



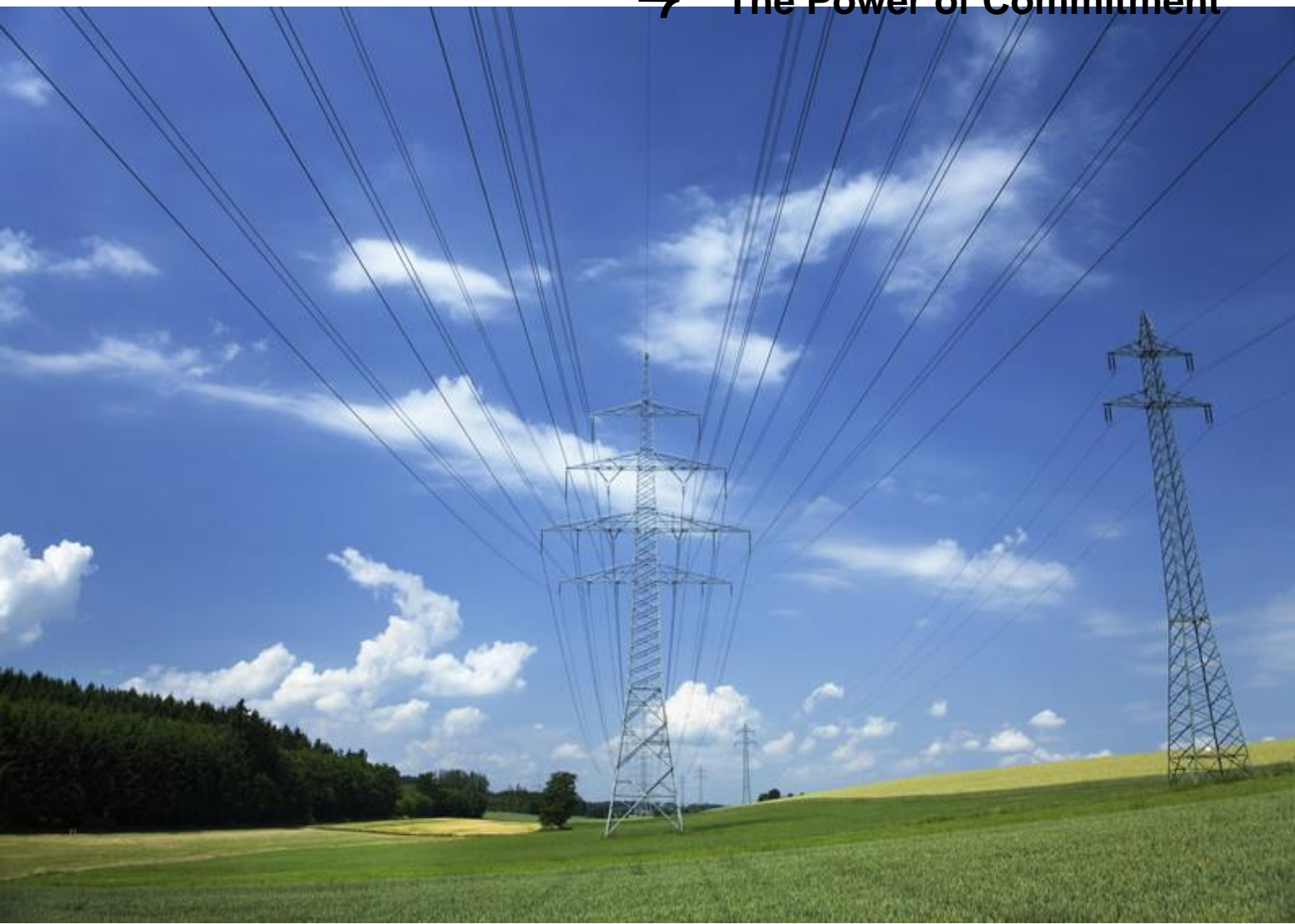
Anti-Climb Barriers - Duty of Care Demonstration









2023-28 Revenue Proposal

Transgrid

7 November 2022

→ **The Power of Commitment**



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Executive summary

The use of anti-climbing barriers is a key control within Electrical Network Safety Management Systems (ENSMS) across the sector. The design standard is expressed by the National Guidelines for the Prevention of Unauthorised Access to Electricity Infrastructure (ENA Document 015:2006).

