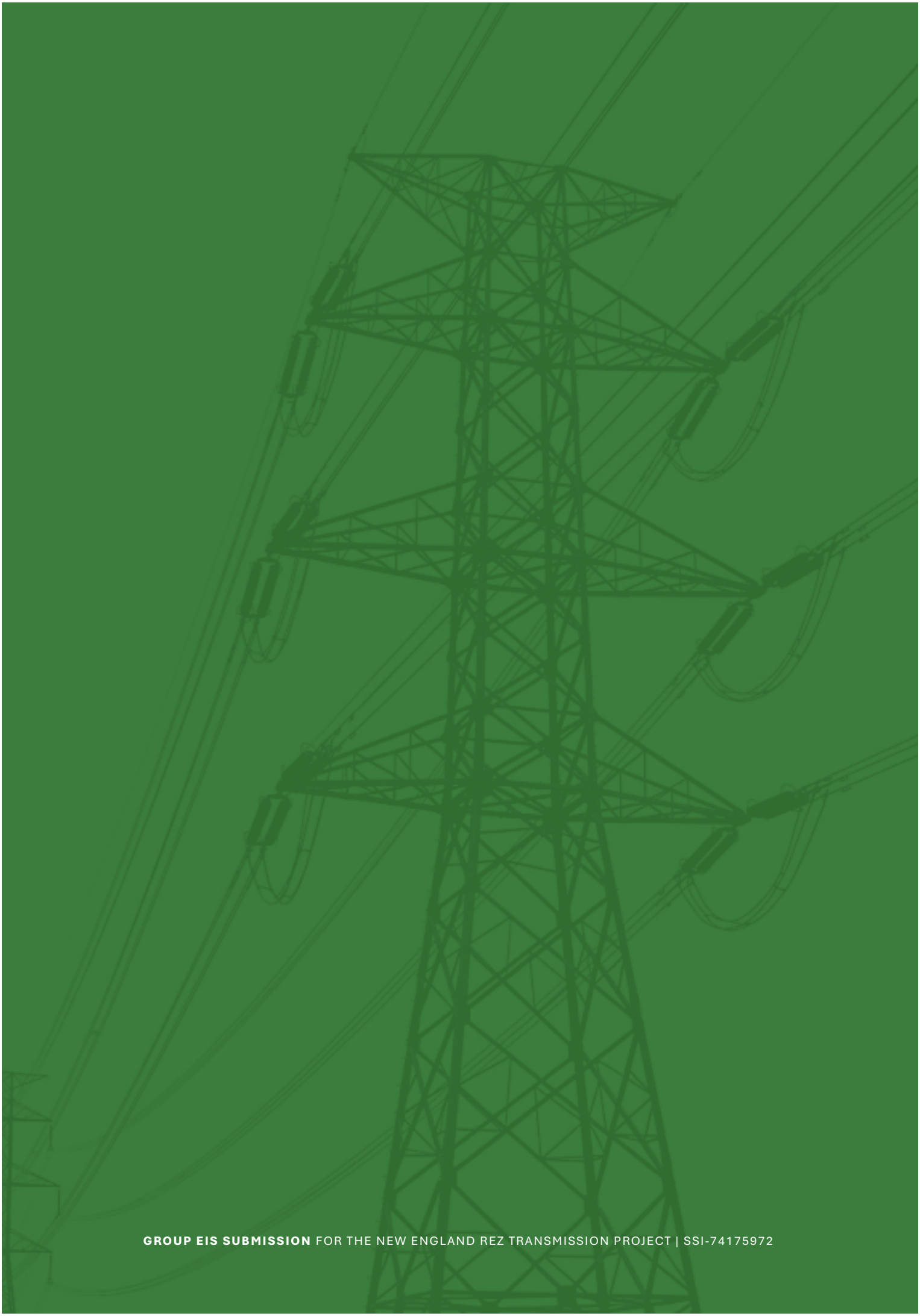
SECTION **10**

Erosion, Sedimentation and Ground Stability

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



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SECTION 10

Erosion, Sedimentation and Ground Stability

Key issues we have found ...



Erosion hazard results are missing

The EIS describes erosion assessment methods but omits completed hazard maps, soil loss classifications and predicted losses for proposed works.



Steep roads intensify erosion risks

Road cuttings, tower pads, vegetation clearing and redirected drainage concentrate major disturbance on steep land already vulnerable to severe erosion.



Landslide hazards need proper assessment

The EIS fails to demonstrate how roads, tower pads, blasting and drainage works address mapped areas of significant landslide risk.



Runoff damage can cross boundaries

The Olsland case study identifies how steep roads and culverts can concentrate runoff, damaging pasture and soil beyond project easements.



Deferred controls prevent proper scrutiny

Landholders cannot test proposed cuttings, drainage and erosion controls when essential designs and management plans are postponed until after approval.



Prove land protection before approval

EnergyCo must demonstrate protection against lasting land degradation, relocating infrastructure where unacceptable erosion or instability cannot be avoided or controlled.

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> This high rainfall area will require project-specific slope assessment to be completed before assessment

SECTION **10**

Erosion, Sedimentation and Ground Stability

EXECUTIVE SUMMARY

Erosion and ground stability are major environmental and constructability issues for the New England REZ Transmission Project. The project involves extensive vegetation clearing, hundreds of kilometres of access tracks, major cut-and-fill earthworks, tower platforms, excavation, blasting, spoil handling and drainage modification across steep, high-rainfall and erosion-prone country.

