

- b. Relevant matters raised, and relief sought, in submissions.
- c. Relevant statutory considerations
- d. Recommended amendments and/or additions to the Requiring Authority’s proposed designation conditions.

Executive Summary

- 7. This memorandum provides a technical assessment under section 42A of the Resource Management Act (RMA), focusing on outdoor lighting aspects related to the Ruakiwi Reservoir Alteration to Designation (the Requirement). Following a review of pertinent documents, and analysis of specific issues raised in submissions, I concur that the effects are no more than minor.
- 8. The potential effects of outdoor lighting can be managed by appropriate designation conditions. These include the new or modified conditions that I recommend below, or similar conditions, which will keep adverse effects on outdoor lighting generally no more than minor.
- 9. I have reviewed the submissions on outdoor lighting matters and recommended responses to them.

Documents considered

- 10. The following documents have been considered in the preparation of this assessment:
 - a. Ruakiwi Reservoir Development Resource Consent - Lighting Effects Assessment, dated 14th October 2025. Prepared by John Mckensee of LDP (Lighting Design Professionals)
 - b. Hamilton City District Plan: section 25.6
 - c. The Department of Conservation Interim Advice Note, Steps to take to reduce the impact/effect of artificial light on pekapeka (bats): Version 1: 19 August 2025
 - d. The Environment Court of New Zealand (court decision for the Weston Lea Amberfield development)
 - e. The Submissions listed in Table 1.

Table 1 Submissions that raise outdoor lighting matters

Number	Submitter
002	Department of Conservation

Analysis

Introduction

- 11. In my opinion, the lighting assessment by LDP provides a detailed and comprehensive analysis of the effects of the works on outdoor lighting matters.
- 12. I largely agree with, and adopt that assessment for the purposes of this memorandum.

Existing Outdoor Lighting Conditions

13. There is existing street lighting along Ruakiwi Road, as well as security lighting associated with the plant room at the base of the current water tower. It my understanding that the security lighting associated with the current water tower will be removed.

Outdoor Lighting Effects Assessment

14. I note the proposal to include an element of building mounted lighting onto the road-facing side of the corten screen, and that lighting shall only be on the Ruakiwi Road frontage of the screen. Key considerations of the lighting effects associated with screen lighting are as follows:
 - a. Noted that a colour temperature of 2700K warm is proposed. Colour temperature and spectral power distribution to be advised by ecological input during design regarding potential effects on bat roosting areas.
 - b. Noted and agreed that the lighting equipment shall be selected to provide zero upward light.
 - c. A mounting height of lighting equipment has not been stated in the lighting concept and I assume that this will be at relatively low-level. If the design is that the downward graze lights are to be mounted at 6m (top of the screen) I recommend that the beam angle be linear graze with very little horizontal spread from the face of the screen.
 - d. Surface luminance of the lighting effect onto the screen shall be designed, and shown, to comply with the requirements stated in AS/NZS 4282 Control of the obtrusive effects of outdoor lighting, Section 3.3.3.3.2 Externally illuminated surfaces and Table 3.4 – Maximum average luminance of surfaces (cd/m²).
 - e. Lighting calculations shall assess any glare impacts on road users along Ruakiwi Road. This shall be in the form of a Threshold Increment (Ti) calculation in accordance with AS/NZS 4282.
 - f. Noted and agree that time-clock operation of this lighting element is appropriate and will help mitigate potential complaints from neighbouring properties. An 11pm cut-off time is appropriate, however community engagement is encouraged to gauge public opinion on night-time lighting duration.
 - g. In addition to time-clock control, I recommend that all screen-mounted downward graze lighting is dimmable with the ability to set the brightness of the screen lighting.
15. The proposal states a potential requirement for exterior functional lighting within the open areas of the reservoir enclosure.
 - a. If necessary, it is recommended that lighting equipment is restricted to egress/entrance areas only.
 - b. Lighting equipment shall be suitably selected to provide mostly horizontal lighting to the ground plane and to provide minimal luminance onto vertical surfaces. Mounting heights to be as low as practicable.

- c. Lighting calculations shall be employed to assess any spill lighting in accordance with Hamilton District Plan, section 25.6 and AS/NZS 4282 for any spill lighting at the “Bat Habitat Boundary” (BHG) .
 - d. The selection and orientation of motion sensors shall ensure that false-triggering is eliminated and only trigger when sensing large-area movements (ie. Vehicles, persons or opening gates/doors).
 - i. A 5-minute time-out period for motion sensors may be excessive, and a shorter 2-min timer should be considered.
16. The proposal states that from a safety and CPTED perspective, outdoor lighting will not be provided to the paths behind the reservoirs and down to the lake.
- a. This approach is consistent with mitigating spill lighting to the “Bat Habitat Boundary” (BHG).
 - b. There is some overlap with the screen-mounted downlights, which will provide a degree of pathway illumination to the road-facing side of the site. However as commented above, the proposal is that this shall only be along the Ruakiwi Road frontage and not along the sides and back.
17. I note the inclusion of outdoor lighting thresholds and minimum requirements regarding bat roosting areas.
- a. I cannot offer any specific comment on the lighting requirements stated in the lighting advise notice regarding spill lighting to bat roosting areas, other than advising that ecological input during the lighting design either confirm, or modify these lighting requirements based on more current research, accepted precedents and/or local information.
 - b. I note the proposal to shift the Bat Habitat Boundary to 20m from the kerb line of Ruakiwi Road. The reasons given are sound and I advise to accept this.
 - c. The stated lighting requirements to be met at the Bat Habitat Boundary shall include spill lighting from permanent fence lighting with the inclusion of exterior functional lighting within the reservoir enclosure.
 - d. Lighting calculations shall be provided to confirm spill lighting and accurate geometry of the reservoir shall be done to more accurately simulate shading and shadowing effects.

Matters raised in submissions

Submission #002 – Department of Conservation

18. Discussion

This submission outlines that lighting spill effects on bats are best managed pursuant to the Bat Recovery Group Advice Note and that roosting areas are to be maintained as inherently dark as much as practicable.

19. Amended conditions #70-72 in the Draft NOR conditions (31 October 2025) describe minimum lighting thresholds at the bat habitable boundary and requirements to mitigate spill lighting.

This is consistent with the Department of Conservation Interim Advice Note, Steps to take to reduce the impact/effect of artificial light on pekapeka (bats): Version1: 19 August 2025.

I advise that ecological input during the lighting design either confirm, or modify these lighting requirements based on more current research, accepted precedents and/or local information.

Statutory Considerations

20. I have reviewed the discussion in submissions of the NoR on the provisions in the statutory documents relating to outdoor lighting that are listed below. I agree with the comments on those provisions. In my opinion, based on that analysis, the Requirement is consistent with those provisions.
 - a. Hamilton District Plan – section 25.6.
 - b. The Department of Conservation Interim Advice Note, Steps to take to reduce the impact/effect of artificial light on pekapeka (bats): Version 1: 19 August 2025
 - c. The Environment Court of New Zealand (court decision for the Weston Lea Amberfield development)

Conclusions

21. In my opinion, from an outdoor lighting perspective, the proposed works for which designation is sought can be managed by appropriate designation conditions, and will have adverse effects on outdoor lighting that are no more than minor and comply with the relevant statutory requirements discussed above.

Recommendations

Designation conditions

22. I recommend the following amendments and/or additions to the Requiring Authority's proposed designation conditions:
 - a. Exterior screen-mounted outdoor lighting onto the reservoir enclosure corten screen shall be provided as dimmable.