NGP ANNUAL COMPLIANCE REPORT - 2023

Revision Number: 1
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AUTHORISATION

Approved by

Name	Job Title	Signature	Date
Sonia Fourie	Group Manager - Environment & Sustainability		02/08/2023

INTERNAL

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DOCUMENT HISTORY

Revision	Date	Author	Description of Changes
1.0	2/08/2023	Rahul Dorairaj	New Document

OWNING FUNCTIONAL GROUP & DEPARTMENT / TEAM

People, Safety & Legal : Environment and Sustainability

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1 INTRODUCTION

Jemena Northern Gas Pipeline Pty Ltd (referred to herein as *Jemena*) gained approval under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) as the approval holder to Construction and Operation of the Jemena Northern Gas Pipeline, tenant Creek Northern Territory to Mt Isa, Queensland (EPBC 2015/7569) in 2017. The Northern Gas Pipeline involves the construction of a new, underground, natural gas transmission pipeline, approximately 622 km in length and associated facilities.

This Annual Compliance report will cover compliance against each of the EPBC conditions issued to Jemena between 21 May 2022 and 20 May 2023 period.

1.1 EPBC APPROVAL KEY INFORMATION SUMMARY

EPBC Number	EPBC 2015/7569
Project Name	Jemena Northern Gas Pipeline
Approval Holder and ACN	Jemena Northern Gas Pipeline Pty Ltd (ACN: 607 928 790)
Approved Action	Construct and Operate a buried 622 km high pressure gas pipeline from Tennant Creek (Northern Territory) to Mount Isa (Queensland)
Location of the Project	Tennant Creek (Northern Territory) to Mount Isa (Queensland)
Project Commencement Date	20 May 2017
Person accepting responsibility of this report	Sonia Fourie
Dates for the reporting period of this report	21 May 2022 to 20 May 2023

1.2 EPBC APPROVAL CONDITIONS – COMPLIANCE STATUS

A total of 15 environmental approval conditions were placed on the project. The Compliance status of these 15 approval conditions are detailed below:

Condition Number	Condition	Is the Project compliant with this condition?	Evidence/ Comments
1	The approval holder must only take the proposed action within the **project area**.	Compliant	All Operations during this period has been within the designated project area as described in the final public environment report. This is inclusive of: • 30 metre construction right-of-way; • work spaces; • camp sites; • operational facilities; • dams; and • access tracks.
2	To protect the EPBC Act listed Plains Death Adder (*Acanthophis hawkei*), the approval holder must not: a) **disturb** more than 791 hectares of **suitable Plains Death Adder habitat**; and b) **remove** more than 36 hectares of **suitable Plains Death Adder habitat**.	Compliant	Since Commencement of Actions, the following occurred in relation to the Plains Death Adder (*Acanthophis hawkei*): a) 692 hectares of **suitable Plains Death Adder habitat** has been **disturbed**; and b) 4.8 hectares of **suitable Plains Death Adder habitat has been removed** to allow for one (1) mainline valve and three (3) cathodic protection stations. All construction work subject to the final public environment report and regulatory approval are now complete. No further disturbance or removal of **Plains Death Adder habitat** is proposed.
3	For the protection of the **EPBC Act** listed Plains Death Adder, Carpentarian Antechinus (*Pseudantechinus mimulus*) and Greater Bilby (*Macrotis lagotis*), the approval holder must	Compliant	All open trench inspections have been in accordance with the **Trench Inspection Procedure** (version 2) as provided to the Department on 23 February 2017.

	undertake open trench inspection activities in accordance with the **Trench Inspection Procedure (Procedure)**.		This version of the Trench Inspection Procedure is available on Jemena's Northern Gas Pipeline Website: https://jemena.com.au/pipelines/northern-gas-pipeline All construction work subject to the final public environment report and regulatory approval are now complete. No further disturbance or removal of Plains Death Adder habitat is proposed.
4	Within five (5) years of the completion of **construction**, the approval holder must **rehabilitate** no less than 791 hectares of **suitable Plains Death Adder habitat**.	Compliant (ongoing)	Completion of construction occurred during 2018-2019 reporting period. Rehabilitation has commenced as per the approved Rehabilitation Management Plan. A Transitional Rehabilitation Monitoring Report (2023) has been prepared and provided in Appendix A of this report.
5	The approval holder must submit a Rehabilitation Management Plan for the Minister's approval in writing. The Rehabilitation Management Plan must include: a) **rehabilitation acceptance criteria**; b) procedures, including contingency measures, that will be undertaken to achieve the **rehabilitation acceptance criteria**; and c) a monitoring program to determine the success of **rehabilitation** procedures implemented by the approval holder over the duration of the approval.	Compliant	The Rehabilitation Management Plan was issued to the Minister for approval on 31 March 2017. This document is confirmed to contain: a) rehabilitation acceptance criteria; b) procedures, including contingency measures, that will be undertaken to achieve the rehabilitation acceptance criteria; and c) a monitoring program to determine the success of rehabilitation procedures implemented by the approval holder over the duration of the approval. A Transitional Rehabilitation Monitoring Report (2023) has been prepared and provided in Appendix A of this report.
6	The approval holder must not **commence** the action until the Rehabilitation Management Plan has been approved by the **Minister** in writing. The approved Rehabilitation Management Plan must be implemented by the approval holder.	Compliant	The Rehabilitation Management Plan was approved on behalf of the Minister on 19 April 2017. This is the most current version of the plan and has been implemented. The Rehabilitation Management Plan is available on Jemena's Northern Gas Pipeline Website: https://jemena.com.au/pipelines/northern-gas-pipeline

7	Within 10 days after the **commencement** of the action, the approval holder must advise the **Department** in writing of the actual date of **commencement**.	Compliant	Date of commencement of the Project was 20 May 2017. This was communicated to the Department on 29 May 2017. Refer to Appendix B of this report.
8	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the **Procedure** and management plan required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.	Complaint	All records have been accurately maintained and may be made available to the Department should there be any request to do so. This includes the current 2022-2023 Northern Gas Pipeline Transitional Rehabilitation Monitoring Report that is the basis for this EPBC Annual Report.
9	Within three (3) months of every 12 month anniversary of the **commencement** of the action, the approval holder must publish a report (the Annual Compliance Report) on its website describing compliance with each of the conditions of this approval, during the previous 12 months. The approval holder must also provide in this report: a) a reconciliation of actual **disturbance** and **removal** of **suitable Plains Death Adder habitat** (in hectares) on the **project area** against the **disturbance** and **removal** limits specified in condition 2; and b) progress against the **rehabilitation acceptance criteria** required at condition 5. Documentary evidence providing proof of the date of the publication must be provided to the **Department** at the same time as the Annual Compliance Report is published. The approval holder must continue to publish the Annual Compliance Report each year until such time as agreed to in writing by the **Minister**.	Complaint	a) Reconciliation of actual disturbance and removal of suitable Plains Death Adder habitat (in hectares) on the project area against the disturbance and removal limits specified in condition 2 is provided in Section 1.3 of this report. b) Progress against the Rehabilitation Acceptance Criteria is detailed in Appendix A of this report. The Annual Compliance Report is available on Jemena's Northern Gas Pipeline Website: https://jemena.com.au/pipelines/northern-gas-pipeline

10	The approval holder must report any potential or actual contravention of the conditions of this approval to the **Department** in writing within two (2) days of the approval holder becoming aware of a contravention.	Not applicable	There were no contravention to the conditions of this approval till date.
11	Upon the written direction of the **Minister**, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The approval holder must not commence the audit until the **Minister** approves the independent auditor and audit criteria in writing. The audit report must address the criteria to the satisfaction of the **Minister**.	Not applicable	This did not occur during the reporting period.
12	The approval holder may choose to revise the **Procedure** or management plan approved by the **Minister** under conditions 3 and 5 without submitting it for approval under section 143A of the **EPBC Act,** if the taking of the action in accordance with the revised **Procedure** or management plan would not be likely to have a **new or increased impact**. If the approval holder makes this choice they must: a) notify the **Department** in writing that the approved **Procedure** or management plan has been revised and provide the **Department**, at least four weeks before implementing the revised **Procedure** or management plan, with: i. an electronic copy of the revised **Procedure** or management plan; ii. an explanation of the differences between the revised **Procedure** or management plan and the approved **Procedure** or management plan; and the reasons the approval holder considers that the taking of the action in accordance with the revised **Procedure** or management plan would not be likely to have a **new or increased impact**.	Not applicable	This did not occur during the reporting period.

12A	The approval holder may revoke its choice under condition 12 at any time by notice to the **Department**. If the approval holder revokes the choice to implement the revised **Procedure** or management plan, without approval under section 143A of the **EPBC Act**, the **Procedure** or management plan approved by the **Minister** must be implemented.	Not applicable	This did not occur during the reporting period.
12B	If the **Minister** gives a notice to the approval holder that the **Minister** is satisfied that the taking of the action in accordance with the revised **Procedure** or management plan would be likely to have a **new or increased impact**, then: a) condition 12 does not apply, or ceases to apply, in relation to the revised **Procedure** or management plan; and b) the approval holder must implement the **Procedure** or management plan approved by the **Minister**. To avoid any doubt, this condition does not affect any operation of conditions 12 and 12A in the period before the day the notice is given. At the time of giving the notice, the Minister may also notify the approval holder that for a specified period of time that condition 12 does not apply for the Procedure or management plan required under the approval.	Not applicable	This did not occur during the reporting period.
13	Conditions 12, 12A and 128 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the approval holder to submit a revised **Procedure** or management plan to the **Minister** for approval.	Not applicable	This did not occur during the reporting period.
14	If, at any time after five (5) years from the date of this approval, the approval holder has not **commenced** the action, then the approval holder must not **commence** the action without the written agreement of the **Minister**.	Not applicable	Date of commencement of the Project was 20 May 2017. This was communicated to the Department on 29 May 2017. Refer to Appendix B of this report.

15	Unless otherwise agreed to in writing by the **Minister**, the approval holder must publish the **Procedure** and Rehabilitation Management Plan on its website. The **Procedure** and Rehabilitation Management Plan must be published on the website within one (1) month of being approved by the **Minister** or being submitted under condition 12. The published **Procedure** and Rehabilitation Management Plan must remain on the website for the lifetime of the approval unless otherwise agreed to in writing by the **Minister**.	Compliant	The approved rehabilitation management plan has been published on Jemena's Northern Gas Pipeline Website: https://jemena.com.au/pipelines/northern-gas-pipeline

1.3 PLAINS DEATH ADDER HABITAT DISTURBANCE AND REMOVAL

Table 2 below demonstrates the currently reconciled areas of suitable Plains Death Adder habitat disturbed and removed during the reporting period and since Project Commencement. To date, these are within the permitted thresholds of this EPBC decision.

Please note that the removal of Plains Death Adder habitat was associated with the construction for the following:

- one mainline valve; and
- three cathodic protection stations.

During this reporting period (20th May 2022 to 19th May 2023), there was no further Plains Death Adder habitat disturbed or removed.

Table 2: Plains Death Adder disturbed and removed habitat

	Maximum Permitted Quantity[1]	Previously Reported Reconciled Quantity	Additional Reconciled Quantity for Current Reporting Period	Total Reconciled Quantity Since Project Commencement
Plains Death Adder Habitat Area Disturbed	791 ha	692 ha	0 ha	692 ha
Plains Death Adder Habitat Area Removed	36 ha	4.8 ha	0 ha	4.8 ha

Note 1: *Maximum limit as set out in EPBC Decision 2015/7569*

2 APPENDICES

2.1 APPENDIX A – TRANSITIONAL REHABILITATION MONITORING REPORT - 2023

JEMENA

NORTHERN GAS PIPELINE

TRANSITIONAL REHABILITATION ASSESSMENT

REPORT 2023

Report prepared for Jemena

June 2023

Report prepared by:

Low Ecological Services P/L

Low Ecological Services P/L

PO Box 3130, Alice Springs, NT 0871

Ph: (08) 89 555 222

Email: lowecol@lowecol.com.au

Web: www.lowecol.com.au

DISCLAIMER

This document has been prepared by Low Ecological Services (LES) for Jemena. LES has prepared this document using the skill and care expected from professional scientists to provide factual and technical information and reasonable solutions to identified risks. It does not constitute legal advice.

