

# Appendix D - Daylight and Sunlight Analysis : Summary Report

CASTLELAKE SHD

Lands at Castl lake, Terrysland, Carrigtwohill, Cork

Prepared for BAM Property Ltd. – June 2022

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A Planning Application is being lodged to Cork County Council by BAM Property for a Strategic Housing Development at Castl lake, Terrysland, Carrigtwohill, Co. Cork.

## Section 1 - INTRODUCTION

A Planning Application is being lodged to an Bord Pleanala by BAM Property Ltd. for a Strategic Housing Development at Castl lake, Terrysland, Carrigtwohill, Co. Cork. The application site is positioned to the north-west of the centre of Carrigtwohill, comprised of a series of land parcels with a combined area of 18.30 hectares, 16.30 hectares of which are developable lands and accommodating 716 dwelling units distributed across the development as varying Character Areas.

The proposed development comprises a variety of residential accommodation in a number of built forms distributed throughout the development;

224	Detached, Semi-detached and Terraced two storey own-door access
284	Duplex Units with own door access and
208	Apartments - one to three bed units

Appendix D provides a summary account on both the Daylight and Sunlight Reports submitted within the application documentation and prepared by DKP Partnership

- **Document 5020 - Daylight Reception Analysis Report** gives information on the level of achieved daylight reception in habitable rooms within the proposed new development.
- **Document 5025 - Effects on Daylight Reception Analysis Report** gives information on the level of achieved daylight reception in habitable rooms in existing neighbouring buildings before and after the introduction of the new development.
- **Document 5060 - Sunlight Reception Analysis Report** gives information on the level of achieved sunlight reception in amenity spaces within the proposed new development
- **Document 5065 - Effect on Sunlight Reception Analysis Report** gives information on the effects of the proposed development on sunlight reception in existing neighbouring amenity spaces.

Please refer to Appendix E – Residential Amenity : Building Separation Report for illustrative analysis of development impact on existing adjacent buildings

## **Section 2 – DAYLIGHT RECEPTION ANALYSIS REPORT**

### **2.1 Summary**

#### **2.1.1 Analysis conducted**

This report details the achieved calculated daylight reception in habitable rooms within the new development and compares these for compliance with the recommendations of the relevant guidelines and standards.

#### **2.1.2 Daylight Reception and Building Orientation;**

Day light reception in habitable rooms within the proposed development under the BRE, CIBSE and BS EN17037/EN17037 is calculated using the area of the glazed element, the room depth/height ratio, the room light reflection capability and the amount of direct or blocked/partially blocked daylight it receives. i.e. building orientation is not relevant to daylight reception or daylight reception calculations. In other words day light factor analysis is equal to all orientations. This note is for clarity as day light is often confused with sunlight or sunlight energy which is effected by orientation.

#### **2.1.3 Guidelines and Standards applied;**

For this report we applied the recommendations and guideline of the following;

- The Building Research Establishment (BRE) report, site layout planning for daylight and sunlight – a guide to good practice (referred to as the BRE Report).
- British European Standard BS EN17037/EN17037 Day lighting standards and contains guidance on the minimum recommended levels of interior day lighting.
- CIBSE guide 10 Day light and lighting for buildings.

#### **2.1.4 Technical Analysis;**

The amount of daylight received in a room is calculated and expressed as a daylight factor. This calculated daylight factor is then compared with the BRE recommended room daylight factor to ensure sufficient daylight reception. Calculations were conducted in accordance with the BRE guidelines to determine the average day light factor in a number of selected rooms within the new development. These selected rooms are generally in (daylight) challenging locations typically based at the lowest (ground floor) levels given that these would receive the least amount of day light. Once the ground floor rooms achieve compliance all other rooms at higher levels with similar room/window configurations and parameters will also achieve compliance as the vertical daylight impact angle will improve increasing the daylight reception typically 0.3%-0.5% per floor level (3m).

#### **2.1.5 Daylight reception in rooms within the new development conclusion;**

See Page 38 of the DAYLIGHT RECEPTION ANALYSIS REPORT

#### **2.1.6 Mitigation measures/actions;**

No mitigation measures anticipated.

## **Section 3 – EFFECTS ON DAYLIGHT RECEPTION ANALYSIS REPORT**

### **3.1 Summary**

#### **3.1.1 Analysis conducted**

This report details the achieved calculated daylight reception in selected rooms in neighbouring buildings before and after the introduction of the new proposed development and compares these for compliance with the recommendations of the relevant guidelines and standards.

#### **3.1.2 Daylight Reception and Building Orientation;**

Day light reception under the BRE, CIBSE and BS 8206 is calculated using the room area of the glazed element, the room depth/height ratio, the room light reflection capability and the amount of direct or blocked/partially blocked daylight it receives. ie. building orientation is not relevant to daylight reception or daylight reception calculations. In other words, daylight factor analysis is equal to all orientations. This note is for clarity as day light is often confused with sunlight or sunlight energy which is affected by orientation.

