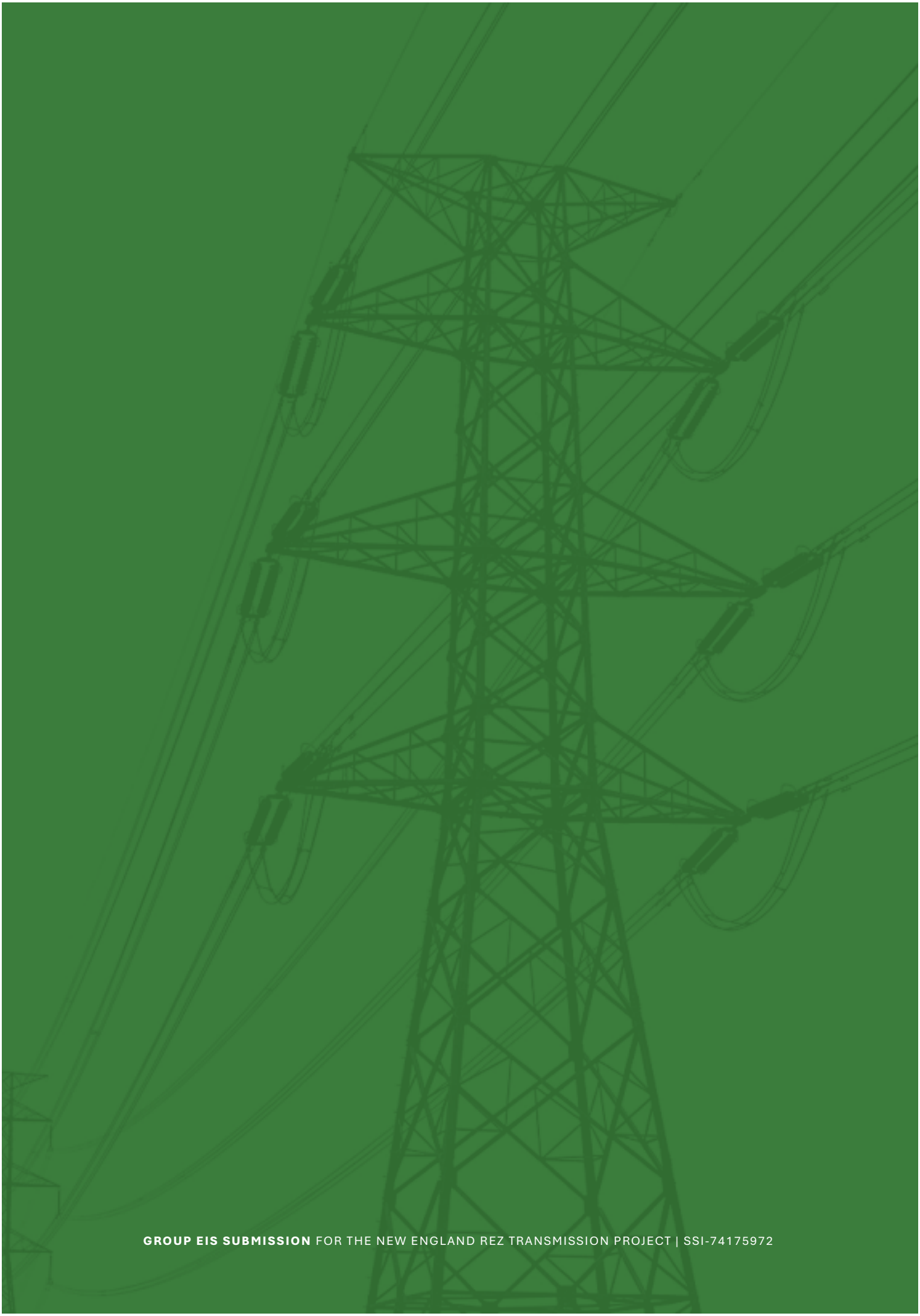
SECTION **13**

# Anthrax Disturbance

THIS IS **ONE** SECTION OF **TWENTY TWO,**
THAT FORMS PART OF A LARGER GROUP SUBMISSION
TO THE NEW ENGLAND REZ TRANSMISSION PROJECT
SSI-74175972




Walcha High Country Guardians | Rouchel Brook Action Group | Protect the Valley Upper Hunter Responsible Infrastructure Group | Voice for Walcha



**GROUP EIS SUBMISSION** FOR THE NEW ENGLAND REZ TRANSMISSION PROJECT | SSI-74175972

SECTION 13

# Anthrax Disturbance

## Key issues we have found ...



**Known anthrax ground is crossed**

The route crosses properties with recorded anthrax sites, while historical outbreaks mean contaminated ground may extend beyond currently mapped locations.