DOCUMENT CONTROL

Approvals	Name	Signature	Date
Prepared by:	Glenn Stuckey Charlotte Taunton		16/06/2023
Approved by:	Bill Low		29/7/2023

REVISION DETAILS

Date	Revision	Author/Reviewer	Company	Comments
17/06/2023	V1 (Draft)	Glenn Stuckey Charlotte Taunton	Low Ecological Services	Initial Draft
22/6/23	V!	Reviewed by Rahul Dorairaj	Jemena	Review, minor comments
15/7/23	V2	Glenn Stuckey	Low Ecological Services	Revise
28/7/23	V2	Bill Low	Low Ecological Services	Review
1/8/23	V2	Jessie Longmiur, Bill Low	Low Ecological Services	Layout and Formatting corrections

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EXECUTIVE SUMMARY

The Northern Gas Pipeline (NGP) is a 622 km buried gas pipeline linking existing gas pipelines in the Northern Territory (NT) and Queensland (Qld). The NGP is currently in the transitional rehabilitation phase which involves returning disturbed areas to a stable, non-polluting landform, the return of native species and the control of weed species. The transitional rehabilitation phase monitors the progress of rehabilitation ensuring that it is transitioning towards final rehabilitation. Meeting the transitional rehabilitation criteria is the responsibility of Jemena. Monitoring will be conducted annually for the first five years following completion of construction (or until the transitional rehabilitation criteria are met). This 2023 document reports on year 4 of the 5 year transitional rehabilitation phase and is the fourth transitional rehabilitation assessment of the NGP project area.

The assessment found the area disturbed by the pipeline construction is generally rehabilitating well. The majority of the rehabilitated area along the pipeline easement meets the criteria designated in the Rehabilitation Management Plan (RMP) for this transitional phase of the rehabilitation process. There are, however, a number of instances where the pipeline right of way and easement (ROW) did not meet the criteria. Specifically, the occurrence of unstable landforms, weed incursion and to a lesser extent, insufficient native ground cover revegetation.

Land stability issues predominately comprise localised erosion issues, with some compromised berms and a small number of subsidence issues. Where issues are occurring, they are predominately moderate or minor, however, some issues have advanced to a significant level or are likely to advance to a significant issue if not remediated.

Weed incursions of both declared and non-declared weeds are low along the ROW. In most instances, weeds are well established on adjacent land and are spreading into the pipeline easement. They typically occur as low density and sporadic populations with some higher density populations associated with riparian areas and cattle disturbance. The exception to this is high density and increasing populations of non-declared *Aerva javanica* (Kapok Bush) spreading from the eastern most 40 km of the ROW into adjacent land.

Revegetation along the ROW is typically in good condition with good or moderate vegetation cover. Just 4 km of the 622 km ROW was considered to have poor revegetation requiring remediation.

Remediation of these issues is needed to fully meet the criteria and successfully maintain the transitional rehabilitation at the standard required to ensure that it is transitioning towards final and complete rehabilitation.

Quality of habitat for the threatened Plains Death Adder found between approximately KP 355 and KP 561 of the ROW, is reflected by the revegetation scores through this area which show revegetation is good or excellent and habitat for the Plains Death Adder appears to be the same, but with cracks in the clay soils perhaps not quite so pronounced as in the adjacent clay soils.

1. INTRODUCTION

1.1. Background

The Northern Gas Pipeline (NGP) is a 622 km buried gas pipeline linking existing gas pipelines in the Northern Territory (NT) and Queensland (Qld). Construction of the pipeline commenced on 20 May 2017, with Jemena taking control of the site from the construction contractors in June 2018, and the pipeline becoming operational on 3rd January 2019. The project area has since been assessed for defects to land surface such as erosion and identified defects rectified.

Approval for the NGP was dependent on the development and implementation of a Rehabilitation Management Plan (RMP) that incorporated the requirements of the three interested jurisdictions – NT, QLD, and the Commonwealth. Of particular interest to the Commonwealth was the restoration of habitat for the threatened Plains Death Adder found between approximately KP 355 and KP 561.

The RMP defined three phases to rehabilitation:

- **Reinstatement**: The process of bulk earthworks and structural replacement of pre-existing conditions of a site (i.e., backfilling of trench, reinstating soil surface topography including scouring or ripping, watercourse lines, culverts, fences and gates and other landscape features). It also includes placing cleared vegetation across disturbed areas. Reinstatement occurs during the construction phase and is the responsibility of the Construction Contractor.
- **Transitional rehabilitation**: The process of returning disturbed areas to a stable, non-polluting landform, the return of native species and the control of weed species. It differs from the reinstatement phase in that it generally does not involve bulk earthworks, but instead monitors the progress of rehabilitation ensuring that it is transitioning towards final rehabilitation, where an issue is found it is to be rectified. Transitional rehabilitation monitoring will focus on areas where failure risk is high. These include erosion at watercourse crossings; weeds at construction weed hygiene locations and preventing any weed incursion.
- **Rehabilitation**: The process of returning a site's structural habitat complexity, and ecosystem processes and services to that of the pre-existing conditions at the site or an analogue site.

The NGP is currently in the transitional rehabilitation phase. Meeting the transitional rehabilitation criteria is the responsibility of Jemena. Monitoring will be conducted annually for the first five years following completion of construction (or until the transitional rehabilitation criteria are met).

The first transitional rehabilitation assessment was undertaken by EcOz Environmental Consultants in January 2020 following below average rainfall at the Tennant Creek (western) end of the pipeline in the 2018-19 summer (EcoOz 2020). This first assessment focused on land stability and revegetation. The second transitional rehabilitation assessment was undertaken by Low Ecological Services in 2021 and focused on land stability, revegetation, and weeds (LES 2021). The third transitional rehabilitation assessment was undertaken by Jemena and focused on land stability, revegetation, and weeds (Jemena 2022). The current and fourth transitional rehabilitation assessment was undertaken by Low Ecological Services with a focus on land stability, revegetation, and weeds.

1.2. Scope

The scope of this report is to assess the current status of transitional rehabilitation across the NGP project area. In this assessment, the focus is on land stability, revegetation, and weeds with reference

to the transitional rehabilitation criteria, as discussed in Section 5 of this report. In areas where the criteria are not met, remediation recommendations are provided.

2. EXISTING ENVIRONEMENT

2.1. Rainfall

The NGP project area is in an arid climate characterised by low (< 380

mm/year on average) and highly variable rainfall. Rainfall affects rehabilitation through plant recruitment and erosional processes. The rainfall pattern across the project area is driven by monsoonal or cyclonic events to the north resulting in higher rainfalls in summer. Over the last year, La Nina has also affected rainfall in the area with a significant increase during the 2022-2023 summer period in comparison to previous years. Summer rainfall in 2022-2023 was 100-200mm higher than rainfall experienced in the particularly wet 2019-2020 summer period. As a result, the large amount of rain experienced in the first quarter of 2023 at Tennant Creek (550mm), Camooweal (578mm) and Mount Isa (430mm) has increased revegetation along the pipeline compared to the previous survey in 2021 (BoM 2023). This rainfall has also exacerbated erosion issues and assisted in the spread and proliferation of weed species along riparian corridors.