The warning signs are already clear. EnergyCo's own A-line methodology shows that steep slopes combined with high rainfall erosivity can produce high erosion hazard. The NSW Land and Soil Capability assessment independently identifies extensive water-erosion and mass-movement limitations along the transmission corridor. At the same time, EnergyCo's constructability work shows that some of the most intensive earthworks will be required in this same steep terrain, including complex tower pads, very steep access tracks, approximately 1.01 million cubic metres of surplus tower-pad material and around 126,000 spoil-truck movements.

Despite this, the erosion and ground-stability assessment requested through the SEARs and agency advice has not been completed or presented to the level necessary to understand the risk. Technical Report 14 says that an erosion-hazard assessment was undertaken, soil-loss classes determined and soil-loss rates estimated, yet the completed project-specific results are not provided in the exhibited EIS.

The concern is therefore not simply that detailed erosion controls will be developed later. The more fundamental issue is that the underlying risk has not yet been properly demonstrated across the full construction footprint, even though the studies that have been completed point to a significant problem.

Before the project is determined, EnergyCo should identify and map the erosion and mass-movement hazards across all disturbed areas, show how the proposed works interact with those hazards, and demonstrate how impacts will be avoided, minimised and mitigated.

The expected outcome should be clear: the project must not leave the land in a worse physical condition than it was before construction began. Where EnergyCo cannot demonstrate that outcome, the infrastructure should not proceed through that location.

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1 | Introduction

The New England REZ Transmission Project involves extensive clearing, access-road construction, cut-and-fill earthworks, tower-platform construction, excavation, blasting, spoil handling and drainage alteration across terrain that includes steep, high-rainfall and erosion-prone country.

This submission is concerned that the assessment needed to properly understand the resulting erosion and ground-stability risk has not been adequately completed or presented, despite the requirements of the SEARs and agency advice. At the same time, the work that has been undertaken is already identifying serious warning signs that need to be understood before decisions are made about where and how this project can be constructed.

2 | Erosion should have been treated as a major risk in its own right

EnergyCo's scoping approach appears to have underestimated the nature of the erosion risk from the outset.

The Revised Scoping Report separated environmental matters into "Key Issues" and "Other Matters". Key Issues were matters where there was a reasonable likelihood of material impact and where detailed assessment was required to fully understand those impacts and develop project-specific mitigation.

Hydrology, water quality and flooding were instead placed in the lower-priority "Other Matters" category, described as matters expected to generate minimal or low impacts and requiring only a standard assessment.

Erosion and sedimentation need to be identified as a Key Issue in their own right.

Erosion is not simply a water-quality issue arising when sediment reaches a creek or river. The primary damage occurs to the land itself. In steep country, erosion can strip topsoil, expose less productive or dispersive subsoil, form rills and gullies, destabilise cut and fill batters, damage pasture, change drainage patterns, undermine tracks and create permanent scars that remain long after construction has finished.

Mass movement is an even more serious manifestation of the same underlying problem. When a slope slips, slumps or fails, the environmental impact is not merely the sediment that may eventually reach a watercourse. The landform itself has been destabilised.

By the time the EIS was prepared, EnergyCo's own environmental risk register had moved substantially from the original scoping position. It identified *"erosion, increased turbidity and sedimentation from vegetation clearing, earthworks, access tracks and other disturbed areas"* as a Medium unmitigated risk and said it would receive detailed assessment.

This detailed assessment cannot be located in the exhibited EIS.

Erosion should have been treated from the outset as a major land, soil and construction risk in its own right, not only a source of downstream sedimentation.

3 | What the SEARs and agency advice required

The Secretary's Environmental Assessment Requirements expressly require

> *"a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004)."*

The SEARs also require assessment of impacts on soils and land capability and on the quantity and quality of regional surface-water resources.

The EPA's advice was considerably more direct. It specifically requested assessment of soil erosion and sediment transport and of mass movement or landslides. It also required assessment of the effectiveness and reliability of proposed mitigation measures and any residual impacts remaining after those measures were implemented.

The EPA was not merely asking EnergyCo to list standard, generic erosion-control measures. It was asking EnergyCo to assess the risk, assess the proposed response, and identify what impacts would remain.

DCCEEW Water also specifically requested erosion and sediment-control measures.

EnergyCo was therefore clearly on notice that erosion, sediment transport and landslide risk required proper consideration in the EIS.

4 | EnergyCo acknowledges that steep slopes are erosion-sensitive

Technical Report 14 contains an important acknowledgement when describing the Montane water-quality zone:

> *"While water quality in the Montane zone is typically good, it is sensitive to episodic events and land management practices, with impacts often transmitted downstream into the broader Gwydir and Namoi river systems. Key risks include elevated sediment and turbidity from erosion on steep slopes…"*

That statement is directly relevant to the proposed project.

The transmission corridor crosses substantial areas of steep upper-catchment terrain. EnergyCo therefore acknowledges that these slopes are vulnerable to erosion, that erosion can generate substantial sediment and turbidity, and that the consequences can extend well beyond the location where the disturbance occurs.

The same Technical Report identifies erosion hazard as depending on soil characteristics, topography, rainfall intensity and groundcover.

Those are exactly the characteristics that will be altered during construction.

Vegetation and groundcover will be removed. Natural slopes will be cut and benched. Fill will be placed. Drainage will be intercepted and redirected. Roads will concentrate traffic and runoff. Tower pads will create level platforms on natural side slopes. Blasting and rock excavation will occur.

The EIS therefore recognises both the vulnerability of the landscape and the activities capable of triggering erosion within it.

