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Project/File:	310003425	Date:	21 February 2025

Reference: NZTA NOR SH 1 Rolleston Access Improvements - Package 1 Preliminary Lighting Design - Independent Peer Review Summary

In November 2024 Stantec was engaged by Selwyn District Council to carry out an independent peer review of a preliminary lighting design associated with the SH1 Rolleston Access Improvements project being undertaken by New Zealand Transport Agency. The project is being delivered in two packages however this memo summarises the external peer review of Package 1 only.

Package 1 includes the construction of a new roundabout at the intersection of SH1 and Dunns Crossing Road and associated works including the realignment of Dunns Crossing Road and Walkers Road to align with the new roundabout, construction of a new cycle/pedestrian subway across SH1 and an upgraded rail level crossing for vehicles and pedestrians.

The peer review was made against the requirements of AS/NZS 1158 (Lighting for roads and public spaces), NZTA M30 (Specification and Guidelines for Road Lighting Design) and AS/NZS 4282 (Control of the obtrusive effects of outdoor lighting).

The following lighting design documents were reviewed:

- Lighting Assessment Report - Package 1 - Roundabout and associated works (Rev 2)
- 3338703-10-CU-3500 - Lighting Drawing Key, Notes & Luminaire Schedule (Rev A)
- 3338703-10-CU-3511 - Lighting Layout Plans Sheet 1 of 5 (Rev A)
- 3338703-10-CU-3512 - Lighting Layout Plans Sheet 2 of 5 (Rev A)
- 3338703-10-CU-3513 - Lighting Layout Plans Sheet 3 of 5 (Rev A)
- 3338703-10-CU-3514 - Lighting Layout Plans Sheet 4 of 5 (Rev A)
- 3338703-10-CU-3515 - Lighting Layout Plans Sheet 5 of 5 (Rev A)
- 3338703-10-CU-3521 - Lighting Calculation Plans Sheet 1 of 5 (Rev A)

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- 3338703-10-CU-3522 - Lighting Calculation Plans Sheet 2 of 5 (Rev A)
- 3338703-10-CU-3523 - Lighting Calculation Plans Sheet 3 of 5 (Rev A)
- 3338703-10-CU-3524 - Lighting Calculation Plans Sheet 4 of 5 (Rev A)
- 3338703-10-CU-3525 - Lighting Calculation Plans Sheet 5 of 5 (Rev A)
- 3338703-10-CU-3531 - Spill Lighting Layout Sheet 1 of 5 (Rev A)
- 3338703-10-CU-3532 - Spill Lighting Layout Sheet 2 of 5 (Rev A)
- 3338703-10-CU-3533 - Spill Lighting Layout Sheet 3 of 5 (Rev A)
- 3338703-10-CU-3534 - Spill Lighting Layout Sheet 4 of 5 (Rev A)
- 3338703-10-CU-3535 - Spill Lighting Layout Sheet 5 of 5 (Rev A)

As a result of the peer review there were some minor issues around typos and missing property numbers (on the drawings) which have all been actioned, however there were some design issues raised which have been summarised in the following notes with designer responses (in ***bold italics***):

1. The preliminary design called for each luminaire to be fitted with a shorting cap, so that the lighting scheme will need to be externally controlled (normally from the electricity network company), whereas NZTA M30 requires a Central Management System (CMS) to be considered. ***The designer response stated that the lighting control system was reviewed and agreed to by NZTA.***
2. The luminance summary tables on drawings 3338703-10-CU-3521 and 3523 only presented calculation results for one roadway and luminaire mounting configuration, however there were various roadway layouts and luminaire mounting arrangements depicted on the drawings so it was not known what roadway configurations or mounting arrangements the calculation results were applicable to. ***The designer response stated that the luminance calculations applied to all lane configurations and represented the worst case.***
3. An incorrect illuminance calculation type (horizontal) was provided for the rail level crossing on drawing 3338703-10-CU-3522 as vertical illuminance calculations are required. It was also noted that the lighting pole locations were in breach of the no column zone (10m in each direction from the rail crossing boundaries). ***Designer response stated that the calculations and pole locations will be corrected during detailed design.***
4. The illuminance calculation summary table on drawing 3338703-10-CU-3522 only included the carriageway design areas of the intersections however AS/NZS 1158 requires illuminance calculations for all carriageway, surrounds and raised island design areas. ***The designer response stated the correct calculations will be provided during detailed design.***

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5. There was missing design information for two curves and no luminance calculations for two roads (Walkers Road and Dunns Crossing Road) on drawings 3338703-10-CU-3521 to 3224.
The designer response originally stated that these areas were out of scope but this was rejected as these areas were clearly shown on the drawings within the project extents. The second designer response stated that further refinement is expected during the design process.

As a suitably qualified and experienced independent design professional I believe on reasonable grounds that **the preliminary lighting design should be accepted**, as an indicator of the likely effects of the proposed lighting scheme, **conditional upon full design calculations being provided (and independently peer reviewed)** as part of the detailed design phase of the project.

At this time, the current level of design information provided does not demonstrate full compliance with the requirements of AS/NZS 1158 or NZTA M30 therefore my recommendation is that a further independent peer review should be completed as part of the detailed design acceptance process.

Yours sincerely

Stantec New Zealand



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