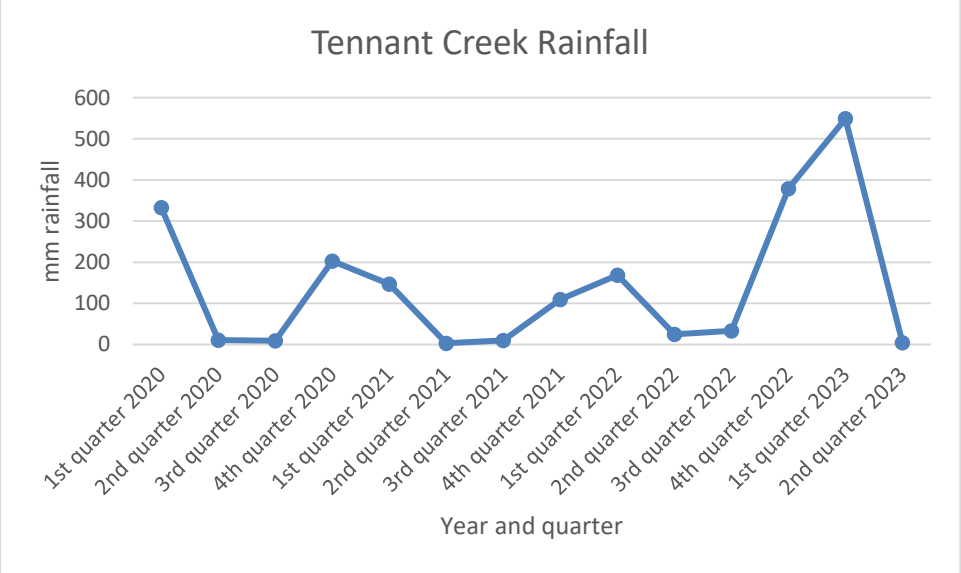


Figure 1. Tennant creek rainfall

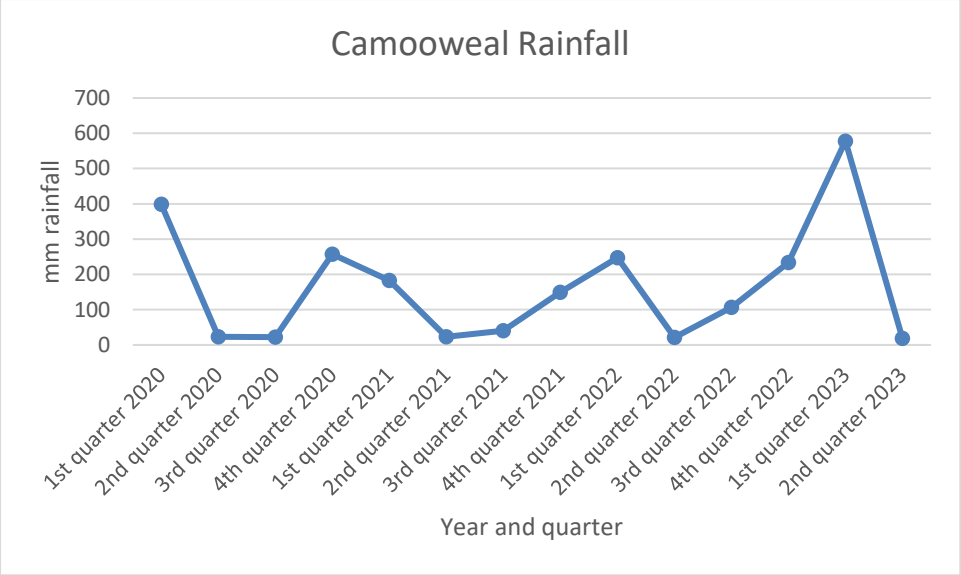


Figure 2. Camooweal rainfall

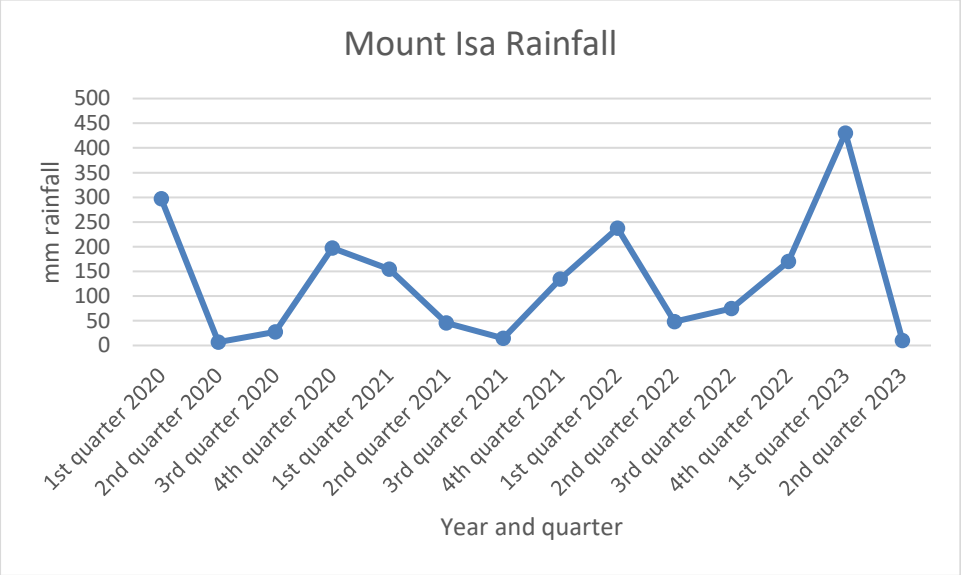


Figure 3. Mount Isa rainfall

2.2. Land Systems

The pipeline right of way (ROW) for the northern Gas pipeline is wholly contained within the land systems of the Barkley region, shown below in Figure 4. Land system mapping collates data on climate, geology, landform, soil, and native vegetation. The following table describes each of the land systems traversed by the ROW.

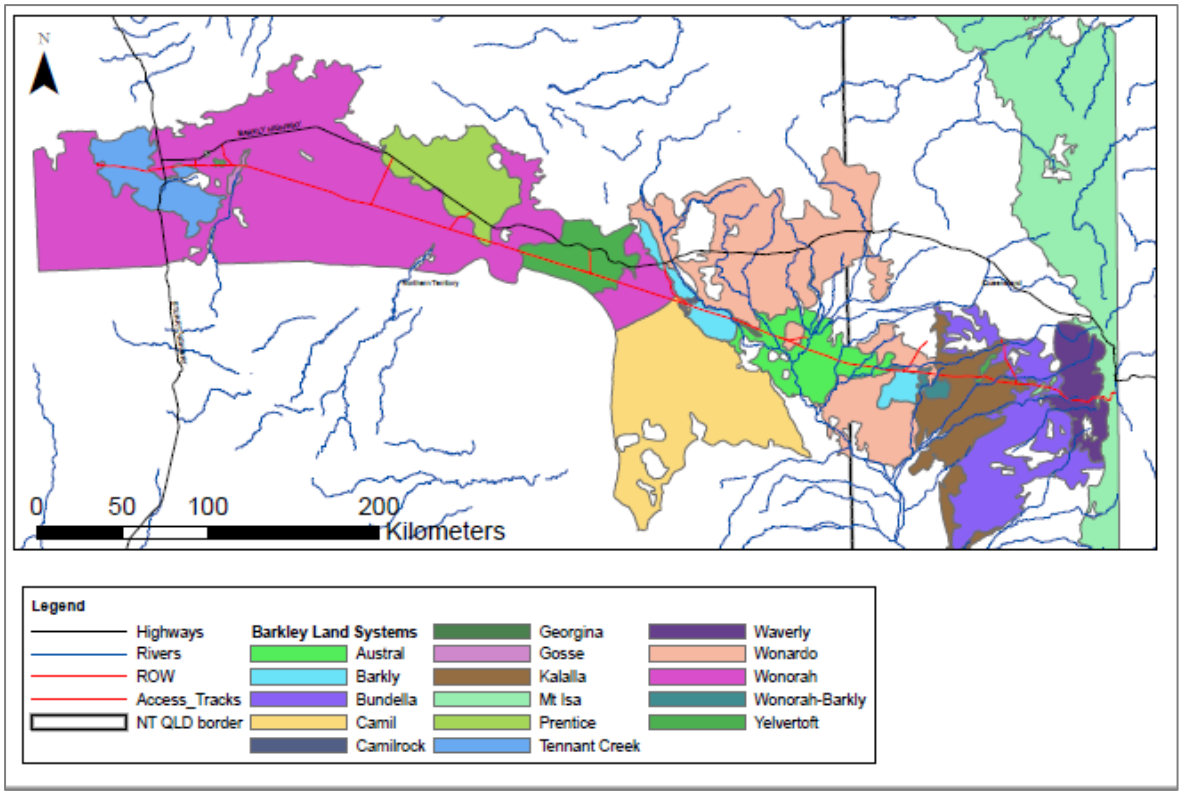


Figure 4. Land systems of the Barkley region

Land System	Description
Mt Isa	This lightly timbered, rugged, hilly country with North-South ridges extend from the Southeast corner of the area to about 193Km North and West of lawn Hill Homestead.
Wonorah	Gently undulating country with deep lateritic soil and low scrubby vegetation. There is one large area in the south-west and numerous scattered areas in the central and eastern portions.
Prentice	Gently undulating country carrying scrubby vegetation and occurring between Wonorah and Frewina on the Barkly Highway
Tennant Creek	An area of lightly timbered flat-topped hills and broad valleys in the Southwest corner of the region.
Gosse	A number of small, scattered areas of sandy, seasonally flooded flats in the Southwest "'desert" portion of the region
Yelvertoft	Numerous widely separated areas of undulating timbered country in the S. half of the region with gravelly and stony lateritic soils.
Wonardo	Irregular areas of gently undulating to nearly flat Mitchell grass plains confined to the Georgina valley in the SE. portion of the region

Barkly	Very gently undulating to nearly flat Mitchell grass plains covering much of the area commonly referred to as the Barkly Tableland
Camil	This gently undulating country with spinifex and low shrubs has leached limestone soils; it occurs as one large and a number of small areas West of Lake Nash Homestead
Camilrock	Several small areas of gently undulating country with numerous limestone outcrops, and carrying spinifex and low shrubs to the West and Northwest of Lake Nash Homestead
Waverly	A broken strip of hilly lightly timbered granite country with mostly steep to moderate slopes which extends from the SE. corner of the region to the North of Mt. Isa.
Austral	A number of small areas of gently undulating Mitchell grass plains near Brunette Downs homestead in the Barkley Basin and between Austral Downs and Carandotta Homesteads in the Georgina Basin
Bundella	Undulating, sandy, low-scrub country extending from Barkly Downs Homestead SB. and S. towards Admore Homestead.
Wonorah-Barkly	Gently undulating country with deep lateritic soil and low scrubby vegetation. There is one large area in the south-west and numerous scattered areas in the central and eastern portions.
Kalalla	Flat to very gently undulating plains with occasional internal drainage depression. Slopes <2%.
Georgina	Flat to gently undulating plains and alluvial plains. Slopes 0-4% and mainly < 2%.

3. FIELD SURVEY METHODS

The ROW was traversed from west to east in 4WD vehicles. The survey was conducted over 7 days from the 2nd of June to the 10th of June 2023. KP locations along the pipeline are the distance in km from the western end at the gate to the gas plant on the NT Gas pipeline. Key locations inspected included the ROW, construction areas, waterway crossings, areas of works conducted since the completion of the pipeline and previous photo points. Locations identified in previous transitional rehabilitation assessments as not meeting the criteria were also assessed. Observations, photos and tracks were recorded on a tablet using Avensa mapping application and GPS devices and were subsequently analysed using ArcGIS mapping tools..

The assessment focused on three key rehabilitation factors; weed infestation, land stability and revegetation. Assessment methodologies for each rehabilitation factor are outlined below.

3.1. Weeds

Identified weed species and locations were recorded with a description of density within the project area and the adjacent land. Weeds recorded were both declared species and non-declared species. Photos were taken to demonstrate density for declared species. All previously recorded weed locations were assessed and compared where relevant.

3.2. Land Stability

Land stability issues, such as erosion, subsidence, and compromised berms, were recorded with a description of the instability that had occurred as well as remediation recommendations.

All issues were given a score between 1-5 reflecting the severity of the issue:

1. significant issues that require remediation
2. moderate issues that could become significant and require remediation
3. moderate issues that require remediation
4. minor issues that require monitoring
5. very minor issues that require monitoring.

Previously recorded land stability issues were assessed and compared where relevant.

3.3. Revegetation

Revegetation condition was recorded along the entirety of the pipeline easement with a description of the density of ground cover, shrub cover, and canopy cover. The assessment focused on the level of vegetation cover to identify the efficacy of revegetation methods, particularly in assisting land stability and ensuring suitable native species were regenerating. The similarity of revegetation species composition to surrounding remnant vegetation and the relevant land systems was broadly considered however species compositions were not assessed in detail.

All areas were given a score between 1-5 reflecting the state of revegetation:

1. no revegetation evident in any stratum
2. vegetation cover is sparse and limited to one or two stratum, is in poor condition and/or has weed infestations

3. moderate vegetation cover and condition in either ground or shrub stratum, may include sparse vegetation in other relevant stratum, species composition broadly suitable to relevant land system
4. moderate to dense vegetation cover in two or more stratum, species composition suitable to relevant land system
5. excellent vegetation cover in all relevant stratum, condition, and species composition comparable to adjacent vegetation and relevant land system.

All previously recorded revegetation locations were assessed and compared where relevant.

4. FIELD SURVEY RESULTS

4.1. Weeds

The ROW is relatively free of weeds in the majority of areas. In most instances, where weeds occur, they are well established on adjacent land and are spreading into the pipeline easement. They typically occur as low density and sporadic populations with some higher density populations associated with riparian areas and cattle disturbance. This is predominantly on pastoral lands within the Prentice, Barkley, Austral and Georgina Land Systems. The exception to this is high density and extensive populations of *Aerva javanica* (Kapok Bush) within the last 40 km of the pipeline easement, in the Waverly and Mt Isa Land Systems. In these areas, Kapok Bush appears to be spreading along the pipeline easement and into adjacent vegetation. The transitional rehabilitation actions outlined in the RMP include “No weed incursion or spread within the NGP footprint” as a performance indicator for transitional rehabilitation (Table 4-2).

Table 1 includes the introduced flora species observed during the survey, their weed classification status in the NT and QLD and whether they are classified as a Weed of National Significance (WONS).

Table 1: Introduced flora species observed during the survey.

Common Name	Scientific Name	NT Weed Category	Qld Weed Category	WONS
Mesquite	*Prosopsis sp.*	Class A and Class C	Prohibited and Restricted	Yes
Hyptis/Horehound	*Hyptis suaveolens*	Class B and Class C	Not Listed	-
Noogoora Burr	*Xanthium strumarium*	Class B and Class C	Other	-
Farnesiana	*Vachellia farnesiana*	Not Declared	Not Listed	-
Buffel Grass	*Cenchrus ciliaris*	Not Declared	Not Listed	-
Kapok Bush	*Aerva javanica*	Not Declared	Not Listed	-
Paddy Melon	*Cucumis myriocarpus*	Not Declared	Not Listed	-
Cattle Bush	*Trichodesma zeylanicum*	Not Declared	Not Listed	-
Spiked Malvastrum	*Malvastrum americanum*	Not Declared	Not Listed	-

Records of declared weeds (NT), listed weeds (QLD) and WONS were very limited within the pipeline easement. *Poposis sp*. (Mesquite) was recorded at two locations; KP 7.8 on adjacent land, and within the ROW and railway corridor at KP 15.6. These were sporadic occurrences, not associated with larger populations. Mesquite was the only WONS species recorded.