5 | Incomplete erosion hazard assessment

Technical Report 14 sets out a specific method for determining whether a site presents a low or high erosion hazard.

Section 3.5.1.1 states:

> *"The erosion hazard of a site is dependent on a range of factors including soil characteristics, topography, rainfall intensity and groundcover."*

It then explains the preliminary assessment method:

> *"A preliminary method to determine erosion hazard is determined by determining the relationship between the rainfall erosivity (R) and the typical upper slope gradient of the site landform (Landcom, 2004). The rainfall erosivity (R) for the project area is shown on Figure 3.31. The slope gradient will be particular to the specific site and the associated detailed designs. The A-line method is then used (Figure 3.29) to determine if the site is low or high erosion hazard."*

This is a simple two-part test. EnergyCo needs the rainfall erosivity, or R-factor, and the slope gradient. Those two values are then plotted against the A-line to determine whether the location falls within the low or high erosion-hazard area.

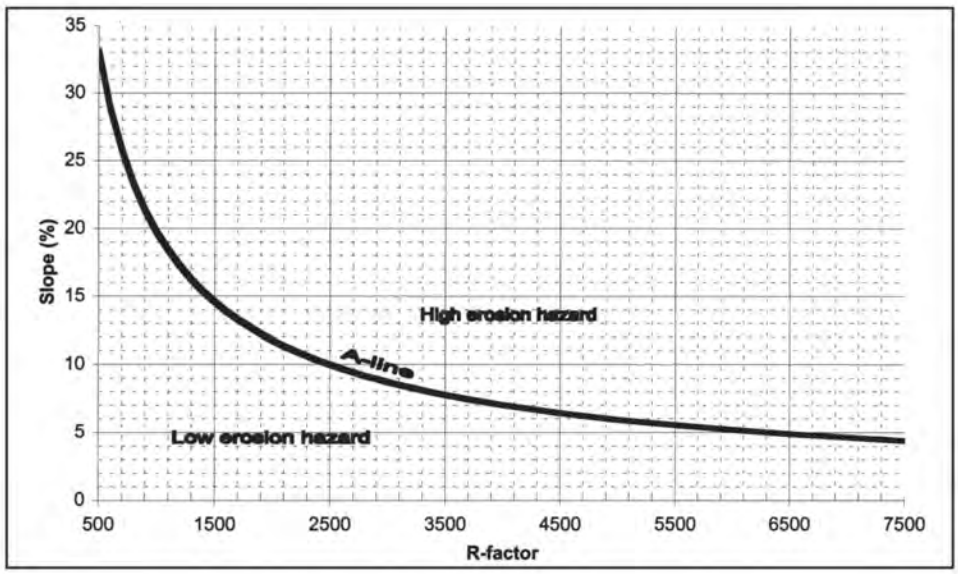


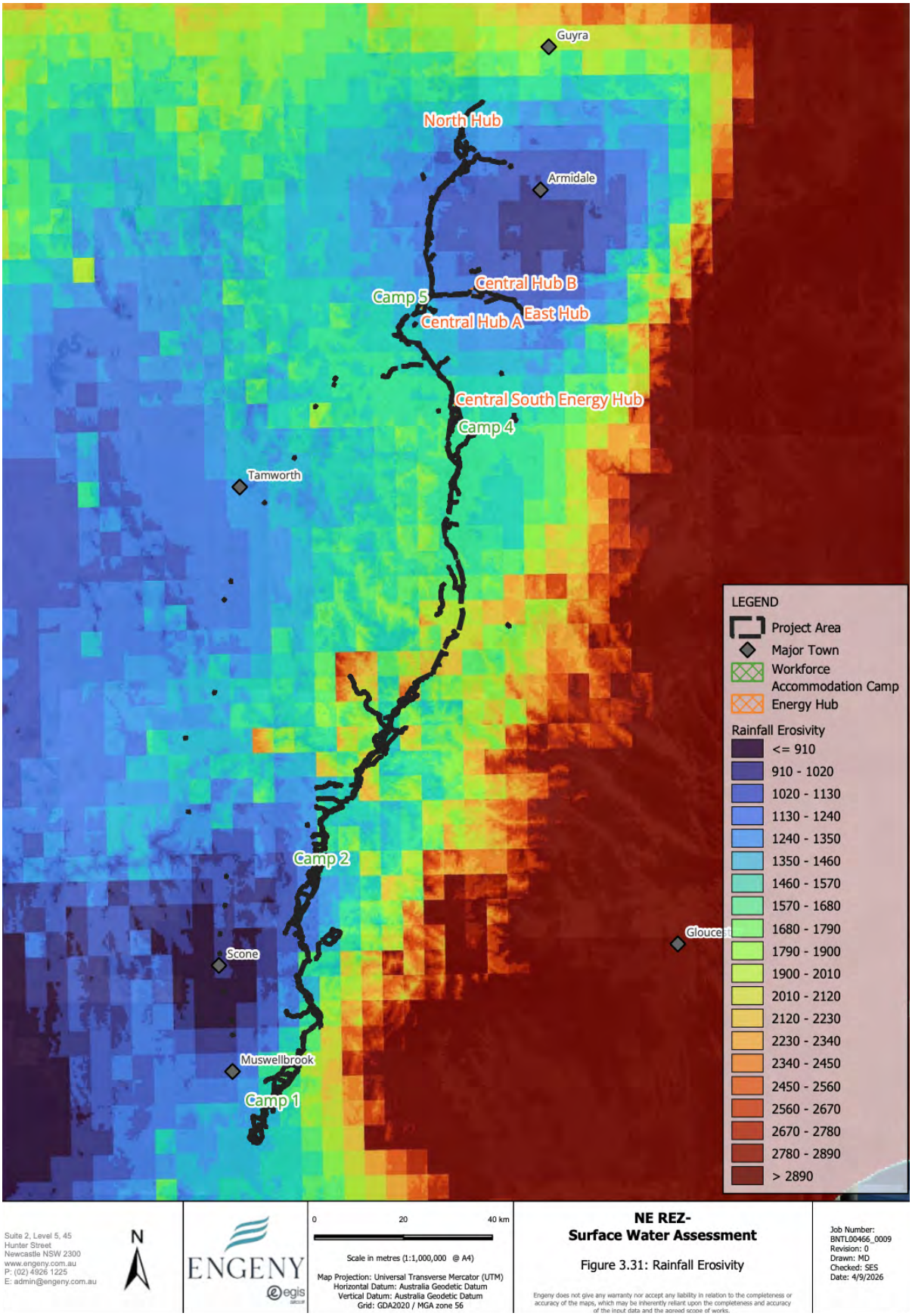
FIGURE 3.29: A-LINE

Source: (Landcom, 2004)

> Figure 1 - Source p76 of the "Blue Book" - https://www.environment.nsw.gov.au/sites/default/files/managing-urban-stormwater-soils-construction-volume-1-fourth-edition.pdf

The graph makes the relationship clear. As rainfall erosivity increases, progressively lower slopes are sufficient to place land within the high erosion-hazard category. Conversely, steep slopes can present a high erosion hazard even at considerably lower R-factors.

This is particularly important for the New England REZ corridor where there are significant areas with steep gradients.



> Figure 3.31 - **maps rainfall erosivity (R-factor) across the project area.**

Figure 3.31 shows that some of the highest rainfall erosivity occurs through elevated range country that is also characterised by steep terrain. Under the A-line method, the combination of increasing slope and high rainfall erosivity moves land into the high erosion-hazard category. This makes completion of the project-specific slope assessment particularly important.

But EnergyCo does not take the next step. There is no project map showing the relevant slope gradient against the R-factor. There is no map identifying which proposed access tracks, tower sites, cuttings or earthworks fall above the A-line. There is no route-wide map of low and high erosion hazard.

Most importantly, the EIS does not show how this assessment has informed the location or design of the proposed works or the measures it will take to minimise and mitigate the impacts.

This is the work that Energy Co have not completed. There is much of the project footprint that sits in the "High Erosion Hazard" category.

Instead, Technical Report 14 states:

> *"The slope gradient will be particular to the specific site and the associated detailed designs."*

Technical Report 14 therefore provides the method and maps the rainfall erosivity, but does not provide the corresponding project-specific slope assessment or the resulting low/high erosion-hazard classification. Nor does it provide the soil-loss classes or estimated soil-loss rates that section 2.3.3.1 says were determined. These are the results needed to understand where the project presents the greatest erosion risk.

