



Bentons Farm

Nazeing

Internal Daylight Assessment

Document Issue Record

This document has been revised and issued as below:

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Calculations are based on the drawings and information provided to us, which have been accepted in good faith as being accurate and valid. The accuracy of this information may have an impact on any assessments carried out.

We have used our best endeavours to ensure that all relevant windows and features of the proposed development have been identified.

We can make no guarantee as to the status (successful/unsuccessful) of the planning application following the submission of our report.

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1.0 Executive Summary

An internal daylight assessment has been carried out for the proposed development of 2No. low energy and sustainable Bungalows at Bentons Farm, Nazeing, EN9 2LN. This report outlines the results of the assessment in order to assist with the developments planning application.

Calculations have been based on the drawings and information provided to us by the client / architect, which have been accepted in good faith as being accurate and valid. The accuracy of this information may have an impact on the daylight assessments carried out.

The methodology used for this assessment follows the most recognised guidance document for daylight and sunlight within dwellings and is titled 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Second Edition 2011*; by Paul Littlefair and is published by the Building Research Establishment (BRE).

This report has investigated the natural light received by the Kitchen/living/dining areas and bedrooms within each of the dwellings. The following daylight assessments have been carried out with the use of computer modelling software in order to provide the most accurate results possible.

- Average Daylight Factors (ADF)

The average daylight factor results show that the habitable rooms within each of the proposed dwellings would comfortably meet the minimum required average daylight factor targets of British Standard BS 8206-2:2008 and the BRE Guide 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' Second Edition 2011.

As such, we can say that they would receive a good amount of natural daylight and should therefore be considered as acceptable overall in terms of natural daylight received.

2.0 Introduction

EEABS (Elmstead Energy Assessments & Building Services) were instructed to undertake an internal daylight assessment for the proposed development of 2No. low energy and sustainable Bungalows at Bentons Farm, Nazeing, EN9 2LN.

Careful consideration has been given to the proposed design to ensure that the habitable rooms within each of the dwellings will receive sufficient amounts of natural daylight.

The key elements of this report are:

- To review the relevant guidance and methodology with respect to daylight that relate to the development.
- Calculate the proposed average daylight factor values within each of the habitable rooms of the development.
- To summarise and compare the findings against regulation guidelines for daylight within new properties.

2.1 The Site and Development Proposal

The proposed development is to be located at Bentons Farm, Nazeing, EN9 2LN. A satellite image of the location with the site outlined in red can be seen below.



Figure 1 - Satellite Image of Bentons Farm, Nazeing, EN9 2LN

2.2 Architectural Information Provided

This assessment has been based on drawings and information provided to us by the Architect DWW Design.

Figures 2 and 3 below show proposed floor plans and 3D model Views of Plots A and B respectively.

