Council

KENDENUP COMMUNITY AND MEN'S SHED – POWER SUPPLY

Electrical Servicing Report August 2025

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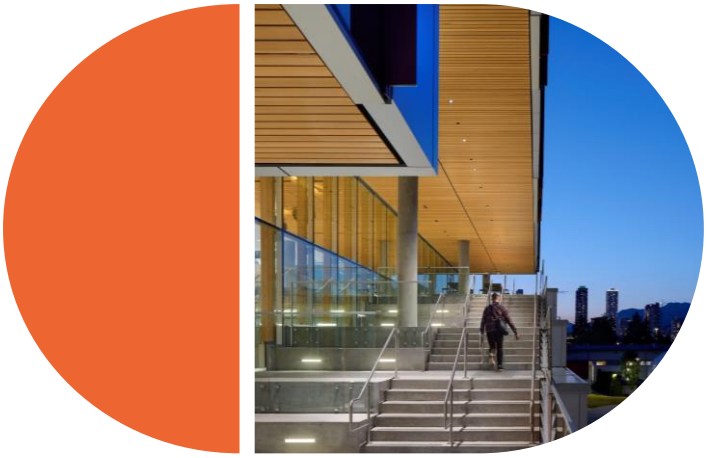
Kendenup Agricultural Grounds

Electrical Servicing Report



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Revision Schedule

Revision No.	Date	Description	Prepared by	Project Manager Final Approval
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1. Introduction

The Shire of Plantagenet have requested an Electrical servicing report to determine the options to provide a power supply to the proposed Kendenup Community and Men's Shed. The KCMS will be located in the South Eastern Corner of the Agricultural Grounds (entrance off Chauvel Road).

An equipment list was provided for the purposes of undertaking a load calculation for the proposed Shed and a site inspection was undertaken to determine the condition and capacity of the existing electrical installation.

2. Load Calculations

2.1 KCMS

Based on the provided equipment list and discussions on site, the proposed KCMS After Diversity Maximum Demand (ADMD) was calculated to be in the vicinity of **120A-140A (single phase).** This is a theoretical maximum demand which was calculated using the maximum demand guidelines for non -domestic installations (Table C2 of AS/NZS 3000). The calculation allows for a diversity factor to be applied to the various load groups to account for the likelihood that all equipment will not be used simultaneously.

2.2 Tennis Club

As the Tennis Club is a relevantly recent addition to the site, it is assumed that the Tennis Club maximum demand matches the SMSB circuit Breaker rating of **32A (single phase).**

2.3 Main Hall, Kitchen, Childcare Building & Powered Campsites

The Main Hall Area consists of approximately 250msq of airconditioned space, general lighting and a small number of 10A socket outlets.

The Hall Kitchen is used for light catering and also supplies 9 x powered campsites. The powered sites are provided with 1 x 10A gpo per site and these are deemed to be used simultaneously during special events.

The Childcare Building consists of approximately 120msq of airconditioned space and includes a small kitchen area used for light catering.

Based on the above, it is likely that the Main Hall, Kitchen, campsites and Childcare Building have a combined maximum demand in the vicinity of **190A (single phase).**

2.4 Water Pumps and Ancillary Equipment

For the purpose of the ADMD calculation, it was assumed that the site contained 2 x 2Kw water pumps. A diversity factor is applied to these loads to account for their relatively infrequent use.

Based on the above, it is likely that the Water Pumps have a combined maximum demand in the vicinity of **16A (single phase).**

2.5 Combined Site Maximum Demand

Based on the individual loads detailed above, the Agricultural Grounds present a theoretical “After Diversity” Maximum Demand in the vicinity of 355A (single phase). This translates to approximately 85Kva or 120A/PH (3 phase).

3. Electrical Site Inspection

The site power supply configuration was inspected on 15/08/2025 and included the following components:

- Western Power Incoming supply
- Site main switchboard
- Sub-distribution boards

The following components were not inspected/verified

- Main and sub-main cabling (cable sizes and cable routes)
- Tennis Club Distribution Board
- Electrical installation (building services) statutory compliance

3.1 Western Power Incoming Supply

The site power is supplied via a pole mounted single phase transformer located on the Northern side of Beverley Road, approximately 150m East of the Agricultural Grounds entrance.

The WP transformer is rated at 25Kva and can supply a load of approximately100A (single phase).

The transformer provides a low voltage power supply to a mini-pillar (green dome) on the Southern Side of Beverley Road, which serves as the point of supply for the adjacent Site Main Switchboard.

3.2 Site Main Switchboard (SMSB)

The SMSB is located approximately 150m East of the Ag Grounds entrance, on the Southern side of Beverley Road, adjacent to the WP mini-pillar. The SMSB houses the incoming Energy meter, a private meter for the Tennis Club, 80A Main Switch, and 3 x Circuit Breakers to supply the Hall (32A), Tennis Club (32A) and Hall Pump (16A).

