Response to submitted questions

Western Victoria Transmission Network Project
Community Session 4: Energy Safe Victoria Part 2 - Farming and High Voltage Transmission Lines

Background

To address the long term future power supply to Victoria, the Australian Energy Market Operator (AEMO) has proposed that a new 500 kV transmission line be constructed from the existing Sydenham Terminal Station to a new Terminal Station north of Ballarat.

The community has raised some safety related concerns regarding the transmission line, and ESV agreed to assist the Moorabool Shire Council by presenting some safety related information regarding transmission lines at a series of community information sessions.

At this, the second of ESV's presentations to the community held on 3 November 2020, ESV presented safety related information via Microsoft Teams primarily on the topics of:

- Electricity regulatory landscape
- ESV's role
- Easements
- Building under Towerlines
- Practices under or near Towerlines.

Members of the community submitted questions, some of which were answered verbally during the session; however time did not permit all questions to be answered during the session.

ESV committed to providing a response to any unanswered questions from the session and our response to each question is provided below. It is important to note that, in responding, ESV is providing clarification regarding the matters raised.

ESV jurisdiction clarification

ESV welcomes the opportunity to provide information to the Moorabool community on the energy safety regulatory environment. Note that ESV is not a referral authority in planning for transmission and distribution lines and has no significant role in project planning, including deciding the proposed route of any proposed line, or whether it will be constructed either underground or overhead. Therefore ESV cannot address any specific concerns raised about the scope of the Western Victorian Transmission Network Project (WVTNP).

That said, ESV does need to be satisfied that electrical risk presented by any proposal is minimised as far as practicable in accordance with the Electrical Safety Act (the Act) and the subordinate regulations. To achieve this, owners of all licenced Transmission lines must implement process and procedures outlined in an ESV accepted Electrical Safety Management Scheme (ESMS).

ESV responses to questions raised in the Q&A

1. **Question:** *Do all farm fences with metallic elements (e.g. wire) within easement zones require earthing to avoid electric shock due to induction?*

ESV response:
When long pieces of metal such as fences and pipes are underneath Transmission lines there may be some voltage induced into the metal. Due to this, it is good practice to have the metal connected to earth to discharge this voltage into the earth. AusNet Services can provide advice on the best way to achieve this earthing arrangement for a fence.

---

2. **Question:** *If minor safety breaches are not prosecuted in court, how does ESV prevent these lapses in minor requirements leading to major issues, particularly when extreme weather incidents arise?*

ESV response:
When a minor breach or near miss occurs, ESV follows its compliance and enforcement system that begins with educating and working with the regulated party to understand their regulatory obligations. ESV aims for improvement to the MEC's approach to safety systems, work practices and procedures. ESV investigates incidents to check that safety systems are adequate to prevent reoccurrence and the systems will not lead to a more serious issue in the future.

ESV also conducts annual audits, inspections and observations to proactively identify and implement improvements and prevent issues.

Extreme weather, such as tornados and high intensity wind gusts, exceed the parameters allowed for in any published standards, and are considered above the expected level of 'as far as practicable' prevention by a regulated entity. However weather events that are described in Australian Standards are expected to be withstood.

---

3. **Question:** *To what extent would the restrictions that are placed on agricultural activities within an overhead power line easement still apply if the powerlines were placed underground?*

ESV response:
Restrictions do vary as outlined during the ESV presentation. For example, there is less risk of induction when the lines are placed underground so the impact on metal fencing and pipes will differ. Easement widths are generally smaller for underground cables compared to overhead easements. However easement widths will vary based on the voltage and the number of cables installed to meet the required maximum demand to be delivered by the line, and will be determined by AusNet Services to suit the detailed design parameters.

A summary of restricted activities under Transmission lines and above Transmission cables is provided in the table below.

