

Te Awa Lakes Lighting Assessment

Prepared for Perry Group Limited

3 October 2017



Document Quality Assurance

Bibliographic reference for citation: LDP Ltd 2017. <i>Te Awa Lakes: Lighting Assessment</i> . Report prepared by LDP Ltd for Perry Group Limited.		
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Status: FINAL	Revision / version: R2	Issue date: 3 October 2017
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Template revision: 20170703 0000

File ref: 17,053 Lighting Report 2017-10-03.docx

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1.0 Introduction

- 1.1 Perry Group Limited ("PGL") requests a private plan change to enable the development of their landholding in the north of Hamilton city. PGL seek to establish a tourism and recreational destination for the region, supported by new residential and business uses. Their landholding is currently zoned for industrial use within the (Partially Operative) Hamilton City Council District Plan ("HCDP").
- 1.2 This plan change relates to approximately 62 hectares of land bound by the Waikato Expressway to the west, the Waikato River to the north and east, and Hutchinson Road to the south. The site is a former sand quarry which has been in the process of disestablishing since May 2016 and is held in its entirety by PGL.
- 1.3 In September 2016, PGL engaged a team of experts to undertake a masterplanning exercise for their landholding; the purpose of which was to explore options consistent with the overall vision including an adventure park, tourism precinct, mixed use precinct and a supporting residential community structured around a series of high amenity water bodies.
- 1.4 Through the masterplanning exercise, the "Consultant Team" formed of) Bloxam, Burnett & Olliver (planning and civil engineers), Boffa Miskell (masterplanners, urban designers and landscape architects, Traffic Design Group (traffic engineers), CKL (stormwater engineers), CMW Geosciences (geotechnical engineers), Marshall Day (acoustic engineers), LDP (lighting engineers), Coffey Services (environmental site investigations), Kessels Ecology (ecology), Dr Caroline Phillips (archaeology), and RCG (economics), have developed and tested a range of preliminary masterplan options. Distilling from these options a series of planning maps for the site which are to be inserted into the HCDP and enable development of the site accordingly.
- 1.5 This report sets out the Lighting Assessment for the Te Awa Lakes Plan Change Area. It is one of a suite of technical reports that has been prepared to inform and support the preparation of the structure plan and request for the Te Awa Lakes Plan Change.

2.0 Brief

- 2.1 LDP Ltd have undertaken an assessment of expected effects from existing and potential nearby developments in relation to the Te Awa Lakes development.
- 2.2 This is in response to a request for further information on "the reverse sensitivity effects from potential odour, lighting and glare" from Hamilton City Council (HCC).
- 2.3 HCC stated the reason for the request as;

"The site is located in close proximity to dairy factories and a meat works which could potentially have discernible odour associated with their operation. This assessment is required so that Council can better understand the potential reverse sensitivity effects of the application and how these effects are to be managed. This is required to ensure that the request is in accordance with sound resource management practices as per Schedule 1, clause 25 (c) of the RMA".

We understand that this should read "...clause 25(4)(c)...".

- 2.4 It is understood that the main existing activity of concern is the Fonterra Te Rapa Dairy Factory, located approximately 450m to the south of the boundary of the Te Awa Lakes proposed plan change area (The Site). Other existing large industrial facilities include the AFFCO Meat Works and the Ports of Auckland Freight Hub (under construction), although these are 1.5km and 700m from the Te Awa Lakes plan change boundary, respectively.
- 2.5 In addition, the plan change area is adjacent an illuminated expressway interchange and land zoned for industrial use to the west of the site.

3.0 Site Visit

- 3.1 In order to inform this review, the writer undertook a site visit on Monday 4th September commencing at 4:00pm and again at night commencing at 7:30pm. The weather was fine and clear affording good visibility across the site and to all adjacent areas.
- 3.2 We viewed the site and adjacent areas from all locations that we considered pertinent including;
 - The service centre in the southwest corner
 - Along Hutchinson Road to the south of the site
 - Along the Te Awa River Ride walkway to the east of the site
 - Along the path immediately south of the expressway bordering the northwest edge of the site
 - Within the site, at the gates at the end of the sealed southern access road
- 3.3 Areas visited remote from the site included;
 - Horotiu including the Northgate Business Park, the AFFCO meat works and residential areas along the Horotiu Bridge Road and River Road
 - The Fonterra Te Rapa Dairy Factory boundary
 - Industrial and residential areas west and south of the Fonterra Te Rapa Dairy Factory

4.0 Observations

The Site

- 4.1 The site is currently undeveloped and thereby dark at night. The exception being the service centre located in the south west corner of the site. The latter is a low rise development with well controlled external lighting. The proposed topography of the site is such that views of the service centre lighting will be either minimal or nil from the proposed residential areas within the site. Hence, any lighting effects will be negligible.

