



Hillsborough substation

105 Hillsborough Road

As part of Vector's commitment to improving the reliability of the electricity supply, sometimes we need to build new electricity substations. Vector is committed to keeping the community informed, and this question and answer sheet addresses questions commonly asked about substations.

What is a substation?

Substations allow Vector to control and monitor the flow of electricity in different sections of the network. A substation also contains equipment to lower ('step down') the voltage of electricity to voltages suitable for distribution to transformers which supply homes and businesses. The 'step down' in voltage that occurs in substations is generally from 33,000 volts to 11,000 volts. Vector operates 100 substations throughout the Auckland region which are located in both residential and business areas.

Why is a new substation required?

A new substation will help improve the reliability and quality of the electricity supply in the area. Population growth, combined with the increasing use of electrical appliances, has increased the demand for electricity in the area. The new substation is required to address the ongoing growth in the demand for electricity, ensuring that there is adequate electricity supply and to reduce the risk of power supply interruptions to customers.

What will the substation look like?

Vector's policy is to provide low impact substations, by applying the latest technology. All electrical equipment is enclosed within the substation building and is not visible, we take into account landscaping, fencing, and architectural design of the substation in order to minimise visual impact.

Vector also seeks to comply with the local council's District Plan development controls for the zone so that the building is of a height and size which could be expected in the area.

The electricity lines that will run into and out of the substation to the local overhead network will be undergrounded. Generally, there is no storage of equipment, such as

power poles or cables, outside the building. In some cases a communications pole is required as part of the building. This is so Vector can monitor the substation.

Will you need to remove any trees?

Any established trees on the site will be retained. If we have to remove any tree to facilitate construction Vector will obtain consent from the Council as is normally required for any tree removal. Once construction is completed we will plant additional shrubs and trees. Gardeners are employed by Vector to maintain the grounds on a regular basis.

How big will the substation be?

The site is 946sqm and the substation will cover 258sqm. At its highest the substation will be around 7m.

Will there be boundary fencing?

The substation building itself is secure and as no equipment is located outside of the building so it is not necessary to construct security fencing. At the Hillsborough site we intend to install a timber panel fence on the sides and back boundary and vertical wire fence along the frontage.

Will the substation generate noise?

The electrical equipment inside a substation does create a level of noise, however, Vector designs and soundproofs the building so that the noise levels generated comply with the District Plan noise controls for that zone. Vector prefers to achieve a higher level of noise control so that noise from the substation is generally not audible to adjoining properties even at very quiet times, such as in the middle of the night. [In fact the noise from the neighbouring motor way may be higher than the noise generated by the substation equipment].

Will there be exterior lighting?

Standard residential security lights will be installed on the substation. These lights are sensor activated and the lights will be angled so any light spill onto adjoining properties is minimised.

Will the substation be safe?

Substations contain high voltage electricity and hence are inherently dangerous for unauthorized people, however, the equipment is completely enclosed and securely locked inside the substation building. A fire at a substation is rare, but we design the buildings to ensure that should a fire occur it will be fully contained. All substations have on-line monitoring to our 24 hour control room.

Concerns have been raised in recent years about the safety of utility equipment, particularly around electric and magnetic fields (EMFs). EMFs are produced by all

electrical wiring or equipment carrying electric current. This includes household appliances, internal home wiring, electricity network lines and equipment. EMFs are not a form of radiation.

Vector takes very seriously the health and safety of its customers and staff. Vector is not an authority in EMFs and therefore defers to the national and international authorities for best practice and health guidelines for EMF levels.

The NZ guideline used for acceptable exposure levels is the Ministry of Health National Radiation Laboratory (www.nrl.moh.govt.nz) guideline which in turn refers to the International Commission on Non-Ionising Radiation Protection (ICNIRP). The NZ recommended safe continuous exposure limit for magnetic fields for the general public is 100 microteslas (μT). This exposure limit is the same as those specified in Australia, Germany, Switzerland and the United Kingdom. The EMF levels of Vector's electricity network lines and equipment comply with and are well below those limits.

Common household and office appliances produce EMF levels which are comparable with Vector electricity substations. For example, an electric kettle produces up to $1\mu\text{T}$ and a computer up to $2\mu\text{T}$. At the front boundary of the Hillsborough substation we anticipate the EMF level to be $2.93\mu\text{T}$ (this is with initial load about 18MVA. It will be $4.63\mu\text{T}$ when load grows to maximum load provided for at the substation of 30MVA. The maximum EMF level of $4.63\mu\text{T}$ will only occur during winter load peak periods such as early evening, typically 5 ~ 8pm). EMFs levels decrease rapidly with distance from the source and within 5 - 10m from the boundary levels will be so low they cannot be measured.

For more information about EMFs and Vector's electricity network visit www.vectorelectricity.co.nz/safety/emfs.

Will there be Vector staff working at the substation?

No permanent staff are employed at substations. After construction, substations are generally visited a few times a month by Vector representatives for routine inspections and maintenance. These visits are during the day except in the event of a fault occurring at night.

Who looks after the substation?

Vector employs a range of contractors to maintain its assets including security and fire monitoring companies, and landscape and maintenance contractors. Once the substation is built adjoining property owners can contact the Property Manager at Vector if any issues arise with the property that Vector must address.

When will construction of the substation start and how long will it take?

Construction is expected to start in August 2009. Construction usually takes about six months. The construction will be closely monitored and only Vector approved contractors will be allowed to work on site. Vector seeks to ensure there is minimal disruption to neighbours from traffic, dust, construction noise and other construction effects. Prior to construction, Vector will inform adjoining property owners of a contact person to notify at any time should any issues arise during construction. After construction it usually a further six months to commission the substation.

Will the substation affect the value of my property?

This can be difficult to determine. We have no evidence to suggest that a substation has a detrimental affect on surrounding property values. The substation will be designed to be low impact and blend with the area. The site will be fully planted and all electrical equipment will be located within the building itself. Vector will maintain the substation and property to the highest standards at all times and employs a range of contractors to regularly undertake maintenance and upkeep at its substations.

Do substations need consent from the local Council?

Vector will be obtaining resource consent from local Council to build the substation.

What if I object to the substation being built in my area?

A new substation needs to be built in the area to meet the increasing demand for electricity. Vector is liaising with adjacent property owners and occupiers now to provide information about the substation and to alleviate any concerns.

If you have any questions please contact the Vector Hillsborough substation Solutions Engineer on 978 7841.