Xanthium strumarium (Noogoora Burr) was recorded in 21 separate locations, all within disturbed pastoral land within the Barkley, Austral, Kalalla and Georgina Land Systems. Dense populations were restricted to riparian corridors with high cattle crossing activity. Sporadic and sparse populations associated with cattle disturbance and tracks were recorded across pastoral grasslands. Noogoora Burr density is focused from KP 367.3 to KP 370.1, KP 382.9 to KP 393.1, KP 471.8 to KP 479.5 and one small patch at KP 544.7.

Hyptis suaveolens (Hyptis/Horehound) was found to be spreading into the pipeline easement from adjacent land at three locations; KP 62.7, KP 63.6 and KP 87.2. These occurrences were moderate to low density populations.

Populations of non declared and non listed weed species were uncommon within the pipeline easement, predominately located in two high density areas, around KP 230 in the Prentice Land System and from KP 580 to KP 622 within the Waverly and Mt Isa Land Systems. Additional records were of low density, sporadic populations.

Aerva javanica (Kapok Bush) was the most extensive weed found throughout the ROW, having spread from adjacent land at KP 224 and KP 226.9 to form moderate to dense populations within the ROW. In the eastern portion of the ROW, from KP 575.2 to the end of the pipeline, Kapok Bush was consistently recorded in moderate to high density populations spreading along the pipeline easement and into adjacent vegetation.

Vachellia farnesiana (Farnesiana) was found in sparse patches along the easement at KP 401.8, KP 415.3, KP 426.6, KP 475.5 and KP 509.9, having spread from adjacent land and now establishing within the easement.

Cenchrus ciliaris (Buffel Grass) has spread from adjacent land and begun to establish within the pipeline easement in small but dense patches at KP 211.3 and KP 237.7. *Cucumis myriocarpus* (Paddy melon) was found in small populations at KP 19.3 and KP 511.4. *Trichodesma zeylanicum* (Cattle Bush) was found in a small population at KP 233.5. *Malvastrum americanum* (Spiked Malvastrum) was only found in a small population at KP 403.3.

A map of the introduced flora species observed during the survey is presented in Figure 5 below.

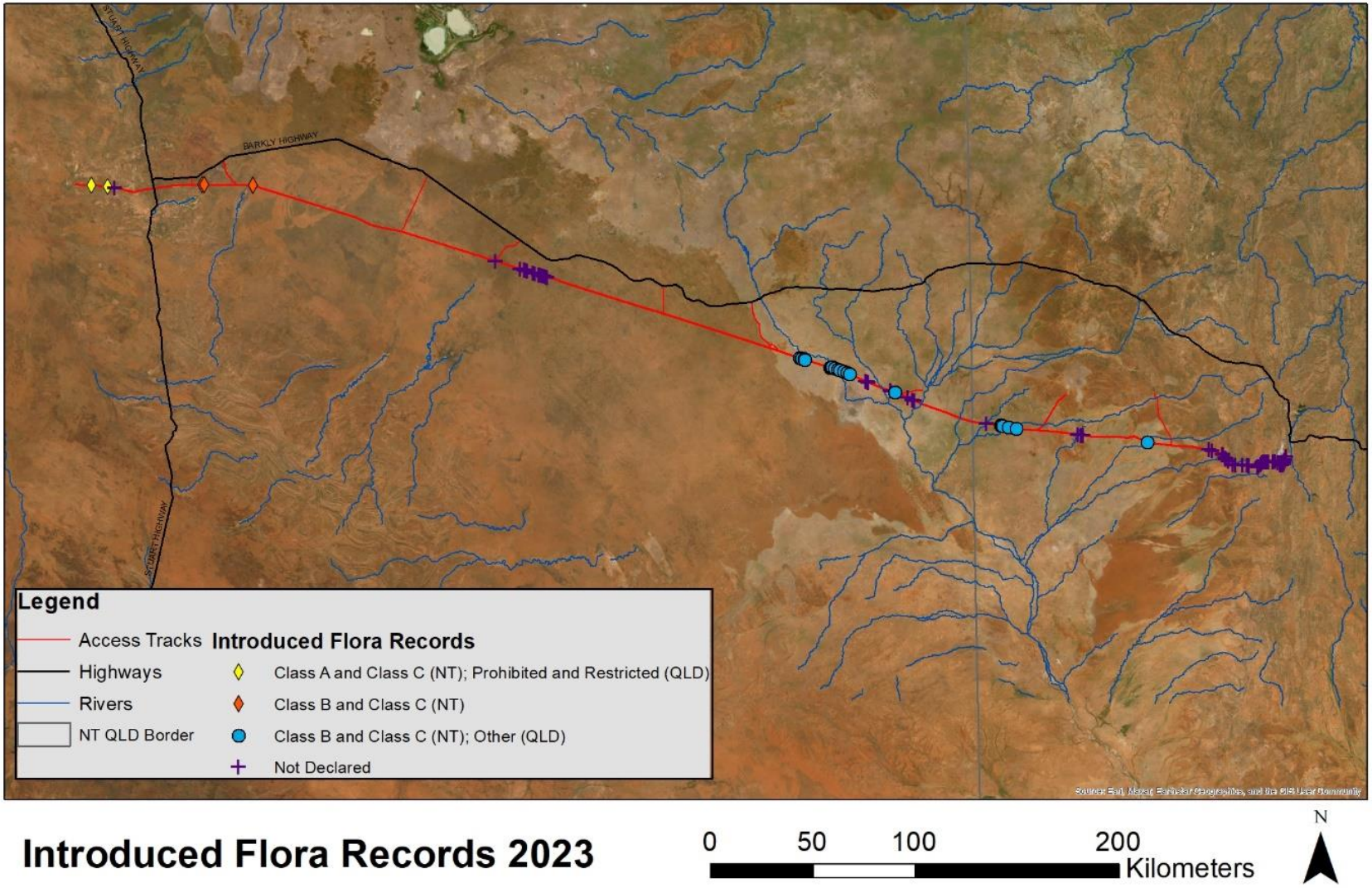


Figure 5. Map of introduced flora species observed during the survey, displayed by weed classification

Figure 6. Mesquite within Railway corridor and NGP easement at KP 15.6

Figure 7. A 50m stretch of dense Kapok Bush within the easement at KP 234.1

Figure 8 . Hyptis spreading from adjacent land into the easement at KP 62.7

Figure 9. A partially defoliated Farnesiana at KP 401.8.

4.2. Land Stability

4.2.1. Erosion

Over the extent of the ROW, erosion occurrences are quite low. Where erosion is occurring, it is predominately moderate or minor, however, some erosion occurrences have advanced to a significant level. Most of the erosion is confined to the access track within the ROW, with some effecting the revegetation area. The majority of erosion is rill erosion on hillslopes while some gully erosion is occurring along drainage lines. Cattle tracking along the access track and the pipeline has intensified erosion in some locations.

Erosion occurs sporadically across the entirety of the ROW however there are three areas of higher concentrations of erosion issues. These areas are from KP 1 to KP 98 within the Tennant Creek and Wonorah Land Systems, between KP 257 and KP 324 within the Yelvertoft and Wonorah Land Systems and between KP 600 and KP 622 within the Waverly and Mt Isa Land Systems.

There were 11 records of significant erosion classified as level 1, including rill and gully erosion ranging from 500 to 1200 mm in depth. Significant erosion issues were typically less than 100 m in extent however some occurrences were over 500 m with one instance extending for up to 1 km. 10 of the 11 significant issues were limited to the areas within KP 1 to KP 98 and KP 257 and KP 324.

Level 2 moderate/significant erosion issues were recorded in 29 locations and included a mix of rill and gully erosion. Instances ranged from 200 to 500 mm in depth, usually less than 200 m in extent. Most level 2 issues were limited to the areas within KP 1 to KP 98 and KP 257 and KP 324.

Level 3 moderate erosion issues were recorded in 78 instances. Most occurrences were rill erosion ranging from 100 to 300 mm in depth and extending from a very small, localised issue up to 200 m with some up 700 m in length.

Level 4 and level 5 minor and very minor erosion issues were recorded in 65 locations spread across the ROW. These issues were minor rill erosion up to 150 mm of small extent or minor cattle tracking.

All locations of erosion issues where remediation actions are recommended are presented in Figure 11.

Refer to Figure 11 for significant and moderate erosion locations. Refer Appendix 8 for summary table with locations and recommended actions.

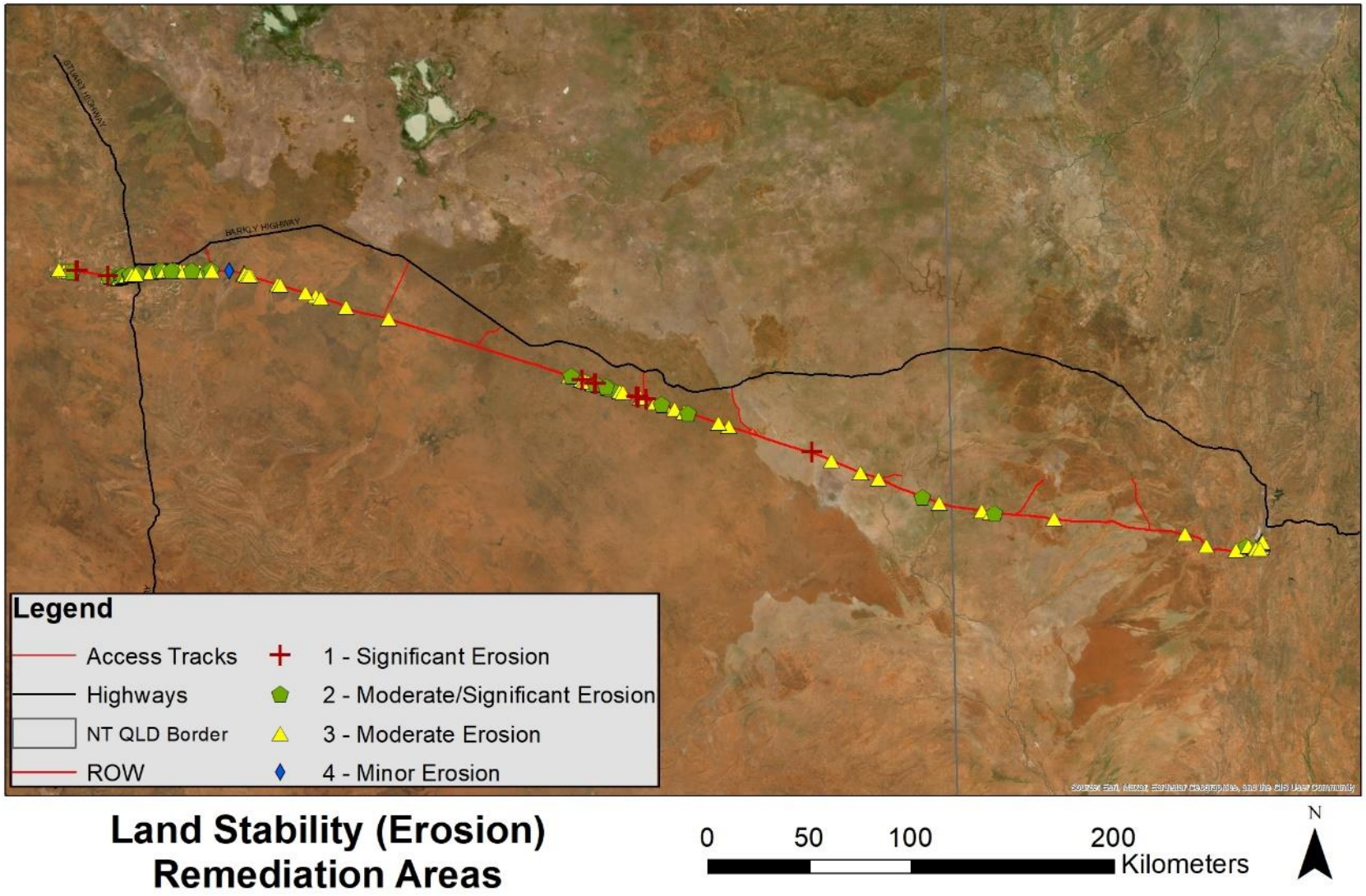


Figure 10. Map showing location of significant, moderate/ significant, moderate, and minor erosion

