

Technical Note

RBC-ALR Daylight Improvements

Note Title	RBC-ALR Daylight Sunlight amendments		
Note Date	02/11/2023	Note Author	AZ/HF
Note Circulation	External	Note Status	v.03

1 Introduction

This technical note provides a summary of Daylight assessments for **Amethyst Lane development** based on planning stage proposed amendments including the introduction of a new house type in Block A, reducing it by one storey, and re-arranging the proposed blocks on the site with a result to increase most of the external amenity spaces.

Following a comprehensive review of design amendments in comparison to the Planning Application Internal and Impact Daylight Assessments, the following steps have been identified:

- Perform a detailed internal daylight analysis for the '4B8PH-Type C' house type within Block A.
- We acknowledge that the site context changes, including one story reduction of Block A, a 2-meter eastward shift of Block B and a 1.5-meter westward shift of Block C, resulting in an overall reduction of the building's impact on neighbouring structures and an improvement in daylight conditions.

Additionally, as supported by our Technical Note dated August 23, 2023, demonstrating no windows to habitable spaces at '47 - 63 Ashdene Gardens' the compliance with BRE criteria is excellent, and it is our recommendation that a detailed Impact Daylight Analysis for the updated design is unnecessary.

- The sun-on-the-ground conditions will be positively influenced by the reduction of Block A by one storey and the re-arrangement of the proposed blocks on the site. Therefore, a new sun-on-the-ground analysis will be necessary to evaluate solar access to the external amenity spaces of the scheme. This analysis will aim to identify any improvements compared to the sun-on-the-ground results of the original planning application scheme, with particular focus on the private gardens of Block A.

2 Assessment of the new house typology (type C), Block A

A daylight analysis was conducted by selecting the worst-case scenario house in Block A type C to ensure that the new house typology introduced with the new design amendments meets the recommended daylight levels according to the BRE guidelines.

In Table 1 are summarised the detailed SDA results for both Planning Application and Revised Scheme. Additionally, the figures below illustrate the unit that was tested in the original planning application daylight report and the one tested in the post-planning phase, along with the results in terms of Spatial Daylight Autonomy (SDA).

In the post-planning amendments, the Spatial Daylight Autonomy (SDA) results achieved 86% compliance rate, indicating a very good amount of daylight for the proposed Block C according to BRE criteria. When compared to the SDA results from the initial planning application, the Ground Floor SDA levels are higher in the revised scheme. For Level 1, SDA levels continue to meet the BRE criteria in both schemes, with slightly lower values in the updated scheme due to its orientation facing directly east towards an existing building.

Overall, all habitable spaces within the proposed Block C will receive good levels of daylight.



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Table 1, Summary of SDA results										
Floor Ref	Room Ref	Room Use	% of Area Meeting Req Lux	Meets Criteria	Floor Ref	Room Ref	Room Use	Effective Area	% of Area Meeting Req Lux	Meets Criteria
Planning Application Scheme					Revised Scheme					
Level 0	20	Kitchen	35%	NO	Level 0	1	Living Room	24.94	69%	YES
	22	Living Room	98%	YES		2	Kitchen	8.46	46%	NO
	21	Office	96%	YES		7	Office	3.22	97%	YES
	23	Kitchen	27%	NO	Level 1	3	Bedroom	8.33	84%	YES
Level 1	34	Bedroom	93%	YES		4	Bedroom	8.60	81%	YES
	35	Bedroom	63%	YES		5	Bedroom	8.51	63%	YES
	36	Bedroom	52%	YES		6	Bedroom	8.94	56%	YES
	37	Bedroom	100%	YES						
	38	Living Room	100%	YES						



