Submission on the Victorian Transmission Licence Application – Transmission Company Victoria Pty Ltd

Author: Dr Anne Suse Smith, Rainforest Reserves Australia

Due Date: 21 October 2024

1.0 Introduction

The Victorian Transmission Licence project proposes to develop a high-voltage transmission line across key regions in Victoria, including the Central Highlands, the Great Dividing Range, and western Victoria's agricultural plains. These areas are rich in biodiversity, spanning temperate rainforests, wetlands, and productive farming land, all of which are critical to the state's environmental and economic sustainability.

While the project aims to support renewable energy transmission, it presents a range of ecological, social, and agricultural concerns. These include the destruction of endangered species habitats, soil erosion, water quality degradation, and long-term carbon mismanagement. The environmental, agricultural, and community impacts of the project must be carefully assessed to ensure alignment with Victoria's sustainability goals and the protection of its natural resources.

This submission outlines the potential breaches in environmental and agricultural standards, focusing on the project's impact on habitat fragmentation, water systems, soil health, and biodiversity. Additionally, the carbon accounting for this infrastructure project is scrutinized to ensure transparency in reporting the true environmental cost, particularly in the context of Victoria's broader carbon-neutral objectives.

2.0 Impact on Rural Communities

Transmission line projects often disrupt rural communities by altering landscapes and imposing restrictions on land use. In Victoria, particularly in regions like the Central Highlands and western Victoria, the project will intersect with several small towns and farming communities, many of which depend on uninterrupted land access for their livelihoods. Research shows that infrastructure projects in rural areas often lead to decreased property values, reduced land productivity, and diminished quality of life for residents (Munday et al., 2011).

In addition to economic impacts, large infrastructure projects often create social divisions, especially when land is compulsorily acquired or when communities feel excluded from decision-making processes. In many cases, residents experience heightened stress and anxiety due to concerns about noise pollution, visual impacts, and perceived health risks from electromagnetic fields (Kheifets et al., 2005). The social fabric of these communities, already vulnerable due to economic pressures, may be further strained by these developments.

Internationally, similar projects have generated substantial public resistance. In the United States, the development of the Clean Line Energy Project, a high-voltage transmission line stretching across several states, faced considerable opposition due to its impact on rural communities (Smith et al., 2016). Local opposition was primarily driven by concerns over property rights, land access, and potential health risks. These same concerns are echoed in rural Victoria, where residents fear the long-term consequences of high-voltage infrastructure on their quality of life and property values.

3.0 Agricultural Impacts
The agricultural sector is perhaps the most directly impacted by the transmission line project. Victoria's agricultural regions, particularly those in western Victoria, are highly productive, contributing significantly to both the state and national economies. These regions are home to a range of farming practices, including crop production, livestock grazing, and dairy farming, all of which rely heavily on access to land and water resources.

One of the most pressing concerns is the disruption to land use caused by the construction of access roads, transmission towers, and other infrastructure. Farmland that is used for grazing or cropping will be permanently altered by these developments, reducing the land available for production. In particular, the construction of access roads can lead to soil compaction, which negatively affects soil structure and water infiltration, ultimately reducing crop yields (Abdel-Mohti et al., 2017). The loss of arable land, combined with the restrictions imposed on farming near high-voltage power lines, poses a serious threat to the sustainability of agricultural practices in the region.

In addition to land use changes, the construction of transmission lines can contribute to soil erosion, particularly in areas with steep terrain or high rainfall. The removal of vegetation for the installation of towers and roads disrupts natural soil stabilizers, increasing the likelihood of erosion and runoff. This not only reduces soil fertility but also contributes to the degradation of nearby water systems, which are essential for both farming and community water supplies (Pimentel & Burgess, 2013).

Further, electromagnetic fields (EMF) associated with high-voltage transmission lines have been shown to affect both crops and livestock. While the exact mechanisms of EMF on biological systems are not fully understood, there is evidence to suggest that prolonged exposure to EMF can lead to decreased milk production in dairy cows and reduced growth rates in crops (Havas, 2009). Although research on the agricultural impacts of EMF exposure is ongoing, these findings raise concerns for the long-term viability of farming in regions affected by transmission infrastructure.

