

East Lancashire Paper Mill, Radcliffe

Daylight, Sunlight and Overshadowing Risk Assessment



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PRESENTED TO

Morris Homes

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EXECUTIVE SUMMARY

Tetra Tech Limited were commissioned by Morris Homes to undertake a Daylight, Sunlight and Overshadowing Risk Assessment to support the planning application for the proposed development at East Lancashire Paper Mill, Radcliff, Manchester M26 9PG.

The updated Building Research Establishment Guidance (A Guide to Good Practice - 2022) and BS 17037:2018 (Daylight in Buildings) were used to consider and assess potential impacts and determine the significance of any change in access to daylight, sunlight and overshadowing.

For the purposes of this risk assessment, the main focus has been to consider the potential impact of the proposed development in terms of overshadowing of existing amenity areas. Further consideration has been given to the level of risk of changes to daylight/sunlight levels at surrounding residential buildings.

Overshadowing

The overshadowing analysis results demonstrate that all worst-case existing amenity areas assessed will meet the BRE criteria for overshadowing of amenity areas, with the exception of 1 small garden/yard area at the rear of 110 Cross Lane which is marginally below the assessment criteria, achieving a ratio of 0.76 (76%) which is not considered to be a significant effect.

As such, the assessment demonstrates that there will be no significant impact on surrounding amenity areas in terms of overshadowing as a result of the proposed development.

Daylight & Sunlight

A 25 degree rule risk assessment has determined that there is low risk of adverse impacts at surrounding residential properties, and as such, no further detailed modelling and assessment has been undertaken.

Overall, the assessment demonstrates that there is a low risk of adverse impacts in terms of daylight, sunlight and overshadowing on surrounding receptor locations as a result of the proposed development.

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ACRONYMS/ABBREVIATIONS/DEFINITIONS

Acronyms/Abbreviations	Definition
3D	3-Dimensional
BRE	Building Research Establishment
CIE	International commission on Illumination
GMT	Greenwich Mean Time
Lux	SI unit of illuminance
m	Meter
NGR	National Grid Reference
VSC	Vertical Sky Component
NSL	No Sky Line
DF	Daylight Factor
DI	Daylight Illuminance
SE	Sunlight Exposure
APSH	Annual Probable Sunlight Hours
WPSH	Winter Probable Sunlight Hours

Term	Definition
CIE Overcast Sky Luminance Distribution	CIE adopted representation of the diffuse light from a completely overcast sky
Daylight	Visible part of global solar radiation consisting of both sunlight and skylight
Daylight Factor	Ratio of illuminance at a point on a given plane due to light received from a sky of known or assumed luminance distribution, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky
Design Sky Luminance	Total amount of illuminance over the sky dome latitude dependent
Illuminance	Total luminous flux incident on a surface per unit area
Luminous Flux	Measure of perceived power of light
Solar Altitude	The angular height of the sun measured from the horizon
Solar Azimuth	Angle between the line from the observer to the sun projected on the ground and the line from the observer due south
Skylight	That part of the light from the sun that reaches Earth's surface as a result of scattering in the atmosphere
Solstice	Date (twice each year) where the sun reaches its maximum or minimum declination, marked by the longest and shortest days (about 21 June for summer and 22 December for winter).
Sunlight	The part of the light from the sun that reaches Earth's surface as parallel rays after selective attenuation by the atmosphere

1.0 INTRODUCTION

Tetra Tech Limited were commissioned by Morris Homes to undertake a Daylight, Sunlight and Overshadowing Risk Assessment to support the planning application for the proposed development at East Lancashire Paper Mill, Radcliff, Manchester M26 9PG.

The proposed scheme is for a residential development at the site.

The proposed development is bound to the north by residential properties along Cross Lane, to the east by residential properties along Bury Street, to the south by the River Irwell and open land, and to the west by the River Irwell, residential properties and a waste recycling facility.

Reference should be made to

Figure 1-1 for the site layout and

Figure 1-2 for the site location.

Figure 1-1. Site Layout



Figure 1-2. Site Location



Google Maps 2023

1.1 ASSESSMENT OVERVIEW

For the purposes of this risk assessment, the main focus has been to consider the potential impact of the proposed development in terms of overshadowing of existing amenity areas. Further consideration has been given to the level of risk of changes to daylight/sunlight levels at surrounding residential buildings.

