NGP ANNUAL COMPLIANCE REPORT - 2021

Revision Number: 1
Revision Date: 23/08/2021

AUTHORISATION

Approved by

Name	Job Title	Signature	Date
Sonia Fourie	Group HSE Manager – Energy Markets & Corporate		23/08/2021

INTERNAL

Jemena
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DOCUMENT HISTORY

Revision	Date	Author	Description of Changes
1.0	23/08/2021	Rahul Dorairaj	New Document

OWNING FUNCTIONAL GROUP & DEPARTMENT / TEAM

People, Safety & Legal : HSE

DECLARATION OF ACCURACY

In making this declaration, I am aware that sections 490 and 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth - EPBC Act) make it an offence in certain circumstances to knowingly provide false or misleading information or documents. The offence is punishable on conviction by imprisonment or a fine, or both. I declare that all the information and documentation supporting this compliance report is true and correct in every particular. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed	
Full name	Sonia Fourie
Position	Group HSE Manager
Organisation	Jemena Northern Gas Pipeline Pty Ltd (ACN 607 928 790)
Date	23/08/2021

TABLE OF CONTENTS

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 2020 and 20 May 2021.

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 2020 to 20 May 2021

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 Rehabilitation Monitoring Report (2021) 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 Rehabilitation Monitoring Report (2021) 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 2020-2021 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 2020 to 19th May 2021), 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 - 2021

JEMENA

NORTHERN GAS PIPELINE

TRANSITIONAL REHABILITATION ASSESSMENT

REPORT

Trafficable access track on edge of stable well vegetated pipeline KP615

Report prepared for Jemena

August 2021

Report prepared by:

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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:	Katelyn Douglass Lara Paijmans Kristen Grant		19/08/2021
Approved by:	Bill Low		19/08/2021

REVISION DETAILS

Date	Revision	Author/Reviewer	Company	Comments
19/08/2021	V1 (Draft)	Katelyn Douglass Lara Paijmans Kristen Grant	Low Ecological Services	Initial Draft
20/08/2021	V1(Draft)	Rahul Dorairaj	Jemena	Revision
20/08/2021	V1(Final)	Bill Low Katelyn Douglass Kristen Grant	Low Ecological Services	Revision (Addressing Jemena Comments

Table of Contents

List of Figures

List of Tables

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 2021 document reports on year 2 of the 5 year transitional rehabilitation phase and is the second 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 RMP for this transitional phase of the rehabilitation process. However, limited sections of the pipeline did not meet the criteria for various reasons. These reasons included 51 observed occurrences of 11 species of introduced flora and weeds, scattered small areas currently lacking ground cover and limited areas of erosion, subsidence and ineffective and deteriorating berms following the 1st big rainfall year since the project began. Intervention is needed in order 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.

Recommendations include:

- Control of areas of weed incursion within the disturbed areas, and consider working with adjacent landholders to control weeds immediately adjacent to the pipeline.
- Maintain land stability by repairing and remodelling damaged or ineffective berms and constructing additional berms to effectively divert water flows off the pipeline corridor, Repair small areas of subsidence of the pipeline.
- Provide suitable habitat to allow native groundcover to establish along the entirety of the ROW by ripping or scarifying soil on the contour in areas with no vegetation and limited top soil.

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, Jemena took over the site from the construction contractors in June 2018, and the pipeline became 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 Tenant Creek (western) end of the pipeline in the 2018-19 summer. This first assessment focussed on soil stability and vegetation growth. This is the second transitional rehabilitation assessment of the NGP project area.

1.2. Scope

The scope of this report is to assess the status of transitional rehabilitation across the NGP project area. In this assessment, the focus is on soil/land stability, vegetation growth, and weeds.

The pipeline right of way (ROW) was traversed from west to east in 4WD vehicles and observations and photos were recorded in a mobile mapping application. The survey was conducted over 5 days from the 5th August to the 9th August 2021. Key locations inspected included the ROW, construction areas, EcOz photo points from 2019 assessment, waterway crossings, and areas of recent works.