- 4.2 Assuming that the plan change is approved, the proposed development will include roads with lighting, commercial areas with lighting and houses with lighting. Hence, the lighting within the site once developed will be similar to that experienced in any typical suburban setting. Hence, any lighting beyond the site will then be viewed in that context and will therefore present significantly less effects than would otherwise be the case (e.g. as presently exist for the dark undeveloped site).

Existing Lighting Effects

Expressway Interchange

- 4.3 The most apparent lighting at present is that generated by the adjacent expressway interchange. While that presently represents moderate-high effects relative to the currently dark site, once the site is developed, it is our opinion that these effects will be diminished to low-moderately low effects for the closest residential areas and low-nil effects otherwise.

Fonterra Dairy Factory

- 4.4 The next most significant source of light is the Fonterra Dairy Factory. This mostly comprises low level lighting estimated to be within 5m of the ground, with some lighting on the tallest structure, estimated up to 30m high. The low level lighting will be screened by the commercial buildings proposed to border Hutchinson Road within the site. Other lighting may be visible to varying degrees from within the site, but in our opinion, the local lighting within the site will be considerably more obvious to residents than the lighting associated with the Dairy factory. Therefore, the latter will present only low effects.

Other Existing Industrial Developments

- 4.5 The next largest developments are the AFFCO meat works and the Ports of Auckland freight hub (under development). These are 1.5km and 700m from the site boundary, respectively.
- 4.6 The only other nearby existing industrial development is the Waikato Milking Systems factory located west of the site within the Northgate Industrial Park. This facility is low rise (estimated less than 5m high) with minimal exterior lighting. The lighting at this location is very unlikely to be visible from anywhere within the site and if it were, the lighting is very subtle. Hence, any lighting effects are low-nil.
- 4.7 No other existing industrial developments have been identified that might generate lighting effects to the site.

Other Locations

- 4.8 Other uses adjacent to the site include some residential use to the south, residential use on the opposite side of the Waikato River to the east, residential use to the north along with some low rise commercial/institutional activities such as the Horotiu school and adjacent play centre. Lighting at these locations is minimal and mostly screened from the site. Hence, any lighting effects are low-nil.

Future Potential Lighting Effects

Open Country Dairy Factory

- 4.9 We understand that this will be constructed on the current AFFCO meat works land. Given the distance from the site and the intervening topography, we estimate that the proposed development will be less visible from the site than the present Fonterra factory, if it is visible at all. If it were a similar height with similar lighting to the Fonterra plant, the lighting effects would be less than those generated by Fonterra due to the greater distance and topography screening. Hence, any lighting effects will be low-nil.

Northgate Industrial Park

- 4.10 Assuming that the plan change is approved, any new developments within Northgate Industrial Park will need to satisfy Council requirements which would then likely be the limits associated with Industrial zoning in the Waikato District Plan. The topography will screen most of this area from the site, but in our opinion, satisfying Industrial zone lighting rules would not be onerous for any Industrial facility in that area. Any lighting effects will be low-nil.

North of Bern Road

- 4.11 The land north of Bern Road and bounded by the expressway and Te Rapa Road is zoned Industrial. We have considered the likely effects of lighting in this area and are of the opinion that any effects would be similar to developments within Northgate Industrial Park and for the same reasons. Any lighting effects will be low-nil.

Summary of lighting effects

- 4.12 Summarising the foregoing, assuming the plan change is approved and the site is developed as proposed, in our opinion lighting effects generated by sources beyond the proposed plan change area, relative to the plan change area, would be;

- | | |
|--------------------------------------|--------------------|
| ▪ Existing expressway: | Moderately Low-Nil |
| ▪ Existing industrial: | Low-Nil |
| ▪ Existing residential & commercial: | Low-Nil |
| ▪ Future industrial: | Low-Nil |

5.0 Statutory Requirements

HCC District Plan

- 5.1 Assuming that the plan change is approved, it would then be expected that the most onerous lighting and glare controls in the District Plan would apply for developments adjacent to the site. The Hamilton City Partly Operative District Plan (PODP) section 25.6 would apply. In

particular, the requirements of rule 25.6.4.1 would apply on the basis that the site would be currently viewed as “future urban”.