Under the Work Health and Safety Act 2011, Section 17 – Transgrid has a duty to eliminate risks to health and safety, So Far As Is Reasonably Practicable (SFAIRP) and if it is not reasonably practicable to eliminate risks to health and safety, then minimise those risks SFAIRP.

SFAIRP is a test that requires a positive demonstration of due diligence, where - “Due diligence (or due care) is a legal concept, derived from the societal need to ensure fairness in dealings between human beings. It has been variously defined, for example: The diligence reasonably expected from, and ordinarily exercised by, a person who seeks to satisfy a legal requirement or obligation¹”.

The AER’s Asset replacement planning note² uses As Low As Reasonably Practicable (ALARP) which is a common test used by risk management professionals. Under the AER’s planning note, Net Present Value (NPV) is used to demonstrate whether the costs to mitigate a risk are proportional.

Whilst these concepts are attempting to achieve the same aims, SFAIRP considers what would be reasonably expected from a societal perspective which is difficult to fully reflect in a NPV calculation.

Transgrid have identified 3,577 structures that have anti-climbing barriers that do not align with the latest Transgrid standards, or the requirements of ENA Document 015:2006. Since 2014 TransGrid have recorded fourteen incidents of unauthorised climbing of these structures. The number of incidents observed supports the view that the current anti-climbing barriers installed on these identified structures are potentially not fully effective.

To demonstrate their duty of care, Transgrid has developed Options Evaluation Report (OER) N2425, seeking funding to replace 2,494 of these anti-climbing barriers with ones that align with ENA Document 015:2006 risk rated medium and above in the 2023-28 Regulatory Period.

The issues with the identified anti-climbing barriers relate to:

- Steel towers installed with spike type climbing deterrent that can be climbed though or around
- Anti-climbing barriers installed without diagonal wires and grid infills that can be climbed though or around
- Anti-climbing barriers installed with inadequate spacers in barbed wire that can be climbed through.

The OER N2425 considers an option to remediate climbing deterrents against a base case of do nothing. This represents a proposed expenditure of \$26.2M, (\$18.8M which will be delivered in 2023-2028 regulatory period) with a Net Present Value (NPV) of -\$9.96M.

The Australian Energy Regulator (AER) Draft Determination accepts remediation of 797 structures risk rated as medium and high. But has questioned the rest of the population on the basis that a negative NPV indicates that

¹ SFAIRPs ALARP Railway Technical Society of Australasia Richard Robinson, Gaye Francis, P3

² Industry practice application note, Asset replacement planning, January 2019, AER

the proposed expenditure is disproportional to the risk when assessing whether it delivers a ALARP solution as detailed in their Asset Replacement Planning Note³.

Our assessment of the OER and the AER Draft Determination comments notes that:

- The ElectraNet Revenue Proposal indicates - "Unlike other projects a standard NPV analysis is not well suited to this project due to the lack of reliable data concerning the frequency with which tower climbing is attempted⁴". GHD concurs with this assessment, discounting the NPV analysis over what would be expected from a societal perspective when considering SFAIRP and Good Electricity Industry Practice (GEIP).
- The use of NPV to assess proportionality in determining ALARP may not fully reflect what would be reasonably expected from a societal perspective when considering SFAIRP. As GHD cannot express a legal opinion Transgrid should seek a legal opinion to better determine their duty of care exposure.

The legal opinion should consider past incidents, indications of the ineffectiveness of identified structure barriers, GEIP and non-alignment with industry guidance provided in ENA Document 015:2006.

