

Daylight and Sunlight Assessment



24 Ducks Hill Road, Northwood

Local Authority: Hillingdon

April 2025 – Revision B

jsa
architects

1.0 The Site



Figure 1 - Proposed site plan

The development consists of four high-quality semi-detached dwellings. Units 1 and 2 are positioned to front Ducks Hill Road, adhering to its established building line, while a new private drive along the southern boundary will provide access to Units 3 and 4 at the rear, which align with the building line of Cygnet Close and 18a Ducks Hill Road. (Figure 1)

This statement has assessed the following:

The impact of the proposed development on daylight and sunlight levels received by new dwellings at 24 Ducks Hill Road, and neighbouring buildings at 18a and 22 Ducks Hill Road, as well as 37c and 38d Cygnet Close.

- The amount of sunlight received by the proposed and neighbouring amenity spaces.
- Shadow plot diagrams to assess shadows created by the proposed development.
- The VSC (vertical sky component) (%) of all glazing for habitable rooms in the proposed development.
- The daylight factors and percentage of glazed areas for all habitable rooms in the proposed development.

The following conclusion has been reached from the above analysis:

- The proposed building will not have any noticeable impact on daylight & sunlight levels experienced at 37c and 38d Cygnet Close.
- Shadows created by the proposed development are not detrimental to 18a and 22 Ducks Hill Road.
- All the habitable rooms in the proposed development meet the requirements for VHS, daylight factors and glazed area ratios.

This report has assessed the neighbouring buildings, 18a and 22 Ducks Hill Road, as well as 37c and 38d Cygnet Close based on the following criteria.

- Daylight: Neighbouring Building – This assesses the effect of the proposed development on the daylight received by the neighbouring buildings, which may be affected.
- Sunlight: Neighbouring Building – This assesses the effect of the proposed development on the level of sunlight received by the neighbouring buildings, which may be affected.

- Shadow Plot Diagrams – These demonstrate the shadows cast by the proposed development throughout the year.
- VSC (vertical sky component): habitable rooms – This assesses the amount of sky visible from the center point on a vertical window surface.
- Daylight factor: habitable rooms – the amount of daylight available inside a room compared to the amount of unobstructed daylight available outside under a standard overcast sky.

The study is divided into two sections:

- The impact of 1-2 Ducks Hill Road at 22 Ducks Hill Road and 38d Cygnet Close and vice versa.
- The impact of 3-4 Ducks Hill Road at 18a Ducks Hill Road and 37c Cygnet Close and vice versa.

2.0 Sunlight overview – Neighbouring Buildings

Section 3.2 of the BRE Handbook offers guidance on the required quality of sunlight for existing buildings, noting that access to sunlight is generally more significant for residential properties than for commercial ones. Sunlight availability within interior spaces is measured using Annual Probable Sunlight Hours (APSH).

According to British Standard 8206-2:2008, rooms where occupants can reasonably expect direct sunlight should receive at least 25% of probable sunlight hours annually. Furthermore, during the winter period (21st September to 21st March) (Fig. 2,3 and 4), a minimum of 5% APSH should be achieved. These criteria are assessed from the centre point of at least one window serving a main living room. In this context, the majority of windows assessed in the four neighbouring properties face east or west, meaning they naturally receive the minimum required levels of sunlight at various times throughout the day.

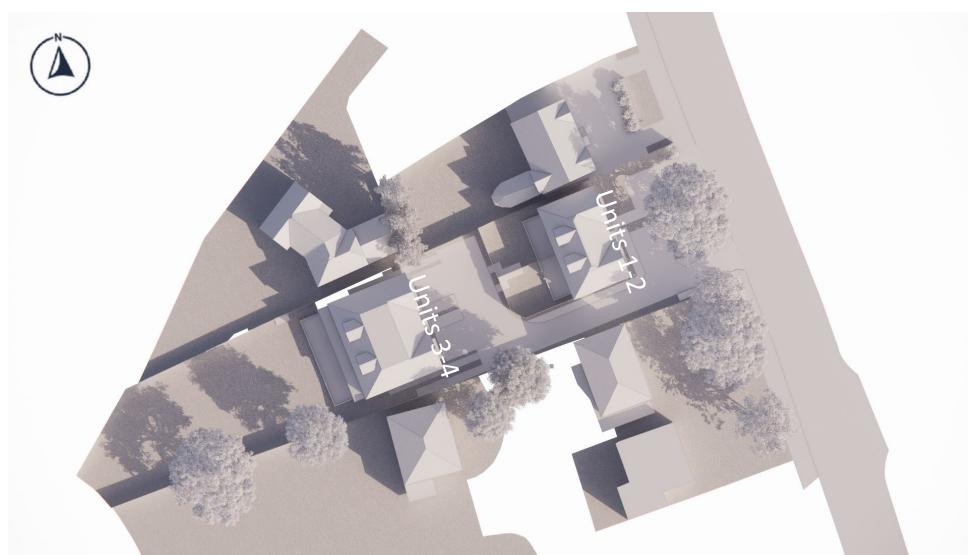


Fig 2 - 9.00 am 21st March site plan



Fig 3 - 12.00 pm 21st March site plan

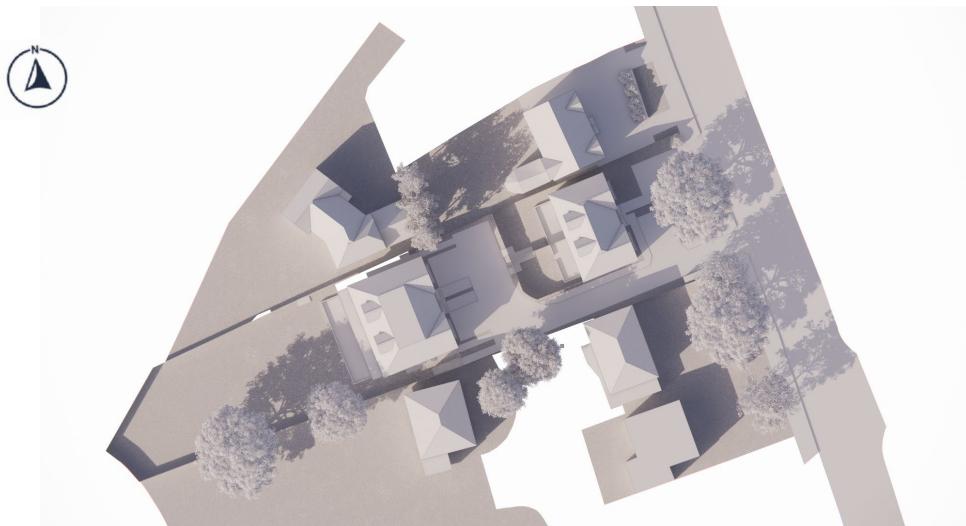


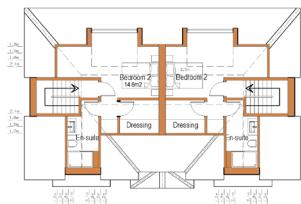
Fig 4 - 3.00 pm 21st March site plan

The shadow study outlines that the outdoor amenity spaces within the site boundary, as well as the neighbouring properties, are able to receive adequate daylight at some point of time during the day.

