Weldale Street

Daylight and Sunlight Assessment – Updated for Section 73 Resubmission

Report for Ropemaker Properties

Date: July 2019

Reference WDS-HYD-00-ZZ-RP-ME-0002-

Weldale Street

Daylight and Sunlight Assessment

Revision: 04
Issue Date: July 2019

EXECUTIVE SUMMARY

Summary

The design team has carried out an assessment of site layout planning for daylight and sunlight.
The team has sought to maximise opportunities for daylight access and sunlight availability in accordance with BRE good practice guidance whilst also taking into account other site requirements and objectives.

The development is generally performing well, with the majority of spaces meeting or exceeding the recommended criteria contained with the BRE guidelines. No specific guidelines are provided in relation to targets or thresholds for compliance and while the BRE guidelines have been utilised, as a recognised basis of assessment, these are informative only and should be read in conjunction with other site design requirements, objectives and constraints.

A summary of the site wide performance is shown in Table 1.

Daylight Variable	Percentage of Site Achieving Guidelines
ADF – Kitchen/Lounge	92% (lower living room ADF)
ADF – Bedrooms	99%
NSL	84%
VSC	76%

Sunlight Variable	Percentage of Site Achieving Guidelines
Amenity Space	All amenity spaces apart from Block A Courtyard and Northern Amenity achieving guidelines.
APSH	63%
WPSH	68%

Table 1 - Summary of daylight and sunlight performance

**Daylight calculations are based on modelling carried out for representative typologies and room types across the site.*

Daylight

The daylight performance of a representative sample of bedrooms, and kitchen/living rooms has been assessed across the site. The vast majority of these are passing the BRE guidelines for bedrooms and living spaces. While the site is generally performing well, it should be noted that the BRE guidelines were designed to be used flexibly, allowing some degree of argument for daylight levels that do not meet the minimum requirements.

The site as a whole is performing well in terms of daylight with 99% of bedrooms achieving the levels required under the BRE guidance. In developments such as this where the kitchens form part of combined kitchen living areas, the lower ADF required for lounges (1.5%) can be used as the kitchens form a relatively small part of the overall space. Using this criterion, 92% of combined kitchen living areas would meet the BRE requirements.

The design team has in a number of cases also made alterations to window and glazing layout in order to help increase daylight provisions where practicable in response to this daylight assessment.

Based on the above the daylight performance is deemed to be acceptable, particularly in relation to other site design requirements, objectives and constraints which include:

- Proximity to proposed adjoining development (by others) causing overshadowing to the development;
- Development density requirements limiting access to daylight in certain areas; and
- Balanced fabric design criteria to maximise daylight whilst limiting winter heat loss (thermal performance) and risk of summertime overheating.

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Sunlight

Overshadowing of communal amenity space and shared surface has been considered and tested in detail.
With the exception of the courtyard to Block A, all amenity space and outside areas are passing the BRE guidance for sunlight. Although not strictly passing the BRE guidance, Block A will receive adequate sunlight when the space will be used the most for amenity during the summer months. The design team have carried out an exercise to ascertain the changes to the massing that would be required to increase the sunlight to this Courtyard. For the courtyard to meet the BRE guidance Block A1 would need to be reduced in height to 2 storeys, resulting in a loss of 45 units, or Block A2 would need to be reduced to 5 storeys resulting in a loss of 52 units. Neither of these proposals are deemed suitable for the scheme due to the loss of approximately 10% of the units on site, this would impact on the amount of affordable dwellings and the overall viability of the scheme.

The residential units on site will have access to communal amenity space that passes the BRE guidance.
The private amenity spaces to the ground floor units are also passing the BRE guidance, with the exception of a small number facing into the Block A Courtyard, these will have access to other communal amenity spaces that does pass.

Window sunlight has also been assessed. The number of units with north only facing main windows has been minimised (approximately 12% of the development). Of the remaining units, the majority of spaces have one main window with sufficient availability of sunlight hours.

Existing Buildings

An impact assessment has been undertaken to determine if the proposed development will have any adverse impact on daylight access and sunlight availability for existing buildings within the vicinity of the site.

- The development impact on the existing dwellings on Statheden Place is negligible to minor adverse.
- The development impact on the existing Chatham apartments on Weldale Street is Moderate Adverse. While it is likely residents will notice a reduction in skylight to the windows facing the Weldale Street development, these are high level clerestory windows which will not be attributed to main living spaces. In these cases the residents will have access to living space within each dwelling which is unaffected by the Weldale Street development on the opposite façade of the building. Furthermore, bedrooms are largely unoccupied during the day and the need for daylight is less vital than for living spaces.
- All other buildings are unaffected.

Planning Re-assessment for section 73 application
Changes have been made to the internal building layout since this document was originally submitted for planning. The proposed changes have been re-assessed where necessary and additional results have been included to highlight any change in performance. These changes will be marked in green at the end of the report in the results section adjacent to the original value.

This re-assessment only concerns internal spaces as the external envelope of the building has only changed around the new shared amenity spaces therefore there will be no impact on the accommodation. There will be no changes to the external analysis, existing buildings analysis and results.

In summary the changes to blocks A1 and A2 do not have any significant effect on the results reported in the previous revision of this report.

Hydrock

Weldale Street

Daylight and Sunlight Assessment

Revision: 04
Issue Date: July 2019

INTRODUCTION

Purpose of Report

Hydrock has been appointed by Ropemaker Properties Limited to provide a daylight and sunlight assessment for the Weldale Street development in Reading.

This report provides the results of a daylight and sunlight assessment that has been undertaken for the proposed development including any adverse impact assessment on surrounding buildings.

The development and impact has been assessed using the criteria set out in the Building Research Establishment's (BRE) 'Site layout planning for daylight and sunlight – a guide to good practice' (BR 209) (Littlefair, 2011). Whilst the guide itself states that its guidelines are not mandatory, they are those predominantly referenced for daylight and sunlight standards in the UK

Development Details

The Weldale Street development consists of 427 dwellings split across two apartment blocks in Reading city centre, the scheme consists of mainly 1, 2- and 3-bedroom apartments. There is also a small commercial unit at ground floor level.

The proposed site plan for the new development is shown in Figure 1.

Figure 1 - Weldale Street site plan

Policy Requirements

The following policies from the Reading Borough Council Sites and Detailed Policies document are of relevance to the daylight and sunlight performance of the development:

DM4 – Safeguarding Amenity

Developments will not cause significance detrimental impact to the living environment of existing or new residential properties in terms of:

- Privacy or overlooking;
- Access to sunlight and daylight;
- Visual dominance and overbearing effects of a development;
- Noise and disturbance;
- Artificial lighting;
- Vibration;
- Dust and fumes;
- Smell; or
- Crime and safety.

The position of habitable rooms will be particularly important. A back-to-back distance of 20m between dwellings is usually appropriate, although the circumstances on individual sites may enable dwellings to be closers without a detrimental effect on privacy

GLOSSARY OF TERMS

Average Daylight Factor - The average daylight factor is the average indoor illuminance (from daylight) on the working plane within a room, expressed as a percentage of the simultaneous outdoor illuminance on a horizontal plane. It is calculated based on a uniform overcast sky.

Glare - Glare is the sensation produced by bright areas within the visual field, such as lit surfaces, parts of the luminaires, windows and/or roof lights. Glare shall be limited to avoid errors, fatigue and accidents. Glare can be experienced either as discomfort glare or as disability glare. In interior work places disability glare is not usually a major problem if discomfort glare limits are met. Glare caused by reflections in specular surfaces is usually known as veiling reflections or reflected glare.

Illuminance - The amount of light falling on a surface per unit area, measured in lux.

Point daylight factor - A point daylight factor is the ratio between the illuminance (from daylight) at a specific point on the working plane within a room, expressed as a percentage of the illuminance received on an outdoor unobstructed horizontal plane.

Uniformity - The uniformity is the ratio between the minimum illuminance (from daylight) on the working plane within a room (or minimum daylight factor) and the average illuminance (from daylight) on the same working plan (or average daylight factor).

View of sky/no-sky line - Areas of the working plane have a view of sky when they receive direct light from the sky, i.e. when the sky can be seen from working plane height. The no-sky line divides those areas of the working plane, which can receive direct skylight, from those that cannot.

Working plane - CIBSE LG10 defines the working plane as the horizontal, vertical or inclined plane in which a visual task lies. The working plane is normally taken as 0.7m above the floor for offices and 0.85 m for industry

METHODOLOGY

Background

Overshadowing occurs when buildings are in close proximity relative to their size. This results in reduced levels of daylight and sunlight in part, or all, of the affected buildings. Daylight refers to the level of diffuse natural light coming from the surrounding sky or reflected off adjacent surfaces, whereas sunlight refers to direct sunshine. A key difference between the two is that sunlight is highly dependent on orientation, whereas orientation has no effect on daylight.

The potential for daylight at a particular point may be quantified by assessing the proportion of the sky that is 'visible' from that point, i.e. not obscured by objects such as buildings. For points located on vertical surfaces such as walls, this proportion of visible sky is termed the 'vertical sky component' or VSC.

After the VSC, the no sky line can also be used to assess daylight performance. The no sky line is the point on the working plane at which no sky can be viewed. This is often expressed as the percentage of working plane from which the sky can be viewed such as 80% or 0.8.

However, if the details of the building are known, then daylight can be more accurately quantified by calculating the average daylight factor (ADF). This gives a more precise measure of daylight, the results of which can in effect over-ride the VSC results. The ADF is generally only used to calculate daylight in new buildings.

Further, climate based modelling (CBM) techniques can be utilised to provide a more accurate assessment of predictive visual comfort within buildings. These techniques include spatial daylight autonomy (SDA), which considers percentage of time across a given year where appropriate illuminance levels are achieved, in addition to glare risk assessment.

These CBM techniques require more complex modelling and are more appropriate where the usage and task requirement of the space are known in more detail. For this reason, and the relative modern emergence of CBM modelling techniques, assessment at planning is rare. Direct sunlight can be calculated by testing the annual 'probable sunlight hours' that a point receives. This is achieved by considering both the complete annual shading variation at the point, and the statistical sunshine averages for the location in question.

The *average daylight factor, vertical sky component*, no sky line and *number of annual probable sunlight hours* form the basis of the overshadowing assessment methodology used in the analysis. The *average daylight factor* is generally only relevant when the internal room layout and use is known.

To achieve objectivity in quantifying daylight and sunlight, the guidelines laid down in the widely accepted BRE guidebook 'Site layout planning for daylight and sunlight: a guide for good practice', 2nd edition, 2011 by P J Littlefair are adhered to.

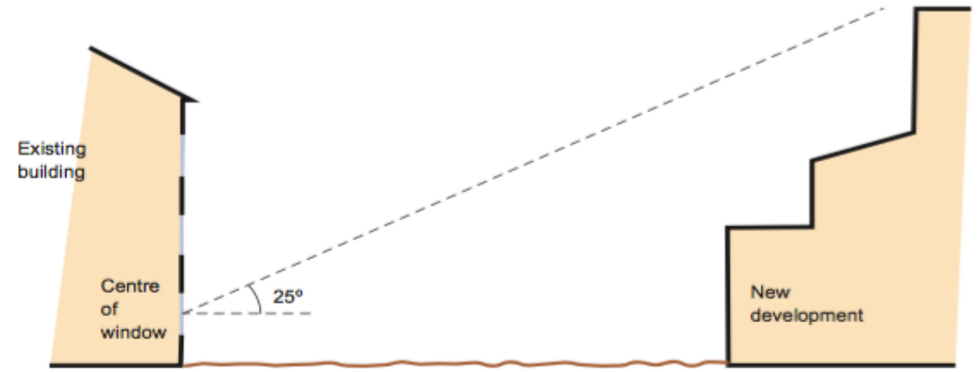


Figure 2 - Existing building 25 degree check

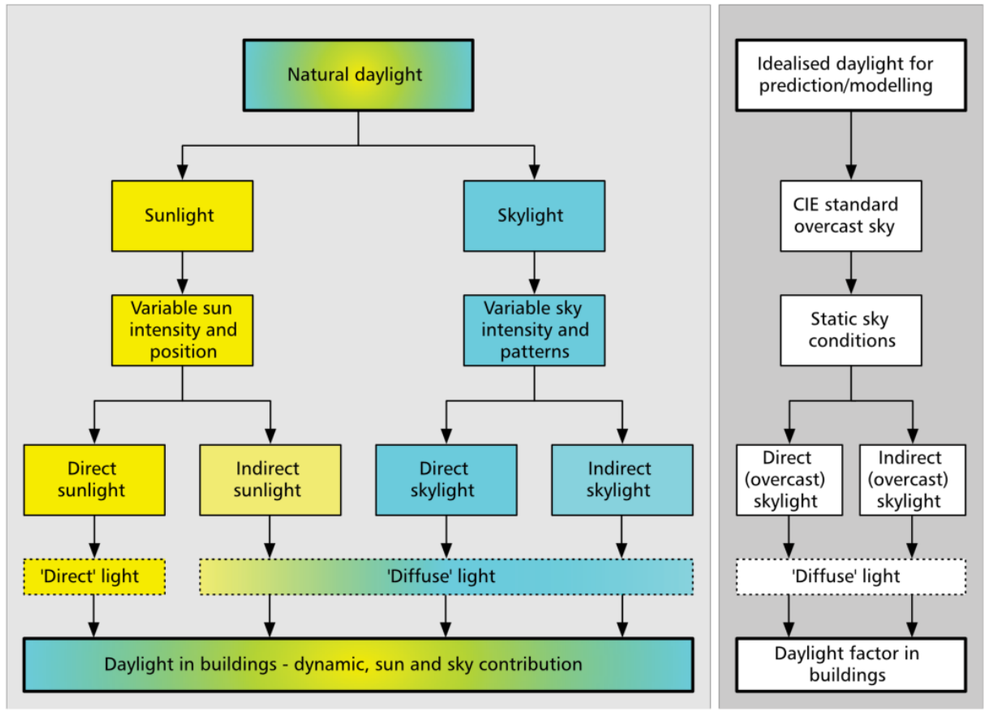


Figure 3 - Natural daylight categories

Existing Buildings – Desktop Assessment

The BRE recommend that daylight is safeguarded to nearby buildings to avoid making adjoining properties appear gloomy or unattractive.

Following the recommendations contained in the BRE guide, an initial desktop assessment can be undertaken to confirm which existing dwellings require assessment. This assessment is shown in Figure 3.

A section is drawn in plane perpendicular to each potential affected window wall of the existing building. The angle to the horizontal subtended by the new development at the level of the centre of the lowest window is drawn.

If this angle is less than 25° for the whole of the development, then it is unlikely to have a significant effect on the daylight enjoyed by the existing building. If for any part of the new development, this angle is greater than 25°, a more detailed check is needed to find the loss of skylight to the existing building. Both the total amount of skylight and its distribution within the building are important.

Existing Buildings – Detailed Assessment

If the proposed development is deemed to have a significant impact on existing buildings, or adjoining developments, a more detailed assessment of daylight is required. In this case, the existing buildings should be tested using the VSC criteria in the first instance, then the NSL, and finally ADF as the final option. It should be noted the ADF can only be used if internal room layouts are known. For further details on this please see Appendix C.

Calculating Daylight in New Development

The BRE guide cites the recommendations in BS 8206-02 Code of Practice for Daylighting as the minimum values for the ADF in each room of a dwelling. They are shown in Table 1.

The BRE guide states that it is the main habitable rooms (kitchen, living room, dining room and study), which should be tested. Daylight in bedrooms is regarded as less important but has been tested here for completeness

Zone	Recommended minimum ADF
Kitchen	2.0%
Living room, dining room, study	1.5%
Bedroom	1.0%

Table 2 - BRE recommended ADF (domestic)

The BRE have confirmed that in this case it is acceptable to use the ADF of 1.5% for combined kitchen and living rooms where the kitchen makes up a small proportion of the space. This applies for all kitchens and living space across the development.

Calculating Sunlight in New Development

Window sunlight

To quantify the potential for sunlight, annual probable sunlight hours are calculated for living room windows, which face within 90 degrees of due south. See Appendix B for a full description. The recommendation is that:

'The center of at least one window to a main living room can receive 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours in the winter months between 21 September and 21 March'.

Amenity sunlight

Overshadowing is quantified by assessing whether or not significant areas of the affected amenity space receive no direct sunlight for a large part of the year.

As required by the BRE, the 21st of March is chosen as an indicative date for shadows. If an area receives no direct sunlight at any time on that date, it will not have received any sunlight during the 6 winter months. After the 21st March, the shadows will become shorter over the summer and then start to lengthen again, returning to an equal length on September 21st.

This means that any garden or amenity areas receiving sunlight on 21st March will continue to receive sunlight for the coming six months. Hourly shadow plots can be used to show areas which are in shade from September 21st to March 21st. The BRE guidance recommends that

'For it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive two hours of sunlight on 21st March'

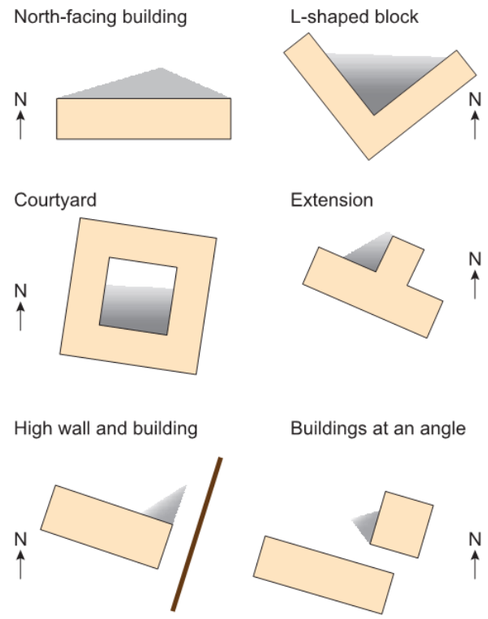


Figure 4 - Typical massing where low levels of sunlight can occur

Assessment Criteria

Daylight access

The BRE Guidelines provide three different methods for assessing daylight for existing residential accommodation: the Vertical Sky Component (VSC) method, No Sky Line (NSL) and the Average Daylight Factor (ADF) method. In the first instances the VSC is tested, and if required the NSL and ADF can then be tested.

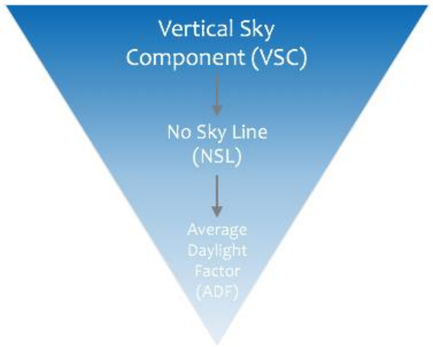


Figure 5 - Sequential testing for daylight

The BRE states that for the effect of the proposed building to be minimal, the VSC including the new development needs to be greater than 27%. If the VSC is less than 27% this is acceptable so long as the VSC with the new development is not less than 0.8 of the VSC without the proposed development.

Sunlight availability

Window sunlight availability will be assessed using the APSH and WPSH. For full details on how this is calculated see Appendix B.

The sunlighting of the existing dwelling may be adversely affected. This will be the case if the centre of the window:

- receives less than 25% of annual probable sunlight hours, or less than 5% of annual probable sunlight hours between 21 September and 21 March; and
- receives less than 0.8 times its former sunlight hours during either period; and
- has a reduction in sunlight received over the whole year greater than 4% of annual probable sunlight hours.

For amenity spaces it is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21st March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

Summary

Existing buildings

The existing buildings surrounding the Weldale Street development will be assessed using the following criteria.

Criteria	Further Testing
25 degree rule	If angle from new development to existing is greater than 25 degrees additional testing of the VSC will be required.
43 degree rule	If angle from new development to proposed adjoining development is above 43 degrees additional testing of VSC will be required.

Table 3 - BRE testing criteria for existing developments

New development

The proposed Weldale Street development will be assessed against the following criteria, which have been detailed above.