³ Industry practice application note, Asset replacement planning, January 2019, AER

⁴ ENET007 - ElectraNet - Attachment 5 - Capital Expenditure - Appendix B Project Summaries - 31 January 2022 P19

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1. Introduction

Transgrid submitted its 2023-28 Revenue Proposal in January 2022. According to the AER regulatory timetable, Transgrid can submit a Revised Revenue Proposal in December 2022.

Transgrid has engaged GHD to perform several independent assessments of Repex projects to support the development of the Revised Revenue Proposal.

1.1 Purpose of this report

This report outlines an independent assessment of OER N2425 revision 0.0 which Transgrid submitted to the AER for funding associated with remediation of climbing deterrents associated with transmission towers.

This report may be used to support Transgrid's Revised Revenue Proposal to be submitted at the AER.

1.2 Scope and limitations

GHD has been engaged by Transgrid to perform an independent assessment of the OER prepared to support the funding request for remediation of anti-climbing barriers.

The scope of this report includes an assessment of whether the business case detailed in OER N2425 and the available supporting documentation detailed in Appendix A-1, is in alignment with the AER's Asset Replacement Planning Note⁵ as well as demonstrating the requirements of a person conducting a business or undertaking under the Work Health and Safety Act.

This report has been prepared by GHD for Transgrid and may only be used and relied on by Transgrid for the purpose agreed between GHD and Transgrid as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Transgrid arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

⁵ Industry practice application note, Asset replacement planning, January 2019, AER

2. Background

The use of anti-climbing barriers is a key control within ENSMS across the sector. The design standard is expressed by an industry guideline ENA Document 015:2006.

Since 2014 TransGrid have recorded fourteen incidents of unauthorised climbing of these structures and two incidents involved youths recording their experiences and uploading onto social media. The incidents include self-harmers and thrill seekers.

Transgrid have identified 3,577 structures that do not align with the latest Transgrid standards, or the requirements of the ENA Document 015:2006. The number of incidents observed supports the view that the current anti-climbing barriers installed on these structures are not fully effective in all circumstances.

To demonstrate duty of care, Transgrid has developed OER N2425 to request funding to replace 2,494 of these anti-climbing barriers with ones that align with ENA Document 015:2006 risk rated medium and above.

The issues with the identified anti-climbing barriers relate to:

- Steel towers installed with spike type climbing deterrent that can be climbed though or around
- Climbing deterrent installed without diagonal wires and grid infills that can be climbed though or around
- Climbing deterrent installed with inadequate spacers in barbed wire that can be climbed though.

3. Anti-climb barrier OER assessment

3.1 Need / opportunity

The need and opportunity section of the OER establishes the investment need by detailing that:

- Transgrid have identified 3,577 structures that do not align with the latest Transgrid standards, or the requirements of the ENA Document 015:2006
- Since 2014 TransGrid have recorded fourteen incidents of unauthorised climbing of these structures two incidents involved youths recording their experiences and uploading onto social media.

This establishes Transgrid's awareness of the risks and their understanding of the availability and suitability of ways to eliminate or minimise the risk. These are two of the five elements needed to be demonstrated to satisfy duty holder obligations as set out in the May 2013 Safe Work Australia published guidance materials covering, how to determine what is reasonably practicable to meet a health and safety duty.

Although this does provide AER with high-level context, there is an opportunity in this section to provide a detailed account of the safety related risks associated with the current climbing barriers and describe incidents where there has been a potential for fatality (e.g., self-harm). This could potentially further support decision making considerations regarding incidents with high consequence outcomes.

3.2 Options analysis

3.2.1 Proportionality demonstration

TransGrid has proposed an option against the base case, for the remediation of 2,494 anti-climbing barriers not aligned with ENA Document 015:2006 that are risk rated medium and above.

The current NPV analysis is based upon the population of identifies structures shows -\$9.96M NPV which indicates that the proposed remediation spend may not be potentially proportional.

