YARRANLEA SOLAR PROJECT

Lighting Assessment

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DOCUMENT DETAILS

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1 EXECUTIVE SUMMARY

This document provides a preliminary lighting assessment for the proposed Yarranlea Solar Farm.

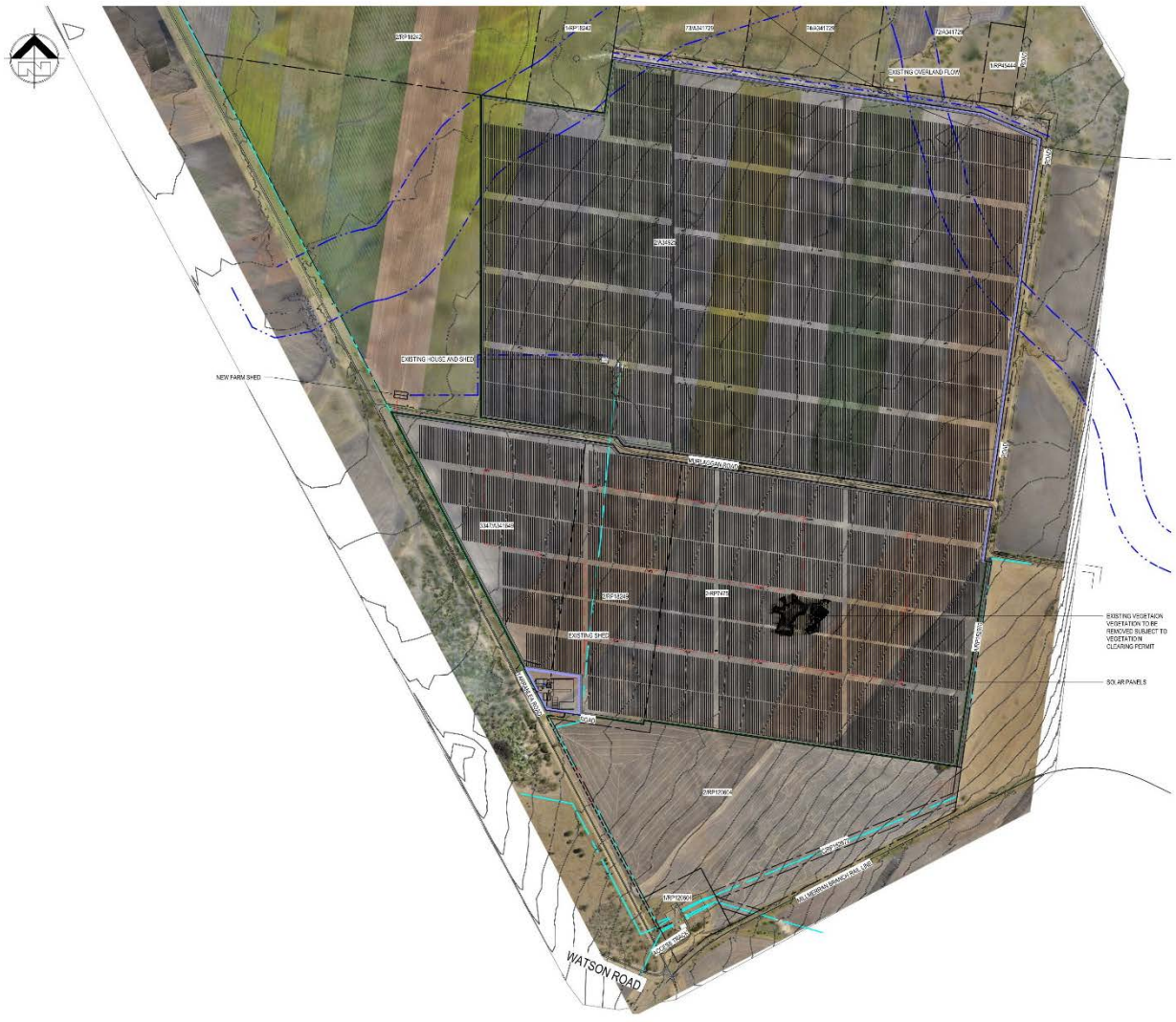
The project preliminary design is typical of a modern photovoltaic power station with the potential light sources being consistent with other local infrastructure including a utility substation located in the close vicinity of the solar farm:

The potential light sources arising from the proposed solar farm are not expected to present significant visual impact to the local public.

