

Before a Board of Inquiry
MacKays to Peka Peka Expressway Proposal

under: the Resource Management Act 1991

in the matter of: Notice of requirement for designation and resource consent applications by the NZ Transport Agency for the MacKays to Peka Peka Expressway Proposal

applicant: **NZ Transport Agency**
Requiring Authority

Statement of rebuttal evidence of **Keith Gibson** (Lighting) for the NZ Transport Agency

Dated: 24 October 2012

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**STATEMENT OF REBUTTAL EVIDENCE OF KEITH GIBSON FOR THE
NZ TRANSPORT AGENCY**

- 1 My full name is Keith Murray Gibson.
- 2 I have the qualifications and experience set out at paragraphs 3 to 6 of my evidence in chief, dated 4 September 2012 (*EIC*).
- 3 I repeat the confirmation given in my EIC that I have read, and agree to comply with, the Code of Conduct for Expert Witnesses (Consolidated Practice Note 2011).
- 4 In this statement of rebuttal evidence, I respond to the evidence of:
- 4.1 **Mr N & Ms B Mountier**,¹ who raise concerns over the spread of impacts from artificial light due to the raised carriageway level at bridges, compared with naturally occurring ground level.²
- 4.2 **Ms L Pomare**,³ who raises concerns relating to spill light from walkway lighting and headlight sweep.⁴ Ms Pomare also expresses concern about construction lighting.⁵
- 4.3 **Dr Marie O’Sullivan**, who, on behalf of APSOC (Action to Protect and Sustain Our Communities),⁶ expresses concern about the impact of lighting pollution, and makes general statements relating to the effect of lighting on biological rhythms⁷. Dr O’Sullivan also comments on the likelihood of spill lighting.⁸
- 4.4 **C & M Dearden**,⁹ who raise concerns relating to light pollution, in particular what they perceive as the spread of light pollution from the Te Moana Road flyover.¹⁰
- 4.5 **I Munro**, who, on behalf of Kāpiti Coast District Council (*KCDC*) is concerned with the extent and quality of lighting for the walkway, in particular requiring a Crime Prevention Through Environmental Design (CPTED) approach and co-

¹ Submitter 327.

² Evidence of N & B Mountier, Fact 2.

³ Submitter 309.

⁴ Evidence of L Pomare, page 2 and paragraphs 34, 35 and 118.

⁵ Evidence of L Pomare, paragraph 109.

⁶ Submitter 677.

⁷ Evidence of Dr O’Sullivan, paragraphs 64 and 135 to 136.

⁸ Evidence of Dr O’Sullivan, Supplement C, paragraph 30.

⁹ Submitter 261.

¹⁰ Evidence of C & M Dearden, paragraphs 2.24 and 2.27.

ordination with landscaping so that night-time sight distances of at least 20m are maintained;¹¹ and seeks KCDC certification of the minimum design standards for the walkway including lighting standards.¹²

4.6 **Emily Thomson**, who, on behalf of KCDC, requests changes to conditions¹³ relating to the Network Integration Plan (condition DC.X3) which she states are recommended for the reasons set out in the evidence of Mr Munro.

5 The fact that this rebuttal statement may not respond to every matter raised in the evidence of submitter witnesses relating to lighting should not be taken as acceptance of the matters raised. Rather, I rely on my earlier technical report,¹⁴ my EIC and this rebuttal statement to set out my opinion on what I consider to be the key lighting matters for this hearing.

6 Consistent with my EIC, I have referred to the MacKays to Peka Peka Expressway Project as "the Project" in this rebuttal evidence.

EXECUTIVE SUMMARY

7 The majority of submitters who have commented on lighting in their evidence are concerned with the effects of spill light, from either the interchange lighting or the walkway lighting.

8 One submitter is also concerned with the effects of construction lighting and headlight sweep.

9 KCDC is concerned with the extent and co-ordination of walkway lighting for the Project, and suggests changes to the conditions of consent.

10 As noted in my EIC, lighting effects of the Project will be minimised by the use of carefully selected and placed luminaires.¹⁵ For the reasons set out below, the concerns raised and evidence lodged by submitters have not caused me to depart from the opinions expressed in my EIC, and I re-confirm the conclusions reached in my EIC.

EVIDENCE OF SUBMITTERS

Concerns about lighting effects

11 The issue of spill light from the Expressway and walkway lighting, is raised in particular by Ms Pomare and in general by N & B Mountier,

¹¹ Evidence of I.C.Munro, paragraph 10.4.

¹² Evidence of I.C.Munro, paragraph 10.7.

¹³ Evidence of E. Thomson, paragraph 9.36 and 9.37.

¹⁴ Technical Report 8.

¹⁵ My EIC, paragraph 59.