International studies also provide insight into the broader agricultural impacts of transmission line projects. In Europe, the construction of transmission lines across farmlands has been linked to reduced crop yields and livestock productivity due to land degradation and fragmentation (Lefebvre et al., 2015). Similar concerns have been raised in Canada, where transmission lines have disrupted traditional farming practices, leading to conflicts between energy developers and rural communities (Devine-Wright, 2009). These international cases highlight the need for a careful consideration of the agricultural impacts of the Victorian Transmission Licence project.

4. Habitat Loss and Impact on Flora and Fauna
The proposed Victorian Transmission Licence project will result in extensive habitat loss due to the large-scale removal of vegetation and the creation of infrastructure corridors. The environmental consequences of this habitat destruction are significant, particularly for regions that support rich biodiversity and endangered species. The destruction of native forests and ecosystems will lead to the fragmentation of wildlife corridors, the loss of critical habitats, and, ultimately, a reduction in biodiversity.

4.1 Habitat Fragmentation and Wildlife Corridors

Habitat fragmentation is a key concern, as it can lead to the disruption of natural ecosystems and the alteration of migration patterns for many species. Transmission lines often bisect critical wildlife corridors, which are essential for the movement of animals across the landscape. Species that rely on large, uninterrupted habitats for survival, such as the critically endangered Leadbeater's Possum (*Gymnobelideus leadbeateri*), are particularly vulnerable to habitat fragmentation. In the Central Highlands, this species depends on old-growth forests, which are increasingly rare and under threat from development (Smith et al., 2020).

Fragmentation not only disrupts the movement of wildlife but also isolates populations, limiting genetic diversity and increasing the likelihood of inbreeding. Isolated populations are more susceptible to local extinction events, as they are unable to migrate in search of food, shelter, or mates (Fahrig, 2003). The loss of connectivity between habitats can have cascading effects throughout ecosystems, as many species play critical roles in seed dispersal, pollination, and maintaining ecological balance.

Internationally, similar impacts have been observed in regions where transmission lines have fragmented wildlife habitats. In Brazil, for example, the construction of transmission lines in the Amazon rainforest led to the displacement of several species and increased the risk of deforestation in surrounding areas (Laurance et al., 2009). In Canada, studies have shown that infrastructure projects in boreal forests have disrupted caribou (*Rangifer tarandus*) migration patterns, leading to population declines (Dyer et al., 2001).

4.2 Impact on Flora

The large-scale removal of native vegetation for the construction of transmission lines will result in the destruction of plant species that are essential to local ecosystems. In particular, eucalyptus forests (*Eucalyptus spp.*), which dominate many of the regions affected by the project, provide critical habitat for a wide range of species, including the koala (*Phascolarctos cinereus*) and the yellow-bellied glider (*Petaurus australis*). The loss of these forests will reduce the availability of food and shelter for these species, increasing the likelihood of population declines.

In addition to direct habitat loss, the construction of transmission lines can lead to the spread of invasive plant species, which outcompete native flora and further degrade ecosystems (Gaertner et al., 2014). Invasive species often thrive in disturbed environments, such as those created by infrastructure projects, and can rapidly colonize cleared areas. This not only reduces biodiversity but also alters ecosystem processes, such as nutrient cycling and water retention.

The loss of vegetation also has broader environmental impacts, as plants play a crucial role in carbon sequestration, soil stabilization, and water filtration. The removal of large tracts of forest will reduce the region's capacity to sequester carbon, exacerbating the effects of climate change. In addition, soil erosion is likely to increase as a result of vegetation loss, leading to further degradation of ecosystems and reduced water quality in nearby rivers and streams (Pimentel et al., 1995).

4.3 Impact on Fauna

The removal of vegetation and the fragmentation of habitats will have severe consequences for local fauna. Many species rely on specific types of vegetation for food, shelter, and breeding grounds, and the destruction of these habitats will leave them vulnerable to predation, starvation, and exposure to the elements. For example, the powerful owl (*Ninox strenua*), a top predator in Victoria's forests, relies on large, old-growth trees for nesting. The loss of these trees will reduce available nesting sites, leading to population declines.

Similarly, bird species such as the critically endangered swift parrot (*Lathamus discolor*) are highly vulnerable to habitat loss and fragmentation. The swift parrot relies on eucalyptus forests for breeding and foraging, and the destruction of these habitats has contributed to the species' rapid decline (Webb et al., 2012). The impact of transmission lines on bird populations is well-documented, with many species suffering from collisions with power lines and towers. Birds with large wingspans, such as the wedge-tailed eagle (*Aquila audax*), are particularly at risk of collisions, which can lead to injury or death (Jenkins et al., 2010).