Parameter	Criteria	Acceptability Criteria	Source
Daylight	Angle to sky from horizontal (existing dwellings)	Maximum 25 degrees	BRE (Littlefair)
	Vertical sky component (existing dwellings)	Greater than 27%	BRE (Littlefair)
	No sky line (new dwellings)	80% of room receives direct light from the sky	BRE/BS 806 and Code for Sustainable Homes
	Average daylight factor (new dwellings)	Greater than 1-2% depending on room use	BRE/BS 806 and Code for Sustainable Homes
Sunlight	Annual probable sunlight hours	Window receives at least 25%	BRE (Littlefair)
	Winter probable sunlight hours	Window receives at least 5%	BRE (Littlefair)
Overshadowing	Area of amenity space receiving 2 hours of sunlight on March 21st.	50% of space	BRE (Littlefair)

Table 4- BRE daylight, sunlight and overshadowing criteria for new developments

DAYLIGHT AND SUNLIGHT MODEL

Accuracy

It is important to note that with any modelling exercise there are assumptions and approximations made. While building performance modelling techniques include detailed hourly simulations, they are predictive methods only, and should not be relied upon as a measure of final building performance. The latter is subject to detailed design, installation, commissioning and operational profiles which are all subject to development. As far as possible, details of all assumptions and approximations used are supplied as part of the report. These should be read & considered carefully.

No site visit has been carried out in the production of this report.

Software

The calculations have been carried out using IES Virtual Environment 2017, an accredited Building Performance Modelling (BPM) tool in accordance with CIBSE Guide AM11 (CIBSE, 2015).

IES uses a Radiance based calculation simulation for daylight. This predicts the transport of light in a virtual 3D scene using physically based models for the emission, transmission, reflection and scattering of light. The output, therefore, can inform on how the building might perform; for example in terms of visual impression and predicted illuminance levels for particular sky conditions. Radiance is capable of producing highly accurate predictions, within 10% of measured illuminance values.

In practical terms however, there are a number of factors that will affect the accuracy and reliability of modelling predictions:

- Model geometry;
- Physical properties;
- Luminous environment;
- Sensor grid/points;
- Simulation parameters; and
- Data output.

Geometry

Three-dimensional numerical models suitable for daylight/sunlight analysis were constructed to represent the current site conditions and the proposed development. The models included a representation of buildings adjacent to the development site up to a distance judged to have an influence on the availability of natural light.

- Window reveals are assumed to be 100mm;
- All cladding and overhangs have been taken from architect's drawings issued in June 2017;
- All glazing levels have been estimated based on architect's layouts and elevations.

Weather

In accordance with BRE guidelines, the ADF has been assessed based on a uniform overcast sky in accordance with BS 8206 and CIE guidelines.

Solar calculations, for the purpose of sunlight availability, have been carried out based on the most suitable local weather file at the development.

Glazing and Room Layout

Glazing properties have been assigned in accordance with BS 8206:

- Light transmittance (T) = 0.60
- Internal Reflectance (R) = Varies. Based on calculated internal surface types (wall and ceiling - light paint, floor - light carpet).
- No margin has been included within the model based on recommendations provided by the BRE. This contradicts the advice given in CIBSE AM11 (Building Performance Modelling) and will increase the daylight factor within the spaces.

EXISTING BUILDINGS IMPACT ASSESSMENT

Introduction

The impact of the proposed development on the existing dwellings in the vicinity of the site has been assessed. This has initially been undertaken using a desktop based approach as outlined in Section 2 of this report. For there to be no significant impact on the existing buildings, the obstruction angle from the ground floor window of the existing building must be less than 25 degrees.

The adjacent buildings which have been assessed are:

- Stratheden Place;
- Chatham Street Apartments
- The Chatham, Weldale Street
- 4-6 Weldale Street Commercial Buildings

The layout of existing buildings is based on the architect's base layouts for the site and information taken from the planning portal where this is available. An existing building survey was also carried out by an independent party which was used within the production of the model for Stratheden Place and the Weldale Street commercial buildings.
Information regarding internal layouts for Stratheden Place and The Chatham has been taken from sales information for those buildings as there is no information that is publicly available via the planning portal. Internal layouts for 4-6 Weldale Street and Chatham Place have been used.

Initial Desktop Assessment

There are a number of existing dwellings to the west of the proposed development on Stratheden Place, to the south on Chatham Street, and the east immediately adjacent the development and on Caversham Road that will require an initial desktop assessment.

The results of this assessment are shown in Table 4.

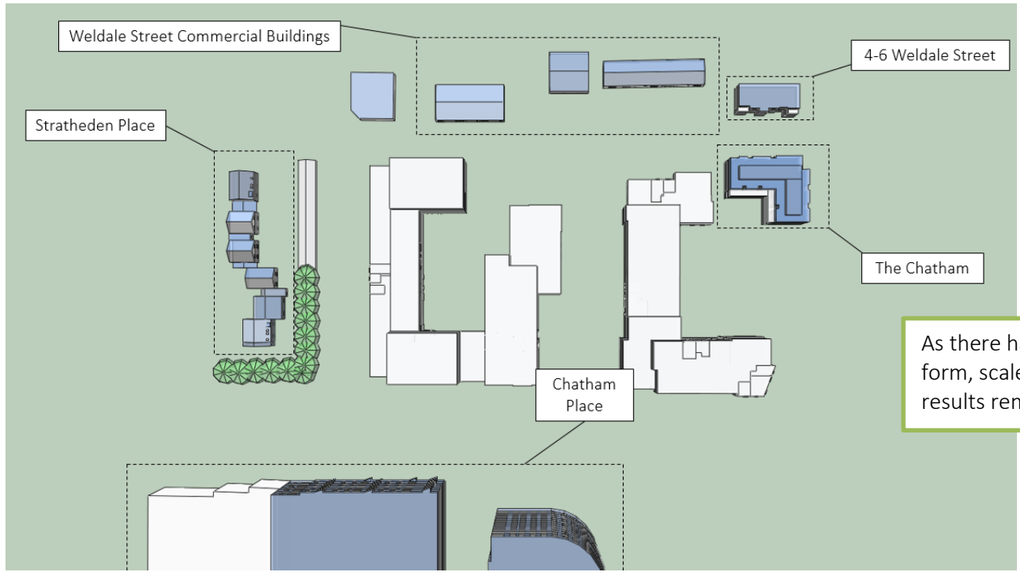


Figure 6 - Existing buildings plan

As there has been no changes to the overall form, scale and mass of the building these results remain valid

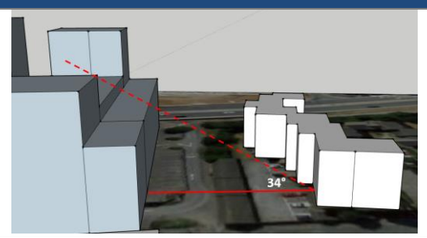
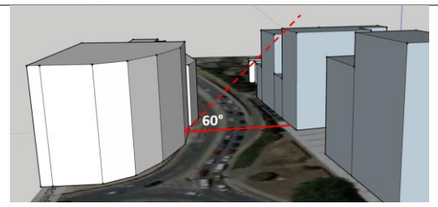
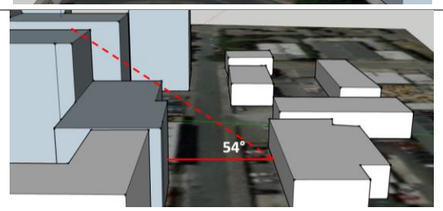
Building	25-degree Check	Requires Detailed Assessment
Stratheden Place		Yes (>25)
Chatham Street Apartments		Yes (>25)
4 – 6 Weldale Street		Yes (>25)

Table 5 – Desktop review

Vertical Sky Component (VSC) Check

The results of the initial desktop assessment of existing buildings in the vicinity of the site reveal that all buildings require further assessment.

The obstruction angle caused by the proposed new buildings to the existing buildings in these cases varies but some are greater than 25 degrees, or only marginally below. In order to assess whether there is any significant reduction in daylight, the vertical sky component (VSC) check must therefore be carried out.

Due to the size of the tabulated results, the full list of VSC results for each existing window is given in Appendix A.

A summary of the results are as follows.

Stratheden Place

The window locations and building geometry for the dwellings at Stratheden Place have been based on survey information provided by Brunel Surveys Ltd. The geometry used within this VSC assessment is shown below.

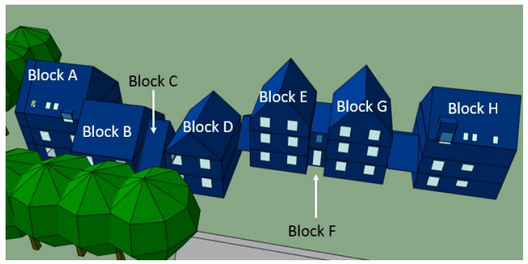


Figure 7 - Stratheden Place dwellings

There are 39 windows that may be affected by the Weldale Street development. With the introduction of the proposed development, 32 of these windows are passing the BRE guidance and will not be significantly affected. In order to "pass" the BRE VSC requirement the VSC with the proposed site must either by at least 27% or no less than 80% of it's former value. Only 8 windows do not meet this criterion, these are contained within the ground floor of Block A, B, C and F with the windows to Blocks A and B only marginally failing to meet the guidance.

The VSC for the windows that are not meeting the BRE guidance is shown in Table 5.

Block	Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Block A	Ground Floor	Window 1	33.25	25.69	23%	Marginal Fail
	Ground Floor	Window 2	24.72	18.34	26%	Fail
	First Floor	Window 2	27.39	21.51	21%	Marginal Fail
Block B	Ground Floor	Window 1	35.22	25.78	27%	Fail
	Ground Floor	Window 2	34.26	25.18	27%	Fail
Block C	Ground Floor	Window 1	34.63	25.76	26%	Fail
Block F	Ground Floor	Window 1	19.16	15.14	21%	Marginal Fail
	First Floor	Window 1	21.93	17.18	22%	Marginal Fail

Table 6 - Stratheden Place windows not meeting BRE guidance, all other windows are not affected. Please see Appendix A for a full list of results for all other windows.

All other windows are passing the BRE guidance for reduction in VSC and will not experience a noticeable reduction in skylight. For a full list of the results for each window please see Appendix A.

The overall impact on Stratheden Place is considered relatively minor, with some reduction in daylight to be expected with the introduction of a new building onto a site that is currently used as a car park (closest to the Stratheden Place dwellings).

Weldale Street Commercial Buildings

Block A of the commercial buildings on Weldale Street (shown in Figure 8) will experience a reduction in skylight caused by the new development. As these buildings are commercial premises, daylight is less important than for residential buildings so this reduction is not deemed to be significant.

Furthermore, the light levels experience indicates that if the site were redeveloped in the future for residential use, adequate levels of daylight could likely be achieved.

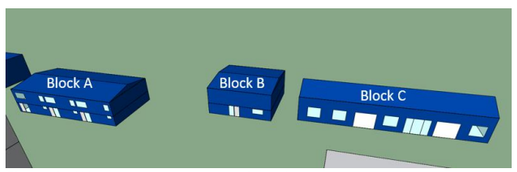


Figure 8 - Weldale street commercial units

Blocks B and C will not experience any significant impact from the proposed development in terms of daylight. For a full list of results please see Appendix A.

4-6 Weldale Street

The development at 4-6 Weldale Street is currently under construction and will consist of a number of flats with associated ancillary space.

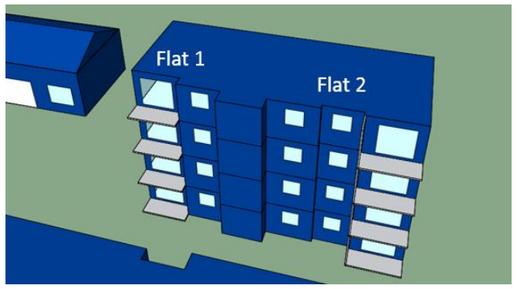


Figure 9 - 4-6 Weldale Street

There are 20 windows which could potentially be affected by the proposed development. Each of these was tested for the existing and proposed scenario. All of the windows tested are passing the BRE guidance for reduction in VSC and will not be significantly affected by the new development.

For full results for each window please see Appendix A.

The Chatham, Weldale Street

The dwellings within the Chatham building are dual aspect with living areas facing Thorn Walk and Weldale Street, and bedrooms/bathrooms facing the existing Wickes site. The windows facing the proposed development are mostly high level clerestory type windows which are most likely attributed to bedrooms, small bathroom windows and access doors. It should be noted that a number of windows are access doors and are therefore not included in this assessment.

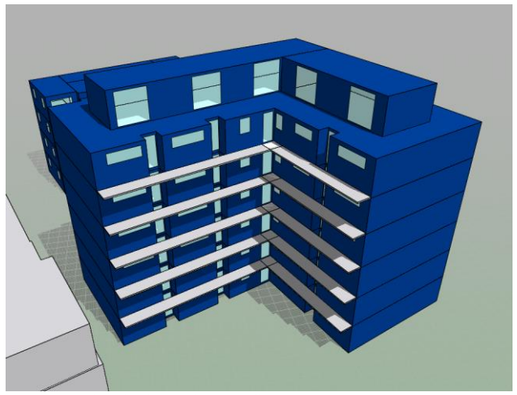


Figure 10 - The Chatham, Thorn Walk

Due to the Chatham's close proximity to the existing warehouses on the Weldale Street site and the external walkway, the rooms on these facades are currently not performing well under the VSC check with some windows currently achieving a VSC of between 1-3%. Any small reduction in VSC caused by the new development will, therefore, be significant in proportional terms. For example, in some cases the VSC has reduced from 5.4% to 3.6%, which is only a small reduction in reality, but equates to the proposed being 0.68 of the former value and a fail in terms of the VSC check.

A number of the south facing windows will experience an improvement in VSC with the introduction of the Weldale Street development.

The bedroom clerestory windows will experience a reduction in daylight with the introduction of the Weldale Street development. In some cases this reduction will be significant in terms of a reduction factor worse than the 0.8 threshold. However, as these windows are attributed to bedrooms and bathrooms, daylight is less important than in other habitable rooms such as kitchens and living spaces. Bedrooms are only generally used during night time hours and residents will often have the blinds/curtains drawn when using these spaces. Daylight is not required for bathrooms. The dwellings at the Chatham are dual aspect with living rooms, kitchens and bedrooms facing the road where the levels of daylight will not be affected.

In cases where the existing buildings have access decks such as The Chatham, the BRE recommend to carry out an additional test without the access decks in place. This is to ascertain whether or not the reduction in daylight is caused by the new development, of the access decks themselves.

The Chatham was remodeled without the access decks as shown in Figure 11.

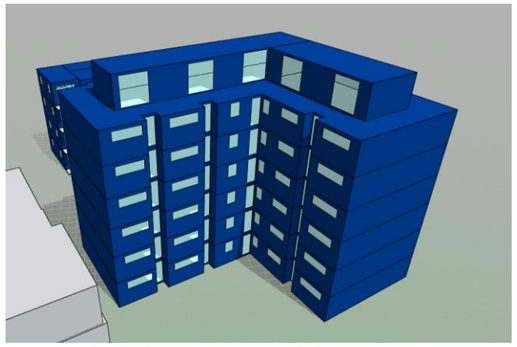


Figure 11 - The Chatham, without access decks

With the access decks removed the majority of windows are meeting the guidelines set by the BRE. In this case, 8 no. windows are experiencing a reduction in VSC greater than 20% and are therefore failing to meet the guidance, all other windows are passing.

Of the failing windows 2 of these are likely access doors to apartments are can be discounted. As discussed previously, the remaining windows are mostly high level clerestory windows which are probably attributed to bedrooms and bathrooms, which generally require less daylight than living spaces.

This vast increase in performance without the access decks indicates that the reduction in daylight can be attributed to these, rather than the introduction of the Weldale Street development.

For a full table of results for each window please see Appendix A.

Weldale Street

Daylight and Sunlight Assessment

Revision: 04
Issue Date: July 2019

Chatham Place, Chatham Street

There are two apartment blocks which could potentially be affected by the introduction of the Weldale street development. These are shown in Figure 11.

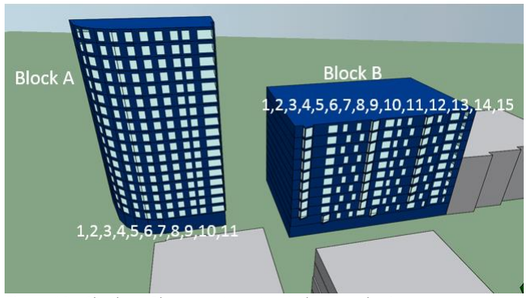


Figure 12 - Chatham Place apartments window numbering

Each window was tested for the potential reduction in VSC caused by the Weldale Street development. In this case, all windows are passing the guidance. It should be noted that the ground floor in each of these buildings contains car parking and circulation space only so is not assessed.

There will be no noticeable reduction in daylight for either Block A or Block B of the Chatham Place development.

For a full list of results please see Appendix A.

Block	Level	Window	NSL Existing	NSL Proposed	Reduction in NSL	Pass/Fail
Ground Floor	Flat 1	Kitchen/Lounge	1	1	0%	Pass
		Bedroom	0.5	0.51	-2%	Pass
	Flat 2	Kitchen/Lounge	0.52	0.52	0%	Pass
		Bedroom 1	0.57	0.57	0%	Pass
		Bedroom 2	0.68	0.68	0%	Pass

Table 7 – NSL results for 4-6 Weldale Street

Block	Room	NSL Existing	NSL Proposed	Reduction in NSL	Pass/Fail
Block A	Kitchen/Lounge	1	1	0%	Pass
	Bedroom	1	1	0%	Pass
	Bedroom	1	1	0%	Pass
	Kitchen/Lounge	1	0.92	8%	Pass
	Kitchen/Lounge	1	0.95	5%	Pass
	Bedroom	1	1	0%	Pass
	Bedroom	1	0.95	5%	Pass
	Bedroom	1	0.95	5%	Pass
	Kitchen/Lounge	1	1	0%	Pass
Block B	Bedroom	1	1	0%	Pass
	Kitchen/lounge	1	1	0%	Pass
	Bedroom	1	1	0%	Pass
	Kitchen/Lounge	1	0.98	2%	Pass
	Bedroom	1	1	0%	Pass
	Bedroom	1	1	0%	Pass
	Kitchen/lounge	1	1	0%	Pass
	Kitchen/lounge	1	1	0%	Pass
	Bedroom	1	0.99	1%	Pass
	Bedroom	1	0.87	13%	Pass
	Kitchen/Lounge	1	0.82	18%	Pass

Table 8 - NSL results for Chatham Place

No Sky Line

Where internal layouts are available, the No Sky Line has also been assessed. Internal layouts are not available for Stratheden Place or the Chatham (Weldale Street). Layouts for 4-6 Weldale Street and Chatham Place have been taken from the Reading Borough Council (RBC) planning portal and were correct at the time the developments were submitted to planning.

In each case the NSL has been assessed on a consequential basis as the floor layouts repeat through both developments, with the ground floor being tested initially. If there is no impact on the NSL on the ground floor then it is safe to assume the upper floors will also not be affected.

4-6 Weldale Street

The floor plans for the 4-6 Weldale Street development repeat on each floor. The results for the ground floor are shown below.

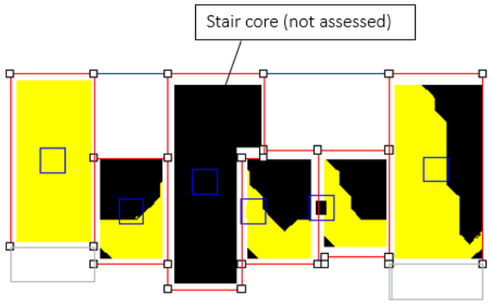


Figure 13 - NSL plot for the ground floor of 4-6 Weldale Street (post development)

In the above image all areas shown in yellow receive direct light from the sky. This different between the pre and post development condition are shown in Table 7.

There will be no noticeable change in the NSL for all rooms within the development.

Chatham Place

The floor plans for Block A and Block B of the Chatham Place development also repeat on each floor. The lowest residential floor in each block has been assessed to ascertain the level of any reduction in NSL.

The full results for the ground floor of the Chatham Place development are shown in Table 8 on the previous page.