Dr O’Sullivan, and C & M Dearden. As noted in my EIC,¹⁶ I have assessed spill lighting effects in accordance with the District Plan requirements, which set a permitted level of spill light of 10 lux, measured at 1.5m within an adjoining boundary. I have also applied a light spill guide of 3 lux at the windows of residential properties.

- 12 These spill light levels will only be exceeded at a few specific locations where detailed design can ensure that the light is screened.¹⁷ I note that proposed condition DC.63 requires compliance with District Plan light spill requirements.
- 13 With regard to the issue of sky glow from the proposed Expressway raised by Ms Pomare and Dr O’Sullivan, I explained in my EIC¹⁸ that this effect will be minimal. I reiterate that the Road Lighting Standard (AS/NZS1158) applies under proposed condition DC.63 and that it requires minimisation of light projected into the night sky in accordance with the maximum specified Upward Waste Light Ratio. I also reiterate that most of the alignment will not be lit.
- 14 In relation to construction yard lighting raised by Ms Pomare, I have addressed construction yard lighting in my EIC¹⁹ and note in particular that construction yard lighting must also comply with the District Plan requirements. I consider the potential lighting effects from the construction phase of the Project will be minor.
- 15 On the issue of headlight sweep, my EIC²⁰ explains that landscaping profiles, noise mitigation measures and plantings will obscure and minimise headlight sweep.

KCDC suggested amendments

- 16 On the issue of the extent of lighting provided to the walkway, Mr Munro has requested that a CPTED study be included as a part of the design process, and that adequate levels of design co-ordination are carried out between lighting and landscaping design to achieve a suitable CPTED outcome. In particular, Mr Munro requests a night time visibility of at least 20m along the walkway.
- 17 As noted in my EIC,²¹ a careful balance is required between the need for illumination for safety, and the minimisation of light pollution. I consider this balance has been achieved in terms of lighting provision, and is covered by proposed condition DC.1(a)(ii)(8) which requires compliance with the proposed lighting design.

¹⁶ My EIC, paragraph 31.

¹⁷ My EIC, paragraphs 49-51 and 57-59.

¹⁸ My EIC, paragraphs 52-54.

¹⁹ My EIC, paragraphs 36-40.

²⁰ My EIC, paragraph 55.

²¹ My EIC, paragraph 48.

- 18 The requirement to minimise spill lighting in order to balance the effects of illumination on surrounding residents, may prevent significant lighting levels being provided to each side of the walkway. However, as a function of achieving a design that meets the design standards which are outlined in my EIC,²² and required under proposed condition DC.63, visibility of at least 20m for pedestrians using the lit walkway will be achieved. I do not consider that further controls are required.
- 19 I note that the extent of walkway lighting was determined in consultation with KCDC during the scheme design process for the Project. KCDC will continue to be included in discussions as part of the future design process.
- 20 I note that proposed condition DC.57(i) requires consideration of CPTED principles in urban areas during the preparation of the Landscape Management Plan. This will include lighting.
- 21 Mr Munro seeks a certification role for KCDC of the final design and standards of the lighting for the walkway. I have noted the standard to be used for walkway lighting in my EIC.²³ I consider that Mr Munro's request for KCDC certification is achieved because proposed condition DC.63 requires that the NZTA demonstrate compliance with these lighting design standards. In my opinion, no further modification to the conditions in relation to this matter is required.
- 22 Finally, I note that, notwithstanding Mr Munro's recommendations, Ms Thomson's only lighting related amendment to conditions, is to clarify that lighting standards form part of the cycleway design detail that the Network Integration Plan required under proposed condition DC.X3 (to be developed in collaboration with KCDC) is required to address.²⁴ I have no issue with this clarification of condition DC.X3. I note that proposed condition DC.X3 also provides an opportunity for KCDC input into detailed lighting design.

CONCLUSION

- 23 In conclusion, I consider the potential lighting effects raised in submitters' evidence in relation to light spill, and sky glow (light pollution) are minor in nature. They are addressed by the detailed design measures outlined in my EIC²⁵ and by proposed condition DC.1(a)(ii)(8), which requires compliance with the proposed lighting plan set, and proposed condition DC.63, which requires compliance with the Road Lighting Standard and District Plan requirements.

²² My EIC, paragraph 31.

²³ My EIC, paragraph 31.

²⁴ Evidence of E Thomson, paragraph 9.36.

²⁵ My EIC, paragraphs 57-59.

- 24 I consider the proposed conditions, in particular conditions DC.63 and DC.X3, provide appropriate opportunities for KCDC to confirm compliance with the lighting standards and to ensure CPTED concerns are addressed.

Keith Gibson

Keith Gibson

24 October 2012