Bats are another group of animals that will be severely impacted by the project. Species such as the southern bent-wing bat (*Miniopterus orianae bassanii*), which is critically endangered, rely on intact forests for roosting and foraging. The removal of trees and the fragmentation of habitats will reduce the availability of roosting sites, forcing bats to travel longer distances in search of food. This increases their energy expenditure and reduces their chances of survival, particularly during the breeding season (Racey & Entwistle, 2003).

5.0 Cumulative Impacts

The cumulative impacts of habitat loss, fragmentation, and the introduction of invasive species will have long-term consequences for biodiversity in the affected regions. The loss of native vegetation, combined with the disruption of wildlife corridors, will reduce the resilience of ecosystems, making them more vulnerable to the effects of climate change, disease, and other environmental stressors (Laurance et al., 2014).
Without adequate mitigation measures, the Victorian Transmission Licence project will likely result in the permanent degradation of ecosystems that are vital.

The impacts of the project extend beyond immediate habitat loss. The introduction of infrastructure often brings increased human activity, further exacerbating the pressure on already vulnerable ecosystems. In addition, the loss of habitat connectivity can hinder species' ability to adapt to climate change. Fragmented populations are less resilient to environmental changes, such as shifts in temperature and precipitation patterns, making them more vulnerable to extinction (Laurance et al., 2014). The compounding effects of habitat fragmentation, invasive species, and climate change are likely to lead to biodiversity loss on a regional scale if not addressed through comprehensive mitigation strategies.

In Australia, the cumulative impacts of land development, including deforestation and infrastructure expansion, have been well documented. The clearing of vegetation for energy projects has led to significant declines in native wildlife populations. For example, the koala (*Phascolarctos cinereus*), already listed as vulnerable, faces increased risks from habitat loss due to infrastructure projects that fragment its already limited range (Rhodes et al., 2011). Similarly, in areas where the project intersects with wetlands or river systems, species such as the platypus (*Ornithorhynchus anatinus*) and the growling grass frog (*Litoria raniformis*) may experience further habitat degradation, leading to population declines.

The long-term effects on ecosystem services provided by these habitats are also of concern. Forests and wetlands play critical roles in water filtration, carbon sequestration, and maintaining soil health (Pimentel et al., 1995). The loss of these services will not only impact wildlife but also human communities that rely on healthy ecosystems for agriculture, water quality, and climate regulation.

6.0 Fire Risk

In addition to habitat loss, the construction of transmission lines through forested areas increases the risk of wildfires. Power lines are known to cause fires, either through direct contact with vegetation or due to faults in the electrical system, particularly during periods of high wind or dry conditions (Chen et al., 2019). The increased fire risk not only threatens human settlements but also further exacerbates habitat destruction. In fire-prone regions, such as parts of western Victoria, the construction of transmission lines could lead to more frequent and severe fire events, with devastating consequences for local wildlife and ecosystems.

In California, for example, transmission lines were responsible for several large wildfires, including the devastating Camp Fire in 2018, which caused widespread destruction and loss of life. Similar risks exist in Australia, where the combination of dry conditions and electrical infrastructure has led to multiple fire outbreaks (Miller et al., 2020). In regions where the Victorian Transmission Licence project intersects with fire-prone ecosystems, there is a pressing need for stringent fire mitigation measures to protect both human communities and wildlife.

The Victorian Transmission Licence project poses significant risks to the region's flora and fauna through habitat loss, fragmentation, and the introduction of invasive species. The cumulative impacts of these disruptions will have long-lasting consequences for biodiversity and ecosystem services. Without robust mitigation strategies, the project threatens to further degrade already vulnerable ecosystems and diminish the region’s ability to support both wildlife and human communities. Protecting wildlife corridors, minimizing habitat destruction, and addressing fire risks must be prioritized to mitigate the environmental impacts of this project.

7.0 Soil Erosion and Road Construction

The construction of access roads and land clearing for transmission towers will significantly exacerbate soil erosion, particularly in regions characterized by steep slopes, high rainfall, and fragile soils. Soil erosion is one of the most critical environmental challenges associated with infrastructure development, as it directly impacts land fertility, agricultural productivity, and water quality. When vegetation is removed and soil is disturbed, it becomes more susceptible to erosion by wind and water, leading to the loss of topsoil, the most nutrient-rich layer essential for agricultural success.

