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Electric and Magnetic Fields and Transpower

2022

FACT SHEET 2 3 4 5

Who is Transpower?

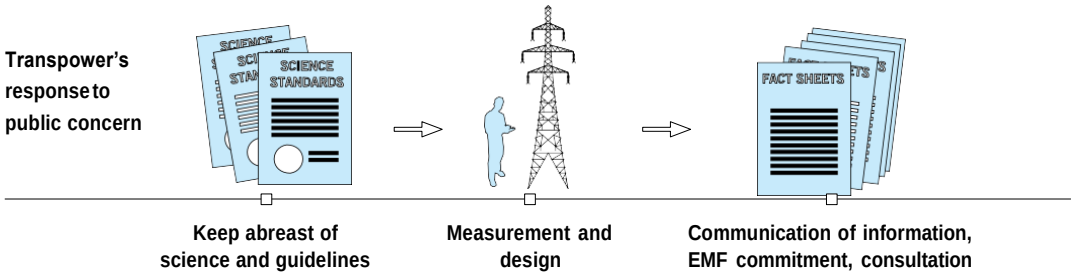
Transpower is the owner and operator of New Zealand's National Grid. The National Grid is the high voltage transmission network that carries electricity around the country. It is made up of over 12,000 km of high-voltage transmission lines and more than 170 substations. It connects power stations owned by generating companies to substations feeding the local networks that distribute electricity to homes and businesses. Some large industrial users of electricity also receive their power directly from the National Grid. The National Grid provides a robust and reliable electricity transmission platform that powers New Zealand's economy and meets the increasing needs of business and communities. While delivering these benefits, Transpower is committed to act in a socially responsible manner whilst promoting a high level of safety.

Background on electric and magnetic fields (EMF)

Electricity transmission as well as many electrical appliances, produces electric and magnetic fields (EMF) of extremely low frequency.

The weight of international scientific opinion is that no causal connection has been confirmed between lower level EMF in the environment and the health effects that have been suggested by epidemiological research.

The biological effects of electric and magnetic fields, when interacting with living tissue, have been well characterised and understood for several decades. Since the late 1970s, the science of epidemiology has investigated possible health effects from lower level environmental exposure to EMF. Although some association has been found, most have been discounted upon review of the full body of scientific literature by national and international bodies. Further information is provided in Fact Sheet 5, *Health Effects and Electric and Magnetic Fields*. Transpower recognises the need to keep abreast of ongoing research.



Keeping the energy flowing

TRANSPOWER

Guidelines and Transpower's commitment

The control of EMF exposure and health effects is guided by the public and occupational guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) 2010. These guidelines are recommended by both the Health New Zealand and WorkSafe New Zealand.

Transpower recognises some people have concerns surrounding the perceived health effects of EMF exposure. Those concerns, which Transpower takes seriously, are often centred on transmission lines.

In response, Transpower has developed a commitment to the management of electric and magnetic fields. This Commitment applies to EMF of extremely low frequency as associated with Transpower's electricity transmission assets - its transmission lines, substations and cables.

Transpower commits to:

- ensure that all new infrastructure is designed and operated to comply with the EMF guidelines recommended by the Health New Zealand
- ensure that, where practicable, existing and uprated infrastructure is operated within these same guidelines
- where available, employ low-cost precautionary measures for new assets to further reduce exposures
- keep abreast of, and where appropriate contribute and respond to, developments in national and international consensus on the management of EMF and its potential effects; and to ensure that this knowledge is adequately communicated to stakeholders and staff
- provide for engagement with various stakeholders on matters including general understanding of EMF and concerns regarding the fields created by Transpower's activities
- employ appropriate occupational health and safety management measures to control EMF exposures, for its staff and for its contractors.

Transpower takes concerns about electric and magnetic fields seriously. Our EMF commitment outlines our response to those concerns.

For further information, please contact: environment@transpower.co.nz

Keeping abreast of EMF knowledge

In addition to retaining its own expertise in this area, one of the ways that Transpower keeps abreast of knowledge is by being represented on NZ Government's Interagency Advisory Committee on the Health Effects of Non-Ionising Fields. The Committee provides updated information to the New Zealand Government on research and developments around electromagnetic energy. Other agency representation includes: the ministries of Health, Economic Development and Environment, the Department of Labour, the Public Health Service, Local Government New Zealand, consumers, academics and the electrical and telecommunications industries.

The role of the Interagency Advisory Committee is to review work published on the health effects of non-ionising fields (including the electric and magnetic fields produced around power lines and other electrical equipment) and advise the Director General of Health on the science and the high-level policy.

The Committee periodically publishes reports to Government endorsing the use of the ICNIRP Guidelines and the use of very low cost measures to reduce exposures. These reports can be found on the Health New Zealand website provided at the end of this fact sheet.

Transpower is active in keeping abreast of new developments and contributing to the development and adoption of best practices.

There are a range of national and international technical engineering committees who consider EMFs from time to time and to which Transpower employees contribute.

Measurement and prediction of EMF

Transpower regularly receives calls from members of the public who have transmission lines in close proximity to their homes and wish to know if the EMF levels are safe.

In many cases, Transpower, at its own cost, will organise for the measurements of field levels in and around the residents' dwellings. These measurements are undertaken by independent experts who provide a report outlining the relevance of the measurements taken. Residents also have an opportunity to discuss their concerns when the measurements are taken. An exception to the provision of this free service is where the request concerns a commercial transaction such as the sale or purchase of a property. Summary measurements can be found on Fact Sheet 3 *Typical strengths of Electric and Magnetic Fields.*

Transpower also operates modelling software to enable the accurate prediction of electric and magnetic field strengths associated with its transmission lines.

Ensuring that Transpower designs comply with national EMF safety guidelines is paramount. Predictions of field levels as they relate to typical (and worst case) operation are not only helpful for safe design, they are also made to give an indication of likely field levels to members of the public and to consenting authorities.

Further information on electric and magnetic fields is available from the following organisations

- Health New Zealand
  - *Electric and magnetic fields and your health*
  - https://www.tewhatuora.govt.nz/publications/electric-and-magnetic-fields-and-your-health

EMF Reports to Minister of Health

https://www.tewhatuora.govt.nz/health-services-and-programmes/environmental-health/non-ionising-radiation/research-into-non-ionising-radiation

- World Health Organization (WHO) EMF Project
  - https://www.who.int/health-topics/electromagnetic-fields#tab=tab_1
- International Commission on Non-Ionizing Radiation Protection (ICNIRP)
  - https://www.icnirp.org/en/frequencies/low-frequency/index.html
- The Australian Radiation Protection and Nuclear Safety Agency
  - www.arpansa.gov.au/RadiationProtection/Basics/elf.cfm
- Australian Energy Networks Association
  - www.energynetworks.com.au/electric-and-magnetic-fields

This is one of five fact sheets produced by Transpower to provide members of the public with information about electric and magnetic fields. This fact sheet gives an overview of our knowledge of electric and magnetic fields and focuses on Transpower's response to public interest in the issue. It includes Transpower's Commitment to the management of electric and magnetic fields. Other fact sheets that are available and provide more detailed information cover:

- **Fact Sheet 2 on the nature of electric and magnetic fields**
- **Fact Sheet 3 on the typical strength of electric and magnetic fields**
- **Fact Sheet 4 on electric and magnetic fields and the question of health effects**
- **Fact Sheet 5 on guidance on safe levels of electric and magnetic fields.**

If you have further questions concerning EMF please call Transpower on 0508 526 369 or contact us through our website www.transpower.co.nz.