Permitted / not permitted activity in transmission easements[1]

Activity Category	Under overhead Transmission Lines	Above underground Transmission Cables
Vegetation	Permitted: • Crops • Vegetation less than 3m high	Generally grass only - No vegetation with deep root systems
Buildings	Not permitted - No buildings under the line	Not permitted - No buildings above the cable
Vehicles	Permitted: • Vehicles (traversing under) – less than 4.7m high • Mobile plant (cranes, excavators, forklifts, etc.) – refer to No Go Zone limits (See response to question no. 18, 19 and 20 below) Not permitted: • Refuelling of vehicles	Permitted: • Vehicles • Refuelling of vehicles
Excavating/Penetrating soil	Permitted – follow No Go Zone rules for use of mobile plant	Permission to be sought from AusNet Services
Water Spray	Permitted - Seek AusNet Services advice for acceptable type and method	Permitted
Fences	Permitted: • Non-metallic fence – less than 3m high • Metallic fence – less than 1.8m high with proper earthing	Permitted – seek AusNet Services advice
Pipes	Permitted: • Non–metallic pipes • Metal pipes - Seek AusNet Services advice	Not permitted
Dams	Permitted – seek AusNet Services advice if dam wall height is to be altered	Not permitted
Material stockpiling	Not permitted	Permitted – seek AusNet Services advice

If at all unsure, seek AusNet Services advice before commencing.

---

4. **Question:** *ESV's website (https://esv.vic.gov.au/safety-education/bushfire-and-powerline-safety/working-near-powerlines-for-non-electrical-workers/) advises that the Electricity Safety (Installations) Regulations 2009 require that non-power industry workers who need to access the space in the vicinity of the overhead electrical distribution company assets to have successfully completed a training course approved by Energy Safe Victoria. Is this applicable in relation to farmers on their own properties and are subject to easements?*

ESV response:

The quoted ESV website page and regulation is not applicable to farmers on their own properties that are subject to easements. The web page relates to telecommunication workers and is also applicable to council employed tree clearers. Note that farmers who perform 'work' are required to meet the Occupational Safety

[1] Source: AusNet Services – "A guide to living with transmission line easements" - https://www.ausnetservices.com.au/en/Safety/Working-Near-Lines

requirements of WorkSafe Victoria. The guidance on working near powerlines from WorkSafe Victoria is called up in the No Go Zone rules.

---

5. **Question:** *As reported in ESV's Safety Performance Report for 2020, transmission and distribution companies were required to replace existing faulty circuit breakers with Rapid Earth Fault Current Limiter (REFCL) devices by 1 May 2019. They have been given years to upgrade overhead lines in both high and low bushfire risk areas. As at today, not all upgrades have been completed and ESV has repeatedly issued 'exemptions' to excuse these delays. What penalties does ESV impose on transmission and distribution companies for failing to meet safety improvement deadlines and how is ESV encouraging these works to be completed as a priority?*

ESV response:
The Rapid Fault Earth Current Limiter (REFCL) is a new device being installed to protect distribution 22 kV overhead powerlines and cannot be used at the voltage of a transmission system (66 kV and above). They have never been installed in Australia before, and are being rolled out in Victoria in three tranches (1 May 2019, 2021 and 2023) to prevent fire ignitions, which is a world first use of this product.

The 'circuit breakers' that were required to be upgraded, also only on the distribution network, are known as Automatic Circuit Reclosers (ACRs). These devices were not 'faulty' but were required by the Government to be replaced with new generation smarter, faster ACRs to further prevent fire starts on the 12.7 kV Single Wire Earth Return (SWER) distribution network. The requirement for distribution businesses to upgrade the ACRs had a deadline of December 2020 which has just been met with the last couple of outstanding ACRs being upgraded in November 2020.

No exemptions or extensions of time were granted to the upgrading of the ACRs.

The REFCL installation program is a separate program to the ACR upgrades. Due to the complex nature of this world first roll out, there has been a need to issue of small number of exemptions to delivery timelines to complete these complex installations, and some short-term relief from the strict operational specification while some of the highly technical implementation issues are resolved. These exemptions have been granted by the Minister and ESV after rigorous assessment, however it is important to note that all the REFCLs required to be operational to date are operational, even if a couple are operating at a slightly reduced sensitivity than the strict specification.

---

6. **Question:** I *assume in the last slide all the references to dimensions > should actually be < i.e. less than*?

ESV response:
Thank you for picking up this error in the presentation, and please accept our apologies for any confusion.

In the slide with the heading of '**Permitted** under 500 kV overhead easements' the measurements should be 'less than' using the '<' symbol, rather than the 'greater than' symbol of '>'.