**Earthworks can expose buried spores**

Excavation, access tracks and spoil handling can expose buried spores, while runoff and machinery can carry contaminated soil between properties.



**High livestock risk remains**

The assessment retains high livestock risk under realistic worst case conditions for access tracks, tower pads and laydowns, despite mitigation.



**Residents need assessed protection**

Landholders and neighbours need specific assessment of exposure through contaminated soil, dust and water, alongside enforceable protection throughout the works.



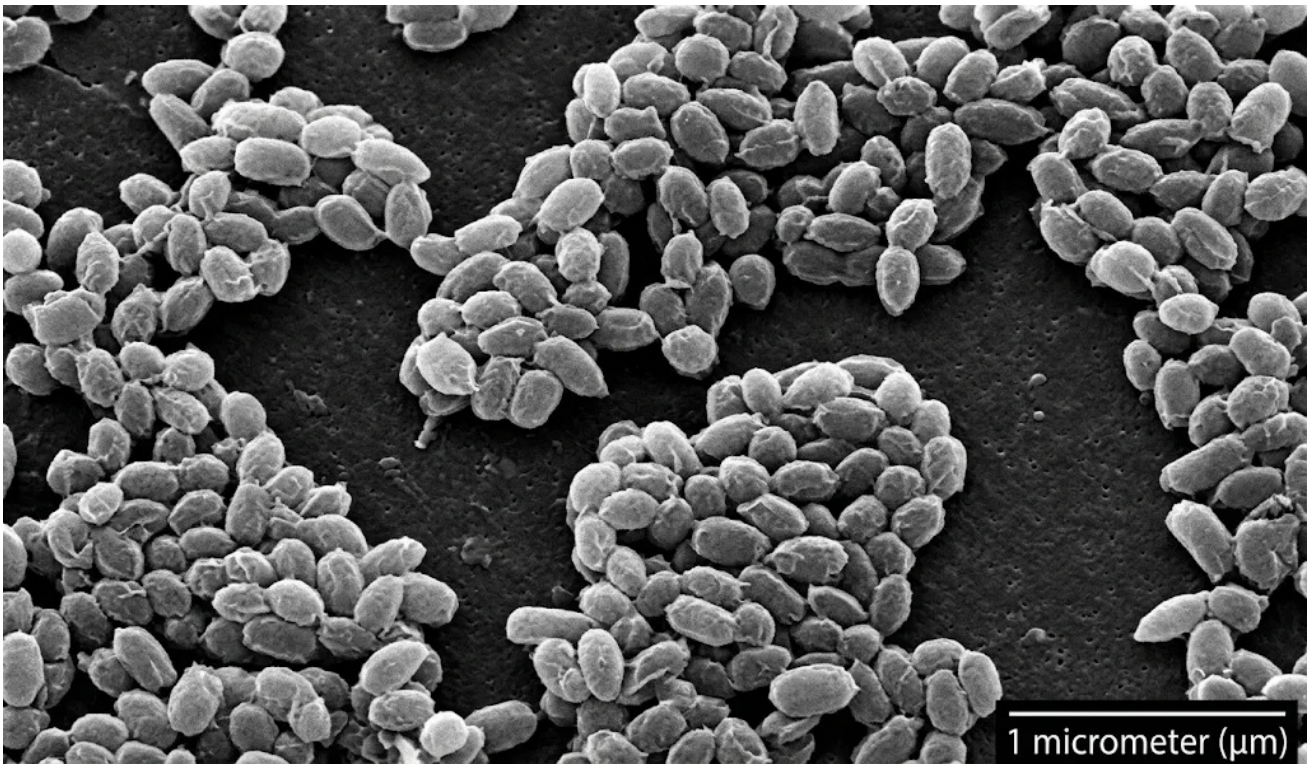
**Outbreak costs remain unresolved**

Stock losses, quarantine, grazing restrictions, vaccination and construction delays need costed planning, with responsibility and landholder compensation settled before approval.




**Avoid the Rouchel anthrax area**

The veterinary report recommends avoiding construction through the Rouchel anthrax area because livestock risks remain significant and practical safeguards unresolved.




> Anthrax spores

SECTION **13**

# Anthrax disturbance


SUMMARY

Our community considers that the New England REZ Environmental Impact Statement (EIS) fails to adequately demonstrate how the project will mitigate the threat of a serious biosecurity concern - prolonged outbreak of anthrax disease associated with construction of the transmission line towers across an area of known endemic anthrax spore contamination.