Potential impacts have been considered and assessed in accordance with BRE Guidance (Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice) and BS EN 17037:2018 (Daylight in buildings). The assessment methodology and results are detailed in the following sections.

2.0 POLICY, LEGISLATION AND RELEVANT AGENCIES

2.1 DOCUMENTS CONSULTED

The following documents were consulted during the undertaking of this assessment:

- Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice, BRE, 2022;
- BS EN 17037: 2018 – Daylight in Buildings, British Standards Institute, 2019;
- National Planning Policy Framework, Ministry for Housing, Communities and Local Government, July 2021;
- National Planning Practice Guidance on Light Pollution, Ministry for Housing, Communities and Local Government, November 2019;
- Housing Supplementary Planning Guidance (Adopted March 2016), Mayor of London;
- Adopted Bury Unitary Development Plan

BRE (2022) Site Layout for Planning and Guidance

The BRE document ‘Site Layout Planning for Daylight and Sunlight: a guide to good practice’ is the standard for assessing developments for access to daylight and sunlight and contains the assessment methodology adopted in this report. However, in Section 1.6 it states that:

“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 flexible since natural lighting is only one of many factors in site layout design”.

The BRE guidance is used to complement BS EN 17037: 2018, “Daylight in Buildings”, which states that:

“This standard encourages building designers to assess and ensure successfully daylight spaces. It also allows building designers and developers to target ambitions with respect to daylighting, as well as addressing other issues related to daylight design, such as view out, protection against glare, and exposure to sunlight.”

Based on the above guidance, the results contained within the following sections of this technical assessment should not be viewed as absolute as the guideline values are not achievable in all circumstances might be necessary or desirable. Within cities or urban centres adjoining the strategic transport network, a compromise between internal access to daylight and other factors, such as the convenience of living in these locations or making efficient use of land resources can be made.

2.2 PLANNING GUIDANCE

2.2.1 National Policy

The National Planning Policy Framework (NPPF) provides some guidance in regard to access to daylight and sunlight when considering new buildings, as follows.

Paragraph 125

“Area-based character assessments, design guides and codes and masterplans can be used to help ensure that land is used efficiently while also creating beautiful and sustainable places. Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies 37 and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances:

C) local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards).” (NPPF (2021) – Para 125)

2.2.2 Local Policy

The Adopted Bury Unitary Development Plan has been reviewed for policies related to daylight, sunlight and overshadowing. The following policies were deemed relevant to this assessment:

“EN1/2 - Townscape and Built Design

The Council will give favourable consideration to proposals which do not have an unacceptable adverse effect on the particular character and townscape of the Borough's towns, villages and other settlements. Factors to be considered when assessing proposals will include:

- *the external appearance and design of the proposal in relation to its height, scale, density and layout;*
- *the relationship of the proposal to the surrounding area;*
- *the choice and use of materials;*
- *access and other design features for the mobility impaired;*
- *the design and appearance of access, parking and service provision;*
- *landscaping, including the use of natural landscape features, and open space provision;*
- *the use of lighting.”*

3.0 METHODOLOGY

Predictions are necessary when forecasting future impacts. Good practice methods are used throughout this assessment to ensure that these predictions are as accurate as possible.

Impacts of the proposed scheme on daylight, sunlight and overshadowing have been considered with reference to the baseline environment and the following guidance:

- Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice, BRE, 2022; and,
- BS EN 17037: 2018 – Daylight in buildings, British Standards Institute, 2019.

For the purposes of this risk assessment, the main focus has been to consider the potential impact of the proposed development in terms of overshadowing of existing amenity areas. Further consideration has been given to the level of risk of changes to daylight/sunlight levels at surrounding residential buildings.

Modelling was undertaken using Waldrum Tools software, an independent lighting model which is capable of calculating daylight and artificial lighting scenes in interior and exterior scenarios.

3.1 OVERSHADOWING

The BRE Guidance recommends the following for garden and amenity areas:

“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 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area that can receive two hours of sun on 21 March is less than 0.80 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.”

As such, the assessment the impact of the proposed development with respect to existing gardens and amenity areas adjoining the proposed site boundary.

3.2 DAYLIGHT AND SUNLIGHT

The BRE guidance outlines a number of different methods to assess the potential for daylight and sunlight to enter rooms within dwellings. In order to determine which existing surrounding dwellings require assessment a high level risk assessment can be undertaken which is based on proximity of the surrounding buildings and height/massing of the proposed development buildings.