3.2.2 Duty of care demonstration

In May 2013, Safe Work Australia published guidance materials covering, how to determine what is reasonably practicable to meet a health and safety duty. The guide outlines five factors that need to be demonstrated to satisfy duty holder obligations, detailed below.

Table 1 Factors required to demonstrate duty of care

Factor	Relevance	GHD considerations
The likelihood of the hazard or the risk concerned occurring	<p>The greater the likelihood of a risk occurring, the greater the significance this will play when weighing up all matters and determining what is reasonably practicable. If harm is more likely to occur, then it may be reasonable to expect more to be done to eliminate or minimise the risk.</p> <p>The frequency of an activity or specific circumstances will be relevant to the likelihood of a risk occurring. The more a worker is exposed to a hazard, the more likely they are to suffer harm from it.</p>	<p>Based upon past incidents there is a clear likelihood of occurrence with evidence to support frequency.</p> <p>Note should be made to the ElectraNet Revenue Proposal that indicates the following when considering anti-climb barriers – “Unlike other projects a standard NPV analysis is not well suited to this project due to the lack of reliable data concerning the frequency with which tower climbing is attempted⁶”.</p>
The degree of harm that might result from the hazard or the risk	<p>The greater the degree of harm that could result from the hazard or risk, the more significant this factor will be when weighing up all matters to be taken into account and identifying what is reasonably practicable in the circumstances. Clearly, more would be expected of a duty holder to eliminate or minimise the risk of death or serious injury than a lesser harm.</p>	<p>Given exposure to height and HV, a risk of serious injury and death are possible outcomes.</p>
What the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk	<p>The knowledge about a hazard or risk, and any ways of eliminating or minimising the hazard or risk, will be what the duty holder actually knows, and what a reasonable person in the duty holder’s position (e.g., a person in the same industry) would reasonably be expected to know. This is commonly referred to as the state of knowledge.</p> <p>The courts have consistently stated a duty holder must consider all reasonably foreseeable hazards and risks when identifying what is reasonably practicable.</p>	<p>This is an industry wide risk covered by ENA Document 015:2006. Transgrid is aware that for the identified structures the current anti climb barriers are not fully effective and don’t align with the current ENA Document 015:2006 guidance.</p>

⁶ ENET007 - ElectraNet - Attachment 5 - Capital Expenditure - Appendix B Project Summaries - 31 January 2022 P19

Factor	Relevance	GHD considerations
<p>The availability and suitability of ways to eliminate or minimise the risk</p>	<p>This requires consideration of not only what is available, but also what is suitable for the elimination or minimisation of risk. A risk control that may be effective in some circumstances or environments may not be effective or suitable in others, because of things such as the workplace layout, skills of relevant workers or the particular way in which the work is done.</p> <p>Equipment to eliminate or minimise a hazard or risk is regarded as being available if it is provided on the open market, or if it is possible to manufacture it.</p> <p>A work process or change to a work process to eliminate or minimise a hazard or risk is regarded as being available if it is feasible to implement.</p> <p>A way of eliminating or minimising a hazard or risk is regarded as suitable if it:</p> <ul style="list-style-type: none"> - is effective in eliminating or minimising the likelihood or degree of harm from a hazard or risk - does not introduce new and higher risks in the circumstances, and - is practical to implement in the circumstances in which the hazard or risk exists. 	<p>The current anti climb barriers do not eliminate the risk, nor do they minimise it in a fully effective way. Therefore, an improved control must be implemented which does not, or ought not, have the same limitations.</p>
<p>The cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.</p>	<p>Although the cost of eliminating or minimising risk is relevant in determining what is reasonably practicable, there is a clear presumption in favour of safety ahead of cost.</p> <p>The cost of eliminating or minimising risk must only be taken into account after identifying the extent of the risk (the likelihood and degree of harm) and the available ways of eliminating or minimising the risk.</p> <p>The costs of implementing a particular control may include costs of purchase, installation, maintenance and operation of the control measure and any impact on productivity as a result of the introduction of the control measure.</p> <p>A calculation of the costs of implementing a control measure must take into account any savings from fewer incidents, injuries and illnesses, potentially improved productivity and reduced staff turnover.</p>	<p>Where an event occurs the courts will consider SFAIRP which is a more stringent view than ALARP.</p> <p>There is a risk that the courts may view past incidents, indications of ineffective barriers and non-alignment with industry guidance unfavourably.</p> <p>As GHD cannot express a legal opinion it is recommended that a legal opinion be obtained to determine a SFAIRP position.</p>