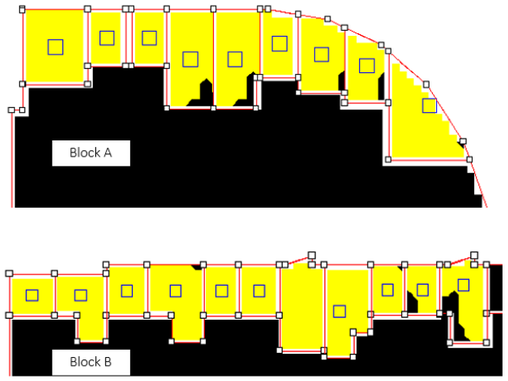


Figure 14 - NSL results for the Chatham Place development post Weldale Street construction

There will be no noticeable impact in terms of NSL on the Chatham Place development.

Existing Buildings Sunlight Assessment

As sunlight is heavily dependent on building orientation, the Chatham Place development has not been assessed as these dwellings are North facing and will not be affected by the Weldale Street development.

All other dwellings have been assessed for annual probable sunlight hours (APSH) and winter probable sunlight hours (WPSH).

As with the VSC, a full tabulated list of results is provided in Appendix B, with a summary provided here.

It should be noted that this assessment takes into account the direct sunlight to windows and not amenity spaces.

Stratheden Place

Out of the 39 windows that could be affected at Stratheden Place, 32 are meeting the BRE guidance for annual probable sunlight hours. A large proportion of the windows are experiencing a very minor reduction in APSH of circa 2-3%. The windows that are failing have been highlighted below:

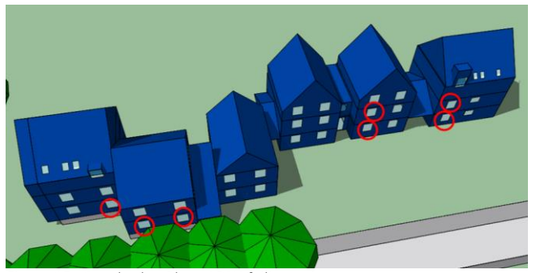


Figure 15 - Stratheden Place APSH failing units

Although there are a small number of windows that are failing to meet the APSH and WPSH requirement, this has been minimised where possible. These windows are experiencing a reduction in sunlight hours between 25%-35% Furthermore, in some of these cases the rooms affected will have access to additional windows that are meeting the APSH and WPSH requirement. The overall impact on the Stratheden Place development is not significant.

For a full list of results for each window please see Appendix B.

Weldale Street Commercial Properties

All of the windows attributed to the commercial units on Weldale Street are passing the APSH and WPSH requirement and there will be no significant impact on the buildings.

For a full list of results for each window, please see Appendix B.

4-6 Weldale Street

All the windows facing the Weldale Street development are passing both the APSH and WPSH check at the 4-6 Weldale Street development. Some windows will experience a reduction in sunlight hours, but the annual and winter sunlight achieved are within the limits set by the BRE.

The impact on the 4-6 Weldale Street development will not be significant. For a full list of results for each window please see Appendix B.

The Chatham, Weldale Street

As discussed above, the units on the Chatham are dual aspect with the main living rooms facing on to Weldale Street and Thorn Walk, these will not be affected by the proposed Weldale Street development. The high-level clerestory windows are attributed to bedrooms, which require less sunlight than the main living spaces.
A number of windows on the south façade are performing better in terms of sunlight with the introduction of the Weldale Street development, with others experiencing a reduction in overall sunlight throughout the year as shown in the figure below. The improvement on the southern façade is down to the existing warehouse that is on site being demolished.

Of the windows that will be affected by the Weldale Street development, 43% will have no significant impact in terms of APSH, and 72% will either have an improvement or no impact in terms of WPSH. While there is a relatively high proportion of windows not meeting the APSH and WPSH requirements, these windows are likely attributed to bedrooms and bathrooms.

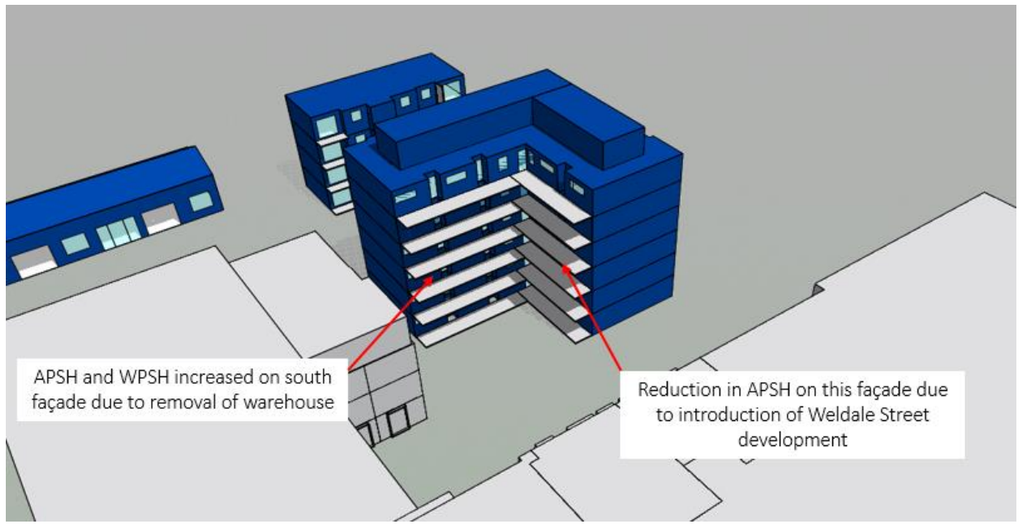


Figure 16 - APSH and WPSH changes at the Chatham

It is likely that residents will notice a reduction in direct sunlight in the summer months in rooms facing the Weldale Street development, however, as discussed above as these windows are not attributed to the main living spaces. The dwellings in the Chatham will still have access to a main living space which is not affected by the Weldale Street development.

Impact Assessment

The impact on the existing buildings has been classified according to the methodology outlined in Appendix I of BR 209. This is shown in the table below. It is worth noting that the assessment of impact depends on a combination of factors and there is no simple rule of thumb that can be applied.

The following is given as guidance:

- Negligible - Where reduction in skylight is well within the guidelines set out within BR 209.
- Minor Adverse – Where loss of skylight only just meets guidelines.
- Moderate Adverse – Where loss of skylight is marginally outside the guidelines or a large area of open space/windows are affected,
- Major Adverse – A large number of open space/windows are affected and the loss of skylight is substantially outlines the guidance.

In most cases, the surrounding buildings will be largely unaffected by the Weldale Street development. Where buildings are affected, the windows that will experience a noticeable reduction in skylight mostly belong to bedrooms, bathrooms or circulations spaces in the residential units, or form part of a commercial building where there is less need for daylight.

There are a small number of windows that may be linked to living spaces (within the Stratheden Place development) however this reduction is only just outside the guidelines and can be expected where a site that is largely a car park is been redeveloped. Furthermore, the development is a City centre location and it is relatively unusual for developments to be unobstructed by other buildings. Typically, dwellings within an urban setting would be situated within a typical street scene with buildings opposite.

Existing Building	Block	Daylight Impact	No. Windows Affected	Sunlight Impact	No. Windows Affected
Stratheden Place	Block A	Minor Adverse	2 (ground floor only all other windows negligible))	Minor Adverse	1 (ground floor marginal fail)
	Block B	Minor Adverse	2 (ground floor only all other windows negligible))	Moderate Adverse	2 (ground floor only all other windows pass BRE guidance)
	Block C	Minor Adverse	1 (only 1 window in this block, likely circulation)	Moderate Adverse	1 (only 1 window in this block, likely circulation)
	Block D	Negligible	0 (All windows meet BRE guidance)	Negligible	All windows meet BRE guidance.
	Block E	Negligible	0 (All windows meet BRE guidance)	Negligible	All windows meet BRE guidance.
	Block G	Negligible	0 (All windows meet BRE guidance)	Minor Adverse	1 (first floor single window failing BRE guidance, all others pass)
	Block H	Negligible	0 (All windows meet BRE guidance)	Moderate Adverse	2 windows marginally fail at first floor level
Weldale Street Commercial Buildings	Block A	Moderate Adverse*	All windows affected but as commercial property daylight is not deemed to be as essential than to dwellings.	Negligible	All windows meet BRE guidance
	Block B	Negligible	0 (All windows meet BRE guidance)	Negligible	All windows meet BRE guidance
	Block C	Negligible	0 (All windows meet BRE guidance)	Negligible	All windows meet BRE guidance
4-6 Weldale Street	All	Negligible	0 (All windows meet BRE guidance)	Negligible	All windows meet BRE guidance
The Chatham, Weldale Street	All	Moderate Adverse*	8 windows affected, the rest are meeting BRE guidance. Window affected are likely bedrooms/bathrooms where daylight is less essential.	Moderate Adverse	8 windows affected, the rest are meeting BRE guidance. Window affected are likely bedrooms/bathrooms where sunlight is less essential.
Chatham Place	Block A	Negligible	0 (All windows meet BRE guidance)	Negligible	North facing development
	Block B	Negligible	0 (All windows meet BRE guidance)	Negligible	North facing development

Table 9 - Existing buildings impact assessment

**Moderate Adverse rather than Major Adverse due to the use of the buildings/windows affected. These are not windows to main living spaces or rooms that require large amounts of daylight.*

PROPOSED BULDING DAYLIGHT ANALYSIS

To assess the daylight performance of the proposed new buildings at Weldale Street, a number of dwellings have been assessed. For clarity, these are shown in the following figures.

All relevant geometry that would cause an obstruction has been included, such as window reveals, existing and proposed buildings.

All dwellings have been tested at the lowest floor, those that are comfortably passing at this level are then removed then the assessment. Rooms that are failing to meet the guidance are then tested at the next floor above. This process is then repeated throughout the building. Any 'new' units such as those above entrances and corridors will also be tested at first floor level until they pass.

As there have only been very minor changes to the block A layout the selected amended units have been re-assessed.

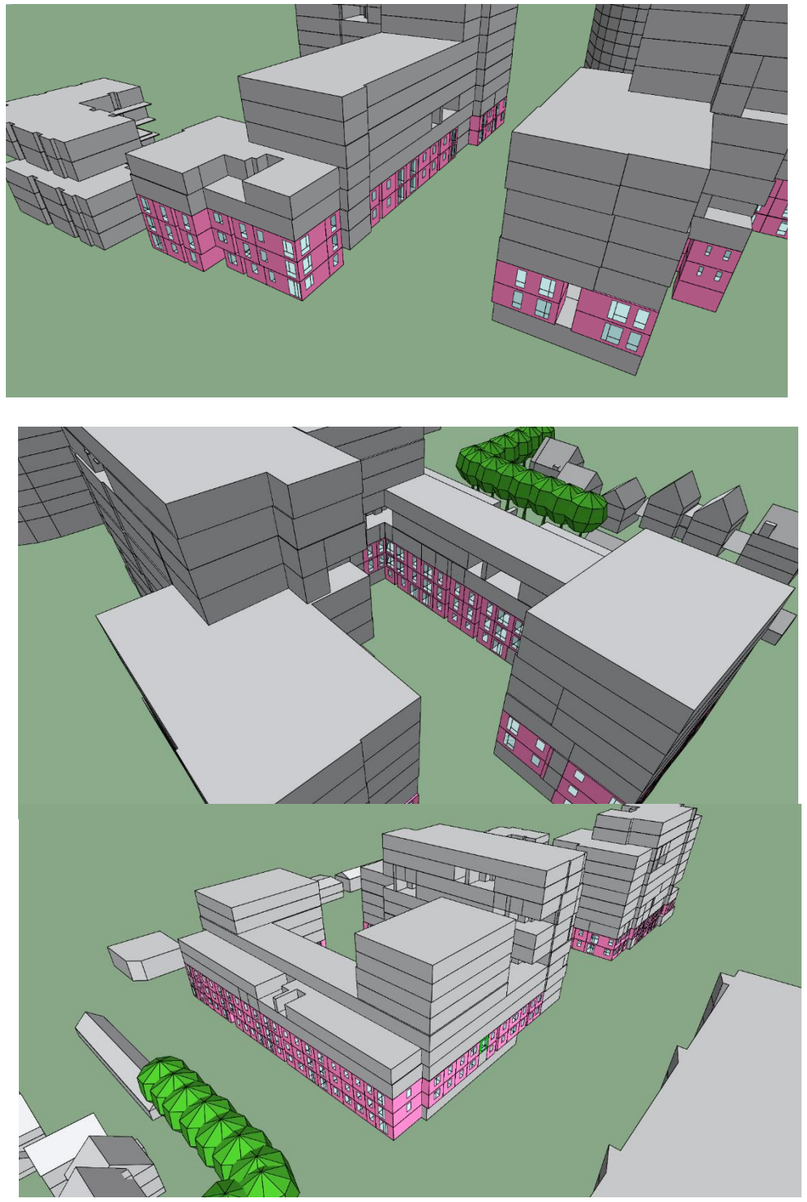


Figure 17 - Lower-ground, ground and first floor modelled dwellings

Vertical Sky Component

Approximately 76% of kitchens/living rooms and 77% of bedrooms are achieving a VSC of at least 27% in line with the BRE criteria.

A number of units are failing due to the close proximity of the blocks, for example the units facing each other in Block A2 and B1. There is little that could be done to increase the VSC in these areas, in most cases the majority of these units are passing the NSL and ADF criteria and will receive good levels of daylight.

Refer to Appendix C for full results.

Figure 18 - Dwellings failing to meet the NSL criteria (shown in red)

No Sky Line

-

The majority of units on site (84%) are achieving the NSL criteria with 80% of the room receiving direct light from the sky. There are a small number of cases where this criterion is not met, however this is due to overshadowing caused by adjacent blocks on site and will be extremely difficult to change without altering the massing of the development.

The units that are failing to meet the NSL criteria are mostly at ground floor level, with dwellings on higher floors passing the NSL criteria. This units that are failing below third floor level are shown in Figure 17.

Refer to Appendix C for full results.

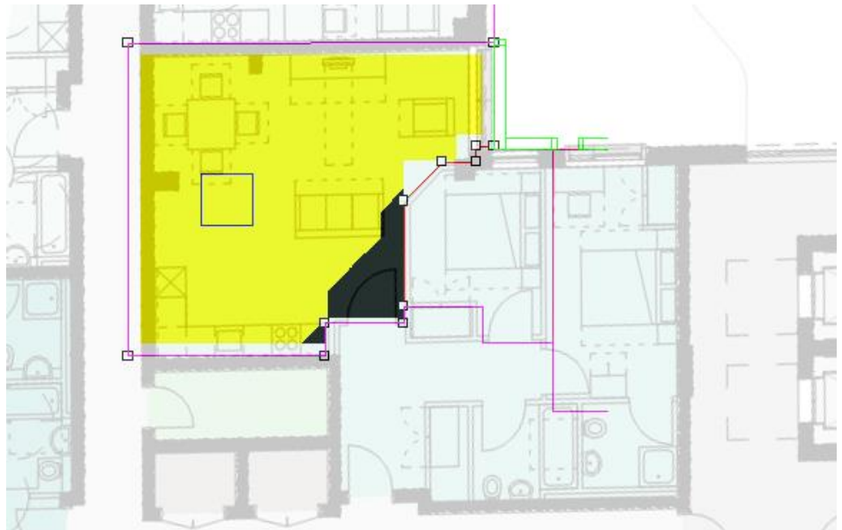


Figure 19 - Sky view example (areas with view of sky shown in yellow)

Average Daylight Factor

The ADF for each modelled unit has been calculated and assessed against the BRE criteria as follows:

- Kitchens– 2%
- Living rooms – 1.5%
- Bedrooms – 1%

In this particular development, all of the kitchens are combined living rooms and kitchens. BS 806 Part 2 (the British Standard for Daylight) recommends that where combined kitchens and living rooms are provided, the higher daylight factor should be applied.

However, in some instances it is applicable to use the lower daylight factor if the kitchen takes up a small part of the room and does not have a specific requirement for daylight. In these cases, the lower 1.5% daylight factor should be used. This is based on information provided by the BRE.

The majority of dwellings modelled are achieving the daylight requirements set within BR209 with 70% of combined kitchen and living rooms meeting the higher ADF of 2.0%, and 92% meeting the living space ADF of 1.5%.

For a full breakdown of the results for each dwelling tested, please see Appendix C.

The majority of combined kitchen and living rooms are meeting the higher average daylight factor of 2.0% which is recommended for kitchens (70%). The remainder of the kitchens on site are meeting the lower ADF that is required for living rooms. In these cases it is fair to classify these rooms as a "Pass" as they will still experience adequate levels of daylight for living spaces. In the majority of these rooms the kitchens is situated towards the back of the space, this is shown as an example in the daylight contour plot below.

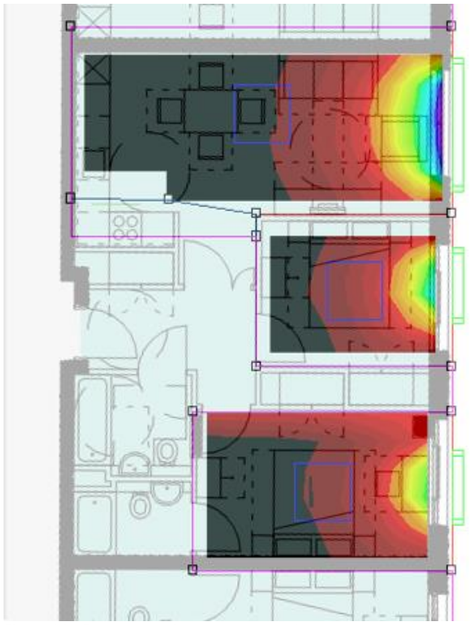


Figure 20 - Example daylight contour plot for a deep plan kitchen on site

Room	No. Achieving ADF Criteria	No. Not Achieving Kitchen ADF Criteria	Pass Rate
Combined Kitchen and Living Room	391	36	92% (living room ADF)
Bedrooms	634	5	99%

Table 10 - Summary of site wide performance

Figure 21 - Example daylight contour plot for unit A1 00.11

Observations

The development is performing well in terms of daylight with 99% of bedrooms achieving the recommended ADF criteria set by the BRE. In addition, 70% of combined kitchen living rooms are achieving the higher 2.0% ADF criteria for kitchens, with 94% performing above the 1.50% ADF set for living rooms.

The majority of dwellings apart from a small number on the lower ground and ground floors are achieving the no sky line criteria. This provides an indication of the distribution of skylight throughout the room.

Residents on site will be provided with habitable spaces which meet the recommendation daylight levels set by the BRE.

Re-submission

A number of apartments have moved during the redesign of the building and as such a couple of test apartments have been re-assessed in line with the new building layouts for Blocks A1 &A2.

We have reviewed ground floor A1-07 and A2-01 to understand the impact of these changes have had against the original design. These results are highlighted in red alongside the previous revision for these apartments. The results show that the changes have had no significant change on the overall figures provided in the previous application.

SUNLIGHT ANALYSIS

Amenity Sunlight

All communal amenity spaces provided as part of the development have been tested for compliance with the BRE guidelines. This states that amenity spaces should receive at least 2 hours of sunlight on March 21st in 50% of the space.

There are a number of private amenity spaces at ground floor level for the apartments, all units will have access to communal amenity space.

Window Sunlight

North facing units should be minimised as far as practicable and dwellings should have at least one window to a main living space that achieves at least 25% of annual probable sunlight hours and 5% of winter probable sunlight hours.

To increase the number of dwellings that have at least one window to a main living space that receives at least 25% of annual probable sunlight hours and 5% winter probable sunlight hours, the number of direct north facing units has been minimised. Across the site approximately 15% of the dwellings are north facing and can be discounted from the assessment.

Table 6 shows the site wide sunlight performance for living spaces and bedrooms. North facing dwellings have been omitted from this table. The site wide performance for APSH and WPSH is deemed to be acceptable when taking into account the constraints of the site. The majority of units which are not meeting the APSH criteria are those situated at lower floors within Block A facing into the courtyard area.