#### **3.1.3 Guidelines and Standards applied;**

For this report we applied the recommendations and guideline of the following;

- The Building Research Establishment (BRE) report, site layout planning for daylight and sunlight – a guide to good practice (referred to as the BRE Report).
- British European Standard BS EN17037/EN17037 Day lighting standards and contains guidance on the minimum recommended levels of interior day lighting.
- CIBSE guide 10 Day light and lighting for buildings.

#### **3.1.4 Technical Analysis;**

Initially the daylight reception is assessed using the vertical sky component factor and where this is marginally in excess of the maximum allowable change under the BRE recommendations the daylight reception is calculated using the more in-depth daylight factor calculation analysis. The calculated daylight factor is then compared with the BRE recommended room daylight factor to ensure sufficient daylight reception. In basic terms the change in sky views/day light reception between the original and current proposed should not be more than 0.8 its previous value unless other measures (increased glazed areas) have been taken to maintain sufficient day light reception.

#### **3.1.5 Daylight reception in rooms within the new development conclusion;**

We conclude that the new proposed development's effect on daylight reception in the neighbouring rooms are all within the constraints and recommendations of the BRE Report – "Site Layout and Planning for Daylight and Sunlight and we therefore deem the development to be compliant with this element.

#### **3.1.6 Mitigation measures/actions;**

No mitigation measures anticipated.

## **Section 4 – SUNLIGHT RECEPTION ANALYSIS REPORT**

### **4.1 Summary**

#### **4.1.1 Analysis conducted**

This report details the sunlight/shadow status of new amenity spaces within the proposed development and examines if the results are within the limits of the recommendations of the relevant guidelines and standards.

#### **4.1.2 Guidelines and Standards applied**

For this report we applied the recommendations and guideline of the following;

- The Building Research Establishment (BRE) report, "Site layout planning for daylight and sunlight – a guide to good practice (referred to as the BRE Report).
- British European Standard BS EN17037/EN17037 Day lighting standards and contains guidance on the minimum recommended levels of interior day lighting.
- CIBSE guide 10 Day light and lighting for buildings.

#### **4.1.3 Technical Analysis**

Calculations were conducted in accordance with the BRE guidelines to determine the extent of achieved sunlight in amenity spaces within the new proposed development. For new amenity spaces, in basic terms, the minimum criteria is that at least 50% of the total amenity spaces should receive at least two hours of sunlight on the 21st March.

#### **4.1.4 Amenity Spaces within the proposed development shadow / sunlight assessment conclusion**

Based on the BRE guidelines at least 50% of the amenity space should receive at least two hours of sunlight on the 21st of March. From the calculation results we note all of the new amenity spaces received more than the recommended sunlight.

We conclude all of the new amenity spaces receive sunlight on 50% of the area is in line with the recommendations of the BRE Report - Site Layout and Planning for Daylight and Sunlight - and therefore deem these to be compliant to this element.

#### **4.1.5 Mitigation measures / actions;**

No mitigation measures anticipated.

## **Section 5 – EFFECTS ON SUNLIGHT RECEPTION ANALYSIS REPORT**

### **5.1 Summary**

#### **5.1.1 Analysis conducted**

This report details the effects on the sunlight/shadow status of existing neighbouring amenity spaces as a result of the new proposed developments and examines if these effects are within the limits of the recommendations of the relevant guidelines and standards.

#### **5.1.2 Guidelines and Standards applied;**

For this report we applied the recommendations and guideline of the following;

- The Building Research Establishment (BRE) report, site layout planning for daylight and sunlight – a guide to good practice (referred to as the BRE Report).
- British European Standard BS EN17037/EN17037 Day lighting standards and contains guidance on the minimum recommended levels of interior day lighting.
- CIBSE guide 10 Day light and lighting for buildings.

#### **5.1.3 Technical Analysis;**

Calculations were conducted in accordance with the BRE guidelines to determine the extent to which the proposed development could affect the shadow/sun light reception in any existing neighbouring amenity spaces. For “existing” amenity spaces any loss of sunlight should not be greater than 0.8 times its former size on March 21st .

#### **5.1.4 Neighbouring amenity spaces shadow / sunlight assessment conclusion;**

Based on the BRE guidelines at least 50% of the amenity space should receive at least two hours of sunlight on the 21st of March and that and any loss of sunlight should not be greater than 0.8 (20% reduction) times its former size. From the calculation results we note that all of the selected existing amenity spaces received 2 hours of sunlight or more on at least 50% of the area before and after the introduction of the new development.

We conclude that the sunlight reception in the existing neighbouring amenity spaces after the introduction of the new development is in line with the recommendations of the BRE Report– “Site Layout and Planning for Daylight and Sunlight and therefore deem this to be compliant to this element.

#### **5.1.6 Mitigation measures/actions;**

No mitigation measures anticipated.