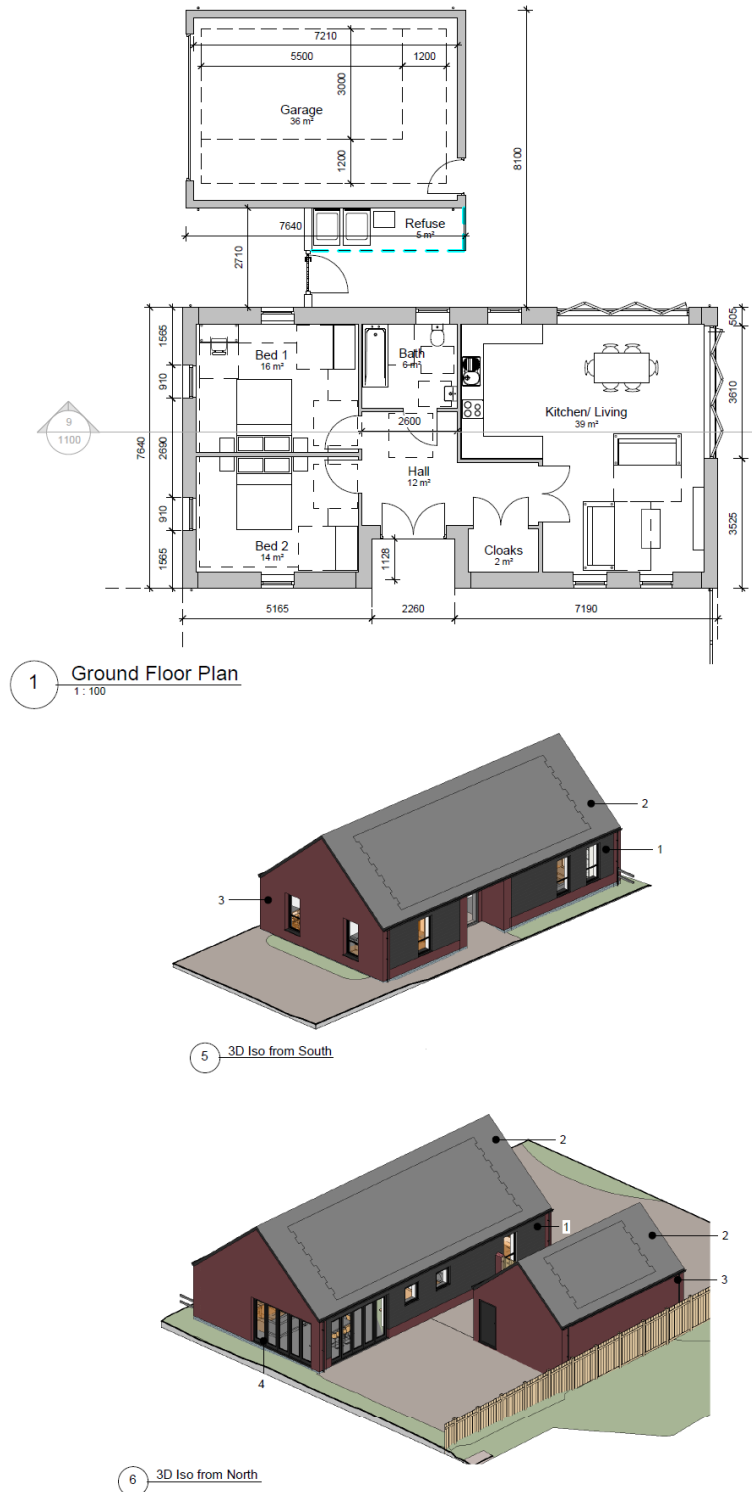
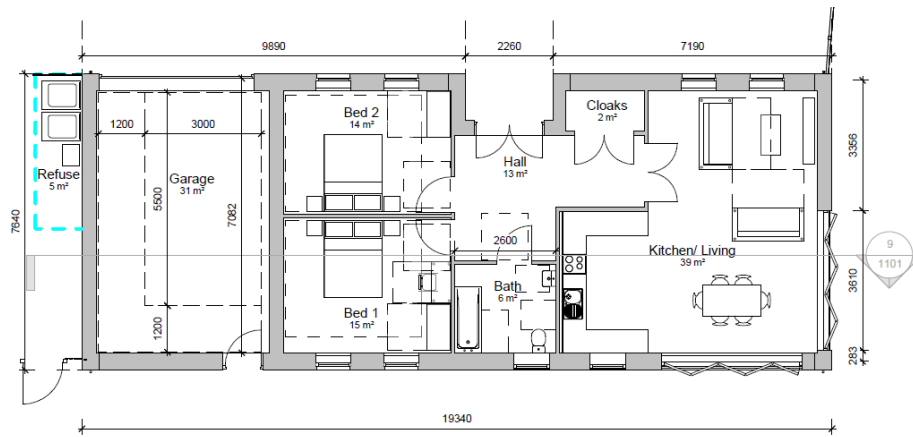
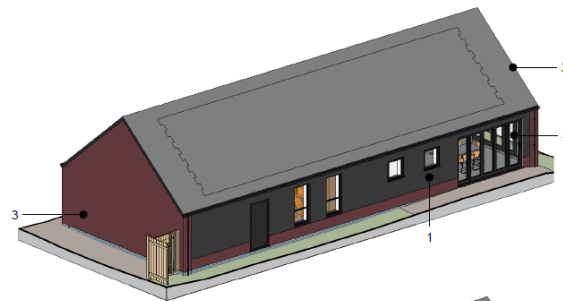