In the regions affected by the Victorian Transmission Licence project, which include highly productive agricultural areas, soil erosion can lead to a marked decline in crop yields and grazing capacity. The removal of vegetation, combined with the construction of roads, disrupts the soil structure, reducing its ability to retain water and increasing runoff (Pimentel & Burgess, 2013). This runoff, often laden with sediments and nutrients, is transported into nearby rivers and streams, degrading water quality and potentially impacting downstream ecosystems, including estuaries and coastal marine environments.

7.1 Impact on Agriculture

Soil erosion poses a serious threat to the agricultural viability of farms located near the transmission line construction sites. When topsoil is lost, it reduces the soil's ability to support crops, leading to lower yields and diminished profitability for farmers (McHugh et al., 2002). Eroded soil also compacts more easily, making it harder for plant roots to penetrate, and reducing water infiltration rates, which can exacerbate the effects of drought. Additionally, sediment-laden runoff can clog irrigation systems, leading to further disruptions in agricultural practices.

In Australia, soil erosion is already a significant challenge, particularly in areas affected by drought and overgrazing (Lal, 2001). The additional pressures of infrastructure development further strain these fragile environments, reducing their long-term agricultural sustainability. Studies show that even small-scale road construction projects can lead to substantial increases in soil erosion, particularly in regions with steep gradients or heavy rainfall (Giménez-Morera et al., 2010). In the case of transmission line projects, which often require extensive networks of access roads, the cumulative impacts on agricultural productivity can be severe.

8.0 Water Resources and Soil Degradation

In addition to land impacts, the construction and operation of transmission lines present significant risks to water resources. The clearing of vegetation for the project will lead to increased soil erosion and sediment runoff, which can pollute local water systems and reduce water quality. This is particularly concerning in regions that rely on surface water for irrigation and drinking water. The loss of vegetation also disrupts natural water retention processes, increasing the risk of both drought and flooding (Wang et al., 2019).

In areas with already stressed water systems, such as western Victoria, the additional burden of transmission line construction could lead to long-term water shortages, further threatening the agricultural sector. International research underscores the importance of protecting water resources from the impacts of large infrastructure projects. In the United States, the Dakota Access Pipeline project caused widespread soil and water degradation, leading to protests and legal challenges from local communities and environmental groups (Bell, 2017).

The community and agricultural impacts of the Victorian Transmission Licence project are extensive and multifaceted. From the disruption of rural communities to the degradation of farmland and water resources, this project presents significant risks to the long-term sustainability of the regions it traverses. Without careful planning, mitigation, and community consultation, these impacts could have lasting consequences for both the environment and the people who depend on it.

9.0 Impact of sediment runoff on Marine Ecosystems

The increase in sediment runoff resulting from soil erosion can have far-reaching impacts on water quality, particularly in areas where transmission lines are constructed near river systems that flow into the ocean. Sediment-laden runoff increases turbidity in rivers and streams, reducing light penetration and affecting aquatic ecosystems, including fish and plant species that rely on clear water for photosynthesis and reproduction (Bilotta & Brazier, 2008).

Excess sediment can also clog waterways, leading to increased flooding and the loss of valuable aquatic habitat.

The impact of sediment runoff on marine ecosystems is particularly concerning in regions where rivers discharge into the ocean, such as the Bass Strait. Sediment pollution has been shown to degrade coral reefs, seagrass meadows, and other coastal ecosystems by smothering marine habitats and reducing the availability of oxygen in the water (Fabricius, 2005). For example, in the Great Barrier Reef, sediment runoff from agriculture and infrastructure development has been a significant factor in the decline of coral health (Brodie et al., 2017). Similar risks exist for Victoria's coastal environments, where increased sedimentation from inland construction projects can negatively impact marine biodiversity and fisheries.

10.0 Water Quality

The construction and maintenance of transmission lines pose significant risks to water quality, especially in regions with sensitive ecosystems and agricultural lands. The primary concern is the disturbance of large amounts of soil and vegetation during the construction of access roads and transmission towers, which increases sediment runoff into nearby water bodies. This runoff can carry sediments, pollutants, and nutrients that degrade water quality, affecting both surface water and groundwater systems (Pimentel & Burgess, 2013).

Excess sediment in water systems can have severe ecological consequences. Increased turbidity, caused by sediment runoff, reduces light penetration, disrupting aquatic ecosystems and affecting species that rely on photosynthesis, such as submerged plants and algae (Bilotta & Brazier, 2008). Additionally, the deposition of fine sediments on riverbeds can smother the eggs of fish and other aquatic organisms, reducing reproductive success and altering species populations. In particular, species like the growling grass frog (*Litoria raniformis*), which relies on clear water for breeding, could face further declines due to habitat degradation caused by sedimentation.