Figure 11. Significant erosion with over 700mm deep gully erosion KP 267.5

Figure 12. Moderate rill erosion at KP 45.9

Figure 13. Moderate gully erosion up to 300mm deep at KP 29.3

Figure 14. Significant erosion up to 1m deep at KP 298.5

Figure 15. Minor erosion across track and revegetation at KP 24.1

Figure 16. Significant rill erosion up to 500mm deep for approximately 200m at KP 272.6

4.2.2. Compromised Berms

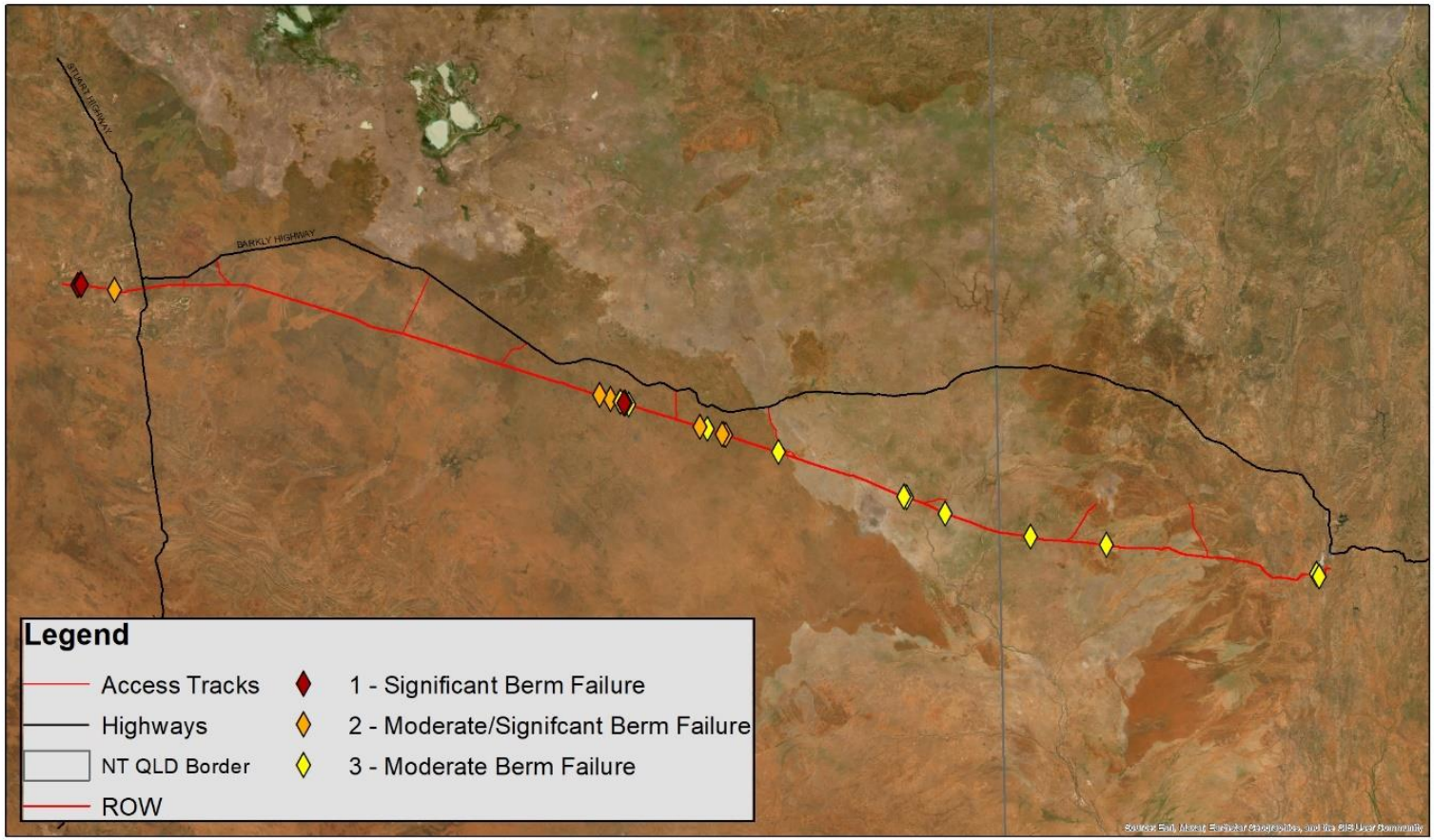
A significant number of berms have been compromised and are no longer serving their purpose. Damage was most often due to water erosion, resulting in erosion channels through the berms or the berms being completed washed out. There were several occurrences of water flowing around the ends of berms and back onto the pipeline ROW rather than diverting outwards into adjacent land. This was

often due to berms not extending far enough at edges of ROW. Cattle tracking has also caused erosion of berms in some instances.

A total of 28 berms across the ROW were considered compromised or ineffective. All compromised berms were assessed as either significant (four instances), moderate/significant (eight instances) or moderate (15 instances).

Many of the berms would be more effective if they extended beyond the disturbed area of the ROW easement to divert and disperse water out onto the adjacent undisturbed land. LES understands that due to constraints associated with heritage buffers at the time the berms were constructed, berms could not be constructed to extend outside the ROW. In places where the access track runs along the edge of the ROW, berms only extend to the edge of the ROW and do not divert the water flow beyond the track edge, but rather water flows around the end of each berm and continues channelling downslope along the track creating erosion.

The map in Figure 17 below shows the locations of observed compromised berms along the Northern Gas Pipeline. Refer Appendix 8 for summary table with locations and recommended actions.



Land Stability (Compromised Berms) Remediation Areas

0 50 100 200 Kilometers

N

Figure 17. Map of observed Compromised Berm locations.

Figure 18. Compromised berm resulting in moderate erosion at KP 25

Figure 19. Failed berm with significant erosion at KP 7.5

4.2.3. Subsidence

Subsidence issues were recorded at 19 locations along the ROW, all associated with water channelling directly along the pipeline trench. Most subsidence issues were considered significant (eight instances) or moderate (12), ranging from 500 mm to 1 m in depth. To prevent water channelling and eroding the pipeline trench reinstatement or construction of runoff diversion berms are recommended in most cases, with a few minor issues requiring monitoring.

The map in **Error! Reference source not found.**20 below shows the locations of observed subsidence a long the Northern Gas Pipeline, mostly in the western desert areas, but also in the steeper section near the eastern end of the pipeline. Refer Appendix 8 for summary table with locations and recommended actions.

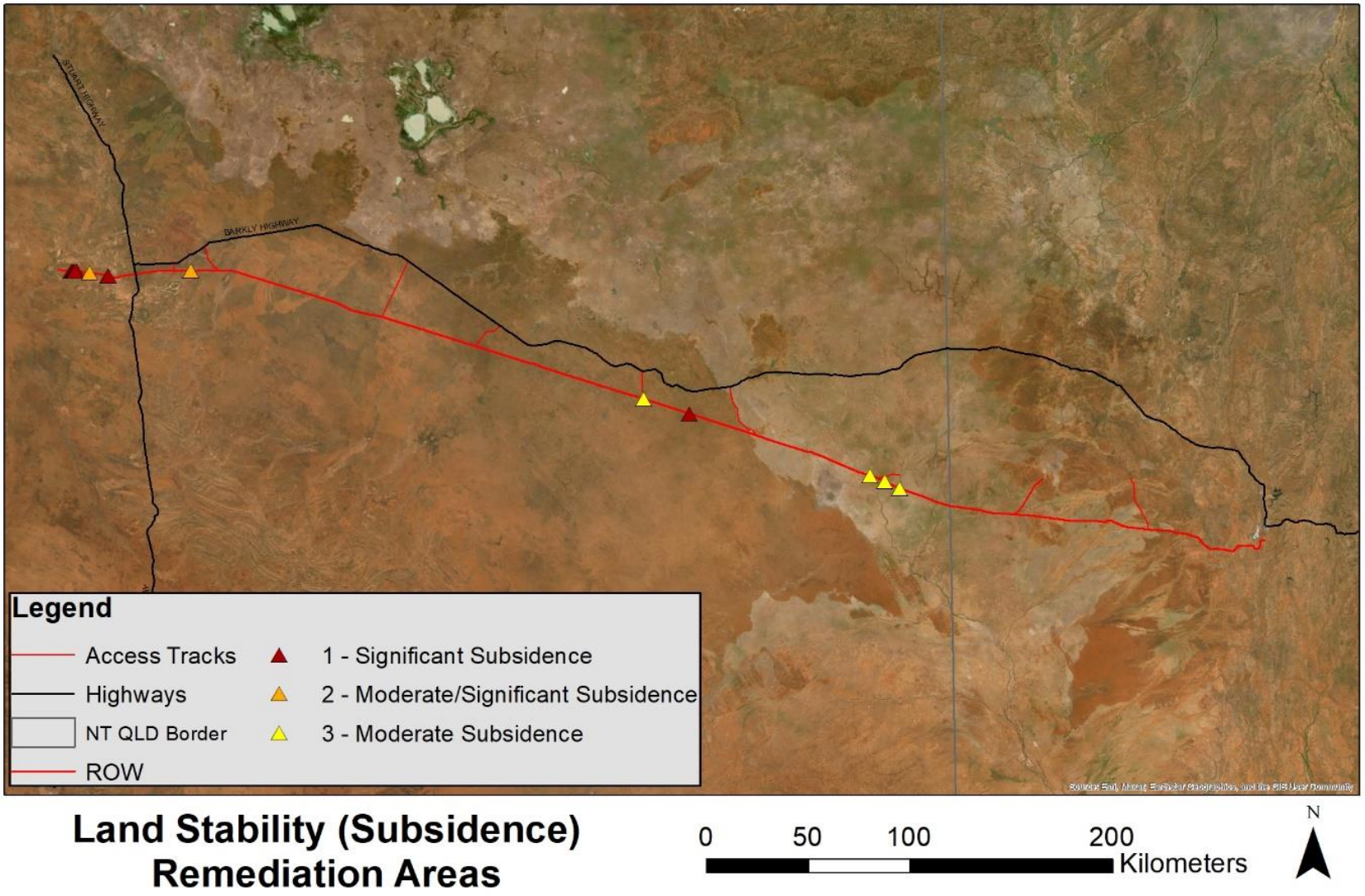


Figure 20. Map showing locations of observed subsidence.

Figure 21. Significant subsidence up to a metre deep at KP 25 where runoff follows the pipeline trench.

Figure 22. Minor erosion caused by cattle tracking KP 87.1

4.3. Revegetation

The pipeline traverses several different land systems contained within different IBRA bioregions. Across all land systems there is good revegetation and local plant species re-entry into theROW. Of the 622 km along the ROW, approximately 4 km were considered to have poor revegetation with a score of 2 and approximately 34 km were given a score of 3, indicating moderate revegetation. The remaining 584 km of the ROW were given a revegetation score of either 4 (good) or 5 (excellent).

