TRANSPOWER
Keeping the energy flowing

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9 July 2019

Plans & Places
Auckland Council
135 Albert Street,
Auckland Central,
Auckland 1010

Attention: **Therese Strickland**
Team Leader, Auckland-wide

Dear Therese,

Subject: **Notice of Requirement pursuant to s. 168 RMA for a designation and an Outdoor to Indoor Conversion project at the Wiri substation.**

Transpower New Zealand Limited (Transpower) has prepared the enclosed documentation to support a Notice of Requirement pursuant to section 168(1) RMA for a designation for the purposes of 'Electricity Substation' and an Outdoor to Indoor Conversion project (ODID) at the Wiri substation located at 656 Great South Road, Manukau.

The designation is necessary so the site can be consistent with other designated Transpower substations in Auckland while also providing long-term planning security and protection for the maintenance, operation, development and upgrade of the site.

Should you have any questions regarding this application, please contact John Sutherland on Ph. 04 590 8608 / Mob. 021 814 384 or Email: John.Sutherland@transpower.co.nz.

Yours sincerely,

John Sutherland
Environmental Planner
Environmental Policy and Planning Group
TRANSPOWER NEW ZEALAND LIMITED

Enclosures:
- *Notice of Requirement documentation*

AUCKLAND UNITARY PLAN (OPERATIVE IN PART)

TRANSPOWER NEW ZEALAND LIMITED

Resource Management Act 1991: Section 168

NOTICE OF REQUIREMENT FOR WIRI ELECTRICITY SUBSTATION

9 July 2019

Keeping the energy flowing




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Table of Contents

1 Introduction

Transpower New Zealand Limited (**Transpower**) is a State-Owned Enterprise (**SOE**) that plans, builds, maintains, upgrades, develops and operates New Zealand's National Grid, the high voltage transmission network for the country. The National Grid links electricity generators directly to major industrial users and distribution companies across New Zealand, feeding electricity to the local networks that distribute electricity to homes and businesses.

The National Grid is made up of over 12,000 km of high-voltage transmission lines and 170 substations. The substations transform voltage from high transmission voltage (from the National Grid) to lower voltage for local electricity distribution.

The Wiri electricity substation supplies electricity to Vector Limited (**Vector**) (a distribution company), which then distributes electricity to the local electricity distribution network, primarily to the area west and south of the Site (Wiri and Manurewa). It is a local point of supply to a mixture of commercial, industrial and domestic uses in South Auckland suburbs.

Transpower became an SOE and a requiring authority in 1994 and took over the operation of some facilities owned by the Electricity Corporation of New Zealand (**ECNZ**), including the Wiri electricity substation, located at 656 Great South Road, Manukau (**the Site**). The Site is not currently designated by Transpower in the Auckland Unitary Plan (Operative in Part) (**AUP(OP)**) and was not previously designated by Transpower in the Auckland District Plan - Operative Manukau Section (2002), primarily due to changes in responsibility as well is timing for future upgrade works. In addition, Transpower decided not to designate the Wiri electricity substation through the proposed Auckland Unitary Plan process due to the timeframes involved, as it had plans to upgrade the substation in 2015, prior to the Auckland Unitary Plan becoming operative and the designations being confirmed in the AUP(OP). Therefore, Transpower intended to designate the site under the Auckland District Plan (Manukau Section) 2002 prior to the upgrade works, to enable those works to occur under the designation. However, the upgrade works were not progressed at that time and the site was not designated in either plan.

This Notice of Requirement (**NOR**) has been prepared to designate the existing Wiri electricity substation in the AUP(OP). The purpose of the designation is for "electricity transmission – Wiri electricity substation". The designation of the Site for this purpose would provide for the ongoing operation, maintenance, development and potential upgrade of the existing substation, and would be consistent with the designations for other Transpower substations throughout Auckland.

This NOR has been prepared in accordance with the requirements of the Resource Management Act 1991 (**RMA**), and in particular, the requirements of Form 18, section 168, and section 171.

This NOR also contains details of the Outdoor to Indoor (**ODID**) conversion project at the Site, which involves the removal of the existing aging 33kV switchyard and replacement with two new 33kV switchroom buildings. Given the level of detail for the ODID conversion project contained within this Report, including the information normally required by s176A(3) of the RMA which has been incorporated into the designation, Transpower need not submit an outline plan for the ODID conversion project.

2 Description of the Environment

3.1 Site Location and Context

This NOR relates to the existing Wiri substation, located at 656 Great South Road, Manukau. The notice of requirement applies to the entire land parcel which is 2.3433 hectares in area. The land is owned by Transpower and is legally described as Lot 1 DP 167802 (Refer to **Appendix B** for the Certificate of Title).

The Site sits between Great South Road and State Highway 1 (**SH1**), which are west and east of the Site respectively. Further to the east beyond SH1 is an area of established housing. The Site sits to the south of a retail complex which includes a supermarket, banks, fast food and real estate outlets and to the north of a car sales yard. Beyond these activities, the land to the north, west and south of the Site includes a mixture of industrial, commercial and retail activities including Manukau City Centre to the west of Great South Road. Further to the north lies Auckland University of Technology - Manukau Campus and to the north east is Manukau Sports Bowl. The Site blends into the commercial and industrial amenity of the surrounding land-uses and has been a part of the existing environment since it was commissioned on 1 March 1975.

3.2 Site Description

Existing Utilities and Infrastructure

Wiri substation was commissioned on 1 March 1975. In 1994, Transpower took over the operation of the Site from ECNZ. The Site is currently a part of Transpower's Auckland 110kV transmission network and is connected to the existing 110kV Bombay to Otahuhu transmission line by hard-tee connection. The 110kV system also connects to the Waikato region via a Bombay–Wiri–Otahuhu double-circuit line, with electricity flow generally south out of Otahuhu.

The Wiri electricity substation supplies Vector with electricity from the 110kV network, which then distributes it throughout the local network to the area west and south of the Site (particularly Wiri and Manurewa). The Site is the sole point of secure electricity supply for these areas, therefore security of supply from the Site is essential.

The Site contains several pieces of existing infrastructure and utilities (as shown in Figures 1, 4, 5 and 6). The existing utilities and infrastructure associated with Wiri substation includes:

- 110kV and 33kV switchyards
- Transformers
- Circuit breakers
- Support structures (gantry, poles and stands)
- Walls (fire and acoustic)
- An oil interceptor tank
- Ripple plant
- Workshop building
- Control room
- Associated security fencing
- Various cables and cabinets, and
- Overhead transmission lines that connect the substation to 110kV double circuit towers (up to 41 metres height). The towers are located outside the Site boundary, east of the Site (on the opposite side of SH1)

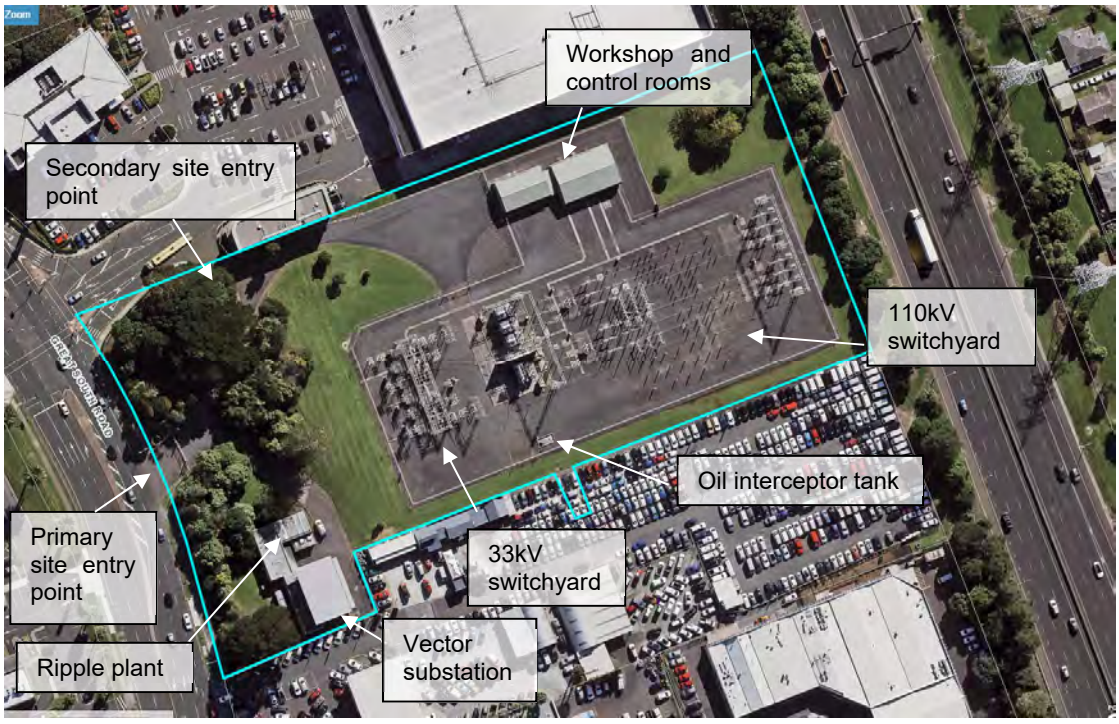


Figure 1 - Wiri substation – Existing site layout at 656 Great South Road, Manukau

Vector also owns and operates electricity infrastructure on the Site. The Vector infrastructure includes a substation in the south-western corner of the site, adjacent to the ripple plant and underground cables connecting the electricity to the local distribution network (see Figure 1). Transpower's designation would not provide for the operation, maintenance, development or potential upgrade of assets owned by Vector.

There are no other known utilities within the footprint of the proposed designation (e.g. reticulated services[1], or aboveground radio communication facilities).

Typical day-to-day operation of the substation equipment occurs remotely, without any persons being present on the Site. Maintenance teams periodically visit the Site to inspect and undertake maintenance activities.

Vegetation

There is a grassed setback along the majority of the perimeter of the Site, with substantial trees and shrubs forming a screen along the Site boundary in common with Great South Road (see Figures 1, 2 and 3). Screening along the boundary of the SH1 road corridor partially screens the site from views from the east.

Access

The Site is located on Great South Road, Manukau and contains two existing entry points; the primary entry point from Great South Road at the western boundary of the Site, and the secondary entry point from the Southpoint Carpark at the northern boundary of the Site (as shown in **Figure 1**). Great South Road is identified as a Primary Arterial Road on Auckland Council GeoMaps.

[1] Based on a review of the 'underground services' layer of Auckland Council GeoMaps

Figure 2 - View of the Wiri substation site from Great South Road (looking north east)

Figure 3 - View of the Wiri substation site from Great South Road (looking south east)

Figure 4 Existing 110kV switchyard and gantries at Wiri Substation (view from south looking north across the Site)

Figure 5 Existing 110kV and 33kV switchyard and gantries (view from north looking south across the site)

Figure 6 Existing 110kV gantries (view from south of The Site, looking east across the Site).

Geology, Topography and Hazards

The site is situated on flat land with a relatively level gradient and an existing land contour of 33 metres above sea level.

The Site is part of a wider flat floodplain between Waokauri and Puhinui Creeks and is located approximately 6 km east of the Manukau Harbour. As shown on the Flood Hazard Map contained in **Appendix A**, Auckland Council GeoMaps identifies an area of approximately 2,500m^2 in the centre of the Site (between the existing 33kV and 110kV switchyard areas) as a 'Flood Plain', which indicates the area is predicted to be covered by flood water as a result of a rainstorm that occurs on average once every hundred years (based on hydraulic modelling). However, to Transpower's knowledge, flooding has never occurred at the site.

Auckland Council GeoMaps also identifies an overland flow path (with a contributing catchment of between 4,000m^2 and 3 ha) which flows toward the north-eastern corner of the site (see **Appendix A**).

Historic Heritage and Archaeology

There are no identified areas or sites of significance to tangata whenua on our surrounding the Site identified on the AUP(OP) Maps. There are also no known archaeological sites on the Site or surrounds with the closest recorded archaeological site being a ditch/bank hedge located approximately 1 km south of the Site (Archsite reference R11/1960). Additionally, the Site is existing, has already been highly modified, and is surrounded by an existing highly modified environment.

Auckland Unitary Plan Zoning and Notations

As shown on the AUP(OP) Context Map contained in **Appendix A**, the Site and the land to the north and south is zoned 'Business – General Business Zone'. The land to the west (Manukau City Centre) is zoned 'Business – Metropolitan Centre Zone', and the land to the east (on the opposite side of SH1) is zoned 'Residential – Mixed Housing Suburban Zone'.

The National Grid Substation Corridor applies to the private land within 12 metres of the boundary of the Site, and to the road reserve of Great South Road and Cavendish Drive within 500 metres of the Site, as shown in the AUP(OP) Context Plan contained in **Appendix A** to this Report. The National Grid Substation Corridor restricts any new development of sensitive activities within the corridor. Any proposed sensitive activity within the National Grid Substation Corridor is managed to prevent risks to people and property; protect the National Grid; and manage potential reverse sensitivity effects.

The Site also sits within the Aircraft Noise Overlay (Moderate Aircraft Noise Area), however the provisions which manage activities sensitive to aircraft noise in areas of high cumulative noise around the Auckland Airport are not relevant to the Site.

A Notice of Requirement (NOR 7) for the Proposed Northern Runway at Auckland Airport (notified in February 2018) has proposed a further airspace restriction designation that applies to the Site. The Site would be subject to the Obstacle Limitation Surfaces (Outer Horizontal Surface) control. The height associated with this control is 150 metres above

sea mean sea level. Taking into account the existing land contour at 33 metres above sea level, the substation and associated buildings, structures and activities and any future activities will be well below the control level and would not encroach into the obstacle limitation surface.

There are no areas on or near the site that are scheduled in the AUP(OP) in relation to natural heritage, natural resources, coastal environment or special character.

3 Description of the Project

3.1 Description of the Designation and Public Work

This NOR has been prepared to designate the existing Wiri electricity substation in the AUP(OP). The purpose of the designation is for "electricity transmission – Wiri electricity substation". The designation of the Site for this purpose would provide for the ongoing operation, maintenance, development and potential upgrade of the existing substation, and would be generally consistent with the designations for other Transpower substations throughout Auckland.

As noted above, the existing buildings, structures and activities include (but are not limited to): transformers, circuit breakers, substation support structures (gantry, poles and stands), various cables, walls (fire and acoustic), cabinets, security fences, oil interceptor and other ancillary facilities and works.

At this stage, the scale, location and extent of any future works at the Site (with the exception of the ODID Conversion Project discussed below) has not been confirmed as this depends on long-term planning for transmission assets and performance of the existing equipment, among other factors. Given the role of the Site, primarily as a connection point for electricity transmission between the National Grid and local distribution network, future changes at the Site are not expected to be substantial or materially different to the activities already occurring. Future work is also constrained by the Site size and configuration.

However, as technology and design standards evolve, there may be new types of equipment that supersedes current technology, hence the need for Transpower to have flexibility in design and configuration of activities that could occur on the Site in the future. The provision for these types of activities under the designation would provide certainty for Transpower in terms of short, medium and long-term planning and to meet its objective (identified in Section 3.5). The types of activities that may occur at the site that would be authorised by the designation include, but are not limited to:

- New switching equipment and reactive power support equipment;
- The construction of new or extension of existing buildings, structures or equipment on the Site;

- The construction of new or extension of existing fencing, car parks and telecommunications facilities at the Site;
- Maintenance and replacement of lighting and impermeable surfacing; and
- Replacement of signs or additional signage.

The works that the designation would authorise would be restricted to the constraints of the property boundary and designated area, shown in **Appendix E**.

There is also a need to maintain electricity supply to Vector therefore the potential for large-scale works or redevelopment of the Site is limited. The capacity of the lines into Wiri is only just sufficient to provide n-1 security (meaning Transpower can manage an unplanned outage of any single piece of equipment and still provide all of the load to the local distribution network). Transpower has an investigation underway to provide additional capacity into Wiri. Any capacity upgrade would relate to the lines into Wiri, with only consequential/insignificant work to the substation under the proposed designation.

Transpower's Auckland Strategy identifies potential dismantling of the 110kV lines to the South of Wiri through to Hamilton between 2020-2030. Any dismantling of these lines would result in consequential removal/dismantling of some of the assets at the substation.

All future works at the Site will be managed in accordance with the measures set out in Section 8 and the associated proposed conditions of the designation, which are set out in **Appendix D** and Section 4.11.

Any future works that involve changes to the Site, would be subject to the OPW process under section 176A of the RMA unless otherwise authorised under the Act or provided for by an Outline Plan Waiver.

3.2 Outdoor to Indoor Conversion Project

Transpower's programme of ODID conversions at various substations throughout New Zealand involves the replacement of existing outdoor switchyards and associated equipment with new indoor switchboards with the same functions. The purpose of the ODID programme is to address the safety and clearance distance concerns with older outdoor infrastructure, with a shift to modernised and safer indoor equipment.

Future works at the Site, as part of the ODID programme, are proposed to replace the existing outdoor 33kV switchyard and associated equipment (which is currently located in the western part of the platform as shown in **Appendix E**.), with an indoor 33kV switchboard with the same functions.

The ODID conversion project will involve:

- **New buildings:** two new buildings up to 6.5 metres in height with a footprint of around 129.2m^2 and 79m^2 respectively to house the new 33kV switchroom

equipment. The location and dimensions of the proposed buildings is shown in the indicative plans contained in **Appendix J.**

- **Earthworks:** Associated earthworks of approximately 3,000m^3 will be required for cabling and trenching, site preparation for the new switchroom buildings, and dismantling old equipment[2].
- **Cabling and trenching:** The installation of associated cables to connect the existing transformers to the 33kV switchboard in the new buildings.
- **Switchyard extension:** the security fencing surrounding the existing switchyard will be extended to include the new switchyard building to the north of the existing 33kV switchyard.
- **Removal of redundant substation equipment:** Small-scale 33kV substation equipment within the existing gantry will be removed from the Site. The existing foundations will remain in-situ, however, they may be altered slightly so that they do not pose a health and safety risk and/or trip hazard.

The works will be undertaken in general accordance with the plans provided in **Appendix J**.

The works are scheduled to commence in approximately February 2020 and will be undertaken in stages over a 14 to 16-month period. The construction of the new buildings is expected to commence in March 2020.

3.3 Outline Plan of Works

Section 176A of the RMA creates a general requirement for requiring authorities to submit an OPW prior to carrying out work within a designation. However, s176A(2)(b) provides that a requiring authority need not submit an OPW if the details of the proposed public work, as referred to in Section 176A(3) are incorporated into the designation.

Extensive information about the ODID conversion project is provided in this notice of requirement, including the information normally required to be provided in the OPW under s176A(3), being:

a. The height, shape, and bulk of the Project;
b. The location on the site of the Project;
c. The likely finished contour of the Project site;
d. The vehicular access, circulation, and the provision for parking;
e. The landscaping proposed; and
f. The other matters proposed to avoid, remedy or mitigate the adverse effects of the Project on the environment.

[2] The Excavation Quantity Estimates plan in Appendix J includes a total estimated excavation quantity of 2,716m^3 across the site, however to enable flexibility Transpower consider that approximately 3,000m^3 of earthworks may be required.

The information that is normally required to be provided for an OPW considering the matters set out in s176A of the RMA is discussed below.

The height, shape, and bulk of the Works - Section 176A(3)(a)

The Works are typical of substation infrastructure and will be consistent with the scale, character and appearance of the Site.

Switchroom Buildings

- The height and shape of the new switchroom buildings is shown in **Appendix J** and will be in keeping with the height, shape and appearance of the existing buildings and equipment on the Site.
- Switchroom buildings L and M will be approximately 7.3m (W) x 17.7m (L) x 6.4m (H), and will be located to the north of the existing 33kV switchyard as shown in **Appendix J**.
- Switchroom building K will be approximately 7.3m (W) x 10.8m (L) x 6.4m (H), and will be located to the south of the existing 33kV switchyard as shown in **Appendix J**.
- The height of the new buildings will be substantially lower than the remaining equipment within the switchyard.

Cabling and Trenching

- The cabling and trenching work will be underground for the most part.

Switchyard Extension

- The existing switchyard will be extended by approximately 425m^2 as shown in **Appendix J.**

Redundant Equipment

Most of the redundant equipment from the 33kV switchyard will be removed. It is expected that any redundant foundations will remain in-situ and be modified so they are not a trip hazard. In the unlikely event that the removal of the foundations is necessary, any soil disturbance associated with the removal of foundations will be included in the resource consent applications for the works explained in Section 3.4.

The height, shape and bulk of the Works are illustrated in the drawings and plans provided in **Appendix J.**

The Location on the Site of the Works - Section 176A(3)(b)

The location on the Site of the Works is shown on the plans provided as **Appendix J.**

Figure 7 shows the area for the proposed switchrooms L and M and the switchyard extension to the north of the existing 33kV switchyard.

Figure 8 shows the area for the proposed switchroom K to the south of the existing 33kV

switchyard.

Figure 7 *The location of the proposed switchroom buildings L and M and switchyard extension (looking north west)*

Figure 8 The location of the proposed switchroom building K (looking west)

Figure 9 The existing 33kV switchyard to be removed (looking south west)

Figure 10 Existing vegetation on the eastern boundary of the site (taken from SH1 looking northwest toward the Site)

The existing 33kV switchyard is shown in **Figure 9**. Most of this equipment is to be removed following the installation of the new indoor equipment.

The proposed locations for the new switchroom buildings are best suited to the Site as there is no nearby high voltage equipment or overhead conductors. These locations were chosen as most of the existing 33kV feeder cables pass near the proposed building locations, this part of the Site is flat, and there is direct access from the existing site accessways.

The likely finished contour of the Site - Section 176A(3)(c)

The switchyard extension will be at the same level as the existing switchyard. The finished contour of the Site will not alter from the existing contours.

The vehicular access, circulation and provision for parking - Section 176A(3)(d)

Vehicular access, circulation and provision for parking will not change from the current configuration. The area for the new proposed switchroom buildings will not be located

where car parking is currently. The amount of carparking spaces at the Site will remain unchanged.

The northern entrance to the Site from the retail complex will be used for standard deliveries of equipment and materials. The main entrance to the Site from Great South Road will also be used, mainly for contractor vehicles. In the case that some construction traffic is unable to turn around on the Site and reverse exiting is required, the northern entrance into the carpark area will be used wherever possible. A Traffic Management Plan will be prepared to control all constriction traffic entering and exiting the Site. There is sufficient room within the Site to store construction materials.

The landscaping proposed - Section 176A(3)(e)

Vegetation trimming, felling or removal

No landscaping is proposed as part of the Works. The vegetation along the western boundary (shown in **Figure 2** and **Figure 3** above) will be retained. The vegetation on the eastern boundary (shown in **Figure 10**) is located on land owned by the NZ Transport Agency.

Any other matters to avoid, remedy or mitigate any adverse effects on the environment - Section 176A(3)(f)

All other matters are addressed in Section 4 of the NOR.

3.4 Applications for Resource Consents

In addition to the designation and the information provided above, Transpower is concurrently applying for the following resource consents from Auckland Council under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES Soil) and the contaminated land provisions of the AUP(OP). These resource consent applications are for the land disturbance required for the ODID conversion project:

- **NES Soil - Controlled Activity:** Volume of soil disturbance required for works is expected to exceed 25m^3 per 500m^2.

- **AUP(OP) E30.6.2.1 - Controlled Activity:** The soil has been sampled and is considered to be contaminated (above AUP(OP) Permitted Activity criteria and meets Controlled Activity criteria). Volume of disturbance exceeds 200m^3.

3.5 Consideration of Alternatives

A consideration of alternative sites, routes and methods of undertaking the project is not necessary as Transpower has an interest in the land for undertaking the work (the Site is owned by Transpower), and the proposed designation will not have a significant adverse effect on the environment (as discussed in Section 4). The Site is an established

substation that has been in operation since 1 March 1975 and future works would be within the constraints of the property boundary. Section 3.6 explains that the designation is necessary to achieve Transpower's objectives as it would provide long-term flexibility and certainty, which other RMA methods would not provide for as efficiently and effectively.

3.6 Requiring Authority's Objectives

Section 171(1)(c) of the RMA requires regard to be had to "*whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought".* The necessity for the works, and the designation as a planning tool are required to be 'tested' against the objective(s) by the consenting authority in making a recommendation on whether to confirm the designation under section 171 of the RMA.