Room	Pass*	Fail*	Pass Rate*
Living Room/Kitchen APSH	228	132	63%
Living Room/Kitchen WPSH	244	115	68%

*not including north facing units which have been discounted from the assessment

Table 11 - Summary of site wide sunlight performance

With a courtyard type arrangement, it can be difficult to increase the APSH for these windows. It would not be possible to increase the number of units that are meeting the APSH and WPSH criteria without changing the massing and layout of the site, which would impact on other design criteria and would affect the viability of the scheme.

As with internal daylight, a representative sample of dwellings have been modelled and the results extrapolated across the site in order to calculate site wide performance.

For a full list of results for each modelled dwelling see Appendix D.

Figure 22 - Plan of modelled amenity spaces

Amenity Sunlight Results

21st March – BRE Test Day

The results of the amenity sunlight analysis for each amenity space on March 21st is shown in Figure 21.

All of the amenity spaces, with the exception of the Block A courtyard, are achieving the requirements for amenity sunlight set by the BRE.

Whilst the Block A courtyard is not meeting the requirement, part of the space is receiving direct sunlight on the BRE test day. Furthermore, the walls of the courtyard will receive direct sunlight which will be reflected and create a bright feeling space.

The performance of the courtyard will also improve throughout the year (see Page 20), with the majority of the space receiving direction sunlight from the hours of 11:00 hours and 16:00 hours. This shows that the courtyard will perform well in terms of direct sunlight during the period of the year when residents are most likely to want to use this for amenity space.

The site as a whole is meeting the BRE requirement of at least 2 hours of sunlight in 50% of amenity space, the occupants of the development will have access to more than one communal amenity space that is achieving the BRE guidance. It is worth noting that the BRE guidelines are intended to be used flexibly and to take into account the nature of the site.

An assessment of how the sunlight performance of the Block A Courtyard could be improved has been carried out by the architect. In order to improve the sunlight performance to a 'pass' the southern most part of Block A1 would need to be reduce to 2 storeys, resulting in a loss of 45 dwellings. Alternatively, a pass could also be achieved by reducing Block A2 to 5 storeys, this option would result in a loss of 52 dwellings. Losing this number of dwellings is not viable for the scheme as this would reduce the number of affordable units, and make the scheme as a whole less viable. Furthermore, residents will have access to amenity space that is meeting the BRE guidance throughout the year.

For further details on this study please see the report from AWW in Appendix F.

Amenity Space	Percentage of Space Receiving Direct Sunlight at Hourly Intervals											
	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00
Block A Courtyard	0	0	0	3.3	22.2	14	19.1	16.6	1.1	0	0	0
Block B Courtyard	86	75.2	58.6	45.3	26.7	2.1	0	4.4	0.6	0	0	0
Site Thoroughfare	59.7	60.1	62.4	64.5	51.4	32.6	28.8	23.1	37.4	53.3	30	1.1
Southern Amenity	100	90	81.3	73.9	62.7	43.5	19.9	20.2	64	63.6	3	0
Northern Thoroughfare	0	0	0.4	17.8	41.8	42.1	29.2	22.6	21.1	11.1	37.2	15.5
Block A Terraces	2.2	0	0	0	75	86.5	97.9	100	46.1	44.1	4.6	4.6

Figure 23 - Amenity sunlight results for the 21st March

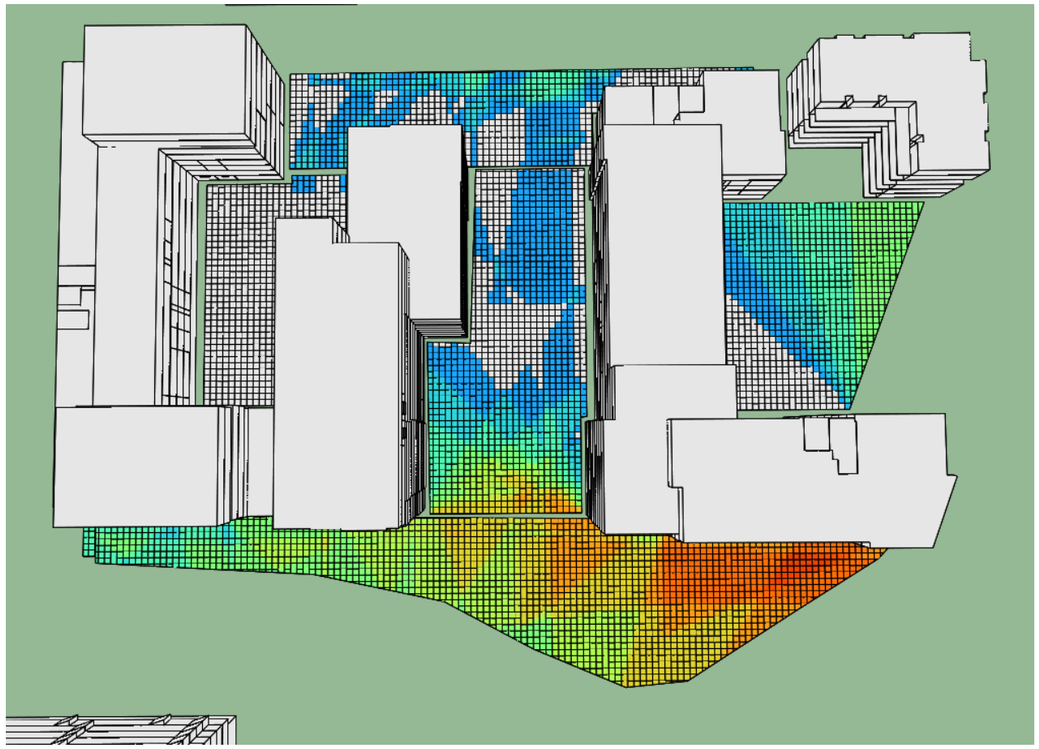


Figure 24 - Amenity sunlight hours (coloured areas represent spaces where 2 hours of sunlight is achieved)

21st July – Typical Summers Day

To assess how the sunlight performance of the development improves during the summer months, the above analysis was also carried out for a typical summer day (July 21st).

During the summer, the majority of the Block A Courtyard is receiving at least 2 hours of direct sunlight. This is representative of when the space will be used the most for amenity. Furthermore, during the summer the private terraced areas within the courtyard will receive some direct sunlight during the day, with the exception of the north facing units. The area proposed for play within the courtyard will also receive direct sunlight during the summer. Parts of this area will be shaded, which can actually be a welcome benefit for residents during the warmest days of the year.

Amenity Space	Percentage of Space Receiving Direct Sunlight at Hourly Intervals														
	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00
Block A Courtyard	0	0	0	0	0	18.3	48.3	56.7	52.9	47.3	35.9	9.9	0	0	0
Block B Courtyard	95.9	98.7	93.5	86.8	77.1	64	56.4	45.5	43.7	42.9	36.2	19.2	2.5	0	0
Site Thoroughfare	31.6	53.7	56.3	59.3	62.5	77.1	85.4	81.7	75.1	65.4	55.1	43.5	10.3	4.9	7.2
Southern Amenity	49	99.8	100	100	94.2	86.1	72.2	71.7	90.3	100	100	73.6	10.8	0	0
Northern Thoroughfare	43	10.4	9.2	14.1	21	36.5	51	58.8	57.4	58.3	61.6	62.6	71.9	83.4	48.1
Block A Terraces	0	0	1.5	2.2	3.1	5	66.5	100	100	100	100	100	57.1	63.6	22

Figure 25 - Amenity sunlight results for the 21st March

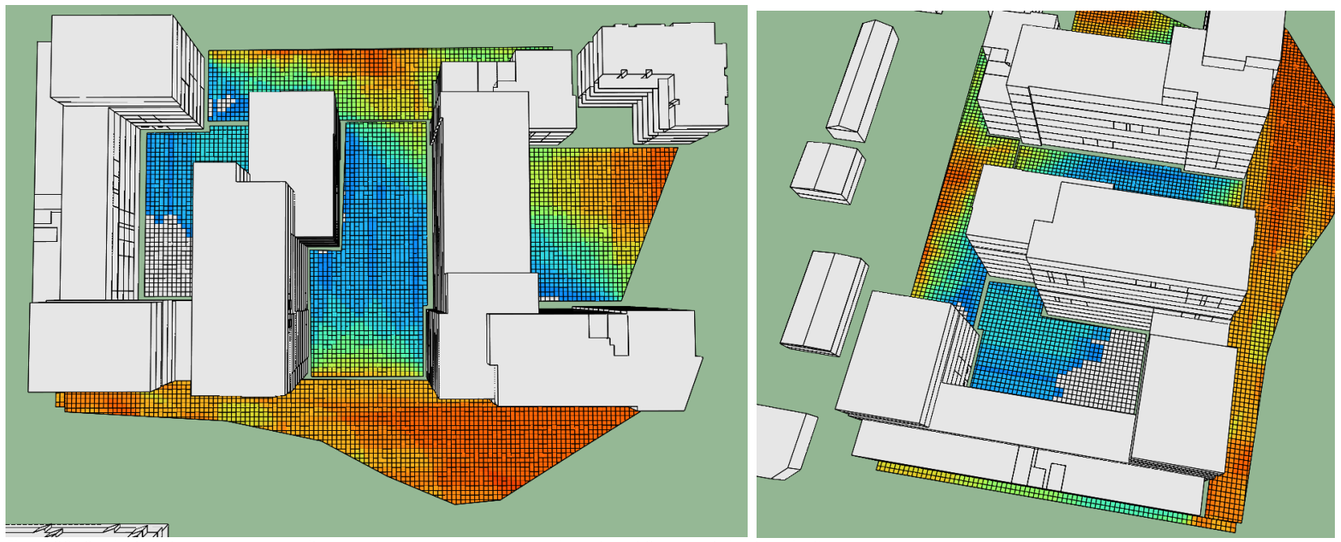


Figure 26 - Sunlight contours on each amenity space (areas shown in colour achieve at least 2 hours of direct sunlight)

CONCLUSIONS

Summary

The design team has carried out an assessment of site layout planning for daylight and sunlight.
The team has sought to maximise opportunities for daylight access and sunlight availability in accordance with BRE good practice guidance whilst also taking into account other site requirements and objectives.

The development is generally performing well, with the majority of spaces meeting or exceeding the recommended criteria contained with the BRE guidelines. No specific guidelines are provided in relation to targets or thresholds for compliance and while the BRE guidelines have been utilised, as a recognised basis of assessment, these are informative only and should be read in conjunction with other site design requirements, objectives and constraints.

A summary of the site wide performance is shown in Table 8.

Daylight Variable	Percentage of Site Achieving Guidelines
ADF – Kitchen/Lounge	92% (lower living room ADF)
ADF – Bedrooms	99%
NSL	84%
VSC	76%

Sunlight Variable	Percentage of Site Achieving Guidelines
Amenity Space	All amenity spaces apart from Block A Courtyard and Northern Amenity achieving guidelines.
APSH	63%
WPSH	68%

Table 12 - Summary of site wide daylight and sunlight performance

**Daylight calculations are based on modelling carried out for representative typologies and room types across the site.*

Daylight

The daylight performance of a representative sample of bedrooms, and kitchen/living rooms has been assessed across the site. The vast majority of these are passing the BRE guidelines for bedrooms and living spaces. While the site is generally performing well, it should be noted that the BRE guidelines were designed to be used flexibly, allowing some degree of argument for daylight levels that do not meet the minimum requirements.

The site as a whole is performing well in terms of daylight with 99% of bedrooms achieving the levels required under the BRE guidance. In developments such as this where the kitchens form part of combined kitchen living areas, the lower ADF required for lounges (1.5%) can be used as the kitchens form a relatively small part of the overall space. Using this criterion, 92% of combined kitchen living areas would meet the BRE requirements.

The design team has in a number of cases also made alterations to window and glazing layout in order to help increase daylight provisions where practicable in response to this daylight assessment.

Based on the above the daylight performance is deemed to be acceptable, particularly in relation to other site design requirements, objectives and constraints which include:

- Proximity to proposed adjoining development (by others) causing overshadowing to the development;
- Development density requirements limiting access to daylight in certain areas; and
- Balanced fabric design criteria to maximise daylight whilst limiting winter heat loss (thermal performance) and risk of summertime overheating.

Sunlight

Overshadowing of communal amenity space and shared surface has been considered and tested in detail.
With the exception of the courtyard to Block A, all amenity space and outside areas are passing the BRE guidance for sunlight. Although not strictly passing the BRE guidance, Block A will receive adequate sunlight when the space will be used the most for amenity during the summer months. The design team have carried out an exercise to ascertain the changes to the massing that would be required to increase the sunlight to this Courtyard. For the courtyard to meet the BRE guidance Block A1 would need to be reduced in height to 2 storeys, resulting in a loss of 45 units, or Block A2 would need to be reduced to 5 storeys resulting in a loss of 52 units. Neither of these proposals are deemed suitable for the scheme due to the less of approximately 10% of the units on site, this would impact on the amount of affordable dwellings and the overall viability of the scheme.

The residential units on site will have access to communal amenity space that passes the BRE guidance.
The private amenity spaces to the ground floor units are also passing the BRE guidance, with the exception of a small number facing into the Block A Courtyard, these will have access to other communal amenity spaces that does pass.

Window sunlight has also been assessed. The number of units with north only facing main windows has been minimised (approximately 12% of the development). Of the remaining units, the majority of spaces have one main window with sufficient availability of sunlight hours.

Existing Buildings

An impact assessment has been undertaken to determine if the proposed development will have any adverse impact on daylight access and sunlight availability for existing buildings within the vicinity of the site.

- The development impact on the existing dwellings on Statheden Place is negligible to minor adverse.
- The development impact on the existing Chatham apartments on Weldale Street is Moderate Adverse. While it is likely residents will notice a reduction in skylight to the windows facing the Weldale Street development, these are high level clerestory windows which will not be attributed to main living spaces. In these cases the residents will have access to living space within each dwelling which is unaffected by the Weldale Street development on the opposite façade of the building. Furthermore, bedrooms are largely unoccupied during the day and the need for daylight is less vital than for living spaces.
- All other buildings are unaffected.

The re-assessment carried out shows that the minor changes to the layout in block A have had negligible change to the previously approved scheme.

APPENDIX A – EXISTING BUILDINGS VSC RESULTS

Stratheden Place VSC Results

Block	Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Block A	Ground Floor	Window 1	33.25	25.69	23%	Marginal Fail
		Window 2	24.72	18.34	26%	Fail
	First Floor	Window 1	34.63	27.57	20%	Pass
		Window 2	27.39	21.51	21%	Marginal Fail
	Third Floor	Roof Light 1	36.16	29.84	17%	Pass
		Roof Light 2	36.16	29.84	17%	Pass
		Roof Light 3	36.16	29.84	17%	Pass
		Window 1	36.16	29.84	17%	Pass
Block B	Ground Floor	Window 1	35.22	25.78	27%	Fail
		Window 2	34.26	25.18	27%	Fail
	First Floor	Window 1	35.89	27.32	24%	Pass
		Window 2	36.09	27.81	23%	Pass
Block C	Ground Floor	Window 1	34.63	25.76	26%	Fail
Block D	Ground Floor	Window 1	28.37	22.85	19%	Pass
		Window 2	33.54	27.04	19%	Pass
	First Floor	Window 1	36.04	28.56	21%	Pass
		Window 2	36.37	29.02	20%	Pass
Block E	Ground Floor	Window 1	31.05	26.94	13%	Pass
		Window 2	33.6	29.06	14%	Pass
	First Floor	Window 1	35.73	30.14	16%	Pass
		Window 2	36.92	31.14	16%	Pass
	Second Floor	Window 1	37.08	31.72	14%	Pass
		Window 2	37.28	31.9	14%	Pass
Block F	Ground Floor	Window 1	19.16	15.14	21%	Marginal Fail
	First Floor	Window 1	21.93	17.18	22%	Marginal Fail
Block G	Ground Floor	Window 1	34.47	29.92	13%	Pass
		Window 2	34.79	30.58	12%	Pass
	First Floor	Window 1	37.07	31.67	15%	Pass
		Window 2	37.04	32.09	13%	Pass
	Second Floor	Window 1	37.29	32.89	12%	Pass
		Window 2	37.68	33.06	12%	Pass

Block	Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Block H	Ground Floor	Window 1	34.29	31.09	9%	Pass
		Window 2	34.86	31.81	9%	Pass
	First Floor	Window 1	37.21	32.62	12%	Pass
		Window 2	37.31	33.19	11%	Pass
	Second Floor	Window 1	38.13	33.94	11%	Pass
		Roof Light 1	38.13	33.94	11%	Pass
		Roof Light 2	38.13	33.94	11%	Pass
		Roof Light 3	38.13	33.94	11%	Pass

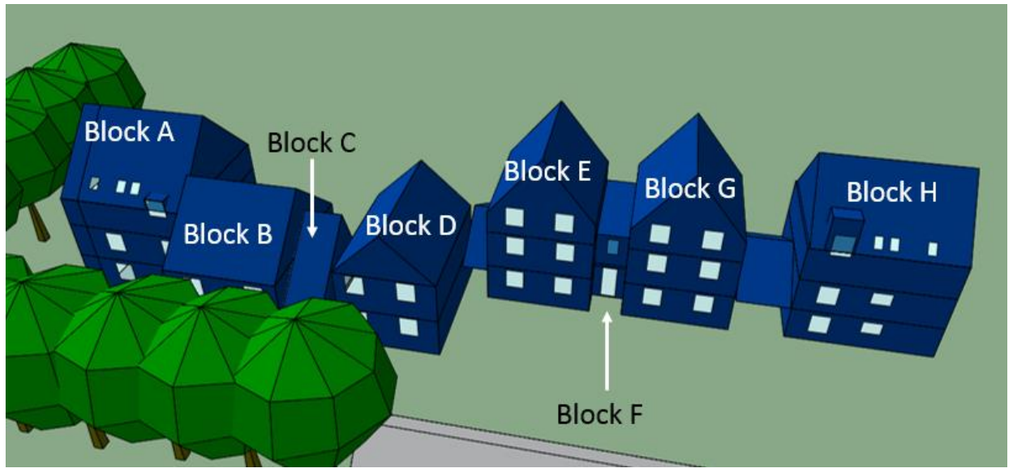


Figure 27 - Stratheden Place block numbering

Weldale Street

Daylight and Sunlight Assessment

Revision: 04
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Weldale Street Commercial Buildings

Block	Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Block A	Ground Floor	Window 1	34.23	15.21	56%	Fail
		Window 2	34.66	16.42	53%	Fail
		Window 3	34.01	17	50%	Fail
		Window 4	33.97	19.89	41%	Fail
		Window 5	33.84	20.49	39%	Fail
		Window 6	33.81	21.81	35%	Fail
	First Floor	Window 1	35.18	17.03	52%	Fail
		Window 2	35.17	17.75	50%	Fail
		Window 3	35.01	18.68	47%	Fail
		Window 4	34.91	20.95	40%	Fail
		Window 5	35.01	21.84	38%	Fail
		Window 6	34.68	23.45	32%	Fail
Block B	Ground Floor	Window 1	32.72	28.32	13%	Pass
		Window 2	33.18	28.63	14%	Pass
Block C	Ground Floor	Window 1	33.3	28.86	13%	Pass
		Window 2	33.28	28.48	14%	Pass
		Window 3	33.19	28.26	15%	Pass
		Window 4	32.66	27.89	15%	Pass
		Window 5	31.92	27.45	14%	Pass
		Window 6	30.11	26.16	13%	Pass