All the information is available. We know the transmission route. The R-Values are mapped. We know the gradient.

Why haven't EnergyCo taken the final and critical step of mapping the Erosion Hazard, as defined by the A-Line?



6 | The LSC assessment shows that much of this land has low capability for high-impact disturbance

Further to the erosion risk identified by EnergyCo's A-line method, the NSW Land and Soil Capability assessment provides a separate and independent warning about the ability of this country to withstand high-impact disturbance.

The scheme assesses eight hazards, including water erosion and mass movement – hazards central to risk of erosion.

The LSC scheme states:

> *"The LSC class gives an indication of the land management practices that can be applied to a parcel of land without causing degradation to the land and soil at the site and to the off-site environment."*

It further states:

> *"As land capability decreases, the management of hazards requires an increase in knowledge, expertise and investment. In lands with lower capability, the hazards cannot be managed effectively for some land uses."*

Those statements are directly relevant to this project.

EnergyCo is proposing a high-impact land use. It is proposing vegetation clearing, hundreds of kilometres of access roads, road cuttings, fill batters, tower benches, excavation, blasting, heavy construction traffic and drainage modification. If this land cannot sustain intensive agricultural use without degradation, there is no basis to assume it can sustain far more intensive civil earthworks.

The LSC assessment therefore raises a much more important question than how productive the land may be agriculturally: **does the land have the physical capability to withstand the level of disturbance EnergyCo is proposing without serious degradation?**

For substantial parts of the route, the LSC data indicates that it does not.

Two hazards are particularly important: water erosion and mass movement.

The independent overlay of the NSW Government water-erosion mapping across the published 250 metre transmission corridor identifies approximately **39.5 per cent** of assessed corridor land within water-erosion Classes 6 to 8.

The mass-movement mapping identifies approximately **20 per cent** of assessed corridor land, around 1,501 hectares, within Classes 6 to 8.

> Source: These maps are provided at Appendices A and B.

These figures relate only to the published transmission corridor. They do not include separately mapped access roads or hub sites, even though access-road construction is likely to be one of the most intensive sources of earthworks and slope disturbance.

EnergyCo is proposing some of the most intensive construction activity in the project through country that the LSC scheme identifies as having serious limitations associated with water erosion and slope instability.

In high water-erosion hazard country, disturbance can result in loss of topsoil, exposure of subsoil, gullying, unstable batters, altered drainage, reduced pasture productivity and long-term damage to the land, along with downstream water quality impacts.

In areas of high mass-movement hazard, the risk is more serious again. Road cuttings, fill, tower benches, blasting, excavation and drainage changes can alter the physical conditions that keep slopes stable and increase the potential for slips, slumps and slope failure.

