

**Annexure C**

**Assessment of Environmental Effects**

**ASSESSMENT OF ENVIRONMENTAL EFFECTS FOR  
NOTICE OF REQUIREMENT FOR A DESIGNATION  
UNDER SECTION 168 OF THE  
RESOURCE MANAGEMENT ACT 1991**

**1. INTRODUCTION**

The purpose of this Assessment of Environmental Effects ("AEE") is to provide a description of one of Powerco's electrical substations in the Matamata-Piako District and to analyse its environmental effects, in accordance with Section 168 of the Resource Management Act 1991 ("RMA"). This AEE forms part of and should be read in conjunction with the Notice of Requirement.

**2. REASONS WHY THE DESIGNATION IS NEEDED**

This facility is necessary, now and in the future, for achieving the objectives of Powerco and ensuring a reliable supply of electricity to the Matamata-Piako District

Electrical substations of this scale have a nature and character that is not normally associated with the adjacent land uses or the underlying District Plan zoning and will often not comply with the zoning provisions in the District Plan. This is expected as electrical substations have a unique nature, character and function, and in planning terms, the facility is entirely suited to the designation process. The Resource Management Act (1991) recognises the special position of utilities and provides for such a process and makes express provision for them to be subject to the designation process.

A designation provides a level of planning protection and certainty for the electrical substations irrespective of the underlying plan provisions. It means the Powerco is not required to "monitor" all zone changes during the intervening planning period. The supply of electricity is dynamic; it requires continual capacity, security and performance improvements to electrical substations overtime. This requires a level of certainty that cannot be guaranteed by sole reliance on the process of obtaining resource consents or the plan preparation process. The designation process also allows for the facility to be developed over time regardless of underlying zoning rules using the outline plan process.

Inclusion of the designation in the district plan clearly identifies the use and type of facility as both necessary and unusual. Consequently designation and notation in the planning maps is an appropriate form of recognition for such a strategically important physical resources.

The RMA (s184) specifies that a designation lapses 5 years after it has been included in the district plan unless it has been given effect to before that time, an extension has been sought or a different time frame set out in the district plan. In this case, Powerco does not request any different timeframe as the electrical substations are existing and the designation will have immediate effect.

### 3. DESCRIPTION OF SITE AND EXISTING ENVIRONMENT

The site of the electric substations is described as follows:

SUBSTATION NAME	ADDRESS	PROPERTY DESCRIPTION	ZONE
Waharoa Substation	Dunlop Road Waharoa	Lot 3 DP 333824	Industrial

The site has existing structures that relate specifically to the purpose of an electricity substation. It is considered that the existing structures are an accepted part of the environment and have been on this site for a number of years

#### **4. DESCRIPTION OF PROPOSAL**

No works are being proposed as part of this Notice of Requirement. The effects of the activity will remain the same or similar as they are currently.

Zone substations convert subtransmission voltage to distribution voltage. These are mostly 33/11kV, but a few are 33/6.6kV or 66/11kV. Some supply 22kV from 11/22kV transformers. A radial feeder network runs from the zone substations throughout the service area. Zone substation transformer capacities range from 1.25MVA to 24MVA.

Substations supplying urban/industrial loads typically have two transformers, two incoming 33kV feeders and anywhere between four and 15 outgoing distribution voltage feeders. For rural substations only one transformer is normally provided, and there are typically three to six distribution voltage feeders.

- **Waharoa** substation supplies the town of Waharoa and surrounding rural area.

There are no significant changes proposed to the operation of the substation. No new equipment is proposed in the near future, and it is expected that the substation, will continue largely in its current form. However, as growth in the Matamata-Piako District may potentially lead to a future increase in the demand for power, future works cannot be ruled out in the longer term and the substations may need to be altered or upgraded to meet on-going demand. These works will be described an Outline Plan at the appropriate time.

#### **5. ASSESSMENT OF ENVIRONMENTAL EFFECTS**

##### **5.1. Visual**

The electrical substation that is the subject of this Notice of Requirement has been established for a considerable amount of time and forms part of the visual character of the local area.