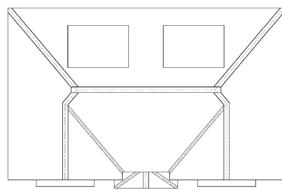
3.0 Units 1-2 Ducks Hill Road

Units 1 and 2 are semi-detached properties that lie slightly towards the front of the existing property. With 3 bedrooms across 3 storeys and a GIA (gross internal area) of 138.2m².

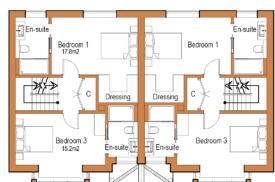
On the first floor, there are two double bedrooms, each with access to en-suite bathrooms. Similarly, the second floor has a large bedroom with an ensuite toilet, which sits within the roof eaves. The second-floor toilet lies within the gable structure. These dwellings have a hall and entrance and a lounge in front with an open-plan kitchen/dining/living space, and a WC in between.



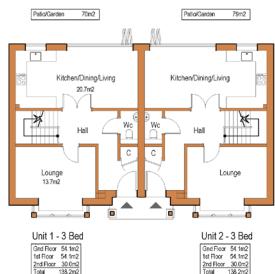
Second Floor Plan



Roof Floor Plan



First Floor Plan



Ground Floor Plan

Fig 5 - Floor plans for units 1-2

3.1 Impact on 22 Ducks Hill Road

22 Ducks Hill Road sits directly north of units 1 and 2 and would likely be affected by overshadowing. Figure 20-22 indicates the shadows cast during the spring equinox by the proposed units on 22 Ducks Hill Road.



Fig 6 - 9.00 am 21st March



Fig 7 - 12.00 pm 21st March

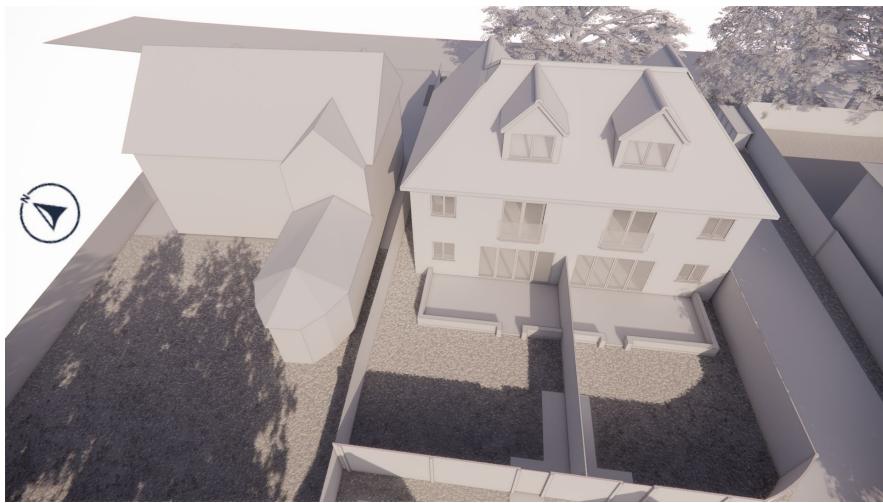


Fig 8 - 3 pm 21st March

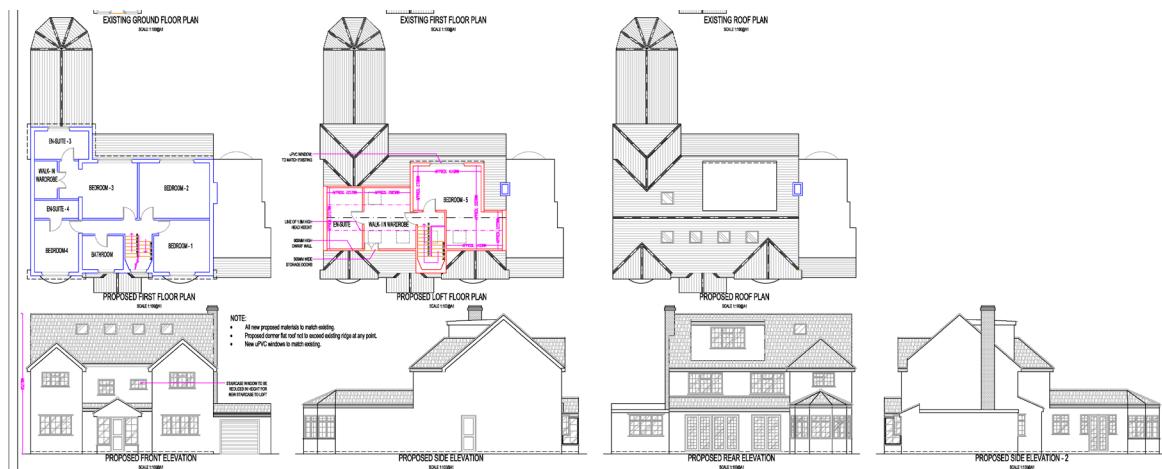


Fig 9 – Floor Plans and Elevations 22 Ducks Hill Road (as per planning permission

21983/APP/2019/1290 – Hillingdon Council)

As shown in Fig. 9, 22 Ducks Hill Road lacks any openings into habitable spaces on the south side of the property, except the bay window on the rear extension. Being a bay window, it offers views across multiple angles in the garden, thus providing greater access to daylight throughout the day. As the depth of the existing property is similar to units 1-2, there is a negligible difference between the proposed and the existing extent of overshadowing.