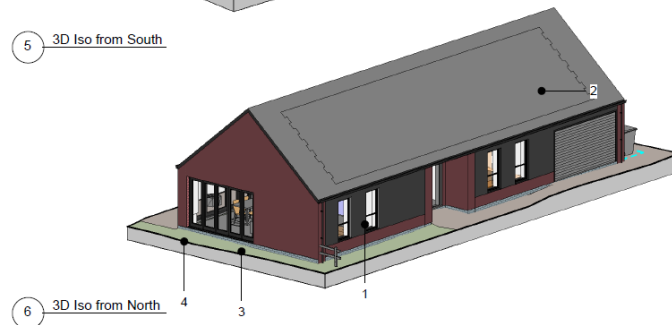
Figure 2 - Proposed Plot A Floor Plan and Model Views



1 Ground Floor Plan
1:100



5 3D Iso from South



6 3D Iso from North

Figure 3 - Proposed Plot B Floor Plan and Model Views

2.3 Planning Policy and Guidance

The most recognised guidance document for natural light within dwellings is titled 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Second Edition 2011*; by Paul Littlefair and is published by the Building Research Establishment.

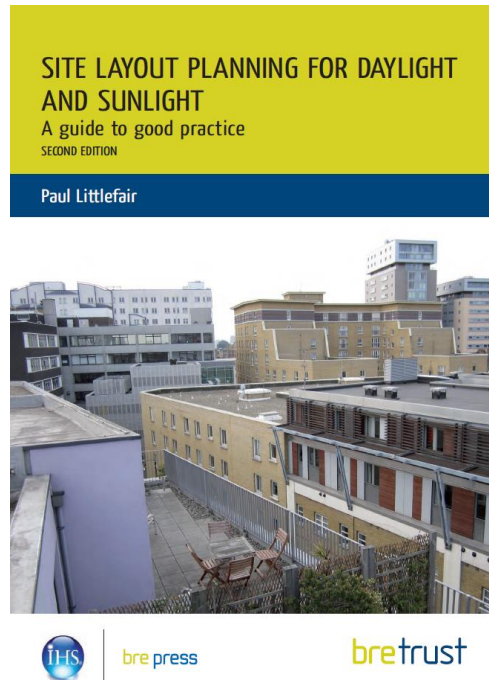


Figure 4 - BRE: Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice

Although the BRE guide clearly states that its recommendations are not mandatory and the document should not be considered as an instrument of planning policy, it can be used in conjunction with the British Standard BS 8206-2:2008, Lighting for Buildings - Part 2: Code of Practice for Daylighting.

While the BRE Guidelines are the most recognised document for natural light within dwellings they also do state that:

"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in site layout design. In special circumstances the developer or planning authority may wish to use different target values."

Any trees located close to proposed development have been excluded from the model as recommended by the BRE Guide, which states:

"Normally trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than the deep shadow of a building"

2.4 Methodology

The following methodology and calculations set out within the BRE Guide 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' *Second Edition 2011* were used to carry out the daylight assessment.

2.4.1 Daylight

Average Daylight Factor (ADF)

The BRE Guidance states that daylight provision for new rooms may be checked using the average daylight factor.

2.1.22 To check that adequate daylight is provided in new rooms, the ADF may be calculated and compared with the recommendations in BS 8206-2 *Code of practice for daylighting*⁽¹⁾

Figure 5 - BRE Guidance for Daylight Provision in New Rooms

The average daylight factor is the ratio of the average illuminance on the working plane in a room, divided by the outside illuminance on a horizontal surface under a CIE overcast sky.

The ratio is usually expressed as a percentage and guidance for adequate levels of daylight are laid out within the British Standard BS 8206-2:2008, Lighting for Buildings - Part 2: Code of Practice for Daylighting and referenced within the BRE guide.

Room type	Minimum average daylight factor %
Bedrooms	1
Living rooms	1.5
Kitchens	2

Figure 6 - BS 8206-2:2008 Minimum Average Daylight Factors

For a room to be considered as having a good average daylight factor it should exceed the minimum values stated above.

3.0 Dynamic Simulation Modelling

EDSL TAS Dynamic Simulation Modelling software was used to carry out the daylight calculations, as this can provide a more accurate means of assessment over the 'by hand' indicator methods outlined within the BRE guide.

