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Attention: Keren McDonnell

RE: WAIPU GATEWAY, 47 MILLBROOK ROAD, WAIPU – LIGHTING ASSESSMENT OF ENVIRONMENTAL EFFECTS

We advise that we have produced an exterior lighting scheme for the Waipu Gateway, 47 Millbrook Road, Waipu and below is our assessment report in relation to the local authority planning rules.

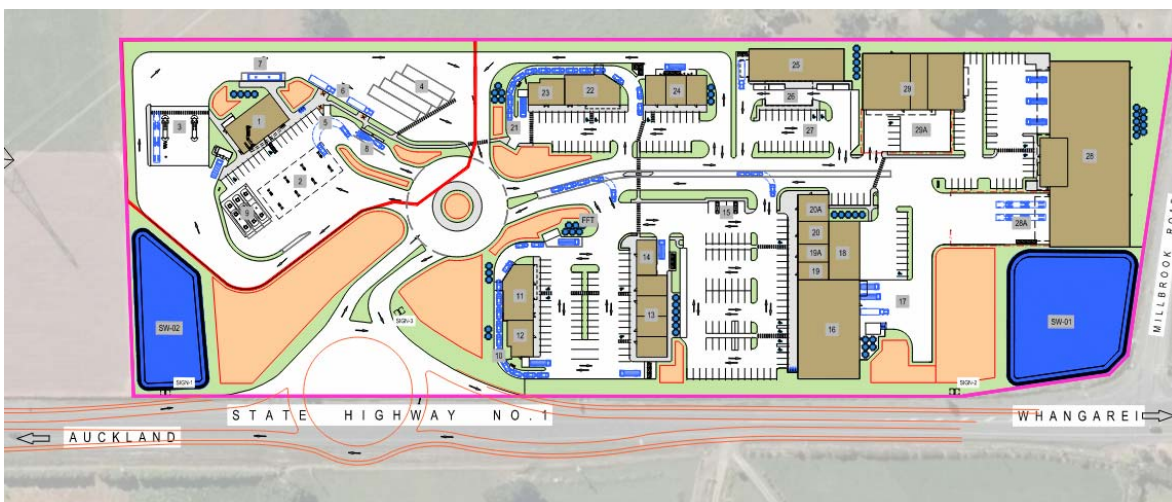
SITE DESCRIPTION

The Waipu Gateway will be located at the corner of State Highway 1 and Millbrook Road and is zoned as “Rural Production Zone” in the Whangarei District Plan (operative 15 September 2022).

The site is bounded by NZTA highway to the south-eastern boundary, local road to the north-eastern boundary and rural farmland to the south-western & north-western boundary. Opposite to the site on Millbrook Road is a veterinary clinic.

The adjoining properties and their zoning are as follows:

Boundary	• Adjacent Zone
North-western & South-western	• Rural Production Zone
South-eastern	• State Highway 1
North-eastern	• Millbrook Road



LIGHTING DESIGN CONCEPT

General

Lighting calculations were undertaken for the outdoor vehicle circulation areas, pedestrian crossing and carparking areas. The calculations have excluded the following:

- Any existing light contribution from the intersection of State Highway 1 and Millbrook Road, which border the site on two sides.
- The new proposed roundabout as the main entrance to the site. (Note: The lighting design for the roundabout is to be by NZTA.)

The following qualifications apply to this Assessment:

- Lighting specification for the exterior building façades and outdoor self-illuminated signage will be undertaken by others.
- Signage will be designed by the respective operator to comply with the District Plan and AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting.

Carpark & Vehicle Circulation Areas

The lighting calculations cover all outdoor vehicle circulation areas of the site, including vehicle access roads, internal vehicle accessways, carparking areas and pedestrian crossings.

The proposed lighting design complies with the requirements of AS/NZS 1158.3.1:2020 "Lighting for roads and public spaces" – category **PC1**, achieving maintained average illuminance levels of 14 lux throughout the car parking and circulation areas of the site.

Note: The truck stop area and station service forecourt canopy are not included in the calculations as lighting to these areas will be undertaken by the station service operator. We, however, envisage that the lighting levels for the truck stop area would be similar to those prescribed for the Category PC1 whereas the lighting levels for the forecourt area would be in the region of 300 lux as per the recommendations under AS/NZS 1680 and that the lighting will be directed downwards onto the forecourt.

Pedestrian Crossing

Each pedestrian crossing will be designed to the requirements of AS/NZS 1158.3.1 : 2020 "Lighting for roads and public spaces" – category **PCX**. The lighting pole columns for the pedestrian crossing will be provided with alternate "black and white band" to the lower 3m of the lighting column, together with a strap-on static Elisha beacon.

Disabled Parking Bays

Disabled parking bays in a carpark will be designed to the requirements of AS/NZS1158.3.1 : 2020 "Lighting for roads and public spaces" – category **PCD**, or to a minimum maintained illuminance of 14 lux.