The current operations will continue in the manner that they have for the past several years, but in any case, any future works undertaken on the electrical substation site will generally be confined to the area within the security fence, with the exception of conductor works.

## **5.2. Noise**

The substation currently complies with the activity performance standards specified in Part 5. of the Matamata-Piako District Plan.

The substation does produce noise intermittently during operation. The main noise generating feature of the facilities being a low hum from the radiator fans which operate under peak power loadings. To the best of our knowledge, Powerco has received no complaints to date relating to noise from these facilities. As there are no changes to the operation of any of these existing facilities proposed under this Notice of Requirement, it follows that there will be no change to the environmental impact of existing substation noise levels.

## **5.3. Traffic generation, access and carparking**

The ongoing operation of the electrical substation involves infrequent and minor traffic movements, and therefore will have virtually no effect on the traffic environment.

## **5.4. Electromagnetic Radiation associated with Telecommunications Equipment**

Electrical substations are controlled via telecommunications equipment. There are electromagnetic radiation emissions from this telecommunications system (antenna only), however the emissions radiated by this equipment are very low, unidirectional and are targeted to the receiver/transmitter in a very narrow beam width (approximately  $4^{\circ}$ ). The emissions are well within the national electromagnetic radiation emission limits set by NZ Standard 2772.1:1999. Measurements at other site from similar equipment indicate that emissions are of the order of 0.01% of the public exposure limit.

Accordingly no mitigation measures are required.

## **5.5. Electric and Magnetic Fields**

Electric and magnetic fields (EMFs) are present wherever there is electricity. For example, EMFs are found near all electrical wiring in streets and in homes, and are associated with electric tools and most electrical appliances. EMFs are also associated with the transmission of electricity in the transmission line wires and energised switching station equipment.

EMF's within an electrical substation arise from a variety of sources including the following:

- Transmission lines and underground cabling carrying power to and from the switching station;
- Transformers within the switchyard; and

- Electrical bus-bars (conductors that connect equipment) in the substation switchyard.

Electric and magnetic fields are strongest close to the source of the field and become rapidly weaker further away from them. The public is excluded from the electrical substations by the use of security fencing in compliance with the requirements of the Electricity Regulations, and accordingly the strength of the EMF's in areas accessible to the general public (i.e. beyond the security fencing and off-site) is insignificant. As well as keeping the public a safe distance from any electromagnetic fields, Powerco's security fences provides protection from other dangers such as electrocution and arcing arising from switching station equipment.

From an international health protection viewpoint, the control of non-ionising electromagnetic energy has been delegated to the International Commission for Non-ionising Radiation Protection (ICNIRP). ICNIRP is an independent scientific organisation responsible for providing guidance and advice on the health hazards of non-ionising radiation, and was established to advance non-ionising radiation protection for people and the environment. It is a formally recognised non-governmental organisation of the World Health Organisation (WHO) and International Labour Office.

New Zealand does not have its own standards for exposure to low frequency fields. However, the National Radiation Laboratory (NRL) a unit of the NZ Ministry of Health recommends the use of the ICNIRP exposure guidelines.

Powerco will continue to comply with the Ministry of Health endorsed ICNIRP Guidelines for all existing and proposed activities within its electrical substation. Accordingly suitable mitigation measures are provided

#### **5.6. Safety**

As with all electrical equipment, there is some potential for electrocution if live wires are handled. The existing security fences around the electrical substation ensure that the general public cannot access the site and safety signs are erected at the site.

The equipment within the electrical substation is designed to withstand natural disturbances, and is considered safe. In the unlikely event of a fire at the electrical substation, the separation distances proposed from the boundaries are such that the fire could be contained on the site. Although there is oil sealed within the equipment on the site, there will be no other combustible materials within the electrical substation compound.

### **5.7. Traffic Impact**

Electrical substations are not manned for their general operation, and will only be attended by Powerco personnel for routine maintenance or in the case of emergency. The number of vehicle trips to the site in an average week would be less than two.