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**Construction of the proposed transmission lines through an area known to have an endemic risk of anthrax disease outbreak poses an unacceptable negative impact for the Hunter region during and after construction of the transmission lines and could potentially have a major impact on:**

- the health of animals ( cattle and horses) and humans ( inhabitants of the Rouchel district and surrounding areas) from dust and water borne anthrax spores.
- economic livelihood of key industries in the region. This includes local agricultural (livestock) businesses and Equine CIC, as well as further 'downstream' industries in vineyard regions.

## Our principal concerns are

### 1. How will local water supply be protected from dust born contamination?

The local residents of Rouchel generally rely on house tank water and allocations from Rouchel Brook as principal potable drinking water. The proposed construction of dual 70m tall transmission towers will result in significant airborne dust particles due to soil disturbance during construction of access roads, upgrading existing roads and clearing a corridor for transmission lines as well as excavation of soil for towers footplate and pylon footings (Source: Technical report 20).

> POSITION SOUGHT

EnergyCo must provide detailed analysis of water sources and potential mitigation strategies to prevent drinking water contamination.

We require Energyco to provide continuous monitoring of drinking water for LGAs associated with the Rouchel area and adjoining LGAs which might be impacted by waterborne spread.

### 2. How will they respond to increased risks from dust and vegetative loss during drought times?

Due to the cyclical climate variations ( droughts and flooding rains) and the nature of the soil ( alkaline calcareous soil) in the Rouchel region adjacent to Glenbawn dam, the region is known to favour persistence of anthrax spores in the soil for decades. (ref Durrheim et al 2017). 'Rouchel' is recognised as an endemic anthrax area and was the region of the last widespread outbreak in NSW ( 2007-2008), in which 1 horse and 53 cattle died before the outbreak was recognised and prophylactic vaccination processes were established.

The naturally occurring contributing factors included loss of vegetation due to drought, followed by cyclical flooding rain which washed exposed spores into creeks and gullies. Responsible agricultural practices (including reduced soil disturbances) have ensured no further outbreaks since then.

> POSITION SOUGHT

What mitigations strategies will be employed by EnergyCo during adverse weather events including drought and flooding rain.

Other proposed mitigation measures, such as 'Livestock exclusion fencing will need to remain until groundcover has fully re-established and soil matrix has stabilised

> Source: EIS

> QUESTION

**How will EnergyCo determine that "groundcover has fully re-established and soil matrix has stabilised" ?**

> POSITION SOUGHT

**The community requires EnergyCo guarantee that they will continue to make reasonable and just compensation to affected landholders for this extended period of time?**

### 3. Groundwater impacts have not been adequately addressed?

The recommended cleaning procedures for Construction workers and vehicles does not address how that water will be decontaminated after use. How will they prevent water contamination during the recommended regular daily process of decontamination of equipment? How will it be prevented from entering the groundwater and natural water courses, including gullies and brooks.

> POSITION SOUGHT

EnergyCo must demonstrate an achievable management plan for management of water resources, before approval is given.

### 4. Where does EnergyCo propose to store / reallocate the soil displaced during construction of towers?

EnergyCo have not provided information regarding the estimated quantity of soil removal required or how the soil from a potentially contaminated region will be separately stored.

Construction of pylons for the proposed transmission towers and associated soil disturbance due to clearing of trees and vegetation disturbance of deeper soil layers, will necessitate removal of tonnes of soil excavated to allow concrete footings. Based on estimates from other projects ( Source: Victoria Western REZ, CWO REZ) - base footprints are likely to be 20m by 20m with four reinforced concrete piers disturbing the soil to an average depth of 15m. This likely would result in ~180cubic metres of earth removal per transmission line tower.

> POSITION SOUGHT

EnergyCo must provide accurate analysis of how much soil will be displaced for each transmission tower construction. EnergyCo must provide specific details regarding an appropriate relocation site for the potentially contaminated soil as well as strategies to prevent offsite contamination during transport.

## 5. EnergyCo has not provided a quantitative risk assessment for each of the potentially affected properties.

The Environmental Impact Statement makes general claims about 'risk mitigation' for anthrax (Source: EIS - AT1, page 549-550) which are not supported by the limited available evidence. The expert report (Technical Report 20) notes "several limitations" to the evaluation due to "limited published research" regarding anthrax disease and the "desktop based risk assessment conducted within a limited timeframe" and acknowledges that they were not able to conduct a site visit in time to generate their report – so were unable to properly assess the risk to landowners".