Design Concept Scheme

The proposed lighting scheme consists of:

- 12x 10m high lighting columns along the south-western boundary and part of the north-western boundary,
- 2x 10m high lighting columns for the Camper Parks (Area 9),
- 5x 10m high lighting columns for the Truck Parks (Area 4),
- 2x 10m high lighting columns for the Coach Park (Area 7), and
- 89x 8m high lighting columns located throughout the site.

A total of 142x LED area luminaires are used. The exact quantities will be subject to future detailed design. All proposed LED area luminaires will be of asymmetric distribution characteristic to distribute lighting into the site with limited spilling into the surrounds and are to be installed with no tilt above the horizontal, avoiding unwanted light pollution. Designated area luminaires located along the south-western and north-western boundaries are fitted with a back-light shield so as to reduce the back spill light onto adjoining properties.

This type of area luminaire is particularly selected for the illumination of areas such as outdoor carparks, due to its asymmetric optic which provides not only total downward light distribution onto the space, but also good uniformity of lighting over the task area and precise control on spill light and glare.

The lighting column heights, quantities and column positions are selected in the design so as to achieve the required illuminance levels and lighting uniformity for the coverage areas as per the recommendations under AS/NZS 1158.3.1.

The overall lighting column above ground height, including the outreach arms & the luminaires, will be no more than 10m, which is no higher than the existing state highway lighting columns at the intersection of State Highway 1 and Millbrook Road.

The columns and luminaires will generally be of light colour, e.g. grey aluminium in order to present a recessive appearance when viewed against the sky during the day and to protect the rural landscape.

ASSESSMENT OF COMPLAINTS TO WHANGAREI DISTRICT PLAN (Operative 15 September 2022)

The proposed lighting design has been assessed in relation to the Whangarei District Plan (operative 15 September 2022) and the findings are as follows:

1. RPE.2 Rural Production Environment - Landuse

Item RPE.2.3 Discretionary Activities

“Any building: a. That exceeds a maximum height of 10m.”

The proposed lighting columns, including outreach arms and luminaires will not exceed 10m. Hence, the proposed lighting columns will be a **Permitted Activity**.

2. Urban and Services – Decision Chapter – Light

LIGHT-R1 Any Activity Not Otherwise Listed in This Chapter

Activity Status : Permitted, where:

1. Resource consent is not required under any rule of the District Plan.
2. The activity is not prohibited under any rule of the District Plan.

Noted.

LIGHT-R2 Any Artificial Lighting

Activity Status: Permitted, where:

1. The artificial lighting is shielded or a suitable luminaire optic deployed, so that light emitted by the luminaire is projected below a horizontal plane running through the lowest point on the fixture as represented in LIGHT Appendix Illustration of District Wide Lighting Standard.

1. All LED luminaires are to be at 0° tilt to the horizontal, i.e. light emissions project below the horizontal plane and emit 0% upward light. Comply.

2. The light is static and is not moving or flashing.	2. Comply.
3. Artificial lighting located in the Sport and Active Recreation Zone or the Open Space Zone complies with the AS/NZS 1158 and AS/NZS4282 standards.	Not applicable (N/A)
4. The added illuminance onto any other site or a road reserve, measured at the boundary, does not exceed the following limits: a. All zones (excluding the Sport and Active Recreation Zone and the Open Space Zone):	
i. Artificial lighting measured at the receiving allotment boundary with a road reserve – 15 Lux.	The maximum value calculated at “State Highway 1 boundary” is approximately 5.93 lux. Less than 15 lux. Comply.
ii. Artificial lighting measured at the receiving allotment boundary other than with a road reserve – 10 Lux.	The maximum value calculated at any rural boundary is approximately 8.20 lux. Less than 10 lux. Comply.
b. Sport and Active Recreation Zone and Open Space Zone:	
i. Artificial lighting measured at the receiving site boundary with a road reserve – 15 Lux.	N/A
ii. Artificial lighting measured at the receiving allotment boundary with the Residential, Natural Open Space, Rural Living, Rural Village Residential and Rural (Urban Expansion) Zones – 10 Lux.	N/A
iii. Artificial lighting measured at the receiving site boundary with all other zones – 20 Lux. Note: The limits identified do not apply to internal allotment boundaries where multiple allotments are held in the same ownership.	N/A
5. The activity complies with LIGHT--REQ-1. Note: Any artificial road lighting, health and safety or navigational artificial lighting, and artificial lighting for mineral extraction activities in Quarrying Resource Areas is not required to comply with LIGHT-R2.	Noted.
LIGHT-R3 Any Artificial Road Lighting	N/A
LIGHT-R4 Any Health and Safety or Navigational Artificial Lighting	N/A
LIGHT-R5 Any Artificial Lighting for Mineral Extraction Activities in Quarrying Resource Areas	N/A