### **5.8. Compliance with District Plan**

Powerco currently has no plans in place for any new structures on this site. Should new structures or any other improvements be required in the future, Powerco confirm that all permitted activity standards of the District Plan relating to building height, setback, coverage, vehicle entrances and lighting will be complied with

## **6. DESCRIPTION OF ANY POSSIBLE ALTERNATIVE LOCATIONS OR METHODS FOR UNDERTAKING THE ACTIVITY**

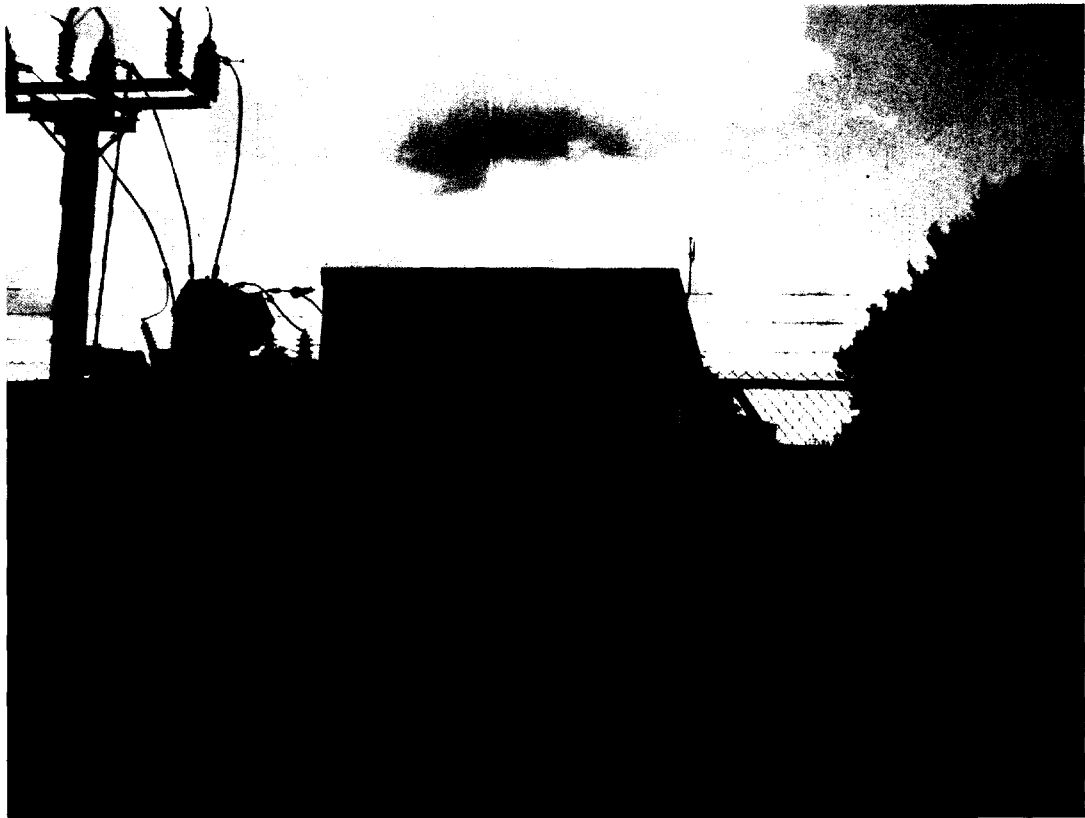
No alternative site or methods have been considered. The site is currently occupied by established electricity infrastructure. Powerco is requesting that the existing facilities be recognised through a designation, which is an accepted method of addressing the potential adverse effects of these particular types of activities.

## **7. CONCLUSION**

The electrical substation listed in Section 1 is an existing facility and no changes to the operation of the facility are expected in the near future. A designation for this electrical substation is necessary to ensure that any enhancement and development work can occur in the future (if required) to ensure the demand for electricity in the Matamata-Piako District can be met. The appropriate processes in terms of the Resource Management Act have been carried out in order for the site to be designated, and it would be unreasonable to expect the requiring authority to use an alternative. The territorial authority should recommend that the requiring authority confirm the requirement subject to appropriate condition (see below):

- All substation works shall be confined to the designated area, and with the exception of works to the conductors, will be located within the security fence.

**Annexure D**  
**Site Photos**



**Waharoa Zone Substation**



**Waharoa Zone Substation**



**Waharoa Zone Substation**