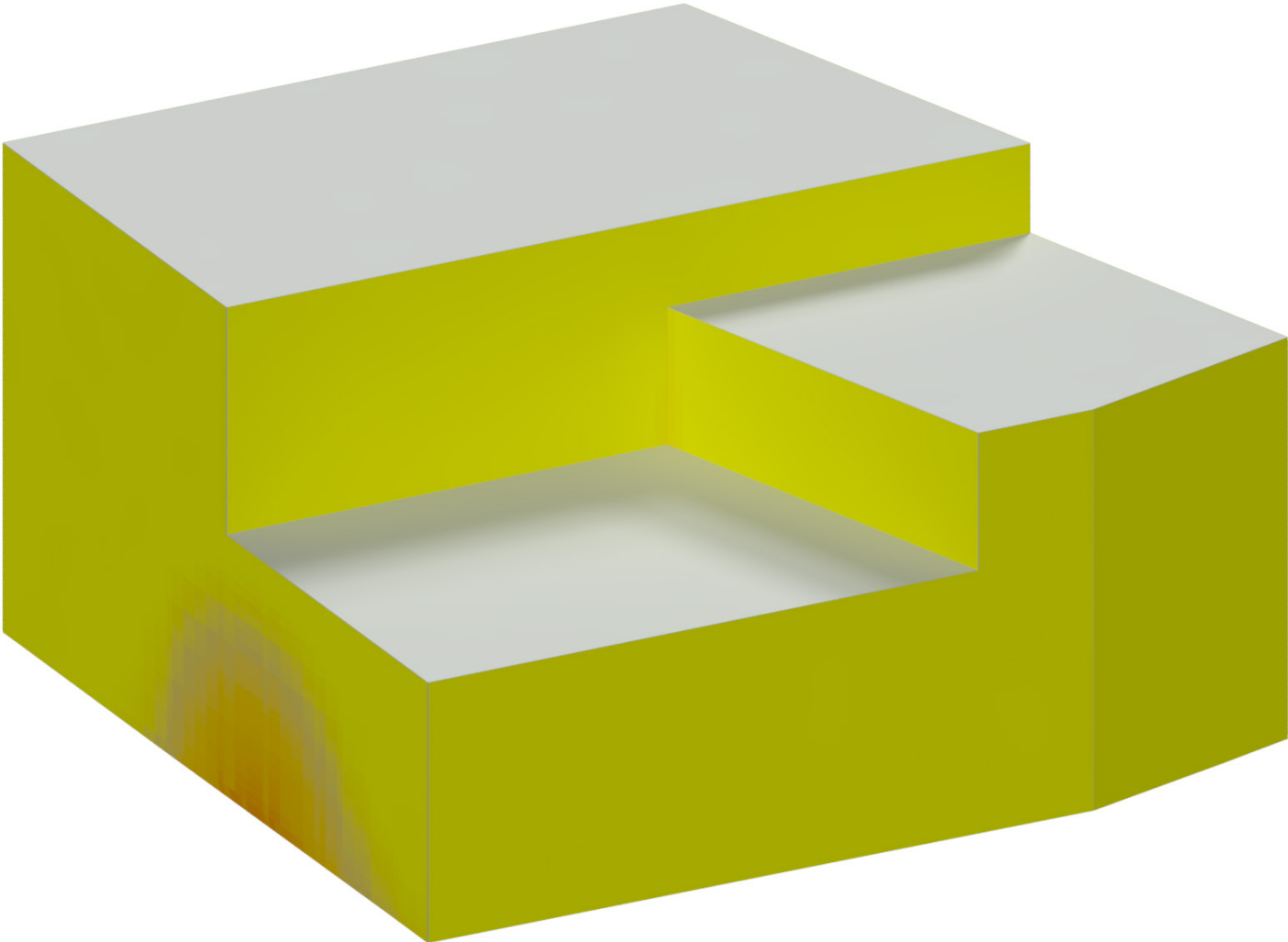
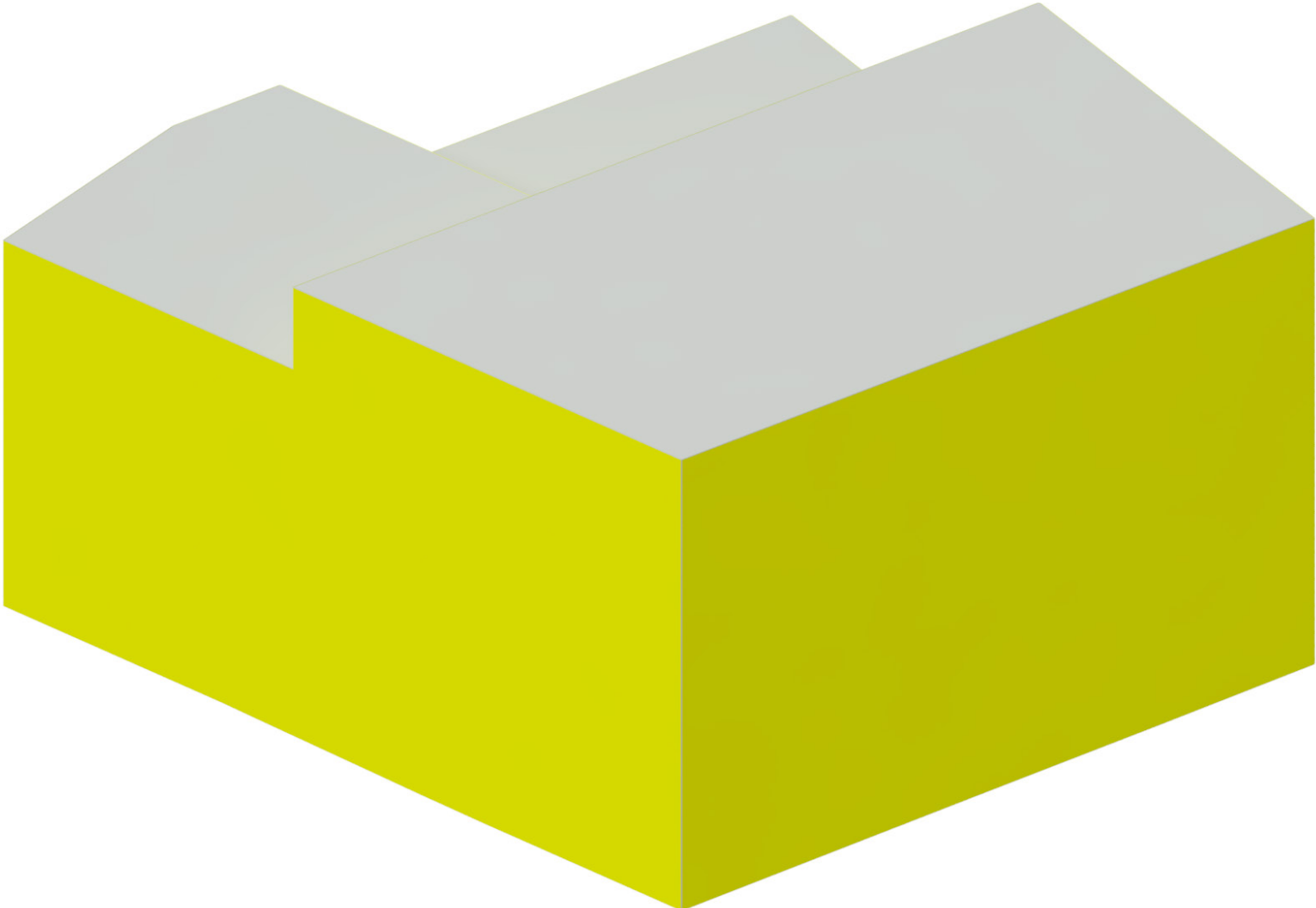
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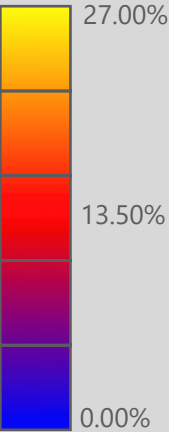