A rule of thumb test can be undertaken based on the 25 degree rule, whereby a line from the centre of a ground floor window of an existing dwelling facing the proposed development is drawn towards the development. If this line does not intersect with the proposed development then it is determined that there will not be adverse effects on daylight and sunlight on those building as a result of the development.

The risk assessment has determined that there is low risk of adverse impacts at surrounding residential properties, and as such, no further detailed modelling and assessment has been undertaken.

4.0 IDENTIFICATION OF IMPACTS

Potential direct impacts on the proposed development for the access to daylight include reduction in the quality of sunlight available in existing amenity areas. These identified effects were assessed in accordance with the previously stated methodology and the results summarised in the following sections.

4.1 MODEL

This assessment was undertaken using Waldrum Tools for AutoCAD Software, a building analysis program which uses the analysis methods outlined within BRE Guidance. A model was produced based upon the block plans and elevations of the proposals provided by Morris Homes.

Detailed modelling for the surrounding buildings was developed using a combination of existing 3D modelling of the area and 3D satellite imagery. An image of the modelling used for the overshadowing assessment in **Figure 4-1**, below.

Figure 4-1. Overshadowing Assessment Model

4.2 OVERSHADOWING ASSESSMENT

Existing Amenity Areas

The assessment has considered the effects on the existing residential gardens and amenity areas located around the proposed development in regard to overshadowing. The assessment analyses the impact of overshadowing as a result of the proposed development. The amenity areas tested are those which are worst-case, located in closest proximity to the proposed development buildings including the taller apartment blocks. The results of the overshadowing analysis are shown in **Table 4-1**, below.

Reference should be made to for a visual representation of the shadowing effects of the proposed development on 21st March between the hours of 07:00 and 18:00.

The overshadowing analysis results demonstrate that all worst-case existing amenity areas assessed will meet the BRE criteria for overshadowing of amenity areas, with the exception of 1 small garden/yard area at the rear of 110 Cross Lane which is marginally below the assessment criteria, achieving a ratio of 0.76 (76%) which is not considered to be a significant effect. As such, the assessment demonstrates that there will be no significant impact on surrounding amenity areas in terms of overshadowing as a result of the proposed development.

Table 4-1. Overshadowing Analysis Results

Floor Ref	Amenity Ref	Amenity Area		Lit Area Existing	Lit Area Proposed	Pr/Ex	Meets BRE Criteria
Ground	11 Brook St	Area m2	34.99	5.94	5.88	0.99	YES
		Percentage		17%	17%		
Ground	25 Brook St	Area m2	34.68	6.58	6.56	1.00	YES
		Percentage		19%	19%		
Ground	16 Cock Clod St	Area m2	76.14	65.04	65.03	1.00	YES
		Percentage		85%	85%		
Ground	64 Cross Ln	Area m2	18.16	3.56	3.53	0.99	YES
		Percentage		20%	19%		
Ground	66 Cross Ln	Area m2	16.32	6.75	6.73	1.00	YES
		Percentage		41%	41%		
Ground	68 Cross Ln	Area m2	15.58	4.19	4.16	0.99	YES
		Percentage		27%	27%		
Ground	70 Cross Ln	Area m2	8.57	0.02	0.01	0.93	YES
		Percentage		0%	0%		
Ground	72 Cross Ln	Area m2	16.10	4.01	3.99	0.99	YES
		Percentage		25%	25%		
Ground	74 Cross Ln	Area m2	27.86	16.51	16.47	1.00	YES
		Percentage		59%	59%		
Ground	76 Cross Ln	Area m2	20.12	9.40	9.37	1.00	YES
		Percentage		47%	47%		