The introduction of pollutants is another significant concern. Construction activities often result in the leaching of chemicals, including heavy metals like lead, zinc, and copper, from transmission infrastructure into surrounding soils and water bodies. These metals, which are commonly used in the construction of transmission towers and substations, can accumulate in soils and water, leading to long-term contamination of both freshwater and marine ecosystems (Thomas, 2018). Once introduced into water systems, these pollutants can bioaccumulate in aquatic organisms, posing risks to both wildlife and human populations that rely on these water sources for drinking and irrigation.

International studies have highlighted the cumulative impacts of infrastructure development on water quality. For example, research conducted on large-scale energy projects in North America has shown that runoff from construction sites can increase concentrations of nutrients like nitrogen and phosphorus in nearby waterways, leading to eutrophication, harmful algal blooms, and oxygen depletion (Bennett et al., 2001). Similar risks exist for Victoria's waterways, particularly in agricultural regions where the introduction of excess nutrients can exacerbate existing water quality issues.

In addition to chemical pollution, transmission line construction often leads to the compaction of soils, reducing their ability to absorb and filter water. This increases the rate of surface runoff and reduces groundwater recharge, further affecting water availability for both ecosystems and agricultural use (Li et al., 2020). The combination of reduced infiltration, increased runoff, and pollutant leaching can have far-reaching consequences for water quality, particularly in areas where farming and water resources are closely linked.

Finally, the long-term maintenance of transmission infrastructure poses ongoing risks to water quality. Over time, aging infrastructure may shed materials, such as insulating compounds or coatings, which can contaminate nearby soils and water bodies (Li et al., 2020). This shedding can introduce microplastics and other pollutants into aquatic environments, contributing to the degradation of both freshwater and marine ecosystems.

11.0 Disruption of Natural Water Flow

In addition to soil erosion, road construction can significantly alter natural water flow patterns, leading to localized flooding or waterlogging of agricultural land. Access roads, particularly those built in areas with natural drainage systems, can disrupt the flow of surface water, causing water to accumulate in areas not designed to handle such volumes (Probst & Tardy, 2004). This can lead to the loss of arable land due to waterlogging, further reducing the agricultural productivity of the region.

Additionally, road construction can create impervious surfaces that increase the rate and volume of surface runoff. This leads to flash flooding events, which can cause further erosion and infrastructure damage. In regions prone to high rainfall, such as parts of western Victoria, the risk of localized flooding is particularly high. These impacts extend beyond the immediate area of the project and can affect neighboring farms and natural ecosystems, reducing their resilience to extreme weather events.

11.1 Mitigation Measures

Mitigating the effects of soil erosion and water disruption is critical to minimizing the environmental impact of the Victorian Transmission Licence project. Effective erosion control measures, such as replanting native vegetation, installing silt fences, and employing soil stabilization techniques, can help reduce the amount of sediment entering waterways (Morgan, 2005). Additionally, designing access roads to follow natural contours, rather than cutting across them, can help maintain natural water flow patterns and reduce the risk of localized flooding (Wemple et al., 2001). Without these mitigation strategies, the project risks causing long-term environmental degradation that could undermine the sustainability of both agricultural and marine ecosystems.

12.0 Impact on Heat Islands and Thermal Belts

Transmission lines are known to create localized heat islands, where the surrounding environment experiences elevated temperatures due to changes in airflow and ground cover caused by the infrastructure (Mackenzie & Collins, 2019). This phenomenon can exacerbate the local climate by increasing evaporation rates, reducing soil moisture, and raising temperatures, especially in urban or semi-urban areas with reduced vegetation cover. Heat islands can degrade natural ecosystems, increasing the strain on flora and fauna, which are sensitive to changes in temperature and moisture availability.

Thermal belts, particularly in hilly or mountainous regions, can experience more pronounced temperature shifts due to the alterations caused by transmission lines. These belts, which are essential for maintaining stable microclimates, particularly for agriculture, may experience altered growing conditions. For example, fruit trees and other crops that rely on specific temperature ranges for optimal growth can be negatively impacted by such disruptions. These changes can lead to decreased agricultural productivity, threatening the economic sustainability of farming in these regions.