The daylight calculations are carried out under a standard CIE overcast sky.

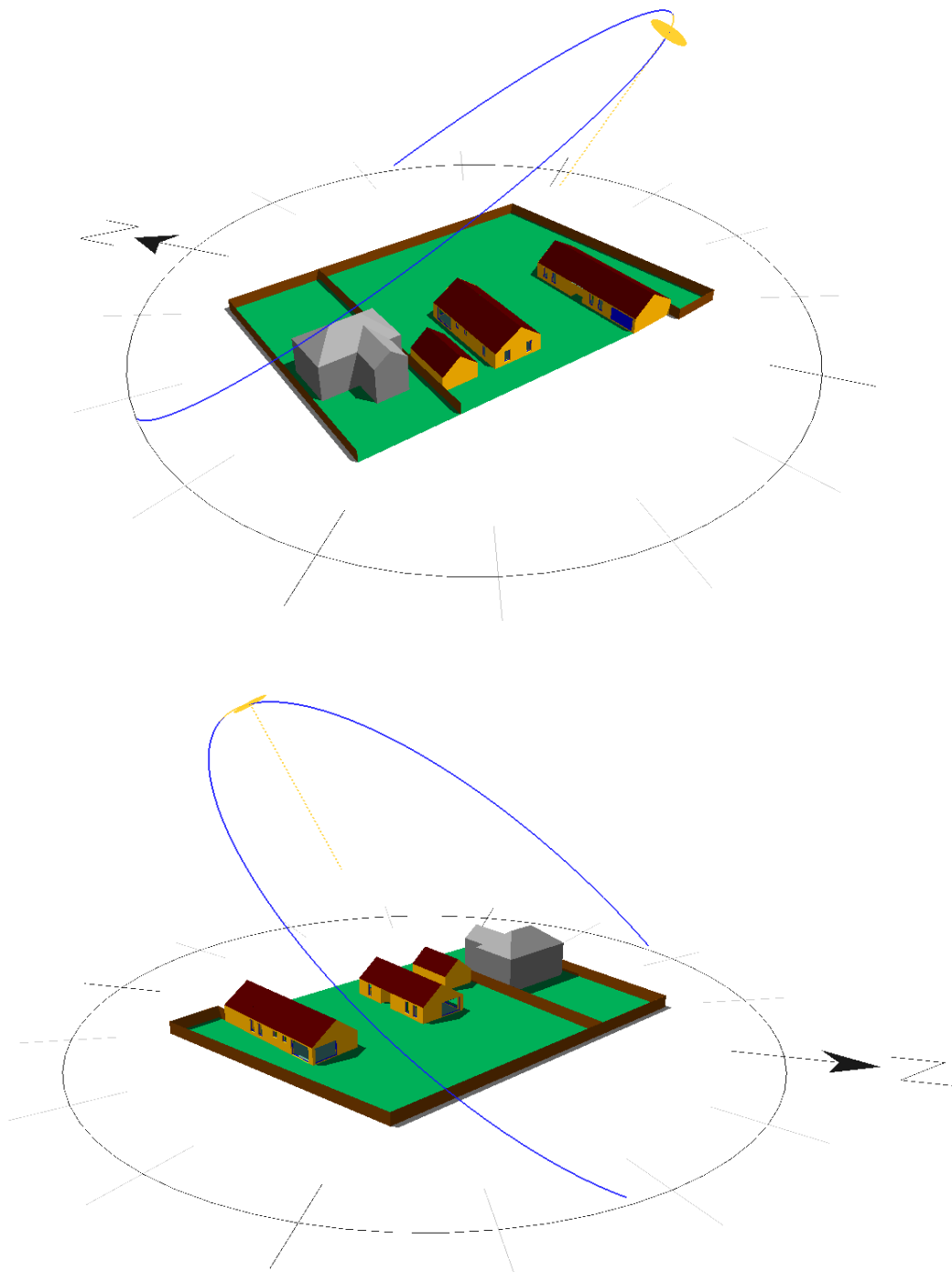


Figure 7 - EDSL TAS Computer Model Views of the Proposed Development

4.0 Daylight Assessment

4.1 Average Daylight Factor Parameters

For the average daylight factor calculation, the windows were assumed to be clear triple glazing with a light transmittance value of 0.72. The working plane height was assumed to be 0.85m.