Ground	78 Cross Ln	Area m2	16.91	5.01	5.00	1.00	YES
		Percentage		30%	30%		
Ground	80 Cross Ln	Area m2	28.81	17.43	17.42	1.00	YES
		Percentage		61%	60%		
Ground	82 Cross Ln	Area m2	27.84	17.06	17.05	1.00	YES
		Percentage		61%	61%		
Ground	84 Cross Ln	Area m2	29.79	18.97	18.92	1.00	YES
		Percentage		64%	63%		
Ground	86 Cross Ln	Area m2	29.16	18.13	18.12	1.00	YES
		Percentage		62%	62%		
Ground	90 Cross Ln	Area m2	20.97	7.54	7.51	1.00	YES
		Percentage		36%	36%		
Ground	92 Cross Ln	Area m2	20.89	10.17	10.16	1.00	YES
		Percentage		49%	49%		
Ground	94 Cross Ln	Area m2	22.28	11.61	11.61	1.00	YES
		Percentage		52%	52%		
Ground	96 Cross Ln	Area m2	22.91	11.40	11.40	1.00	YES
		Percentage		50%	50%		
Ground	98 Cross Ln	Area m2	13.57	0.03	0.03	1.00	YES
		Percentage		0%	0%		
Ground	100 Cross Ln	Area m2	23.42	10.95	10.95	1.00	YES
		Percentage		47%	47%		
Ground	102 Cross Ln	Area m2	23.80	13.22	13.21	1.00	YES
		Percentage		56%	56%		
Ground	104 Cross Ln	Area m2	32.64	22.28	22.28	1.00	YES
		Percentage		68%	68%		
Ground	106 Cross Ln	Area m2	33.68	22.68	22.66	1.00	YES
		Percentage		67%	67%		
Ground	108 Cross Ln	Area m2	24.53	12.48	11.83	0.95	YES
		Percentage		51%	48%		
Ground	110 Cross Ln	Area m2	19.76	8.71	6.62	0.76	NO
		Percentage		44%	33%		
Ground	112 Cross Ln	Area m2	34.87	23.20	20.01	0.86	YES
		Percentage		67%	57%		
Ground	114 Cross Ln	Area m2	24.81	14.07	14.07	1.00	YES
		Percentage		57%	57%		

Ground	116 Cross Ln	Area m2	57.57	46.34	46.31	1.00	YES
		Percentage		80%	80%		
Ground	118 Cross Ln	Area m2	48.89	37.63	37.63	1.00	YES
		Percentage		77%	77%		
Ground	120 Cross Ln	Area m2	54.52	42.86	42.86	1.00	YES
		Percentage		79%	79%		
Ground	122 Cross Ln	Area m2	55.38	44.66	44.66	1.00	YES
		Percentage		81%	81%		
Ground	2 Bury St	Area m2	130.80	101.34	99.82	0.99	YES
		Percentage		77%	76%		
Ground	4 Bury St	Area m2	65.65	47.72	46.19	0.97	YES
		Percentage		73%	70%		
Ground	6 Bury St	Area m2	62.70	33.41	32.40	0.97	YES
		Percentage		53%	52%		
Ground	8 Bury St	Area m2	53.02	26.05	26.04	1.00	YES
		Percentage		49%	49%		
Ground	10 Bury St	Area m2	58.49	41.20	41.20	1.00	YES
		Percentage		70%	70%		
Ground	12 Bury St	Area m2	33.44	11.77	11.76	1.00	YES
		Percentage		35%	35%		
Ground	14 Bury St	Area m2	37.15	15.20	15.20	1.00	YES
		Percentage		41%	41%		
Ground	16 Bury St	Area m2	53.75	39.97	39.85	1.00	YES
		Percentage		74%	74%		
Ground	18 Bury St	Area m2	188.70	172.44	168.10	0.97	YES
		Percentage		91%	89%		
Ground	28 Bury St	Area m2	45.63	32.20	31.00	0.96	YES
		Percentage		71%	68%		
Ground	30 Bury St	Area m2	45.94	32.26	31.82	0.99	YES
		Percentage		70%	69%		