Level 0



Level 1



Figure 1, Planning Application, Internal Daylight Analysis results, Block A

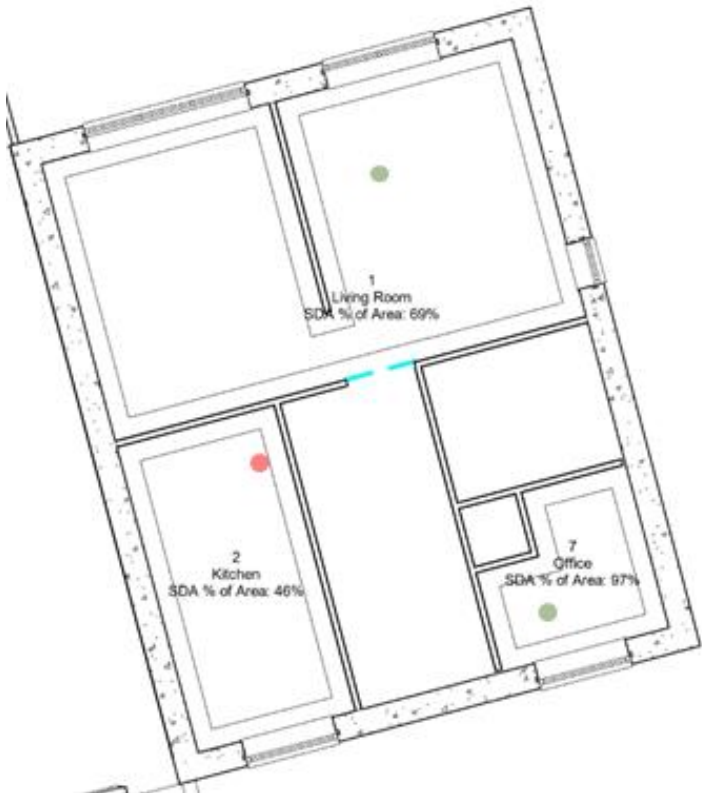


Figure 2, Post Planning Amendment, Internal Daylight Analysis results, house type C, Block A

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3 Sun on the Ground Analysis

A sun-on-the-ground analysis was conducted for the revised proposed scheme on March 21. An additional test was also conducted on June 21 to assess sunlight conditions in the summer period when people typically spend more time outdoors and are more likely to use these spaces.

To align with BRE recommendations, at least 50% of amenity space area should receive direct sunlight for two hours or more on March 21 (Spring Equinox).

The figures below illustrate the sun-on-the-ground results for both the revised scheme and the originally submitted scheme. The results reveal that the reduction of building heights, coupled with the lengthening and widening of gardens, has led to a substantial improvement in sunlight access to the proposed private amenity gardens in the north. Approximately 35.2% of the area now receives at least 2 hours of sunlight on March 21, compared to just 13.2% in the initially submitted planning application scheme. However, it's important to note that sunlight levels still fall short of meeting the BRE criteria for March. On June 21, there is also an improvement in sunlight levels for the private amenity gardens. It's worth noting that these spaces receive adequate sunlight during the summer, which compensates for the reduced sunlight on March 21.

Furthermore, with regards to the eastern terrace results, there is an enhancement in sunlight levels when compared to the submitted planning scheme. Specifically, on March 21, the average lit area was 38.9%, whereas the revised scheme achieves an average lit area of 55.7%, thereby meeting the BRE criteria for March 21. There is also an improvement in the sunlight levels of the eastern gardens on June 21 compared to the submitted scheme.

In summary, there have been significant improvements in the amount of sunlight available on the ground for the external amenity spaces in the revised scheme.



Figure 3, Revised scheme, Sunlight on the ground - 21 March, the areas marked in yellow are indicating the area which is sunlit on the 21st of March