<p>LIGHT-R6 Any Car Parking or Loading Spaces in the City Centre, Commercial, Light Industrial, Heavy Industrial, Waterfront, Marsden Primary Centre – Town Centre South and Industry, Rural Village Centre and Rural Village Industry Zones</p>	<p>N/A – Rural Production Zone</p>
<p>LIGHT-R7 Any Subdivision</p> <p>Activity Status: Controlled</p> <p>Where:</p> <p>1. Artificial lighting is provided for all streets, walkways, cycleways and roads created by the subdivision.</p> <p>2. The artificial lighting complies with the AS/NZS1158 series of standards.</p>	<p>Noted and provided within the proposed development.</p> <p>Noted - lighting calculations have been carried out in accordance with the standard, and thereby in compliance with the rule..</p>
<p>LIGHT-REQ1 Lighting Measurement</p>	
<p>1. Unless specified otherwise, lighting shall be measured by calculation with a proprietary lighting design programme which details the direct, horizontal and vertical plane illuminance with a maintenance factor set at 1.0 at any point and height of an adjacent property boundary.</p>	<p>Noted – spill lighting has been calculated in compliance with the rule.</p>
<p>2. The light intensity shall be measured by calculation with a proprietary lighting design programme at a height of 1.5 metres above ground level at any point on the adjacent property boundary.</p>	<p>Noted – light intensity has been calculated in compliance with the rule.</p>
<p>3. Road lighting and lighting for parks, reserves, publicly accessible /used areas and pedestrian areas shall be calculated in accordance with the methods described in the AS/NZS 1158 series of standards as listed in REF.1 Referenced Documents at REF.1.2 b. or alternative method of compliance certified in a statement by a suitably qualified and experienced professional (e.g. Chartered Professional Engineer or Independently Qualified Person).</p>	<p>Noted – lighting calculations have been carried out in accordance with the standard, and thereby in compliance with the rule.</p>

3. Urban and Services – Notified Chapters – Signs

SI-R20 Any Illuminated Sign Visible from Beyond the Site Boundary

Activity Status: Discretionary

Where:

1. *The sign is located within the following zones:*
 - a. *Residential Zones*
 - b. *Neighbourhood Centre*
 - c. *Open Space*
 - d. *Natural Open Space*
 - e. *Waterfront*
 - f. *Marsden Primary Centre-Town Centre South*
 - g. *Airport*
 - h. *Ruakaka Equine*
 - i. *Rural Production*
 - j. *Rural Living*
 - k. *Rural Village Residential*
 - l. *Rural (Urban Expansion)*
 - m. *Rural Village Industry*
 - n. *Rural Village Centre*

Noted.

Signage will be developed by the operator using their standard suite of signage to ensure compliance with the recommendations of the district Plan and AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting Table 3.5 – “Maximum Average Luminance of Surfaces”.

With respect of the effect of the lighting to the surrounding areas, the proposed lighting scheme has been designed specifically to address the lighting requirements to suit the activities for the different parts of the areas within the site. The service station forecourt, for example, is positioned some 78m from State Highway 1, 55m to the south-western boundary & 63m from the north-western boundary and its lighting will primarily be for the safe operation of the fuel dispensers by the drivers, which will be shielded from the service station building. Or lighting to the drive-through lane for the food retailer (bldg no. 11) will only be limited to the drive-through lane.

Given the close proximity of the site to State Highway 1 and the need of well-lit intersection areas for traffic safety, we envisage the new site access roundabout will be well lit in accordance with AS / NZS 115.8.1 Lighting for Roads and Public Spaces Part 1.1. Vehicular Traffic (Category V) lighting – Performance and Design Requirements. Together with the existing streetlighting (7x streetlighting poles) already provided at the intersection of Millbrook Road, State Highway 1 and The Braigh, the proposed lighting scheme for the site is consistent with the existing amenity values of the surrounding areas, i.e. creating and maintaining a safe and well lit environment for vehicle and pedestrian traffic. Hence, in our opinion, any cumulative effective of the lighting from the site would not adversely affect the rural amenity values.

SUMMARY

The exterior lighting scheme for the proposed Gateway Waipu development at 47 Millbrook Road, Waipu has, in our opinion, been designed with due consideration of the requirements of all interested parties. We believe that the proposed exterior lighting installation would have a no more than minor effect to the surrounding environments and would not adversely affect the rural amenity values where considering the following site conditions and design criteria:

- The site is located at an existing intersection of State Highway 1 which is already well-lit for traffic safety purpose,
- All the lighting luminaires are aimed within the site, away from the boundaries and any roading networks,
- The proposed lighting luminaires provide good and precise cut-off control, limiting spill light and glare to surrounding areas,
- The proposed lighting luminaires have no tilt from the horizontal, avoiding any unwanted light pollution to the sky,
- The proposed lighting scheme complies with the rules of the Whangarei District Council (operative 15 September 2022) in terms of spill light and glare,
- The proposed lighting scheme not only creates, but also maintains a safe and well-lit environment for vehicle and pedestrian traffic, and
- The performance of the exterior lighting system is in accordance with AS/NZS 1158.3.1 : 2020 Pedestrian Area (Category P) Lighting.

Should you require any further information regarding this Report, please do not hesitate to contact our office.

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