Although not specifically identified for privacy reasons, "Data provided by the DPIRD identified 58 anthrax sites across 15 properties in the Rouchel area, with the proposed transmission lines directly crossing four properties with known anthrax sites and remaining 11 properties affected by ancillary development" (Source: Technical report 20;P.17). "12 properties are associated with a significant water course – Rouchel Brook"- This contributes to significant potential downstream spread, which would increase during periods of heavy rain.

The report acknowledges that 'the social and financial impact on communities and their livestock from an anthrax outbreak have been high in some communities. An anthrax disease outbreak has wider ramifications for NSW in general, including negative impacts due to "outbreak response at state level, potential livestock trade disruption, and public perception"( Source: Technical report 20; P.7).

> POSITION SOUGHT

DPHI should require EnergyCo to produce a detailed, quantifiable property-specific Management Plan for each property, before approval is given for the project. It must provide reliable estimates for quantities of soil to be removed, and demonstrate acceptable extraction locations for the soil to avoid more distant contamination of other areas in the Hunter region. It is insufficient to say this will be done as part of the construction process, as this data also relates to the feasibility of the project

## 6. EnergyCo has not considered the increased chance of human infection in landholders with anthrax due to inhalation (dust) or ingestion ( contaminated water).

Human anthrax infection is most often associated with a skin infection following contact with soil, allowing entry of the anthrax spore through even a minor skin abrasion. Other sources of infection are relevant to this project. **Inhalational anthrax** – can be associated with breathing in anthrax spores contaminating environmental dust. This project will be associated with significant soil disturbance and dust. This increased risk is acknowledged in the report and extensive recommendations made to protect Construction workers including - Protective clothing, masks and gloves while working, avoiding inhalation of dust and decontamination of clothing and equipment daily to reduce risk of inhalation exposure to anthrax ( Source: EIS Technical Report 20). Inhalational anthrax has a high fatality rate. In 2001 in the USA, 22 cases of anthrax (11 inhalational, 11 cutaneous) were identified, linked to the bioterrorism 'mail' anthrax outbreak in the USA, where cross contamination occurred between individuals handling unopened mail containing *B. anthracis* spores. About 50% of cases died. (Hughes et al, Emerg Infect Dis. 2002 Oct;8(10):1013–1014).

**Intestinal anthrax-**gut ingestion has been rare in Australia but overseas outbreaks have been associated with drinking water supply contamination. It can lead to a generalised illness ( septicemia). It has a fatality rate of 25% - 50%.

There are significant identified limitations in the assessment report ( Technical report 20), relating to risk of human disease due to lack of available literature and desktop nature of the analysis. The report assumes that "landholders are not present on active construction sites" and their risk is limited to contact with affected livestock – patently not true.

> QUESTION

Why has EnergyCo not provided recommendations for personal risk management relating to landholders,farm workers and families, in addition to the recommendations they made for construction workers.

> POSITION SOUGHT

EnergyCo must provide expert advice regarding regarding reasonable mitigation strategies for all residents of the Rouchel area who will have prolonged exposure to increased anthrax risk. This should be ongoing as the risk of contamination remains after construction.

EnergyCo and DPI provide ongoing monitoring for individual residents / landholders within the Rouchel area to monitor for increased risk of all forms of anthrax.

## 7. The EIS fails to demonstrate ongoing commitment to mitigation strategies and management of any anthrax outbreak.

In the EIS, Energyco does not address the fact that some strategies will not be achievable, for example 'limiting the movement of displaced soil over large distances. Stockpiling and removal of large quantities of soil will be required for the proposed construction of transmission line towers and corridors.

The risk of anthrax is <u>not</u> limited to the period of construction but also ongoing potential exposure might continue over many years during and after the construction period. The report sights a "real risk of a livestock outbreak during several years of construction in the Rouchel area including during:

- access track construction
- site preparationand tower pad preparation
- construction laydown
- tower foundations
- post construction revegetation and maintenance.

> Source: EIS technical report 20

EnergyCo ( source: Anthrax management and biodiversity fact sheet-April 2026) does not give any binding commitment but states they will undertake measures "where practicable". Most mitigation strategies centre on other agencies supporting landholders *after* an outbreak in livestock.

> POSITION SOUGHT

**The community requires EnergyCo to having a binding commitment to mitigate risks of anthrax outbreak.**

# Veterinary Perspective
# Anthrax – Animal Impacts

## Introduction

I am a veterinarian with twenty five years of experience in cattle and sheep practice. This report sets out my views on the anthrax biosecurity risk associated with the New England REZ Network Infrastructure Project. It is provided for the Anthrax section of a community submission on the project's Environmental Impact Statement.