Transpower's key corporate objectives are to operate as a successful business and to "*deliver and operate a safe, reliable, cost efficient transmission grid that meets New Zealand's needs now and into the future."* (as stated in Transpower's Statement of Corporate Intent 2018/19).

Transpower's objective for Wiri Substation is:

"To provide for the short, medium and long-term operation, maintenance, development and potential upgrade of the existing Wiri electricity substation, to enable safe, secure and efficient electricity transmission between the National Grid and local distribution network."

The designation is necessary to achieve this objective because it will:

- identify the Site in the AUP(OP) for its purpose as a substation for electricity transmission purposes;
- provide Transpower with greater flexibility and allow for a wider variety and scale of activities associated with the operation, maintenance, development and potential upgrade of the substation equipment at the Site;
- provide Transpower with certainty to plan for the short, medium and long-term operation, maintenance, development and potential upgrade of the Site, in accordance with the designation;
- allow Transpower to effectively and efficiently carry out all necessary works at the Substation including any emergency works, to maintain a reliable and secure electricity supply to the local distribution network; and
- be generally consistent with other designated substations owned and operated by Transpower in Auckland.

Despite the current enabling network utility provisions in the AUP(OP), the National Grid is enduring infrastructure that requires long-term certainty and protection for future development. The permitted activities that would apply to the Site do not include all the potentially necessary activities at Wiri substation to ensure safe, efficient and resilient transmission of electricity to the local network in the long-term and may not be provided

for in subsequent unitary plans. In comparison to the designation method, other RMA mechanisms would not provide long-term flexibility and certainty, nor would the other mechanisms enable Transpower to achieve its objective as efficiently and effectively.

Transpower's substations, such as Wiri substation, are vital and fundamental links in the National Grid, which also provide connection points between the National Grid and the local electricity network. The operation of the National Grid is vital to the economy of New Zealand and the health and wellbeing of its communities. Transpower is committed to ensuring that the National Grid, including its associated substations, meets the current and future needs of domestic electricity consumers (such as industrial, business, farming and citizens).

The ODID project works at the Site, which involves the removal of the existing aging 33kV switchyard and replacement with two new 33kV switchroom buildings, are also necessary to achieve Transpower's objective as the new and improved indoor switchroom equipment will ensure a safe, reliable and secure electricity supply is maintained for distribution to the local network. It will resolve safety concerns associated with the existing aging 33kV equipment.

The benefits of designating the site for its purpose as an electricity substation is further discussed in Section 4.1.

4 Assessment of Environmental Effects

The following section summarises and evaluates the environmental effects of the activities that would be provided for by the proposed designation (the operation, maintenance, development and potential upgrade of the existing Wiri Substation), including the ODID conversion project described in Section 3.2. These effects relate to the physical and natural elements that determine these environments, as well as the social, cultural and economic environment associated with the area. The focus of the assessment is only on the actual and potential effects relevant to the Project. Consequently, for example, ecological effects have not been considered as the Site is an existing substation in a highly modified environment, with no identified significant ecological areas on the Site or in the nearby surrounds.

A key component of this assessment is the management measures proposed to be included in the conditions to avoid, remedy and mitigate any adverse effects. Those conditions are set out in section 4.11 4.11of this Report.

4.1 Benefits of Designating the Site

The need for the Project has been described in Section 3. The designation at the Site for its purpose would provide the certainty required for the ongoing use, operation, maintenance, development and potential upgrade of the substation infrastructure to ensure a resilient electricity supply continues to be available for local distribution. This includes the benefits realised from electricity supply for economic, social and cultural

wellbeing, and public health and safety. Overall, by enabling the necessary activities at the Site, the designation will:

- improve security and reliability of electricity supply between the National Grid and the local distribution network;
- provide secure and efficient connections to existing electricity transmission infrastructure in the short, medium and long term;
- contribute to the economic and social aspirations of New Zealanders by providing safe, reliable and economic electricity transmission services to meet customer and wider community needs; and
- enable the efficient use of natural and physical resources by continuing an established and existing land use on a site that has been used for this purpose since 1975 and is well serviced by existing physical resources, such as transport infrastructure. The use of an existing site represents an efficient use of land that avoids the need for new infrastructure in an alternative location, which may generate adverse environmental effects.

4.2 Effects on Landscape Character and Visual Amenity

The Site has been operating since 1 March 1975 and is an established part of the existing environment. Boffa Miskell Limited has undertaken a Landscape and Visual Effects Assessment (**LVEA**) for the Project, including the potential effects of the ODID project, which is contained in **Appendix I**. It notes that both of the Site's roadside boundaries are lined by mature treebelts, which along Great South Road lie within the footprint of the Site. Due to the dense vegetation buffer, the existing structures (including gantries) are difficult to discern in views from the main roads when passing the Site and/or from the footpath of Great South Road (as shown by Figures 2 and 3) and the photographs in **Appendix I.**

The properties to the north and south are used for commercial/retail activities and as such are publicly accessible areas. Views of the Site can be obtained from these adjoining properties, namely the carpark of the Southpoint Retail Centre to the north of the Site, and the car sales yard to the south of the Site, however these uses are not activities that have high amenity values or would be sensitive to these types of views. From these areas, the public view a network utility facility in a commercial/business environment where it is generally anticipated that such activities may be located.

The works that the designation would authorise would be restricted to the constraints of the property boundary and designated area. In relation to landscape effects, the LVEA assessment in **Appendix I** states:

> *The designation of the Site, to enable the ongoing protection, use, operation, maintenance, development and upgrade of the substation infrastructure, including the ODID project, would enable a change to the physical characteristics and appearance of the Site itself. However… there is no requirement for the removal*

of the existing planting lining the Site's roadside boundaries, which provides substantial screening of the Site.

In relation to landscape character, the ODID project would result in reduction of the apparent infrastructure elements on the Site.

In relation to visual amenity effects, future necessary maintenance, redevelopment and upgrade works within the designated site would remain consistent with the nature and scale of existing infrastructure. The anticipated ODID conversion project and the subsequent removal of the existing 33kV switchyard would result in smaller scale, less dominant infrastructure and would be seen in the context of the existing infrastructure on the Site. The LVEA assessment in **Appendix I** states:

The expected change in relation to the proposed designation and anticipated ODID works are expected to reduce visual clutter in the limited public views from the retail complex and car sales yard. These views and the viewing audience are not considered to be sensitive to the type of change proposed.

Residential viewing audiences are intrinsically the most sensitive to a change as views from houses are generally static, residents are considered to be concerned about views from their properties and are therefore susceptible to changes in these views. Due to the intervening vegetation, the introduced changes within the Site as a result of the proposed designation are not expected to be visible from the residential area to the east of the SH1. This is considered on the basis that additional high gantries will not be placed on the Site. Even if this should occur the visual effect will be limited to the upper part of gantries which will be seen in the context of the existing national grid structures.

Expected visual effects resulting from the proposed designation of the Site are very limited and are likely to be either neutral or positive in terms of reducing infrastructure clutter.

Considering the nature of existing activities on the Site and in the surrounding environment, and the conclusions reached in the LVEA assessment, the effects of future activities on the Site on visual amenity and landscape are anticipated to be less than minor, with the ODID project resulting in neutral or positive effects due to the reduced scale of infrastructure elements on the Site.

In order to ensure this level of effects is maintained for the Site and designation proposal it is recommended that the existing boundary vegetation is retained and managed to ensure a permanent visual screen is provided from ground level viewing locations from Great South Road. It is recommended that a condition is placed on the designation for Wiri substation to ensure a minimum planting strip (at least 10 metres width south of the accessway, and at least 40 metres width north of the access way) is retained and managed along the full extent of the western (Great South Road) boundary (excluding the accessway) (refer to condition 12 in Section 4.11).

4.3 Noise and Vibration Effects

The surrounding environment is generally not sensitive to the effects of noise being a commercial/business environment in close proximity to the adjoining SH1 and Great South Road. The closest sensitive activity is located 80 metres away from the Site on the eastern side of SH1, where residents would experience the noise effects of SH1.

A Noise Assessment Report - Existing Environment, prepared by Marshall Day Acoustics is provided in **Appendix H** to this Report. The Assessment details the measurement and assessment of the baseline (existing) acoustic environment at and around the Substation.

The Site and associated noise is part of the existing environment and the designation over the Site is not anticipated to result in noise effects that are different to those currently emitted from the Site. The ambient noise levels on the Site have been assessed and confirmed to be below the AUP(OP) requirements, even with a +5 dB penalty applied for special audible character, as assessed by Marshall Day Acoustics (refer **Appendix H**). Following the implementation of the proposed ODID project, the noise from the Site is predicted to reduce in comparison with existing noise limits and will continue to comply with the relevant AUP(OP) noise limits at all assessment locations.

The potential effects of noise and vibration are proposed to be managed by Transpower using the following mitigation measures and are proposed as conditions of the designation:

- as proposed as conditions 3 and 4, any construction noise associated with maintenance, redevelopment, or upgrading of the Site and ancillary equipment will be designed, managed and conducted to ensure compliance with NZS6803:1999 Acoustics–Construction Noise. A construction noise and vibration management plan will be submitted to Auckland Council when any significant construction works on site are to be undertaken;
- as proposed as condition 5; vibration effects will be managed in accordance with the limits of German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures; and
- as proposed as condition 10, any new works or equipment (such as transformers, fans and circuit breakers) will be designed and located to comply with noise limits when combined cumulatively with other operating elements of the substation.

For proposed condition 10, transformers are not considered to be defined as fixed mechanical plant, therefore the Hz criteria has not been addressed.

The designation is not expected to result in noise effects that are different to those already occurring at the Site and in the surrounding environment.

4.4 Traffic Effects

The existing traffic volumes associated with the ongoing operation and maintenance of the Site are minimal. The Site is currently unmanned and is only usually occupied when maintenance of grassed areas or routine inspection and maintenance of substation equipment is occurring. Construction and operational traffic will continue to use the existing entrance ways (from Great South Road or via the Southpoint Carpark) which provides safe and efficient entry and exit manoeuvres in and out of the Site. Any construction traffic associated with future maintenance, redevelopment or upgrade works would be temporary in nature.

Traffic effects from designating the Site and associated future works, including the ODID works described in Section 3.3 above are expected to be generally consistent with those already experienced in the commercial/business area and Great South Road, which is a busy transport route. Based on the above information, the designation at the Site, including the ODID works is expected to have traffic effects that are less than minor.

4.5 Effects of Electric and Magnetic Fields

Electric and magnetic fields (EMFs) are produced by all systems involving the transmission, transformation, and use of electricity. Electric fields are determined by the voltage, and as transmission systems are held at a stable voltage, the electric field at any given location around transmission equipment will be largely constant. Magnetic fields are determined by the current and change in strength as the demand of electricity fluctuates.

EMFs are the strongest closest to the source of the field and become rapidly weaker with distance from the source. If EMFs are strong enough, a person in these fields may experience effects ranging from a superficial movement of hair (with high electric field strengths) to induction of electric currents within the body (with high electric and magnetic field strengths). These are called direct effects: i.e., the interaction is between the field and the person directly.

The ability for electricity to cause electric shocks is well known. Micro-shocks can occur when the electric and magnetic field of a high voltage conductor is in close proximity to a conductive earthed material (such as a metal fence) such that the transmission field induces a surface charge on the fence. In this situation, and where the body connects with the fence, a minor, barely perceptible, electric shock can occur. Such an effect is called an indirect effect.

Transpower has completed extensive modelling and measurements on existing substations. The conclusion of that work is that Transpower substations have both low magnetic and electric field exposures which are well within the NZ Ministry of Health recommended EMF public exposure guidelines. This is typically due to the large physical spacings between electrical equipment and areas accessible to the public. With respect to Wiri Substation, the existing substation has been in operation since 1975 with secure fencing surrounding it and large physical spacing between conductors and areas accessible to the public, therefore the electric and magnetic fields from this facility would

pose no known health risks. Conditions are proposed to the Wiri substation designation to ensure that any new works or equipment at the Site are designed and operated to limit the electric and magnetic field exposures at or beyond the secure boundary of the Site (refer Condition 11 in Section 4.11).

4.6 Effects of Radio Frequency Interference and Earth Potential Rise

Substations and high voltage transmission lines can cause radio frequency interference and earth potential rise.

Radio Frequency Interference (RFI) is a phenomenon where corona discharge associated with high voltage equipment (lines, or substation equipment) can interfere with the operation of some electrical equipment, for example AM radio receivers.

Earth Potential Rise (EPR) occurs when high fault current passes through the earth. An earth fault occurs when one conductor is inadvertently connected to earth or the voltage rating of insulation is overcome. Typically, this could be via a tree contacting the line or an insulation failure on a tower, caused by lightning, insulator damage, pollution or fauna. During an earth fault, there is significant current (many times normal) flowing in the faulted line from the power source into the earth. This current causes voltages within the soil, which are highest at the fault location and reduce as the distance from the fault increases.

The existing Wiri substation is located more than 80 metres from the closest residential property on the opposite side of SH1, to the east of the substation. To Transpower's knowledge, there are no sensitive telecommunication receiver sites (e.g. amateur radio or aviation guidance systems) adjacent to the Site.

NZS6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage A.C. Power Systems (NZS6869:2004) sets out compliance criteria for RFI emissions from High Voltage Electrical Installations within New Zealand. Modern engineering design and industry good practice ensure RFI is minimised and that any possible risks due to EPR are avoided or mitigated. The Site has an earth grid (designed to reduce the risks associated with EPR) which has been tested and assessed and meets modern standards. Instances of EPR are very rare and considered to be a low risk, given that all Transpower installations are required to be properly designed to be electrically safe. Conditions are proposed to the Wiri substation designation to ensure that any new works or equipment at the substation complies with the NZS6869:2004 and to ensure electricity safety at or beyond the designation boundary in accordance with Transpower's Standard Design of Substation Earthing (refer proposed conditions 7 and 8, as stated in Section 4.11).

4.7 Lighting Effects

Lighting associated with the substation would comply with Transpower's lighting standards, which require a minimum level of lighting within the substation to ensure they

provide a safe environment for operating and maintaining a substation. The minimum lighting level applies specifically to areas containing equipment, walkways, ingress and/or access points. The potential for adverse lighting effects on nearby residential properties is not anticipated due to the minimum distance of at least 80 metres between the existing substation and the nearest residential land use, which is intersected by SH1. Also, any new exterior lighting at the Site will be designed to comply with Transpower's lighting standards, as well as AS/NZS 1158 Lighting for Roads and Public Spaces 2005 Part 3.1, and AS 4282 1997, Control of Obtrusive Effects of Outdoor Lighting. The potential for adverse lighting effects associated with the proposed designation of the Wiri Substation can be mitigated through compliance with the abovementioned design standards, as required by proposed condition 9 (refer to Section 4.11).

4.8 Effects of Potential Contaminants and Hazardous Substances

National Grid substations are identified on the Ministry for the Environment's hazardous activities and industries list (**HAIL**). The HAIL flags land where there is potential for contaminants to be encountered in soil. Earthworks on the Site are therefore subject to the National Environmental Standard for Assessment and Managing Contaminants in Soil to Protect Human Health (**NES Soil**). The NES Soil regulations apply regardless of the designation and would ensure that any part of the land that may be affected by contaminants in soil is appropriately identified and assessed when soil disturbance and/or land development activities take place and, if necessary, remediated or the contaminants contained to make the land safe for human use. As stated in Section 3.4, the soil disturbance associated with the ODID conversion project at the Site requires resource consent under both the NES Soil and the AUP(OP). These resource consent applications (which are being applied for concurrently with the NOR) include a Site Management Plan with recommended measures to manage the potential effects of contaminants in soil on the environment and human health, which will be adhered to for the duration of works at the Site.

In relation to hazardous substances, the existing substation uses insulating oil in power transformers, circuit breakers and other transmission equipment. Transpower has its own standards for oil spill management to avoid, remedy or mitigate any adverse effects, which may occur in the unlikely event of an accident. These standards provide design guidelines, including requirements for bunding and requires the preparation of an Oil Spill Management and Contingency Plan. Transpower has also proposed a condition where any new part of the facility containing oil shall be designed to comply with Transpower's Oil Spill Management Policy (TP: GS.54.01), Issue 4, December 2014 to avoid potential adverse effects of oil spill on the environment (refer to Condition 6 in Section 4.11). The likelihood of leakage or spillage of transformer oil is considered to be low as the equipment is sealed or self-contained. Considering the above, the designation over the Site is not expected to result in adverse effects of potential contaminants or hazardous substances.

4.9 Effects on Overland Flow Paths and Flooding

The site is part of a wider flat floodplain between Waokauri and Puhinui Creeks and is located approximately 6 km east of the Manukau Harbour. As shown on the Flood Hazard Map contained in **Appendix A** and outlined in Section 2 Auckland Council GeoMaps identifies an area of approximately 2,500m^2 in the centre of the Site (between the existing 33kV and 110kV switchyard areas) as a 'Flood Plain', which indicates the area is predicted to be covered by flood water as a result of a rainstorm that occurs on average once every hundred years (based on hydraulic modelling). Auckland Council GeoMaps also identifies an overland flow path with a contributing catchment of between 4,000m^2 and 3 ha on the Site, which flows toward the north-eastern corner of the site (see **Appendix A**).

The Site is flat in topography, and the existing substation has been established and operating on the Site since 1975. The area identified as 'Flood Plain' in the centre of the Site is covered in gravel and is within the secure perimeter fence that surrounds the existing switchyards. To Transpower's knowledge, the site has never been subject to flooding, and is considered to have good drainage (with the permeable gravel surface covering the switchyard area). As mentioned in Section 3.2 and 3.3, the proposed ODID conversion project will not result in changes to the topography or contour of the Site, nor would the proposed buildings divert potential stormwater flows or flood flows that would exacerbate flooding hazards off-site.

In addition, any associated future works that are authorised by the designation are not expected to result in significantly different ground levels at the Site nor would they be expected to obstruct the existing overland flow paths or exacerbate flooding hazards. Any new infrastructure is likely to be located in a similar position and at a similar scale to the existing equipment on Site, and as such, would not divert the entry or exit point, or result in reduced capacity of overland flow paths at the Site. In the unlikely case that a change in contours of the land was proposed, the effects of these changes (including potential flood hazards) would be addressed in an outline plan of works for the proposed activity.

4.10 Cultural and Heritage Effects

There are no identified archaeological sites or sites of significance to Mana Whenua within the vicinity of the Site, with the closest recorded archaeological site being a ditch/bank hedge located approximately 1 km south of the Site (Archsite reference R11/1960). Additionally, the Site is existing and has been extensively modified.

Transpower proposes a condition to ensure that if any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during works, then the appropriate procedures are followed and interested persons, including tāngata whenua, are given reasonable time to record and recover archaeological features before work recommences (refer to Condition 2 in Section 4.11). Engagement with mana whenua on the proposal has also been undertaken and is anticipated to be ongoing, as summarised in Section 7 of this Report. Based on the above information, designating the Site is not anticipated to result in adverse effects on cultural and heritage values.

4.11 Proposed Designation Conditions

The designation, as it would appear in the AUP(OP), is shown in **Appendices D and E** to this NOR. Transpower proposes to impose conditions on the designation to manage potential effects on the environment and people. The proposed conditions offered by Transpower are generally consistent with the conditions on other substation designations in the AUP(OP). The proposed conditions that would apply to the designation for Wiri substation are:

General

1. *The initial construction works at the Site shall be undertaken in general accordance with the plans and information submitted within the Assessment of Environmental Effects for the Notice of Requirement (reference "Notice of Requirement for Wiri Electricity Substation, dated 9 July 2019")*

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, Heritage New Zealand, the Auckland 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.

Construction and maintenance noise and vibration

3. *All construction and maintenance work shall be designed, managed and conducted to ensure that construction and maintenance noise in accordance with NZS6803:1999 Acoustics–Construction Noise.*

4. *Prior to any significant construction work taking place, including any earthworks, a construction noise and vibration management plan (CNVMP) 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 German Standard DIN 4150-3 (1999-02) Structural Vibration - Effects of Vibration on Structures. The CNVMP shall be submitted to the 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.*

The works shall be undertaken in accordance with the CNVMP.

5. *Where reasonable risk of vibration damage during construction activities has been identified, vibration shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.*

Hazardous substances

6. *Any new part of the facility containing oil shall be designed to comply with Transpower's Oil Spill Management Policy (TP: GS.54.01). Issue 4, December 2014.*

Radio frequency interference

7. *Any new works or equipment shall 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

8. *Any new substation earth grids shall be designed, built, and tested to ensure electrical safety at or beyond the designation boundary is in accordance with Transpower Standard Design of Substation Earthing TP.DS.52.01, Issue 3, May 2016.*

Light spill

9. *All exterior lighting shall comply with:*

(a) *AS/NZS 1158 Lighting for Roads and Public Spaces 2005 Part 3.1; and*
(b) *Transpower's Guidelines and Information for Switchyard and Grounds Lighting, TP DS 40.03, Issue 3.1, August 2018; and*
(c) *AS 4282 1997, Control of Obtrusive Effects of Outdoor Lighting.*

Operational noise

10. *Any new works or equipment (such as transformers, fans and circuit breakers) shall be designed and operated to ensure that the following noise limits shall not be exceeded (when combined cumulatively with the other operating elements of the substation):*
    (a) *At or within the boundary of any Business – General Business zoned site outside of the designated area:*
        i. *All times: 65dBA L_{Aeq}*

    (b) *At or within the boundary of any residentially zoned site outside of the*

designated area:

i. Monday to Saturday 7am to 10pm, and Sunday 9am to 6pm: 55dB LAeq
ii. All other times: 45dB LAeq; and
iii. All other times: 75dB LAFmax

(c) At or within the boundary of any Business - Metropolitan Centre zoned site outside of the designated area:
i. Daytime 7am to 11pm: 65dB LAeq
ii. Night-time 11pm to 7am: 60dB LAeq; and 75dB LAFmax.

Electric and Magnetic Fields (EMF)

11. Any new equipment shall be designed and operated to limit the electric and magnetic field exposures 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 and magnetic fields (1Hz - 100kHz), (Health Physics 99(6):818-836:2010) (ICNIRP Guidelines). That is the public exposure reference levels of 5 kV/m for electric fields and 200 µT for magnetic flux density at one metre above ground level under maximum normal operating conditions (i.e when there are no faults in the transmission system).

Landscaping

12. The requiring authority shall ensure that a planting strip is retained and managed within the Site along the full extent of the western (Great South Road) boundary (excluding the access way). The planting strip shall be a minimum width of 40 metres from the boundary in the area north of the access way to Great South Road, and a minimum width of 10 metres from the boundary in the area south of the access way to Great South Road.

All existing vegetation associated with the above condition shall be maintained regularly and kept in a tidy condition, including replacement if any planting dies or becomes over mature. The replacement of any vegetation shall be planted no later than the next planting season (i.e. April to September) following discovery of the need for replacement.

Advice note

Any new works or equipment means those works or equipment which were not existing prior to the confirmation of this designation and inclusion in the Auckland Unitary Plan at <insert date the designation is incorporated into the AUP(OP)>.

4.12 Conclusion of Assessment of Environmental Effects

The designation at the Site for this purpose enables positive effects to be realised in that it would provide the certainty required for the ongoing use, operation, maintenance, development and potential upgrade of the substation infrastructure, to ensure a resilient electricity supply to the local distribution network.

The potential adverse effects of the proposed designation will be mitigated through conditions to be imposed on the designation, which include an accidental discovery protocol, the management of vibration, construction and maintenance noise, compliance with hazardous substances, radio frequency and earth potential rise design standards and guidelines, standards for maximum lighting spill and operational noise, electric and magnetic fields and maintenance of vegetation along the western boundary.

Overall, Transpower's proposal to designate the existing Wiri Substation site, including the proposed ODID conversion works that will occur at the Site under the proposed designation, are not considered to give rise to significant adverse effects on the environment. The works that the designation would authorise would be restricted to the constraints of the property boundary and designated area, shown in **Appendix E**.

Considering the nature of the Site, highly modified nature of the receiving environment, above assessment and conditions proposed by Transpower to mitigate potential future adverse effects of activities at the site, both during construction activities and ongoing operation, the potential adverse environmental effects resulting from the proposal are considered to be less than minor.