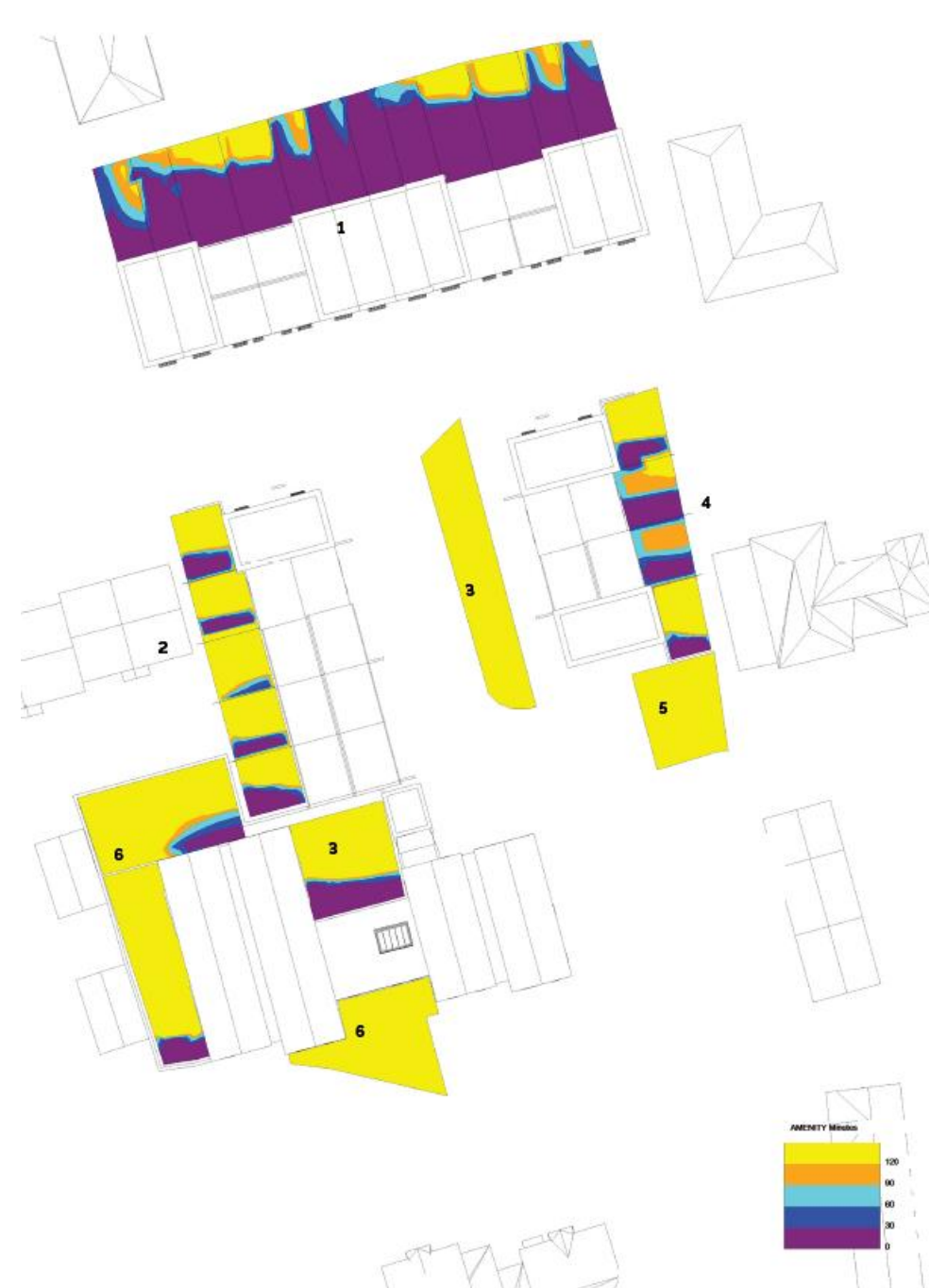


Figure 4, Planning Application scheme - Sunlight on the ground - 21 March, the areas marked in yellow are indicating the area which is sunlit the 21st of March

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Table 2, Sunlight on the ground - March & June 21st- Revised Scheme