The method of topsoil retention in revegetation of the ROW has been largely effective in generating good vegetation cover suitable to the relevant land system. In the desert dune fields and sand plains of the Wonorah and Yelvertoft land systems, revegetation is dominated by *Acacia lysiphloia* and *Acacia stipuligera.* These fast-growing species respond well to disturbance and have densely colonised the cleared ROW area. In these areas, canopy species are typically sparse and include *Corymbia Opaca* and *Eucalyptus victrix*. Across these desert soils Spinifex (*Triodia spp.)* dominated understory revegetation and is present along large sections of the pipeline. In the cracking clay soils of the Austral and Wonardo land systems, revegetation is slower with the dominant species Mitchell grass (*Astrebla pectinata*) is gradually re-entering the site in some areas. Flinders grass (*Iseilema vaginiflorum)* is also common in these areas. These pasture areas are either heavily grazed or used as tracks and disturbed by cattle, but species composition within the ROW reflects the adjacent pasture grasslands, having moderate ground cover of predominately annual pasture grasses and only sparse occurrences of Mitchell grass following the drought years of the late 2010s. Across the steeper slopes of the Bundella, Waverly and Mount Isa land systems, revegetation is dominated by *Eucalyptus brevifolia, Acacia spp.* and *Triodia spp.* and is rehabilitating well, despite some bare gravel patches with limited ground cover, highlighting a lack of topsoil. As noted in section 4.1, Kapok Bush occurs at high densities within the ROW in some of these areas

The majority of areas identified in LES 2021 as having bare or minimal vegetation are revegetating well and largely do not require attention. No areas were observed with a score of 1 with no revegetation. Three sections were scored 2 with sparse ground cover, no shrubs, and no canopy cover. These locations are in the eastern portion of the ROW between KP 594.1 and KP 597, KP 618.6 and KP 618.9 and KP 588.3 and KP 588.8. These areas are revegetating poorly and have ongoing erosion issues despite recent remediation undertaken by Jemena in some locations. These areas may be caused by the methods used in the redistribution of topsoil and vegetation following the initial construction phase. Further action may be required to ensure that these areas revegetate to the same standard as the rest of the site and meet the transitional rehabilitation criteria.

A hillslope area between KP 29.1 and KP 29.4 was given a score of 2 as it had poor revegetation and some moderate erosion. However, with some small remediation to provide alternative soil stabilisation in the area, the disturbed area would adhere to criteria outlined in the RMP as it already adheres to rest of the criteria i.e., the area has been appropriately re-profiled to contours consistent with the surrounding landform, surface drainage lines are re-established, and topsoil has been reinstated.

Throughout the ROW, cattle tracking and grazing through the revegetating areas is negatively impacting plant reestablishment. This is particularly notable in the cracking clay Mitchel grass plains where cattle tracks have inhibited Mitchell grass regrowth along the ROW and at some riparian corridors where cattle tracking has contributed to destabilisation.Where cattle have trampled berms protecting riparian areas, these berms should be restored on a regular basis.

Quality of habitat for the threatened Plains Death Adder found between approximately KP 355 and KP 561 of the ROW, is reflected by the revegetation scores through this area which show revegetation is good or excellent and habitat for the Plains Death Adder appears to be the same, but with cracks in the clay soils perhaps not quite so pronounced as in the adjacent clay soils . Revegetation was also reflective of surrounding vegetation, even where it was in early successional phase.

The map in **Error! Reference source not found.**24 below shows the conditions of revegetation along t he Northern Gas Pipeline.

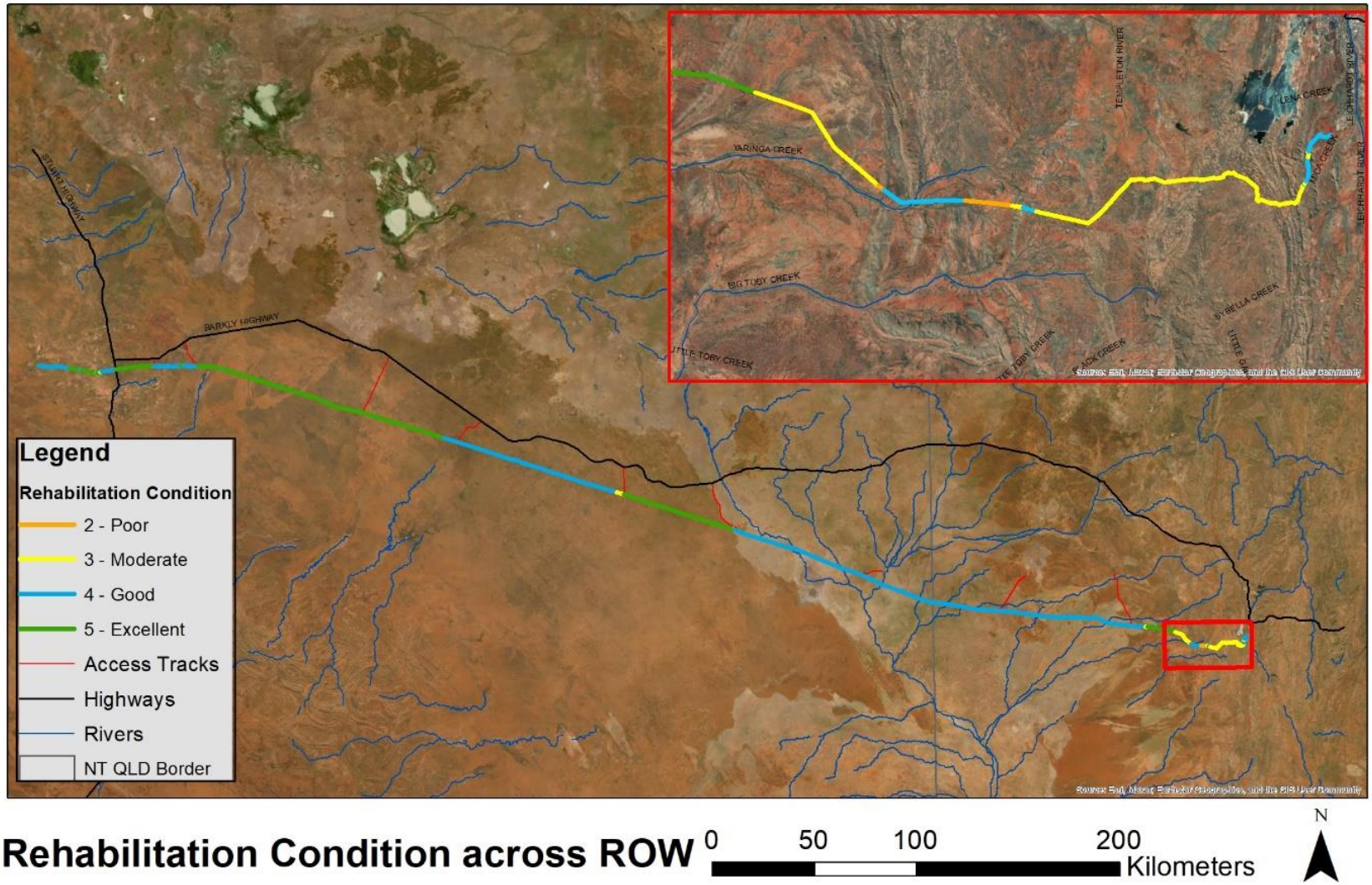


Figure 23. Map showing rehabilitation conditions along the pipeline.

Figure 24. Revegetation score of 2 - bare gravel, very sparse ground and shrub cover.

Figure 25.. Revegetation score of 3 – Good ground cover, sparse shrubs, no canopy

Figure 26. Revegetation score of 4 – Good ground and shrub cover

Figure 27. Revegetation score of 5 – Excellent revegetation

5. ASSESSMENT OF TRANSITIONAL COMPLETION CRITERIA

The following criteria designated in the RMP are used to assess the transitional rehabilitation status of disturbed areas.

Significantly disturbed areas that are no longer required for operational purposes, must be transitionally rehabilitated within 12 months (unless exceptional circumstance in the area to be rehabilitated (e.g. flood event) prevents this timeframe being met) and be maintained to meet the following acceptance criteria:

a) Disturbed areas are:
(i) a stable landform
(ii) re-profiled to contours consistent with the surrounding landform
b) surface drainage lines are re-established
c) top soil is reinstated in disturbed areas; and
d) either
(i) groundcover, that is not a declared pest species, is growing in disturbed areas; or
(ii) an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained in disturbed areas.

The transitional rehabilitation actions (Table 4-2) outlined in the rehabilitation management plan also include “No weed incursion or spread within the NGP footprint” as a performance indicator for transitional rehabilitation.

Table 2 summarises the results of the assessment of each transitional rehabilitation criteria. This table reports on year 4 of the 5 year transitional rehabilitation phase

Table 2: Assessment of each transitional rehabilitation criteria

Criteria	Conclusion/recommendations
Disturbed areas are a stable landform within 12 months and maintained.	Incomplete. There is a significant portion, exceeding 95%, which meets this criterion. However, there were limited areas of erosion, subsidence and ineffective and deteriorating berms observed at various locations throughout the ROW. These conditions are predominately minor however management action is required to achieve a stable landform along the pipeline in areas identified as having significant or significant/moderate land stability issues. This is further outlined in section 3.2, recommendations provided in section 6.
Disturbed areas are re-profiled to contours consistent with the surrounding landform	Complete. No exceptions noted.
Surface drainage lines are re-established within 12 months	Re-establishment completed during the projects’ reinstatement phase. This criteria has been met, with no exceptions noted
Top soil is reinstated in disturbed areas within 12 months	This was undertaken during the projects’ reinstatement phase. It is noted that areas with no revegetation may be a result of variable topsoil respreading during the reinstatement phase.
Native groundcover, that is not a declared pest species, is growing	Overall the 622 km long ROW for the Northern Gas Pipeline is revegetating well and the majority of it meets the transitional

in disturbed areas, or an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained within 12 months	rehabilitation criteria. To fully address this criteria, further intervention is needed to address the limited areas currently lacking adequate ground cover. Occurrences of declared pest species within the ROW are quite limited and are predominately a result of incursion from adjacent land. There are some instances of declared weed species within the ROW which require management, including Noogoora Burr, Mesquite and Horehound. To be effective, cooperative control with the adjacent landholder would be required and control should take place before seed set and focus on upstream or upwind weed populations. The largest weed infestations within the ROW occur in the eastern most 40 km. Dense and moderately dense populations of Kapok Bush have established within the ROW in large areas. Kapok Bush is not a declared weed species however management is recommended to remediate spread along the ROW and into adjacent land. Refer section 6 for recommendations.

6. CONCLUSION AND RECOMMENDATIONS

The transitional rehabilitation survey of the Northern Gas Pipeline undertaken in June 2023 found the disturbed areas are present in less than about 5% of the pipeline and the ROW is generally rehabilitating well. The majority of the construction disturbance along the pipeline easement meets the criteria designated in the RMP for this transitional phase of the rehabilitation process.

Higher than average rainfall in the 2022-2023 summer period has significantly improved revegetation within the ROW. However in a few locations the ROW did not meet the criteria, specifically the occurrence of unstable landforms, weed incursion and to a lesser extent, insufficient native ground cover revegetation.

Intervention is needed to fully meet the criteria and successfully maintain the transitional rehabilitation at the standard required to ensure that it is transitioning towards final and complete rehabilitation. The following recommendations are provided to remediate these issues such that Jemena can meet all criteria by the end of the five-year transitional rehabilitation phase of the project. It is recommended that remediation actions are completed prior to the final transitional rehabilitation survey in 2024.

6.1. Weeds

Weed occurrences were typically low within the ROW and in the majority of instances were a result of incursion from adjacent properties. This was particularly the case for declared weeds, which should be managed as a priority. Declared weed species identified include Noogoora Burr, Mesquite and Horehound. Jemena should consider working with adjacent landholders to control weeds immediately adjacent to the ROW. A collaborative approach to long term weed control would be particularly effective for Noogoora Burr within disturbed pastoral land in the Barkley, Austral, Kalalla and Georgina Land Systems. Noogoora Burr density is focused from KP 367.3 to KP 370.1, KP 382.9 to KP 393.1, KP 471.8 to KP 479.5 and one small patch at KP 544.7.

