

**APPENDIX G: PAKURANGA TO BROWNHILL UNDERGROUND
CABLE CONDITIONS****Documents**

1. The initial works to give effect to the designation of the Pakuranga to Brownhill underground cable shall be generally in accordance with Maps 8–12 of Appendix V.

Cultural / spiritual

2. 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.

Magnetic Fields (MF)

3. The works shall be designed and constructed to limit the magnetic field exposure 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 100 µT for magnetic flux density when measured at one metre above ground level directly above any cable under normal operating conditions (ie, when there are no faults in the transmission system).

4. In order to reduce long-term public exposure to MFs no habitable buildings shall be constructed within the designation corridor for the underground cable.

Radio frequency interference

5. 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 / induced voltages

6. The works shall be designed and constructed to comply with regulations 58, 60, 69 and 87 of the Electricity Regulations 1997 as in force at the date of confirmation of the designation.
7. The works shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4852:2000 *Electrical Hazard on Metallic Pipelines*.

Existing utilities

8. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:
 - (a) it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
 - (b) to the greatest extent practicable, all utility services existing at 28 May 2007 (being the date the Notice of Requirement was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
 - (c) if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at 28 May 2007 located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and

- (d) reasonable access to existing utility services located in or adjacent to the designation are able to be accessed during construction.
9. Nothing in condition 8 (c) requires Transpower to:
- (a) provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
 - (b) put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management Plan (CMP) to Manukau City Council for approval. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld. The construction management plan shall outline Transpower's intended approach to:
- (a) the proposed construction methodology;
 - (b) storage and reuse of top soil, including stockpiling areas;
 - (c) on- and off-site disposal of spoil;
 - (d) silt and dust control, during earthwork stages;
 - (e) groundwater and stormwater management, treatment and disposal;
 - (f) traffic/property access management;
 - (g) contaminated land management procedures;
 - (h) construction hours;
 - (i) existing network utilities protocols and guidelines;
 - (j) access and utilities management;
 - (k) subject to other specific conditions, cultural protocols and archaeological requirements;

- (l) land stability management and water quality and sediment controls;
 - (m) vegetation disturbance/removal and replacement;
 - (n) management of construction activities;
 - (o) contractor training, including health and safety;
 - (p) the intended construction programme, including staging if appropriate;
 - (q) management of construction noise;
 - (r) community information and liaison;
 - (s) temporary activities and equipment storage in specified areas;
 - (t) contractor car parking in specified areas;
 - (u) security and lighting during construction; and
 - (v) situations where the proposed cable depth could differ from the 1500 mm shown on Maps 6 or 7 of Appendix V, including likely reasons for differing depth and means of resolving any issues arising from that depth.
11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:
- (a) quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
 - (b) spoil which is not reused in construction shall be disposed of at appropriate facilities;
 - (c) dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
 - (d) clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;

- (e) as far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- (f) measures for testing and removing any contaminated land along the route shall be developed;
- (g) liaison with existing utility providers with underground services within the designated route shall be undertaken;
- (h) adequate measures shall be implemented so as to avoid land slope failure;
- (i) when construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- (j) site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled *Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi Tapu, Heritage Sites and Archaeological Sites* (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;
- (k) Transpower shall notify Manukau City Council and Auckland Regional Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek, Mangemangeroa Stream and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;
- (l) parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;
- (m) temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);

- (n) contractor car parking shall be suitably located, so as to not prevent property access; and
- (o) work sites shall be secure and illuminated to restrict access as appropriate.

Advice note:

1. *Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.*

Construction hours

12. Construction hours shall be as follows:

Monday to Friday: 7 am to 6 pm

Saturday: 8 am to 1 pm

Sundays and public holidays: No work

except where work is necessary outside the specified days or hours for the following purposes:

- (a) where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;
- (b) delivery of large equipment;
- (c) emergencies;
- (d) securing of the site or removing a traffic hazard;
- (e) cable jointing in self-contained enclosures;
- (f) where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and maintenance noise

13. Subject to condition 14, all construction and maintenance work shall be designed, managed and conducted to ensure that construction and maintenance noise along the underground cable route does not exceed the limits in NZS6803:1999 *Acoustics–Construction Noise* at locations set out in section 6.2 of that standard.

14. The noise limits shall not apply to emergency work required to re-establish continuity of electricity, communications or water supply, work urgently required to prevent loss of life or other personal injury, or commissioning works; 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).
15. Prior to any significant construction work taking place, 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 (other than emergency works).
16. The noise management plan required by condition 15 shall be submitted to Manukau City 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.

Advice note:

1. *The noise management plan required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.*

Vibration

17. 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*.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with *Transit New Zealand's Code of Practice for Temporary Traffic Management (COPTTM)*.
19. The TMP shall be submitted to Manukau City Council's Consents Manager for approval at least 20 working days prior to commencement of underground cable construction after consultation with:
 - (a) Manukau City Council;
 - (b) the following key stakeholders:

diversions and delays, including examples of signage for diversion routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and installed at appropriate locations at least seven days in advance of such road closures, diversions and delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

- (e)** details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;
- (f)** inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;
- (g)** details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions and delays, and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;
- (h)** details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;
- (i)** Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:

- (i) the traffic volumes using such intersections or roads;
 - (ii) the likely levels of delays and disruptions which may be experienced as a result of cable construction; and
 - (iii) identification of locations where such installation works must be carried out in the most timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;
- (j) following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.
23. Transpower shall carry out traffic modelling at the intersections of Chapel Road/Maghera Drive/Armoy Drive and Haven Drive, and the crossings of Te Irirangi and Ti Rakau to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan (CMP) and the Traffic Management Plan as required by condition 18, and incorporate any necessary specific provisions in the CMP.

Advice note:

1. *The traffic management plan required by condition 18 can be incorporated into, and be part of the construction management plan required by condition 10.*

Continuation of access

24. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

25. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be

made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

- 26.** Other than as provided in conditions 27 and 28, Transpower shall:
- (a)** within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials;
 - (b)** as soon as practicable after the completion of construction re-grass areas that were previously grassed.
- 27.** Prior to commencing construction, Transpower shall undertake a carriageway condition survey of the road network along the designated route, and shall invite appropriate representatives of Manukau City Council to attend. The condition survey shall consist of a photographic or video record of the carriageway along the designated route. A copy of the record will be retained and provided to the Manukau City Council upon request.
- 28.** As soon as practicable after the completion of construction, Transpower shall repair any damage to public carriageways and footpaths (and associated road components) resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Sandstone / Caldwell's Road Intersection sight line protection

- 29.** Transpower shall construct and install the cable in the vicinity of the Sandstone / Caldwell's Road intersection in general accordance with Map 13 of Appendix V, in order to maintain the sight lines for any intersection installed in accordance with Map 14 of Appendix V.
- 30.** Transpower shall ensure that the cable is placed in the Sandstone/Caldwell's Road intersection in general accordance with Map 6 or 7 of Appendix V to a minimum depth of 1500 mm from the surface levels shown on Map 13 of Appendix V.

Brownhill Road upgrade

31. After installation of the cables, Transpower shall after consultation with Manukau City Council upgrade the surface of Brownhill Road to the entrance to the substation site to meet Manukau City Council's minimum design standards for rural roads as defined in their Engineering Quality Standard R16–*Rural Roding "Minimum Standard"*.

Road widening of Whitford Park Road

32. Transpower shall ensure that the cable is placed in Whitford Park Road at such depth as will not compromise Manukau City Council's plans to widen the road and alter its vertical alignment as shown on Maps 15–23 of Appendix V.