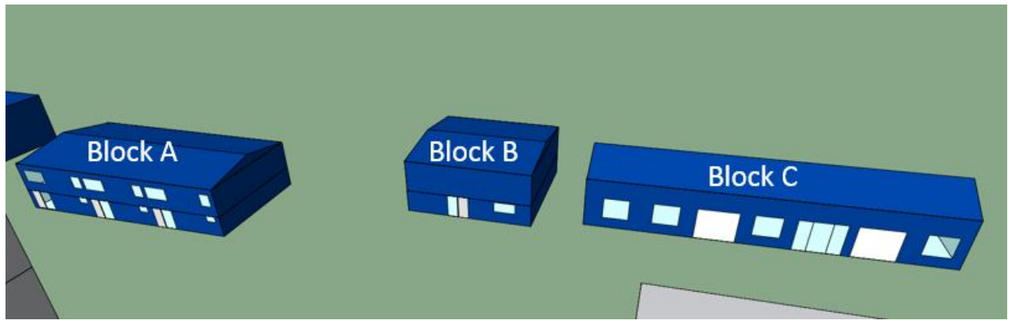

Figure 28 - Commercial buildings block labels

4-6 Weldale Street

Block	Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Ground Floor	Flat 1	Window 1	11.45	9.28	19%	Pass
		Window 2	19.21	17.45	9%	Pass
	Flat 2	Window 1	21.47	20.76	3%	Pass
		Window 2	17.16	16.24	5%	Pass
		Window 3	12.91	12.6	2%	Pass
First Floor	Flat 1	Window 1	13.65	12.29	10%	Pass
		Window 2	21.99	19.76	10%	Pass
	Flat 2	Window 1	23.92	22.72	5%	Pass
		Window 2	20.09	18.64	7%	Pass
		Window 3	15.31	14.73	4%	Pass
Second Floor	Flat 1	Window 1	17.08	14.81	13%	Pass
		Window 2	25.64	23.66	8%	Pass
	Flat 2	Window 1	27.34	26.11	4%	Pass
		Window 2	23.34	22.15	5%	Pass
		Window 3	17.33	17.33	0%	Pass
Third Floor	Flat 1	Window 1	31.09	29.82	4%	Pass
		Window 2	30.69	29.53	4%	Pass
	Flat 2	Window 1	31.54	31.04	2%	Pass
		Window 2	28.76	28.7	0%	Pass
		Window 3	31.48	31.52	0%	Pass

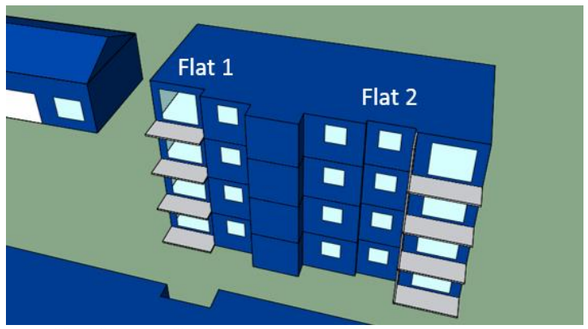

Figure 29 - 4-6 Weldale Street

The Chatham, Weldale Street VSC Results – With Overhang

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Ground Floor	Window 1	3.26	4.28	-31%	Pass
	Window 2	0.44	3.77	-757%	Pass
	Window 3	0.66	3.71	-462%	Pass
	Window 4	0.23	3.04	-1222%	Pass
	Window 5	1.12	1.5	-34%	Pass
	Window 6	1.58	0.4	75%	Fail
	Window 7	1.73	0.33	81%	Fail
	Window 8	2.88	0.28	90%	Fail
	Window 9	5.08	0.17	97%	Fail
	Window 10	4.57	0.38	92%	Fail
First Floor	Window 1	4.03	4.04	0%	Pass
	Window 2	0.8	3.58	-348%	Pass
	Window 3	0.71	3.58	-404%	Pass
	Window 4	0.26	2.84	-992%	Pass
	Window 5	1.3	1.3	0%	Pass
	Window 6	1.84	0.59	68%	Fail
	Window 7	2.28	0.11	95%	Fail
	Window 8	3.99	0.23	94%	Fail
	Window 9	5.7	0.69	88%	Fail
	Window 10	5.44	0.67	88%	Fail
Second Floor	Window 1	5.53	3.99	28%	Fail
	Window 2	2.13	3.79	-78%	Pass
	Window 3	1.67	3.66	-119%	Pass
	Window 4	0.81	2.84	-251%	Pass
	Window 5	2.01	1.53	24%	Marginal Fail
	Window 6	2.2	0.85	61%	Fail
	Window 7	2.75	0.89	68%	Fail
	Window 8	4.6	0.77	83%	Fail
	Window 9	6.74	2.17	68%	Fail
	Window 10	6.54	1.51	77%	Fail

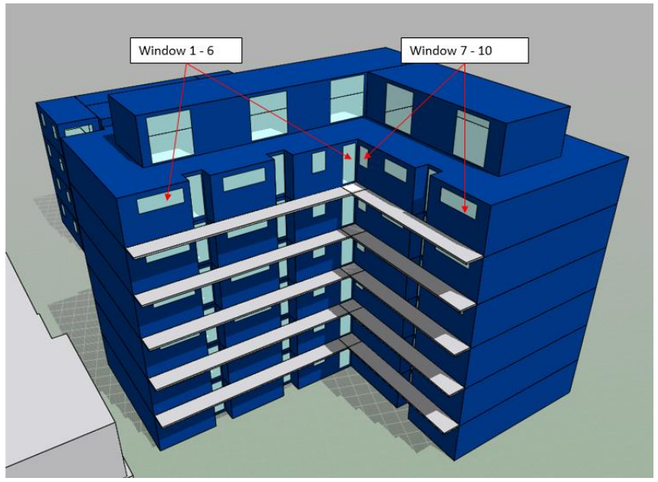

Figure 30 - The Chatham window labeling

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Third Floor	Window 1	8	4.8	40%	Fail
	Window 2	5.405	3.65	32%	Fail
	Window 3	4.52	3.57	21%	Marginal Fail
	Window 4	4.375	2.92	33%	Fail
	Window 5	4.495	2.11	53%	Fail
	Window 6	2.93	1.23	58%	Fail
	Window 7	3.175	0.87	73%	Fail
	Window 8	5.125	1.81	65%	Fail
	Window 9	7.89	4.06	49%	Fail
	Window 10	7.295	2.92	60%	Fail
Fourth Floor	Window 1	10.47	6.22	41%	Fail
	Window 2	8.68	5.46	37%	Fail
	Window 3	7.37	3.68	50%	Fail
	Window 4	7.94	5.41	32%	Fail
	Window 5	6.98	3.43	51%	Fail
	Window 6	3.66	1.95	47%	Fail
	Window 7	3.6	1.97	45%	Fail
	Window 8	5.65	3.38	40%	Fail
	Window 9	9.04	7.07	22%	Marginal Fail
	Window 10	8.05	5.14	36%	Fail

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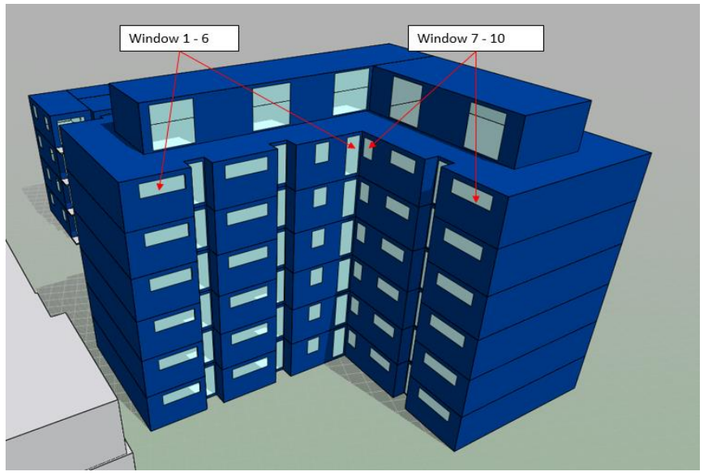
Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Fifth Floor	Window 1	36.95	32.83	11%	Pass
	Window 2	21.03	17.91	15%	Pass
	Window 3	36.98	33.18	10%	Pass
	Window 4	21.19	18.27	14%	Pass
	Window 5	34.25	31.08	9%	Pass
	Window 6	23.8	20.24	15%	Pass
	Window 7	37.24	25.86	31%	Fail
	Window 8	36.45	33.07	9%	Pass
	Window 9	21.9	20.08	8%	Pass
	Window 10	37.14	34.17	8%	Pass
Sixth Floor	Window 1	37.13	34.07	8%	Pass
	Window 2	36.59	33.62	8%	Pass
	Window 3	30.69	27.78	9%	Pass
	Window 4	34.75	32.8	6%	Pass
	Window 5	37.31	34.8	7%	Pass

The Chatham, Weldale Street VSC Results – Without Overhang



Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Ground Floor	Window 1	22.06	20.57	7%	Pass
	Window 2	10.91	13.62	-25%	Pass
	Window 3	18.71	20.41	-9%	Pass
	Window 4	8.29	12.94	-56%	Pass
	Window 5	13.8	15.22	-10%	Pass
	Window 6	11.77	11.52	2%	Pass
	Window 7	16.41	11.6	29%	Fail
	Window 8	19.2	14	27%	Fail
	Window 9	15.73	10.01	36%	Fail
	Window 10	20.3	16.69	18%	Pass
First Floor	Window 1	25.36	22.88	10%	Pass
	Window 2	13.03	14.49	-11%	Pass
	Window 3	21.89	22.24	-2%	Pass
	Window 4	18.4	13.42	27%	Fail
	Window 5	16.11	15.97	1%	Pass
	Window 6	13.26	12.38	7%	Pass
	Window 7	17.65	12.73	28%	Fail
	Window 8	21.34	15.76	26%	Fail
	Window 9	17.05	14.69	14%	Pass
	Window 10	22.23	19.91	10%	Pass
Second Floor	Window 1	28.72	25.78	10%	Pass
	Window 2	15.08	14.97	1%	Pass
	Window 3	25.29	24.32	4%	Pass
	Window 4	12.71	14.58	-15%	Pass
	Window 5	18.94	17.7	7%	Pass
	Window 6	15.21	13.98	8%	Pass
	Window 7	19.47	14.76	24%	Fail
	Window 8	23.59	18.64	21%	Pass
	Window 9	18.4	13.73	25%	Fail
	Window 10	25.28	23.32	8%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Third Floor	Window 1	32.49	27.74	15%	Pass
	Window 2	17.72	15.59	12%	Pass
	Window 3	29.61	26.39	11%	Pass
	Window 4	15.78	15.17	4%	Pass
	Window 5	22.96	20.3	12%	Pass
	Window 6	17.45	14.83	15%	Pass
	Window 7	20.4	16.59	19%	Pass
	Window 8	26.74	22.37	16%	Pass
	Window 9	19.14	15.99	16%	Pass
	Window 10	29.54	27.02	9%	Pass
Fourth Floor	Window 1	35.58	30.21	15%	Pass
	Window 2	19.25	16.3	15%	Pass
	Window 3	33.87	29.52	13%	Pass
	Window 4	18.4	15.64	15%	Pass
	Window 5	27.97	24.25	13%	Pass
	Window 6	20.28	16.39	19%	Pass
	Window 7	21.78	18.74	14%	Pass
	Window 8	30.57	27.28	11%	Pass
	Window 9	20.38	17.9	12%	Pass
	Window 10	34.77	30.56	12%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Fifth Floor	Window 1	36.9	32.64	12%	Pass
	Window 2	21.32	18.18	15%	Pass
	Window 3	36.36	32.33	11%	Pass
	Window 4	21.24	18.72	12%	Pass
	Window 5	33.45	29.83	11%	Pass
	Window 6	24.82	21.2	15%	Pass
	Window 7	28.32	25.73	9%	Pass
	Window 8	34.64	31.83	8%	Pass
	Window 9	22.18	20.52	7%	Pass
	Window 10	36.75	33.31	9%	Pass
Sixth Floor	Window 1	37.13	34.07	8%	Pass
	Window 2	36.59	33.62	8%	Pass
	Window 3	30.69	27.78	9%	Pass
	Window 4	34.75	32.8	6%	Pass
	Window 5	37.31	34.8	7%	Pass

Chatham Place, Chatham Street

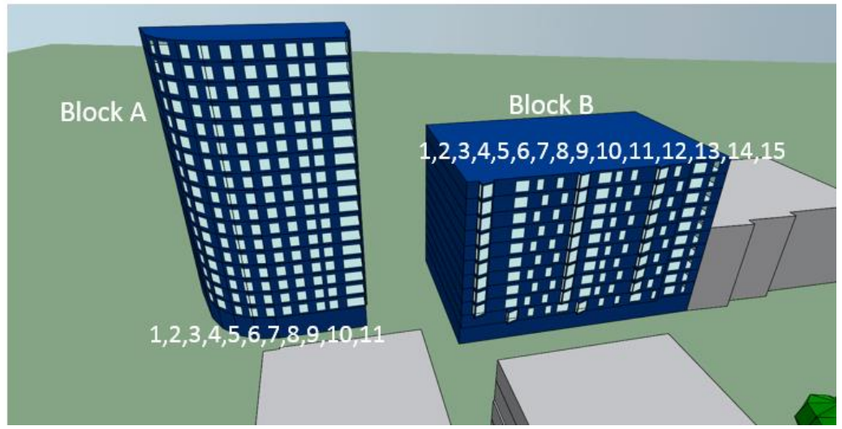


Figure 31 – Chatham Place window numbering

Chatham Place Block A

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
First Floor	Window 1	39.16	34.61	12%	Pass
	Window 2	38.98	32.41	17%	Pass
	Window 3	38.71	36.55	6%	Pass
	Window 4	38.74	30.41	22%	Pass
	Window 5	38.87	29.56	24%	Pass
	Window 6	38.66	29.61	23%	Pass
	Window 7	38.22	29.59	23%	Pass
	Window 8	38.09	28.89	24%	Pass
	Window 9	37.94	29.03	23%	Pass
	Window 10	37.5	28.57	24%	Pass
	Window 11	37.1	27.93	25%	Pass
Second Floor	Window 1	39.51	35.24	11%	Pass
	Window 2	39.39	33.12	16%	Pass
	Window 3	39.48	34.92	12%	Pass
	Window 4	39.51	31.72	20%	Pass
	Window 5	39.9	31.23	22%	Pass
	Window 6	39.45	31.08	21%	Pass
	Window 7	38.92	30.55	22%	Pass
	Window 8	38.61	30.38	21%	Pass
	Window 9	38.4	30.25	21%	Pass
	Window 10	38.38	29.89	22%	Pass
	Window 11	37.72	29.24	22%	Pass
Third Floor	Window 1	39.79	35.95	10%	Pass
	Window 2	39.69	34.2	14%	Pass
	Window 3	39.58	32.69	17%	Pass
	Window 4	39.8	32.62	18%	Pass
	Window 5	39.57	32.31	18%	Pass
	Window 6	39.64	32.34	18%	Pass
	Window 7	39.11	31.96	18%	Pass
	Window 8	38.92	32.14	17%	Pass
	Window 9	38.88	31.41	19%	Pass
	Window 10	38.77	31.62	18%	Pass
	Window 11	37.87	30.88	18%	Pass

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Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Fourth Floor	Window 1	39.89	36.12	9%	Pass
	Window 2	39.74	35.02	12%	Pass
	Window 3	39.6	34.05	14%	Pass
	Window 4	39.89	33.71	15%	Pass
	Window 5	39.75	33.61	15%	Pass
	Window 6	39.67	33.5	16%	Pass
	Window 7	39.65	33.34	16%	Pass
	Window 8	39.23	32.86	16%	Pass
	Window 9	39.01	32.84	16%	Pass
	Window 10	38.57	32.93	15%	Pass
	Window 11	38.15	32.45	15%	Pass
Fifth Floor	Window 1	39.73	36.79	7%	Pass
	Window 2	39.82	36.1	9%	Pass
	Window 3	39.7	36.24	9%	Pass
	Window 4	40.28	35.04	13%	Pass
	Window 5	39.8	34.69	13%	Pass
	Window 6	39.9	34.83	13%	Pass
	Window 7	39.47	34.69	12%	Pass
	Window 8	39.23	34.39	12%	Pass
	Window 9	39.01	34.7	11%	Pass
	Window 10	38.89	34.41	12%	Pass
	Window 11	38.32	33.72	12%	Pass
Sixth Floor	Window 1	39.87	37.63	6%	Pass
	Window 2	39.97	36.81	8%	Pass
	Window 3	39.88	36.16	9%	Pass
	Window 4	39.36	36.16	8%	Pass
	Window 5	39.8	35.97	10%	Pass
	Window 6	39.62	36.1	9%	Pass
	Window 7	39.49	36.08	9%	Pass
	Window 8	39.17	35.76	9%	Pass
	Window 9	39.28	35.64	9%	Pass
	Window 10	39.29	35.72	9%	Pass
	Window 11	38.48	35.13	9%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Seventh Floor	Window 1	39.82	38.27	4%	Pass
	Window 2	39.77	37.47	6%	Pass
	Window 3	39.87	37.21	7%	Pass
	Window 4	39.96	37.21	7%	Pass
	Window 5	39.91	37.04	7%	Pass
	Window 6	39.7	37.14	6%	Pass
	Window 7	39.8	37.21	7%	Pass
	Window 8	39.4	37.02	6%	Pass
	Window 9	39.22	36.97	6%	Pass
	Window 10	39.13	36.76	6%	Pass
	Window 11	38.99	36.35	7%	Pass
Eighth Floor	Window 1	39.89	38.74	3%	Pass
	Window 2	39.84	38.52	3%	Pass
	Window 3	39.62	37.97	4%	Pass
	Window 4	39.53	38.07	4%	Pass
	Window 5	39.8	37.94	5%	Pass
	Window 6	39.8	37.87	5%	Pass
	Window 7	39.88	38.28	4%	Pass
	Window 8	39.5	38.13	3%	Pass
	Window 9	39.51	38.18	3%	Pass
	Window 10	39.36	37.99	3%	Pass
	Window 11	39.16	37.91	3%	Pass
Ninth Floor	Window 1	39.86	39.17	2%	Pass
	Window 2	39.98	38.88	3%	Pass
	Window 3	39.86	38.82	3%	Pass
	Window 4	39.7	38.72	2%	Pass
	Window 5	39.77	38.64	3%	Pass
	Window 6	39.89	38.71	3%	Pass
	Window 7	39.82	38.76	2%	Pass
	Window 8	39.7	38.8	2%	Pass
	Window 9	39.7	38.72	3%	Pass
	Window 10	39.73	38.8	2%	Pass
	Window 11	39.41	38.68	2%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Tenth Floor	Window 1	39.93	39.49	1%	Pass
	Window 2	40.04	39.47	1%	Pass
	Window 3	39.93	39.35	1%	Pass
	Window 4	39.93	39.34	1%	Pass
	Window 5	39.81	39.37	1%	Pass
	Window 6	39.76	39.45	1%	Pass
	Window 7	39.76	39.44	1%	Pass
	Window 8	39.79	39.34	1%	Pass
	Window 9	39.66	39.28	1%	Pass
	Window 10	39.78	39.41	1%	Pass
	Window 11	39.82	39.34	1%	Pass
Eleventh Floor	Window 1	39.9	39.76	0%	Pass
	Window 2	39.64	39.65	0%	Pass
	Window 3	39.75	39.87	0%	Pass
	Window 4	39.74	39.56	0%	Pass
	Window 5	39.72	39.64	0%	Pass
	Window 6	39.83	39.58	1%	Pass
	Window 7	39.83	39.65	0%	Pass
	Window 8	39.73	39.58	0%	Pass
	Window 9	39.79	39.61	0%	Pass
	Window 10	39.8	39.51	1%	Pass
	Window 11	39.7	39.51	0%	Pass
Twelfth Floor	Window 1	39.97	39.79	0%	Pass
	Window 2	39.71	39.76	0%	Pass
	Window 3	39.81	39.76	0%	Pass
	Window 4	39.81	39.69	0%	Pass
	Window 5	39.8	39.79	0%	Pass
	Window 6	39.8	39.53	1%	Pass
	Window 7	39.8	39.68	0%	Pass
	Window 8	39.82	39.61	1%	Pass
	Window 9	39.71	39.5	1%	Pass
	Window 10	39.71	39.6	0%	Pass
	Window 11	39.69	39.61	0%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Thirteenth Floor	Window 1	39.93	39.81	0%	Pass
	Window 2	39.82	39.68	0%	Pass
	Window 3	39.82	39.85	0%	Pass
	Window 4	39.69	39.84	0%	Pass
	Window 5	39.7	39.63	0%	Pass
	Window 6	39.83	39.67	0%	Pass
	Window 7	39.87	39.63	1%	Pass
	Window 8	39.87	39.63	1%	Pass
	Window 9	39.85	39.58	1%	Pass
	Window 10	39.85	39.58	1%	Pass
	Window 11	39.78	39.64	0%	Pass
Fourteenth Floor	Window 1	40	39.89	0%	Pass
	Window 2	39.9	39.78	0%	Pass
	Window 3	39.77	39.59	0%	Pass
	Window 4	39.76	39.58	0%	Pass
	Window 5	39.81	39.7	0%	Pass
	Window 6	39.74	39.68	0%	Pass
	Window 7	39.64	39.53	0%	Pass
	Window 8	39.64	39.68	0%	Pass
	Window 9	39.79	39.61	0%	Pass
	Window 10	39.75	39.7	0%	Pass
	Window 11	39.85	39.73	0%	Pass
Fifteenth Floor	Window 1	39.91	39.87	0%	Pass
	Window 2	39.86	39.78	0%	Pass
	Window 3	39.9	39.67	1%	Pass
	Window 4	39.9	39.67	0%	Pass
	Window 5	39.62	39.61	1%	Pass
	Window 6	39.81	39.77	-1%	Pass
	Window 7	39.56	39.67	0%	Pass
	Window 8	39.71	39.72	0%	Pass
	Window 9	39.82	39.69	0%	Pass
	Window 10	39.82	39.68	0%	Pass
	Window 11	39.76	39.72	0%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Sixteenth Floor	Window 1	39.98	39.95	0%	Pass
	Window 2	39.93	39.86	0%	Pass
	Window 3	39.97	39.74	1%	Pass
	Window 4	39.97	39.74	1%	Pass
	Window 5	39.78	39.74	0%	Pass
	Window 6	39.87	39.79	0%	Pass
	Window 7	39.69	39.46	1%	Pass
	Window 8	39.76	39.81	0%	Pass
	Window 9	39.93	39.65	1%	Pass
	Window 10	39.94	39.65	1%	Pass
	Window 11	39.83	39.81	0%	Pass
Seventeenth Floor	Window 1	39.92	39.79	0%	Pass
	Window 2	39.89	39.72	0%	Pass
	Window 3	39.77	39.83	0%	Pass
	Window 4	39.78	39.82	0%	Pass
	Window 5	39.79	39.75	0%	Pass
	Window 6	39.95	39.87	0%	Pass
	Window 7	39.81	39.58	1%	Pass
	Window 8	39.83	39.63	1%	Pass
	Window 9	40.01	39.73	1%	Pass
	Window 10	40.01	39.72	1%	Pass
	Window 11	39.75	39.68	0%	Pass