2 BACKGROUND

The Yarranlea Solar Farm is located in the township Yarranlea, QLD and comprises an area of approximately 253Ha. The project site is located within 700 metres of the existing utility substation as illustrated in Figure 1.

Figure.1 – Yarranlea Solar Farm Overal Plan



2.1 EXISTING LIGHT SOURCES

A small number of existing night time light sources occur within the local project area and includes rural residential and general lighting within surrounding towns, and a utility substation located adjacent to the project site (refer Figure 1).

Localised lighting is associated with a small number of dispersed homesteads located adjacent to the project boundary, but lighting is unlikely to be visually prominent and does not emit any significant illumination beyond immediate areas surrounding residential and agricultural buildings.

Lights from vehicles travelling along the local roads and highways provide dynamic and temporary sources of light.

Light sources from the existing utility substation (refer Figure 2) are represent similar low intensity and night time light sources to that which would be presented by the Yarranlea solar farm during normal operations.

Figure.2 – Existing Utility Substation (Left – Plan View; Right - Streetview from Pittsworth-Tunmaville Rd, Yarranlea)

2.2 POTENTIAL LIGHT SOURCES

The Yarranlea solar farm will require night time lighting and during day time periods of reduced visibility. The main potential light sources associated with the solar farm would include:

- Low intensity night lights for substation and service buildings including,
    - Switched or sensor activated 50-100W fluorescent or equivalent LED luminaries above personal doorway (refer Figure 3) or vehicle access entries (refer Figure 4)
- Night time emergency and maintenance lighting including,
    - Switched pole mounted 400W halogen or equivalent LED luminaires at approximately 3-5m height directed downwards (refer Figure 5)
    - Portable high intensity lighting comprising 4 x 1000W metal halide or equivalent luminaires mounted to a hydraulic mast type which may extend approximately 4-6m in height (refer Figure 6)

Figure.3 – Typical Substation Building Doorway Entry Lighting

Figure.4 – Typical Service Building Doorway Entry Lighting

Figure.5 – Typical Pole Mounted Lighting for Substation LIghting

Figure.6 – Typical Portable Lighting System for Emergency and Maintenance LIghting

Lighting within the substation and around service buildings is necessary to meet the level of lighting required for normal security and safety per standards for workplace lighting. As the visibility of the substation and service buildings would be largely contained by the surrounding landform, it is unlikely that light spill from these sources would be visible from the majority of surrounding view locations including surrounding residences.

Where necessary, the substation and associated service facility may be designed and constructed to minimise visual intrusion as far as reasonable and feasible including appropriate external finishes to minimise glare or reflection, landscape planting to screen views and external lighting requirements.

Permanent and temporary lighting would be required for scheduled or emergency maintenance around the substation, service building, and solar array areas.

By its nature, unplanned maintenance is intended to be avoided where possible but still could occur at any time due to unforeseen events such as wind or lightning causing damage to the electrical equipment or project infrastructure. As such it is difficult to estimate with any certainty the frequency per year of such portable lighting being used. For example, ideally never used at all but could be used multiple times depending on unforeseen events. But it is expected that any night time activities would typically not span multiple nights as the majority of works would be performed during daylight hours where possible.

For temporary lighting of the type depicted in Figure 6, a single unit would normally be used but could be up to two at a single location. Other than within the substation and maintenance facility, the location could occur anywhere within the solar farm where electrical assets are present. As such, the orientation such portable lighting is unknown and fixed screening is not possible

2.3 POTENTIAL VIEW LOCATIONS AND IMPACT

Night time lighting associated with the solar farm is unlikely to have a significant visual impact on the majority of public with the types of lighting evident on the solar farm being consistent with the light sources from the existing utility substation (refer Figure 2).

Night time lighting associated with the solar farm would be visible from a number of the residential view locations surrounding the project; however, topography and screening by vegetation and screen planting around the substation would screen or partially obscure views toward night time obstacle lighting.

Irrespective of the total number of visible lights, any lighting is more likely to be noticeable from exterior areas surrounding residences rather than from within residences, where internal lighting tends to reflect and mirror views in windows, or where exterior views would be obscured when curtains and blinds are closed.

Whilst obstacle lighting would be visible to motorists travelling along the local roads, the duration of visibility would tend to be very short and partially screened by undulating landform along some sections of local road corridors and influenced by the direction of travel. The impact on night time lighting on motorists would also be minimal, with the impact similar to that which a motorist would normally encounter on the roads (eg. rear tail lights, headlights, street lighting, illuminated signs, and lights from nearby residences).

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