Given the risk of unfavourable SFAIRP interpretation, Transgrid should seek a legal opinion to better determine their duty of care exposure.

3.3 Good electricity industry practice

The National Electricity Rules defines GEIP as below:

“The exercise of that degree of skill, diligence, prudence and foresight that reasonably would be expected from a significant proportion of operators of facilities forming part of the national electricity system for the generation, transmission or supply of electricity or the provision of wholesale demand response under conditions comparable to those applicable to the relevant facility consistent with applicable regulatory instruments, reliability, safety and environmental protection. The determination of comparable conditions is to take into account factors such as the relative size, duty, age and technological status of the relevant facility and the applicable regulatory instruments.”

This definition has the following elements:

... exercise of that degree of skill, diligence, prudence and foresight... This refers to the precautionary approach to risk management.

... that reasonably would be expected from... This refers to the societal expectation of Transgrid’s ability and behaviour given that it constitutes a large part and the backbone of the NEM.

... under conditions comparable to those applicable to Transgrid... This refers to benchmarking ability, behaviour and undertakings with relevant network entities facing similar pressure, challenges, and opportunities.

This definition of GEIP elaborated above should be thought through in an ex-post perspective (i.e., after an incident as viewed by the society with the benefit of hindsight) rather than in an ex-ante perspective to exercise its responsibility.

Installation of anti-climbing barriers is a GEIP as demonstrated by the existence of industry guideline ENA Document 015:2006. They are a well-established control mechanism, in place across similar network entities to achieve the same outcome and are continuously installed across the NEM⁷. As the society and human movement evolves around the existing Transgrid infrastructure, Transgrid must continuously assess the risk that its assets and operations pose to others, and is exposed to from others. Failure to continuously exercise this degree of skill, diligence, prudence and foresight is not GEIP.

⁷ See ElectraNet 2023-28 revenue reset proposal for Transmission Tower Anti-Climb Installation on approx. 2100 towers located on 59 lines budgeted for \$22m (2022).

A-1 Documentation considered

The following documentation was considered during our independent assessment:

- Safe Work Australia, "How to determine what is reasonable practicable to meet a health and safety duty", May 2013
- Australian Energy Regulator, "Industry practice application note, Asset replacement planning", January 2019
- Transgrid - OER-N2425 Rev 2 TL Public Safety Compliance - 31 Oct 2022 - PUBLIC.pdf
- TransGrid, "OER-N2425 revision 0.0", November 2021
- TransGrid, "N2425 Public Safety – Climbing Deterrent NPV Analysis Rev 1- Confidential.xlsx"
- TransGrid, "N2425 Public Safety Risk Calculation.xlsx"
- TransGrid, "Electricity Network Safety Management System (ENSMS) Description", Rev 4, May 2020
- AER - Transgrid 2023-28 - Draft Decision - Attachment 5 - Capital expenditure - September 2022.pdf
- ENET007 - ElectraNet - Attachment 5 - Capital Expenditure - Appendix B Project Summaries - 31 January 2022
- ENET007 - ElectraNet - Attachment 5 - Capital Expenditure - 31 January 2022_0.pdf
- Richard Robinson_R2A_CORE-2014-paper-SFAIRP-vs-ALARP.pdf
- NSW legislation - view-act-2011-10-whole.pdf



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