Management of non-declared weeds should focus on high density populations of Kapok Bush around KP 230 in the Prentice Land System and from KP 580 to KP 622 within the Waverly and Mt Isa Land Systems. This infestation in the eastern most 40 km of the ROW occurs in high and moderate densities in the ROW and is spreading within the ROW and into adjacent land.

Specific locations of weed occurrences requiring management are provided in section 4.1 and relevant data provided to Jemena for management purposes. The following actions are recommended to meet the transitional rehabilitation criteria:

- Prioritise management of all instances of declared weeds
- consider working with adjacent landholders for long term managemrnt of weed incursions into the ROW
- management actions for non-declared weeds should focus on upstream or upwind areas of high infestation, particularly Kapok Bush in the eastern portion of the ROW. Control should occur before plants set seed.
- future monitoring should reinspect all weed records to ensure control has been effective and weeds have not spread.

6.2. Land Stability

Land stability issues across the ROW are few, predominately consisting of erosion issues, with some compromised berms and small number of subsidence issues. Where level 1 and 2 issues are occurring, they are predominately moderate or minor, however, some issues have advanced to a significant level or are likely to advance to a significant issue if not remediated.

LES understands that some land stability issues may occur within culturally sensitive areas and can only be rectified with approval from traditional owners.

Specific locations of land stability issues, severity score and recommended actions are provided in an appendix in Section 8. Relevant data has been provided to Jemena for management purposes.

The following actions are recommended to meet the transitional rehabilitation criteria:

- Remediate all level 1 and 2 land stability issues as a priority
- remediate level 3 moderate land stability issues
- monitor level 4 and 5 minor land stability issues
- construct additional berms as required upslope of areas where erosion or subsidence is developing due to water channelling along ROW/track.
- where appropriate, back fill subsidence to ground level
- where appropriate, fill and smooth erosion occurrences to prevent further advancement and encourage vegetation to establish. Eroded sediment from downslope could be used where available
- repair compromised berms, with some requiring extension to effectively remediate erosion issues.

6.3. Groundcover/Revegetation

Revegetation within the ROW is typically good and the vast majority meets the transitional rehabilitation criteria. Three sections were scored 2, indicating revegetation was present however native ground cover

was sparse. These locations are in the eastern portion of the ROW between KP 594.1 and KP 597, KP 618.6 and KP 618.9 and KP 588.3 and KP 588.8. Management of these areas is recommended to encourage native ground cover o establish or flourish and weed incursions are controlled, particularly Kapok Bush. In some instances, retention of topsoil may be difficult on steep hillslopes and an alternative soil stabilisation methodology may be an appropriate approach.

Quality of habitat for the threatened Plains Death Adder found between approximately KP 355 and KP 561 of the ROW, is reflected by the revegetation scores through this area which show revegetation is good or excellent and habitat for the Plains Death Adder appears to be the same. Cracks in the clay soils are perhaps not quite so pronounced as in the adjacent clay soils, but given the undisturbed subsurface clays have cracking “memory”, the cracks will work themselves to the surface of the disturbed soils following a few wetting and drying cycles. Revegetation was also reflective of surrounding vegetation, even where it was in early successional phase.

7. REFERENCES

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8. APPENDICES

8.1. Land Stability and Weeds of National Significance (WONS) Observation Locations and Recommended Actions Table

This table includes all observations of erosion, compromised berms, pipeline trench subsidence and WONS along the 622 km NGP pipeline. The Observations in the table are sorted from West to East along the pipeline.

Definitions of Recommended Actions:

Monitor: Revisit and assess condition of observed locations in future surveys
Repair: Reinstate berm to intended or improved design.
Smooth: Even out ground surface. Could be achieved by filling with washed out top soil from downslope.
Extend: Increase length of berms to extend beyond the ROW. Ensure berms discharge along contour.
Add: Construct additional berms up slope of vulnerable locations
Fill: Fill subsidence depression to ground level.
Wrap: Re-align berm to wrap around contour.
Raise: Increase height of berm.

Observation ID	Observation Category	KP	Culturally Sensitive Area	Severity Score	Recommended Action
476	Minor Erosion	0.2		5	Monitor minor erosion
477	Moderate Erosion	0.2		3	Install new Berm/s and address moderate erosion issues
478	Minor Subsidence	0.2		4	Monitor minor erosion
479	Minor Erosion	2.2		4	Monitor minor erosion
480	Minor Erosion	2.3		4	Monitor minor erosion
481	Minor Erosion	2.7		3	Install new Berm/s and address moderate erosion issues
408	Moderate Erosion	4		3	Install new Berm/s and address moderate erosion issues
409	Moderate Erosion	5.1		3	Install new Berm/s and address moderate erosion issues
410	Minor Erosion	5.5		4	Monitor minor erosion
411	Minor Erosion	5.8		4	Monitor minor erosion
412	Moderate Erosion	6.5		2	Install new Berm/s and address moderate erosion issues
413	Moderate Subsidence	6.5		2	Install new Berm/s and address moderate erosion issues
414	Significant Subsidence	6.8		1	Install new Berm/s and address significant erosion issues
415	Significant Subsidence	7.5		1	Install new Berm/s and address significant erosion issues
416	Compromised Berm (Significant)	7.5		1	Repair and Extend Berm
417	Significant Subsidence	7.6		1	Address significant erosion issues
543	WONS (Mesquite)	7.8		NA	Remove WONS occurrences
418	Significant Subsidence	7.9	Culturally Sensitive	1	Address significant erosion issues within the easement
419	Significant Subsidence	8.2	Culturally Sensitive	1	Address significant erosion issues within the easement
420	Significant Erosion	8.6	Culturally Sensitive	1	Install new Berm/s and address significant erosion issues within the easement
421	Compromised Berm (Significant)	8.8		1	Repair Berm
422	Compromised Berm (Significant); Significant Erosion; Significant Subsidence	9.2	Culturally Sensitive	1	Repair Berm, add Berm/s, Fill and Smooth and address significant erosion issues within the easement
423	Minor Erosion	9.5	Culturally Sensitive	4	Monitor minor erosion
3	Moderate Subsidence	15.6	Culturally Sensitive	2	Fill and Smooth, address moderate erosion issues within the easement
154	WONS (Mesquite)	15.6		NA	Remove WONS occurrences
9	Minor Erosion	15.7		5	Monitor minor erosion
10	Minor Erosion	20.8		5	Monitor minor erosion
11	Minor Erosion	21.9		5	Monitor minor erosion
12	Minor Erosion	24.1		4	Monitor
13	Moderate Erosion	24.4		3	Install new Berm/s and address moderate erosion issues
14	Significant Erosion	24.4		1	Install new Berm/s and address significant erosion issues
15	Moderate Erosion	24.7		2	Install new Berm/s and address significant erosion issues
16	Moderate Subsidence	24.8		2	Install new Berm/s, Fill and Smooth and address significant erosion issues
17	Compromised Berm (Moderate)	25		2	Repair Berm and address moderate erosion issues
18	Significant Subsidence	25		1	Install new Berm/s and address significant erosion issues
19	Minor Erosion	26.1		5	Monitor minor erosion
0	Moderate Erosion	27.3		2	Install new Berm/s and address moderate erosion issues
21	Minor Erosion	28.1		5	Monitor minor erosion
22	Moderate Erosion	28.4		2	Address moderate erosion issues
23	Moderate Erosion	29.3		2	Install new Berm/s and address moderate erosion issues

24	Moderate Erosion	29.8		3	Install new Berm/s and address moderate erosion issues
424	Moderate Erosion	29.8		3	Install new Berm/s and address moderate erosion issues
425	Moderate Erosion	30.1		3	Install new Berm/s and address moderate erosion issues
426	Minor Erosion	30.7		4	Monitor minor erosion
427	Moderate Erosion	31.2		2	Install new Berm/s and address moderate erosion issues
428	Moderate Erosion	31.3		2	Install new Berm/s and address moderate erosion issues
429	Moderate Erosion	31.7		3	Install new Berm/s and address moderate erosion issues
430	Moderate Erosion	32.2		2	Repair Berm and address moderate erosion issues
431	Minor Erosion	32.8		4	Monitor minor erosion
432	Minor Erosion	33.8		4	Monitor minor erosion
433	Moderate Erosion	34.1		3	Install new Berm/s and address moderate erosion issues
434	Minor Erosion	35.3		4	Monitor minor erosion
435	Moderate Erosion	35.4		2	Install new Berm/s and address moderate erosion issues
436	Moderate Erosion	35.9		2	Install new Berm/s and address moderate erosion issues
437	Minor Erosion	36.5		4	Monitor minor erosion
438	Moderate Erosion	36.6		3	Install new Berm/s and address moderate erosion issues
439	Minor Erosion	37.8		4	Monitor minor erosion
440	Moderate Erosion	38.4		3	Install new Berm/s and address moderate erosion issues
25	Moderate Erosion	39		2	Install new Berm/s and address moderate erosion issues
26	Minor Erosion	41.9		4	Monitor minor erosion
27	Minor Erosion	45.5		4	Monitor minor erosion
28	Minor Erosion	45.9		3	Address moderate erosion issues
29	Minor Erosion	47.1		5	Monitor minor erosion
30	Moderate Erosion	50		2	Install new Berm/s and address moderate erosion issues
31	Moderate Erosion	51.5		2	Install new Berm/s and address moderate erosion issues
101	Minor Erosion	52		4	Monitor minor erosion
32	Moderate Erosion	52.5		3	Install new Berm/s and address moderate erosion issues
33	Minor Erosion	52.7		4	Monitor minor erosion
34	Moderate Erosion	55.3		3	Install new Berm/s and address moderate erosion issues
35	Significant Erosion	55.8		2	Install new Berm/s and address moderate erosion issues
36	Moderate Erosion	56.2		3	Install new Berm/s and address moderate erosion issues
37	Moderate Erosion	57.4		2	Address moderate erosion issues
441	Minor Erosion	57.9		4	Monitor minor erosion
442	Moderate Erosion	58.8		3	Install new Berm/s and address moderate erosion issues
443	Moderate Erosion	60.4		3	Install new Berm/s and address moderate erosion issues
444	Minor Subsidence	60.9		4	Monitor minor erosion
445	Moderate Erosion	62.1		3	Install new Berm/s and address moderate erosion issues
446	Minor Erosion	64		4	Monitor minor erosion
447	Minor Erosion	65.4		4	Monitor minor erosion
448	Moderate Erosion; Moderate Subsidence	66		2	Install new Berm/s, Fill and Smooth, address moderate erosion issues
449	Moderate Erosion	69.7		3	Install new Berm/s and address moderate erosion issues
450	Moderate Erosion	74.3		2	Install new Berm/s and address moderate erosion issues
451	Minor Erosion	75.1		4	Install new Berm/s and address minor erosion issues
452	Moderate Erosion	75.4		2	Install new Berm/s and address moderate erosion issues
453	Moderate Erosion	75.8		3	Install new Berm/s and address moderate erosion issues
38	Minor Erosion	79.2		4	Monitor minor erosion
39	Minor Erosion	84.4		4	Address minor erosion issues
40	Minor Subsidence	87.1		4	Monitor minor erosion
41	Moderate Erosion	91.6		3	Address moderate erosion issues
42	Minor Erosion	91.7		4	Address minor erosion issues
43	Moderate Erosion	91.9		3	Install new Berm/s and address moderate erosion issues
454	Minor Erosion	91.9		3	Install new Berm/s and address minor erosion issues
44	Moderate Erosion	92.1		3	Install new Berm/s and address moderate erosion issues
45	Minor Erosion	92.1		4	Monitor minor erosion
455	Minor Erosion	93.1		4	Monitor minor erosion
456	Moderate Erosion	93.5		3	Install new Berm/s and address moderate erosion issues
457	Moderate Erosion	94.4		3	Install new Berm/s and address moderate erosion issues
458	Minor Erosion	95.5		3	Install new Berm/s and address minor erosion issues
459	Minor Erosion	99.2		4	Monitor minor erosion
460	Minor Erosion	104		4	Monitor minor erosion
461	Minor Erosion	109.1		3	Install new Berm/s and address minor erosion issues
462	Minor Erosion	110.4		3	Install new Berm/s and address minor erosion issues
463	Minor Erosion	122.1		4	Monitor minor erosion
464	Moderate Erosion	123.2		3	Install new Berm/s and address moderate erosion issues
46	Minor Erosion	124.3		5	Monitor minor erosion
47	Moderate Erosion	128.4		3	Install new Berm/s and address moderate erosion issues
48	Moderate Erosion	131.2		3	Address moderate erosion issues