Chatham Place Block B

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
First Floor	Window 1	17.58	12.49	29%	Fail
	Window 2	38.57	29.72	23%	Pass
	Window 3	39.04	29.48	24%	Pass
	Window 4	38.95	30.41	22%	Pass
	Window 5	37.09	29.02	22%	Pass
	Window 6	18.92	13.97	26%	Fail
	Window 7	38.83	33.34	14%	Pass
	Window 8	39.27	33.3	15%	Pass
	Window 9	38.93	33.84	13%	Pass
	Window 10	38.35	34.1	11%	Pass
	Window 11	39.35	35.34	10%	Pass
	Window 12	39.09	35.33	10%	Pass
	Window 13	39.61	36.2	9%	Pass
Second Floor	Window 1	25.05	20.79	17%	Pass
	Window 2	38.8	29.53	24%	Pass
	Window 3	39.32	29.71	24%	Pass
	Window 4	39.36	30.73	22%	Pass
	Window 5	38.84	31.55	19%	Pass
	Window 6	19.06	14.5	24%	Fail
	Window 7	39.01	33	15%	Pass
	Window 8	39.5	31	22%	Pass
	Window 9	39.51	33.75	15%	Pass
	Window 10	39.84	34.81	13%	Pass
	Window 11	19.55	15.38	21%	Marginal Fail
	Window 12	39.15	36.77	6%	Pass
	Window 13	39.69	35.62	10%	Pass
	Window 14	38.84	35.95	7%	Pass
	Window 15	39.69	36.96	7%	Pass
Third Floor	Window 1	25.42	21.4	16%	Pass
	Window 2	38.01	31.13	18%	Pass
	Window 3	39.75	31.19	22%	Pass
	Window 4	39.58	32.34	18%	Pass
	Window 5	38.96	32.53	17%	Pass

Weldale Street

Daylight and Sunlight Assessment

Revision: 04
Issue Date: July 2019

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
	Window 6	19.76	15.46	22%	Marginal Fail
	Window 7	38.96	33.36	14%	Pass
	Window 8	39.78	34.79	13%	Pass
	Window 9	39.93	35.45	11%	Pass
	Window 10	39.48	35.4	10%	Pass
	Window 11	19.91	16.27	18%	Pass
	Window 12	39.41	37.04	6%	Pass
	Window 13	39.83	36.87	7%	Pass
	Window 14	39.79	36.53	8%	Pass
	Window 15	39.62	37.5	5%	Pass
Fourth Floor	Window 1	25.55	21.75	15%	Pass
	Window 2	38.3	32.35	16%	Pass
	Window 3	39.61	32.68	17%	Pass
	Window 4	39.8	33.72	15%	Pass
	Window 5	39.5	33.94	14%	Pass
	Window 6	19.45	16.06	17%	Pass
	Window 7	39.97	35.6	11%	Pass
	Window 8	39.85	35.53	11%	Pass
	Window 9	39.69	36.29	9%	Pass
	Window 10	39.82	36.38	9%	Pass
	Window 11	20.09	17.09	15%	Pass
	Window 12	39.38	37.57	5%	Pass
	Window 13	39.79	37.28	6%	Pass
	Window 14	39.36	37.23	5%	Pass
	Window 15	40.06	37.98	5%	Pass
Fifth Floor	Window 1	25.66	22.7	12%	Pass
	Window 2	39.49	34.14	14%	Pass
	Window 3	39.81	34.56	13%	Pass
	Window 4	39.79	35.35	11%	Pass
	Window 5	38.67	34.81	10%	Pass
	Window 6	19.78	16.88	15%	Pass
	Window 7	39.24	35.73	9%	Pass
	Window 8	39.8	36.38	9%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
	Window 9	39.75	37.28	6%	Pass
	Window 10	39.31	37.08	6%	Pass
	Window 11	20.12	18.05	10%	Pass
	Window 12	39.65	38.47	3%	Pass
	Window 13	39.76	38.33	4%	Pass
	Window 14	40	37.63	6%	Pass
	Window 15	40	38.56	4%	Pass
Sixth Floor	Window 1	26.6	23.39	12%	Pass
	Window 2	38.31	35.47	7%	Pass
	Window 3	39.7	35.89	10%	Pass
	Window 4	39.71	36.3	9%	Pass
	Window 5	39.17	36.53	7%	Pass
	Window 6	19.97	17.78	11%	Pass
	Window 7	39.81	37.5	6%	Pass
	Window 8	39.9	37.56	6%	Pass
	Window 9	39.78	37.61	5%	Pass
	Window 10	39.66	37.87	5%	Pass
	Window 11	20.32	18.88	7%	Pass
	Window 12	39.51	38.6	2%	Pass
	Window 13	39.72	38.45	3%	Pass
	Window 14	39.42	38.24	3%	Pass
	Window 15	40.1	38.96	3%	Pass
Seventh Floor	Window 1	25.65	23.87	7%	Pass
	Window 2	39.28	37.18	5%	Pass
	Window 3	39.62	37.22	6%	Pass
	Window 4	39.79	37.72	5%	Pass
	Window 5	38.78	37.18	4%	Pass
	Window 6	20.29	18.68	8%	Pass
	Window 7	39.68	38.08	4%	Pass
	Window 8	39.86	38.54	3%	Pass
	Window 9	39.72	38.6	3%	Pass
	Window 10	39.51	38.31	3%	Pass
	Window 11	20.39	19.15	6%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
	Window 12	39.52	39.15	1%	Pass
	Window 13	39.85	39.05	2%	Pass
	Window 14	39.9	38.63	3%	Pass
	Window 15	39.9	39.06	2%	Pass
Eighth Floor	Window 1	25.97	24.57	5%	Pass
	Window 2	39.73	38.35	3%	Pass
	Window 3	39.67	38.69	2%	Pass
	Window 4	39.59	38.67	2%	Pass
	Window 5	39.48	38.57	2%	Pass
	Window 6	20.25	19.61	3%	Pass
	Window 7	39.39	39.01	1%	Pass
	Window 8	39.77	38.99	2%	Pass
	Window 9	39.82	39.07	2%	Pass
	Window 10	39.71	39.06	2%	Pass
	Window 11	20.68	20.01	3%	Pass
	Window 12	39.89	39.12	2%	Pass
	Window 13	39.93	39.4	1%	Pass
	Window 14	39.39	38.76	2%	Pass
	Window 15	39.98	39.47	1%	Pass
Ninth Floor	Window 1	25.85	25.36	2%	Pass
	Window 2	39.4	39.01	1%	Pass
	Window 3	39.85	39.07	2%	Pass
	Window 4	39.71	39.13	1%	Pass
	Window 5	38.56	38.18	1%	Pass
	Window 6	21.34	21.06	1%	Pass
	Window 7	39.47	39.07	1%	Pass
	Window 8	39.79	39.21	1%	Pass
	Window 9	39.79	39.37	1%	Pass
	Window 10	39.52	39.07	1%	Pass
	Window 11	21.48	20.88	3%	Pass
	Window 12	39.62	39.35	1%	Pass
	Window 13	39.8	39.52	1%	Pass
	Window 14	39.57	39.03	1%	Pass

Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
	Window 15	39.88	39.53	1%	Pass
Tenth Floor	Window 1	28.1	27.79	1%	Pass
	Window 2	39.6	39.63	0%	Pass
	Window 3	39.92	39.41	1%	Pass
	Window 4	39.84	39.34	1%	Pass
	Window 5	39.71	39.28	1%	Pass
	Window 6	23.85	23.64	1%	Pass
	Window 7	39.5	39.54	0%	Pass
	Window 8	39.86	39.49	1%	Pass
	Window 9	39.86	39.75	0%	Pass
	Window 10	39.83	39.5	1%	Pass
	Window 11	24.1	23.86	1%	Pass
	Window 12	39.91	39.68	1%	Pass
	Window 13	39.79	39.72	0%	Pass
	Window 14	39.88	39.34	1%	Pass
	Window 15	39.88	39.84	0%	Pass
	Window 15	39.88	39.53	1%	Pass

APPENDIX B – EXISTING BUILDINGS SUNLIGHT RESULTS

Annual Probable Sunlight Hours

Stratheden Place

Block	Level	Window	APSH Existing	APSH Proposed	Reduction in APSH	Pass/Fail
Block A	Ground Floor	Window 1	11%	9%	18%	Pass
		Window 2	14%	10%	29%	Fail
	First Floor	Window 1	15%	15%	0%	Pass
		Window 2	16%	16%	0%	Pass
	Third Floor	Roof Light 1	41%	40%	2%	Pass
		Roof Light 2	41%	40%	2%	Pass
		Roof Light 3	41%	40%	2%	Pass
		Window 1	22%	19%	14%	Pass
Block B	Ground Floor	Window 1	13%	9%	31%	Fail
		Window 2	14%	9%	36%	Fail
	First Floor	Window 1	14%	14%	0%	Pass
		Window 2	14%	14%	0%	Pass
Block C	Ground Floor	Window 1	14%	9%	36%	Fail
Block D	Ground Floor	Window 1	4%	9%	-125%	Pass
		Window 2	14%	11%	21%	Pass
	First Floor	Window 1	15%	15%	0%	Pass
		Window 2	17%	17%	0%	Pass
Block E	Ground Floor	Window 1	14%	11%	21%	Pass
		Window 2	20%	16%	20%	Pass
	First Floor	Window 1	23%	19%	17%	Pass
		Window 2	27%	21%	19%	Pass
	Second Floor	Window 1	28%	23%	18%	Pass
		Window 2	29%	23%	21%	Pass
Block F	Ground Floor	Window 1	8%	4%	50%	Fail
	First Floor	Window 1	11%	6%	45%	Fail
Block G	Ground Floor	Window 1	25%	21%	16%	Pass
		Window 2	26%	22%	15%	Pass
	First Floor	Window 1	30%	22%	27%	Fail
		Window 2	31%	25%	20%	Pass
	Second Floor	Window 1	32%	25%	22%	Pass
		Window 2	33%	26%	21%	Pass
Block H	Ground Floor	Window 1	26%	21%	19%	Pass
		Window 2	27%	22%	19%	Pass
	First Floor	Window 1	32%	23%	28%	Fail
		Window 2	33%	23%	30%	Fail
	Second Floor	Window 1	34%	27%	21%	Pass
		Roof Light 1	39%	33%	15%	Pass
		Roof Light 2	45%	35%	22%	Pass
		Roof Light 3	46%	41%	11%	Pass

Weldale Street Commercial Buildings

Block	Level	Window	VSC Existing	VSC Proposed	Reduction in VSC	Pass/Fail
Block A	Ground Floor	Window 1	34.23	15.21	56%	Fail
		Window 2	34.66	16.42	53%	Fail
		Window 3	34.01	17	50%	Fail
		Window 4	33.97	19.89	41%	Fail
		Window 5	33.84	20.49	39%	Fail
		Window 6	33.81	21.81	35%	Fail
	First Floor	Window 1	35.18	17.03	52%	Fail
		Window 2	35.17	17.75	50%	Fail
		Window 3	35.01	18.68	47%	Fail
		Window 4	34.91	20.95	40%	Fail
		Window 5	35.01	21.84	38%	Fail
		Window 6	34.68	23.45	32%	Fail
Block B	Ground Floor	Window 1	32.72	28.32	13%	Pass
		Window 2	33.18	28.63	14%	Pass
Block C	Ground Floor	Window 1	33.3	28.86	13%	Pass
		Window 2	33.28	28.48	14%	Pass
		Window 3	33.19	28.26	15%	Pass
		Window 4	32.66	27.89	15%	Pass
		Window 5	31.92	27.45	14%	Pass
		Window 6	30.11	26.16	13%	Pass

4-6 Weldale Street

Block	Level	Window	APSH Existing	APSH Proposed	Reduction in APSH	Pass/Fail
Ground Floor	Flat 1	Window 1	29%	23%	19%	Pass
		Window 2	37%	31%	16%	Pass
	Flat 2	Window 1	37%	33%	11%	Pass
		Window 2	31%	26%	16%	Pass
		Window 3	29%	29%	0%	Pass
First Floor	Flat 1	Window 1	33%	26%	21%	Pass
		Window 2	42%	36%	14%	Pass
	Flat 2	Window 1	39%	37%	5%	Pass
		Window 2	35%	32%	9%	Pass
		Window 3	31%	29%	6%	Pass
Second Floor	Flat 1	Window 1	39%	30%	23%	Pass
		Window 2	48%	42%	13%	Pass
	Flat 2	Window 1	41%	42%	-2%	Pass
		Window 2	39%	36%	8%	Pass
		Window 3	33%	32%	3%	Pass
Third Floor	Flat 1	Window 1	62%	56%	10%	Pass
		Window 2	59%	54%	8%	Pass
	Flat 2	Window 1	59%	57%	3%	Pass
		Window 2	58%	48%	17%	Pass
		Window 3	58%	58%	0%	Pass

The Chatham – Weldale Street

Level	Window	APSH Existing	APSH Proposed	Reduction in APSH	Pass/Fail
Ground Floor	Window 1	12%	9%	18%	Pass
	Window 2	2%	7%	-250%	Pass
	Window 3	2%	8%	-300%	Pass
	Window 4	2%	5%	-150%	Pass
	Window 5	2%	3%	-50%	Pass
	Window 6	3%	3%	0%	Pass
	Window 7	3%	1%	44%	Fail
	Window 8	3%	1%	44%	Fail
	Window 9	6%	2%	56%	Fail
	Window 10	6%	2%	64%	Fail
First Floor	Window 1	14%	10%	30%	Fail
	Window 2	3%	7%	-133%	Pass
	Window 3	3%	8%	-167%	Pass
	Window 4	2%	6%	-200%	Pass
	Window 5	4%	3%	3%	Pass
	Window 6	6%	3%	55%	Fail
	Window 7	6%	2%	73%	Fail
	Window 8	7%	4%	46%	Fail
	Window 9	8%	3%	63%	Fail
	Window 10	9%	3%	67%	Fail
Second Floor	Window 1	20%	13%	31%	Fail
	Window 2	5%	8%	-60%	Pass
	Window 3	7%	8%	-14%	Pass
	Window 4	3%	5%	-67%	Pass
	Window 5	7%	4%	32%	Fail
	Window 6	7%	1%	86%	Fail
	Window 7	7%	1%	86%	Fail
	Window 8	8%	1%	88%	Fail
	Window 9	9%	4%	48%	Fail
	Window 10	12%	5%	53%	Fail

Level	Window	APSH Existing	APSH Proposed	Reduction in APSH	Pass/Fail
Third Floor	Window 1	19%	13%	31%	Fail
	Window 2	10%	8%	16%	Pass
	Window 3	12%	8%	27%	Fail
	Window 4	8%	5%	27%	Fail
	Window 5	11%	4%	58%	Fail
	Window 6	10%	1%	89%	Fail
	Window 7	8%	1%	87%	Fail
	Window 8	11%	1%	90%	Fail
	Window 9	10%	4%	60%	Fail
	Window 10	16%	5%	69%	Fail
Fourth Floor	Window 1	18%	9%	50%	Fail
	Window 2	14%	11%	19%	Pass
	Window 3	18%	9%	50%	Fail
	Window 4	13%	10%	17%	Pass
	Window 5	16%	5%	69%	Fail
	Window 6	12%	4%	67%	Fail
	Window 7	8%	3%	63%	Fail
	Window 8	13%	6%	54%	Fail
	Window 9	12%	8%	27%	Fail
	Window 10	21%	10%	52%	Fail
Fifth Floor	Window 1	77%	66%	14%	Pass
	Window 2	30%	25%	17%	Pass
	Window 3	76%	67%	12%	Pass
	Window 4	30%	26%	13%	Pass
	Window 5	67%	57%	15%	Pass
	Window 6	48%	38%	21%	Pass
	Window 7	45%	38%	16%	Pass
	Window 8	52%	42%	19%	Pass
	Window 9	26%	22%	15%	Pass
	Window 10	54%	42%	22%	Pass

Winter Probable Sunlight Hours

Stratheden Place

Block	Level	Window	WPSH Existing	WPSH Proposed	Reduction in WPSH	Pass/Fail
Block A	Ground Floor	Window 1	1%	1%	0%	Pass
		Window 2	3%	2%	33%	Fail
	First Floor	Window 1	2%	2%	0%	Pass
		Window 2	3%	3%	0%	Pass
	Third Floor	Roof Light 1	19%	19%	0%	Pass
		Roof Light 2	19%	19%	0%	Pass
		Roof Light 3	19%	19%	0%	Pass
		Window 1	3%	3%	0%	Pass
Block B	Ground Floor	Window 1	3%	2%	33%	Fail
		Window 2	3%	2%	33%	Fail
	First Floor	Window 1	2%	2%	0%	Pass
		Window 2	3%	3%	0%	Pass
Block C	Ground Floor	Window 1	3%	1%	67%	Fail
Block D	Ground Floor	Window 1	1%	1%	0%	Pass
		Window 2	2%	2%	0%	Pass
	First Floor	Window 1	2%	2%	0%	Pass
		Window 2	6%	6%	0%	Pass
Block E	Ground Floor	Window 1	1%	1%	0%	Pass
		Window 2	3%	2%	33%	Fail
	First Floor	Window 1	2%	2%	0%	Pass
		Window 2	6%	6%	0%	Pass
	Second Floor	Window 1	8%	7%	13%	Pass
		Window 2	10%	10%	0%	Pass
Block F	Ground Floor	Window 1	1%	1%	0%	Fail
	First Floor	Window 1	1%	1%	0%	Fail
Block G	Ground Floor	Window 1	7%	6%	14%	Pass
		Window 2	7%	6%	14%	Pass
	First Floor	Window 1	10%	9%	10%	Pass
		Window 2	14%	10%	29%	Pass
	Second Floor	Window 1	13%	11%	15%	Pass
		Window 2	15%	11%	27%	Pass