## Summary of Opinion

The Upper Hunter has a long history of anthrax. The disease was endemic in the Hunter Valley in the 1890s, and stock losses were recorded in the Upper Hunter as recently as 1939. In December 2007 and January 2008, 53 cattle and a horse died on 11 properties around Rouchel after a drought was broken by severe flooding. NSW DPIRD records 58 anthrax sites on 15 properties in the Rouchel district. The proposed transmission line crosses four of these properties, and construction overlaps recorded anthrax sites.

The soils, landform and climate at Rouchel are well suited to the long-term survival of anthrax spores.

Anthrax outbreaks in livestock are most often triggered by soil disturbance and by extreme weather that moves soil. The project will involve extensive excavation, access track and road construction, and stockpiling of spoil over several years, in an area where both triggers are present.

The EIS anthrax assessment by Ausvet and Public Health Matters (Technical Report 20) is a careful and transparent piece of work. Its findings are serious. Even with all recommended mitigations in place, it rates the realistic worst-case risk to livestock as High for access tracks, tower pads and laydown areas. It concludes that there is a real risk of an occasional livestock outbreak during construction.

The mitigations recommended in the assessment have not yet been committed to by EnergyCo in a form that is specified, funded and enforceable. Several of the limitations the authors openly acknowledge have not been addressed.

My primary recommendation is that the project should not proceed with construction through the Rouchel anthrax area. If that recommendation is not accepted, the further work set out in section 9 should be completed before any decision is made.

## Anthrax and soil disturbance

Anthrax is a soil-borne disease. Any project that moves large volumes of soil in a historically infected district creates a pathway for infection that does not exist when the ground is left undisturbed.

For this reason, the central recommendation for preventing anthrax in livestock is to minimise soil disturbance, particularly in areas with a known history of the disease. Animal health authorities advise landholders in anthrax areas to minimise excavation, ploughing and earthworks, to avoid disturbing old burial sites, stock camps and low-lying ground, and to keep livestock away from recently disturbed soil. Where disturbance is unavoidable, they advise vaccinating stock and monitoring closely for sudden deaths

(Business Queensland; NSW DPIRD). DPIRD's own statement in EnergyCo's April 2026 fact sheet emphasises avoiding disturbance of contaminated sites and managing soil movement. A transmission project of this scale runs directly against this advice.

Bacillus anthracis multiplies in the host and causes a rapidly fatal septicaemia, most often in cattle and sheep, which are usually found dead. When a carcass is opened by scavengers, decomposition or handling, the organism is exposed to air and forms spores. These spores enter the soil and can remain viable for decades.

Spores below about 15 cm are protected from sunlight, drying and competition from other soil organisms, and survive longest. Historically, carcasses in NSW were buried or partly burnt. Old disposal sites therefore hold spores at the depths reached by tower foundations, trenching, cut and fill for access tracks, and borrow pits. AUSVETPLAN notes that spores below 15 cm can remain viable for long periods, even centuries, and that viable organisms have been grown from spores held in favourable subsoil for around 200 years. It records two outbreaks that began when spores, washed into the soil at old knackery and tannery sites, were brought to the surface decades later by deep ploughing. It also states that disturbance of soil by flood damage or ploughing may expose previously buried spores (Animal Health Australia 2020).

Livestock are infected mainly by ingesting spores while grazing, so soil disturbance is central to the risk. Excavation can bring long-buried spores to the surface, while stockpiling, runoff, dust and soil carried on machinery can move contaminated material beyond its original location. The 2007 Rouchel outbreak followed severe flooding that exposed and redistributed soil across the landscape. Construction creates the same mechanism of risk by exposing buried soil and moving it through excavation, access works, spoil handling and machinery movements. These activities increase the opportunity for viable spores to be brought into areas accessible to livestock.

Anthrax is a zoonosis. People can be infected through contact with infected animals, carcasses or contaminated soil. Landholders handling dead stock, veterinarians, and construction workers disturbing contaminated soil are at risk.

## History of Anthrax in the Upper Hunter

Anthrax was introduced to Australia near Sydney in 1847 and spread along stock routes through NSW. It was regarded as endemic in the Hunter Valley during the 1890s. Losses were recorded on three Upper Hunter properties in 1939 (Durrheim et al. 2009, citing Seddon 1953).

