

IAN BOWMAN

BA • BArch • MA Cons Stud • FNZIA
Architect and Conservator



P.O Box 19252 • Wellington • New Zealand
Ph 04 385 3006 • Fax 04 385 3008
Mobile 027 445 7813

www.ianbowman.co.nz

ibowman@clear.net.nz

New Zealand Transport Agency Transmission Gully Project specialist briefing

Transmission Line Relocation Project

Addendum to Technical Report 19 Built Heritage

By: Ian Bowman

July 2011

1. Introduction

The NZ Transport Agency (NZTA) has identified the need for a new inland state highway from Linden in Wellington City to MacKays Crossing in the Kapiti Coast District. This is known as the Transmission Gully Project and is part of the Wellington Northern Corridor Roads of National Significance (RoNS). The NZTA are progressing notices of requirement for designations and applications for resource consents for the Transmission Gully Project as a project of national significance under the Resource Management Act 1991 (RMA). NZTA's documentation that supports the notices of requirement for designations and applications for resource consents is contained in Volumes 1 to 5. These volumes contain a substantive description of the Transmission Gully Project.

In order to allow for the construction and operation of the Transmission Gully Project, parts of the existing electricity transmission line between the Pauatahanui substation at State Highway 58 and MacKays Crossing will need to be relocated. The Paekakariki-Takapu Road A (PKK-TKR A) 110kV transmission line is part of the National Grid and is owned and operated by Transpower New Zealand Limited (Transpower). This Line Relocation Project involves the relocation of sections of the PKK-TKR A between the Paekakariki and Pauatahanui Substations from Tower 1 to 49A. The line route generally follows the existing transmission line with the route design generally governed by the need to minimise crossings of the Transmission Gully Project cognisant of environmental, cultural, engineering and other factors.

Transpower is seeking the majority of the resource consents to enable the line relocation to occur under the regulations included in the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009 (NESETA). These resource consents are set out in detail in the AEE and in summary are:

- Restricted discretionary land use consent for the relocation of 6 towers in Kapiti Coast District in accordance with the NESETA; and
- Restricted discretionary land use consent for the relocation of 18 towers in Porirua City in accordance with the NESETA.

No transmission lines will be relocated in Upper Hutt City or in Wellington City.

Regional consents for related works including earthworks and construction of culverts are not being applied for at this time. Where consents are required for these activities they will be applied for during detailed design.

This Addendum to [Technical Report 19 Built Heritage](#) addresses the effects on built heritage associated with the Transmission Gully Line Relocation (hereafter referred to as 'the Line Relocation Project').

2. Project Description

The Assessment of Environmental Effects report (AEE) accompanying the application for resource consent describes the Line Relocation Project in detail. This section is a summary of the Project.

2.1 Line Route

The PKK-TKR A line between the Paekakariki and Pauatahanui Substations is approximately 15 km long. The existing line is a 110 kV double circuit line consisting of lattice steel towers. There are 50 existing towers along this section of the line.

For assessment purposes, the line route is split into six route sections. The following summarises the relocation works for each section.

Route Section 1– McKays Crossing

This route section covers the line route between Tower 1 and Tower 4. In order to accommodate the Transmission Gully Project, two existing towers will be relocated, one to the west and the other slightly to the east of the existing line. No alterations are required to towers or lines located north of the existing state highway.

Section 2 and 3 - Wainui Saddle

This section covers the line route between Tower 5 and 15. Through this route section, the line route runs to west of the proposed road and then roughly two thirds of the way up the Te Puka valley at Tower 8, the line is proposed to be relocated to the west of the Saddle. This is required in order to navigate around the Wainui Saddle, which will be occupied by the Transmission Gully Project. Towers will be erected halfway up the main spur to the west of the Saddle and will skirt round the high point of the saddle and then crossing the Transmission Gully Project between Towers 11 and 12, before dropping back into the Horokiri Valley of the Saddle at roughly Tower 13. Minor relocations will be required to the remaining towers (including tower 13) in this section (as compared with current positions) in order to accommodate the proposed Transmission Gully Project with the line aligned roughly parallel and to the east of the existing line.