The EPA specifically required assessment of *"Mass movement (landslides)"* in accordance with the Australian Geomechanics Society landslide-risk-management guidelines.

Despite this, the exhibited EIS does not provide a route-wide demonstration of how the mapped water-erosion and mass-movement hazards have influenced the location of access roads, tower sites, major cut-and-fill earthworks, blasting areas or the transmission alignment itself.

This is where the LSC assessment should have fundamentally informed project design.

If land is identified as having low capability for high-impact disturbance because of water erosion or mass movement, the response should not automatically be to engineer a way through it. The first question should be whether that level of disturbance is appropriate in that location at all.

EnergyCo has relied on LSC elsewhere in the EIS. It should therefore also acknowledge what the same assessment says about the physical limits of the country being disturbed. It is unclear why EnergyCo provided this assessment in the agriculture technical report, and not a technical report on erosion.

The LSC data is a warning that parts of this landscape have limited capability to withstand high-impact disturbance without degradation.

For a project proposing major earthworks through that landscape, that warning should be central to route selection, access design and the decision about whether particular areas should be disturbed at all.

7 | Access roads concentrate high-impact construction in difficult and vulnerable terrain

The erosion risk cannot be separated from the extraordinary scale of access-road and tower-pad construction required by this project. This is not simply a transmission-line project with incidental access tracks. It contains a very large civil road and earthworks project within it.

The exhibited EIS describes approximately 580 kilometres of access tracks. EnergyCo's earlier *Bulk Corridor Design Refinement Report*, November 2025, identified approximately 57 kilometres of access tracks above an 18 per cent gradient, including approximately 28 kilometres exceeding 21 per cent. Around 97 tower sites were to be serviced by tracks exceeding an 18 per cent grade, while 116 towers required complex Type C tower-pad construction associated with very steep terrain.

The same constructability assessment estimated approximately 1.01 million cubic metres of surplus material from tower-pad earthworks, together with approximately 126,000 spoil-truck movements.

In flatter agricultural country, existing roads and farm tracks are more common and can often be upgraded with comparatively limited earthworks. In the steepest country, substantial existing access is often absent for a simple practical reason: constructing and maintaining roads through that terrain is difficult.

Where small farm tracks exist, they are often not capable of carrying the cranes, drilling rigs, concrete trucks, heavy excavation equipment and other machinery required for construction of 500 kV transmission infrastructure.



> Figure 4 - **Crawny Road**

To create that access, roads must be benched into hillsides, slopes cut back, fill placed to create workable platforms, batters formed and stabilised, drainage redirected and, in some locations, rock excavated or blasted. Tower pads themselves require substantial cutting and filling to create level working areas on steep natural slopes.

The project therefore faces a compounding problem. The harder a tower site is to reach, the greater the road construction required to reach it. The steeper the tower site, the greater the cutting and filling required to establish a workable tower pad. And the country requiring the greatest disturbance is also the country that the A-line assessment and LSC mapping identify as most susceptible to erosion and mass movement.

This is the central concern.

The approximately **1.01 million cubic metres of surplus tower-pad material** will not be generated evenly across the landscape. A large proportion of that material is likely to arise from the steepest sites, where the natural landform must be most heavily modified to create roads and level construction platforms.

Likewise, the approximately **126,000 spoil-truck movements** are evidence of the enormous volume of soil and rock that must be excavated, handled, transported and placed elsewhere.

That means some of the most intensive earthmoving in the entire project will occur in the terrain already showing the strongest warning signs for erosion and slope instability.

EnergyCo's own A-line methodology shows that steep slopes combined with high rainfall erosivity can produce high erosion hazard. The NSW Land and Soil Capability mapping separately identifies substantial water-erosion and mass-movement limitations through this same broad landscape.

The project is therefore concentrating its greatest physical disturbance in the country least able to tolerate that disturbance.

That relationship should have been front and centre in the erosion assessment.

Instead, the EIS does not provide a completed project-specific erosion-hazard assessment showing where the steep access tracks, tower pads and major cut-and-fill areas overlap the highest erosion and mass-movement hazards.

The people who work this country every day understand the practical implications of that omission. They know where machinery can travel after prolonged rain, where tracks become impassable, where hillsides slip, where water concentrates and where even ordinary agricultural machinery cannot safely operate. They know that this creates months of work stoppages, or instances where projects should not start at all.

For some locations, constructing a road capable of carrying cranes and other major construction equipment may be technically achievable. But "technically achievable" is not the end of the question.

At what financial cost? At what level of excavation, cutting and filling? At what level of blasting? At what cost to the slope itself? At what ongoing maintenance burden? And at what point does engineering a way through unsuitable terrain cease to be a reasonable environmental outcome?

Building heavy-vehicle access through this country may be technically possible. That does not make it environmentally acceptable.

The EIS needs to demonstrate not merely that access can be engineered, but what must be done to the country to create that access, what erosion and stability risks that work creates, and whether some locations should be avoided altogether.

8 | Reliance on future erosion and sediment control plans removes meaningful community scrutiny

The principal response to erosion risk in Technical Report 14 is the future preparation of area-specific Erosion and Sediment Control Plans.

Section 5.5.4 states that these plans will be prepared generally in accordance with the Blue Book and will consider the erosion hazard at each location. Typical controls include limiting disturbance, diverting clean runoff, sediment traps, stabilisation, progressive rehabilitation, stockpile management, drainage controls, monitoring and maintenance.

These are standard generic erosion-control measures. Their effectiveness depends entirely on the site.