5 Statutory Framework

The effects on the environment of allowing the proposed requirement will be considered having particular regard to relevant provisions of relevant national policy statements and the AUP(OP), as set out in Section 171(1)(a) of the RMA.

5.1 National Policy Statement on Electricity Transmission

The National Policy Statement on Electricity Transmission (NPSET) was gazetted on 13 March 2008 and sets out the objective and policies for managing the electricity transmission network under the Resource Management Act 1991.

The NPSET is to be applied by decision-makers under the RMA and prescribes an objective and policies to guide the decision making on resource management matters. Specifically, the objective and policies are intended to guide decision-makers in drafting plan rules, in making decisions on the notification of resource consents and in the determination of resource consent applications, and in considering notices of requirement for designations for transmission activities.

The one objective in the NPSET is as follows:

> *To recognise the national significance of the electricity transmission network by facilitating the operation, maintenance and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while:*

- *managing the adverse environmental effects of the network; and*
- *managing the adverse effects of other activities on the network.*

The proposed designation is consistent with the objective of the NPSET in that:

- the designation of the substation will assist in meeting the needs of present and future generations, particularly the local community who rely on the local distribution network;
- the potential adverse environmental effects of the Site, which is part of the existing environment, would be appropriately avoided, remedied or mitigated through appropriate conditions, as detailed in Section 4 of this NOR; and
- the use of a designation would contribute to and enable the effective operation, maintenance and potential upgrade of the National Grid infrastructure.

There are 14 accompanying policies to achieve the above objective. The policies relate to:

- recognition of the national benefits of transmission (Policy 1);
- managing the environmental effects of transmission (Policies 2 to 9);
- managing the adverse effects of third parties on the transmission network (Policies 10 and 11);
- identification of the transmission network on territorial authority maps (Policy 12); and
- long term strategic planning for transmission assets (Policies 13 and 14).

The NPSET policies that are considered to be of particular relevance to the proposal are discussed below.

Recognition of the national benefits of transmission

Policy 1

In achieving the purpose of the Act, decision-makers must recognise and provide for the national, regional and local benefits of sustainable, secure and efficient electricity transmission. The benefits relevant to any particular project or development of the electricity transmission network may include:

1. *Maintained or improved security of supply of electricity; or*
2. *Efficient transfer of energy through a reduction of transmission losses; or…*

The above list of benefits is not intended to be exhaustive and a particular policy, plan, project or development may have or recognise other benefits.

Comment

The designation would assist with maintaining security of supply and efficient transmission of electricity between the National Grid and local distribution network by providing Transpower with the certainty required for the ongoing protection, use, operation, maintenance, development and potential upgrade of the substation infrastructure. Enabling the necessary activities at the Site and providing flexibility for such activities to occur will ensure that a resilient and efficient electricity supply continues to be available for the local community that it serves. It is essential that the Site operates efficiently, cost-effectively and reliably and contributes to the efficient transmission of electricity. There are clear benefits to be recognised and provided for by the designation of the Site. It is considered that the proposal is consistent with Policy 1.

Managing the environmental effects of transmission

Policy 2

In achieving the purpose of the Act, decision-makers must recognise and provide for the effective operation, maintenance, upgrading and development of the electricity transmission network.

Comment

The purpose for the designation is to enable works that are part of the effective operation, maintenance, development and upgrading of the electricity transmission network. The designation is effective within the meaning of Policy 2 because it provides Transpower with certainty about the types of activities that can occur at the Site. The proposed designation would recognise and provide for the effective operation, maintenance, upgrading and development of the electricity transmission network. It is considered that the proposal is consistent with Policy 2.

Policy 3
When considering measures to avoid, remedy or mitigate adverse environmental effects of transmission activities, decision-makers must consider the constraints imposed on achieving those measures by the technical and operational requirements of the network.

Policy 5
When considering the environmental effects of transmission activities associated with transmission assets, decision-makers must enable the reasonable operational, maintenance and minor upgrade requirements of established electricity transmission assets.

Policy 7
Planning and development of the transmission system should minimise adverse effects on urban amenity and avoid adverse effects on town centres and areas of high recreational value or amenity and existing sensitive activities.

Comment

The Site to be designated is established and is part of the existing environment. The Site and its associated activities are constrained by its existing infrastructure, layout size and the location of surrounding land uses (SH1 to the east, Great South Road to the west, and commercial development to the north and south), as well as technical and operational requirements (for example, separation distances between switchyards).

There are no existing sensitive activities or areas of high recreational value in close proximity to the Site, with the closest sensitive activity located more than 80 metres from the Site, to the east of SH1. Any future maintenance, redevelopment and upgrade works would be within the confines of the designated site, would remain consistent with the nature and scale of the existing infrastructure and screened by the existing vegetation along the boundaries of the Site. In addition, the anticipated ODID project at the Site is expected to have an overall positive visual effect (as discussed in Section 4.2).

Transpower is endeavouring to minimise the potential adverse environmental effects at the Site as far as is practicable by including mitigation measures in proposed conditions that will be placed on the designation, as set out in Section 4. The proposal represents an efficient use of natural and physical resources by continuing an established and existing land use on a site that has been used for this purpose since 1975 and is well serviced by existing physical resources. The use of an existing site represents an efficient use of land that avoids the need for new infrastructure in an alternative location, which may generate adverse environmental effects. For the above reasons, it is considered that the proposal is consistent with Policies 3, 5 and 7 of the NPSET.

> *Policy 9*
> *Provisions dealing with electric and magnetic fields associated with the electricity transmission network must be based on the International Commission on Non-ionising Radiation Protection Guidelines for limiting exposure to time varying electric magnetic fields (up to 300 GHz) (Health Physics, 1998, 74(4):494-522) and recommendations from the World Health Organisation monograph Environment Health Criteria (No 238, June 2007) or revisions thereof and any applicable New Zealand standards or national environmental standards.*

Comment

Proposed condition 7 on the designation would ensure that the Site continues to operate in accordance with applicable New Zealand Standards for electric and magnetic field limits, therefore, the proposal is consistent with Policy 9.

<u>Long term strategic protection for transmission assets</u>

> *Policy 13*

Decision-makers must recognise that the designation process can facilitate long-term planning for the development, operation and maintenance of electricity transmission infrastructure.

Comment

The designation sought for the Site is intended to facilitate long-term provision for its operation, maintenance, development, upgrading and protection. The designation is reasonably necessary to achieve Transpower's objectives for the reasons set out in Section 3.5 of this Report. It will effectively and efficiently enable Transpower to carry out all necessary works suitable for the purpose of the Site, including any emergency works, to maintain reliability and security of electricity supply. Transpower requires the certainty to undertake future works at the Site and to connect to existing infrastructure in an integrated manner. A designation at the Site would improve Transpower's asset management capabilities by facilitating it with security and long-term planning and operational capabilities. It is also generally consistent with designations applied to Transpower's other substations throughout Auckland which provides for long term integrated management. The proposed designation will assist Transpower with long-term planning, which is consistent with Policy 13.

Conclusion on NPSET

Overall, the proposed designation over the Site is considered to have benefits in terms of providing a secure electricity supply and efficient connection to the local distribution network. The potential adverse effects of the activities that would be authorised by the designation would be managed through the proposed designation conditions.

The designation is consistent with Policy 13 of the NPSET as the decision-makers must recognise that the designation process facilitates long-term planning for the development, operation, maintenance and upgrade of electricity transmission infrastructure. Overall, it is considered that the designation sought is consistent with the objective and relevant policies in the NPSET.

5.2 Auckland Unitary Plan (Operative in Part)

An analysis of the AUP(OP) including the objectives and policies of the Regional Policy Statement (RPS) is provided below.

5.2.1 Regional Policy Statement

Infrastructure

B3.2.1. Objectives

(1) *Infrastructure is resilient, efficient and effective.*

(2) *The benefits of infrastructure are recognised, including:*

(a) *providing essential services for the functioning of communities, businesses and industries within and beyond Auckland;*

(b) *enabling economic growth;*

(c) *contributing to the economy of Auckland and New Zealand;*

(d) *providing for public health, safety and the well-being of people and communities;*

(e) *protecting the quality of the natural environment; and*

(f) *enabling interaction and communication, including national and international links for trade and tourism.*

(3) Development, operation, maintenance, and upgrading of infrastructure is enabled, while managing adverse effects on:

(a) the quality of the environment and, in particular, natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character;

(b) the health and safety of communities and amenity values.

(4) The functional and operational needs of infrastructure are recognised.

(5) …

(6) …

(7) The national significance of the National Grid is recognised and provided for and its effective development, operation, maintenance and upgrading are enabled.

(8) The adverse effects of infrastructure are avoided, remedied or mitigated.

B3.2.2. Policies

Provision of infrastructure

(1) Enable the efficient development, operation, maintenance and upgrading of infrastructure.

(2) Recognise the value of investment in existing infrastructure.

(3) Provide for the locational requirements of infrastructure by recognising that it can have a functional or operational need to be located in areas with natural and physical resources that have been scheduled in the Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character.

Managing adverse effects

(6) Enable the development, operation, maintenance and upgrading of infrastructure in areas with natural and physical resources that have been scheduled in the

Unitary Plan in relation to natural heritage, Mana Whenua, natural resources, coastal environment, historic heritage and special character while ensuring that the adverse effects on the values of such areas are avoided where practicable or otherwise remedied or mitigated.

(8) Avoid, remedy or mitigate the adverse effects from the construction, operation, maintenance or repair of infrastructure.

Natural hazards

(9) Ensure where there is a functional or operational need for infrastructure to locate in areas subject to natural hazards:

(a) that buildings accommodating people are located and/or designed to minimise risk from natural hazards; and

(b) that risk that cannot be avoided by location or design should be mitigated to the extent practicable.

Comment

The objectives and policies of the Regional Policy Statement (RPS) seek to enable the efficient development, operation, maintenance, and upgrading of infrastructure. The objectives seek that infrastructure is resilient, efficient and effective and that the benefits of infrastructure are recognised and protected whilst managing effects on the environment from infrastructure. Objective B3.2.1(7) of the RPS directs that the national significance of the National Grid is recognised and provided for and its effective development, operation, maintenance and upgrading are enabled. The proposed designation would specifically recognise the national importance of the substation and provide Transpower with the necessary security and planning capabilities to enable the effective development, operation, maintenance and upgrading of the National Grid.

With regard to policy B3.2.2(3) and (6), there are no areas scheduled in the AUP(OP) in relation to natural heritage, mana whenua, natural resource, coastal environment, historic heritage and special character near the Site. For the reasons set out in Section 4.9, the proposed designation over the Site is not expected to increase the risk of flooding of the site or surrounds. It is reiterated that the Site is already established and is considered to be part of the existing environment and that there is a functional and operational need to continue to operate, maintain, upgrade and develop the Wiri Substation infrastructure at its current location. The potential adverse effects of locating new substation infrastructure elsewhere (in a different location) are avoided by the continued use of an existing, established substation for its purpose.

The potential adverse effects of the proposed designation are proposed to be mitigated through conditions to be imposed on the designation including an accidental discovery protocol, the management of vibration, construction and maintenance noise, compliance with hazardous substances, radio frequency and earth potential rise design standards and guidelines, and standards for maximum lighting spill, electric and magnetic fields and

operational noise, and maintenance of vegetation along the western boundary. For the above reasons, the proposal is considered to be consistent with the Objectives and Policies of B3.2. Infrastructure in the Regional Policy Statement.

5.2.2 Auckland Unitary Plan (Operative in Part) Provisions - Chapter E26

Infrastructure

E26.2.1 Objectives

(1) The benefits of infrastructure are recognised.

(2) The value of investment in infrastructure is recognised.

(3) Safe, efficient and secure infrastructure is enabled, to service the needs of existing and authorised proposed subdivision, use and development.

(4) Development, operation, maintenance, repair, replacement, renewal, upgrading and removal of infrastructure is enabled.

(5) The resilience of infrastructure is improved, and continuity of service is enabled.

(7) The national significance of the National Grid is recognised and provided for and its effective development, operation, maintenance, repairs, upgrading and removal is enabled.

(9) The adverse effects of infrastructure are avoided, remedied or mitigated.

E26.2.2 Policies

(1) Recognise the social, economic, cultural and environmental benefits that infrastructure provides, including:

- *(a) enabling enhancement of the quality of life and standard of living for people and communities;*
- *(b) providing for public health and safety;*
- *(c) enabling the functioning of businesses;*
- *(d) enabling economic growth;*
- *(e) enabling growth and development;*
- *(f) protecting and enhancing the environment;*
- *(g) enabling the transportation of freight, goods, people; and*
- *(h) enabling interaction and communication.*

(2) Provide for the development, operation, maintenance, repair, upgrade and removal of infrastructure throughout Auckland by recognising:

- *(a) functional and operational needs;*
- *(b) location, route and design needs and constraints;*

(c) *the complexity and interconnectedness of infrastructure services;*

(d) *the benefits of infrastructure to communities with in Auckland and beyond;*

(e) *the need to quickly restore disrupted services; and*

(f) *its role in servicing existing, consented and planned development*

Adverse effects of infrastructure

(4) Require the development, operation, maintenance, repair, upgrading and removal of infrastructure to avoid, remedy or mitigate adverse effects, including, on the:

(a) *health, well-being and safety of people and communities, including nuisance from noise, vibration, dust and odour emissions and light spill;*

(b) *safe and efficient operation of other infrastructure;*

(c) *amenity values of the streetscape and adjoining properties;*

(d) *environment from temporary and ongoing discharges; and*

(e) *values for which a site has been scheduled or incorporated in an overlay*

(5) Consider the following matters when assessing the effects of infrastructure:

(a) *the degree to which the environment has already been modified;*

(b) *the nature, duration, timing and frequency of the adverse effects;*

(c) *the impact on the network and levels of service if the work is not undertaken;*

(d) *the need for the infrastructure in the context of the wider network; and*

(e) *the benefits provided by the infrastructure to the communities within Auckland and beyond.*

New technologies

(11) Provide flexibility for infrastructure operators to use new technological advances that:

(a) *improve access to, and efficient use of services;*

(b) *allow for the re-use of redundant services and structures where appropriate;*

(c) *result in environmental benefits and enhancements; and*

(d) *utilise renewable sources.*

National Grid

(13) Have regard to the extent to which actual and potential effects have been avoided, remedied or mitigated by the route, site and method selected when assessing the development of the National Grid.

Comment

The objectives and policies in Section E26 Infrastructure of the AUP(OP) recognise that infrastructure is critical to the social, economic, and cultural well-being of people and communities and the quality of the environment. They also recognise that as well as the benefits, infrastructure can have a range of adverse effects on the environment, visual amenity of an area, and public health and safety.

The objectives and policies enable and encourage the provision for effective, efficient and resilient infrastructure and that the benefits of infrastructure are recognised and protected whilst managing effects on the environment from infrastructure. Like the RPS, the national significance of the National Grid is to be recognised and provided for as stated in Objective E26.2.1 (7), and Policy E26.2.2(13). The designation would be consistent with the AUP(OP) objectives and policies as it would enable the effective, efficient and safe maintenance or improvements to the network by providing Transpower with the flexibility and certainty to undertake necessary activities at the Site. With operational certainty, Transpower can effectively use and plan for new technological advances, especially those that would result in environmental benefits and enhancements.

There are no areas scheduled in the AUP(OP) in relation to natural heritage, mana whenua, natural resource, coastal environment, historic heritage and special character, near the Site. It is reiterated that the Site is already established and is considered to be part of the existing environment. There is a locational requirement for the Site to continue to operate at its current location. Any future maintenance, redevelopment and upgrade works would be within the confines of the designated site and would remain consistent with the nature and scale of the existing infrastructure.

As already mentioned above, the potential adverse effects of the proposed designation are proposed to be mitigated through conditions to be imposed on the designation (set out in Section 4.11). For the above reasons, the proposal is considered to be consistent with the Objectives and Policies of E26 Infrastructure in the AUP(OP).

6 RMA Part 2 Analysis

The purpose and principles of the Resource Management Act 1991 (RMA) are set out in Part 2 of the Act (Part 2 comprises sections 5 to 8). Part 2 is a relevant consideration in assessing this NOR as Section 171 states that the assessment is 'subject to' Part 2.

Section 5 – Purpose

Section 5 sets out the purpose of the RMA, which is to provide the sustainable management of natural and physical resources.

Sustainable management is defined in Section 5(2) as:

... managing the use, development, and protection of natural and physical resources

in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while:

(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Comment

The proposed designation will promote the sustainable management of natural and physical resources. It will provide the certainty required for the ongoing use, operation, maintenance, development and potential upgrade of the substation and associated National Grid infrastructure, which is a nationally significant physical resource. In turn, the proposed designation will ensure a resilient electricity supply to the local distribution network, in a way that will enable people and communities in the to continue to derive the social, economic and cultural benefits that rely upon a secure electricity supply. Further:

- It will sustain the potential of the National Grid and associated infrastructure to meet the reasonably foreseeable needs of future generations which enables community wellbeing. The safe, efficient and effective transmission of electricity is vital to the wellbeing of the community, in terms of providing electricity for homes, commercial and industrial activities as well as community facilities and hospitals.

- It will avoid, remedy and mitigate all potential adverse effects on the environment to the fullest extent possible, through the mitigation measures proposed and associated conditions.

- The ODID conversion works that are provided by the designation will resolve safety concerns associated with aging infrastructure and improve resilience and security of electricity transmission.

- It represents an efficient and sustainable use of an existing site, through the continuation of a well-established land use and physical resource and avoids the need for new infrastructure in an alternative location, which may generate adverse environmental effects.

Section 6 – Matters of National Importance

Section 6 lists certain matters of national importance which shall be recognised and provided for by the consent authority. There are no matters of national importance that are of particular relevance to this NOR.

Section 7 - Other Matters

Section 7 lists certain matters to which particular regard is to be had by the consent authority. The relevant matters are as follows:

(a) Kaitiakitanga;

(aa) the ethic of stewardship;

(b) the efficient use and development of natural and physical resources;

(c) the maintenance and enhancement of amenity values; and

(f) the maintenance and enhancement of the quality of the environment;

Comment

With regard to matters 7(a) and (aa), the proposed designation over the Site would not compromise the ability of tāngata whenua to practice their role and activities as Kaitiaki, or the community as a whole to pursue and practice an ethic of stewardship.

With regard to matter 7(b), the designation of the Site enables the efficient use and development of existing physical resources by enabling Transpower to replace and upgrade the Site with improved facilities, avoiding the need for new substations, facilities or infrastructure elsewhere, which may generate adverse environmental effects.

With regard to matters 7(c) and (f), the Site is part of the existing environment, and has been operating as a substation since 1975. The Site is well setback from any sensitive activities and is screened by existing vegetation. Transpower also proposes conditions to be attached to the designation to manage potential effects including effects of noise and lighting associated with the Site. Therefore, the amenity values and quality of the environment will be maintained and/or enhanced by the proposed designation. It represents an efficient and sustainable use of an existing site, through the continuation of a well-established land use and physical resource and avoids the need for new infrastructure in an alternative location, which may generate adverse environmental effects.

Section 8 - Treaty of Waitangi

Section 8 requires the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) to be taken into account when considering a NOR. The Iwi with rohe in the Manukau area have been provided with information on the proposal, and engagement with mana whenua is anticipated to be ongoing, as explained in Section 7 below. The Treaty of Waitangi principles have also been incorporated into the assessment contained in Section 4 of this Report.

Overall, it is considered that the proposed designation over the existing Wiri substation is consistent with Part 2 of the RMA.

7 Consultation

7.1 Consultation with Stakeholders

With regard to the above, Transpower has consulted with a number of stakeholders with an interest in the proposal (refer to Stakeholder Map contained in **Appendix F**). The stakeholders who have been consulted include:

- NZ Transport Agency (road controlling authority of state highway 1)
- Auckland Transport (road controlling authority of Great South Road)
- Kilburn Car Sales Limited (landowners and occupiers of the car sales yard south of the site at 676 Great South Road)
- Van Den Brink 652 Limited (landowners of the commercial land north of the site at 5 Te Irirangi Drive). It is understood that that Van Den Brink 652 Limited have the authority to provide written approval on behalf of Laren Limited (which is the landowner of 654A Great North Road and understood to be a subsidiary of Van Den brink 652 Limited).
- Vector Limited who operate a substation on the southwestern corner of the Site.

These stakeholders were provided with an overview of the proposal and the Notice of Requirement documentation. Transpower has obtained written approvals from the following stakeholders (refer **Appendix G**):

- NZ Transport Agency
- Kilburn Car Sales (Jenny Jonker)
- Van Den Brink 652 Limited
- Vector Limited

For the purposes of notification, as these stakeholders have provided, and not withdrawn, written approval for the activity, the territorial authority must determine that these persons are not affected persons.

7.2 Engagement with Iwi

Transpower has also engaged with Iwi who have rohe in the Manukau area, including Ngai Tai ki Tamaki, Ngati Maru, Ngati Paoa, Ngati Tamaoho, Ngati Tamatera, Ngati Te Ata, Ngati Whanaunga, Te Ahiwaru, Makaurau Marae, Te Akitai Waihoua, Te Kawarau a Maki and Tainui / Waikato. Each iwi was sent an overview of the proposal on 27 June 2019. The responses are summarised as follows:

- Ngati Tamaoho noted that they had no problems with the proposal, however would support cultural monitoring at the Site for all soil disturbances within the footprint of the Wiri Substation.
- Te Kawarau a Maki noted that they would defer to other iwi.

- Te Ahiwaru noted that they would provide a response, however the proposal is considered to be minor.
- Ngati Te Ata advised that they would review the documentation and provide a response in due course.
- Ngati Whanaunga requested the Notice of Requirement and resource consent application documentation to improve the understanding of the proposal. Transpower is providing this documentation to Ngati Whanaunga who will review it and subsequently advise whether a site visit is necessary.

At the time of lodgement of this NOR with Auckland Council, no further responses had been received, however Transpower anticipates that Iwi engagement will be ongoing.

8 Notification Assessment

Section 169 of the RMA is the relevant section with regard to the notification of a NOR and outlines that a territorial authority must decide whether or not to notify the NOR. This section of the Report provides discussion on whether the NOR needs to be notified in accordance with Section 169(1) of the RMA. Section 169(1) states:

> *" (1) If a territorial authority is given notice of a requirement under section 168, the territorial authority must, within 10 working days, decide whether to notify the notice under—*
>
> *(a) subsection (1A); or*
>
> *(b) sections 149ZCB(1) to (4), 149ZCC(1) to (4), 149ZCE, and 149ZCF, which apply with all necessary modifications and as if—*
>
> *(i) a reference to an application or notice were a reference to the notice of requirement; and*
>
> *(ii) a reference to an applicant were a reference to the requiring authority; and*
>
> *(iii) a reference to the Minister or the EPA were a reference to the territorial authority; and*
>
> *(iv) a reference to an activity were a reference to the designation.*

8.1 Public Notification

Section 149ZCB relates to public notification of a Notice of Requirement, as follows:

> *"(1) The [territorial authority] may in [its] discretion… decide whether to… publicly notify an application or a notice.*
>
> *(2) Despite subsection (1), the [territorial authority] must publicly notify an application or a notice if –*
>
> *(a) The [territorial authority] decides (under section 149ZCE) that the activity that is the subject of the application or notice will have, or is likely to have, adverse effects on the environment that are more than minor; or*

(b) The applicant requests public notification of the application or notice; or

(c) A rule or national environmental standard requires public notification of the application or notice.

(3) Despite subsections (1) and (2)(a), the [territorial authority] must not publicly notify the application or notice if—

(a) a rule or national environmental standard precludes public notification of the application or notice; and

(b) subsection (2)(b) does not apply.

(4) Despite subsection (3), the [territorial authority] may publicly notify an application or a notice if the [territorial authority] decides that special circumstances exist in relation to the application or notice.

Public notification of this NOR is not required because:

- Clause (2)(a) does not apply as the Site is an established substation that has been operating since 1975 and is part of the existing environment. The proposed designation over the Site to provide for the ongoing operation, maintenance, upgrade, development and protection of the substation, including the proposed ODID conversion project will not have, nor is it likely to have, adverse effects on the environment that are more than minor (for the reasons outlined in Section 4).