Route Section 3 - Horokiri Stream

This section covers the line route between Tower 15 and 25. Minor relocations of towers (as compared with current positions) are required to accommodate the proposed Transmission Gully Project with the proposed line aligned roughly parallel and to the east of the existing line. Tower 23 is to be removed.

Section 4 - Battle Hill

This route section covers the line route between Tower 26 and 33. Relocations of towers is required to accommodate the proposed Transmission Gully Project with the proposed line aligned roughly parallel and to the east of the existing line. The proposed line crosses the Transmission Gully Project between Towers 32 and 33.

Section 5 – Golf Course

This route section covers the line route between Tower 34 and 42. Relocation of towers is required in order to accommodate the proposed Transmission Gully Project with the proposed line aligned roughly parallel and to the west of the existing line.

Section 6 - State Highway 58

This route section covers the line route between Tower 43 and 49A. Tower 43 is relocated to the west of the existing tower. No other tower relocations are needed in this section.

2.2 Tower Design and Access Tracks

The proposal is to relocate 24 existing tower structures, to strengthen 10 towers, and entirely remove an existing tower. **Error! Reference source not found.** Table 1 summarises the changes to each of the towers.

Table 1 – PKK-TKR A Line Towers

Description	Towers	Quantity
Replaced structures	2A, 3A, 8A, 9A, 10A, 11A, 12A, 13A, 14A, 15A, 16A, 17A, 18A, 22A, 24A, 25A, 26A, 31A, 32A, 33A, 40A, 41A, 42A, 43A	24
Structures to be strengthened*	1, 4, 7, 19, 21, 27, 30, 34, 39, 44	10
Structures to be removed entirely	23	1
Unaffected Structures (not moving or being strengthened)	5, 6, 20, 28, 29, 35, 36, 37, 38, 45, 46, 47, 48, 49, 49a	15
Total		50

* Involves foundation and/or tower strengthening.

The “A” in the tower reference denotes relocated/replaced tower.

Appendix A contains details of each of the towers including co-ordinates and indicative expected heights of each tower. The replacement towers are expected to range in height from approximately 29 m through to 39 m.

The towers will be steel lattice design, similar to existing towers.

Tower foundations will be approximately 9m x 9m for a strain tower and for construction, an additional clearance buffer of approximately 3 m around each tower. In addition, generally an area of approximately 20 m x 25 m will be required to one side of each proposed tower for construction crane assembly purposes. This construction area will be able to reinstated following use.

Transpower has an existing access track along the line for maintenance purposes. This track is shown on the drawings contained in Volume 4: Plan Set. This existing access track and other existing tracks (including farm and forestry tracks) will be used for construction access to provide four wheel drive access to each tower. The tracks will be approximately 3.5m to 4.5m wide. At the Wainui Saddle, for the towers located outside the extent of works for the NZTA’s Transmission Gully Main Alignment (i.e. for towers 9A, 10A and 11A), access is likely to be taken off the existing access track that currently serves the farm and the gas pipeline owned by Vector. New tracks will be constructed off this to gain access to Towers 9A and 10A.

3 Scope and methodology

This assessment relies on my Technical Report 19 Built Heritage and is based on drawings supplied by NZTA entitled Transmission Gully Project, Volume 4 0 Plan set, construction access 2 of 21, sheet AC02 version and drawings supplied by Transpower entitled Paekakariki – Takapu Road A 110kV line Paekakariki – Pauatahanui section Transmission Gully SSR Alignment Tower 1 to Tower 27, 2313162-SKTRL 16 Version -2, sheet 1/17.