In June 2007, after a prolonged drought, 259 mm of rain fell near Aberdeen over about three days, against a three-year June average of 43 mm. Large amounts of topsoil were washed into gullies and creeks. Between 14 December 2007 and 3 January 2008, 53 cattle and one horse died of anthrax on 11 properties in the Rouchel area, about 20 km east of Aberdeen. A further case occurred in May 2008 in an unvaccinated bull brought onto an infected property. All stock on the infected properties and 24 neighbouring properties were vaccinated (Durrheim et al. 2009).

The investigating team found no source in imported feed or stock and concluded that long-lived soil spores, exposed by the flooding, were the likely cause. Anthrax was not suspected at first because of the long absence of recorded cases. The authors also raised the possibility that low-level, undiagnosed infection had continued in the district since the 1940s.

> Credit - With thanks for expert input from Dr Margaret Burgess, Emeritus Professor Paediatrics & Preventive Medicine, University of Sydney

The 2007 outbreak shows four things that are directly relevant to this project:

- anthrax recurred after 68 years without a recorded case, which is consistent with long-term persistence of spores in the environment;
- the trigger was large-scale movement of soil;
- the outbreak affected a landscape of about 60 km2, not a single paddock;
- Rouchel lies about 350 km outside the traditional NSW anthrax belt, so maps of the belt understate the risk in the Upper Hunter. Barro et al. (2016) has since redefined the anthrax belt to include parts of the Upper Hunter.

Case records in NSW are reasonably complete only from about 1990, although district records go back to the early 1900s (Moloney and Salmon 2015). The same authors note that owners of newly diagnosed properties often recall occasional unexplained deaths in the same paddock over many years. Recorded sites are therefore likely to understate the true extent of contaminated ground. The EIS assessment acknowledges this, noting that older outbreaks may not be included in DPIRD's GPS records.

## Soil suitability

Anthrax spores persist best in neutral to alkaline soils with high calcium, moisture and organic matter, and in warm conditions (Van Ness 1971; Hugh-Jones and Blackburn 2009). Calcium helps maintain spore viability (Dragon and Rennie 1995). Spores tend to accumulate in drainage lines, seepage areas and depressions.

The Rouchel area has alluvial soils along the creeks and basaltic and sandy soils on the slopes (Durrheim et al. 2009). Basalt-derived soils in the Upper Hunter are generally clay-rich and calcium-rich, with neutral to alkaline pH. The EIS assessment itself states that Rouchel soils are neutral to alkaline and suitable for spore persistence. The country is hilly, with gullies that run after rain, and 12 of the 15 properties with recorded anthrax sites adjoin or are crossed by Rouchel Brook.

In my opinion the corridor through Rouchel, Rouchel Brook, Upper Rouchel and McCullys Gap should be treated as ground with a proven capacity to hold viable spores for decades.

## Risk of disease and risk factors

NSW DPIRD identifies a previous history of anthrax on a property as the single greatest risk factor for an outbreak. That factor is present on the properties crossed by this project.

The recognised risk factors present at Rouchel include:

- a recorded history of anthrax on the affected properties;
- soils and drainage suited to spore survival;
- a climate with recurring drought followed by heavy rain;
- hot summers, when stock graze close to the ground;
- stock that are likely to be unvaccinated;
- a low level of suspicion among owners, as seen in 2007;
- horses, for which there is no registered anthrax vaccine in Australia, in an area that includes the Upper Hunter Equine Critical Industry Cluster.

The project adds the following construction-specific risks:

- deep excavation for tower foundations;
- long, continuous strips of disturbed soil for access tracks and road upgrades;
- spoil stockpiles and sediment basins, which concentrate soil and water in conditions that favour spores;

- a laydown area reportedly located at Rouchel Brook;
- movement of machinery, spoil and workers between properties and districts along a corridor of about 300 km;
- changes to fencing, water access and grazing that can push stock onto poorer ground;
- ongoing soil disturbance from easement maintenance over the life of the asset.

The consequences of an outbreak are serious:

- deaths of stock;
- quarantine and movement restrictions;
- carcass destruction;
- vaccination of stock on infected and surrounding properties;
- tracing and ongoing surveillance;
- possible damage to the reputation and trade of the district, including the thoroughbred industry;
- a risk to human health.
  The EIS assessment rates the consequence as high to extreme, and I agree.

## Comment on the EIS anthrax assessment and how it has been represented

Technical Report 20, Anthrax Assessment and Management Strategy for New England REZ Project (Ausvet Pty Ltd and Public Health Matters Pty Ltd, September 2026), uses a recognised risk assessment framework based on the World Organisation for Animal Health Terrestrial Code. It is candid about its limitations. My concerns are not with the assessment itself. They relate to how its findings have been represented by EnergyCo, and to the work and commitments that are still missing.