Figure 4-2. Overshadowing Analysis Results – Cross Lane

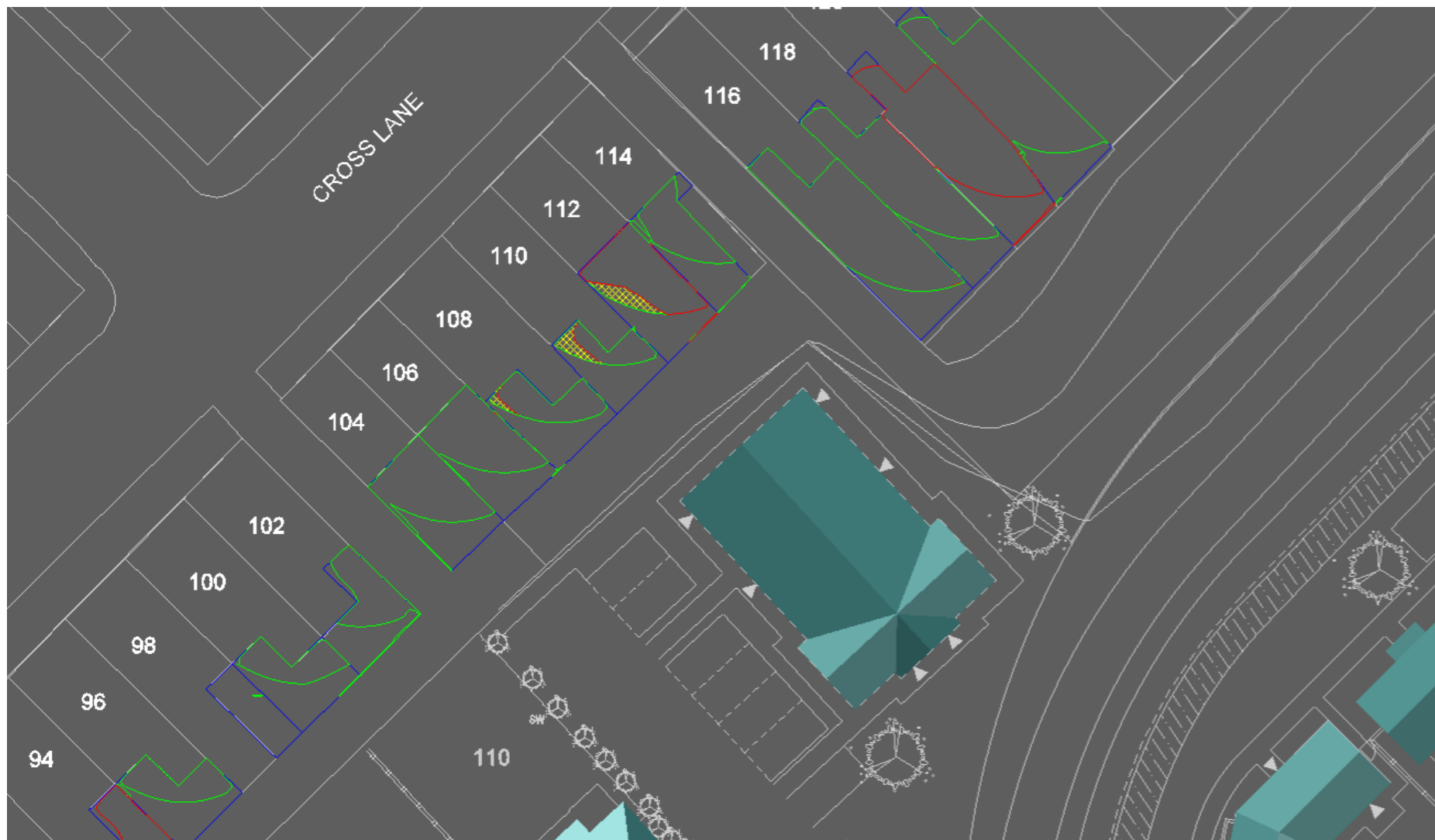
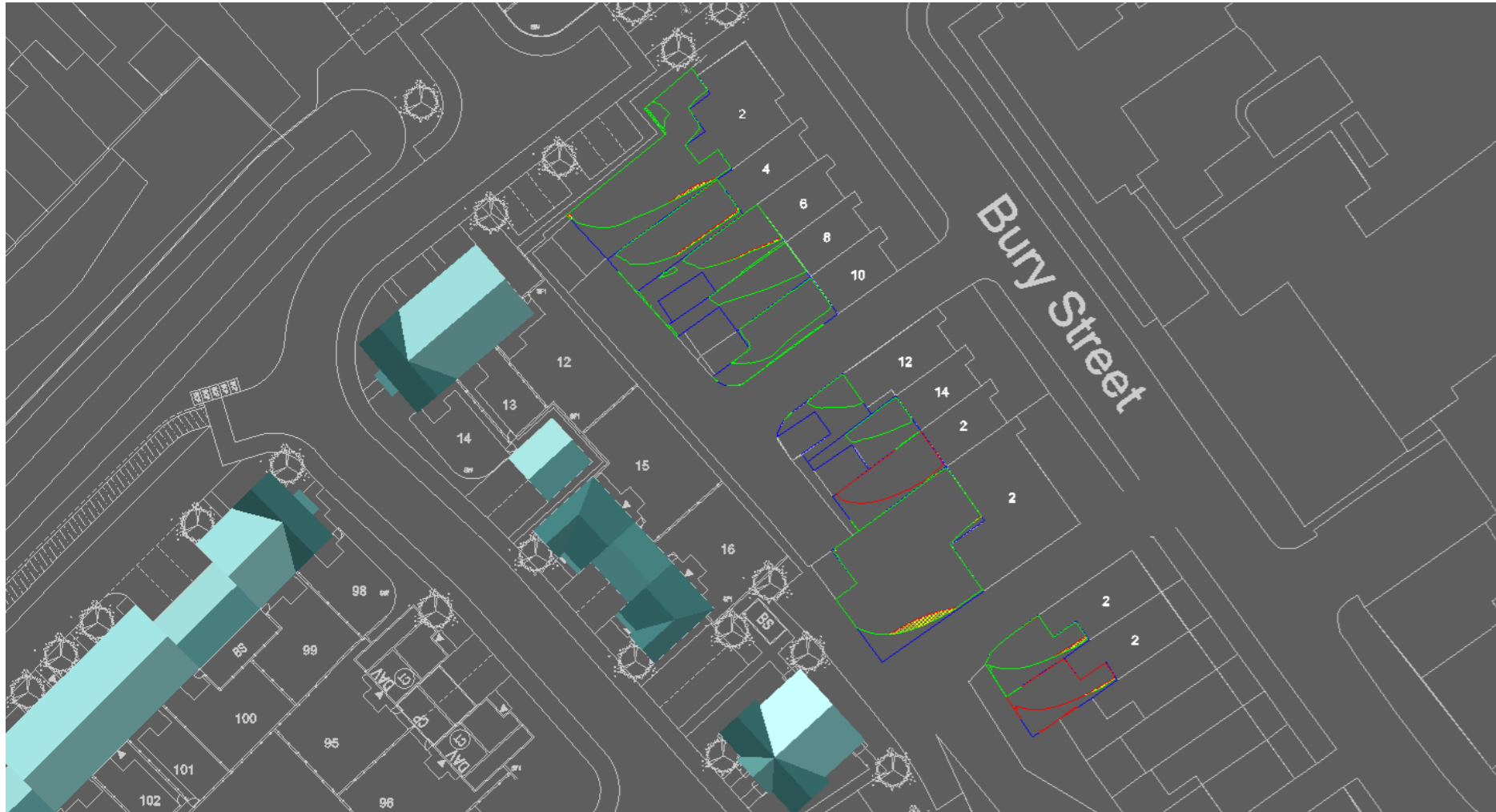