My Technical Report 19 Built Heritage found that only two heritage structures were deemed to be affected by the proposed alignment of Transmission Gully, St Joseph’s Church and the “Petrol Storage Tank” (the Tank) identified as B87 on the Kapiti Coast District Council District Plan. Of these two only the area near to the Tank is proposed to have new or relocated towers. This addendum will focus on any effects on the heritage values identified in the Technical Report 19 Built Heritage on the Tank of the proposed new towers.

The following assessment is based on dimensions scaled from the AC02 drawing of the proposed and existing tower locations and the anticipated maximum possible change to distances from the Tank.

4 Existing Environment/Context

As discussed above, the relevant heritage context is the Tank and its immediate environs. The structure and its significance are described in section 3.1 of my Technical Report 19 Built Heritage. The Tank is approximately 12 metres in diameter and 8 metres high.

The existing relevant environment comprises the existing towers, Tower 2 and Tower 3, the associated lines supported by them and the access tracks to them. Tower 2 is approximately 120 m to the north of the exterior of the Tank and Tower 3 is approximately 240 metres to the south east of the Tank.

Potential pedestrian and vehicular viewing of the exterior of the Tank is currently from the access road. As the Tank is half buried into a small hill, it may also be possible to access the perimeter of the Tank and look down into the interior of the Tank, although the existing vegetation makes this difficult. There is access into the Tank and consequently its interior can be viewed but views to the landscape beyond the perimeter of the Tank are restricted by its height and current vegetation. Consequently there are no views from the Tank of the existing towers.

With the construction of Transmission Gully views of the existing towers (as well as the proposed) from the tank, will only be possible if the vegetation is removed and then only from the top perimeter of the Tank. The absence of views of the towers from within the structure following the construction of Transmission Gully will be unchanged.

5 Assessment of Effects

5.1 Proposed changes

Proposed Towers 2A and 3A replace the existing towers. Tower 2A is located approximately 20 m to the west of the existing tower, Tower 2, while Tower 3A is located approximately 18 m to the west of the existing tower, Tower 3. The height of Tower 2A is to increase by up to 9.6 metres, while the height of 3A is to increase by up to 2.3 metres. This is summarised on the following table taken from the Assessment of Environmental Effects for the Transmission Line Relocation Project (Volume 6 of the applications documents set)

Existing tower	Proposed tower	Existing		Proposed		Span (m)	Existing height (m)	Proposed Height (m)	Height difference (m)
		Northing (m)	Easting (m)	Northing (m)	Easting (m)				
2	2A	5461117	1765471	5461122	1765451	361	23.4	33.0	9.6
3	3A	5460749	1765416	5460764	1765405	440	30.7	33.0	2.3

The drawings note that the locations of the proposed towers may vary by up to 20 metres so that in the worst case, the closest Tower, 2A, may be 100 metres to the north of the Tank and Tower 3A, 220 metres to the south east. The base of the proposed towers will be at approximately the same height above sea level as the counterpart existing tower.

It is understood that the number of conductors will not change and that the location of the access track does not change within 200 m of the tank.

5.2 Assessment

The potential effects on the Tank of the new towers and access track could only be visual given that the new towers are sufficiently far away so that their construction is highly unlikely to have physical effects on the Tank. The visual effects of the towers is discussed in Technical Report 5A.

While Tower 2A may be slightly closer and approximately 40% taller than the existing, the relatively small differences from the existing situation will have little visual impact on the Tank and therefore minimal impact on its heritage values.

As Tower 3A is further away still and is only marginally taller, its visual impact on the Tank will be even less than that of Tower 2A. The power lines will be slightly closer to the Tank but, given the increased height of Tower 2A compared with the existing, the overall visual effect on the Tank will also be minimal. There will be no change to the access tracks within a 200 metre distance from the Tank, and therefore negligible visual effect on the Tank.

6 Monitoring and Mitigation

Given that the effects on the Tank are less than minor no mitigation or monitoring is required.

7 Summary and Conclusion

The proposed Towers 2A and 3A, relocated power lines, and modified access tracks will have a less than minor effect on the heritage values of the Tank.

Ian Bowman

18 July, 2011