

APPENDIX D: OTAHUHU SUBSTATION CONDITIONS**Cultural / spiritual**

1. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, then the following procedures shall apply:
 - (a) works in the immediate vicinity of the site that has been exposed shall cease;
 - (b) the site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
 - (c) the site supervisor shall notify representatives of relevant tāngata whenua, the New Zealand Historic Places Trust, the Manukau City Council and, in the case of human remains, the New Zealand Police; and
 - (d) the notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Electric and Magnetic Fields (EMF)

2. The works shall be designed and constructed to limit the EMF exposure at or beyond the secure boundary of the substation site to the *International Commission on Non-Ionising Radiation Protection Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz) (Health Physics, 1998, 74(4): 494–522)* (ICNIRP Guidelines) public reference levels of 5 kV/m for electric fields and 100 µT for magnetic flux density at one metre above ground level under maximum normal operating conditions (ie, when there are no faults in the transmission system).

Radio frequency interference

3. All works shall be designed to comply with NZS 6869:2004 *Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz*.

Earth potential rise

4. In designing and constructing the work, Transpower shall give consideration to third-party conductive services to ensure compliance with regulations 58, 60, 69 and 87 of the Electricity Regulations 1997 as in force at the date of confirmation of the designation.
5. Substation earth grids shall be designed, built, and tested to ensure electrical safety at or beyond the designation boundary in accordance with Transpower Standard TP.DS.52.01, Issue 2, January 2005.

Light spill

6. All exterior lighting shall be designed to comply with:
 - (a) AS/NZS 1158 *Lighting for Roads and Public Spaces* 2005 Part 3.1; and
 - (b) Transpower's *Requirements for Outdoor Switchyard Lighting Policy*, TP GS 41.01, Issue 3, April 2006; and
 - (c) AS 4282 1997, *Control of Obtrusive Effects of Outdoor Lighting*.

Operational noise

7. Any new equipment (such as transformers, fans and circuit breakers) required as part of the Upper North Island Grid Upgrade Project shall be designed and operated to ensure that the following noise limits shall not be exceeded:
 - (a) Within the boundary of any Business Zone site or any Open Space Zone outside of the designation:
All times 55 dBA L₁₀
 - (b) At or within the boundary of any residentially zoned site outside of the designated area:
All days 7 am to 10 pm 50 dBA L₁₀
All nights 10 pm to 7 am 40 dBA L₁₀
All nights 10 pm to 7 am 70 dBA L_{max}
8. Sound levels shall be assessed in accordance with NZS6802:1991 *Assessment of Environmental Sound*.

9. A design report shall be provided to the satisfaction of the Manukau City Council prior to the installation of any new noise generating substation equipment that demonstrates compliance with these limits.
10. Within one month of installation, the new equipment shall be assessed at source for its sound power level using *EN60076-10:2001-05 Power Transformers Part 10 Determination of Sound Levels*. Sound levels shall then be predicted at the designation boundary. Monitoring and prediction shall be undertaken by a suitably qualified and experienced person within one month of the commissioning of any new equipment. The results of the noise monitoring shall be made available to the Manukau City Council upon request.
11. Transpower shall review the noise levels and report to Manukau City Council at the time of each designation roll-over on progress that has been made to reduce noise levels progressively as a result of any necessary replacement of transformers.

Advice note:

1. *The existing noise levels at the Otahuhu Substation (except for construction and maintenance works) have been predicted as 52 dBA L10 at Nos 8, 12 and 16 Waipapa Crescent. These sound levels contain special audible characteristics and an assessment using NZS6802:1991 would cause any performance standard to be reduced by 5 dB.*

Vibration

12. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) *Structural Vibration – Effects of Vibration on Structures*.

Hazardous substances

13. Any part of the facility containing oil shall be designed to comply with Transpower's *Oil Spill Management Policy* (TPG:GS.54.01), Issue 2, June 2002.

Construction Management Plan (CMP)

14. At least 30 days prior to commencement of any construction activity on the site, Transpower shall submit a construction management plan to the Council's Consents Officer. The Council's Consents Officer shall respond within 20 working days indicating whether approval is given or refused.

Approval shall not be unreasonably withheld. The construction management plan shall detail:

- (a) the proposed earthworks methodology;
- (b) storage and reuse of topsoil;
- (c) on- and off-site disposal of soil;
- (d) silt and dust control;
- (e) traffic management for delivery of substation equipment and materials (excluding transformers) and general construction activities;
- (f) temporary equipment storage;
- (g) site security and lighting;
- (h) procedures for temporary storage and handling of hazardous substances, including insulation oil;
- (i) compliance with designation conditions, including (where applicable) for:
 - (i) noise;
 - (ii) hours of operation;
 - (iii) accidental discovery protocol;
 - (iv) protection of known archaeological sites;
- (j) community information and liaison (including local marae); and
- (k) procedure for managing the accidental discovery of archaeological sites or sites of significance to Māori, including contractor training prior to commencement of work.

Construction and maintenance noise

15. Subject to condition 16, all construction and maintenance work shall be designed, managed and conducted to ensure that construction and maintenance noise from the site does not exceed the limits in

NZS6803:1999 *Acoustics–Construction Noise* at locations set out in section 6.2 of that standard.

- 16.** The noise limits shall not apply to emergency work required to re-establish continuity of supply, work urgently required to prevent loss of life or other personal injury, or commissioning works at the substation site, but all practicable steps shall be undertaken to control noise and to avoid adverse noise effects, particularly at times when the stricter noise limits apply (eg, at night-time).
- 17.** Prior to any significant construction work taking place, including any earthworks, a noise management plan shall be prepared, with the assistance of a suitably qualified and experienced person, that sets out the management procedures in terms of section 8 and Annex E of NZS6803:1999 and the works shall be undertaken in accordance with that noise management plan.
- 18.** The noise management plan required by condition 17 shall be submitted to Council's Consents Manager for approval, at least 20 working days prior to the works commencing. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.