

Kevin Wellington

From: Peter Matthews <pmatthews@shelmerdines.com.au>
Sent: Thursday, 8 June 2017 1:27 PM
To: Kevin Wellington
Cc: 'John Macinger'
Subject: RE: Altair Apartments - Electricity Supply
Attachments: Letter 08.06.pdf; 25858 Altair Apartments Load Recording.pdf; AltairAptMainsIncomer.csv; AltairAptMainsIncomer-Summary.txt

Kevin,

In answer to the questions raised in your email, my advice is as follows:

- At the time of our inspection, we were unable to determine if the supply to the building was rated at 400 amps per phase or 800 amps per phase, which are the standard ratings of supplies from Ausgrid substations. Fortunately, the supply is rated at 800 amps.
- With regard to the 450 amp maximum demand measured by Ausgrid, I can only comment that their meters tend to be less accurate than those of the Electrical Testing Company. I note that the monitoring by the Electrical Testing Company was carried out in May 2017 and presume that the apartments were all occupied during that period. If there was a high vacancy rate, that would affect the figures.
- When we are assessing the load of residential buildings similar to yours, we use a load of 4 KVA for 1-bed apartments and 5KVA for 2-bed and 3-bed apartments. Historically, this 'rule of thumb' provides a reasonable estimate of the electrical load including air conditioning. However, it is by no means a definite figure and generally falls on the high side. Because of the great diversity of usage of the air conditioning within the building it is not possible to accurately calculate the increase in load due to its installation so figures such as these give us (and Ausgrid) the best guide available. In the case of your building this calculation gives a total load of 606 KVA or 841 amps per phase. I quoted this figure to give you some surety that the 800 amps per phase will provide you with the additional capacity required to serve the air conditioning (noting that the estimate is generally high) but also to advise you that if every apartment chooses to install air conditioning, the supply will be close to full capacity and will need to be monitored to ensure that it is not overloaded.
- In this regard, one issue which will need to be monitored is the balance of the load. As the supply to the apartments is generally single phase, it is possible that the load on one phase may become higher than the others. If this imbalance is significant, it can result in tripping of the supply. Re-balancing of the supply phases is simple work for an electrical contractor. However, it needs to be monitored when the supply is close to capacity.
- The other issue which will affect the capacity of the supply is the installation of a service protection device (SPD). This was not a requirement when the building was constructed but will be required by Ausgrid when the works are undertaken. The SPD is a circuit breaker installed at the point of supply within the building and designed to protect the consumers mains cabling. The protection setting of the circuit breaker needs to be selected to ensure that, in the event of a fault within the building, the SPD will trip before the fuse in the substation blows. In order to achieve this grading, it is probable that the SPD will need to be set below 800 amps per phase, e.g. 780 amps per phase, which will further restrict the supply capacity. However, I am still confident that the upgraded supply should be adequate.

I hope this is of assistance. I have amended my report as you requested and have attached the load monitoring figures. Please let me know if you need more information.