### What the assessment found

Even with all recommended mitigations in place, the assessment rates the realistic worst-case risk to livestock (Table 1) as:

- High for access tracks;
- High for site preparation and tower pads;
- High for construction laydown areas;
- Moderate for tower foundations;
- Moderate for post-construction revegetation and maintenance.

The authors conclude that mitigation cannot reduce the risk to very low or negligible in every scenario, and that there is a real risk of an occasional outbreak in livestock during the several years of construction at Rouchel. They identify drought followed by heavy rain as a realistic worst case, which is the sequence that preceded the 2007 outbreak at the same location. In my opinion, however, construction largely removes the need for drought as part of that sequence. Drought strips pasture cover and exposes topsoil, as the assessment itself notes. Excavation, track construction and stockpiling do the same thing directly, and also expose deeper soil where spores are best preserved. On disturbed ground, heavy rain alone could be enough to mobilise spores and trigger an outbreak, in any season. AUSVETPLAN notes that cases are sometimes seen after only moderate rainfall following prolonged dry periods, and that spores, which can float, may concentrate in low-lying areas after heavy rain (Animal Health Australia 2020). This makes the worst case more likely during construction than under normal farming conditions. For human health, the risk from contact with infected animals or carcasses remains Moderate in the most likely case and High in the worst case after mitigation (Table 3).

## How the findings have been represented

EnergyCo's April 2026 anthrax fact sheet told landholders it expected the risk of anthrax being encountered and spread during construction to be low. Its April 2026 community feedback report described the likelihood as very low. In my opinion these statements are not consistent with the assessment's findings of a High residual risk under realistic worst-case conditions and a high to extreme consequence. Landholders and the consent authority should be guided by the technical findings.

## Limitations acknowledged by the authors

The authors are open that:

- the assessment was desktop-based and completed in a limited timeframe;
- site access was not possible;
- expert opinion was relied on because data on construction-related anthrax risk are scarce;
- older outbreaks may not be included in DPIRD's records;
- the assumption that landholders face lower risk than workers could not be confirmed and should be reassessed when construction begins.

These are fair statements of uncertainty, but they mean important questions remain unanswered at the point of approval. The detailed report on which the summary is based has also not been exhibited. In disease control, when the consequences of an outbreak are serious and the evidence is limited, the sound approach is to avoid the risk rather than proceed and attempt to manage an outbreak if one occurs.

## History and the location of contaminated ground

The assessment's spatial analysis draws on DPIRD's records of recent cases. The full history of the district, set out in section 4, should also be compiled and considered, because it bears directly on where contaminated ground may lie.

The assessment describes how flooding brings buried spores to the surface and disperses them, and how drought exposes topsoil. Combined with the likelihood of unrecorded historical sites, this means the location of contaminated ground cannot be known with confidence. Avoiding known sites by GPS is an important measure, but it cannot be relied on alone. The other recommended controls (vaccination, fencing, soil and water management) will need to be applied across the whole Rouchel section, not only near recorded sites.

## Scale of the works

The assessment identifies access tracks and surface groundworks as among the highest-risk activities. The EIS should state the extent of this work in the Rouchel area:

- kilometres of new and upgraded track and road;
- number of tower sites;
- excavation depths;
- volumes of cut, fill and surplus spoil;
- total area disturbed;
- how long ground will remain bare.

Without these figures, the exposure cannot be properly understood.

# Mitigation and practical limitations

## Mitigation measures

Technical Report 20 recommends avoidance of known anthrax sites, vaccination, exclusion fencing, runoff and erosion controls, retention of excavated soil, equipment hygiene, surveillance and emergency response. These measures do not remove the livestock risk. EnergyCo's own assessment retains a High residual risk for access tracks, tower pads and laydown areas under realistic worst-case conditions.
The important question is whether these controls can be implemented effectively over the scale and duration of the works in the Rouchel area.

## Exclusion fencing

Livestock should be excluded from disturbed ground, but the area requiring exclusion may extend beyond individual tower pads and tracks. Soil can be moved by machinery, runoff and erosion into adjoining areas. The EIS should define the area to be fenced, how long livestock will be excluded, and the standard required before grazing can resume. Extensive fencing has the potential to interfere with stock movement, access to water and normal property management. Access roads and much of the earthworks will be permanent, so exclusion may be needed for many years. Because the project is linear, continuous fencing along easements and roads would divide properties and could seriously reduce their productive capacity and value.

## Runoff and erosion

Runoff is particularly important because water can move contaminated soil beyond the original excavation. The project should identify how runoff and sediment from disturbed ground will be managed during major rainfall events, including where contaminated sediment will be retained and what will occur if erosion and sediment controls are overtopped or fail. Downstream and neighbouring grazing land must also be considered where runoff can leave the construction area.