Facade Name	Facade Area	Lit Area Proposed Area with at least 2 hours of sun (%)	Lit Area Proposed % with at least 2 hours of sun (%) 21 March	Meet criteria on 21 March	Criteria 50% of the lit area proposed should receive at least 2 hours of sunlight	Facade Name	Facade Area	Lit Area Proposed Area with at least 2 hours of sun (%)	Lit Area Proposed % with at least 2 hours of sun (%) 21 June	Meet criteria on 21 June	Criteria 50% of the lit area proposed should receive at least 2 hours of sunlight
A1	71.139842	30.827265	43.33%	NO	50%	A1	71.139842	68.768514	96.67%	YES	Not required
A2	57.374591	18.359869	32.00%	NO		A2	57.374591	51.637132	90.00%	YES	
A3	58.041161	18.573171	32.00%	NO		A3	58.041161	52.237044	90.00%	YES	
A4	58.811431	18.095825	30.77%	NO		A4	58.811431	50.894507	86.54%	YES	
A5	59.584822	18.417127	30.91%	NO		A5	59.584822	50.917939	85.45%	YES	
A6	60.080585	20.755111	34.55%	NO		A6	60.080585	52.433965	87.27%	YES	
A7	60.280111	17.536032	29.09%	NO		A7	60.280111	50.416093	83.64%	YES	
A8	60.400971	19.767591	32.73%	NO		A8	60.400971	52.713575	87.27%	YES	
A9	59.280077	18.322933	30.91%	NO		A9	59.280077	50.65752	85.45%	YES	
A10	100.744955	47.087316	46.74%	NO		A10	100.744955	97.459794	96.74%	YES	
A1 Average	645.738546	227.514099	35.23%	NO		A1 Average	645.738546	227.514099	35.23%	YES	
A11	82.70616	63.861719	77.22%	YES		A11	82.70616	82.70616	100.00%	YES	
A12	65.912409	45.903285	69.64%	YES		A12	65.912409	65.912409	100.00%	YES	
A13	51.455341	21.86852	42.50%	NO		A13	51.455341	48.882574	95.00%	YES	
A14	51.355202	20.328101	39.58%	NO		A14	51.355202	42.796002	83.33%	YES	
A15	65.088014	42.250114	64.91%	YES		A15	65.088014	62.804224	96.49%	YES	
A2 Average	233.810967	130.282728	55.72%	YES		A2 Average	233.810967	130.282728	55.72%	YES	
A16	71.31622	71.31622	100.00%	YES		A16	71.31622	71.31622	100.00%	YES	
A17	59.042505	36.148473	61.22%	YES		A17	59.042505	53.01776	89.80%	YES	
A18	52.591086	29.582486	56.25%	YES		A18	52.591086	43.825905	83.33%	YES	
A19	52.677399	29.631037	56.25%	YES		A19	52.677399	48.287616	91.67%	YES	
A20	52.662802	30.719968	58.33%	YES		A20	52.662802	49.371377	93.75%	YES	
A21	55.112264	22.963443	41.67%	NO		A21	55.112264	51.667747	93.75%	YES	
A3 Average	272.086056	149.026388	54.77%	YES		A3 Average	272.086056	149.026388	54.77%	YES	



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A22	115.60384	75.901511	65.66%	YES
A23	227.116108	197.580829	87.00%	YES
A24	108.728845	108.728845	100.00%	YES
A25	39.490066	39.490066	100.00%	YES
A26	33.90548	33.90548	100.00%	YES
A27	19.995383	19.995383	100.00%	YES
A28	16.61219	16.61219	100.00%	YES
A29	14.380691	14.380691	100.00%	YES
Average	2024.443148	1271.136023	62%	YES

A22	115.60384	110.932977	95.96%	YES
A23	227.116108	227.116108	100.00%	YES
A24	108.728845	108.728845	100.00%	YES
A25	39.490066	39.490066	100.00%	YES
A26	33.90548	33.90548	100.00%	YES
A27	19.995383	19.995383	100.00%	YES
A28	16.61219	16.61219	100.00%	YES
A29	14.380691	14.380691	100.00%	YES

Table 3,Sunlight on the ground - March & June 21st – Planning Application scheme

Facade Name	Facade Area	Lit Area Proposed with at least 2 hours of sun (%)	Lit Area Proposed % with at least 2 hours of sun (%) 21 March	Meet criteria on 21 March	Criteria 50% of the lit area proposed should receive at least 2 hours of sunlight	Facade Name	Facade Area	Lit Area Proposed Area with at least 2 hours of sun (%)	Lit Area Proposed % with at least 2 hours of sun (%) 21 June	Meet criteria on 21 June	Criteria 50% of the lit area proposed should receive at least 2 hours of sunlight
1	560.25	73.9	13.19%	No	50%	1	560.25	416.44	74.33%	Yes	Not required
2	182.33	116.29	63.78%	Yes		2	182.33	169.51	92.97%	Yes	
3	231.92	199.22	85.90%	Yes		3	231.92	226.97	97.86%	Yes	
4	144.42	56.16	38.89%	No		4	144.42	127.37	88.19%	Yes	
5	186.37	186.37	100.00%	Yes		5	186.37	186.37	100.00%	Yes	
6	242.89	205.68	84.68%	Yes		6	242.89	239.79	98.72%	Yes	
Average			64.41%	Yes							



Figure 5, Revised scheme, Sunlight on the ground - 21 June, the areas marked in yellow are indicating the area which is sunlit the 21st of June

