



St Johns substation upgrade

As part of Vector's commitment to improving the reliability of the electricity supply, sometimes we need to upgrade or build new electricity substations. Vector is committed to keeping its customers 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 do you need to upgrade the substation?

To 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 upgrade will reinforce the substation to ensure that there is adequate electricity supply to meet demand and to reduce the risk of power supply interruptions to customers.

What does the upgrade involve?

We are extending the building and installing new transformers. We are also upgrading the existing electrical equipment.

Will the appearance of the substation change?

We are extending the substation building to the south (Merton Road side). The extension will match the existing building type. Any new electricity lines running into and out of the substation to the local network will be installed underground. All electrical equipment, such as transformers and switchgear, will be housed indoors. There will be no storage of equipment, such as power poles or cables, outside the building, once construction work is completed.

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 much bigger will the substation be?

The site is 2632 sqm and the existing substation structure covers approximately 264 sqm. The building extension will be approximately 85 sqm, built onto the back of the section.

Will there be additional boundary fencing?

The existing fencing will be retained where possible and replaced where required.

Will the new equipment increase the noise level at the substation?

No, we expect the noise level to remain the same. Electrical equipment inside a substation does create a level of noise, however, Vector designs and soundproofs the buildings 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.

Will there be additional exterior lighting?

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

Are substations safe?

Substations contain high voltage electricity and hence are inherently dangerous for unauthorised 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.

We are often asked questions about the safety of electrical 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.

We anticipate that the maximum EMF level at the boundaries of the substation property will be less than $2\mu\text{T}$. To put EMF levels into perspective, an electric kettle produces up to $1\mu\text{T}$ and a computer up to $2\mu\text{T}$. EMFs levels decrease rapidly with distance from the source and within 5 – 10 metres of the shared boundaries the EMF levels will be so low they cannot be measured.

For more information about EMFs visit www.vectorelectricity.co.nz/safety/emfs.

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

The entire upgrade project will take 10 months to complete and will be finished in February 2010.

The extension construction work is scheduled to start in August 2009 and should take four months to complete. The construction will be closely monitored and only Vector approved contractors are 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.

Does this extension need consent from the local Council?

Vector will obtain building consent from the council. The building will be subject to the local council's District Plan development controls for the zone.

For more information please call Vector on 303 0626.