Figure 4-3. Overshadowing Analysis Results – Bury Street



5.0 CONCLUSIONS

Tetra Tech Limited were commissioned by Morris Homes to undertake a Daylight, Sunlight and Overshadowing Risk Assessment to support the planning application for the proposed development at East Lancashire Paper Mill, Radcliff, Manchester M26 9PG.

The updated Building Research Establishment Guidance (A Guide to Good Practice – 2022) and BS 17037:2018 (Daylight in Buildings) were used to consider and assess potential impacts and determine the significance of any change in access to daylight, sunlight and overshadowing.

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The overshadowing analysis results demonstrate that all worst-case existing amenity areas assessed will meet the BRE criteria for overshadowing of amenity areas, with the exception of 1 small garden/yard area at the rear of 110 Cross Lane which is marginally below the assessment criteria, achieving a ratio of 0.76 (76%) which is not considered to be a significant effect.

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Daylight & Sunlight

A 25 degree rule risk assessment has determined that there is low risk of adverse impacts at surrounding residential properties, and as such, no further detailed modelling and assessment has been undertaken.

Overall, the assessment demonstrates that there is a low risk of adverse impacts in terms of daylight, sunlight and overshadowing on surrounding receptor locations as a result of the proposed development.

APPENDIX A REPORT CONDITIONS

This Report has been prepared using reasonable skill and care for the sole benefit of Morris Homes (“the Client”) for the proposed uses stated in the report by [Tetra Tech Limited Limited]. Tetra Tech Limited exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder’s permission.

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The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech Limited accept no liability for issues with performance arising from such factors.