13.0 Noise, Vibration, and Shedding
Transmission lines and their associated infrastructure can generate significant levels of noise and, to a lesser extent, vibration. The primary sources of noise include the electrical hum or "corona discharge" from high-voltage power lines, as well as the mechanical sounds from transformers and substations. Although often considered a low-frequency noise, this constant hum can be disruptive to both human populations and wildlife. Studies have shown that prolonged exposure to such noise can lead to a variety of health effects, including sleep disturbances, increased stress, and reduced cognitive function in nearby communities (Havas, 2009). Noise pollution can also disrupt communication and mating behaviors in wildlife, particularly birds and mammals that rely on sound for social interactions and navigation (García & Díaz, 2019).

The vibrations generated by transmission infrastructure, although less studied, can also pose issues for nearby ecosystems. While evidence suggests that vibration impacts are generally minimal for human populations, certain sensitive species, particularly those with underground nests or burrows, could be negatively affected. Species such as the southern bent-wing bat (*Miniopterus orianae bassanii*) and certain rodent species are more vulnerable to vibration disturbances, which can affect their reproductive success and ability to forage efficiently (Racey & Entwistle, 2003).

In addition to noise and vibration, the phenomenon of "shedding" is also a concern in transmission line projects. Shedding refers to the gradual loss of materials, such as paint, metals, or insulating components, from transmission towers and lines. These materials can accumulate in the surrounding environment, leading to soil contamination and water pollution. For instance, metals such as zinc and lead, which are used in transmission infrastructure, can leach into the soil and nearby water systems, posing risks to both human health and wildlife (Thomas, 2018). Over time, the accumulation of these pollutants can lead to bioaccumulation in plants and animals, which may enter the food chain and have long-term ecological consequences.

Shedding from aging infrastructure also contributes to microplastic pollution, as certain synthetic materials used in insulation and coatings degrade into smaller particles that can infiltrate soils and water systems. These microplastics pose serious threats to aquatic life, as they are easily ingested by fish and other organisms, leading to physical harm and toxic exposure (Li et al., 2020). The long-term environmental impacts of shedding are often overlooked, but they represent a critical risk to both terrestrial and aquatic ecosystems.

14.0 Carbon Miscounting and Environmental Cost
While the Victorian Transmission Licence project is part of a broader strategy to achieve carbon neutrality, it is essential to ensure that the full carbon cost is accounted for. Transmission line projects typically focus on the long-term benefits of renewable energy integration without fully acknowledging the carbon emissions generated during construction, land clearing, and ongoing maintenance.

The loss of habitats, particularly forested areas, releases significant amounts of stored carbon into the atmosphere. For instance, when forests are cleared, not only is carbon sequestration lost, but the carbon stored in vegetation and soil is also released as a result of the disturbance (Houghton, 2003). Additionally, the carbon footprint of constructing access roads, transmission towers, and substations is often overlooked. The production and transport of materials like concrete, steel, and copper for these projects generate considerable emissions

(Wu et al., 2019). These emissions are compounded by the ongoing need for maintenance and eventual decommissioning, both of which further increase the project's carbon cost.

When these factors are taken into account, the carbon savings expected from renewable energy transmission may be significantly lower than projected. Therefore, it is crucial that comprehensive lifecycle assessments are conducted to ensure that the true environmental and carbon costs are fully integrated into the project's evaluation.

15.0 Breaches Identified and Mitigation Measures

The Victorian Transmission Licence project presents several potential breaches of environmental, agricultural, and biodiversity regulations. These breaches reflect the risks associated with habitat destruction, soil erosion, water quality degradation, and carbon mismanagement. Below are the key breaches identified, along with suggested mitigation measures:

15.1 Breach of the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The loss of critical habitats and fragmentation of ecosystems could lead to violations of the EPBC Act, which protects endangered species and ecosystems of national significance. Species such as the Leadbeater's Possum (*Gymnobelideus leadbeateri*) and swift parrot (*Lathamus discolor*) are highly vulnerable to habitat disruption caused by transmission line construction.

Mitigation Measures:

- Implement buffer zones to protect critical habitats.
- Realign transmission lines to avoid key wildlife corridors.
- Conduct regular biodiversity monitoring to assess the impact on endangered species and implement adaptive management strategies.

15.2 Breach of the Climate Change Adaptation and Resilience Standards

Creating localized heat islands and disrupting thermal belts without mitigating their impacts on local climates and agriculture could breach climate resilience standards. The project risks increasing regional temperatures, further stressing ecosystems and crops.