The reflectance's of internal floors, walls and ceilings were assumed to be typical values of 0.30, 0.65, and 0.80, respectively. (Each surface/paint colour has its own light reflectance value ranging from 0 - 1, with black being on the low end of the scale around 0.05 and white being on the high end around 0.90).

4.2 Average Daylight Factor Results

Plot	Room	Minimum Average Daylight Factor Required (%)	Calculated Average Daylight Factor (%)	Overall Result
Plot A	Kitchen/Living/Dining	2.00	6.29	Pass
	Bedroom 1	1.00	2.51	Pass
	Bedroom 2	1.00	2.96	Pass
Plot B	Kitchen/Living/Dining	2.00	6.44	Pass
	Bedroom 1	1.00	2.97	Pass
	Bedroom 2	1.00	2.77	Pass

The average daylight factor results show that the habitable rooms within each of the proposed dwellings would comfortably meet the minimum required average daylight factor targets of British Standard BS 8206-2:2008 and the BRE Guide 'Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice' Second Edition 2011.

As such, we can say that they would receive a good amount of natural daylight and should therefore be considered as acceptable overall in terms of natural daylight received.

Daylight Factors (<)

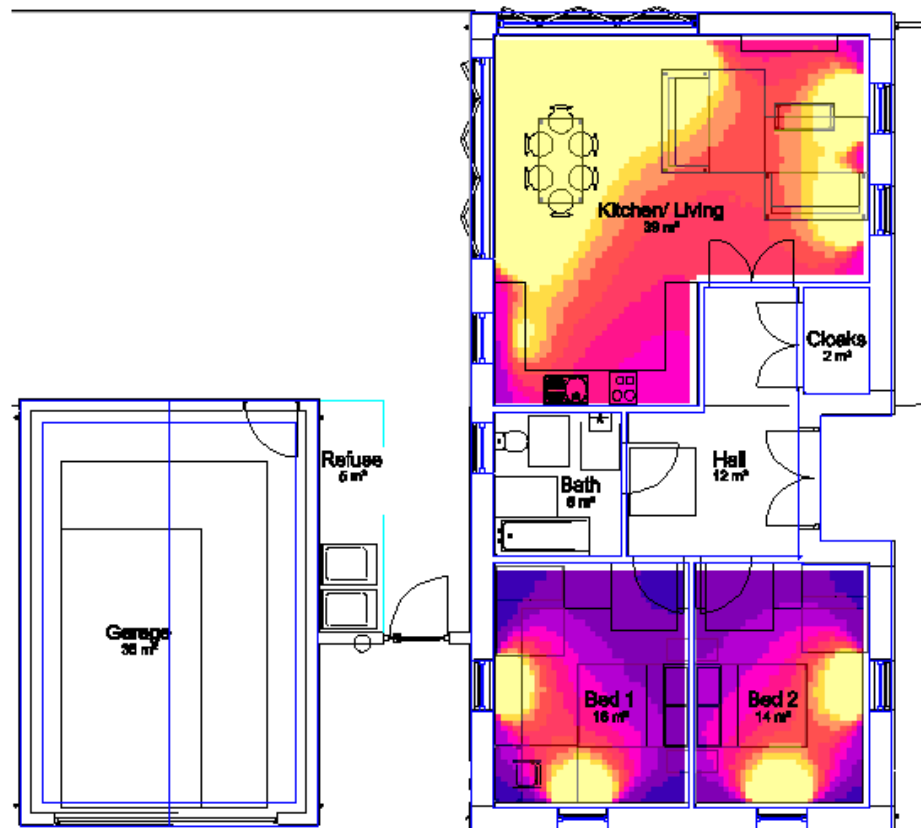
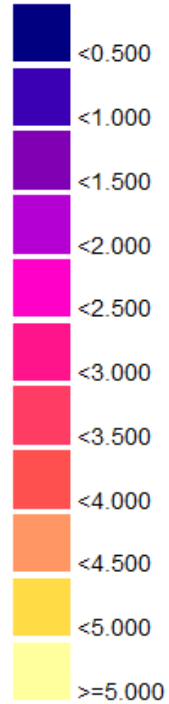