In addition, the shadow study highlights that during the afternoon, there is little to no overshadowing onto the property's south boundary.

3.2 Impact of 38d Cygnet Close

The property 38d Cygnet Close sits to the South of Units 1-2. As shown (Fig. 10-12)

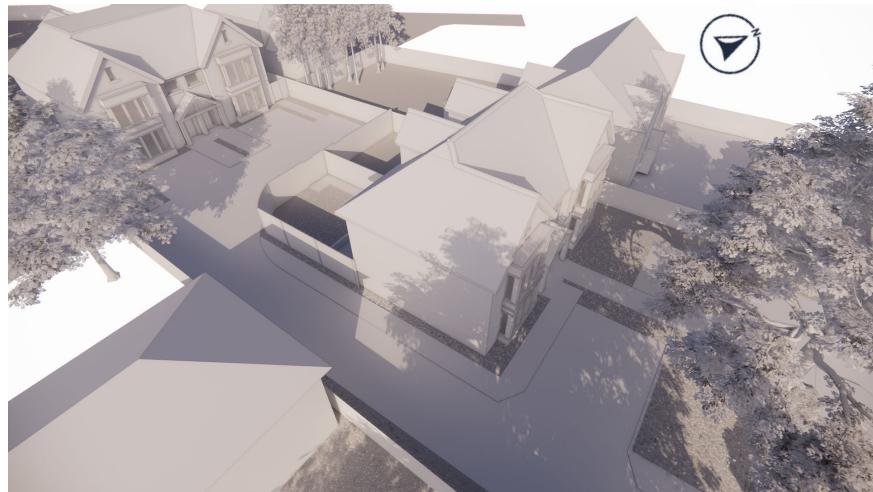


Fig 10 - 9.00 am 21st March

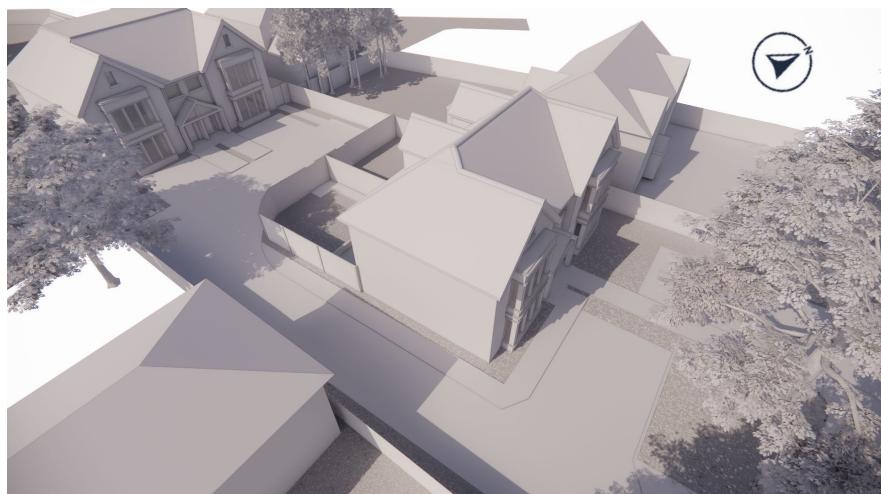


Fig 11 - 12.00 pm 21st March

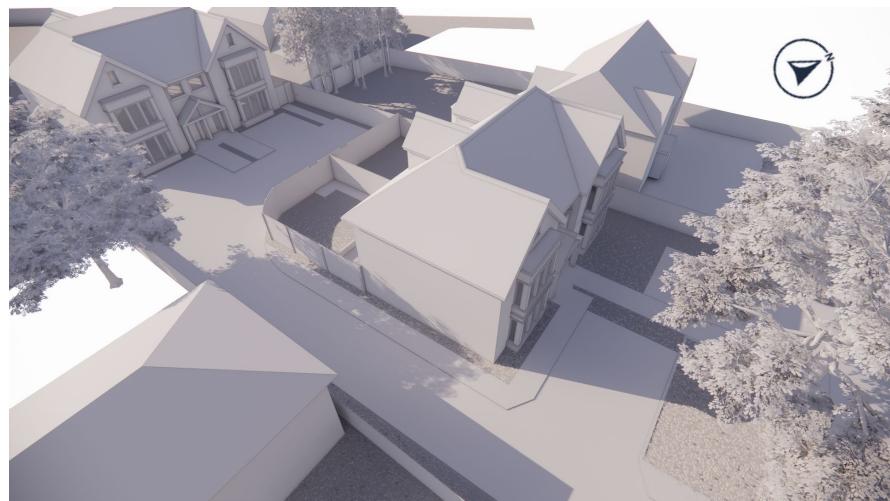


Fig 12 - 3 pm, 21st March

The South elevation of Units 1 and 2 lacks any glazed openings; hence, the impact of shadowing by 38d Cygnet Close to them is negligible.

Additionally, as 38d Cygnet Close sits in the same building line as units 1-2, there is minimal shadowing occurring on the front or rear glazings within any of the units' habitable spaces.

As displayed in the study below, the generous glazed coverage of these units allows for plenty of daylight throughout the year, with a VSC factor exceeding the requirements.

3.3 Units 1-2 VSC study

The following study delves into the VSC (vertical sky component) of all the openings into the habitable rooms of units 1-2. All habitable rooms should have a VSC of greater than 27%. Hence, for each room, the median VSC factor was calculated based on the total area of each opening. The median VSC factor is stated on the top right of each image.