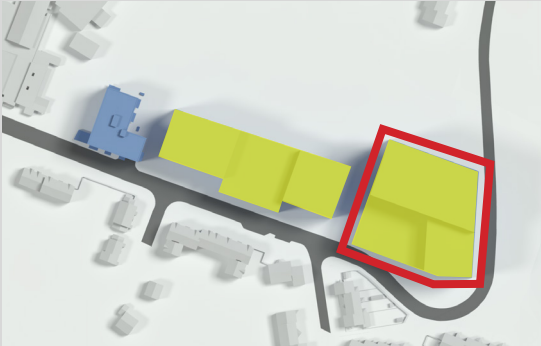
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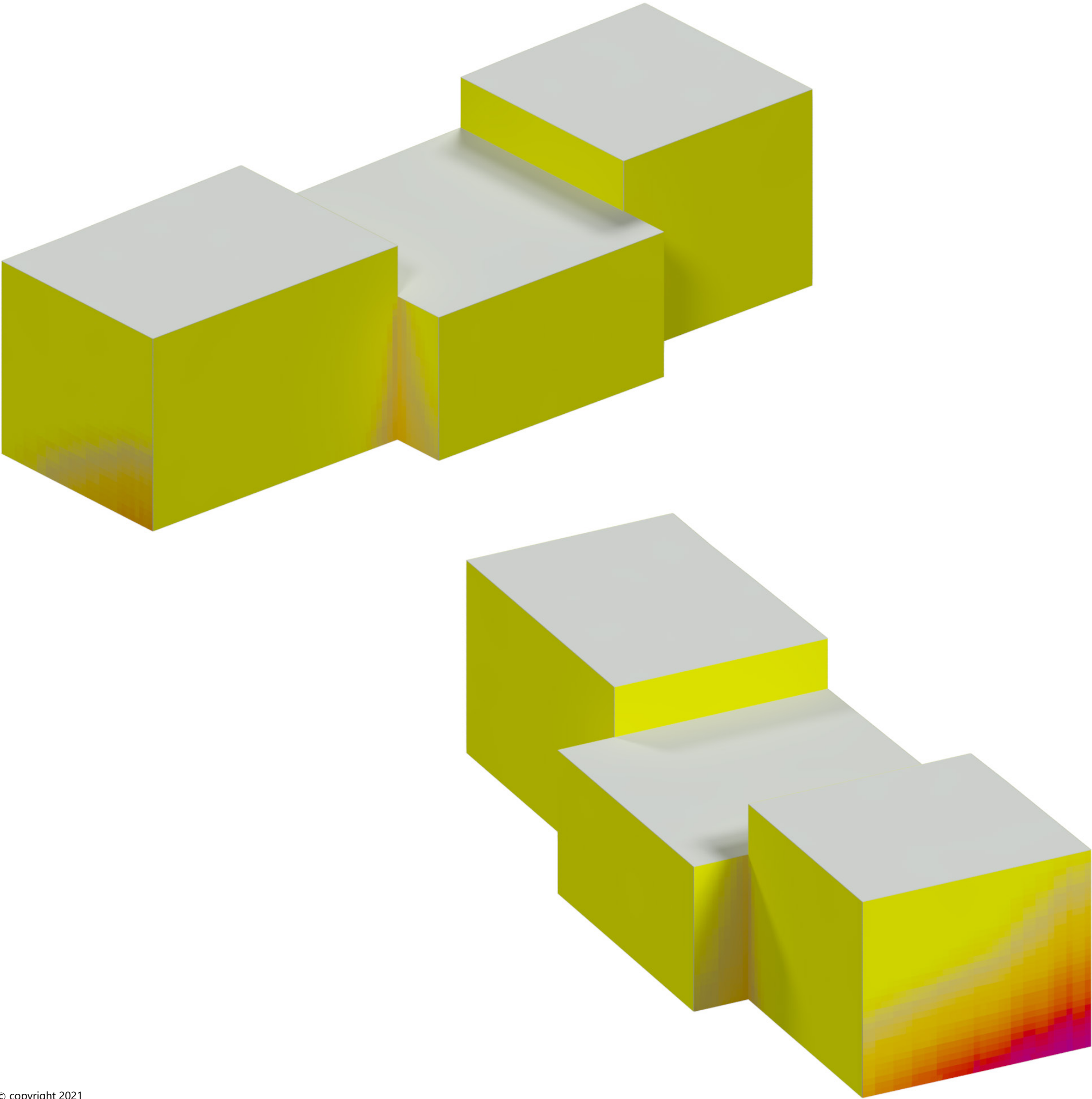
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