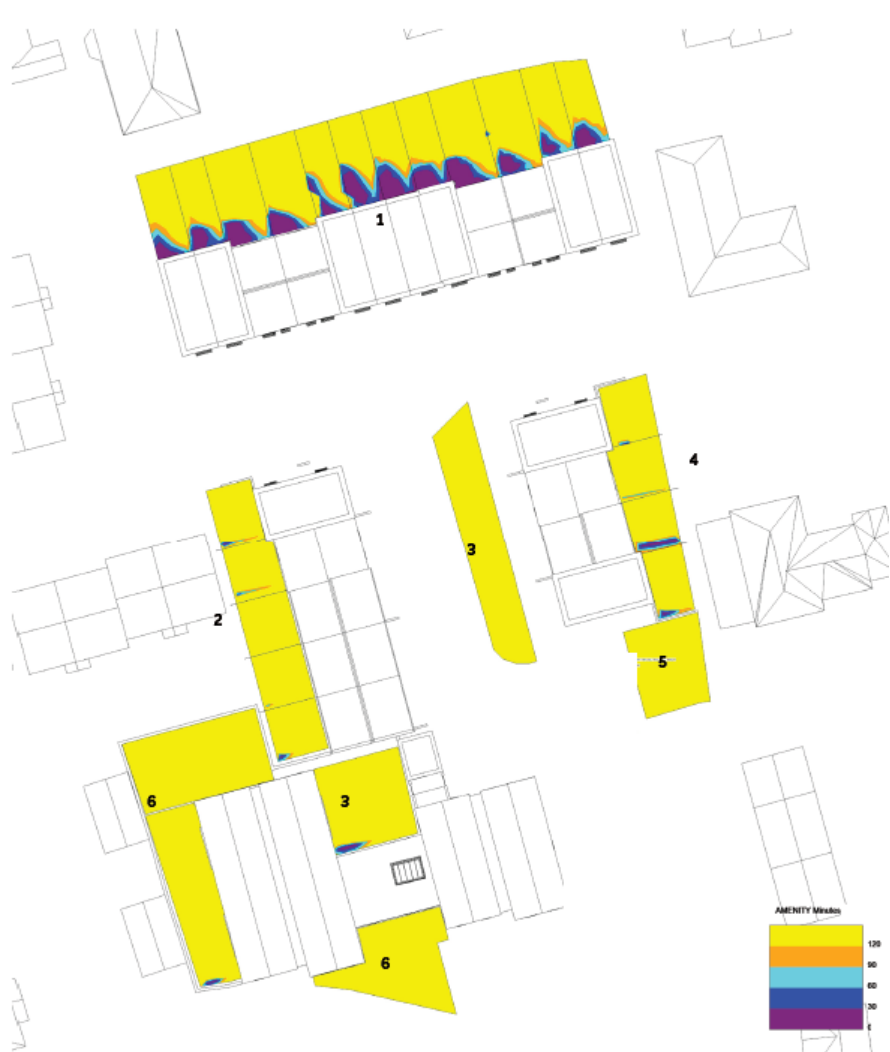


Figure 6, Planning Application scheme - Sunlight on the ground - 21 June, the areas marked in yellow are indicating the area which is sunlit the 21st of June

4. Conclusion

Proposed Building Assessment

The detailed internal daylight analysis demonstrates that the majority of rooms in Block C comply with recommended daylight levels, achieving a commendable 86% compliance rate based on BRE criteria. In comparison to the initial planning application, the revised scheme shows marked improvement in Ground Floor daylight levels. However, at Level 1, SDA levels are slightly diminished due to the updated scheme's east-facing orientation toward an existing structure, a change that was anticipated for the worst-case scenario house type. Importantly, it is anticipated that when testing Level 1 of the exact same unit from the planning application, the daylight results will either remain consistent or possibly improve. To sum up, the analysis assures that the habitable spaces within Block C will enjoy adequate daylight, with a notably enhanced ground floor level in contrast to the initial planning application.

Sun on the Ground

The results show improvement in the access to sunlight, especially in the northern private gardens and the eastern terrace.

Notably, the reduction in building heights and the expansion of garden areas have significantly increased the percentage of areas receiving two or more hours of sunlight on March 21. While the northern gardens not yet meeting the full BRE criteria for March, these improvements compensate with adequate sunlight levels on June 21, when outdoor spaces are more extensively utilized. More specifically, Table 2, revised scheme in comparison with the Table 3 former planning submission, the amendments shows that the northern gardens have improved sun on the ground levels from 13.19% to 35.23% and the eastern gardens have improved from 38.89% to 55.72% which now complies with BRE criteria.

Overall, the sun on the ground results of the revised scheme achieves a better rate of satisfaction with the BRE criteria, especially for the northern and eastern amenity spaces.