Figure 8 - ADF Plot for the Proposed Plot A Dwelling

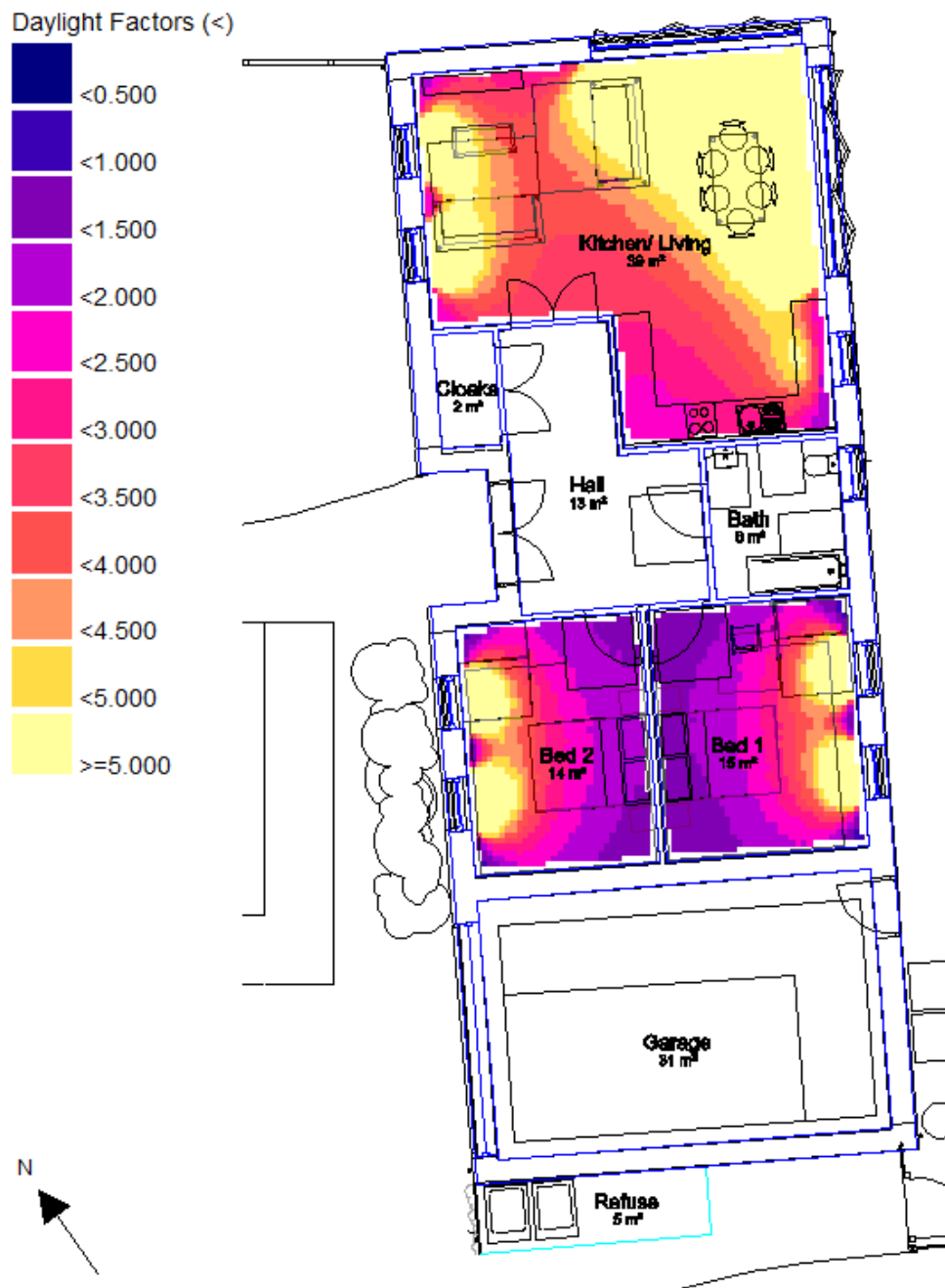


Figure 9 - ADF Plot for the Proposed Plot B Dwelling