NBRSARCHITECTURE50

Materials Reflectance Review

North Kellyville Public School
Hezlett Road, Kellyville
NSW 2155

Project No 17447

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2.0 INTRODUCTION

2.1 GENERAL

NBRS Architecture have been requested by Adco Constructions to review the reflectivity of the façade of North Kellyville Public School and assess whether any parts of the façade would result in glare that could cause any discomfort or threaten the safety of pedestrians or drivers.

The report is based on the drawings and specification prepared by NBRS Architecture.

2.2 SITE DETAILS

The site is at Hezlett Road, Kellyville, NSW 2155. It is located within the Hills Shire Council area.

2.3 BUILDING DETAILS

The school comprises a two storey building which is rectangular in shape. It is 113.750m long and 57.050m wide. The building varies in height due to the slope of the ground, being between 9.9m high on the eastern side and 11.9m high on the western side.

3.0 EXTERNAL MATERIALS REFLECTIVITY

3.1 OBJECTIVES

The objective of reviewing the reflectivity is to identify any adverse effects of glare reflected from the sun on the external façade materials of the building to pedestrians or drivers.

3.2 IMPACT ON SPECIFIC SURROUNDING FUNCTIONS.

The site is located in an existing residential area and abuts three roads. The main road is Hezlett Road to the east. Along this road the building is set back 15.9m. The ground floor of the building is at approximately at the same level as the road, and the façade is 9.9m high. Holloway Boulevard is located to the West, with the school playing fields located between the building and road, resulting in a setback of around 161m. The road is well below the level of the building. To the north is Thorogood Boulevard. This has a turning circle to allow service access and waste collection to be carried out. It is also located below the level of the building. The building is around 38m from this boundary and around 15m from the turning circle.

Due to the large setback and difference in height between the building and roadway it is considered that the building will have no impact on Holloway Boulevard.

The only façades which could have any impact on pedestrians or drivers are the façades along Hezlett Road and Thorogood Boulevard. The Hezlett Road façade is parallel to the roadway, and therefore could only be viewed from an acute angle. In addition it is set well back from the road and screened by vegetation. The Thorogood Boulevard façade could have a minimal impact on a small part of the turning circle for a short period of the year, however this is also screened by vegetation. These facades are therefore not considered to have an impact as described in further detail in section 3.1.4.

3.3 SELECTED EXTERNAL MATERIALS

The following table sets out the various materials that have been selected for the external faces of the façade and the associated reflectivity.

Material Description	Colour	Description	Reflectivity	Comments
METAL CLADDING (MC1)	Colorbond 'Surfmist'	Vertical cladding to half of façade in bands	68%	Estimated based on 0.32 Solar Absorbance
METAL CLADDING (MC2)	Colorbond 'Windspray'	Vertical cladding to half of façade in bands	42%	Estimated based on 0.58 Solar Absorbance
METAL CLADDING (MC2)	Colorbond 'Windspray'	Horizontal cladding under windows	27%	Estimated based on 0.73 Solar Absorbance
VERTICAL SUN BLADES	Powder coated, various colours	To East, West and South		Limited impact due to relatively small area
HORIZONTAL SUN BLADES	Powder coated, various colours	To North		Limited impact due to relatively small area
BLOCKWORK BLK1	Austral 'Almond'	Walls at lower level		Limited impact due to rough surface texture
ALUMINIUM WINDOWS and DOORS	Clear Natural Anodised Aluminium frames	Sliding, louvres and fixed panel composition.		Limited impact due to small area
EXTERNAL GLAZING GENERALLY	Clear	Single glazed to meet JV3 report complying to BCA Section J requirements.		
HANDRAILS and BALUSTRADING	Galvanized steel			Limited impact due to small area and rough surface
FENCING	Powdercoated 'black'			Limited impact due to small area and dark colour

3.4 REFLECTANCE ASSESSMENT

There are a number of different materials and finishes to the various facades of the building as the table above. Following is an assessment of the various finishes addressed per element.

Walls

The predominant material used for the external walls is prefinished profiled metal cladding in three colours with a possible light reflectance of 68, 42 and 27%. The supplier (Bluescope) advise that they do not have any data on the products, and therefore this is an estimate only. It should be noted that the profiled nature of the material will significantly reduce the reflectance of light in one particular direction, and the reflectivity will decrease over time due to weathering and dirt build up on the facade. It is not considered that glare will be an issue from this material.

Other materials include blockwork, balustrading and fencing. The blockwork has a rough surface and will therefore have negligible reflectance. The balustrading and fencing comprise small areas and will therefore have minimal impact.

Windows

Windows occur on all facades of the building. On the lower level these are set back and the upper level windows are covered by sun shading. The windows are clear glass, with no reflective tint, and therefore will have minimal reflection. The frames have small surface area and will therefore have limited impact.

Effect on pedestrians and drivers

As can be seen from the above, there are a number of materials which could have a reflectivity of visible light exceeding 20%. Due to the large setback on the Holloway Boulevard facade, the only façades which could potentially cause issues for pedestrians or drivers are the façades facing Hezlett Road and Thorogood Boulevard.

The façade on Hezlett Road is set back 15.9 m from the boundary, (and therefore the building has a greater setback from the footpath and road). There is also vegetation planted along the boundary line. Due to the distance and screening, the façade would not cause any discomfort to pedestrians or drivers. Likewise Thorogood Boulevard is set back 38m, with only the turning circle being closer than this distance, which is still 15m from the building. Again, due to the distance and vegetation the façade would not cause any discomfort to pedestrians or drivers.

The other factor is to consider is whether there would be a possibility of glare reflected off the building threatening the safety of drivers or pedestrians. The façade to Hezlett Road is oriented NW/SE and would receive morning sun between around 8am and 11am for most of the year. The angle of sun would vary throughout the year, but it would be relatively low. However, as the façade is parallel to the road, the sun would not be reflected into the eyeline of passing pedestrians or drivers, and therefore not threaten the safety of pedestrians or drivers.

The façade facing Thorogood Boulevard is at right angles to the road, and therefore could have an impact on pedestrians or drivers. However the façade is oriented to the north, so the sun will be higher when it reaches this façade. When the sun is perpendicular to the façade in summer, reflection would not reach the turning circle. In winter, when the sun is perpendicular, the angle would be around 31 degrees. This would result in possible reflection from the highest part of the facade to a point approximately 8m into the turning circle, however due to the location of fences and vegetation it is unlikely that any glare would actually reach the roadway. It should be noted that any reflection would only occur within the turning circle, which is intended to be used by service vehicles traveling at low speed, and if it did reach the roadway would only occur for a limited time during the year. It is not expected that the area which could be affected by glare would be used by pedestrians as the gates to the school are located outside this area. Consequently it is not considered to be a hazard to pedestrians or drivers.

4.0 CONCLUSION

Based on the information provided in the preceding sections of this report it is considered that some parts of the façade may have a reflectivity exceeding 20%, however the reflectivity would not create glare that would cause discomfort or threaten the safety of pedestrians or drivers.

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