- 5.2 Summarising the relevant rules that would then apply;
- **25.6.3 (a) – Glare to motorists;**
Comply with AS4282 re effect on traffic
 - **25.6.3 (b) – Obtrusive light effects;**
Comply with applicable AS/NZS standards for lighting to public spaces, transport corridors, roads, car parks and amenity areas [This relates to the AS/NZS1158 suite of standards (Lighting for roads and public spaces), which refer the designer to AS4282 for the control of obtrusive light effects to residents and traffic]
 - **25.6.4.1 (a) – Spill light;**
No more than 3 lux (horizontal and vertical) when measured or calculated at points 1.5m within the boundary of any other site.
- 5.3 Since the Northgate Industrial Park is within the Waikato District, the site is zoned Industrial under the Waikato District Plan (WDP) and the following rule applies;
- **24.22.1 – Spill Light;**
No more than 10 lux measured vertically at any other site.
- 5.4 These requirements are entirely reasonable, achievable and not onerous.
- 5.5 The first two items [25.6.3 (a) and 25.6.3 (b)] relate principally to glare effects and are typically achieved by avoiding the use of projector floodlights with excessive tilt angles. Where floodlighting is needed, the alternative is to use asymmetric floodlights with nil or very little tilt, thereby limiting glare.
- 5.6 The last two items [25.6.4.1 (a) and 24.22.1] relate to lighting (spill) effects. Given the wide boundary separation afforded to the entire site by the bounding roads and rivers, achieving this limit will be virtually automatic. While not specifically measured, experiential observation indicates that the existing light spill at the plan change boundary from lighting, other than road lighting which is excluded from this rule, would be Nil.
- 5.7 Any lighting for future developments designed in accordance with the above requirements would similarly comply with these rules.

RMA

- 5.8 Schedule 1, clause 25(4)(c) of the Resource management Act 1991 (RMA) states;
- “(4) The local authority may reject the request in whole or in part, but only on the grounds that –*
- ...
- (c) the request or part of the request is not in accordance with sound resource management practice...”*
- 5.9 While this matter will be addressed holistically by Bloxam Burnett & Olliver, we offer that the lighting aspect is consistent with sound resource management practice.

5.10 In this respect, the HCC PODP establishes suitable Objectives, Policies and Rules for controlling Lighting and Glare Effects. In our opinion, compliance with these requirements will also then satisfy the test presented by Schedule 1, clause 25(4)(c) of the RMA, ensuring that the lighting effects are then in accordance with sound resource management practice.

5.11 In summary;

HCC PODP Objectives

5.12 Objective 25.6.2.1 states;

“An environment free from the adverse effects of intrusive lighting.”

5.13 As detailed in section 2.4 above, we have assessed the existing and permitted future lighting effects from other sites beyond the proposed plan change boundary as “Low-Nil”. In our opinion, this satisfies the objective.

HCC PODP Policies

5.14 Policy 25.6.2.1a states;

“Ensure that light spill and glare do not detract from the amenity values of other properties, compromise traffic safety, or have a negative effect on people’s health and general welfare.”

5.15 As stated in Section 3.1 above, the existing and expected future lighting effects, relative to the proposed plan change area when developed as proposed, will comply with the rules. The rules are consistent with the Policy and Objective. Therefore, the Policy will be satisfied.

HCC PODP Rules

5.16 As stated in section 3.1 above, the existing and expected future lighting effects, relative to the proposed plan change area when developed as proposed, will comply with the envisaged rules. In summary;

- The lighting effects from existing activities beyond the proposed plan change boundary currently satisfy the rules listed in section 3.1 above.
- The lighting effects from future developments can also readily satisfy these requirements using standard good practice lighting design. The requirements are not onerous.

5.17 Hence, the existing and permitted future lighting effects are and will be consistent with sound resource management practice.

6.0 Conclusion

6.1 In our opinion, glare and lighting effects from existing facilities beyond the site are currently adequately controlled to an acceptable degree and satisfy the HCC PODP objectives, policies and rules in section 25.6 thereof.

- 6.2 Any future developments can be readily and cost effectively designed to ensure compliance with these rules.
- 6.3 Potential glare and lighting effects will be adequately addressed to acceptable levels, without onerous conditions being placed on sites adjacent to the proposed plan change area.
- 6.4 Hence, we do not consider that reverse sensitivity is an issue in this regard.