- Clause (2)(b) does not apply as Transpower does not request public notification of the NOR.

- Clause (2)(c) and (3) do not apply as there are no relevant rules or national environmental standards that require public notification of the NOR, nor are there rules or national environmental standards that preclude public notification of the NOR.

- Clause (4) does not apply as there are no special circumstances which would warrant public notification of this NOR.

Accordingly, the territorial authority need not publicly notify this application.

8.2 Limited Notification

Where the territorial authority accepts that public notification is not required, it must determine if limited notification is required under Section 149ZCC as follows:

(1) If the [territorial authority] decides not to… publicly notify an application or a notice, the [territorial authority] must, in relation to the activity, —

(a) decide if there is any affected person (under section 149ZCF); and

(b) identify any affected protected customary rights group or affected customary marine title group.

(2) The [territorial authority] must give limited notification of the application or notice to any affected person unless a rule or national environmental standard precludes limited notification of the application or notice.

(3) The [territorial authority] must give limited notification of the application or notice to an affected protected customary rights group or affected customary marine title group even if a rule or national environmental standard precludes public or limited notification of the application or notice.

(4) In subsections (1) and (3), the requirements relating to an affected customary marine title group apply only in the case of applications for accommodated activities.

Limited notification of this NOR is not required because there are no affected persons or affected groups for the reasons set out in Section 8.3 below.

8.3 Affected Persons

With regard to affected persons, Section 149ZCF states:

(1) The [territorial authority] must decide that a person is an affected person, in relation to an activity, if the adverse effects of the activity on the person are minor or more than minor (but are not less than minor).

(2) The [territorial authority], in making [its] decision, —

(a) may disregard an adverse effect of the activity on the person if a rule or national environmental standard permits an activity with that effect; and

(b) in the case of a controlled activity or a restricted discretionary activity, must disregard an adverse effect of the activity on the person if the activity does not relate to a matter for which a rule or national environmental standard reserves control or restricts discretion; and

(c) must have regard to every relevant statutory acknowledgement made in accordance with an Act specified in Schedule 11.

(3) Despite anything else in this section, the [territorial authority] must decide that a person is not an affected person if—

(a) the person has given, and not withdrawn, approval for the activity in a written notice received by the authority before the authority has decided whether there are any affected persons; or

(b) it is unreasonable in the circumstances to seek the person's written approval.

There are no adversely affected persons who are affected to an extent that is minor or more than minor and whom must be notified of this NOR, because:

- A number of stakeholders have provided, and not withdrawn, written approval for the activity. As such the territorial authority must determine that these persons are not affected persons (refer **Section 7**).
- The Site has been operating as a Substation since 1 March 1975 and is an established part of the existing environment.
- The surrounding land uses, including the activities to the north, west and south of the site are commercial in nature and highly modified, with publicly accessible carparking areas. These areas are not considered to have high amenity values, nor are they considered to be sensitive to the activities that occur on the Site.
- Aside from Vector Ltd, who owns and operates electricity infrastructure at the south-western corner of the Site (and has provided written approval), there are no other known utilities within the footprint of the proposed designation.
- The works that would occur under the designation purpose would be restricted to the constraints of the property boundary and the designated area, and the proposed conditions to be applied to the designation (discussed further below).
- Future necessary maintenance, redevelopment and potential upgrade woks within the designated area of the Site would remain consistent with the nature and scale of the existing infrastructure and would be screened by the existing vegetation along the western and eastern boundaries of the site.
- Any views to the site from the residential properties to the east of the Site are located at least 80 metres from the Site and separated by the SH1. In addition, the views of the Site are within the context of existing transmission line support structures (pylons) that are approximately 41 metres in height.
- The potential adverse effects of the activities that would occur at the Site under the proposed designation, including the ODID conversion project, are proposed to be mitigated through conditions to be imposed on the designation, which include an accidental discovery protocol, the management of vibration, construction and maintenance noise, compliance with hazardous substances, radio frequency and earth potential rise design standards and guidelines, and standards for maximum lighting spill, electric and magnetic fields operational noise, and maintenance of vegetation along the western boundary.

- There are no statutory acknowledgements on or near the site that the territorial authority must have regard to.

Accordingly, it is considered that the territorial authority need not give notice of this proposal to any person.

8.4 Conclusion of Notification Assessment

Pursuant to Section 169 of the RMA, this NOR can be processed without public notification and without limited notification to any person or group because:

- None of the requirements under 149ZCB are made out requiring the territorial authority to publicly notify the application, and
- None of the requirements under 149ZCC are made out requiring the territorial authority to give limited notification.

9 Conclusion

Transpower proposes to designate the existing Wiri electricity substation at 656 Great South Road, Manukau in the AUP(OP) for its purpose as "electricity transmission – Wiri electricity substation". The designation at the Site for this purpose would provide Transpower with certainty and flexibility required for the ongoing, use, operation, maintenance, development and potential upgrade of the substation infrastructure to ensure a resilient electricity supply and connection to the local distribution network.

This NOR has been prepared in accordance with the requirements of the Resource Management Act 1991 (**RMA**), and in particular, the requirements of Form 18, section 168, and Section 171.

This NOR also contains details of the ODID conversion project at the Site, which involves the removal of the existing aging 33kV switchyard and replacement with two new 33kV switchroom buildings. Given the level of detail contained within this Report, Transpower requests that Auckland Council waives the requirement for an Outline Plan of Works (OPW) for the ODID conversion project.

The information provided in this Report, as well as the supporting assessments and information, enable the following conclusions to be made:

The designation and works are reasonably necessary to achieve the objectives of the requiring authority –

- Designating Wiri substation for its purpose for electricity transmission would assist in achieving Transpower's corporate objectives of operating a successful business and delivering and operating a safe, reliable, and cost-efficient transmission grid that meets New Zealand's needs now and into the future.

- In line with the Project objectives, the designation is necessary to:
    - authorise the land for its continued use as a National Grid substation;
    - provide for its short, medium and long-term operation, maintenance, development and potential upgrade, including through enabling planning and operational certainty;
    - enable safe, secure and efficient transmission between the National Grid and local distribution network; and

A consideration of alternative sites, routes and methods of undertaking the project is not necessary –

- An alternatives assessment is not required as Transpower has an interest in the land for undertaking the work and the proposed designation will not have a significant adverse effect on the environment.

The Project is consistent with the relevant provisions of the National Policy Statement on Electricity Transmission, the Auckland Regional Policy Statement and the Auckland Unitary Plan –

- The proposal is consistent with the directives of the NPSET. The designation will facilitate planning for the development, operation and maintenance of electricity transmission infrastructure, and will have benefits in terms of providing a secure, electricity supply and connection to the local distribution network.

- The proposal is consistent with the policy direction contained in the Auckland RPS for Infrastructure (contained in Section B3.2). The designation will contribute to the resilient, efficient and effective operation, maintenance, development and upgrading of the National Grid, and recognise its functional and operational needs.

- For similar reasons as those relating to the RPS, the proposal is also consistent with the policy direction provided in the AUP(OP) (Section E26.2 Infrastructure), as the designation will:
    - recognise the benefits of and value of investment in infrastructure and the national significance of the National Grid;
    - improve the resilience of infrastructure and enable continuity of service through enabling the effective and efficient development, operation, maintenance, repairs and upgrading of the Wiri substation; and
    - avoid, remedy and mitigate all potential adverse effects on the environment to the fullest extent possible, through the mitigation measures proposed and associated conditions.

The Project promotes the sustainable management purpose of the RMA –

- It will sustain the potential of the National Grid to meet the reasonably foreseeable needs of future generations which enables community wellbeing. The safe, efficient and effective transmission of electricity is vital to the wellbeing of the community in terms of providing electricity for homes, commercial and industrial activities as well as community facilities and hospitals.

- It will avoid, remedy and mitigate all potential adverse effects on the environment to the fullest extent possible through the mitigation measures proposed and associated conditions.

- It represents an efficient and sustainable use of an existing site, through the continuation of a well-established land use and physical resource and avoids the need for new infrastructure in an alternative location, which could generate adverse environmental effects.

Accordingly, Auckland Council is able to recommend confirming the designation in the AUP(OP), subject to appropriate conditions, as per the information contained in **Appendix D** of this NOR.

Appendices

Appendix A

AUP(OP) Context Map

Flood Hazard Map

Wiri Substation - AUP(OP) Context Map

0 50 100 150
Meters

Scale @ A4
= 1:8,000

Date Printed:
17/10/2018

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Overlays

Infrastructure

Airport Approach Surface Overlay

- Airport Approach Surface Overlay

City Centre Port Noise Overlay [rcp/dp]

- City Centre Port Noise Overlay [rcp/dp]

National Grid Corridor Overlay

- National Grid Subdivision Corridor
- National Grid Substation Corridor
- National Grid Yard Compromised
- National Grid Yard Uncompromised

Quarry Buffer Area Overlay

- Quarry Buffer Area Overlay

Place Names

Place Name Search

- Place Name Search

Railway Lines

Railway (25,000)

- Railway (25,000)

Roads

Roads (8,000)

- Roads (8,000)

Parcels

- Parcels

Property Boundaries

- Property Boundaries

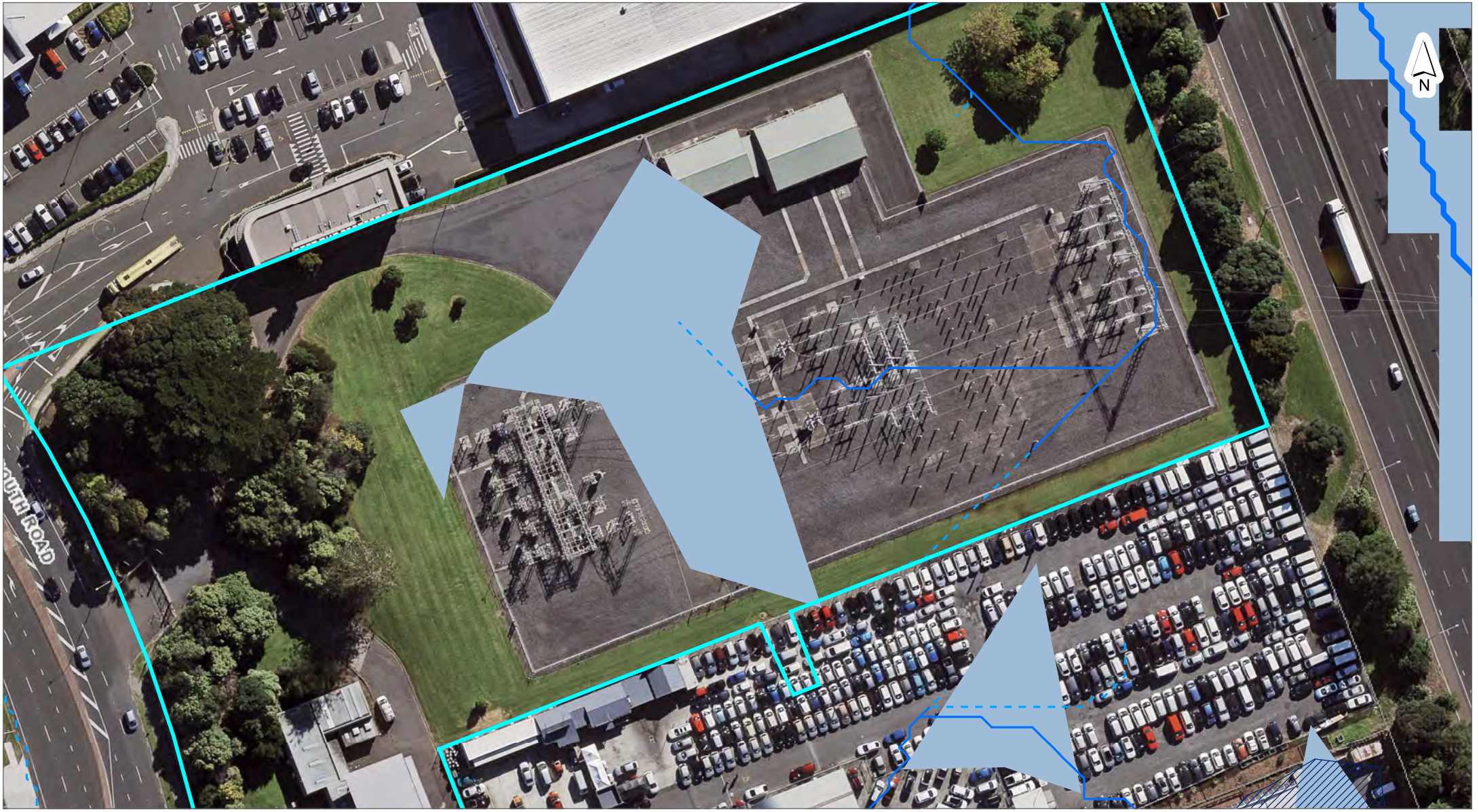
Zones

- Residential - Large Lot Zone
- Residential - Rural and Coastal Settlement Zone
- Residential - Single House Zone
- Residential - Mixed Housing Suburban Zone
- Residential - Mixed Housing Urban Zone
- Residential -Terrace Housing and Apartment Buildings Zone
- Open Space - Conservation Zone
- Open Space - Informal Recreation Zone
- Open Space - Sport and Active Recreation Zone
- Open Space - Civic Spaces Zone
- Open Space - Community Zone
- Business - City Centre Zone
- Business - Metropolitan Centre Zone
- Business - Town Centre Zone
- Business - Local Centre Zone
- Business - Neighbourhood Centre Zone
- Business - Mixed Use Zone
- Business - General Business Zone
- Business - Business Park Zone
- Business - Heavy Industry Zone
- Business - Light Industry Zone
- Future Urban Zone
- Green Infrastructure Corridor (Operative in some Special Housing Areas)
- Rural - Rural Production Zone
- Rural - Mixed Rural Zone
- Rural - Rural Coastal Zone
- Rural - Rural Conservation Zone
- Rural - Countryside Living Zone
- Rural - Waitakere Foothills Zone
- Rural - Waitakere Ranges Zone
- Strategic Transport Corridor Zone
- Special Purpose Zone
- Coastal - General Coastal Marine Zone [rcp]
- Coastal - Marina Zone [rcp/dp]
- Coastal - Mooring Zone [rcp]
- Coastal - Minor Port Zone [rcp/dp]
- Coastal - Ferry Terminal Zone [rcp/dp]
- Coastal - Defence Zone [rcp]
- Coastal - Coastal Transition Zone
- Water [i]
- Hauraki Gulf Islands
- Road [i]

Legend

Date Printed:
17/10/2018

Auckland Council
Te Kaunihera o Tāmaki Makaurau



Wiri Substation - Flood Hazard Map

0 6.5 13 19.5
Meters

Scale @ A4
= 1:1,000

Date Printed:
31/01/2019

Auckland Council
Te Kaunihera o Tāmaki Makaurau

River Names

River Names

Overland Flow Paths - 3ha and above

Overland Flow Paths - 3ha and above

Overland Flow Paths - 4000m2 to 3ha

Overland Flow Paths - 4000m2 to 3ha

Overland Flow Paths - 2000m2 to 4000m2

Overland Flow Paths - 2000m2 to 4000m2

Overland Flow Paths

Overland Flow Paths

Flood Prone Areas

Flood Prone Areas

Flood Sensitive Area

Flood Sensitive Area

Flood Plains

Flood Plains

Information

Indicative Coastline (i)

Indicative Coastline (i)

Rural Urban Boundary (RUB)

Rural Urban Boundary (RUB)

Place Names

Place Name Search

Place Name Search

Railway Lines

Railway (2,500)

Railway (2,500)

Roads

Roads (1,000)

Parcels

Parcels

Property Boundaries

Property Boundaries

Legend

Date Printed:
31/01/2019

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Appendix B
Certificate of Title

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **NA101D/252**
Land Registration District **North Auckland**
Date Issued 02 April 1998

Prior References
NA85B/402 NA93D/215

Estate	Fee Simple
Area	2.3433 hectares more or less
Legal Description	Lot 1 Deposited Plan 167802

Registered Owners
Transpower New Zealand Limited

Interests

Subject to Section 11 Crown Minerals Act 1991

Subject to Part IV A Conservation Act 1987

Subject to Section 27B State-Owned Enterprises Act 1986 (which provides for the resumption of land on the recommendation of the Waitangi Tribunal and which does not provide for third parties, such as the owner of the land, to be heard in relation to the making of any such recommendation)

Appurtenant to part formerly contained in CT NA85B/402 is a drainage right created by Transfer C410792A.3 - 4.9.1992 at 1:40 pm

Appurtenant hereto is a drainage right created by Transfer D258383.7 - 2.4.1998 at 1:27 pm

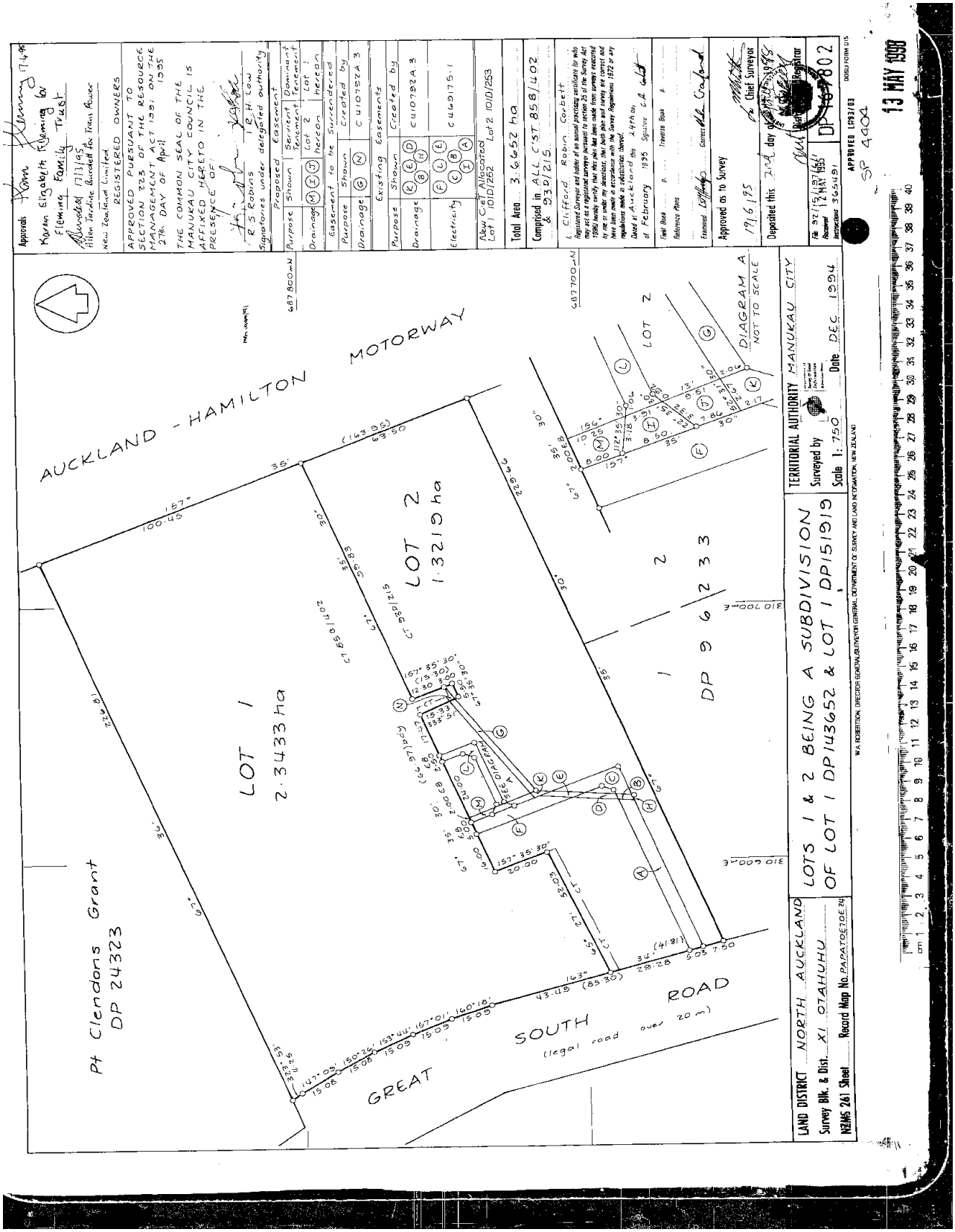
Appurtenant hereto is a right of way created by Easement Instrument 9810217.4 - 16.12.2015 at 8:16 am

The easements created by Easement Instrument 9810217.4 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right of way over parts marked AG & AH on DP 473176 created by Easement Instrument 9810217.5 - 16.12.2015 at 8:16 am

The easements created by Easement Instrument 9810217.5 are subject to Section 243 (a) Resource Management Act 1991

Identifier **NA101D/252**



Appendix C
Gazette Notices

Notice Number: 3533
Year: 1994
Publication Date: 19 May 1994
Page Number: 1705
Title: TRANS POWER NEW ZEALAND LTD
Notice Text: The Resource Management (Approval of Trans Power New Zealand Limited as Requiring Authority) Notice 1994 Pursuant to section 167 of the Resource Management Act 1991, the Minister for the Environment, hereby gives the following notice: N o t i c e 1. Title and commencement (1) This notice may be cited as the Resource Management (Approval of Trans Power New Zealand Limited as Requiring Authority) Notice 1994. (2) This notice shall come into force on the 28th day after the date of its publication in the New Zealand Gazette. 2. Interpretation In this notice, unless the context otherwise requires, ``line function services'' has the same meaning as in section 2 (1) of the Electricity Act 1992. 3. Approval as requiring authority Trans Power New Zealand Limited is hereby approved as a requiring authority for its network operation of the supply of line function services. Dated at Wellington this 9th day of May 1994. S. UPTON, Minister for the Environment.

Notice Number: 6914
Year: 1997
Publication Date: 02 October 1997
Page Number: 3323
Title: RESOURCE MANAGEMENT TRANSPOWER
Notice Text: The Resource Management (Approval of Transpower New Zealand Limited as Requiring Authority) Notice 1997 Pursuant to section 167 of the Resource Management Act 1991, the Minister for the Environment hereby gives the following notice: N o t i c e 1. Title and commencement (1) This notice may be cited as the Resource Management (Approval of Transpower New Zealand Limited as Requiring Authority) Notice 1997. (2) This notice shall come into force on the 28th day after the date of its publication in the New Zealand Gazette. 2. Interpretation In this notice, unless the context otherwise requires, ``telecommunications'' has the meaning given to that term by section 2 (i) of the Telecommunications Act 1987. 3. Approval as requiring authority Transpower New Zealand Limited is hereby approved as a requiring authority under section 167 of the Resource Management Act 1991, for the supply, operation, maintenance and development of a telecommunications network. Dated at Wellington this 29th day of September 1997. H. S. UPTON, Minister for the Environment.

Appendix D

New Designation Information for Auckland Unitary Plan (Operative in Part)

Designation Schedule – Transpower New Zealand Ltd

Number	Purpose	Location
8533	Electricity transmission – Wiri electricity substation	656 Great South Road, Manukau

8533 Wiri Electricity Substation

Designation number	8533
Requiring Authority	Transpower New Zealand Ltd
Location	656 Great South Road, Manukau
Rollover Designation	No
Legacy Reference	n/a
Lapse Date	Given effect to (i.e. no lapse date)

Purpose

Electricity transmission – Wiri electricity substation.

Conditions

General

1. *The initial construction works at the Site shall be undertaken in general accordance with the plans and information submitted within the Assessment of Environmental Effects for the Notice of Requirement (reference "Notice of Requirement for Wiri Electricity Substation, dated 9 July 2019")*

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:*

(e) works in the immediate vicinity of the site that has been exposed shall cease;
(f) the site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
(g) the site supervisor shall notify representatives of relevant tāngata whenua, Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
(h) 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.