The slide should read:

Permitted under 500 kV overhead easements:

- General grazing and crops, Trees (<3m), Dams
- Fences - Non-metallic (<3m) - Metallic (<1.8m) isolated & earthed

---

7. **Question:** *COAG Energy Council has now been disbanded. That info org. Chart that was presented can be found on the internet, but I would have thought that with a change in structure from the top, Energy Safe Vic May have updated their chart to the new structure. Anyway, same old, same old.*

ESV response:
The COAG Energy Council was ceased in May 2020 and a new National Federation Reform Council (NFRC) will be formed and ESV will update its diagram for future use. However the key point of the illustration was to

provide a high level explanation of how Federal and State Governments interact regarding energy policy decisions.

---

8. **Question:** *Does ESV believe their current jurisdiction and powers on enforcement over the transmission providers (e.g. summonsing to court), for any breach of Safety regulations is sufficient? Would it help ESV to assure Victorian's safety better if ESV had greater power and jurisdiction over the transmission companies?*

ESV response:
ESV's jurisdiction and related powers are described in Acts of Government and appropriately reflect our remit and enable ESV to regulate MECs effectively. Additionally, ESV is always testing and reviewing our powers to confirm they are appropriate to perform our functions as described in the Act, which leads ESV to propose changes to regulations when the Government remakes or amends the Act and regulations.

---

9. **Question:** *ESV regulates electrical safety related to the underground transmission lines and easements for the line to the Wonthaggi desalination plant in Gippsland, where can we find information on the restrictions that apply to that underground easement, and how do they differ from the restrictions that apply to the proposed WVTNP overhead solution?*

ESV response:
The general differences in restrictions applicable to overhead or underground easements was covered during the community presentation, and further information is contained above in response to question 3.

In regards to the Wonthaggi desalination line easement, it will have distinct easement restrictions as the easement also includes the desalinised water pipeline in addition to electrical cables.

You can also contact AusNet Services for the specific restrictions that apply to the Wonthaggi Desalination plant underground line.

---

10. **Question:** *I went looking on the ESV website and could not find the information about no go zones for underground easements that you are showing. Can you share the link where we might find this information?*

ESV response:
The link is: https://esv.vic.gov.au/technical-information/electrical-installations-and-infrastructure/no-go-zones/underground-assets/

---

11. **Question:** *If cables are buried deeper, does the 300mm No Go Zone increase?*

ESV response:
Firstly, it is important to point out that a person must not penetrate deeper than 300 millimetres on any land where underground assets are located unless the person has inspected any relevant records.

Relevant records are held by the asset owner or via the Dial Before You Dig (DBYD) Service. DBYD is a free service, via DBYD's website https://www.1100.com.au/ or call 1100 for more information.

The 300 millimetre No Go Zone restricted zone above a cable remains the same irrespective of the cable depth.

---

12. **Question:** *Please define the distance from the transmission lines that boom type irrigators must maintain, and does this distance vary in windy conditions? If so, how is the distance in windy conditions determined, and what does ESV define as "windy conditions"?*

ESV response:
The regulations do not prescribe a distance that a boom type irrigator must be from the Transmission line. This distance will depend on the spray distance, how the stream of water breaks into droplets, and volume of water sprayed, etc.

Please consult AusNet Services to determine the distance that would be required away from the Transmission line for your specific situation.

---

13. **Question:** *Thanks for the explanation of the regulatory landscape -if the AER is the "economic Regulator" does this mean they are the ones who should decide if the cost to eliminate risk (which will be passed on to customers) is warranted, or that risk should be accepted?*

ESV response:
The AER is the national economic regulator and its role is to assess the electricity network company's submissions for funding. The major electricity companies (MECs) must demonstrate to ESV as Victoria's technical and safety regulator what they will do to minimise risk '*as far as practicable*' (AFAP).

The AER will consider funding MECs for specific risk minimisation and will fund any safety regulation commitments. The AER and ESV regularly meet and discuss such matters.

---

14. **Question:** *The Cressy repair of six downed 500 kV transmission towers in January of this year took AusNet nearly nine months to complete – what restrictions were applied to the respective landowners in relation to the operation of their properties noting the additional large footprint of the Emergency Restoration System (ERS), throughout this time in terms of land-use and burn-offs, and what compensation were they offered, and who is responsible for providing that compensation?*

ESV response:
ESV has no role or involvement in any compensation to landowners for the disruption to the operations during the repair works, and so we cannot comment on this matter. We would presume that, in this case, any applicable compensation would be payable by AusNet Services.