Weldale Street

Daylight and Sunlight Assessment

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Block	Level	Window	WPSH Existing	WPSH Proposed	Reduction in WPSH	Pass/Fail
Block H	Ground Floor	Window 1	12%	10%	17%	Pass
		Window 2	14%	10%	29%	Pass
	First Floor	Window 1	15%	10%	33%	Pass
		Window 2	19%	13%	32%	Pass
	Second Floor	Window 1	17%	15%	12%	Pass
		Roof Light 1	19%	15%	21%	Pass
		Roof Light 2	28%	25%	11%	Pass
		Roof Light 3	12%	10%	17%	Pass

Weldale Street Commercial Buildings

Block	Level	Window	WPSH Existing	WPSH Proposed	Reduction in WPSH	Pass/Fail
Block A	Ground Floor	Window 1	67%	20%	70%	Pass
		Window 2	70%	23%	67%	Pass
		Window 3	67%	16%	76%	Pass
		Window 4	67%	15%	78%	Pass
		Window 5	67%	16%	76%	Pass
		Window 6	69%	24%	65%	Pass
	First Floor	Window 1	70%	21%	70%	Pass
		Window 2	71%	25%	65%	Pass
		Window 3	71%	19%	73%	Pass
		Window 4	70%	17%	76%	Pass
		Window 5	70%	19%	73%	Pass
		Window 6	71%	26%	63%	Pass
Block B	Ground Floor	Window 1	60%	33%	45%	Pass
		Window 2	63%	36%	43%	Pass
Block C	Ground Floor	Window 1	65%	31%	52%	Pass
		Window 2	67%	33%	51%	Pass
		Window 3	68%	50%	26%	Pass
		Window 4	48%	30%	38%	Pass
		Window 5	52%	30%	42%	Pass

4-6 Weldale Street

Block	Level	Window	WPSH Existing	WPSH Proposed	Reduction in WPSH	Pass/Fail
Ground Floor	Flat 1	Window 1	29%	23%	19%	Pass
		Window 2	37%	31%	16%	Pass
	Flat 2	Window 1	37%	33%	11%	Pass
		Window 2	31%	26%	16%	Pass
		Window 3	29%	29%	0%	Pass
First Floor	Flat 1	Window 1	33%	26%	21%	Pass
		Window 2	42%	36%	14%	Pass
	Flat 2	Window 1	39%	37%	5%	Pass
		Window 2	35%	32%	9%	Pass
		Window 3	31%	29%	6%	Pass
Second Floor	Flat 1	Window 1	39%	30%	23%	Pass
		Window 2	48%	42%	13%	Pass
	Flat 2	Window 1	41%	42%	-2%	Pass
		Window 2	39%	36%	8%	Pass
		Window 3	33%	32%	3%	Pass
Third Floor	Flat 1	Window 1	62%	56%	10%	Pass
		Window 2	59%	54%	8%	Pass
	Flat 2	Window 1	59%	57%	3%	Pass
		Window 2	58%	48%	17%	Pass
		Window 3	58%	58%	0%	Pass

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The Chatham- Weldale Street

Level	Window	WPSH Existing	WPSH Proposed	Reduction in WPSH	Pass/Fail
Ground Floor	Window 1	18%	19%	-6%	Pass
	Window 2	3%	15%	-400%	Pass
	Window 3	4%	21%	-425%	Pass
	Window 4	5%	13%	-160%	Pass
	Window 5	2%	5%	-150%	Pass
	Window 6	7%	2%	71%	Pass
	Window 7	7%	1%	86%	Fail
	Window 8	5%	1%	80%	Fail
	Window 9	5%	1%	80%	Fail
	Window 10	4%	1%	75%	Fail
First Floor	Window 1	19%	19%	0%	Pass
	Window 2	5%	15%	-200%	Pass
	Window 3	4%	21%	-425%	Pass
	Window 4	2%	13%	-550%	Pass
	Window 5	8%	4%	50%	Fail
	Window 6	11%	3%	73%	Fail
	Window 7	12%	1%	92%	Fail
	Window 8	15%	1%	93%	Fail
	Window 9	9%	1%	89%	Fail
	Window 10	10%	1%	90%	Fail
Second Floor	Window 1	24%	20%	17%	Pass
	Window 2	7%	15%	-114%	Pass
	Window 3	13%	23%	-77%	Pass
	Window 4	4%	14%	-250%	Pass
	Window 5	16%	5%	69%	Pass
	Window 6	17%	4%	76%	Fail
	Window 7	15%	3%	80%	Fail
	Window 8	18%	3%	83%	Fail
	Window 9	12%	3%	75%	Fail
	Window 10	14%	3%	79%	Fail

Level	Window	WPSH Existing	WPSH Proposed	Reduction in WPSH	Pass/Fail
Third Floor	Window 1	32%	20%	39%	Pass
	Window 2	16%	17%	-6%	Pass
	Window 3	30%	24%	19%	Pass
	Window 4	14%	16%	-11%	Pass
	Window 5	27%	9%	69%	Pass
	Window 6	23%	6%	73%	Pass
	Window 7	19%	6%	70%	Pass
	Window 8	22%	6%	74%	Pass
	Window 9	14%	4%	70%	Fail
	Window 10	25%	6%	78%	Pass
Fourth Floor	Window 1	40%	19%	53%	Pass
	Window 2	25%	19%	24%	Pass
	Window 3	46%	25%	46%	Pass
	Window 4	24%	17%	29%	Pass
	Window 5	38%	12%	68%	Pass
	Window 6	28%	8%	71%	Pass
	Window 7	22%	8%	64%	Pass
	Window 8	25%	8%	68%	Pass
	Window 9	15%	5%	67%	Pass
	Window 10	35%	8%	77%	Pass
Fifth Floor	Window 1	90%	59%	34%	Pass
	Window 2	40%	28%	30%	Pass
	Window 3	89%	65%	27%	Pass
	Window 4	41%	30%	27%	Pass
	Window 5	80%	55%	31%	Pass
	Window 6	63%	34%	46%	Pass
	Window 7	63%	30%	52%	Pass
	Window 8	59%	28%	53%	Pass
	Window 9	20%	15%	25%	Pass
	Window 10	57%	29%	49%	Pass

Weldale Street

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APPENDIX C – PROPOSED BUILDING MODELLED DAYLIGHT RESULTS

Average Daylight Factor

Lower Ground Floor

Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
A1	-01:01	4.80%	Pass	3.40%	3.20%	NA
	-01:02	3.40%	Pass	2.00%	NA	NA
	-01:03	4.40%	Pass	2.90%	NA	NA
	-01:04	3.90%	Pass	4%	NA	NA
	-01:05	1.10%	Fail	1.50%	0.80%	NA
	-01:06	1.70%	Pass	1.80%	0.80%	NA
Original result	-01:07	1.20%	Fail	1.20%	0.60%	NA
Re assessed	-01:07	1.10%	Fail	1.10%	0.60%	NA
	-01:08	1.00%	Fail	1.20%	NA	NA
	-01:09	2.20%	Pass	2.90%	4.50%	3.80%
	-01:10	2.40%	Pass	3.90%	NA	NA
	-01:11	2.60%	Pass	3.30%	NA	NA
	-01:12	2.50%	Pass	2.30%	3.10%	NA
	-01:13	2.30%	Pass	2.50%	3.50%	4.30%
	-01:14	2.30%	Pass	3.20%	3.10%	NA
A2						
~~Apt Removed~~ from scheme	~~-01:01~~	~~1.50%~~	~~Pass~~	~~1.30%~~	~~NA~~	~~NA~~
	~~-01:02~~	~~1.60%~~	~~Pass~~	~~1.50%~~	~~1.40%~~	~~NA~~
	~~-01:03~~	~~0.80%~~	~~Fail~~	~~1.80%~~	~~1.30%~~	~~2.00%~~
B1	-01:01	4.20%	Pass	2.40%	3.20%	1.90%
	-01:02	1.90%	Pass	2.40%	2.40%	NA

Ground Floor

Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
A1	00:05	3.90%	Pass	1.20%	NA	NA
	00:06	0.70%	Fail	1.40%	NA	NA
	00:07	1.10%	Fail	1.60%	0.80%	NA
	00:08	1.10%	Fail	2.10%	1.00%	NA
	00:09	0.80%	Fail	1.60%	1.00%	NA
	00:10	0.60%	Fail	0.70%	NA	NA
	00:11	0.50%	Fail	1.60%	1.70%	NA
	00:12	1.60%	Pass	1.80%	NA	NA
	00:13	1.70%	Pass	1.80%	1.80%	NA
	00:14	1.60%	Pass	1.60%	NA	NA
	00:15	1.20%	Fail	2.10%	NA	NA
A2						
Original result	00:01	5.00%	Pass	1.00%	NA	NA
Re assessed	00:01	5.60%	Pass	1.10%	NA	NA
	00:02	6.20%	Pass	1.80%	1.00%	NA
	00:03	2.10%	Pass	1.20%	NA	NA
	00:04	2.00%	Pass	1.50%	1.00%	NA
	00:05	1.50%	Pass	1.30%	NA	NA
	00:06	1.80%	Pass	1.80%	NA	NA
	00:07	1.70%	Pass	2.80%	1.60%	NA
	00:08	0.80%	Fail	1.70%	1.00%	NA
	00:11	0.90%	Fail	1.80%	1.90%	NA
B1	00:03	1.50%	Pass	1.80%	1.30%	NA
	00:04	2.10%	Pass	1.90%	1.40%	NA
	00:05	2.30%	Pass	2.20%	NA	NA
	00:06	1.70%	Pass	1.10%	NA	NA
	00:07	1.50%	Pass	1.60%	1.60%	NA

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Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
B2	00:01	1.90%	Pass	1.80%	NA	NA
	00:02	2.10%	Pass	2.50%	2.50%	1.60%
	00:03	2.20%	Pass	4.70%	2.20%	NA
	00:04	2.40%	Pass	3.10%	NA	NA
	00:05	4.70%	Pass	2.50%	2.40%	NA
	00:06	1.60%	Pass	1.50%	NA	NA
	00:07	1.50%	Pass	1.50%	1.40%	NA

First Floor

Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
A1	01:06	0.80%	Fail	1.60%	NA	NA
	01:07	1.30%	Fail	1.90%	1.00%	NA
	01:08	1.30%	Fail	2.30%	1.00%	NA
	01:09	0.90%	Fail	1.80%	1.10%	NA
	01:10	0.60%	Fail	0.80%	NA	NA
	01:11	0.60%	Fail	1.70%	1.90%	NA
	01:12	1.70%	Pass	1.90%	NA	NA
	01:13	1.50%	Pass	1.80%	NA	NA
	01:14	1.50%	Pass	1.90%	NA	NA
	01:15	1.70%	Pass	1.70%	NA	NA
	01:16	1.30%	Fail	2.20%	NA	NA
A2	01:05	1.90%	Pass	1.60%	1.00%	01:05
	01:09	0.80%	Fail	2.00%	1.10%	01:09
	01:12	1.10%	Fail	2.00%	2.10%	01:12
B2	01:02	2.10%	Pass	1.20%	NA	NA
	01:03	2.20%	Pass	1.60%	NA	NA
	01:04	2.40%	Pass	1.60%	NA	NA
	01:05	4.50%	Pass	1.60%	NA	NA
	01:06	4.90%	Pass	1.20%	NA	NA
	01:07	2.80%	Pass	4.40%	NA	NA
	01:09	2.40%	Pass	3.10%	NA	NA
	01:12	2.20%	Pass	1.30%	NA	NA

Second Floor

Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
A1	02:06	1.10%	Fail	NA	NA	NA
	02:07	1.50%	Pass	NA	NA	NA
	02:08	1.60%	Pass	NA	NA	NA
	02:09	1.00%	Fail	NA	NA	NA
	02:10	0.80%	Fail	NA	NA	NA
	02:11	0.70%	Fail	NA	NA	NA
	02:16	1.50%	Pass	NA	NA	NA
A2	02:09	1.00%	Fail	NA	NA	NA
	02:12	1.30%	Fail	NA	NA	NA

Third Floor

Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
A1	03:06	1.50%	Pass	NA	NA	NA
	03:09	1.30%	Fail	NA	NA	NA
	03:10	0.90%	Fail	NA	NA	NA
	03:11	0.70%	Fail	NA	NA	NA
A2	03:09	1.00%	Fail	NA	NA	NA
	03:12	1.50%	Pass	NA	NA	NA

Fourth Floor

Block	Dwelling	Kitchen ADF	Pass/Fail	Bedroom 1 ADF	Bedroom 2 ADF	Bedroom 3 ADF
A1	04:09	1.50%	Pass	NA	NA	NA
	04:10	1.10%	Fail	NA	NA	NA
	04:11	0.90%	Fail	NA	NA	NA
A2	04:09	1.10%	Fail	NA	NA	NA

Block A1 ends at the fourth floor.
Dwelling 04:09 in Block A2 will not meet the guidelines at any floor.

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Vertical Sky Component

Block	Dwelling	Kitchen VSC	Bedroom 1 VSC	Bedroom 2 VSC	Bedroom 3 VSC
A1	-01:01	36.01%	35.66%	NA	NA
	-01:02	36.42%	36.63%	NA	NA
	-01:03	36.46%	34.91%	NA	NA
	-01:04	38.30%	35%	NA	NA
	-01:05	13.02%	13.07%	12.97%	NA
	-01:06	10.33%	10.97%	12.34%	NA
	-01:07	9.29%	8.01%	6.68%	NA
	-01:08	14.32%	15.89%	NA	NA
	-01:09	28.77%	28.61%	28.21%	28.05%
	-01:10	27.58%	27.87%	NA	NA
	-01:11	27.94%	28.88	NA	NA
	-01:12	30.88%	30.48%	29.61%	NA
	-01:13	31.89%	33.15%	33.72%	34.18%
	-01:14	34.57%	35.44%	36.05%	NA
A2					
Apt Removed from Scheme	~~-01:01~~	~~14.01%~~	~~13.26%~~	~~NA~~	~~NA~~
	~~-01:02~~	~~14.83%~~	~~15.08%~~	~~15.14%~~	~~NA~~
	~~-01:03~~	~~11.86%~~	~~13.66%~~	~~15.93%~~	~~17.00%~~
B1	-01:01	36.47%	35.93%	33.16%	NA

Block	Dwelling	Kitchen VSC	Bedroom 1 VSC	Bedroom 2 VSC	Bedroom 3 VSC
A1	00:05	23.35%	14.38%	NA	NA
	00:06	11.76%	9.48%	NA	NA
Original result	00:07	12.10%	12.01%	9.08%	NA
Re-assessed	00:07	12.50%	12.15%	10.50%	NA
	00:08	14.60%	14.52%	14.23%	NA
	00:09	11.08%	12.45%	13.23%	NA
	00:10	8.55%	10.08%	NA	NA
	00:11	8.15%	12.95%	14.60%	NA
	00:12	15.86%	17.34%	NA	NA
	00:13	23.96%	28.78%	22.83%	NA
	00:14	22.68%	20.90%	NA	NA
	00:15	19.37%	20.11%	NA	NA
A2					
Original result	00:01	35.28%	19.70%	NA	NA
Re-assessed	00:01	34.78%	19.20%	NA	NA
	00:02	37.82%	22.37%	21.50%	NA
	00:03	19.27%	20.47%	NA	NA
	00:04	17.79%	17.92%	19.08%	NA
	00:05	21.75%	23.26%	NA	NA
	00:06	24.20%	25.95%	NA	NA
	00:07	24.84%	24.74%	NA	NA
	00:08	14.45%	12.89%	13.31%	NA
	00:11	12.78%	15.43%	18.61%	NA
B1	00:03	19.99%	17.11%	14.28%	NA
	00:04	28.63%	26.45%	20.69%	NA
	00:05	29.63%	29.62%	NA	NA
	00:06	18.67%	17.82%	NA	NA
	00:07	19.72%	21.22%	22.33%	NA

Block	Dwelling	Kitchen VSC	Bedroom 1 VSC	Bedroom 2 VSC	Bedroom 3 VSC
B2	00:01	25.30%	27.82%	NA	NA
	00:02	20.98%	23.15%	25.50%	26.86%
	00:03	34.26%	34.18%	33.14%	NA
	00:04	32.84%	32.23%	NA	NA
	00:05	29.51%	29.85%	26.62%	NA
	00:06	16.07%	17.28%	NA	NA
	00:07	16.18%	17.25%	16.96%	NA

Block	Dwelling	Kitchen VSC	Bedroom 1 VSC	Bedroom 2 VSC	Bedroom 3 VSC
	01:05	24.72%	17.07%	NA	NA
A1	01:06	14.66%	11.16%	NA	NA
	01:07	15.83%	13.96%	10.15%	NA
	01:08	16.44%	17.02%	16.21%	NA
	01:09	12.55%	13.97%	15.20%	NA
	01:10	9.56%	11.40%	NA	NA
	01:11	8.49%	13.77%	16.39%	NA
	01:12	17.69%	19.09%	NA	NA
	01:13	25.18%	24.33%	NA	NA
	01:14	23.56%	23.96%	NA	NA
	01:15	22.71%	22.88%	NA	NA
	01:16	21.01%	21.89%	NA	NA
A2	01:03	21.46%	22.57%	NA	NA
	01:04	19.34%	20.44%	21.07%	NA
	01:05	21.02%	18.45%	13.90%	NA
	01:06	22.69%	23.11%	NA	NA
	01:07	25.35%	25.30%	NA	NA
	01:08	25.82	26.03%	25.04%	NA
	01:09	15.72%	14.17%	15.60%	NA
	01:10	20.25%	19.20%	17.59%	NA
	01:11	21.15%	21.38%	21.89%	NA
	01:12	14.42%	17.82%	21.52%	NA

Block	Dwelling	Kitchen VSC	Pass/Fail	Bedroom 1 VSC	Bedroom 2 VSC	Bedroom 3 VSC
B1	01:03	21.29%	18.18%	14.97	NA	01:03
	01:06	20.08%	19.34%	NA	NA	01:06
	01:07	21.52%	22.44%	23.76%	NA	01:07
B2	01:01	26.10%	26.10%	28.61%	NA	01:01
	01:02	23.53%	20.00%	NA	NA	01:02
	01:03	19.56%	22.59%	NA	NA	01:03
	01:06	35.35%	33.53%	35.31%	NA	01:06
	01:07	34.72%	31.96%	NA	NA	01:07
	01:09	33.27%	32.72%	32.04%	NA	01:09
	01.11	17.56%	18.65%	NA	NA	01.11
	01:12	17.80%	18.35%	NA	NA	01:12

APPENDIX D – PROPOSED BUILDING SUNLIGHT RESULTS

Block A1

Dwelling	Room	APSH	Pass/Fail	WPSH	Pass/Fail
-01.02	Kitchen	NA	NA	NA	NA
	Bedroom	NA	NA	NA	NA
	Bedroom 2	NA	NA	NA	NA
-01.04	Kitchen	10%	Fail	2%	Fail
	Bedroom	9%	Fail	1%	Fail
-01:10	Kitchen	38%	Pass	26%	Pass
	Bed 1	39%	Pass	27%	Pass
	Bed 2	41%	Pass	28%	Pass
	Bed 3	41%	Pass	31%	Pass
00.09	Kitchen	1%	Fail	1%	Fail
	Bedroom 1	1%	Fail	1%	Fail
	Bedroom 2	1%	Fail	1%	Fail
00.11	Kitchen	NA	NA	NA	NA
	Bedroom 1	NA	NA	NA	NA
	Bedroom 2	NA	NA	NA	NA
00.20	Kitchen	41%	Pass	26%	Pass
	Bedroom	42%	Pass	28%	Pass
03.08	Kitchen	42%	Pass	1%	Fail
	Bedroom 1	6%	Fail	1%	Fail
	Bedroom 2	6%	Fail	1%	Fail
03.11	Kitchen	NA	NA	NA	NA
	Bedroom 1	NA	NA	NA	NA
	Bedroom 2	NA	NA	NA	NA
03.20	Kitchen	50%	Pass	50%	Pass
	Bedroom 1	50%	Pass	45%	Pass
	Bedroom 2	51%	Pass	55%	Pass