Construction and maintenance noise and vibration

3. *All construction and maintenance work shall be designed, managed and conducted to ensure that construction and maintenance noise in accordance with NZS6803:1999 Acoustics–Construction Noise.*

4. *Prior to any significant construction work taking place, including any earthworks, a construction noise and vibration management plan (CNVMP) 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 German Standard DIN 4150-3 (1999-02) Structural Vibration - Effects of Vibration on Structures. The CNVMP shall be submitted to the 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. The works shall be undertaken in accordance with the CNVMP.*

5. *Where reasonable risk of vibration damage during construction activities has been identified, vibration shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.*

Hazardous substances

6. *Any new part of the facility containing oil shall be designed to comply with Transpower's Oil Spill Management Policy (TP: GS.54.01). Issue 4, December 2014.*

Radio frequency interference

7. *Any new works or equipment shall 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

8. *Any new substation earth grids shall be designed, built, and tested to ensure electrical safety at or beyond the designation boundary is in accordance with Transpower Standard Design of Substation Earthing TP.DS.52.01, Issue 3, May 2016.*

Light spill

9. *All exterior lighting shall comply with:*

(d) AS/NZS 1158 Lighting for Roads and Public Spaces 2005 Part 3.1; and
(e) Transpower's Guidelines and Information for Switchyard and Grounds Lighting, TP DS 40.03, Issue 3.1, August 2018; and
(f) AS 4282 1997, Control of Obtrusive Effects of Outdoor Lighting.

Operational noise

10. Any new works or equipment (such as transformers, fans and circuit breakers) shall be designed and operated to ensure that the following noise limits shall not be exceeded (when combined cumulatively with the other operating elements of the substation):

(d) At or within the boundary of any Business – General Business zoned site outside of the designated area:
i. All times: 65dBA L_{Aeq}

(e) At or within the boundary of any residentially zoned site outside of the designated area:
i. Monday to Saturday 7am to 10pm, and Sunday 9am to 6pm: 55dB LAeq
ii. All other times: 45dB LAeq; and
iii. All other times: 75dB LAFmax

(f) At or within the boundary of any Business - Metropolitan Centre zoned site outside of the designated area:
i. Daytime 7am to 11pm: 65dB LAeq
ii. Night-time 11pm to 7am: 60dB LAeq; and 75dB LAFmax.

Electric and Magnetic Fields (EMF)

11. Any new equipment shall be designed and operated to limit the electric and magnetic field exposures 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 and magnetic fields (1Hz - 100kHz), (Health Physics 99(6):818-836:2010) (ICNIRP Guidelines). That is the public exposure reference levels of 5 kV/m for electric fields and 200 µT for magnetic flux density at one metre above ground level under maximum normal operating conditions (i.e when there are no faults in the transmission system).

Landscaping

12. The requiring authority shall ensure that a planting strip is retained and managed within the Site along the full extent of the western (Great South Road) boundary (excluding the access way). The planting strip shall be a minimum width of 40 metres from the boundary in the area north of the access way to Great South Road, and a minimum width of 10 metres from the boundary in the area south of the access way to Great South Road.

All existing vegetation associated with the above condition shall be maintained

regularly and kept in a tidy condition, including replacement if any planting dies or becomes over mature. The replacement of any vegetation shall be planted no later than the next planting season (i.e. April to September) following discovery of the need for replacement.

Advice note

Any new works or equipment means those works or equipment which were not existing prior to the confirmation of this designation and inclusion in the Auckland Unitary Plan at <insert date the designation is incorporated into the AUP(OP)>.

Appendix E
Designation Plan

External Disclaimer

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Path: C:\TP\p18147_Wiri designation maps\18147_Wiri_designation.mxd

TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation - Area to be designated

Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

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TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation - Area to be designated

Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

Path: C:\TP\p18147_Wiri designation maps\18147_Wiri_designation.mxd

Appendix F
Stakeholder Map

Path: C:\Users\sutherlandj\OneDrive - Transpower\ArcGIS\Transpower.mxd

TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation (WIR) - Stakeholder Map

Projection: NZTM 2000 Scale: 1:1,250 Plan Size: A3L

0 0.03 0.06 Km

Date: 8/04/2019 *Drawn by: sutherlandj*

Appendix G
Written Approvals

Written approval of affected persons

Auckland Council
Te Kaunihera o Tāmaki Makaurau

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*)	Transpower New Zealand Limited	
Address of proposed activity:	656 Great South Road, Manukau	Consent number if known:

Brief description of proposed activity:

Notice of Requirement by Minister, local authority, or requiring authority for designation or alteration of designation

- Resource Management Act 1991: Section 168

Plan references (including title, author and date):

Title: Wiri Substation - Area to be designated Author: dornanm

Date: 4 March 2019

Resource consent(s) being sought for (describe area(s) of non-compliance):

N/A

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)	Jenny Jonker	☐	☑
Full name: (*in print*)		☐	☐
Full name: (*in print*)		☐	☐

Address of affected property: 676 Great South road, Manukau City. Auckland Postcode: 2104

Phone: 09) 263-1000 Mobile: 021338428

Page 1 of 2

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

☑ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

☑ I/We have been given details of the proposal and plans to which I/we are giving written approval.

☑ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form.

☑ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

☑ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):		Date:	06/6/2019
Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

The council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the council. If you would like to request access to, or correction of any details, please contact the council.

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TRANSPOWER

Prepared by: Geospatial & Drawings

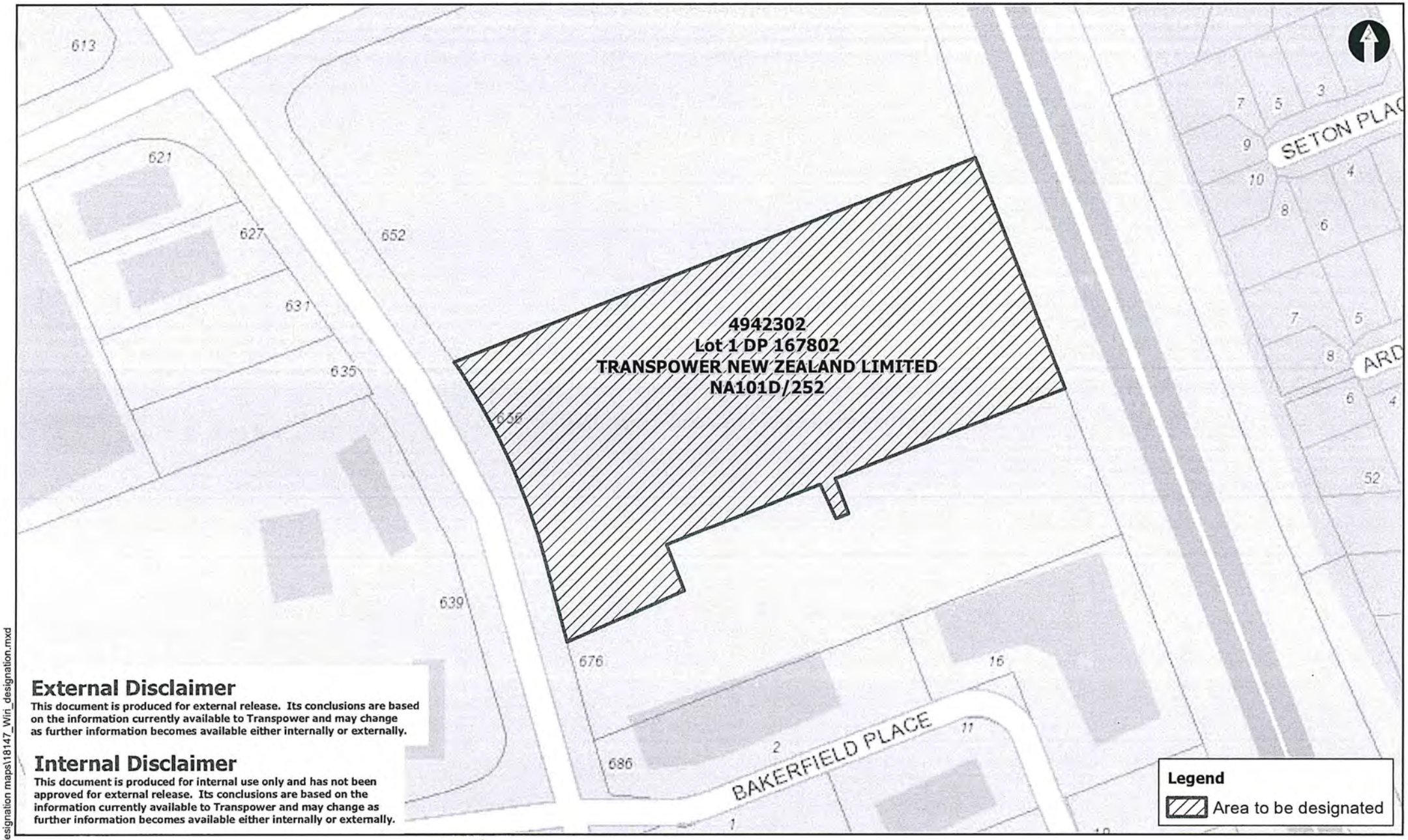
Wiri Substation - Area to be designated

Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

Path: C:\TP\p18147_Wiri designation maps\18147_Wiri_designation.mxd



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TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation - Area to be designated

Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

NZ TRANSPORT AGENCY
WAKA KOTAHI

Level 11, HSBC House
1 Queen Street
Private Bag 106602
Auckland 1143
New Zealand
T 64 9 969 9800
F 64 9 969 9813
www.nzta.govt.nz

NZTA Ref: LUD 219132

25 June 2019

John Sutherland
John.Sutherland@transpower.co.nz

Dear John

NOTICE OF REQUIREMENT FOR WIRI SUBSTATION
656 GREAT SOUTH ROAD, MANUKAU
REQUIRING AUTHORITY: TRANSPOWER NEW ZEALAND LTD

Thank you for your email dated 4th June 2019 and supporting documentation requesting written approval from the NZ Transport Agency for a Notice of Requirement of the Wiri Substation.

Proposal
Transpower New Zealand Ltd has prepared a Notice of Requirement (NOR) to designate the existing Wiri electricity substation in the Auckland Unitary Plan (Operative in Part). The purpose of the designation is for "electricity transmission – Wiri electricity substation". The designation of the Site for this purpose would provide for the ongoing operation, maintenance, development and potential upgrade of the existing substation and would be consistent with the designations for other Transpower substations throughout Auckland.

Written approval is sought from the NZ Transport Agency as an adjacent landowner prior to lodging an NOR with Auckland Council.

Discussion
The Transport Agency has reviewed Transpower's NOR for the Wiri Substation dated 31st May 2019. The NOR along with a confirmation email from John Sutherland dated 19th June 2019 confirms that Transpower are not proposing any changes to the existing substation that would have an impact on the State Highway 1 corridor or proposing any work outside of Transpower's property boundary which would have an impact on the maintenance and operation of State Highway 1. Transpower are lodging a NOR primarily to be consistent with other substations in Auckland.

Decision
The NZ Transport Agency provides its approval to the proposed Notice of Requirement.

This letter may serve as written approval pursuant to S95E of the Resource Management Act 1991.

I trust this letter clearly outlines the NZ Transport Agency's position with respect to your proposal. If you have any queries, please do not hesitate to contact Ian Blundell on 021 2469011 (or email ian.blundell@nzta.govt.nz).

This response is the NZ Transport Agency's current view of the situation. Please note that if this application is put on hold for any length of time and resubmitted at a later date, the NZ Transport Agency's may need to review its comments in the light of any traffic, safety, planning, or policy change.

Yours faithfully,

Bruce Hawkins
Senior Planning Advisor
Consents and Approvals

Enclosed:

- Attachment 1: Proposed Designation Area

Attachment 1: Proposed Designation Area

Written approval of affected persons

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*)	Transpower New Zealand Limited	
Address of proposed activity:	656 Great South Road, Manukau	Consent number if known:

Brief description of proposed activity:

Notice of Requirement by Minister, local authority, or requiring authority for designation or alteration of designation - Resource Management Act 1991: Section 168

Plan references (including title, author and date):

Title: Wiri Substation - Area to be designated Author: dornanm

Date: 4 March 2019

Resource consent(s) being sought for (describe area(s) of non-compliance):

N/A

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)	Van Den Brink 652 Ltd.	☑	☐
Full name: (*in print*)	Laren Ltd	☑	☐
Full name: (*in print*)		☐	☐

Address of affected property: 652A GtSth Rd, 5 Tiliriangi Dr. Postcode:

Phone: Mobile: 0210373207

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

☑ OWNER(S) ☐ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

PART C – DECLARATION

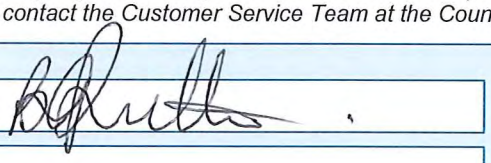
☑ I/We have been given details of the proposal and plans to which I/we are giving written approval.

☑ I/We have signed each page of the plans in respect of this proposal. These need to accompany this form.

☑ I/We understand that by giving my/our written approval, the Council when considering the application cannot take account of any actual or potential effects of the activity on my/our property.

☑ Further, I/we understand that at any time before the determination of the application, I/we may give notice in writing to the Council that this approval is withdrawn.

Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):		Date:	3/07/2019
Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

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TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation - Area to be designated

Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

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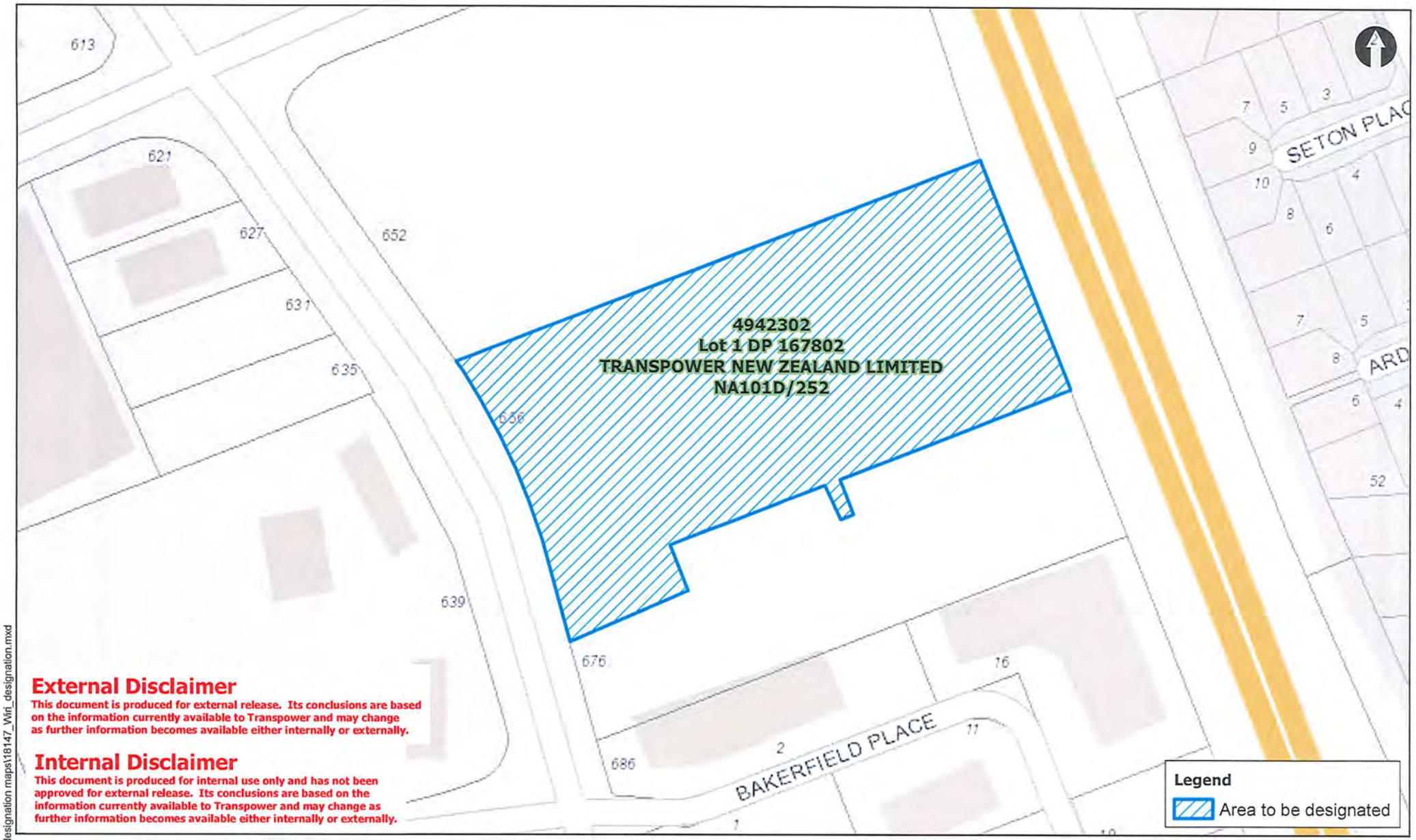

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Prepared by: Geospatial & Drawings

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Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

Path: C:\TPlp\18147_Wiri designation maps\18147_Wiri_designation.mxd

Written approval of affected persons

PART A (to be completed by applicant)

PART A – APPLICATION

Applicant(s) name: (*please write all names in full*)	Transpower New Zealand Limited	
Address of proposed activity:	656 Great South Road, Manukau	Consent number if known:

Brief description of proposed activity:

Notice of Requirement by Minister, local authority, or requiring authority for designation or alteration of designation

- Resource Management Act 1991: Section 168

Plan references (including title, author and date):

Title: Wiri Substation - Area to be designated Author: dornanm

Date: 4 March 2019

Resource consent(s) being sought for (describe area(s) of non-compliance):

N/A

PART B (to be completed by persons and/or organisations providing written approval)

PART B – AFFECTED PERSON(S)

		Tick if Owner	Tick if Occupier
Full name: (*in print*)	Vector Limited	☐	☑
Full name: (*in print*)		☐	☐
Full name: (*in print*)		☐	☐

Address of affected property:	Head office: 101 Carlton Gore Rd, Newmarket, 1023. Occupier of 656 Great South Rd, Manukau, 2104.	Postcode:	
Phone:		Mobile:	

PART B – AFFECTED PERSON(S) *(continued)*

I have authority to sign on behalf of all the other: (*tick one*)

☐ OWNER(S) ☑ OCCUPIER(S)

of the property. Please provide documentation proving this authority.

Please note: the approval of all the legal owners and the occupiers of the affected property may be necessary.

PART C (to be completed by persons and/or organisations providing written approval)

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Note: You should only sign below if you fully understand the proposal. If you require the resource consent process to be explained you can contact the Customer Service Team at the Council who can provide you with information.

Signature(s):	David Owen, on behalf of Vector	Date:	20 June 2019
Signature(s):		Date:	
Signature(s):		Date:	

PRIVACY INFORMATION

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TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation - Area to be designated

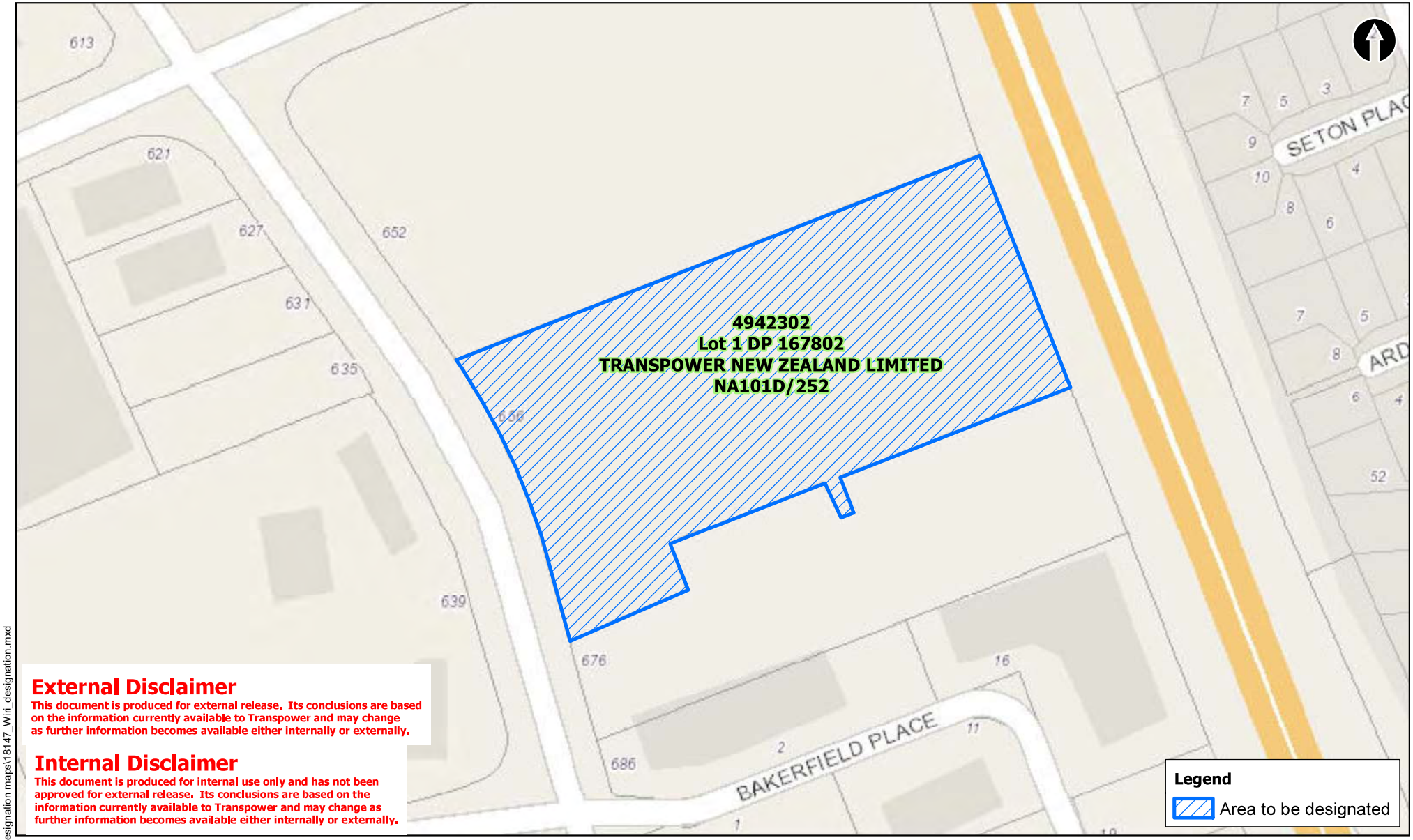
Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

Path: C:\TPjp18147_Wiri designation maps\18147_Wiri_designation.mxd

D.O.



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TRANSPOWER

Prepared by: Geospatial & Drawings

Wiri Substation - Area to be designated

Projection: NZTM 2000 Scale: 1:2,000 Plan Size: A4L

0 0.03 0.06 Km

Date: 4/3/2019 *Drawn by: dornanm*

D.O.

Appendix H

Noise Assessment Report - Existing Environment (Marshall Day Acoustics)

MARSHALL DAY Acoustics

TRANSPOWER WIRI SUBSTATION
OPERATIONAL NOISE LEVEL MEASUREMENTS

Rp 001 R04 20181227 | 21 May 2019

MARSHALL DAY Acoustics

Level 2 EMC² House
5 Willeston Street
PO Box 25442
Featherston Street
Wellington 6146 New Zealand
T: +64 4 499 3016 F: +64 4 472 1493
www.marshallday.com

Project: **TRANSPOWER WIRI SUBSTATION**

Prepared for: **Transpower NZ Ltd**
PO Box 1021
Wellington 6011

Attention: **John Sutherland**

Report No.: **Rp 001 R04 20181227**

Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
			15/11/18	B. Wood	S. Arden
	01	Typographical error	20/11/18	B. Wood	S. Arden
	02	Added ODID section	13/02/19	B. Wood	S. Arden
	03	Comments re NOR	25/02/19	B. Wood	S. Arden
	04	Client update	21/05/19	B. Wood	S. Arden

TABLE OF CONTENTS

1.0 INTRODUCTION

Transpower NZ intends to lodge a Notice of Requirement to designate Wiri substation, located at 656 Great South Road, Manukau, Auckland. Marshall Day Acoustics (MDA) has been engaged by Transpower New Zealand Ltd to measure the existing noise emissions from Wiri Substation.

The main noise sources at this substation are two transformer banks, identified as T1 and T2. These each comprise three single-phase transformers. T1 and T2 are both rated at 92 MW.