---

15. **Question:** *The ESV response to the previous session emphasizes that ESV does not administer the economic regulatory regime for major electricity companies, and that this is the AER's role. Previously ESV members have stated that the cost to upgrade old-Cressy era towers to the new AS7000 standards following the Cressy failure was too expensive and impracticable - did the AER make that judgement in that case or was it ESV's conclusion?*

ESV response:
There are approximately 13,000 towers across Victoria that were installed before the current standard was in place. To upgrade all towers to suit the latest standard, by ESV's assessment, does not meet the Electricity Safety Act requirement of being practicable, e.g. the cost (labour and material) is disproportionately higher than the risk reduction that would be realised. Furthermore, AS/NZS 7000 also states that the standard is not applicable to older structures, i.e. it is not retrospective, and is only used for the design and installation of new towers.

---

16. **Question:** *Thank you for making the Cressy failure report available, I note that it was posted on the ESV Website on 18 Nov 20, a long time after the event, and after the AER had made its decision on AusNet's pass through application which awarded them $25.4m in costs to repair the failures - which then gets passed on to consumers. When was the ESV investigation report actually completed and what advice was ESV asked to provide to the AER to support their decision in Sep 20?*

ESV response:

The ESV investigation commenced the moment the incident occurred and still continues until the replacement tower construction is fully completed. The public report has been finalised and published to assist with the questions presented during this community consultation.

The AER cost pass through decision was made under provisions of the National Electricity Rules (NER) to fund some of the costs incurred towards replacement and repair of the tower line independent of ESV's investigation.

---

17. **Question:** *What costs apply to applications for permits to undertake activities in easements and under powerlines?*

ESV response:
Permit costs (if any) are applied by the electricity network company and are based on the company recovering any costs it incurs in implementing risk mitigations and controls.

Each individual case may vary and you would need to consult AusNet Services directly.

ESVs response regarding clearances and No Go Zone

The following questions have been grouped together and a consolidated response provided as they relate to the same topic.

18. **Question:** *AusNet have advised in the WVTNP EES Referral Update dated 9 June 20, that the minimum clearance between the lowest point of the proposed overhead lines and the ground will be around 9.2 meters. If so, noting the ESV No-Go Zone limit works between 8-10meters of the conductor to require a registered spotter, and works within 8m to require permission from AusNet, how any ANY activities within the easement satisfy the No Go Zone requirements?*

19. **Question:** *'Slide 13 of the ESV presentation on Electrical Safety delivered at the 21 Oct 20 Moorabool Council Community information session stated that "permission is required when encrouching the No Go Zone". If the minimum conductor height from the ground is going to be 9.2 meters according to AusNets EES Referral Updated date 9 Jun 20, and any distance between 8-10m requiring a qualified electrical spotter, and less than 8m requiring permission from the Authority, is it true that only people of 1.2 m tall will be able to work and walk under these powerlines without permission?*

20. **Question***: You state that AusNet's design standard minimum height for 500kV is 15m yet they state in the EES referral 9.2m. How do we get comfort that they will be installed at minimum 15m as this has a huge bearing on what can and cannot be done in the easement?*

ESV response:
As communicated during the ESV community presentation (refer to slide 9), the minimum ground clearance in the standard is 9.2m; however AusNet Services' design standard minimum ground clearance for 500 kV lines is 15m.

Hence, subtracting the 8-10m for No Go Zone (which as explained only relates to work being performed with plant and machinery in vicinity of the lines), still leaves 5m to move safely under the lines.

Please note ESV also presented information regarding No Go Zones and activities that are permitted in easements during the community information session. ESV also issued a response to questions from first community session that explains the No Go Zone concepts, which has also been included below.

Extract from response to questions from ESV Information Session 1 – No Go Zone

Buildings are not permitted under 500 kV overhead, or on top of 500 kV underground, easements.

