



Our Ref C21008

Contact Stuart Murphy

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For the attention of Bruce Lee

Dear Bruce,

## **RE: PERTH WALDORF SCHOOL- PARKERVILLE STEINER COLLEGE MAGNETIC FIELD METER READINGS**

Perth Waldorf School requested that River Engineering investigate concerns regarding exposure of Magnetic Field generated by the high Voltage power line located on the Proposed Parkerville Steiner College. River Engineering is not a professional Magnetic Field Consultant so requested advice from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). ARPANSA do provide some guiding information freely available on their website. Additionally, ARPANSA provide a Magnetic Field survey meter which can be hired. River hired a meter and recorded readings on Thursday 17<sup>th</sup> February 2022.

### **Typical Values Comparison**

ARPANSA provide typical values of magnetic fields measured at normal user distance. The below comments and tables are provided by ARPANSA and freely available on their website.

*“Magnetic fields within homes can vary at different locations and also over time. The actual strength of the field at a given location depends upon the number and kinds of sources and their distance from the location of measurement. Typical values measured in areas away from electrical appliances are of the order of 0.1 – 2.0 mG.”*

*“Magnetic fields from individual appliances can vary considerably as well, depending on the way they were designed and manufactured. One brand of hair dryer, for example, may generate a stronger magnetic field than another. In general, appliances, which use a high current (such as those which have an electric motor) will lead to higher readings. It should also be noted that different body parts will be exposed to different magnetic field levels from the same appliance, depending on how far that part of the body is from the appliance when in use. Typical values of magnetic fields measured at normal user distance from some common domestic electrical appliances are listed in Table 1.”*

**Table 1: Typical values of magnetic fields measured at normal user distance**

Appliance	Range of measurements (mG)*
Electric stove	2 - 30
Refrigerator	2 - 5
Electric kettle	2 - 10
Toaster	2 - 10
Television	0.2 - 2
Personal computer	2 - 20
Electric blanket	5 - 30
Hair dryer	10 - 70
Pedestal fan	0.2 - 2

\* Note: Levels of magnetic fields may vary from the range of measurements shown.

*“The powerlines that are present in typical neighbourhoods are called 'distribution' lines and they operate at lower voltage than 'transmission' lines, which use very high voltages. As stated earlier, however, it is the current and not the voltage that is associated with the strength of the magnetic field. Therefore, proximity to high voltage lines will not necessarily give a high reading unless those lines are also carrying a large current. Typical values of magnetic fields measured near powerlines and substations are listed in Table 2. These are well below the exposure limit in the international guidelines of 2000 mG.”*

**Table 2: Typical values of magnetic fields measured near powerlines and substations**

Source	Location of measurement	Range of measurements (mG)*
Distribution line (street powerlines)	directly underneath	2 - 30
Distribution line (street powerlines)	10m away	0.5 - 10
Substation	at substation fence	1 - 8
Transmission line (high voltage powerlines)	directly underneath	10 - 200
Transmission line (high voltage powerlines)	at edge of easement	2 - 50

\* Note: Levels of magnetic fields may vary from the range of measurements shown.

## Parkerville Steiner College Readings

River Engineering conducted some readings across the various areas and locations using the ARPANSA provided meter. A summary of these readings is located within the below Table. All readings were taken between 1m and 1.5m above ground. Please refer to the below section on method used for taking readings.

Location	Specific Location (1.5m above ground)	Reading (minimum two readings at various times)
Parkerville Steiner College	Underneath High Voltage Power Lines - Centre line (on ground) of power line	0.2 to 0.5mg
Parkerville Steiner College	Underneath High Voltage Power Lines - 2m off power line centre line (on ground)	0.1 to 0.4 mg
Parkerville Steiner College	Underneath High Voltage Power Lines - 4m off power line centre line (on ground)	0.1 to 0.4mg
Parkerville Steiner College	Underneath High Voltage Power Lines - 6m off power line centre line (on ground)	0.2 to 0.3mg
Parkerville Steiner College	Underneath High Voltage Power Lines - 8m off power line centre line (on ground)	0.1 to 0.2mg
Parkerville Steiner College	Various locations around College but greater than 10m from HV power line Centre Line	0.1mg
Parkerville Steiner College	Oval	0mg
Silver Tree School	Café	0.2mg
Silver Tree School	Administration building	0.1mg
Silver Tree School	Front of Kindy	0mg
Silver Tree School	In front of each Classroom	0mg
Silver Tree School	Top of school	0mg
General Locations	In Car	0.5mg
General Locations	Along Roland Road (adjacent school footpath)	0.5mg
General Locations	Transformer along Roland Road (at fence)	2.2mg
General Locations	River Office Cannington	1.2mg

## Meter Used

River Engineering were provided with a Emdex Snap 3-Axis Magnetic Field Survey Meter by ARPANSA. Specificity, River were provided with the unit serial number 159417. This unit was last calibrated on 23 November 2021 and valid until 23<sup>rd</sup> February 2022. This unit was used within the calibrated dates.



The Magnetic Field Survey Meter is simple to use. The instructions for use are to hold the unit at a location you would like to test. In this case it was between 1m and 1.5m from the ground. The unit has only one switch which turns on and off the unit. Once the unit is turned on the meter will automatically commence reading within 3 to 5 seconds.

If you require further discussion, please do not hesitate to contact me.

Yours Faithfully

Stuart Murphy  
*for* **River Engineering Pty Ltd**