This report details the measurement and assessment of the baseline (existing) acoustic environment at and around the Substation. In addition, an assessment of noise as a result of the proposed ODID project has been included in this report, based on this assessment of the existing noise environment.

A glossary of acoustic terminology used in this report can be found in Appendix A.

2.0 SITE DESCRIPTION

The substation is located at 656 Great South Road, Manukau, Auckland. It is bounded to the west by Great South Road, and bounded to the east by the Southern Motorway. The Auckland Unitary Plan Operative in Part (15 November 2016) (AUP OP) is the relevant planning document for this assessment. The substation site is currently zoned 'General Business' in the AUP OP. The immediately surrounding area to the north and south is also zoned 'General Business'. Directly across Great South Road to the west, the area is zoned 'Business - Metropolitan Centre'. Directly east, across the Southern Motorway (SH 1) are residential dwellings zoned 'Residential - Mixed Housing Suburban'. This residential area is separated from SH 1 by a narrow strip of land zoned 'Open Space – Informal Recreation'.

Figure 1 shows the location of the substation. Figure 2 shows the location of the substation in the context of the AUP OP zoning.

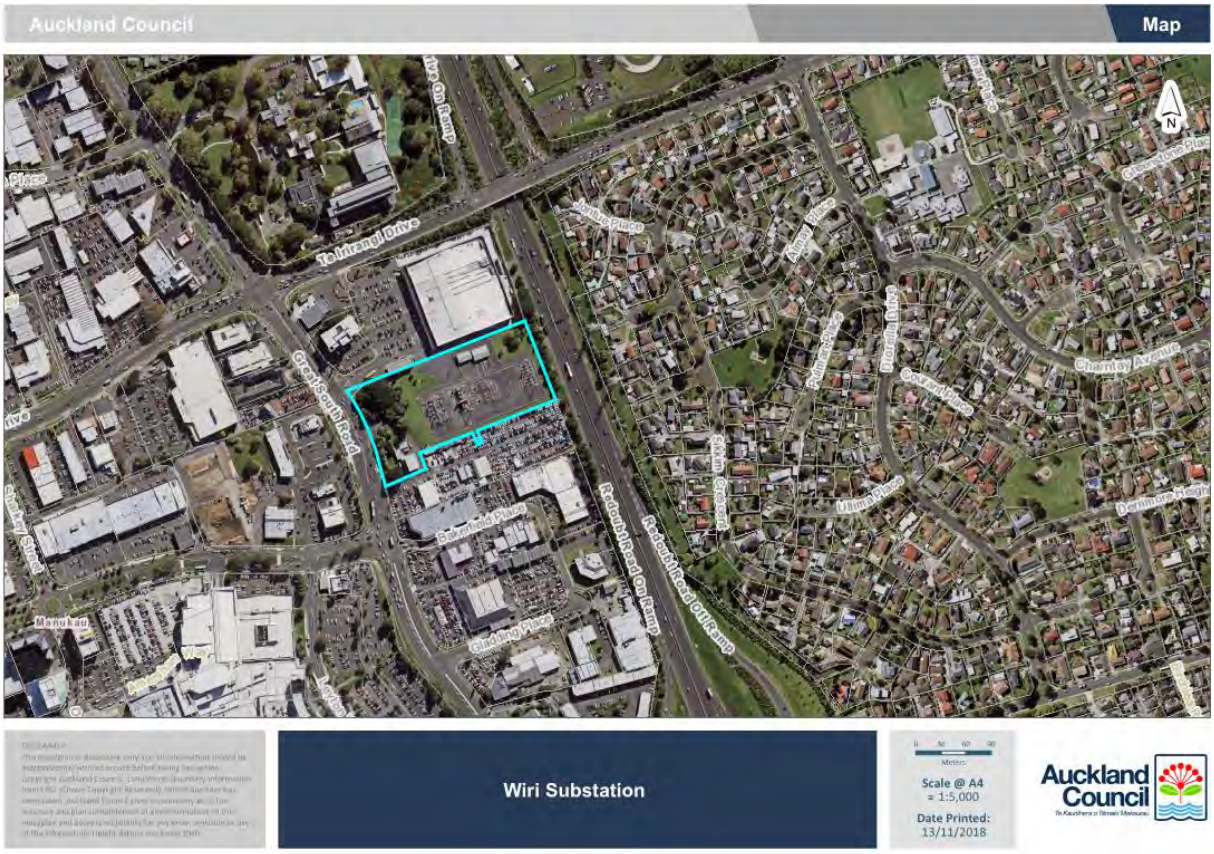


Figure 1: Wiri Substation (identified by blue line) and Surrounding Properties. (*Base image: Auckland Council GIS*).

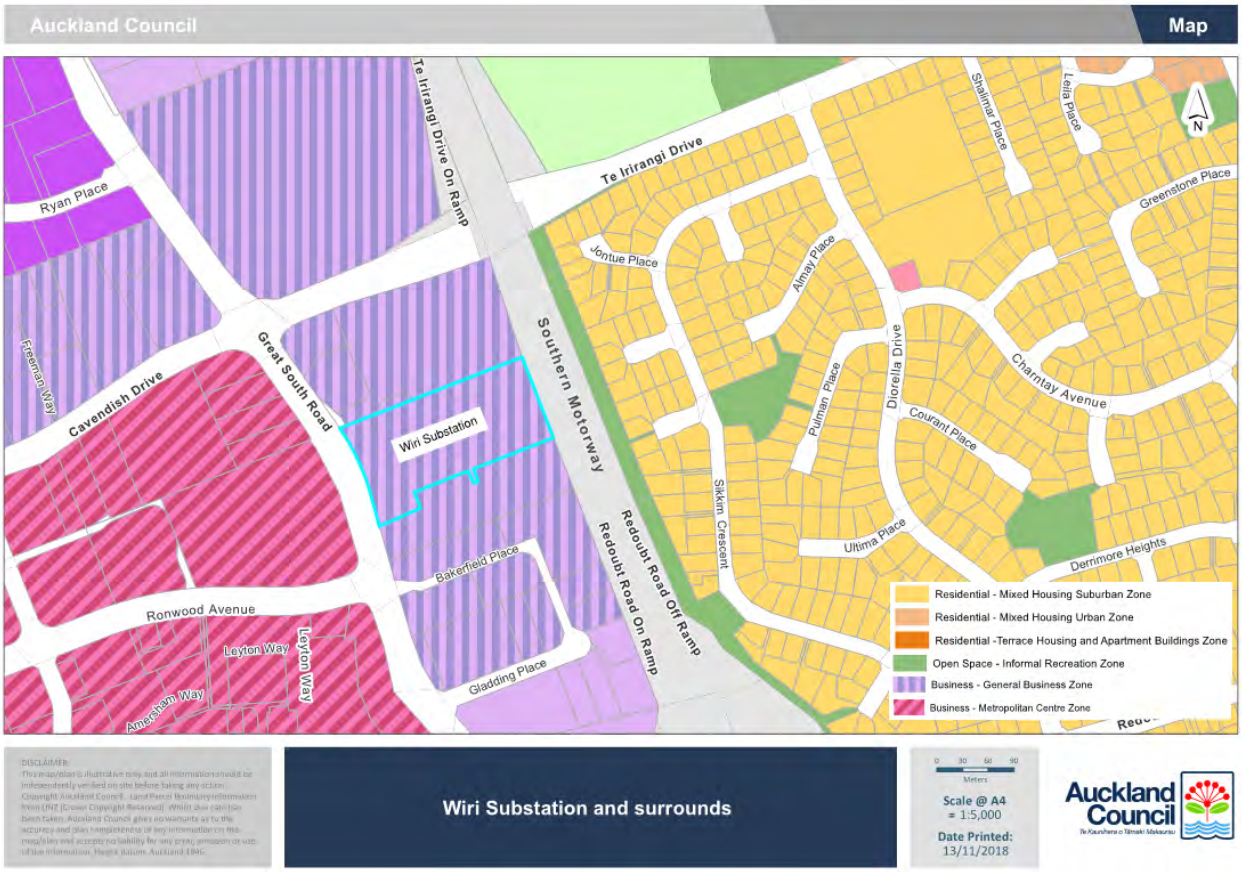


Figure 2: AUP OP Zone Map (*Base image: Auckland Council GIS*).

3.0 NOISE PERFORMANCE STANDARDS AND LEGISLATION

3.1 Resource Management Act

Under the provisions of the RMA there is a duty to adopt the best practicable option to ensure that noise from any development does not exceed a reasonable level. Specifically, Sections 16 and 17 reference noise effects as follows.

Section 16 states that *"every occupier of land (including any coastal marine area), and every person carrying out an activity, shall adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level"*.

Section 17 states that *"every person has a duty to avoid, remedy, or mitigate any adverse effect on the environment arising from an activity, whether or not the activity is in accordance with a rule in a plan, a resource consent or relevant sections of the RMA"*.

3.2 Auckland Unitary Plan

As discussed, the subject site is located within the 'General Business' Zone, and in the vicinity of sites zoned 'Business - Metropolitan Centre' and 'Residential – Mixed Housing Suburban'. Consequently, the substation activities are subject to several AUP OP noise standards. These are summarised below. The AUP OP requires that noise must be measured and assessed in accordance with New Zealand Standard NZS 6801:2008 "*Acoustics – Measurement of environmental sound*" and NZS 6802:2008 *"Acoustics - Environmental Noise"*.

3.2.1 Substation Operational Noise

Infrastructure Standard E26.2.5.3 (2) states that noise from substations must not exceed 55dB L_{Aeq} between Monday to Saturday 7am to 10pm and Sundays 9am to 6pm; 45dB L_{Aeq} / 75dB L_{AFmax} at all other times when measured within the boundary of a residential zone site.

Infrastructure Standard E26.2.5.3 (3) notes that noise from substations in other zones "*…must not exceed the noise limits for the zone in which they are located as provided in E25 Noise and Vibration*".

3.2.2 General Business Zone

E25 Noise and Vibration standard E25.6.6 (1) states that the noise (rating) level must not exceed 65 dB L_{Aeq} within the boundary of any other site in the General Business Zone at all times.

3.2.3 Business – Metropolitan Centre Zone

There do not appear to be noise standards for noise emissions from a General Business Zone, received within a Business - Metropolitan Centre Zone. However, E25 Noise and Vibration standard E25.6.22 (1) states that "*Except as provided for in Standards E25.6.14 to E25.6.21 above, where noise generated by any activity on a site in one zone is received by any activity on a site in a different zone, the activity generating the noise must comply with the noise limits and standards of the zone at the receiving site*".

Although this relates to standards that are not relevant to this project, it would be reasonable to apply a similar approach for the Business - Metropolitan Centre Zone. In this case, the relevant standard is found in E25.6.8 (1), the relevant section of which is as follows:

The noise (rating) level must not exceed:

- 7am – 11pm: 65 dB L_{Aeq}:
- 11pm – 7am: 60 dB L_{Aeq}, and 75 dB L_{AFmax}.

In addition, there are night-time criteria for the 63Hz and 125Hz octave bands (11pm to 7am only). E25.6.7 (2) notes that these do not apply to fixed mechanical plant. Transpower does not consider transformers to be fixed plant and accordingly these criteria have not been applied.

3.2.4 Summary of noise standards

The following AUP OP noise standards apply to this site:

- Residential – Mixed Housing Suburban: **55dB L_{Aeq}** Monday to Saturday 7am to 10pm and Sundays 9am to 6pm; **45dB L_{Aeq} / 75dB L_{AFmax}** at all other times when measured within the boundary of a residential zone site;
- General Business: **65 dB L_{Aeq}** within the boundary of any other site in the General Business Zone at all times;
- Business – Metropolitan Centre: Daytime 7am – 11pm **65 dB L_{Aeq}**;
  Night-time 11pm-7am **60 dB L_{Aeq}**, and **75 dB L_{AFmax}**

4.0 OPERATIONAL NOISE ASSESSMENT

A site visit was undertaken by Marshall Day Acoustics from 11:30pm 25 October 2018 until 01:00am 26 October 2018. Noise measurements at the substation site boundaries were not possible due to noise from traffic on Great South Road, SH 1 and the more distant roading network. As a consequence, near field noise measurements were taken of each of the transformers for the purpose of modelling the existing noise levels at the nearest receivers.

Transpower confirmed that the substation was operating normally during the period of the site visit. Noise measurements were taken of each of the transformers T1 and T2 for the purpose of modelling the existing noise levels at the nearest receivers. The only significant noise sources on site were the two transformers.

The sound power levels of the T1 and T2 transformers were determined using the surface sound pressure method of AS/NZS 60076-10:2009 "*Power transformers Part 10: Determination of sound levels*" (IEC 60076-10, Ed.1 (2001) MOD).

The operating load conditions at the time of measurement were as follows:

- Transformer T1: 26.82 MW;
- Transformer T2: 14.69 MW.

4.1 Transformer Load

We understand from Transpower that each transformer is rated as 92 MW. From this it appears that at the time of measurement they were not operating at capacity. Section 6.4 of AS/NZS 60076-10:2009 sets out a method for calculating the sound power levels at the rated current. However this method is valid only for a reduced current of ≥ 70% of the rated current, and in this case the operating load at the time of measurement falls outside that parameter. Consequently, the noise level under increased load conditions can not be calculated. We therefore can only carry out an assessment on the measurements made during the survey period only without an allowance for a higher operational load.

4.2 Transformer Sound Power Levels

The results of all measurements were analysed and the final sound power level at the time of measurement was calculated in accordance with the relevant standard. These results are as follows:

- T1: 94.5 dBA;
- T2: 91.5 dBA.

Appendix B shows the measurement locations around each transformer. Full details of the measured sound pressure levels around each transformer are given in Appendix C. Details of the measurements are given in Appendix D.

4.3 Modelling Methodology

The noise emission from the substation has been calculated in accordance with ISO 9613-2: 1996 as implemented in SoundPLAN® environmental noise modelling software.

ISO 9613 considers a range of frequency dependent attenuation factors, including spherical spreading, atmospheric absorption, ground effect and acoustic screening.

The model considers the noise emission from all significant noise sources associated with the substation's operation. In this case, as noted, the only significant noise sources on site were the transformers T1 and T2.

The transformers have a strong tonal component. In accordance with Appendix B4 of New Zealand Standard NZS 6802:2008 an adjustment of +5dB has been added to the transformer noise levels to account for noise containing special audible characteristics (SACs).

4.4 Nearest Receiver Locations

Calculations of substation noise at receiver locations have been carried out for the following locations:

Table 1: Nearest Receiver Locations

Address	AUP OP Zoning
2/8 Jontue Place	Residential – Mixed Housing Suburban Zone
12 Jontue Place	Residential – Mixed Housing Suburban Zone
14 Jontue Place	Residential – Mixed Housing Urban Zone
16 Jontue Place	Residential – Mixed Housing Urban Zone
7A Seton Place	Residential – Mixed Housing Urban Zone
2/8 Seton Place	Residential – Mixed Housing Suburban Zone
9 Seton Place	Residential – Mixed Housing Urban Zone
10 Seton Place	Residential – Mixed Housing Suburban Zone
2/7 Arden Court	Residential – Mixed Housing Suburban Zone
8 Arden Court	Residential – Mixed Housing Suburban Zone
34 Sikkim Crescent	Residential – Mixed Housing Suburban Zone
42 Sikkim Crescent	Residential – Mixed Housing Suburban Zone
2/50 Sikkim Crescent	Residential – Mixed Housing Suburban Zone
5 Irirangi Dr (Countdown)	General Business
652 Great South Road	General Business
654 Great South Road	General Business
654A Great South Road	General Business
676 Great South Road buildings 1 - 3	General Business
? Great South Road (Mitsubishi)	General Business
7 – 11 Bakersfield Place	General Business
16 – 16A Bakersfield Place	General Business
627 – 639 Great South Road	Business - Metropolitan Centre

4.5 Calculated Existing Operational Noise Levels

4.5.1 L_{Aeq} Levels

Table 2 sets out the calculated operational noise levels received within the Residential – Mixed Housing Suburban Zone; Table 3 sets out the calculated operational noise levels received within the General Business Zone; and Table 4 sets out the calculated operational noise levels received within the Business - Metropolitan Centre Zone.

Note that properties located at greater distances from the substation than those considered in this assessment may also be exposed to noise from the substation, but noise levels would be less than for the properties considered in this assessment. This is due to additional attenuation from increased distances and screening due to buildings.

Table 2: Calculated Existing Operational Noise Residential – Mixed Housing Suburban Zone (+5 dB added for SACs)

Receiver Location	Receiver Zone Night-time Noise Limit dB L_{Aeq}	Calculated Existing Noise Level (dB L_{Aeq})
2/8 Jontue Place	45	40
12 Jontue Place	45	39
14 Jontue Place	45	40
16 Jontue Place	45	36
7A Seton Place	45	40
2/8 Seton Place	45	45
9 Seton Place	45	41
10 Seton Place	45	42
2/7 Arden Court	45	45
8 Arden Court	45	45
34 Sikkim Crescent	45	35
42 Sikkim Crescent	45	43
2/50 Sikkim Crescent	45	44

Based on the results in Table 2, the existing substation under the operational conditions at the time of measurement complies with the AUP OP night-time noise limit of 45 dB L_{Aeq} at the nearest Residential – Mixed Housing Suburban Zone receivers.

Table 3: Calculated Existing Operational Noise – General Business (+5 dB added for SAC)

Receiver Location	Receiver Zone Noise limit dB L_{Aeq}	Calculated Existing Noise Level (dB L_{Aeq})
5 Irirangi Dr (Countdown)	65	45
652 Great South Road	65	30
654 Great South Road	65	41
654A Great South Road	65	55
676 Great South Road buildings 1 - 3	65	52
? Great South Road (Mitsubishi)	65	42
7 – 11 Bakersfield Place	65	41
16 – 16A Bakersfield Place	65	49

Based on the results in Table 3, the existing substation under the operational conditions at the time of measurement complies with the AUP OP noise limit of 65 dB L_{Aeq} at the nearest General Business Zone receivers.

Table 4: Calculated Existing Operational Noise –Business – Metropolitan Centre (+5 dB added for SACs)

Receiver Location	Night Time Noise limit dB L_{Aeq}	Calculated Existing Noise Level (dB L_{Aeq})
627 – 639 Great South Road	60	40 to 42

Based on the results in Table 4, the existing substation under the operational conditions at the time of measurement complies with the AUP OP night-time noise limits at the nearest Business – Metropolitan Centres Zone receivers.

4.5.2 L_{max} levels

The measurements show that the L_{Amax} are typically 0-1 dB above the L_{Aeq}. This is typical for a constant noise source such as these transformers. The substation noise is therefore calculated to comply with the AUP OP L_{Amax} criteria at all assessment locations.

5.0 ODID (OUTDOOR – INDOOR) PROJECT

Due to age and the associated safety concerns, Transpower proposes to replace the existing outdoor 33 kV infrastructure on this site with an indoor switchboard with the same functions. The new switchgear would be housed in three relatively small ancillary buildings, identified by Transpower as Switchrooms K, L, and M.

The following assessment is based on the Transpower drawing package "*WIR 2018-11-06 DSR Scored Workshop*" dated August 2018, as well as on communication with the Transpower Environmental Planner.

New noise sources associated with this project are the outdoor units (OUs) for the air conditioners to be installed in each switchroom. At this stage the specific make and model of each OU has not been determined. For the purposes of our calculations we have used generic data based on units of a similar size, with each OU producing noise of 53 dB L_{Aeq} at a distance of 1 metre.

In addition to this, it is proposed to relocate the transformers T1 and T2 30 metres west of their present location.

Compared to the predicted levels in Tables 2 and 3, these proposed changes are predicted to result in a 0 to 3 dB reduction in site noise received at the Residential-Mixed Housing Suburban Zone, and within the General Business Zone. At 42 Sikkim Crescent, this reduction is predicted to be 4 dB, due to the increased barrier effect of the intervening buildings, caused by the relocation of T1 and T2.

An increase in noise levels of 1 to 2 dB is predicted for the receivers within the Metropolitan Centre, compared to the levels set out in Table 4.

In terms of compliance with AUP OP night-time noise limits, the noise from the substation is predicted to continue to comply at all assessment locations, following the proposed ODID upgrade. Note that this is based on information gathered from the existing substation under the operational conditions at the time of measurement.

One potential additional noise benefit from the project is that during windy periods, the wind-generated noise from the 33 kV infrastructure will no longer contribute to any noise from the site.

6.0 NOTICE OF REQUIREMENT

Transpower is submitting a Notice of Requirement (NOR) to Auckland Council to designate Wiri Substation (the Site) for its purpose as an 'electricity substation'. Based on our assessment described in this report, it is considered that the proposed ODID project would not result in any perceptible increase in the existing noise levels outlined in this report.

In order to ensure the existing noise levels and effects are maintained for the Site and designation proposal, it is recommended that noise related conditions are imposed on the designation to manage future noise emitting equipment on the Site.

We have reviewed the Transpower documentation for the Notice of Requirement (NOR)[1]. The proposed conditions are contained in Section 8.11 of the Transpower document. The relevant proposed acoustical conditions are as follows:

"Construction and maintenance noise

2. *All construction and maintenance work shall be designed, managed and conducted to ensure that construction and maintenance noise is in accordance with in NZS6803:1999 Acoustics-Construction Noise.*
3. *Prior to any significant construction work taking place, including any earthworks, a construction noise and vibration management plan (CNVMP) 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 German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures. The CNVMP shall be submitted to the 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. The works shall be undertaken in accordance with the CNVMP.*

[1] Transpower document "*A18245_009_Notice_of_Requirement_Wiri_Substation_Final_Draft_Clean_20190220*" dated February 2019

Vibration

4. *Where a reasonable risk of vibration damage during construction activities has been identified, vibration shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.*

Operational noise

9. *Any new works or equipment (such as transformers, fans and circuit breakers) shall be designed and operated to ensure that the following noise limits shall not be exceeded (when combined cumulatively with the other operating elements of the substation):*
   a. *At or within the boundary of any Business Zone site outside of the designation:*
      i *All times: 65dBA L_{Aeq}*
   b. *At or within the boundary of any residentially zoned site outside of the designated area:*
      ii *Monday to Saturday 7am to 10pm, and Sunday 9am to 6pm: 55dB L_{Aeq}*
      iii *All other times: 45dB L_{Aeq}; and*
      iv *All other times: 75dB L_{AFmax}*

   c. *At or within the boundary of any Business - Metropolitan Centre zoned site outside of the designated area:*
      v. *Daytime 7am to 11pm: 65dB LAeq*
      vi. *Night-time 11pm to 7am: 60dB LAeq; and 75dB LAFmax*

It can be confirmed that the noise related conditions offered by Transpower in the NOR are sufficient to manage any future noise effects.

7.0 CONCLUSION

Marshall Day Acoustics has carried out noise measurements and an assessment of the baseline (existing) acoustic environment at and around Wiri Substation. The only significant noise sources on site were the transformers T1 and T2. Noise measurements at the substation site boundaries were not possible due to noise from traffic on Great South Road, SH 1 and the more distant roading network. As a consequence, noise measurements were taken of each of the transformers for the purpose of modelling the existing noise levels at the nearest receivers.

Noise emission from the operational substation has been calculated based on the noise measurements made over the period of 11:30pm 25 October 2018 to 01:00am 26 October 2018 with all noise sources operating simultaneously.

These sound levels have been measured and calculated to comply with the Permitted Activity noise limits at all assessment locations under the operational conditions at the time of measurement, even after a +5 dB penalty is applied for special audible character.

Following implementation of the proposed ODID upgrade project, the noise from the substation is predicted to continue to comply with the relevant AUP OP noise limits at all assessment locations.

We consider that the recommended noise-related conditions will ensure that noise effects from this site are adequately controlled through the life of the substation.

APPENDIX A GLOSSARY OF TERMINOLOGY

Ambient	The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.
dB	Decibel. The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 μPa i.e. dB = 20 x log(P/Pr)
dBA	The unit of sound level, which has its frequency characteristics modified by a filter (A-weighted) to approximate the frequency bias of the human ear.
SPL or L_P	Sound Pressure Level A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing (20 μPa RMS) and expressed in decibels.
SWL or L_W	Sound Power Level A logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
L_{Aeq}	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.
L_{AFmax}	The A-weighted maximum noise level. The highest noise level that occurs during the measurement period.
NZS 6801:2008	New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of environmental sound"
NZS 6802:2008	New Zealand Standard NZS 6802:2008 *"Acoustics - Environmental Noise"*
AS/NZS 60076-10:2009	"*Power transformers Part 10: Determination of sound levels*"

APPENDIX B TRANSFORMER NOISE MEASUREMENT LOCATIONS

Actual measurement positions are 300mm from a line which connects the outside dimensions of the cooling fins on each main transformer, or from the tank body of the regulating transformer.