Mitigation Measures:

- Utilize landscape-sensitive designs to minimize heat island effects.
- Preserve vegetative cover around infrastructure to reduce thermal impacts.
- Conduct climate modeling to identify areas at risk and implement strategies to manage microclimate disruptions.

15.3 Breach of the Water Act 1989

Sediment runoff, chemical leaching, and microplastic pollution from construction and maintenance activities pose risks to water quality, violating the Water Act 1989. Contaminants from transmission infrastructure may degrade surface and groundwater systems, impacting both human and ecological water resources.

Mitigation Measures:

- Implement sediment control measures such as silt fences and revegetation.
- Use permeable materials in road construction to reduce runoff.
- Regularly monitor water quality to detect and mitigate potential pollution events early.

15.4 Breach of the National Greenhouse and Energy Reporting Act 2007
If the carbon accounting associated with the project fails to include emissions from habitat loss, road construction, and maintenance activities, it may violate the National Greenhouse and Energy Reporting standards. The project must account for carbon emissions across its lifecycle.
Mitigation Measures:
- Conduct full lifecycle carbon assessments, including construction, maintenance, and decommissioning.
- Replant native vegetation to offset carbon losses.
- Implement carbon capture projects within the transmission corridor to mitigate carbon emissions.

15.5 Breach of the Flora and Fauna Guarantee Act 1988
The large-scale removal of vegetation and impacts on endangered species habitats could breach the Flora and Fauna Guarantee Act. The project may threaten species such as the powerful owl (*Ninox strenua*) and greater glider (*Petauroides volans*), both of which depend on intact forest ecosystems.
Mitigation Measures:
- Avoid critical areas of biodiversity significance during planning and construction phases.
- Establish wildlife crossings and maintain habitat connectivity wherever possible.
- Implement habitat restoration initiatives post-construction to recover lost ecosystems.

15.6 Breach of Agricultural Land Protection Standards
The project could breach agricultural protection regulations by reducing land fertility, disrupting water flow, and degrading soil structure. Local farmers may experience reduced productivity due to soil compaction and the loss of arable land.
Mitigation Measures:
- Develop soil conservation plans to protect agricultural lands.
- Restrict road construction to areas with minimal impact on farming activities.
- Provide compensation to affected farmers and offer assistance with soil recovery strategies post-construction.

15.7 Breach of the State Environment Protection Policy (Waters)
The increase in sediment runoff and chemical pollution poses risks to compliance with Victoria's State Environment Protection Policy (Waters). The degradation of water quality due to transmission line activities threatens aquatic ecosystems and downstream users.
Mitigation Measures:
- Use erosion control techniques, such as terracing or contour plowing, to minimize runoff.
- Install water filtration systems near construction sites to capture contaminants before they enter waterways.
- Implement wetland restoration projects to enhance natural filtration and water purification processes.

15.8 Breach of the Occupational Health and Safety Act 2004

Noise and vibration levels generated by transmission infrastructure may violate health and safety standards, especially if they affect nearby residents or workers. Prolonged exposure to low-frequency noise and vibrations could lead to health issues such as sleep disturbances and increased stress.

Mitigation Measures:

- Install noise barriers around substations and transmission infrastructure.
- Conduct regular noise monitoring to ensure levels remain within acceptable limits.
- Provide protective measures, such as ear protection, to workers in high-noise areas.

16.0 Conclusion

The Victorian Transmission Licence project represents a significant step in transitioning towards renewable energy, yet its potential environmental costs cannot be overlooked. From the destruction of critical habitats and degradation of water systems to the mismanagement of carbon accounting, the project risks undermining the very goals it seeks to achieve.

Our environment is not just a resource to be utilized; it is a delicate system that sustains life. If we fail to protect it—especially in the pursuit of net-zero carbon targets—by ignoring the full carbon costs of habitat loss, soil degradation, and long-term ecosystem health, we must ask ourselves: What are we really achieving? Sustainable development must involve accurately calculating and addressing all environmental impacts to ensure we are truly moving towards a future where humanity and nature thrive together.

The path to carbon neutrality is one that must balance innovation with responsibility. We owe it to future generations to protect Victoria’s rich biodiversity and natural landscapes, ensuring that decisions made today do not lead to irreversible harm. Let us proceed with the vision that environmental protection and sustainable energy can, and must, coexist.

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