A sediment-control approach that may be adequate on gently sloping stable ground cannot simply be assumed to work on steep, high-rainfall country involving major cut-and-fill earthworks, blasting and unstable batters.

This is also a procedural issue.

Public exhibition of the EIS is the principal opportunity for affected landholders, local communities and councils to understand the proposed impacts and respond before the project is determined.

People need to be able to see where roads will be cut, where batters will be formed, where blasting may occur, how drainage will be redirected, where spoil will be placed and what measures are proposed to prevent permanent damage to the land.

Only then can they provide meaningful local evidence about whether those measures are realistic.

Local landholders often have decades of practical experience with particular slopes. They know where water runs after prolonged rain. They know where tracks fail. They know where slips occur. They know where machinery can and cannot safely travel. They know which areas remain wet, which soils disperse and where erosion begins once protective groundcover is removed.

That knowledge cannot inform the EIS if the relevant roads, cuttings, drainage arrangements and erosion controls are not designed until after the project has been approved.

Deferring these matters to detailed design removes much of the community's opportunity to scrutinise and respond to the impacts that will occur on their land.

By that point, the debate has shifted from whether the disturbance should occur to how an approved project will be constructed.

That is too late.

The EIS should contain enough design and assessment detail for affected communities to understand what is proposed, identify where the assumptions are wrong and provide informed local evidence before determination.

9 | What is required

Before this project is determined, EnergyCo should provide a complete, project-specific erosion and ground-stability assessment for the full construction footprint.

That assessment should clearly identify and map the areas of highest water-erosion and mass-movement risk, including the transmission corridor, access tracks, tower sites, cut-and-fill areas, blasting locations, drainage works, hubs and other disturbed areas. It should show how those hazards interact with the actual proposed construction works, what impacts are likely to occur, and which locations present unacceptable levels of risk.

EnergyCo should then demonstrate how those impacts will be avoided, minimised and mitigated, including where route changes or relocation of infrastructure are necessary because the land is not capable of safely withstanding the proposed disturbance.

The assessment should be sufficiently complete and publicly available before determination so that affected landholders, communities and councils can understand what is proposed, assess the likely impacts on the land, and provide meaningful local knowledge in response.

The expected outcome should be clear. Land affected by the project must not be left in a worse physical condition than it was before construction began. Where EnergyCo cannot demonstrate that outcome, the infrastructure should not proceed through that location.

Conclusion

The studies already undertaken point consistently to a serious erosion and ground-stability risk. EnergyCo's A-line methodology identifies the danger created by the combination of steep slopes and high rainfall erosivity. The NSW Land and Soil Capability assessment independently identifies extensive water-erosion and mass-movement limitations. EnergyCo's constructability work then shows that some of the greatest cut-and-fill disturbance will occur in this same steep and vulnerable country.

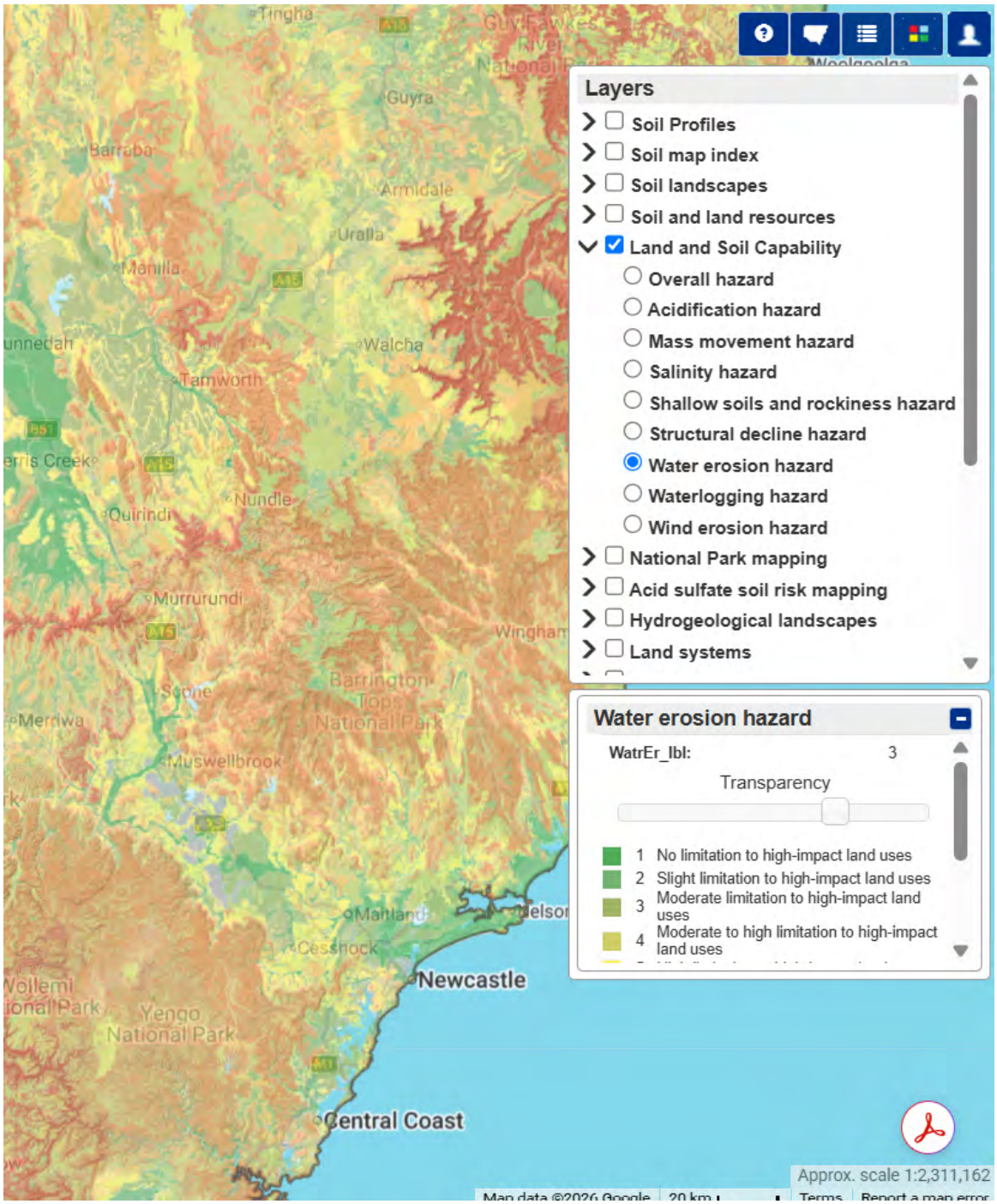
Yet the assessment requested through the SEARs and agency advice has not been completed or presented to the level necessary to understand that risk. The exhibited EIS does not provide the completed project-specific erosion-hazard assessment, soil-loss classes or estimated soil-loss rates referred to in Technical Report 14, nor does it show across the full construction footprint how the identified hazards interact with the proposed roads, tower pads, cut-and-fill areas and other major earthworks.