Figure B1: T1 measurement locations

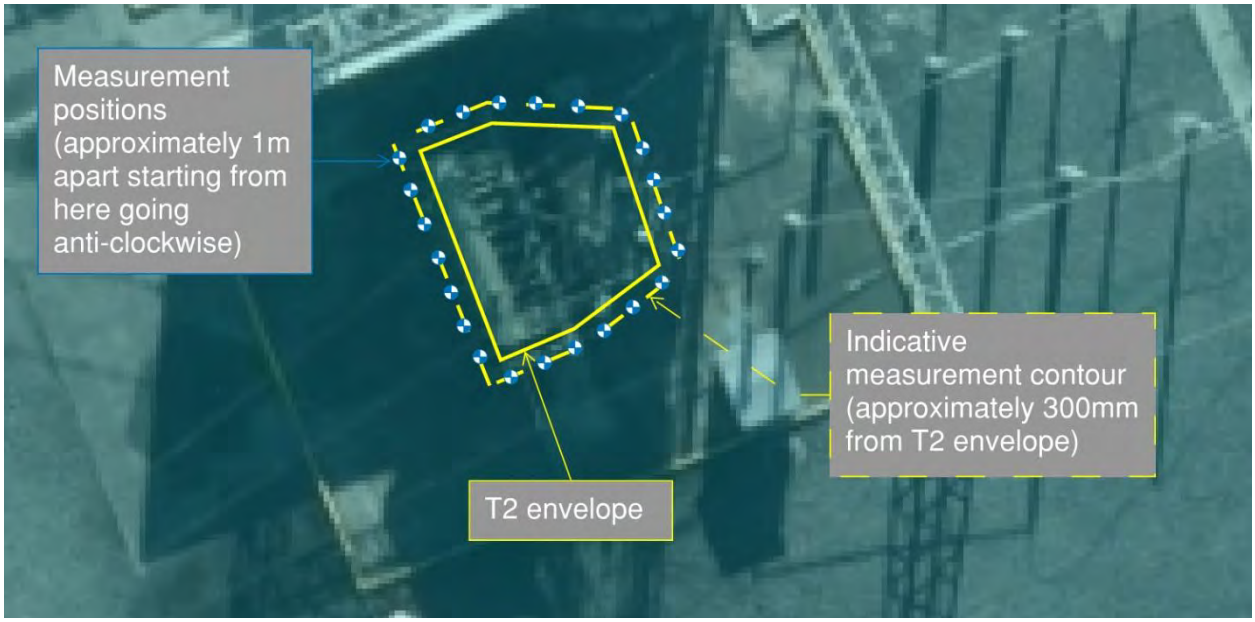


Figure B2: T2 measurement locations

APPENDIX C TRANSFORMER SOUND POWER CALCULATION

Table C1: Transformer T1

Measurement Number	Measured SPL T1 (dB L_{Aeq})	Measurement Number	Measured SPL T1 (dBA Leq)
1	72	38	69
2	71	39	69
3	70	40	68
4	69	41	73
5	69	42	71
6	70	43	65
7	73	44	67
8	69	45	68
9	68	46	68
10	69	47	67
11	71	48	69
12	73	49	72
13	68	50	71
14	68	51	69
15	71	52	73
16	69	53	72
17	73	54	70
18	75	55	69
19	71	56	68
20	72	57	69
21	74	58	67
22	75	59	65
23	76	60	65
24	75	61	69
25	76	62	73
26	76	63	72
27	75	64	74
28	74	65	73
29	76	66	74
30	77	67	75
31	74	68	73
32	75	69	73

Measurement Number	Measured SPL T1 (dB L_{Aeq})	Measurement Number	Measured SPL T1 (dBA Leq)
33	75	70	74
34	76	71	73
35	79	72	73
36	75	73	74
37	67		

Average Sound Pressure Level dB re $20x10^{-6}$ Pa	72.5
Measurement Surface Area S m^2	156
Sound Power Level, L_w re $1x10^{-12}$W	94.5

Table C2: Transformer T2

Measurement Number	Measured SPL T2 (dB L_{Aeq})	Measurement Number	Measured SPL T2 (dBA Leq)
1	64	24	66
2	65	25	68
3	68	26	65
4	66	27	64
5	64	28	65
6	65	29	66
7	68	30	65
8	66	31	63
9	69	32	64
10	68	33	66
11	70	34	68
12	71	35	68
13	71	36	72
14	75	37	75
15	74	38	74
16	74	39	76
17	77	40	73
18	75	41	72
19	77	42	72
20	76	43	71
21	75	44	70
22	73	45	70
23	69	46	65

Average Sound Pressure Level dB re $20x10^{-6}$ Pa	71.4
Measurement Surface Area S m^2	103.5
Sound Power Level, L_w re $1x10^{-12}W$	91.5

APPENDIX D NOISE MEASUREMENT DETAILS

The following lists the key details of the noise survey:

Date of survey:	19-26/10/18
Personnel:	M. Yang, Marshall Day Acoustics
Instrumentation	Brüel & Kjær Type 1 Hand Held Analyser Type 2250, serial no.3002010 calibration due 08/11/18
Field calibrator:	Brüel & Kjær Type 4231 Calibrator, serial no. 2402639, calibration due 09/08/2019
Field Calibration:	The analyser was calibrated before measurements, and the calibration checked after measurements. No significant change (±0.1 dB) was noted.
Microphone height above ground:	In accordance with AS/NZS 60076-10:2009 "*Power transformers Part 10: Determination of sound levels*" (IEC 60076-10, Ed.1 (2001) MOD)
Weather	Overcast 8/8, windspeed 0-0.5 m/s

Appendix I

Landscape and Visual Effects Assessment (Boffa Miskell Limited)

Memorandum

Boffa Miskell
Level 3, IBM Centre, 82 Wyndham Street, Auckland
PO Box 91250, Auckland 1142
Telephone: +64 9 358 2526

Boffa Miskell

Attention:	John Sutherland
Company:	Transpower Ltd
Date:	July 2019
From:	John Goodwin and Kerttu Ots
Message Ref:	Landscape and Visual Amenity Effects Assessment
Project No:	A18245

Dear John

Introduction

This memorandum provides an assessment of the landscape and visual amenity effects that would result from the designation of the existing Wiri electricity substation site at 656 Great South Road, Manukau (the Site) for the purpose of "electricity transmission – Wiri electricity substation". The land and substation at the Site is owned and operated by Transpower who are submitting a Notice of Requirement (NOR) to Auckland Council to enable the ongoing protection, use, operation, maintenance, development and upgrade of the substation infrastructure to ensure a resilient and efficient electricity supply. The NOR is supported by this landscape and visual amenity effects assessment.

The provision for the types of activities under the designation for the Site would, in the long-term, provide for a greater variety and scale of activities associated with the operation, maintenance, upgrade and replacement of substation equipment at the Site in comparison to the activities that can currently occur as a permitted activity under the current AUP(OP) framework.

Any future works that involve changes to the Site would be subject to the Outline Plan of Works (OPW) process under section 176A of the RMA unless otherwise authorised under the Act or provided for by an Outline Plan Waiver.

The proposed works at the Site, that are known at this time, include replacing the existing outdoor 33kV switchyard and associated equipment with an indoor switchboard with the same functions. This is aligned with Transpower's programme of Outdoor to Indoor Conversion (ODID) projects at various substations throughout New Zealand. The proposed works are shown on the site layout plan WIR-200 (attached) and explained in the 'Proposal' section below.

Site Character and Viewing Context

The Site is currently part of Transpower's Auckland 110kV transmission network and comprises an area of approximately 2.3ha between the multi-lane heavily trafficked Southern Motorway - State Highway 1 (SH1) to the east and the dual carriageway Great South Road to the west.

Topographically the Site is flat, being part of the wider flat floodplain between Waokauri and Puhinui Creeks, approximately 6 km to the east of the Manukau Harbour.

The grounds of the Site are modified to allow for the accommodation of a substation platform with associated gantries, up to 20m in height, with the majority of the structures such as switchyard facilities and buildings (including control room, workshop, substation and ripple plant) approximately 9m in height.

The gantries are taller and finer structures with a lower visual density and therefore more transparent than the lower buildings. The lower mass of structures creates the most visually dense part of the existing infrastructure on Site. The substation platform is surrounded by a 2.6m high galvanized mesh security fence. The fence surrounding the Site is similarly a 2.6m high galvanized mesh security fence.

Both of the Site's roadside boundaries are lined by mature treebelts, which along the Great South Road lie within the footprint of the Site. Along SH1 the vegetation is outside the fenced off property boundary, therefore belonging to the road reserve area. Due to the dense vegetation buffer, the existing structures (including gantries) are difficult to discern in views from the main roads when passing the Site and/ or from the footpath of Great South Road.

Photo 1: View from Great South Road opposite to the entrance gate of the Wiri Substation Site. View of the Site's infrastructure is screened by the intervening mature vegetation lining the Site's western boundary.

The gated entrance to the Site is located at Great South Road, however, apart from the security fence there are no views into the Site and therefore no indication of the Site's related infrastructure activities (refer Photo 1). The second entrance to the Site is provided from the retail complex, abutting the northern boundary.

Photo 2: View from the Site towards the retail complex, the rear elevations of which face the Site's northern boundary.

The primary facades of the retail complex do not face towards the Site and therefore, in public views, the current structures are visible only from the car park area and experienced transiently by people visiting the retail complex (refer Photo 3).

Photo 3: View from the retail complex car park to the north of the Wiri Substation Site, from where the Site's infrastructure is partially visible between the buildings.

Photo 4: View from the Site's south eastern corner between the southern boundary abutting the car sales yard and security fence of the substation platform.

The Site's southern boundary adjoins the car sales yard, the boundary of which is also defined by a wire security fence (refer Photo 4). The car sales yard extends and forms the eastern street frontage of Great South Road up to its intersection with Redoubt Road approximately 450m to the south. The western street frontage of Great South Road is formed by commercial development which is divided / surrounded by car parks, with the Westfield Manukau supermall next to the intersection with Redoubt Road to the south west. Extensive business development within the area is part of the Manukau Metropolitan Centre, which extends to the west of Great South Road.

SH1, which runs to the east of the Site, is lined by vegetation on both sides of the road. A transmission line extends along the eastern side of SH1, involving pylons / towers of up to 41m in height. A vegetation buffer alongside the eastern side of SH1 currently screens the majority of views from the residential properties of the Residential Mixed Housing Suburban Zone to the east of SH1. As shown by Photo 5, the existing transmission towers appear as prominent elements on the skyline within the area close to SH1. The upper part of the gantries of the Site are noticeable from certain locations within the residential area, mainly those close to SH1 and opposite the Site.

It is considered that the Site, including the infrastructure, is well-screened from both close proximity and distant views.

Photo 5: View from Seton Place, a street of residential housing to the east of the SH1 opposite to the Wiri Substation location.

Proposal

Transpower is submitting a NOR to Auckland Council to designate the Site for its purpose as an electricity substation. The designation will enable the ongoing operation, maintenance, development and potential upgrade of the substation infrastructure to ensure a resilient and efficient electricity supply to the local distribution network.

Future works at the Site includes the ODID project, which addresses safety and clearance distance concerns with older outdoor 33kV infrastructure by shifting to modernised and safer indoor equipment. . The ODID project at the Site will involve the replacement of the existing outdoor 33kV switchyard and associated equipment (currently located on the western part of the platform (as shown in Figure WIR-200)), with an indoor switchboard with the same functions.

The ODID conversion project will be undertaken in stages over a 14 to 16-month period and will involve:

- **New buildings:** two new buildings up to 6.5 metres in height with a footprint of 129.2m^2 and 79m^2 respectively, to house the new 33kV switchgear equipment. The location and dimensions of the proposed buildings is shown in **Appendix E** to the Notice of Requirement, dated 9 July 2019**.**
- **Earthworks:** Associated earthworks of approximately 3,000m^3 will be required for cabling and trenching, site preparation for the new switchgear buildings, and dismantling old equipment.
- **Cabling and trenching:** The installation of associated cables to connect the existing transformers to the 33kV switchboard in the new buildings.
- **Switchyard extension:** the security fencing surrounding the existing switchyard will be extended to include the new switchyard building to the north of the existing 33kV switchyard.
- **Removal of redundant substation equipment:** Small-scale 33kV substation equipment within the existing gantry will be removed from the Site. The existing foundations will remain in-situ, however, they may be altered slightly so that they do not pose a health and safety risk and/or trip hazard.

The site layout for the ODID conversion project is illustrated in WIR-200 attached to this memorandum. The area where the 33kV switchyard is will be re-gravelled. The rest of the existing outdoor equipment at the Site (110kV switchyard etc.) will remain as is.

All the related works (including excavation works) will remain within the Site with no requirement for the removal of any of the existing planting.

Landscape Effects

The Site is zoned for Business - General Business and its footprint is defined by the National Grid Corridor Overlay that surrounds the Site. The Site is already established and is considered to be part of the existing environment and National Grid network. There is a locational requirement for the Site to continue to operate at its current location.

There are no areas scheduled in the AUP(OP) in relation to natural heritage, mana whenua, natural resource, coastal environment, historic heritage and special character, on or near the Site.

The designation of the Site, to enable the ongoing protection, use, operation, maintenance, development and potential upgrade of the substation infrastructure, including the ODID project, would enable a change to the physical characteristics and appearance of the Site itself. However, as noted above, there is no requirement for the removal of the existing planting lining the Site's roadside boundaries, which provides substantial screening of the Site.

In relation to landscape character, the ODID project would result in a reduction of apparent infrastructure elements. Considering the above, the overall landscape character effects of the proposed designation are considered to be beneficial due to the reduced scale of the infrastructure elements on the Site.

Visual Amenity Effects

Future necessary maintenance, redevelopment and upgrade works within the designated area of the Site would remain consistent with the nature and scale of the existing infrastructure. The conversion of the 33kV outdoor switchyard to indoor switch rooms and the subsequent removal of the existing 33kV switchyard would result in smaller scale, less dominant infrastructure and would be seen in the context of existing infrastructure on the Site.

The expected change in relation to the proposed designation and anticipated ODID works are expected to reduce visual clutter in the limited public views from the retail complex and car sales yard. These views and the viewing audience are not considered to be sensitive to the type of change proposed.

Residential viewing audiences are intrinsically the most sensitive to a change as views from houses are generally static, residents are considered to be concerned about views from their properties and are therefore susceptible to changes in these views.

Due to the intervening vegetation, the introduced changes within the Site as a result of the proposed designation are not expected to be visible from the residential area to the east of the SH1. This is considered on the basis that additional high gantries will not being placed on the Site. Even if this should occur the visual effect will be limited to the upper part of gantries which will be seen in the context of the existing national grid structures.

Expected visual effects resulting from the proposed designation of the Site are very limited and likely to be either neutral or positive in terms of reducing infrastructure clutter.

Conclusions

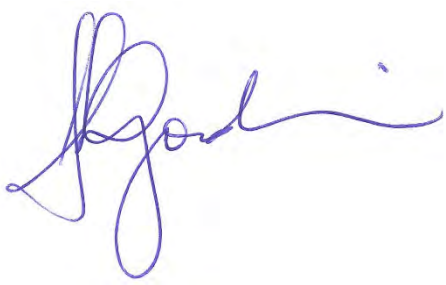
The proposed designation of the Site will allow for the rationalisation and upgrading of existing infrastructure within the existing property boundary, avoiding the introduction of infrastructure elements into another area which does not possess similar features. On a more detailed level, the impact of infrastructure will be reduced by undergrounding and an ODID project, which will minimise the overall clutter of grid infrastructure.

In landscape and visual terms, the Site has low sensitivity to the type of activities that would occur within the proposed designation. It is concluded that both the expected landscape and visual effects on the Site and its surrounding area due to the proposed designation, will be very low in magnitude and benign by nature. The ODID project would result in overall positive effects due to the reduced scale of the infrastructure elements on the Site.

In order to ensure this level of effects is maintained for the Site and designation proposal it is recommended that the existing boundary vegetation is retained and managed to ensure a permanent visual screen is provided from ground level viewing locations from Great South Road. It is recommended that the following condition is placed on the designation for Wiri substation:

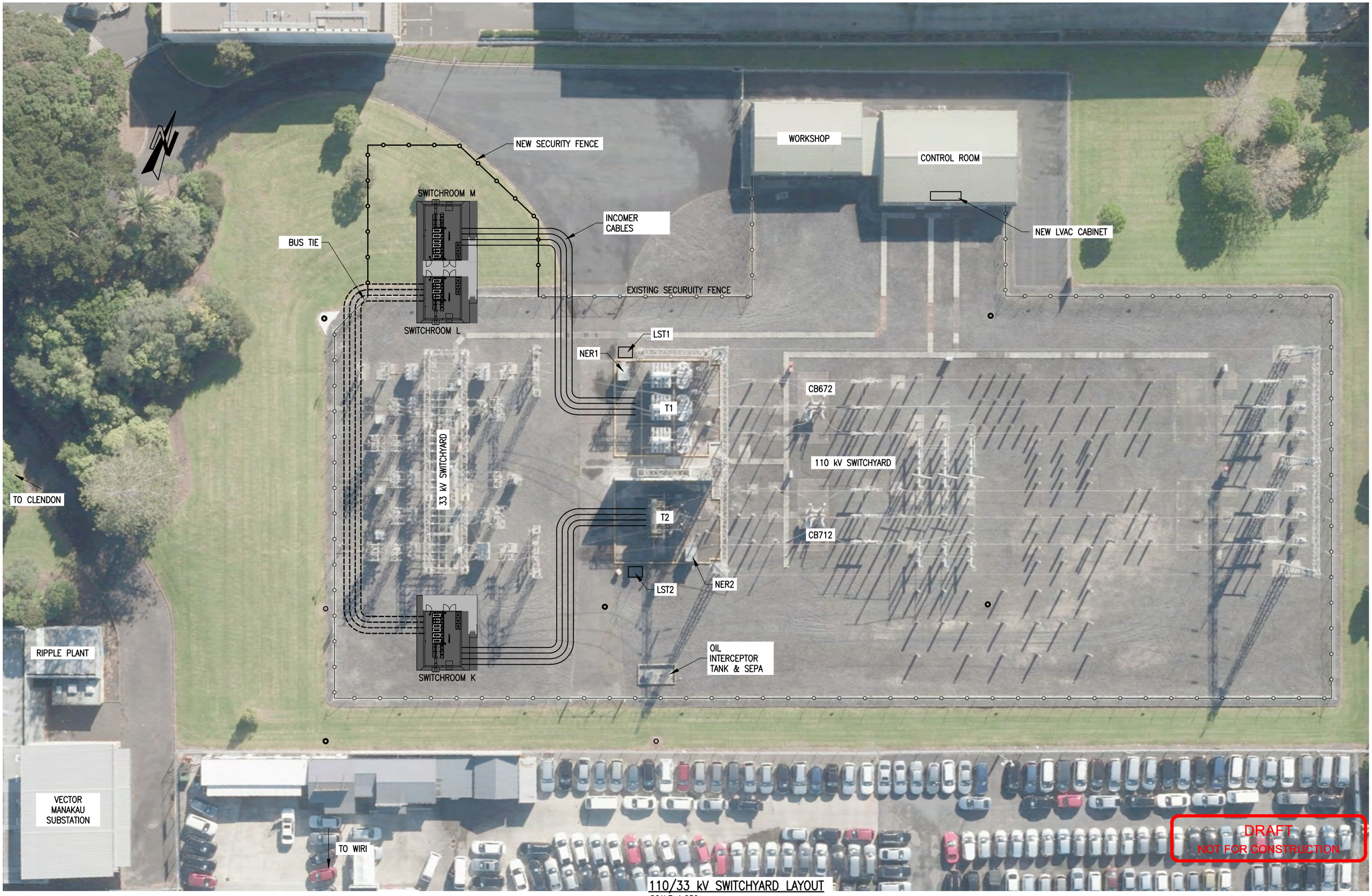
> *The requiring authority shall ensure that a minimum 10 metre planting strip is retained and managed within the Site along the full extent of the western (Great South Road) boundary (excluding the access way). The planting strip shall be a minimum width of 40 metres from the boundary in the area north of the access way to Great South Road, and a minimum width of 10 metres from the boundary in the area south of the access way to Great South Road.*
>
> *All existing vegetation associated with the above condition shall be maintained regularly and kept in a tidy condition, including replacement if any planting dies or becomes over mature. The replacement of any vegetation shall be planted no later than the next planting season (i.e. April to September) following discovery of the need for replacement.*

Kind regards



John Goodwin
Landscape Architect / Partner

Kerttu Ots
Landscape Architect / Associate Principal



110/33 kV SWITCHYARD LAYOUT

SCALE 1:250

REV	DESCRIPTION	CONSULTANT/CONTRACTOR NAME	DSN	DATE	DRN	DATE	CHK	DATE	APP	DATE	TP APP	TP DATE
-1	ORIGINAL ISSUE	MEL	MG	10.18	HL	10.18						

TRANSPOWER

PREPARED BY:
MittonElectronet Ltd
PO Box 6138 Chch. Ph 03 335 1100

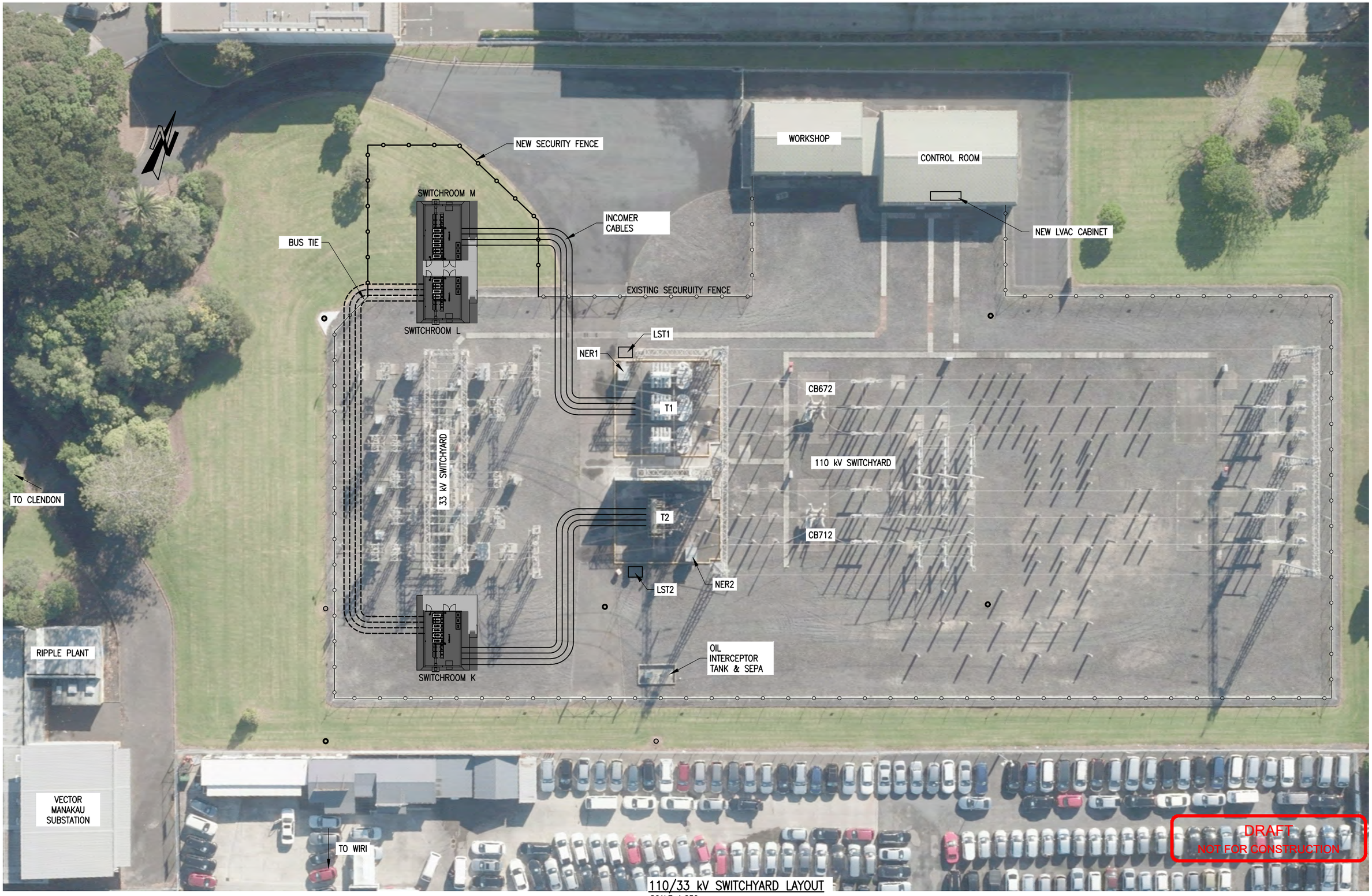
WIRI SUBSTATION

33 kV ODID CONVERSION
SITE LAYOUT
(PRELIMINARY)