Fig 13 and 14 – Unit 1 front ground and first floor VSC component

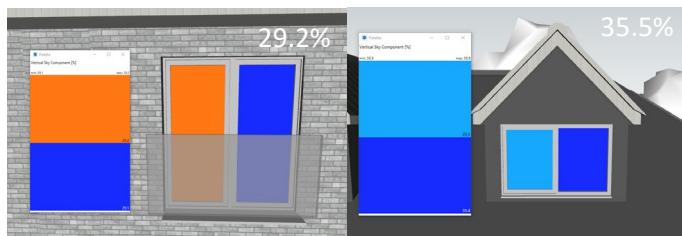


Fig 15 and 16 – Unit 1 first and second floor VSC component

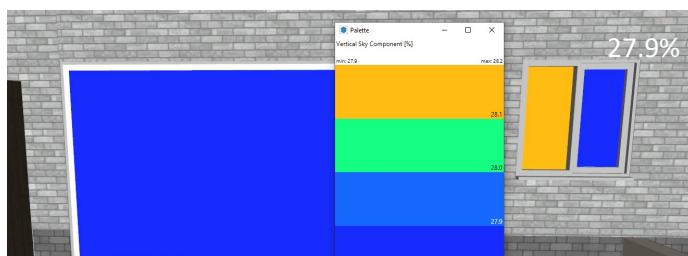


Fig 17 – Unit 1 ground floor VSC component

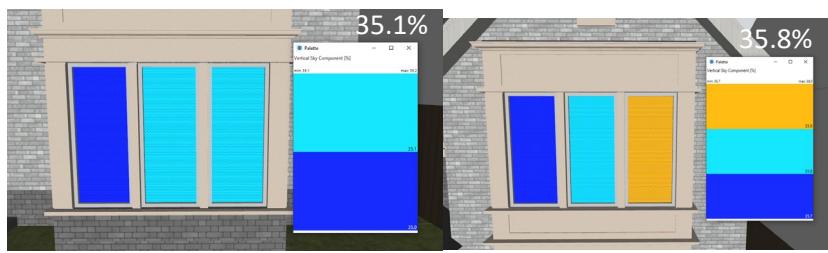


Fig 18 and 19 – Unit 2 front ground and first floor VSC component

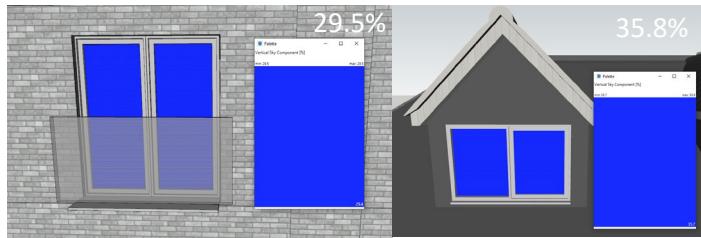


Fig 20 and 21 – Unit 2 rear first and second floor VSC component

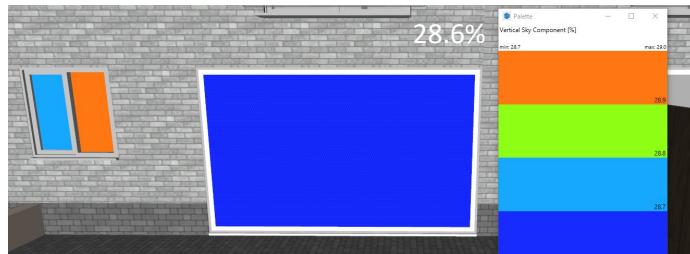


Fig 22 – Unit 2 rear ground floor VSC component

3.4 Units 1-2 Daylighting factors

The British Standard for daylighting, also mentioned in the London Design Guide, states that a minimum average daylight factor of 2% in kitchens and 1.5% in living rooms, dining rooms and studies, as well as 1% for bedrooms, is required. As shown below, the calculated daylight factors for the habitable rooms in Units 1-2 exceed these requirements, providing ample daylight to these spaces.

Room Units 1-2	Daylight Factor
Kitchen	7.97%
Lounge	5.7%
Bedroom 3	5.4%
Bedroom 1	2.9%
Bedroom 2	2.7%

Table 1 – Daylighting factors of habitable rooms in 1-2 Ducks Hill Road. **Green** = meeting requirements

In addition, the London housing design guide in 5.5.1 requires that glazing in all habitable rooms should not be less than 20% of the internal floor area of the room. The table below highlights the percentage areas of all the glazing in the habitable rooms of Units 1 and 2.

Room Units 1-2	Floor Area Factor
Kitchen	45%
Lounge	37%
Bedroom 3	23%
Bedroom 1	21%
Bedroom 2	21%

Table 2 – (%) glazed area ratios for habitable rooms in 1-2 Ducks Hill Road. *Green = meeting requirements*

3.5 Units 1-2 – Amenity Space

The BRE guidance suggests that layout planning for daylight and sunlight should extend to open communal spaces and gardens, where required. The BRE guidance details the types of spaces that are included under this category. From that list, the following apply to the analysis of the proposed development and existing neighbouring areas:

- Gardens, usually the main back garden of a house

Overlooking

A1.23 No direct overlooking will be permitted. Adequate distance should be maintained to any area from which overlooking may occur. Regard should be given to the character of the area and the distances between buildings but as a guide, the distance should not be less than 21m between facing habitable rooms and windows and 24m from window to patio to window. However, in these situations where the distance between existing houses already breaches this distance, any new development should not result in any additional overlooking.

The 45-degree Rule

A1.24 The 45-degree rule can be used to establish the maximum permissible height, depth and width of an extension. It provides a general guide to what is normally considered acceptable. However, it is only a general rule of thumb and the Council may, on occasion, consider an extension to be unacceptable, even if it appears acceptable on paper.

A1.25 The 45-degree rule can be used to check if your extension may result in a loss of light to adjoining windows. When assessing a planning application for two-storey extensions, two methods for applying the 45-degree rule will be used:

- Method 1: Considers the depth and width of the extension
- Method 2: Considers the height of the extension

A1.26 Applicants are advised to locate any extension as far from the 45-degree splay as practically possible to reduce the impacts to neighbours, and thereby increasing the chance of creating an acceptable extension.

The 45 degree rule

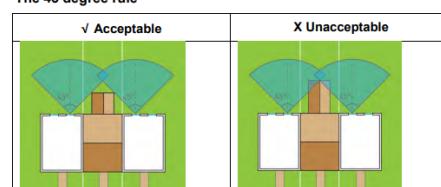


Fig 23 –Policy DMHD 1 of the Hillingdon Local Plan regarding overlooking.

DMHD 1 of the Hillingdon Local Plan explores the impact of overlooking neighbouring properties with regard to new developments (Fig. 23). It states the 45-degree rule can be used to establish the maximum permissible height, depth and width of a proposed development to ensure it won't result in a significant loss of daylight.

In addition, the distance should not be less than 21m between facing habitable rooms and windows and 24m from the window to the patio should not be less than 24 m.