These warning signs cannot simply be disregarded or deferred to detailed design. The erosion and ground-stability risk needs to be properly understood first. EnergyCo must then demonstrate how the project can be constructed without causing serious and long-term damage, how impacts will be avoided or minimised, and where the route or infrastructure must change because the land cannot safely withstand the proposed disturbance.

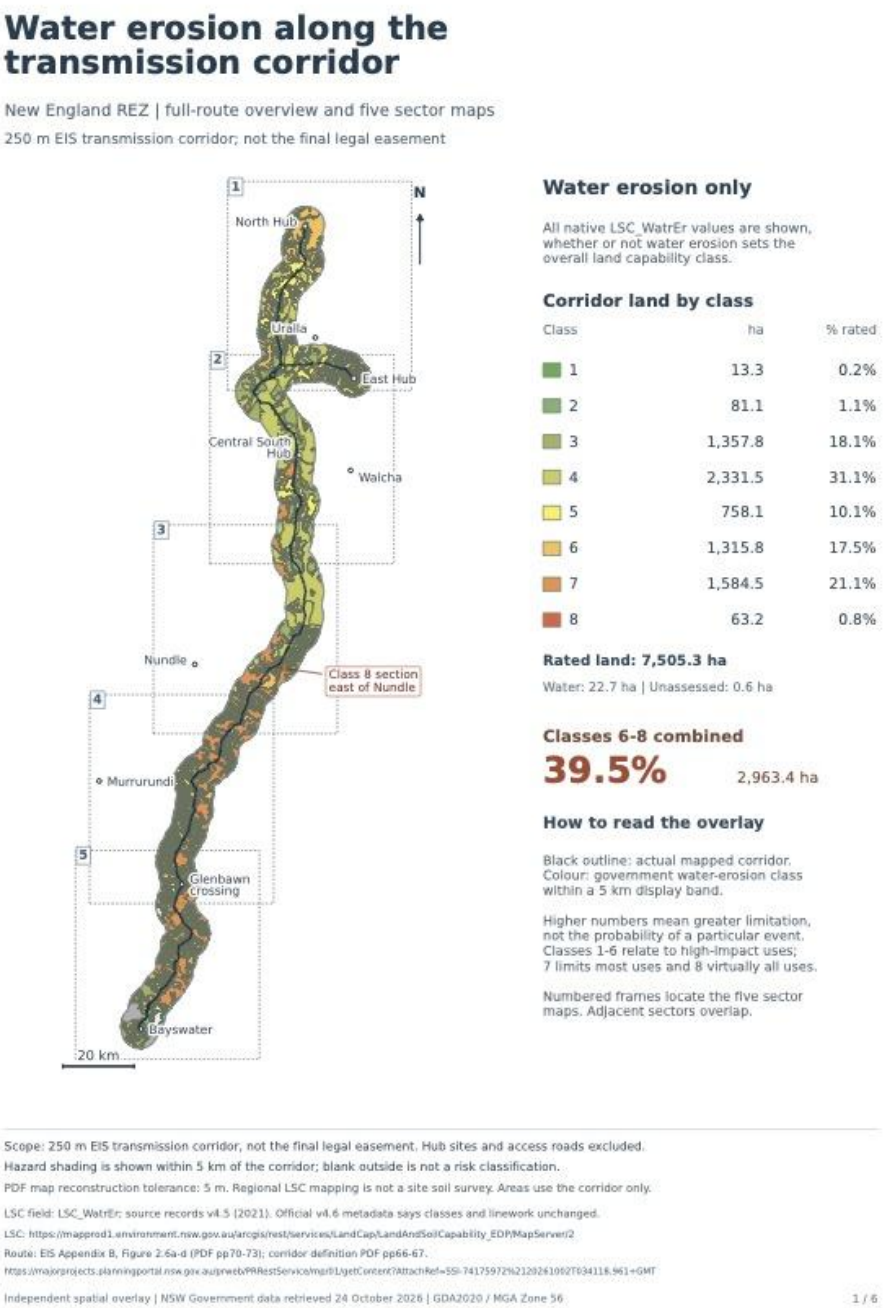
The community is not asking for an unreasonable standard. It is asking that the assessment work requested by the relevant agencies be completed, that the risks already identified in EnergyCo's own studies be taken seriously, and that the country not be left in a worse physical condition than it was before construction began.