The regulation requires that a member of the public shall not place, or leave, flammable material closer to 500 kV conductors than:

Situation	Distance Away
Horizontally	6.4m
Vertically	9.8m

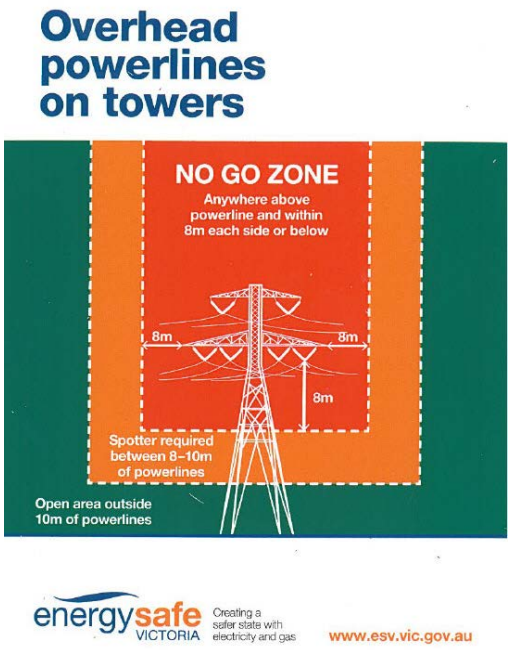
A person must not drive or maneuver a vehicle with a load or transport a load so that the load is closer to the 500 kV conductors than **4.7 m**

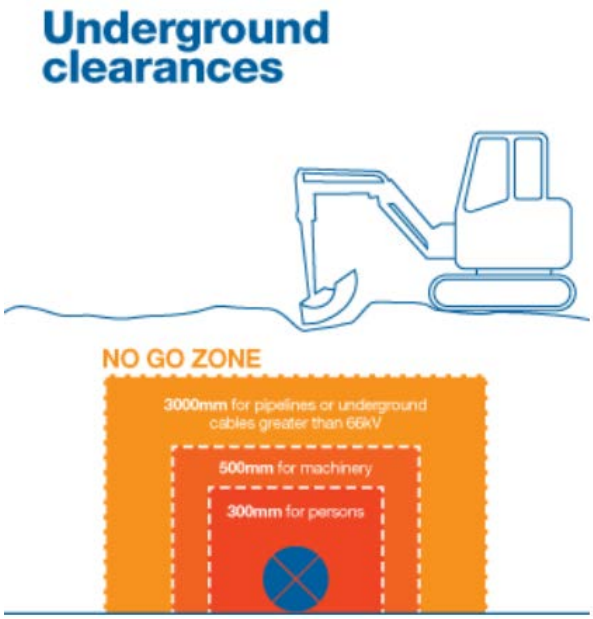
Under Occupational Health and Safety laws administered by WorkSafe Victoria, certain farms are considered to be workplaces. An employer is required to ensure a farm is a safe working environment without risks to the health of employees and contractors. To achieve the WorkSafe requirement, farm employers must consider the hazards and risk imposed by those hazards.

One hazard to consider is when working near electricity. To assist duty holders to meet their obligations with this hazard, WorkSafe Victoria, in conjunction with ESV, have produced a guideline to work safely near overhead and underground power. This guideline is called the No Go Zone for overhead electrical power lines. This guideline provides a safe work method for industry participants to follow to keep workers safe as required by Occupational Health and Safety Laws. These guidelines deliberately exceed the minimum required clearances contained in the regulation, as provided above.

For transmission lines, WorkSafe and ESV have produced two simple guides to the zones as shown below. More information can be found on the WorkSafe and ESV websites. Work outside the No Go Zone (green area) can be performed at any time with no special requirements. When working closer to the power line/cable, as shown in the picture, a spotter is required whilst working and permission is required from AusNet Services to work closer. No work is allowed in the No Go Zone unless the power is switched off.

Working does not include a vehicle traversing across the area.





Overhead conductors are not the same height everywhere at all times. The height of the conductor will depend upon the distance between towers (span length), how hot the conductors are (which affects sag), hills and gullies that the towers sit on or cross, and where along the span the work is being undertaken. AusNet Services design for a minimum height of a 500 kV conductor of 15m above ground. Thus there is sufficient clearance for farm machinery to pass under the transmission line. However, as each site and work activity differs, and conductors may sag more during the day due to temperature increase, it is

recommended that advice be sought from AusNet Services regarding the actual conductor heights where work is proposed to occur within the No Go Zone.