As shown in Fig. 24, units 1-2 maintain the 45-degree overlooking line with the neighbouring properties of 22 Ducks Hill Road and 38d Cygnet Close, both on the front and rear elevations. In addition, the depth and scale of these two units are similar to the existing property. Hence, the neighbouring properties' daylight levels would be largely unaffected by the new development.

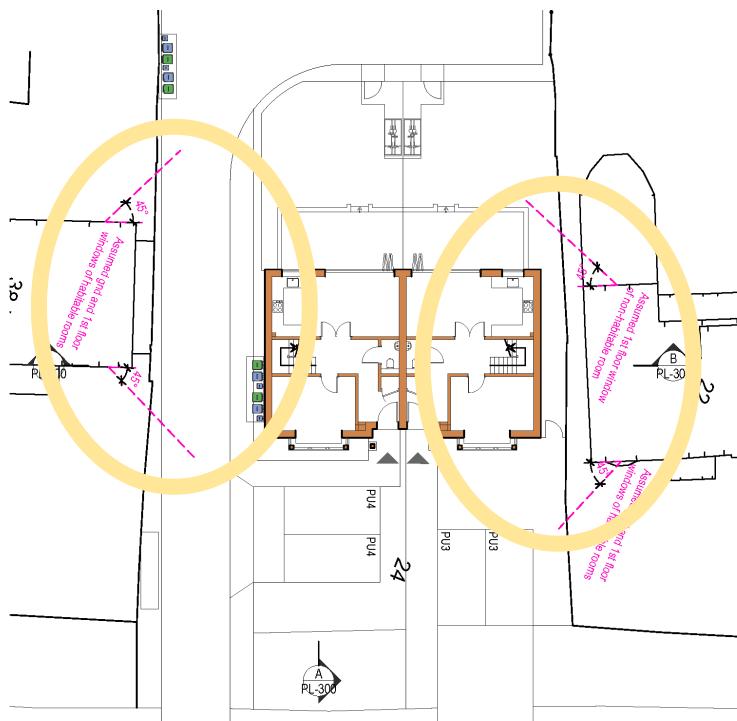


Fig 24 – Units 1-2 on Proposed site plan – observed 45 degrees

4.0 Units 3-4 Ducks Hill Road

Units 3 and 4 are semi-detached properties that sit towards the rear of the site. They consist of 4 bedrooms across 3 storeys with a GIA (gross internal area) of 224.2 m² per unit. These two units are adjacent to 18a Ducks Hill Road on the North and 37c Cygnet close to the south.

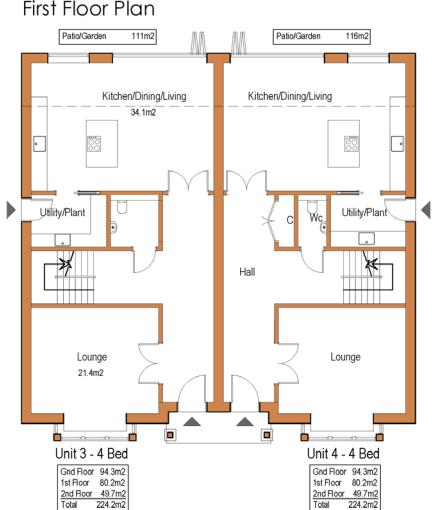
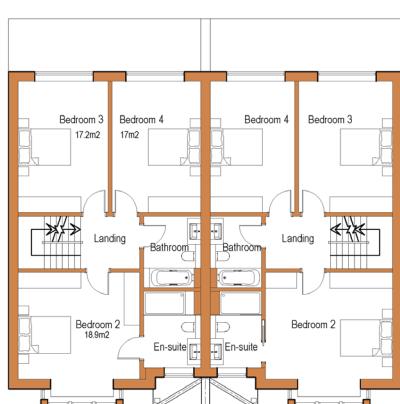
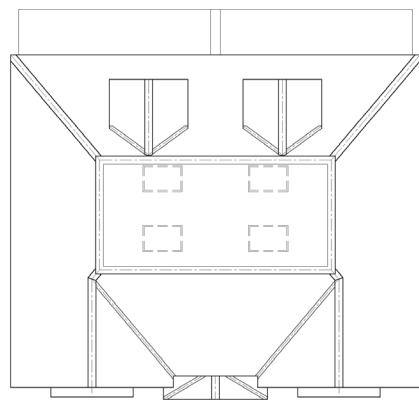
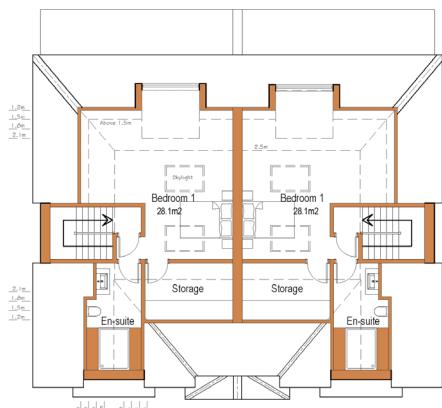


Fig 25 - Floor plans for units 3-4

4.1 Impact of 37c Cygnet Close

The property 37c Cygnet Close sits to the South of Units 3-4. Fig. 5,6 and 7 depict the proposed development at 09:00, 12:00 and 15:00 on the 21st March (Spring Equinox) on the neighbouring properties, which gives a representative average for year-round shadowing.