465	Minor Erosion	138.4		4	Monitor minor erosion
466	Minor Erosion	144.3		3	Install new Berm/s and address minor erosion issues
467	Minor Erosion	166.1		3	Install new Berm/s and address minor erosion issues
468	Minor Erosion	174		4	Monitor minor erosion
49	Minor Erosion	205.8		4	Monitor minor erosion
102	Minor Erosion	226.3		4	Monitor minor erosion
62	Minor Erosion	235.2		4	Monitor minor erosion
50	Moderate Erosion	259.2		3	Install new Berm/s and address moderate erosion issues
51	Moderate Erosion; Compromised Berm (Moderate)	260.1		2	Repair Berm and address moderate erosion issues
52	Moderate erosion	265.2		2	Address moderate erosion issues
53	Moderate Erosion	265.5		3	Install new Berm/s and address moderate erosion issues
54	Compromised Berm (Moderate)	265.5		2	Repair Berm and address moderate erosion issues
55	Significant Erosion	265.8		1	Install new Berm/s and address significant erosion issues
56	Significant Erosion	265.9		1	Install new Berm/s and address significant erosion issues
57	Moderate Erosion	266.8		3	Address moderate erosion issues
58	Moderate Erosion	267.5		3	Repair Berm and address moderate erosion issues
103	Moderate Erosion	268.6		3	Address moderate erosion issues
104	Compromised Berm (Moderate)	270.1		3	Repair Berm and address moderate erosion issues
105	Compromised Berm (Moderate)	270.5		3	Repair Berm and address moderate erosion issues
59	Moderate Erosion	271.1		3	Address moderate erosion issues
60	Moderate Erosion	271.9		3	Address moderate erosion issues
106	Significant Erosion; Compromised Berm (Significant)	272.2		1	Repair Berm and address significant erosion issues
107	Moderate Erosion	272.4		2	Install new Berm/s and address moderate erosion issues
61	Significant Erosion	272.6		1	Install new Berm/s and address significant erosion issues
108	Compromised Berm (Moderate)	272.6		2	Repair Berm and address moderate erosion issues
63	Moderate Erosion	274.4		3	Address moderate erosion issues
64	Compromised Berm (Moderate)	274.5		3	Repair Berm and address moderate erosion issues
109	Moderate Erosion	277.9		2	Install new Berm/s and address moderate erosion issues
65	Moderate Erosion	278.1		2	Install new Berm/s and address moderate erosion issues
66	Moderate Erosion	278.9		2	Install new Berm/s and address moderate erosion issues
67	Minor Erosion	279.2		4	Monitor minor erosion
68	Moderate Erosion	279.9		2	Install new Berm/s and address moderate erosion issues
69	Minor Erosion	284.5		4	Monitor minor erosion
70	Moderate Erosion	285		3	Install new Berm/s and address moderate erosion issues
71	Moderate Erosion	286.5		3	Address moderate erosion issues
72	Minor Erosion	287.3		4	Monitor minor erosion
73	Significant Erosion	293.7		1	Install new Berm/s and address significant erosion issues
74	Significant Erosion	294.6		1	Install new Berm/s and address signifcant erosion issues
75	Minor Erosion	295.1		5	Monitor minor erosion
76	Moderate Erosion	295.5		3	Install new Berm/s and address moderate erosion issues
470	Moderate Subsidence	297.8		3	Address moderate subsidence issues
471	Minor Erosion	298.2		4	Monitor minor erosion
472	Significant Erosion	298.5		1	Install new Berm/s and address moderate erosion issues
407	Moderate Erosion	303.5		3	Install new Berm/s and address moderate erosion issues
473	Moderate Erosion	306.6		2	Install new Berm/s and address moderate erosion issues
474	Minor Erosion	308.1		3	Install new Berm/s and address minor erosion issues
475	Compromised Berm (Moderate)	309.5		2	Repair Berm and address moderate erosion issues
77	Compromised Berm (Moderate)	313.1		3	Repair Berm and address moderate erosion issues
78	Moderate Erosion	313.4		3	Address moderate erosion issues
79	Minor Erosion	317.1	Culturally Sensitive	4	Monitor minor erosion
110	Minor Erosion	317.9		4	Monitor minor erosion
111	Moderate Erosion	318.2		3	Address moderate erosion issues
112	Moderate Erosion	318.3		3	Install new Berm/s and address moderate erosion issues
113	Minor Erosion	319.7		4	Monitor minor erosion
114	Moderate Erosion; Compromised Berm (Moderate)	320.4		2	Repair berm, Install new Berm/s and address moderate erosion issues
115	Compromised Berm (Moderate)	320.8		2	Repair Berm and address moderate erosion issues
116	Minor Erosion	321.5		4	Monitor minor erosion
80	Significant Subsidence	321.7		1	Address significant erosion issues

117	Compromised Berm (Moderate)	322		2	Repair Berm and address moderate erosion issues
118	Minor Erosion	328.5		4	Monitor minor erosion
119	Minor Erosion	330.3		4	Monitor minor erosion
120	Minor Erosion	332.7		4	Monitor minor erosion
121	Moderate Erosion	335.9		3	Install new Berm/s and address moderate erosion issues
122	Minor Erosion	336.1		4	Monitor minor erosion
123	Minor Erosion	338		4	Monitor minor erosion
124	Minor Erosion	341.4		3	Install new Berm/s and address minor erosion issues
125	Compromiseed Berm (Moderate)	348.1		3	Repair Berm and address moderate erosion issues
81	Significant Erosion	384.3		1	Install new Berm/s and address significant erosion issues
82	Moderate Erosion	394.7	Culturally Sensitive	3	Install new Berm/s and address moderate erosion issues within the easement
126	Minor Erosion	400.6		4	Monitor minor erosion
83	Moderate Erosion	410.1		3	Address moderate erosion issues
84	Compromised Berm, Moderate Erosion	410.3		3	Repair Berm and address moderate erosion issues
127	Compromised Berm (Moderate)	410.9		3	Repair Berm and address moderate erosion issues
128	Compromised Berm (Moderate)	411.6		3	Repair Berm and address moderate erosion issues
129	Compromised Berm (Moderate)	411.8		3	Repair Berm and address moderate erosion issues
85	Moderate Subsidence	415.9		3	Address moderate subsidence issues
130	Moderate Erosion	419.4		3	Address moderate erosion issues
86	Moderate Erosion	419.6		3	Monitor erosion
131	Moderate Subsidence	423.5		3	Address moderate subsidence issues
132	Compromised Berm (Moderate)	431.5		3	Repair Berm and address moderate erosion issues
133	Moderate Subsidence	431.6		3	Address moderate subsidence issues
87	Moderate Erosion	442.9		2	Address moderate erosion issues
135	Minor Erosion	451.7		3	Install new Berm/s and address minor erosion issues
136	Minor Erosion	472		4	Monitor minor erosion
137	Moderate Erosion	472.8		3	Address moderate erosion issues
7	Compromised Berm (Moderate)	473	Culturally Sensitive	3	Repair Berm and address moderate erosion issues within the easement
138	Compromised Berm (Moderate)	473.1		3	Repair Berm and address moderate erosion issues
139	Moderate Erosion	477.5		3	Address moderate erosion issues
140	Moderate Erosion	479.5	Culturally Sensitive	2	Install new Berm/s and address moderate erosion issues within the easement
141	Compromised Berm, Moderate Erosion	508.9		3	Repair Berm and address moderate erosion issues
142	Moderate Erosion	574.5		3	Install new Berm/s and address moderate erosion issues
143	Moderate Erosion	586.9		3	Install new Berm/s and address moderate erosion issues
144	Moderate Erosion	602.9	Culturally Sensitive	3	Install new Berm/s and address moderate erosion issues within the easement within the easement
88	Moderate Erosion	603.8		3	Install new Berm/s and address moderate erosion issues
89	Moderate Erosion	608.9		2	Repair Berm and address moderate erosion issues
145	Moderate Erosion	610		3	Address moderate erosion issues
146	Compromised Berm (Moderate)	613.2		3	Repair Berm and address moderate erosion issues
147	Moderate Erosion	614.7	Culturally Sensitive	3	Install new Berm/s and address moderate erosion issues within the easement
148	Moderate Erosion	614.9	Culturally Sensitive	3	Install new Berm/s and address moderate erosion issues within the easement
90	Compromised Berm, Moderate Erosion	615.3		3	Repair Berm and address moderate erosion issues
91	Moderate Erosion	615.9	Culturally Sensitive	3	Repair Berm and address moderate erosion issues within the easement
149	Moderate Erosion	616.9		3	Install new Berm/s and address moderate erosion issues
8	Moderate Erosion	618.4	Culturally Sensitive	3	Address moderate erosion issues within the easement
2	Moderate Erosion	618.6		3	Address moderate subsidence issues and Install new coir log
150	Minor Erosion	619		4	Monitor minor erosion
92	Moderate Erosion	619.7		3	Install new Berm/s and address moderate erosion issues
93	Moderate Erosion	619.7		3	Address moderate erosion issues
94	Minor Erosion	620		4	Monitor minor erosion
95	Minor Erosion	620.2		4	Reinstate drainage rocks and address minor erosion issues
151	Minor Erosion	620.2		4	Monitor minor erosion
96	Minor Erosion	620.4		4	Monitor minor erosion
97	Moderate Erosion	620.6		3	Address moderate erosion issues
98	Minor Erosion	620.6		4	Reinstate drainage rocks and address minor erosion issues
99	Minor Erosion	620.7		4	Install new coir log
100	Moderate Erosion	621.2		3	Install new coir log and address moderate erosion issues

2.2 APPENDIX B – NOTIFICATION OF COMMENCEMENT

Marc Rullo

From: Marc Rullo
Sent: Monday, 29 May 2017 3:12 PM
To: EPBCMonitoring@environment.gov.au
Cc: Russell Brooks; Jeff.richardson@ecoz.com.au; Cox, Vaughn
Subject: Notification of Commencement | Jemena Northern Gas Pipeline (EPBC 2015/7569)

Dear Sir or Madam,

In accordance with Condition 7 of EPBC Decision 2015/7569 (Jemena Northern Gas Pipeline), Please be advised the commencement of actions was **20 May 2017**.

Please acknowledge receipt of this email. If you require further information, do not hesitate to contact me using the details below.

Thank you and kind regards,

Marc Rullo
Project Engineer – Northern Gas Pipeline
Jemena
Level 15, 567 Collins Street, Melbourne, VIC 3000
T: (03) 9173 7810 | M: 0400 375 012 | F: (03) 9173 7515
marc.rullo@jemena.com.au | www.jemena.com.au

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