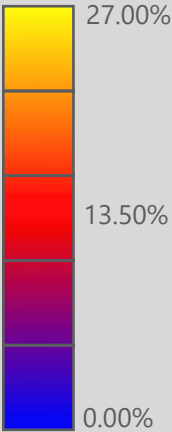
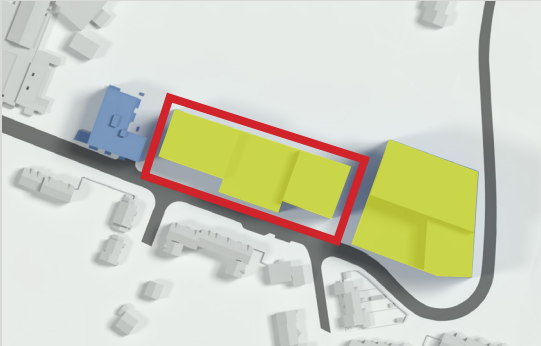
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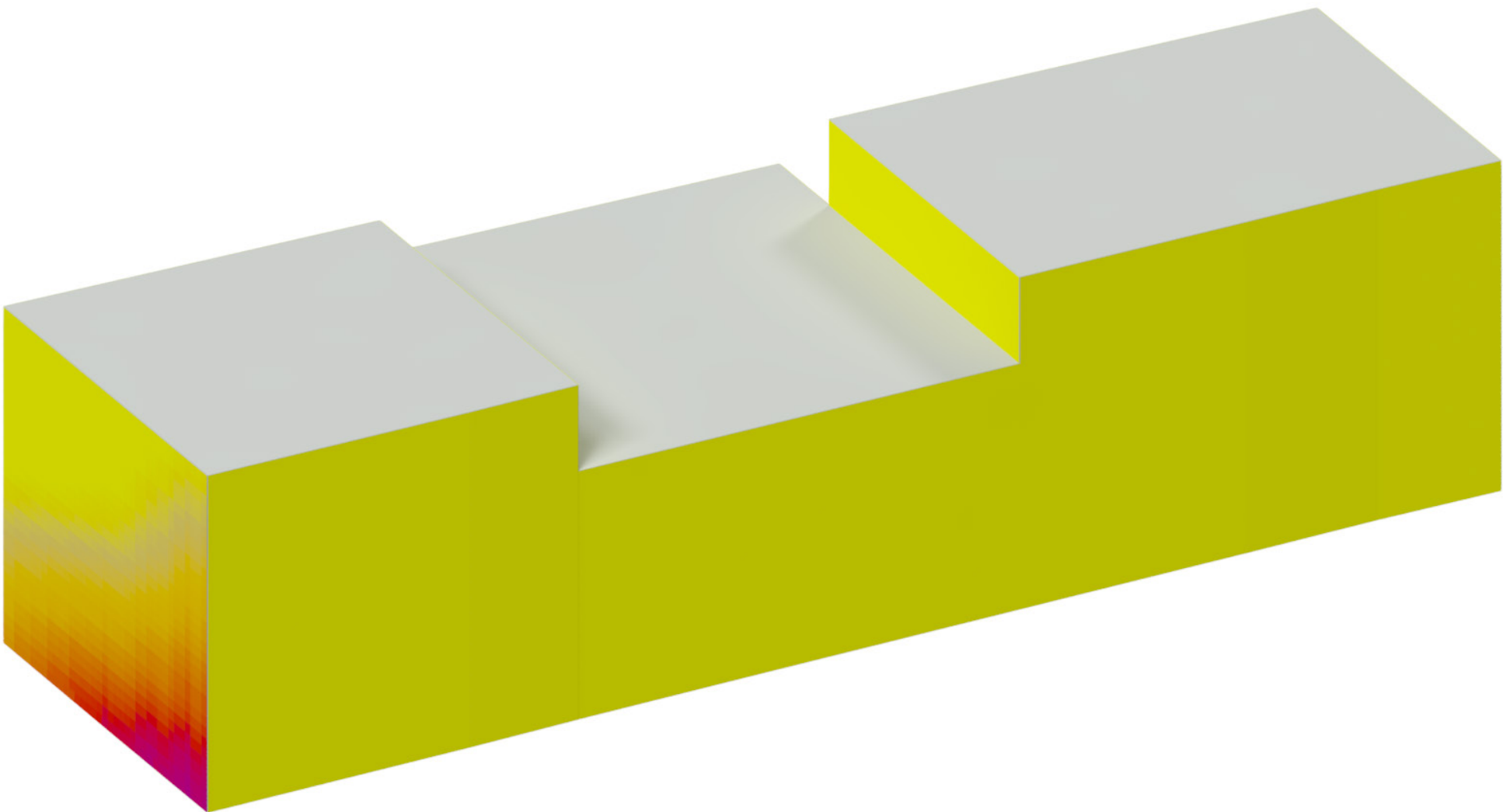
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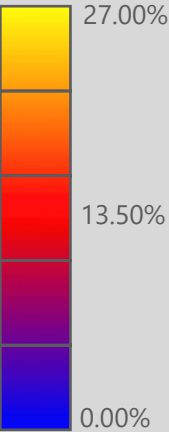
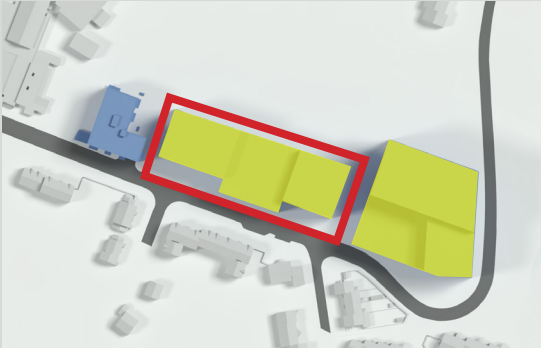
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