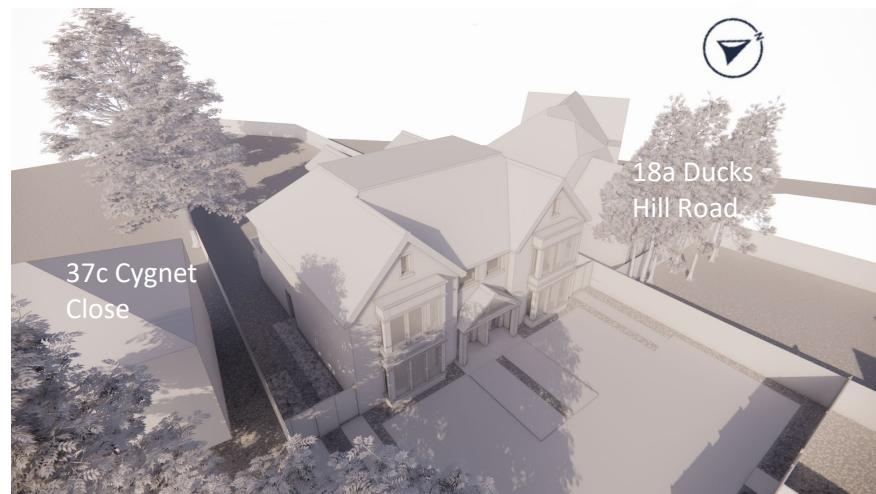


Fig 26 - 9.00 am 21st March

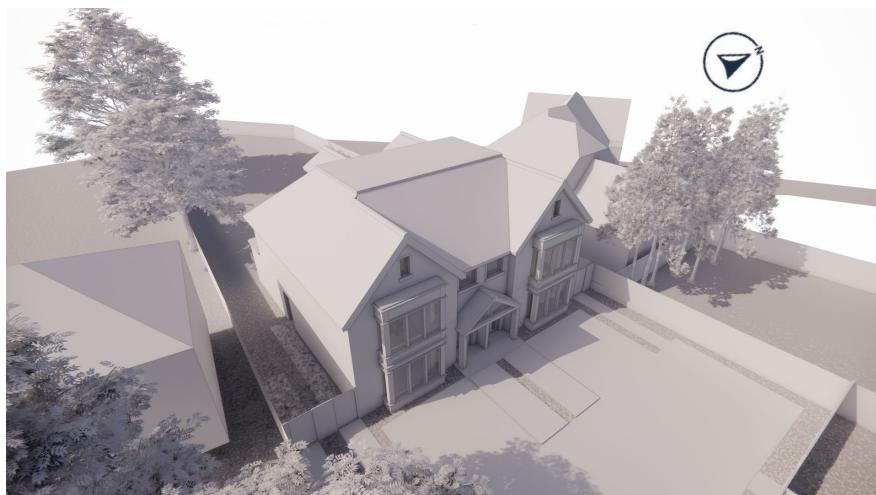


Fig 27 - 12.00 pm 21st March

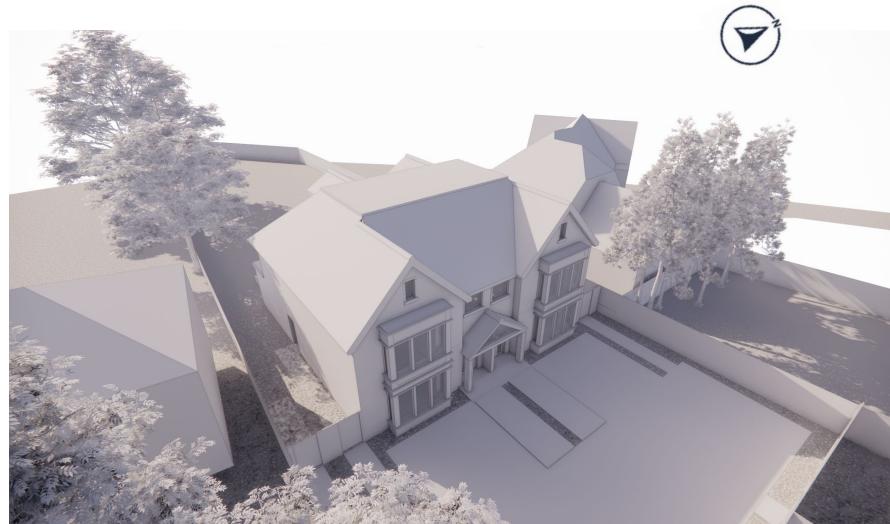


Fig 28 - 3 pm 21st March

As the South elevation of Units 3 and 4 lacks any glazed openings, the impact of shadowing by 37c Cygnet Close on the proposed development is negligible.

Additionally, 37c Cygnet Close sits in the same building line as proposed units 3 and 4, there is minimal shadowing occurring on any of the units' habitable spaces.

As demonstrated in the subsequent studies, the generous glazed coverage of the units provides ample daylight throughout the year, with VSC factors exceeding the requirements.

4.2 Impact on 18a Ducks Hill Road

18a Ducks Hill Road is situated directly north of Units 3 and 4 and is therefore the most likely to be affected by any potential overshadowing. Fig. 8-10 illustrates the extent of shadowing on 18a Ducks Hill Road during the spring equinox.



Fig 29 - 9.00 am 21st March



Fig 30 - 12.00 pm 21st March



Fig 31 - 3.00 pm 21st March

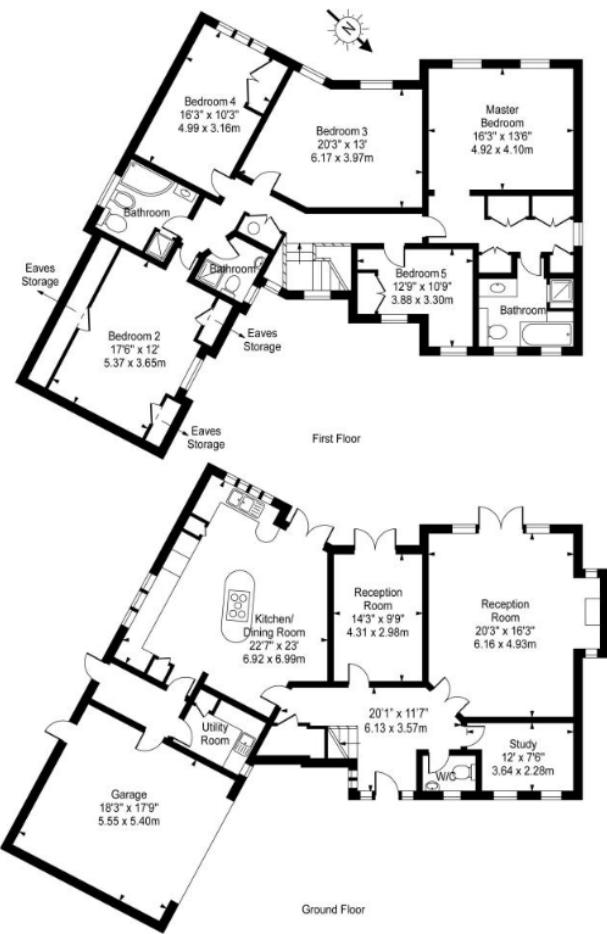


Fig 32 – 18a Ducks Hill Road Floor Plans from Rightmove

The south elevation of 18a Ducks Hill Road features three small ground-floor kitchen windows and no glazed openings to habitable rooms on the first floor (Fig. 35). As a result, the most significant overshadowing occurs at 9 a.m., with partial shading at noon, and no overshadowing by 3 p.m.