Whilst the SMSB is sufficiently rated for the incoming power supply, it will require to be upgraded to supply any additional loads.

3.3 Main Hall Distribution Board

The Main Hall Switchboard is in reasonable condition but is not able to provide a suitably rated power supply to the Kitchen sub-board. This is largely due to the incoming single phase supply cable, the main circuit breaker (32A) and the large power demand presented by the powered campsites.

3.4 Kitchen (Main Hall) Sub-Distribution Board

The Kitchen Switchboard is in reasonable condition but is not able to provide a suitably rated power supply to the powered campsites, or the Childcare Centre. This is largely due to the incoming single phase supply cable, the main circuit breaker (32A) and the large power demand presented by the powered campsites.

3.5 Childcare Centre – Sub-distribution Board

The Childcare Centre Switchboard is in reasonable condition and is sufficiently rated to supply the connected subcircuits. There are however limitations imposed by the upstream circuit breakers (Kitchen, Hall and SMSB) and supply cables.

4. KCMS Supply Options

The proposed KCMS location in the South-Western Corner of the site is well suited to the provision of a free standing, separate, 2nd supply to the overall Agricultural Grounds Site. Whilst the provision of a 2nd supply to any single lot is not standard practice, it is likely that the clear separation between the proposed KCMS site, and the existing electrical installation to the remainder of the Lot, will be acceptable to the Supply Authority (subject to conditions being met). This does however not resolve any of the supply constraints to the existing facilities.

The below options are available for the KCMS site as well as the overall Agricultural Grounds Precinct. We note that the cost estimates to each option are approximate and are intended as guidance only. The supply costs are largely dependent on Western Power design, material and labour costs.

4.1 Option 1 – Single Phase Western Power Supply from Chauvel Road

There is an existing single phase High Voltage overhead line on the Eastern side of Chauvel Road that could be used to provide a new single phase supply to the KCMS site. This will require the installation of a new pole top or pad mounted transformer and the supply will be limited to 100 Amps (single phase). Although this supply will be approximately 20-40% less than the theoretical ADMD for the KCMS, the equipment usage (frequency and duration) could potentially be managed to ensure the building demand does not exceed the supply capacity.

The cost for this option is expected to be in the vicinity of **$80k - $ 100k** and excludes cabling and equipment downstream of the WP Point of supply (green dome).

4.2 Option 2 – Three Phase Western Power Supply from Chauvel Road

In order for this option to be implemented, the existing single phase overhead line on the Eastern side of Chauvel Road will require to be upgraded to support a 3 phase High Voltage network. This will require the installation of new poles, conductor and other related equipment, or alternatively a new high voltage underground cable from Beverley Rd (approx. 220m), a new padmounted Transformer, as well as possibly a HV RMU (switch) will be installed within the lot and will provide a 3 phase power supply to match the KCMS maximum power demand.

There are several unknown cost variables related to this option but we expect the cost to be in the vicinity of **$180k - $220k.**

The above also provides the option of supplying the Tennis Club from the new transformer – this will free up capacity from the existing Beverley Road Supply that could potentially be used to cover some of the shortfall at the Main Hall Switchboard.

4.3 Option 3 – Upgrade of Existing Beverley Road Power Supply

This option requires that the existing single phase supply to the main site be upgraded to a 3 phase supply. A new padmounted Transformer, as well as a HV RMU (switch) will be installed within the lot and will provide a 3 phase low voltage supply to match the entire site maximum power demand. The existing Site Main Switchboard will be upgraded to accommodate both the new 3 phase supply, as well as separate energy meters (Main Site, Tennis Club, KCMS). The new supply to the KCMS will be via a low voltage cable installed from the SMSB.

The cost estimate for this option is **$200k - $250k** and has the following advantages:

- The KCMS will be supplied with sufficient power to allow full operation without the need for demand management
- The Tennis Club (and KCMS if required) can be metered separately from the rest of the site

- The supply to the Hall, Kitchen and Childcare can be upgraded to reduce nuisance tripping and overloading of circuits. This may require upgrades to the supply cables and sub-distribution boards, the cost of which are not included in this estimate.
- The 3 phase supply will allow for the installation of 3 phase equipment. These are usually more efficient than the equivalent single phase equipment.
- The new power supply can be sized to allow for future replacement of gas appliances (cooking, water heating etc) as well as the addition of new facilities on the site.

5. Summary

The above options provide a reasonable spread of both costs and outcomes. Whilst our discussions on site were of an informal nature, it is clear that the existing power supply is insufficient for the power demand posed by existing facilities. The addition of the KCMS will exacerbate the operational restraints and a power upgrade is inevitable. The question is therefore not whether the upgrade is required, but rather what future proofing should be considered as part of the supply upgrade.

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