## Excavated soil and spoil

Technical Report 20 recommends that excavated soil remain at the immediate construction site. This reduces the risk of transferring contaminated soil elsewhere, but it leaves disturbed soil on the affected property. EnergyCo should identify how much spoil will be generated, where it will be placed, how it will be stabilised and protected from erosion, and when livestock will be allowed access to those areas. Potentially contaminated soil should not be moved to another property or construction site without specific biosecurity assessment and approval.

## Vaccination

Vaccination is an important control for cattle and sheep, but it should supplement rather than replace control of soil disturbance. Use of the vaccine requires approval under the authority of the Chief Veterinary Officer, obtained in NSW through the Local Land Services district veterinarian. NSW DPIRD guidance is that cattle and sheep be vaccinated annually for three years after anthrax is diagnosed on a property, and that vaccination is recommended where anthrax has occurred in the previous ten years. A single dose is usually effective for 6 to 12 months, provided the full dose is given and the animals are not treated with antibiotics within 10 to 14 days before or after vaccination. Immunity peaks around 15 days after vaccination. On heavily contaminated premises, deaths have continued for up to 60 days after vaccination, and in the 1997 Victorian outbreak some vaccinated animals still died. Vaccination can cause a fever 12 to 36 hours afterwards, reduced milk yield and possibly abortion in dairy cows, and care is needed when vaccinating in hot weather.

Vaccinated stock are subject to a 42-day meat withholding period, which restricts when they can be sold. Annual mustering, vaccination and the withholding period would be an ongoing cost and constraint on affected properties for as long as disturbed ground remains a risk. Severe vaccine reactions can occur in horses, and no anthrax vaccine is registered for them, which is relevant to affected equine enterprises (Animal Health Australia 2020; NSW DPIRD).

### Machinery and surveillance

Soil carried on machinery provides a pathway for transfer between paddocks and properties. A clear decontamination standard is required for vehicles and plant leaving known or suspected anthrax areas, including management of soil and wash-down material. Surveillance is necessary, but it detects disease after exposure has occurred. There must also be an agreed protocol for investigation of sudden deaths, immediate notification to NSW DPIRD and Local Land Services, stop-work authority and management of an affected site.

### Cost of an outbreak

The assessment recommends that all work stop immediately on a suspected or confirmed case. The 2007 outbreak produced cases over several weeks and again five months later, so a similar event could halt work for months. The EIS does not estimate this delay or its cost. It also does not commit to compensating landholders for stock losses, quarantine and vaccination costs arising from an outbreak linked to the works. Under AUSVETPLAN, an infected property remains in quarantine for at least 20 days after the last case, and vaccinated stock on infected and neighbouring properties cannot be moved until restrictions are lifted. Where cases occur on more than five properties in an area within a short time, the Chief Veterinary Officer may declare an unusual outbreak and a vaccination area, in which all properties are quarantined with a mandatory movement embargo. AUSVETPLAN also notes that public concern about an outbreak can lead to boycotts of livestock markets and local events.

The mitigation measures proposed in Technical Report 20 are necessary, but EnergyCo's own assessment shows that they do not eliminate the livestock risk. Avoiding disturbance of historically anthrax-affected ground remains the most effective control.

## Recommendations

### Primary recommendation

The consequence of an outbreak is high to extreme, and EnergyCo's own consultant has identified a residual risk that cannot be mitigated to a low level. The established advice is to minimise soil disturbance in anthrax areas. In my opinion, the project should not proceed with construction through the Rouchel, Rouchel Brook, Upper Rouchel and McCullys Gap anthrax area.

If the consent authority does not accept this recommendation, the following should be completed and exhibited before any determination is made:

a. publication of the full detailed anthrax risk assessment;
b. site investigation for B. anthracis at proposed tower, pad, laydown, track and road locations, carried out to a design agreed with DPIRD;
c. a full historical review of anthrax in the Upper Hunter and along the corridor, including district and Local Land Services records and landholder knowledge of unexplained deaths and burial sites;
d. quantification of the works in the Rouchel area as set out in paragraph 7.8;

e. an estimate of the likelihood of heavy rainfall on exposed and disturbed soil over the full period of construction and stabilisation, based on Bureau of Meteorology records;
f. an assessment of spore transport along Rouchel Brook and the risk to downstream and neighbouring properties;
   an assessment of the risk to landholders and their families;
g. a costed outbreak scenario covering landholders, the state response and the project.

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