That must be the test for this project. Where EnergyCo cannot demonstrate, before determination, that the land will not be left more eroded, less stable or permanently degraded, the infrastructure should not proceed through that location.

APPENDIX **A**
Land and Soil Capability (LSC) Water erosion hazard along the transmission corridor



> Figure 3 - **LSC Water Erosion hazard across region**



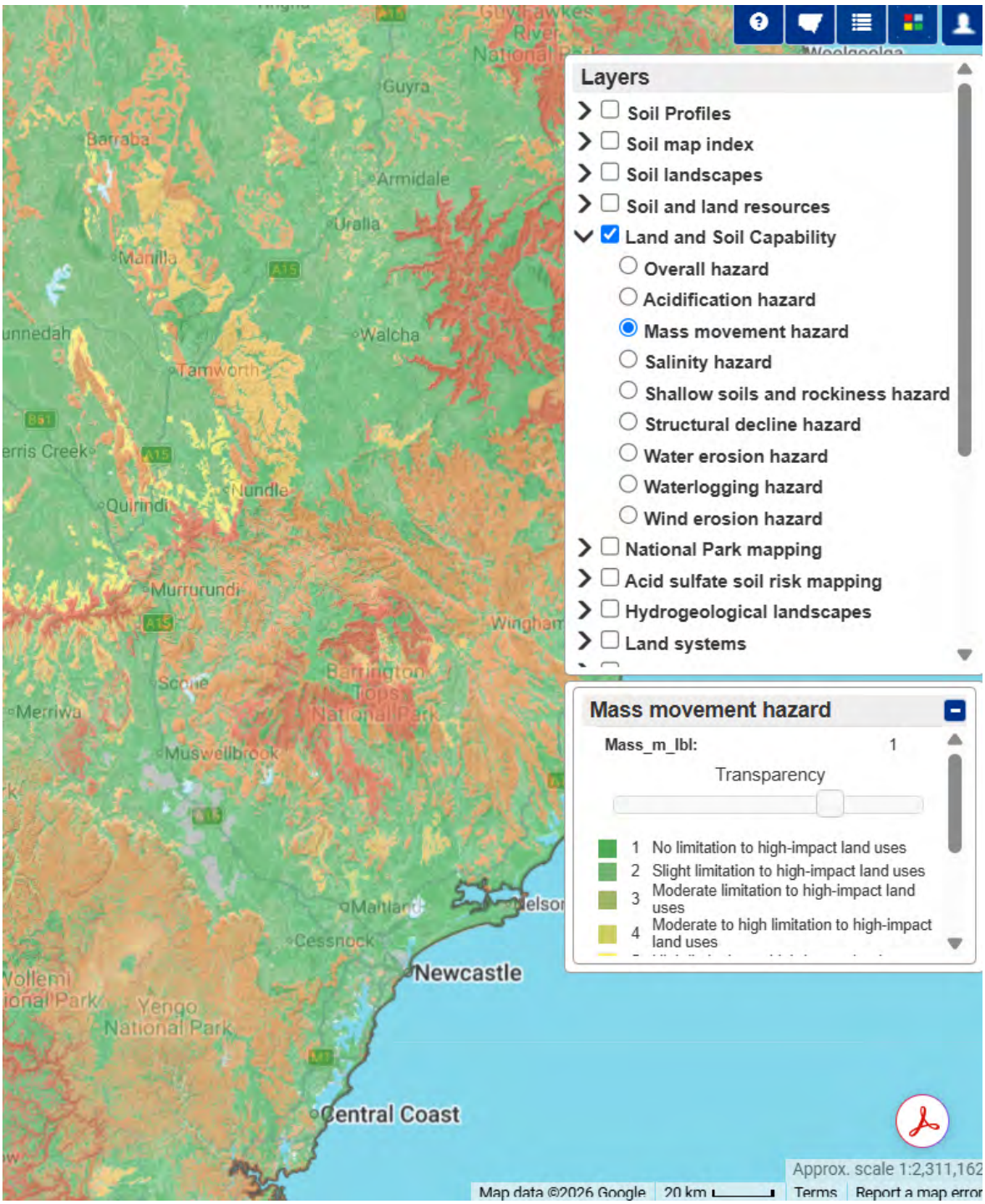
> Figure 4 - **LSC Water Erosion hazard along transmission corridor**

The map shows the NSW Government LSC water-erosion hazard along the published 250 metre EIS transmission corridor. It identifies approximately 39.5 per cent of assessed corridor land within water-erosion Classes 6 to 8.

Source: espade.environment.nsw.gov.au Layer – Land and Soils Capability – Water erosion hazard

The map relates only to the published transmission corridor and excludes separately mapped access roads and hub sites.

APPENDIX **B**
Land and Soil Capability (LSC) Mass movement hazard along the transmission corridor



> Figure 2 L - **SC Mass movement hazard across region**



> Figure 3 - **LSC Mass movement hazard along transmission line**

The map shows the NSW Government LSC mass-movement hazard along the published 250 metre EIS transmission corridor. It identifies approximately 20 per cent of assessed corridor land within mass-movement Classes 6 to 8.

Source: espade.environment.nsw.gov.au Layer – Land and Soils Capability – Mass movement hazard

The map relates only to the published transmission corridor and excludes separately mapped access roads and hub sites.

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