Following daylight and sunlight requirements, all dwellings must allow direct sunlight to enter at least one habitable room for part of the day. Despite partial morning overshadowing, the kitchen's dual aspect and the availability of sunlight for most of the day ensure that adequate daylight is maintained within the property's habitable areas.

4.3 Units 3-4 VSC study

The following study delves into the VSC (vertical sky component) of all the openings into habitable rooms on the proposed development. As part of the regulations, all habitable rooms should have a VSC of greater than 27%. Hence, for each space, the median VSC factor was calculated based on the total area of each opening. The median VSC factor is stated on the top right of Fig. 33 - 39.

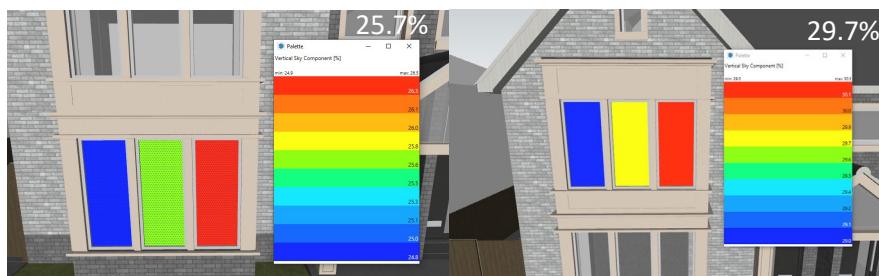


Fig 33 - 34 – Unit 3 front ground and first floor VSC component

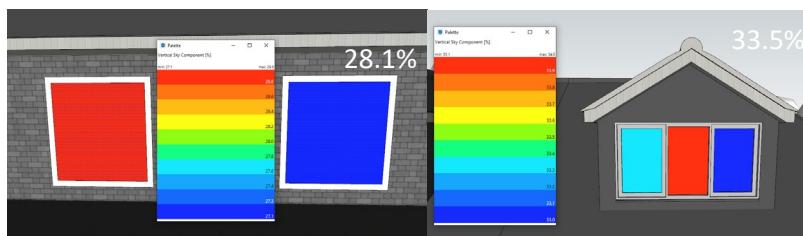


Fig 35 - 36 – Unit 3 first and second floor VSC component

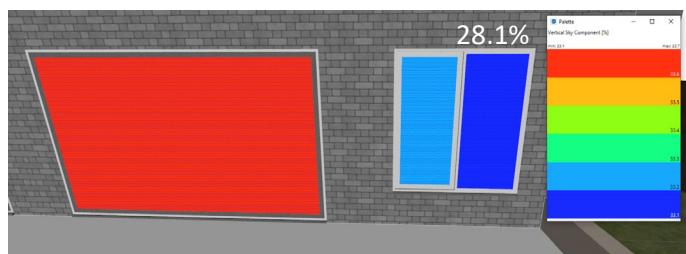


Fig 37 – Unit 3 rear ground floor VSC component

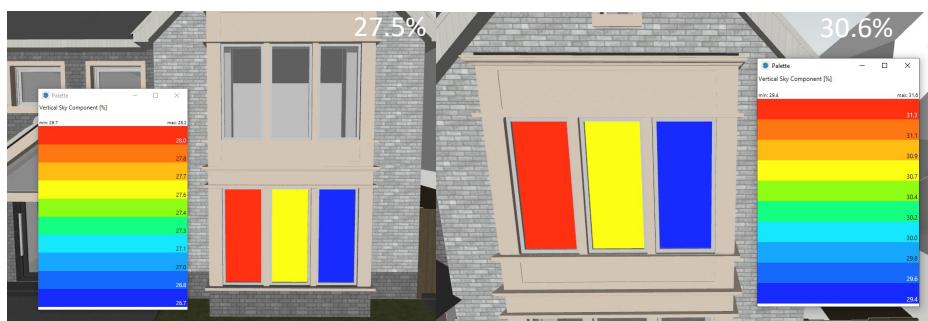


Fig 38 - 39 – Unit 4 front ground and first floor VSC component

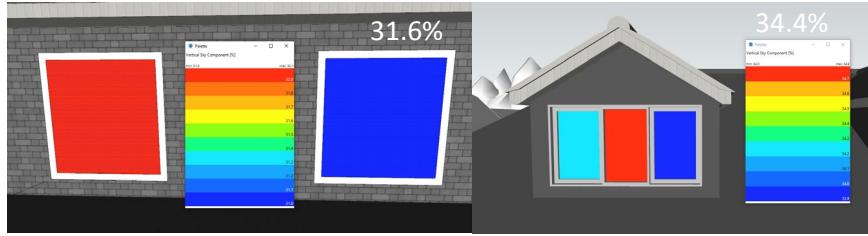


Fig 40 - 41 – Unit 4 rear first and second floor VSC component

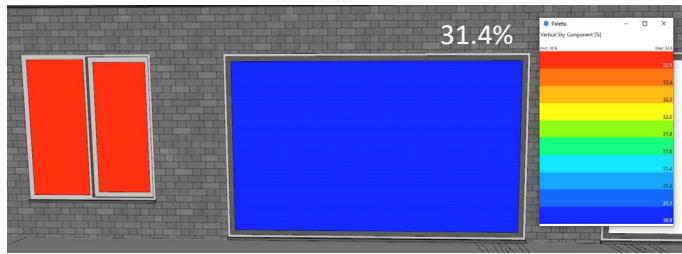


Fig 42 – Unit 4 rear ground floor VSC component

4.4 Units 3-4 Daylighting factors

According to the British Standard for daylighting, referenced in the London Design Guide, the minimum average daylight factor should be 2% for kitchens, 1.5% for living rooms, dining rooms, and studies, and 1% for bedrooms. As demonstrated below, the calculated daylight factors for the habitable rooms in Units 3 and 4 surpass these thresholds, ensuring bright and comfortable living environments.