DRG.SIZE	SCALE	FOLDER
A1	1:250	W33/3A2

DRAWING NUMBER: WIR-200
SHEET: –
REVISION: -1
SOURCE FILE NAME: WIR-200_0.dwg

Appendix J
ODID Conversion Project Details (Indicative Plans)



110/33 kV SWITCHYARD LAYOUT

SCALE 1:250

REV	DESCRIPTION	CONSULTANT/CONTRACTOR NAME	DSN	DATE	DRN	DATE	CHK	DATE	APP	DATE	TP APP	TP DATE
-1	ORIGINAL ISSUE	MEL	MG	10.18	HL	10.18						

TRANSPOWER

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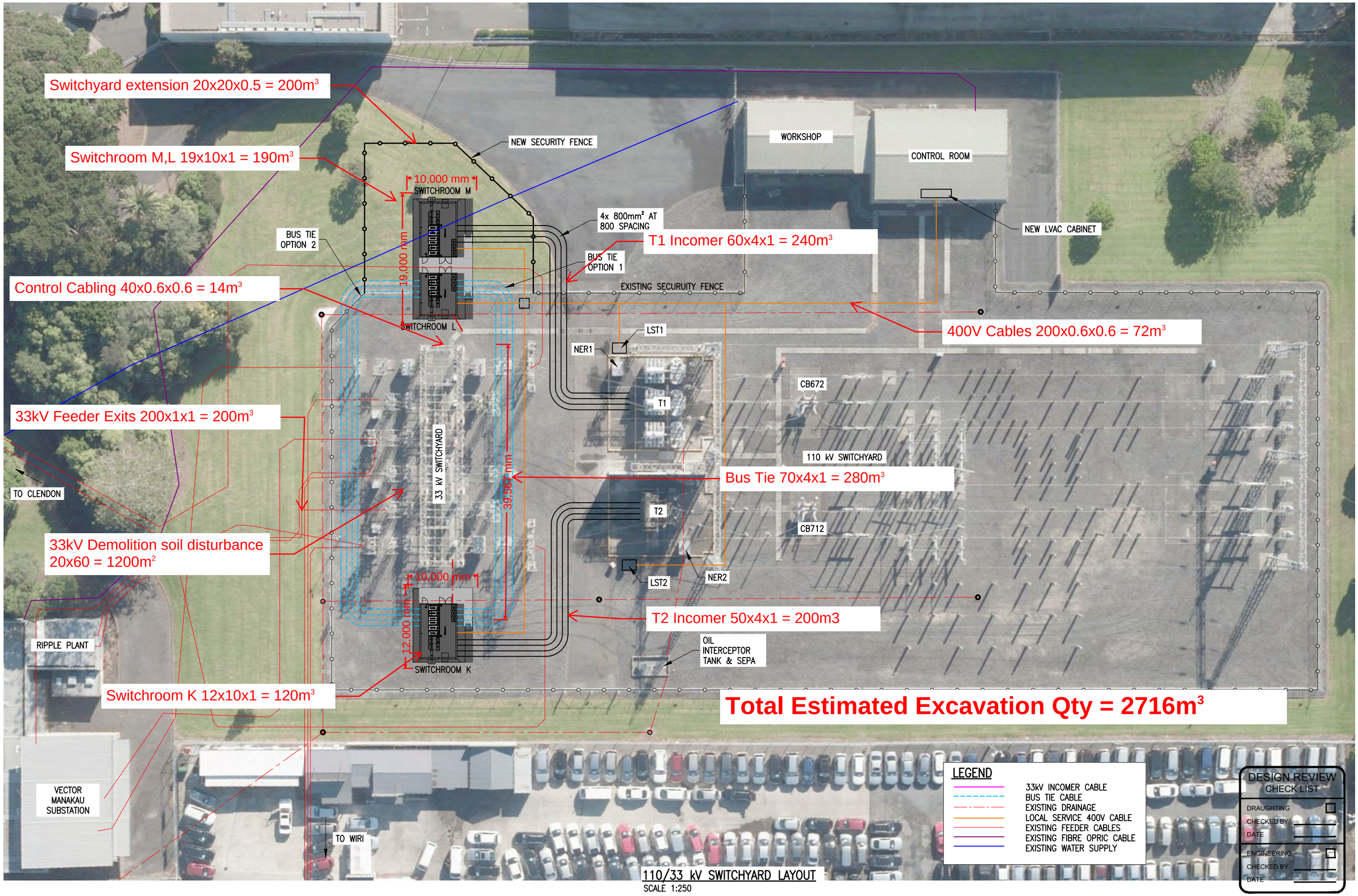
WIRI SUBSTATION

33 kV ODID CONVERSION
SITE LAYOUT
(PRELIMINARY)

DRG.SIZE	SCALE	FOLDER
A1	1:250	W33/3A2

DRAWING NUMBER: WIR-200
SHEET: –
REVISION: -1
SOURCE FILE NAME: WIR-200_0.dwg



110/33 kV SWITCHYARD LAYOUT
SCALE 1:250

REV	DESCRIPTION	CONSULTANT/CONTRACTOR NAME	DSN	DATE	DRN	DATE	CHK	DATE	APP	DATE	TP APP	TP DATE
-1	ORIGINAL ISSUE	MEL	MG	8.18	BA	8.18						

TRANSPOWER

PREPARED BY:
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PO Box 6138 Chch. Ph 03 335 1100

WIRI SUBSTATION

33 kV ODID CONVERSION

SITE LAYOUT

EXCAVATION QUANTITY ESTIMATES

DRG.SIZE	SCALE	FOLDER
A1	1:250	W33/3A2

DRAWING NUMBER	SHEET	REVISION
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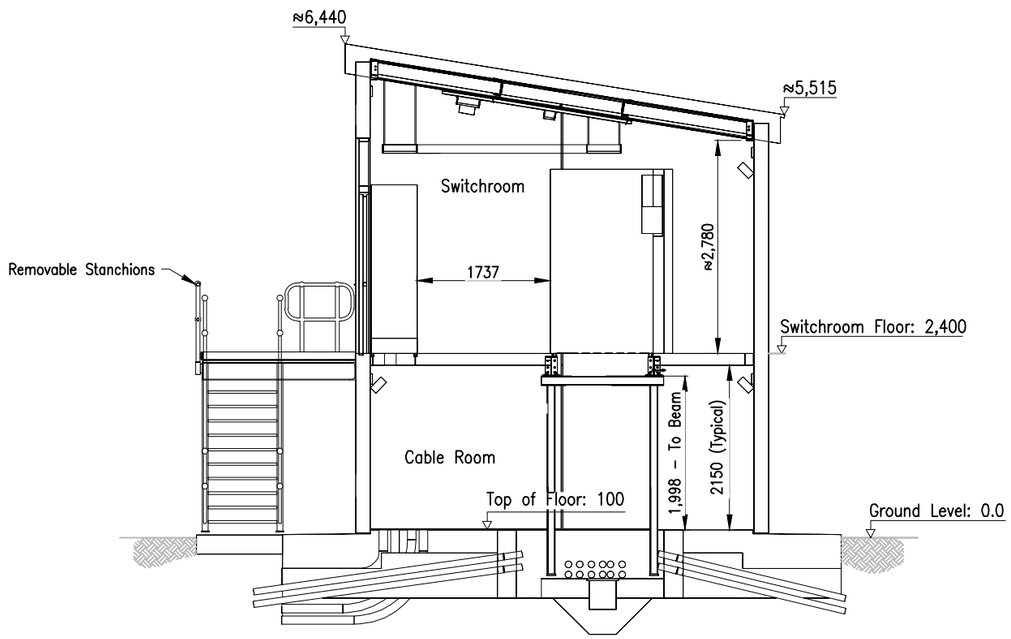
SOURCE FILE NAME
WIR-101_0.dwg

Front Elevation



Typical Section

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

Notes:

1. For drawing list and general notes refer TPxxxxxx.
2. Dimensions in millimetres unless noted otherwise.

REV	DESCRIPTION	CONSULTANT/CONTRACTOR NAME	DSN	DATE	DRN	DATE	CHK	DATE	APP	DATE	TP APP	TP DATE
–1	ORIGINAL	MEL	JT	8.18	BA	8.18						

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WIRI SUBSTATION

33kV SWITCHGEAR BUILDING
ARCHITECTURAL
SWITCHROOM L & M ELEVATION & TYPICAL SECTION

DRG.SIZE	SCALE	FOLDER
A1	N.T.S.	W33/1C2

DRAWING NUMBER	SHEET	REVISION
WIR–102	3	–1

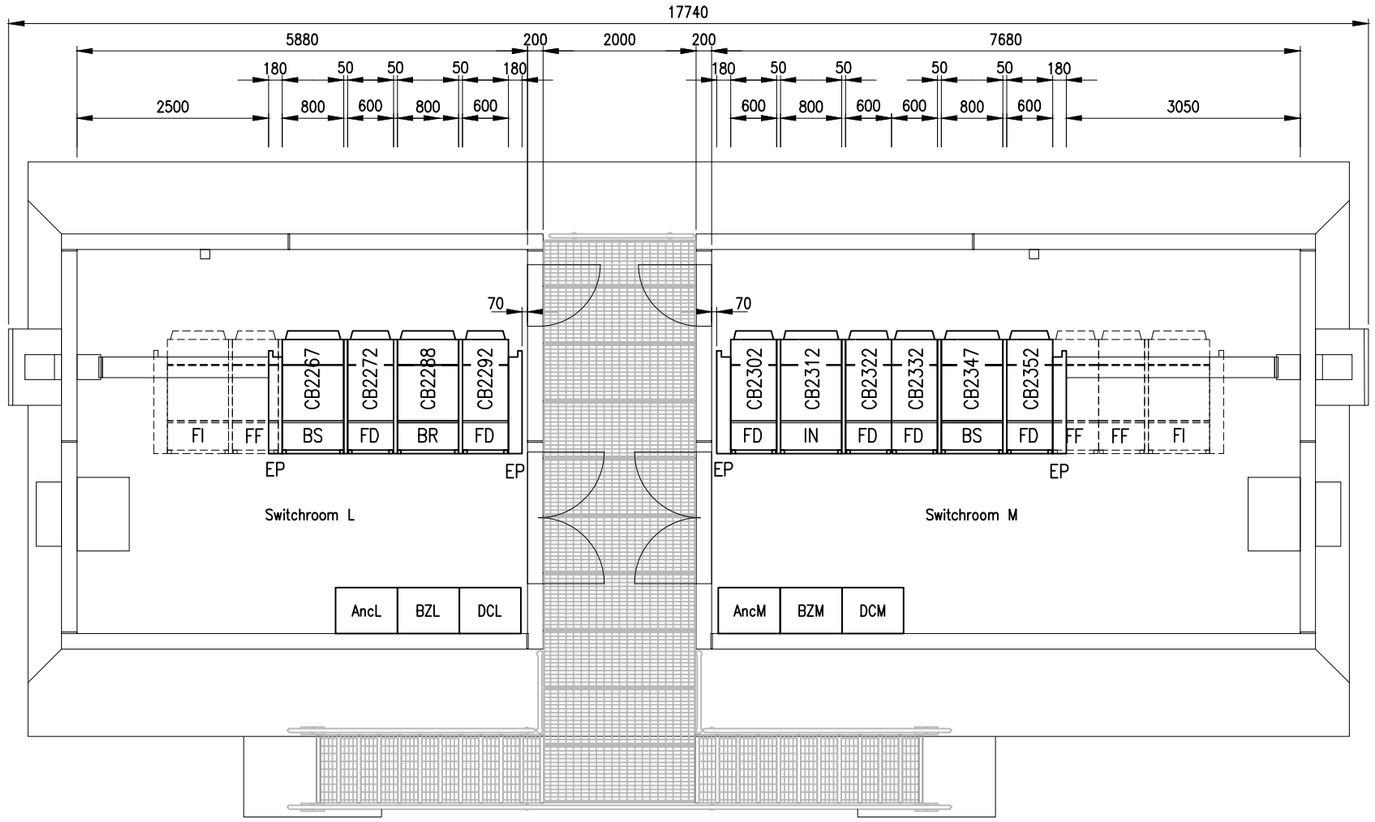
SOURCE FILE NAME: WIR–102.dwg

Key:

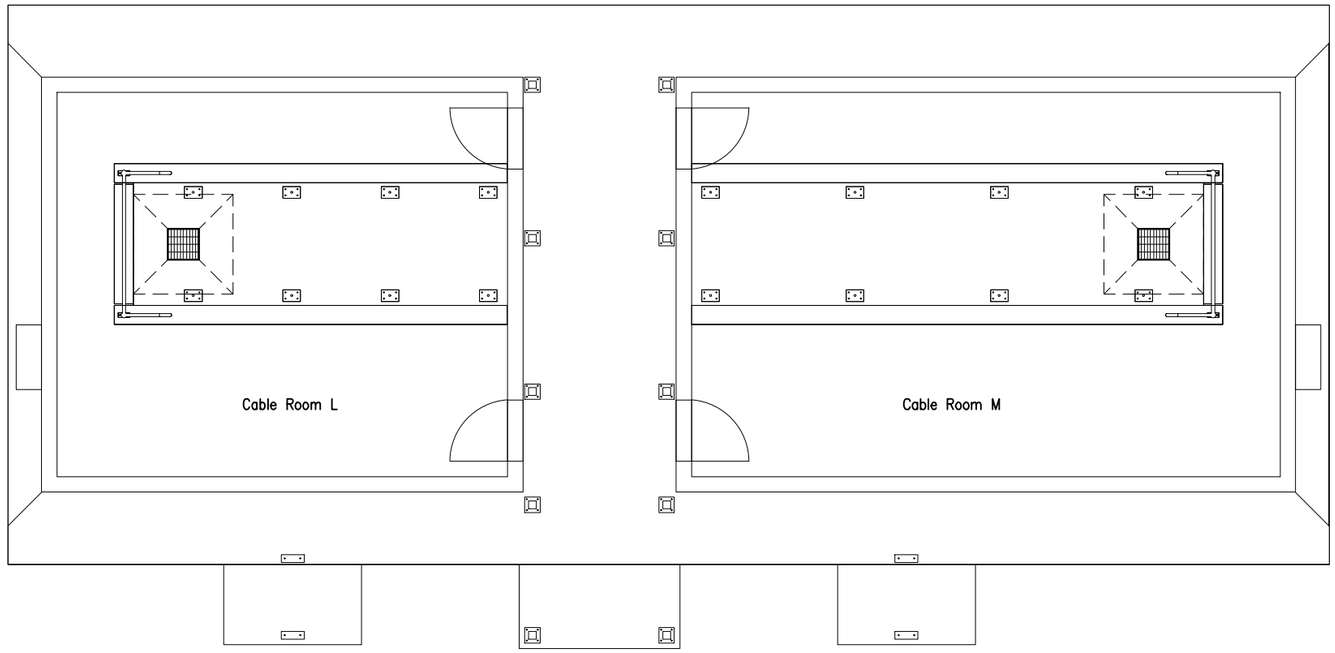
IN	Incomer
BR	Bus Riser
FD	Feeder
FF	Future Feeder
EP	End Panel
AncK	Ancillary Panel Bus K
AncL	Ancillary Panel Bus L
BZK	Bus Zone K
BZL	Bus Zone L
DCK	125 V DC Distribution Panel Bus K
DCL	125 V DC Distribution Panel Bus L

Notes:

1. For drawing list and general notes refer TPxxxxxx.
2. Dimensions in millimetres unless noted otherwise.



Switchroom Plan



Cable Room Plan

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

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–1	ORIGINAL	MEL	MG	8.18	BA	8.18						

TRANSPOWER

PREPARED BY:
MittonElectronet Ltd
PO Box 6138 Chch. Ph 03 335 1100

WIRI SUBSTATION

33kV SWITCHGEAR BUILDING
ARCHITECTURAL
SWITCHROOM L & M LAYOUT

DRG.SIZE	SCALE	FOLDER
A1	N.T.S.	W33/1C2

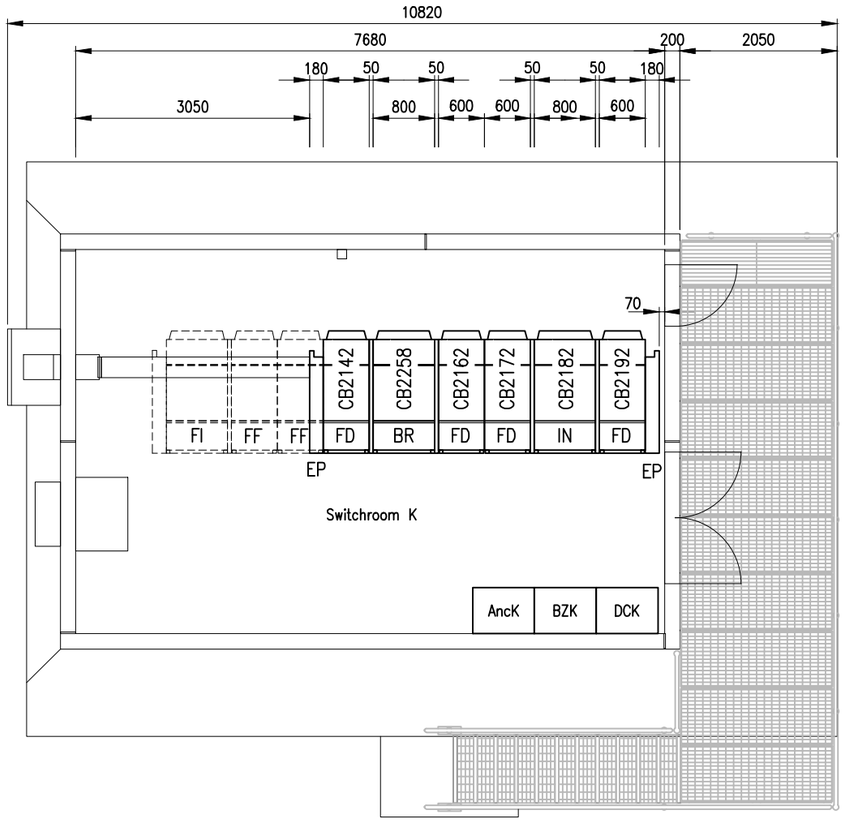
DRAWING NUMBER: WIR–102
SHEET: 2
REVISION: –1
SOURCE FILE NAME: WIR–102.dwg

Key:

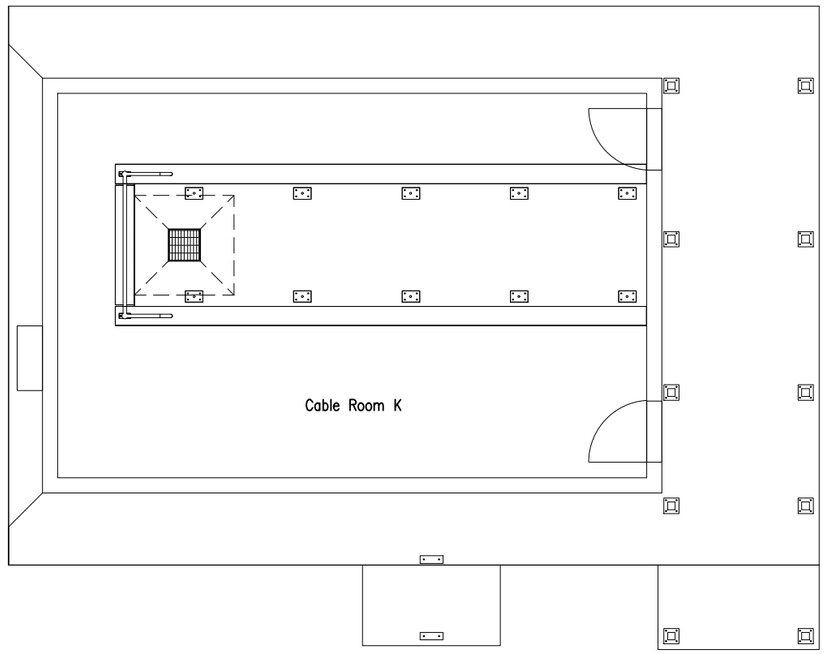
IN	Incomer
BR	Bus Riser
FD	Feeder
FF	Future Feeder
EP	End Panel
AncK	Ancillary Panel Bus K
AncL	Ancillary Panel Bus L
BZK	Bus Zone K
BZL	Bus Zone L
DCK	125 V DC Distribution Panel Bus K
DCL	125 V DC Distribution Panel Bus L

Notes:

1. For drawing list and general notes refer TPxxxxxx.
2. Dimensions in millimetres unless noted otherwise.



Switchroom Plan



Cable Room Plan

FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

REV	DESCRIPTION	CONSULTANT/CONTRACTOR NAME	DSN	DATE	DRN	DATE	CHK	DATE	APP	DATE	TP APP	TP DATE
–1	ORIGINAL	MEL	MG	8.18	BA	8.18						

TRANSPOWER

PREPARED BY:
MittonElectronet Ltd
PO Box 6138 Chch. Ph 03 335 1100

WIRI SUBSTATION

33kV SWITCHGEAR BUILDING
ARCHITECTURAL
SWITCHROOM K LAYOUT

DRG.SIZE	SCALE	FOLDER
A1	N.T.S.	W33/1C2

DRAWING NUMBER	SHEET	REVISION
WIR–102	1	–1

SOURCE FILE NAME
WIR–102.dwg

Appendix K
Form 18

Form 18

Notice of requirement by Minister, local authority, or requiring authority for designation or alteration of designation.

Sections 168(1), (2) and 181 and clause 4 of First Schedule, Resource Management Act 1991

To Auckland Council,

Transpower NZ Ltd gives notice of a requirement for a designation (*or* for an alteration to a designation) for a public work (*or* for a project or work *or* in respect of any land, water, subsoil, or airspace where a restriction is necessary for the safe or efficient functioning or operation of a public work *or* project or work).

The site to which the requirement applies is as follows:

Wiri Substation, located at 656 Great South Road, Manukau, legally described as Lot 1 DP 167802.

The nature of the proposed public work (*or* project or work) is:

Refer to Section 3.

The nature of the proposed restrictions that would apply are:

Refer to Section 4.11 and **Appendix D**

The effects that the public work (*or* project or work) will have on the environment, and the ways in which any adverse effects will be mitigated, are:

Refer to Section 4.

Alternative sites, routes, and methods have been considered to the following extent:

Refer to Section 3.5.

The public work (*or* project or work) and designation (*or* alteration) are reasonably necessary for achieving the objectives of the requiring authority because:

Refer to Section 3.6.

The following consultation (*or* No consultation) has been undertaken with parties that are likely to be affected:

Refer to Section 7

Transpower NZ Ltd attaches the following information required to be included in this notice by the district plan, regional plan, or any regulations made under the Resource Management Act 1991.

'Notice of Requirement for Wiri Electricity Substation' dated 9 July 2019 and supporting appendices.

.....
Signature of person giving notice
(*or* person authorised to sign
on behalf of person giving notice)

John Sutherland
Environmental Planner
TRANSPOWER NZ LTD
.....
Date: 9 July 2019