Block A2

Dwelling	Room	APSH	Pass/Fail	WPSH	Pass/Fail
00.03	Kitchen	7%	Fail	6%	Pass
	Bedroom	5%	Fail	5%	Pass
03.03	Kitchen	22%	Fail	24%	Pass
	Bedroom	25%	Pass	24%	Pass
03.11	Kitchen	16%	Fail	12%	Pass
	Bedroom 1	11%	Fail	6%	Pass
	Bedroom 2	26%	Pass	8%	Pass
04.08	Kitchen	26%	Pass	9%	Pass
	Bedroom 1	27%	Pass	12%	Pass
	Bedroom 2	63%	Pass	53%	Pass
07.04	Kitchen	9%	Fail	11%	Pass
	Bedroom 1	10%	Fail	7%	Pass
	Bedroom 2	46%	Pass	72%	Pass
07.07	Kitchen	45%	Pass	27%	Pass
	Bedroom 1	45%	Pass	19%	Pass
	Bedroom 2	66%	Pass	45%	Pass
09.02	Kitchen	29%	Pass	46%	Pass
	Bedroom	29%	Pass	46%	Pass
09.05	Kitchen	30%	Pass	23%	Pass
	Bedroom 1	25%	Pass	17%	Pass
	Bedroom 2	66%	Pass	44%	Pass

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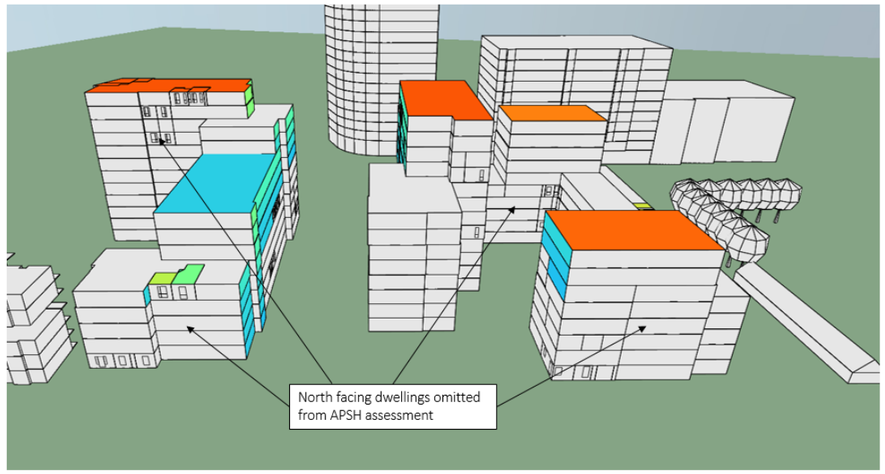
Block B1

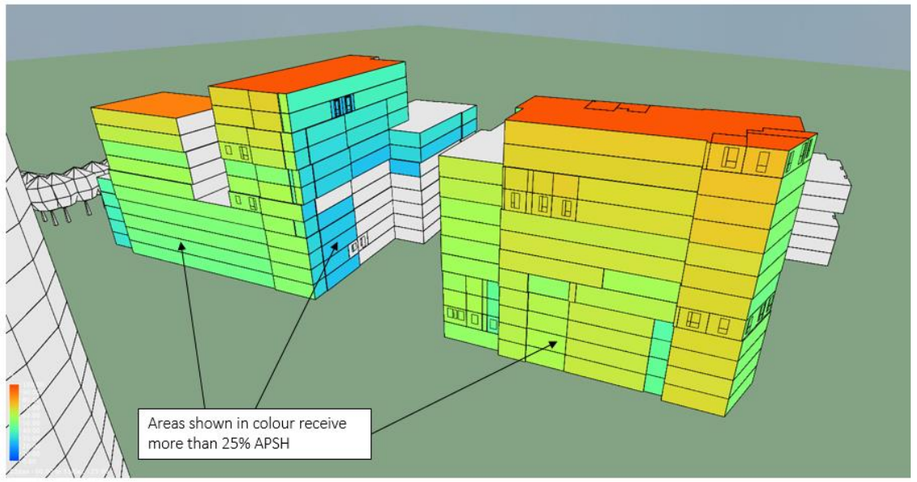
Dwelling	Room	APSH	Pass/Fail	WPSH	Pass/Fail
00.03	Kitchen	29%	Pass	15%	Pass
	Bedroom 1	23%	Pass	13%	Pass
	Bedroom 2	17%	Pass	8%	Pass
00.05	Kitchen	19%	Pass	5%	Pass
	Bedroom	17%	Pass	6%	Pass
03.01	Kitchen	NA	NA	NA	NA
	Bedroom	NA	NA	NA	NA
03.07	Kitchen	15%	Pass	10%	Pass
	Bedroom 1	17%	Pass	10%	Pass
	Bedroom 2	17%	Pass	10%	Pass

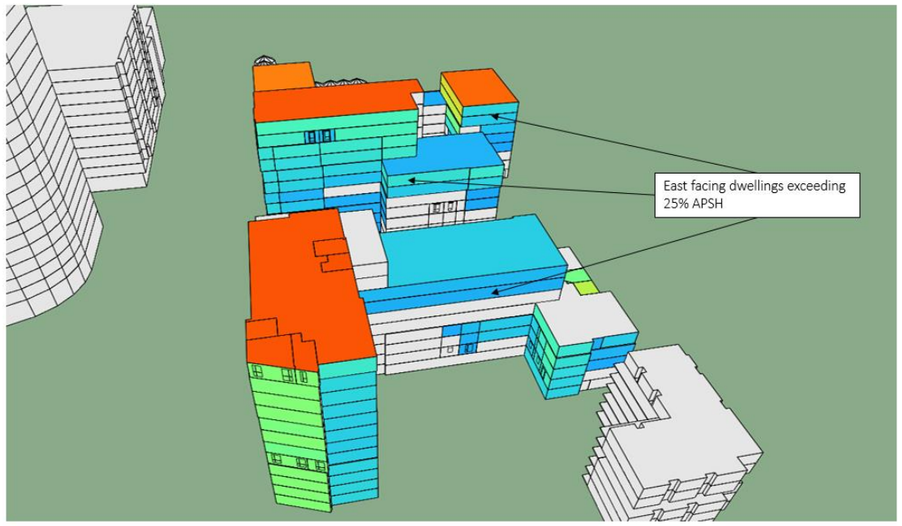
Block B2

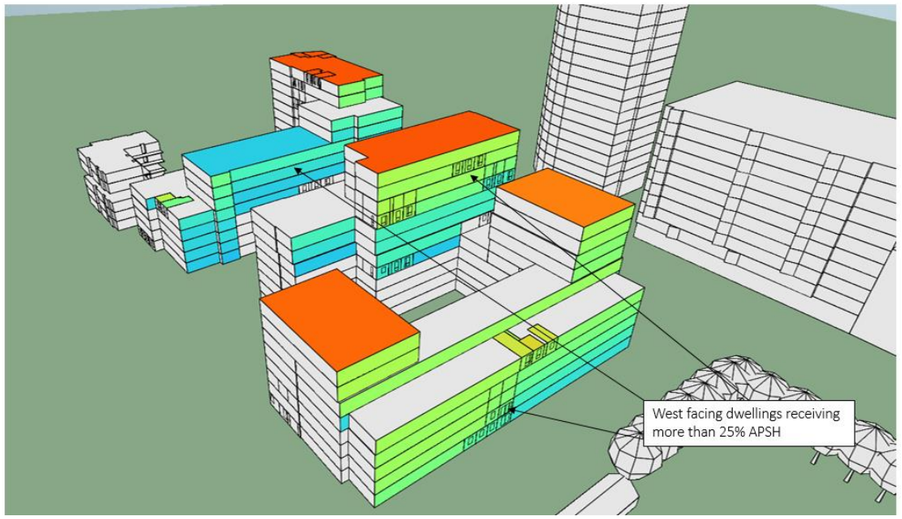
Dwelling	Room	APSH	Pass/Fail	WPSH	Pass/Fail
00.04	Kitchen	53%	Pass	46%	Pass
	Bedroom 1	56%	Pass	56%	Pass
	Bedroom 2	49%	Pass	52%	Pass
03.02	Kitchen	NA	NA	NA	NA
	Bedroom	NA	NA	NA	NA
03.05	Kitchen	42%	Pass	61%	Pass
	Bedroom 1	53%	Pass	41%	Pass
	Bedroom 2	35%	Pass	63%	Pass
07.03	Kitchen	NA	NA	NA	NA
	Bedroom	NA	NA	NA	NA
07.08	Kitchen	50%	Pass	61%	Pass
	Bedroom 1	48%	Pass	58%	Pass
	Bedroom 2	48%	Pass	56%	Pass
09.02	Kitchen	NA	NA	NA	NA
	Bedroom 1	NA	NA	NA	NA
11.01	Kitchen	NA	NA	NA	NA
	Bedroom	NA	NA	NA	NA
11.04	Kitchen	42%	Pass	67%	Pass
	Bedroom 1	53%	Pass	75%	Pass
	Bedroom 2	35%	Pass	28%	Pass

Annual Probable Sunlight Hours (Graphics)









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APPENDIX E – HYDROCK RESPONSES TO BRE AND PLANNING OFFICER COMMENTS UNDER APPLICATION 170326

Comment	BRE Comment	Hydrock Response
4.3.1	*In Hydrock's appendices A and B, results for Chatham Place have been incorrectly labelled The Chatham and vice versa.*	Amended
4.3.4	*Hydrock also give daylight distribution results for this development. These are confusing because Hydrock state they have done the analysis for the ground floor, whereas the lowest vertical sky component results are for the first floor. Assuming that the daylight distribution results are in fact for the first floor all rooms would meet this guideline.*	Daylight distribution results are for the first floor, as there are no residential units at ground floor level within these blocks.
4.4.2	*Hydrock's model of this building appears to be slightly incorrect.*	Amended
4.4.3	*Compared to the real building, Hydrock's model has wider access decks.*	The building model was produced using publicly available information and sales information for the flats, the width of the access deck has been estimated from this. We can amend the model, however this will again be an estimate.
4.4.5	*There are large relative losses in light, although these are partly due to the access decks above the windows which restrict access to light from overhead. In this type of situation, the BRE Report suggests carrying out an extra analysis without the overhangs in place. This has not been done, though it is likely that it would show lower relative losses of light. Overall the loss of daylight would be classed as moderate adverse impact for this reason.*	While the BRE guide suggests to carry out an additional test without the access decks, modelling the daylight without the access deck will provide results which are not true to reality and will down play any adverse impact on the Chatham apartments. Hydrock have performed this additional check within the report.
5.1.4	*Hydrock have only modelled a subset of the proposed flats (29). Where only some of the flats are analysed the usual approach is to look at the worse case ones on the lower floors looking into courtyards. Hydrock have done a few of these, but most of the flats analysed are either on the upper floors or on the lightly obstructed perimeter of the building. They have used the results to estimate sit wide figures for compliance with the BRE/BS guidelines. Unless other rooms were analysed which are not in Appendix C, this must have involved a fair amount of guesswork.*	Prior to completing any modelling, Hydrock undertook a desk top analysis to select the units to be modelled. This desktop analysis provided the basis for the computer simulation and the worst case units have been tested. In addition to testing a number of worst case dwellings, a selection of what Hydrock believe to be 'typical' performing units have also been assessed. The worst performing dwelling on site is the corner typology in Block A (shown below), this unit has been tested on 3 of the 5 floors where this typology occurs to assess it's site wider performance. The performance of this unit on the floors not assessed can be calculated from the other results. As the dwelling typologies repeat across the site Hydrock are able to work out the daylight factor for un-assessed units based on the dwelling typology performance. The results are, therefore, somewhat conservative but are sufficient to cover all units. This is an approach that has been widely used across many local authorities in the UK and has been deemed acceptable, furthermore, neither BS8206 or the BRE Report contain no set methodology on how a site as a whole should be assessed. 'a fair amount of guesswork' is not considered a reasonable comment on the basis of above methodology. However, after discussions with the council, Hydrock have modelled all units at lower ground, ground and first floor, and have then tested any failing rooms on the next floor up and so on until a pass is achieved.
5.1.5	*It would be helpful to have results for all the rooms on the lowest floors which look inwards within the new development, either towards other blocks or in courtyards to check whether there are any units with especially poor light.*	Amended
5.1.6	*Overall, according to Hydrocks figures….. Table 1 in their summary does not agree with Table 11 in their conclusions or Table 9 in the average daylight factor section.*	Amended
5.1.7	*Compared to the previous scheme, daylight provision appears better. It is not clear whether this is due to changes in the design, or because the average daylight factors have been worked out in a different way.*	The daylight factor results have improved due to removal of the 0.5m margin around the edge of the room, this is stated and made clear on Page 7 of the report and detailed within the previous iteration of this comments tracker. Hydrock have removed the margin at the request of the BRE, although this goes against CIBSE AM11: Building Performance Modelling which provides benchmarks for standards of computer simulation modelling throughout the industry. With regards the 0.5 margin, CIBSE AM11 states the following: *"There should be a border no smaller than 0.5m between the sensors and perimeter walls, windows, etc. This is primarily to avoid undue bias in the calculation of, say, the average daylight factor, which can occur if there are sensors very close to the glazing. The high DFs at these points (> 20%) will produce a high average DF that is unrepresentative of the typical DFs in the space".*

Comment	BRE Comment	Hydrock Response
6.3	*From the data provided, it appears that the space to the south of the new development , along Chatham Street would meet the BRE guidelines, as would the thoroughfare through the site. The courtyard to Block B is predicted to just meet the guidelines. However, it tends to receive sunlight predominantly in the morning; in the afternoon, except at the height of summer, it will largely be in shadow.*	This is a statement. No change to design required. The courtyard here will meet the BRE guidelines.
6.4	*The courtyard to Block A would not meet the BRE guidelines with virtually none of it receiving two hours of sunlight on March 21st. This space would be poorly sunlight.*	This is correct, during the period of September - March this courtyard will not receive a great deal of sunlight. However during these periods residents will have access to a number of other communal areas within the site that do receive good levels of daylight if they wish to use them. During the summer, the sunlight performance of this courtyard increases greatly with half of the space receiving more than 2 hours of sunlight. This is more fitting to the time of the year that residents will wish to use the space for amenity, rather than a access/egress route to get to their apartment. The architect has produced a study showing how changes to the massing will change the sunlight performance of this building. This is included within the appendices of the Daylight and Sunlight report.
6.5	*Unfortunately the proposed play areas in the courtyard to Block A and B are likely to be in shadow for nearly all the time when people would want to use them. The playground in Block A would be in almost permanent shadow year round, while the playground in Block B would receive some sunlight, but mainly before 1100 in the morning. Consideration should be given to re-siting these playground if the layout of the blocks cannot be changed.*	Hydrock disagree with this statement to some degree. The play area in the Block B courtyard will receive sunlight in the morning only between September - March. However, during rest of the year this performance improves and will receive sunlight in at least 36% of the space up to 3pm. In our opinion, this is more representative of when residents will want to use the spaces, as during the autumn and winter months the play area is less likely to be used. The design team have considered different locations (see Appendix D) of the play space. There is nowhere else on the site that is suitable for play. The massing of the building has also been looked at this try and improve sunlight performance in Courtyard A, however the changes to the massing do not increase the available sunlight significantly due to the Courtyard been north facing.

Comment	Planning Officer Comment	Hydrock Response
Section 4.4	*Daylight impact on The Chatham – the review has highlighted inaccuracies in the modelling of the building, suggests that an additional test (without the overhangs – paragraph 4.4.5) should be carried out and that the sunlight results have been presented incorrectly. It is considered, owing to the current findings and the fact that objections to the scheme have been received to the application on this basis, that all matters raised by BRE need to be addressed and re-presented by you, so that the impact on this building can be shown to have been fully assessed and considered.*	Amended as per BRE comments.
Section 5	*daylight and sunlight to the proposed residential units – the BRE review has highlighted shortcomings in the methodology used in your assessment. Officers consider that all windows/rooms associated with each façade of each building should be tested from the lowest level up until each window on a façade of a floor of the building comfortably passes the test(s). Please note that this is over and above that referenced by BRE at paragraph 5.1.5 of just the lowest inward floors. Instead officers consider that the assessment needs to be fully comprehensive, to fully and accurately demonstrate the proposed day/sunlight levels for future occupiers and in-turn inform the assessment of the overall quality of accommodation proposed by the scheme.* *The requirement for at least some of this additional information should not come as a complete surprise to you, based on my emails of 6th March and 21st July. Put simply, it is considered that the methodology you have chosen to follow for the proposed units is highly selective and is considered to undermine the validity of the conclusions reached to date. Instead, it is required for you to provide comprehensive results, which will then enable more accurate analysis / conclusions to be reached. Without the additional results being provided, it will be considered by officers that you have failed to demonstrate the levels of day/sunlight received by future occupiers of the proposed development, which in-turn significantly calls into question the overall quality of accommodation being provided.* *It is likely that BRE will be sought to review the addendum report you are requested to submit, to verify the updated results/findings made. I would welcome your initial agreement to fund the additional review BRE undertakes in the future? Furthermore, please also provide timescales by which an addendum report will be submitted by you, so that I can advise BRE that this will be forthcoming (if you outline the precise scope of the addendum report, this will enable me to seek a quotation from BRE in advance of your addendum report being submitted*	Hydrock recognise the Council's wish to have a more comprehensive analysis and propose to carry out additional modelling to satisfy this. The council agreed that the following scope was acceptable: - All units at lower-ground, ground and first floor to be tested - Any failing rooms to be tested on the next floor up - Process to be repeated until a pass is achieved.

Comment	Planning Officer Comment	Hydrock Response
Section 6	*In relation to section 6 of the review, it is considered that the levels of sunlight to the two courtyards are very disappointing, in particular with that associated with block A not even meeting the BRE test. Officers would recommend that you explore incorporating measures which would increase the amounts of sunlight reaching these spaces (i.e. altering the layout/massing of the development to enable more light to be received). Furthermore, you should also explore altering the location of the play spaces (as also referenced in previous leisure comments, as well as by BRE). If you do not wish to alter your proposals, please confirm this and provide a rationale for this (e.g. demonstrating the exact changes which would need to be made to the massing for the BRE test to be met, and in-turn the number of residential units this would remove from the proposed scheme). In such a scenario officers would weigh up these identified shortfalls of the proposals in the overall planning balance for the scheme as a whole.*	Changing the massing to Block A would result in increased mass elsewhere on the site, which would in turn impact the daylight and sunlight performance in other areas of the development, and potentially increase the impact on existing buildings. Furthermore, the BRE guide is not specific in saying that each and every amenity space needs to meet the guidelines, in many proposals the accepted way of looking at communal amenity space is to provide at least 1 communal space on site that is meeting the BRE guidance. Weldale Street has 3 outdoor spaces that meet this criteira (Block B courtyard, the southern amenity space and the site thoroughfare). Furthermore the BRE test is guidance only, and the BRE report itself states that these should be used flexibly dependent on the site conditions. The BRE test day is chosen as the 21st March as this is the average length of shadows throughout the year, it is worth noting that any outdoor amenity space is not likely to be used very much until later in the year. Hydrock have performed additional tests on the courtyards for July, and the performance is much greater. The BLock A courtyard in the summer will receive 2 hours of direct sunlight in at least 36% of the space, this is not a 'Pass' but does show that the courtyard will not be in the dark all year round. Any north facing amenity space such as this is unlikely to meet the criteria for sunlight, however in large developments it is often impossible to fully design out north facing gardens and amenity areas. The architect has produced a study which shows how the altering the massing of this part of the site does not increase the daylight performance in Courtyard A significantly as it is north facing.

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APPENDIX F – LIGHT TO COURTYARD A STUDY

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