Room Units 3-4	Daylight Factor
Kitchen	6.42%
Lounge	4.04%
Bedroom 2	4.04%
Bedroom 3	3.4%
Bedroom 4	3.6%
Bedroom 1	4.2%

Table 3 – Daylighting factors of habitable rooms in 3-4 Ducks Hill Road. **Green** = meeting requirements

In addition, the London Housing Design Guide, 5.5.1, requires that glazing in all habitable rooms should not be less than 20% of the internal floor area of the room. The table below highlights

the percentage areas for all the glazing in the habitable rooms of Units 3 and 4.

Room Units 3-4	Floor Area Factor
Kitchen	32%
Lounge	23%
Bedroom 2	23%
Bedroom 3	21%
Bedroom 4	23%
Bedroom 1	20%

Table 4 – (%) glazed area ratios for habitable rooms in 3-4 Ducks Hill Road. Green = meeting requirements

4.5 Units 3-4 Sunlight – Amenity Space

As stated before, the BRE guidance suggests that layout planning for daylight and sunlight should extend to open communal spaces and gardens, where required.

The equinox, 21st March, is chosen for the assessment. The guide states that at least half of the above amenity areas should receive at least 2 hours of sunlight.

If an existing garden or amenity area is already heavily obstructed, then any further obstruction is prohibited. The proposed development should be kept to a minimum.

Overlooking

A1.23 No direct overlooking will be permitted. Adequate distance should be maintained to any area from which overlooking may occur. Regard should be given to the character of the area and the distances between buildings but as a guide, the distance should not be less than 21m between facing habitable rooms and windows and 24m from window to patio to window. However, in these situations where the distance between existing houses already breaches this distance, any new development should not result in any additional overlooking.

The 45-degree Rule

A1.24 The 45-degree rule can be used to establish the maximum permissible height, depth and width of an extension. It provides a general guide to what is normally considered acceptable. However, it is only a general rule of thumb and the Council may, on occasion, consider an extension to be unacceptable, even if it appears acceptable on paper.

A1.25 The 45-degree rule can be used to check if your extension may result in a loss of light to adjoining windows. When assessing a planning application for two-storey extensions, two methods for applying the 45-degree rule will be used:

- Method 1: Considers the depth and width of the extension
- Method 2: Considers the height of the extension

A1.26 Applicants are advised to locate any extension as far from the 45-degree splay as practically possible to reduce the impacts to neighbours, and thereby increasing the chance of creating an acceptable extension.

The 45 degree rule

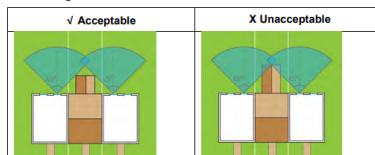


Fig. 43 –Policy DMHD 1 of the Hillingdon Local Plan regarding overlooking

The equinox, on 21st March, is chosen for the assessment as it provides an accurate average for year-round shadowing. 3.3.14 of the BRE guidance states that at least half of the above amenity areas should receive at least 2 hours of sunlight. If an existing garden or amenity area is already heavily obstructed, then any further obstruction from the proposed development should be kept to a minimum.

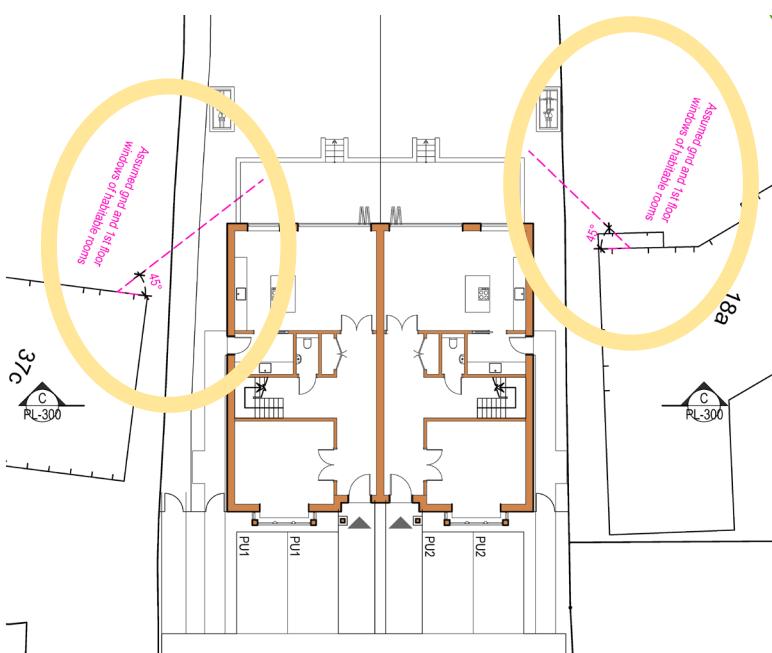


Fig 44 – Units 3-4 on Proposed site plan– observed 45 degree 'Rule'

DMHD 1 of the Hillingdon Local Plan (Fig. 43) explores the impact of overlooking neighbouring properties concerning new development. It states the 45-degree rule can be implemented to establish the maximum permissible height, depth and width of a proposed development to ensure it won't result in a significant loss of daylight.

In addition, the distance should not be less than 21m between facing habitable rooms and windows and 24m from the window to the patio should not be less than 24 m.

Fig. 44 indicates units 3-4 maintain the 45-degree overlooking line with the neighbouring properties of 18a Ducks Hill Road and 37c Cygnet Close, both on the West elevation, with no habitable rooms being significantly overshadowed in either property. Hence, the neighbouring properties' daylight levels would be largely unaffected by Units 3-4.

Conclusion

The impact of the proposed development at 24 Ducks Hill Road on the daylight and sunlight levels of neighbouring residential properties at 18a and 22 Ducks Hill Road, as well as 37c and 38d Cygnet Close, has been carefully assessed. The shadow analysis demonstrates that the proposed development will not result in any detrimental impact on the amenity spaces of either the proposed site or adjacent properties. Sufficient levels of sunlight will be maintained across all relevant amenity areas.

Overall, the proposed building will have a minimal impact on the levels of daylight and sunlight experienced by the surrounding properties. Furthermore, compliance with the Vertical Sky Component (VSC), daylight factor, and glazing ratio standards set out in the London Housing Design Guide ensures that all habitable rooms within the proposed development will receive adequate natural light.

The 45-degree rule, as per BRE guidelines, along with the daylight factor criteria adopted by both Hillingdon Council and the London Housing Design Guide, has been fully observed, particularly regarding habitable spaces. Accordingly, the proposal poses no adverse impact on the neighbouring buildings or their associated amenity spaces.