

Prepared for
Pacific National
ABN: 39 098 060 550

Preliminary Greenhouse Gas Assessment

Project Tasman

12-Jul-2023
Project Tasman
Commercial-in-Confidence

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Client: Pacific National

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1.0 Introduction

A preliminary study to determine the Greenhouse Gas (GHG) impact of the proposed Little River Logistics Precinct in Little River, Victoria was undertaken. The purpose of this document is to assess whether the project has the potential to produce GHG emissions of the project in excess of 200,000 tonnes of carbon dioxide equivalent per annum. This is to directly address the requirement outlined in the Ministerial Guidelines for Assessment of Environmental Effects¹ and serve as a supporting document to the project's Environmental Effects Statement. Carbon dioxide equivalent is a metric used to compare and standardise emissions from various gases by their global warming potential. The estimation is based on existing conditions (BAU assumptions) and considers the following key loads across Precincts A, B and C:

- Warehouse lighting and conditioning
- Cool storage in warehouses
- Office heating and cooling
- Site vehicle movements
- Site lighting
- Cranes
- Refrigerated container units (reefer units)

2.0 Assumptions & Limitations

2.1 Information Sources

The location and indicative operations are based on the following documents:

- Master Plan Rev G – Site Plan layout (ref. *SIWI-TAC-AR-DWG-MP-0001 (G) - Master Plan.pdf*)
- Site Electrical Demand Report Rev D prepared by JHA Services. This report was provided to AECOM by Guy Evans on 25 May 2023 and forms the basis for the assumptions made in this GHG assessment.
- Project Tasman – Project Description Rev 2 prepared by Pacific National.

2.2 Assumptions

Assumptions made in this assessment are based on the sources provided in Section 2.1 and relevant publicly available information in Table 1. This includes the JHA Services report which provides an overview of the anticipated loads at the Little River Precinct.

Table 1: Assumption Register

Assumption	Source
Grid Emissions Factor: 0.92 kg CO ₂ -e/kWh	Department of Climate Change, Energy, the Environment and Water ²
Non-Warehouse Spaces Load consists of: <ul style="list-style-type: none"> • Admin/Operation Building Load: 1000kW 	Site Electrical Demand Report – JHA Services ³ (Design Parameter 5, 8, 9 Page 5 and Assumption 7 Page 5)

¹ [Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978](#)

² [Greenhouse Gas Accounts Factors 2022](#)

³ Alignment with assumptions made by electrical consultant (JHA Services) as preferred by Pacific National

<ul style="list-style-type: none"> Wagon Maintenance Building Load: 500kW Commercial/Ancillary/Support Area Load: 2000kW Locomotive Provisioning MT Park Load: 500kW 	
Warehouse load: 20 W/m ²	Site Electrical Demand Report – JHA Services ⁴ (Design Parameter 6 Page 5)
1000m ² of office space in each warehouse	Site Electrical Demand Report – JHA Services ³ (Assumption 3 Page 5)
20% of warehouse area is cool storage	Site Electrical Demand Report – JHA Services ³ (Assumption 9 Page 5)
Cold storage load ⁵ : 100 W/m ²	Site Electrical Demand Report – JHA Services ³ (Assumption 9 Page 5)
Office load: 100 W/m ²	Site Electrical Demand Report – JHA Services ³ (Assumption 4 Page 5)
External lighting load: 2 W/m ²	National Construction Code 2019 BCA Volume 1 Section J Part 6 Table J6.2a
External lighting required across entire site	Based on AECOM industry experience
Electric Vehicle Charging Load: 200kW	Site Electrical Demand Report – JHA Services ³ (Assumption 6 Page 5)
23 cranes on site each consuming 1400KW with a diversity of 0.3	Site Electrical Demand Report – JHA Services ³ (Design Parameter 1-3 Page 5)
100 reefer units on site each consuming 12KW with a diversity of 0.75	Site Electrical Demand Report – JHA Services ³ (Design Parameter 4 and Assumption 1 Page 5)
Site is to be operable 24/7	Project Tasman – Project Description (Page 4)

Occupancy and usage assumptions are detailed in Table 2.

Table 2: Pacific National Terminal Load Occupancy & Usage

Load	Time per day (h)	Days per year	Time per year (h)
Non-Warehouse Space Load	24	365	8760
External Lighting	10	365	3650
Warehouse Lighting & Conditioning	24	365	8760
Warehouse Office Space	24	365	8760
Cool Storage Warehouses	24	365	8760

⁴ Alignment with assumptions made by electrical consultant (JHA Services) as preferred by Pacific National

⁵ Noting that cold storage load is equivalent to the office load in Site Electrical Demand Report prepared by JHA Services.

Load	Time per day (h)	Days per year	Time per year (h)
Office Heating & Cooling	24	365	8760
Electric Vehicle Charging	24	365	8760
Cranes	24	365	8760
Reefer Units	24	365	8760

2.3 Limitations

The following limitations have been identified:

- Onsite generation, such as by a photovoltaic array, which may offset grid consumption, has not been considered in this assessment due to a lack of detail at this stage of the project
- Several emissions sources have been identified, however were not considered in this assessment. There is not sufficient information to consider them at this stage of the project and the emissions assessment exceeds the 200,000 tonnes of carbon dioxide equivalent without their inclusion. These sources include:
 - Fleet vehicles for onsite operations and maintenance
 - Buses or similar vehicles for transporting employees
 - Refrigerant gases
 - Gas fittings and fixtures
 - Emissions associated with transporting container units to and from the project site
- AECOM has not validated any assumptions made in the report by JHA Services.

3.0 Results

Using the above information, the results of the preliminary study are broken down into energy demand by category in Table 3. The results have been rounded to a range to reflect the uncertainty of the high-level assumptions used as inputs at this stage of the project.

Table 3: Pacific National Terminal GHG Emissions

Energy Demand	Area (m ²)	MWh	Tonnes CO ₂ -e
Non-Warehouse Space Load	1,070,200	30,000 to 40,000	25,000 to 40,000
External Lighting	2,818,734	15,000 to 25,000	10,000 to 25,000
Warehouse Lighting & Conditioning	709,360	110,000 to 140,000	100,000 to 130,000
Warehouse Office Space	36,000	25,000 to 35,000	20,000 to 35,000
Cool Storage Warehouses	186,340	130,000 to 190,000	120,000 to 180,000
Office Heating & Cooling	3,675,000	7,000 to 11,000	6,000 to 10,000
Electric Vehicle Charging	N/A	1,000 to 3,500	900 to 3000

Cranes	N/A	70,000 to 100,000	65,000 to 95,000
Reefer Units	N/A	6,000 to 1,0000	5,500 to 9,000
Total	-	-	350,000 to 530,000

4.0 Conclusion

Using the existing assumptions, the results indicate that the CO₂ equivalent will exceed 200,000 tonnes per year. The vast majority of CO₂ equivalent originates from energy consumed by cool storage areas in warehouses. Lighting is the other major contributor.

Although the assumptions presented in the above sections may change during design development, the expectation remains that the CO₂ equivalent would exceed 200,000 tonnes per year.