2. EXISTING ENVIRONEMENT

2.1. Rainfall

The NGP project area is in an arid climate characterised by a small (< 250 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. In the year prior to the survey all three regional areas, Tennant Creek, Camooweal and Mount Isa had above average rainfall, particularly in the summer period (see Figure 1, Figure 2 and Figure 3).

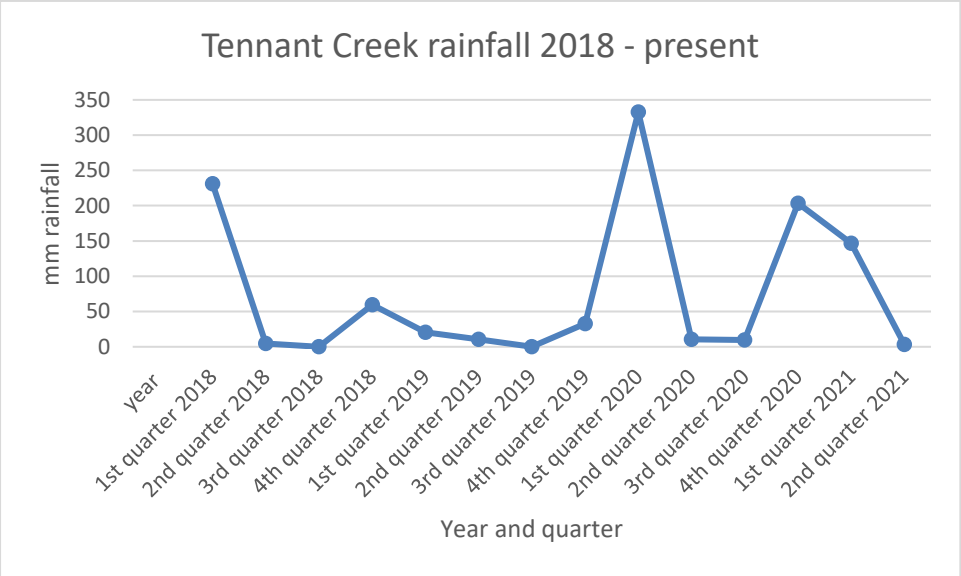

Figure 1. Tennant creek rainfall

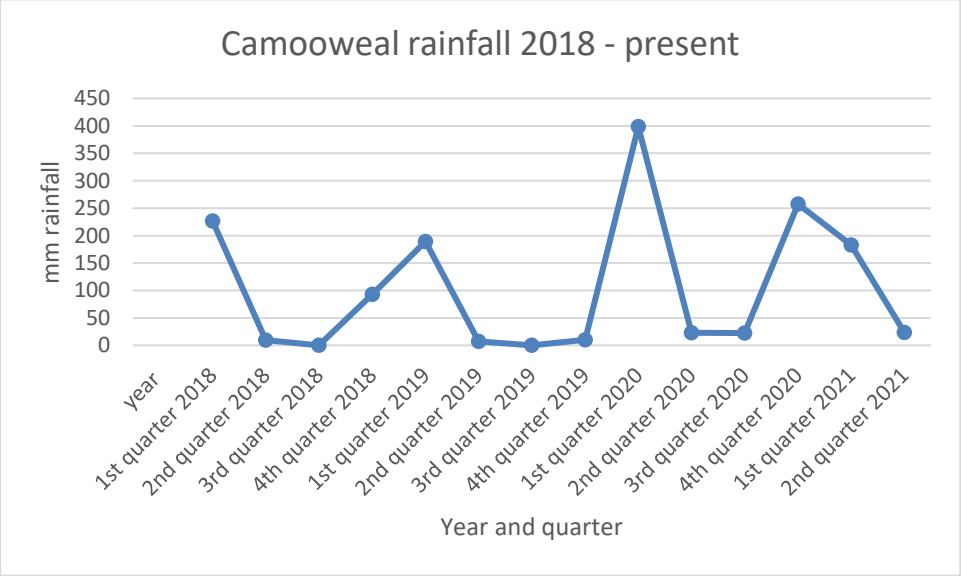

Figure 2. Camooweal rainfall

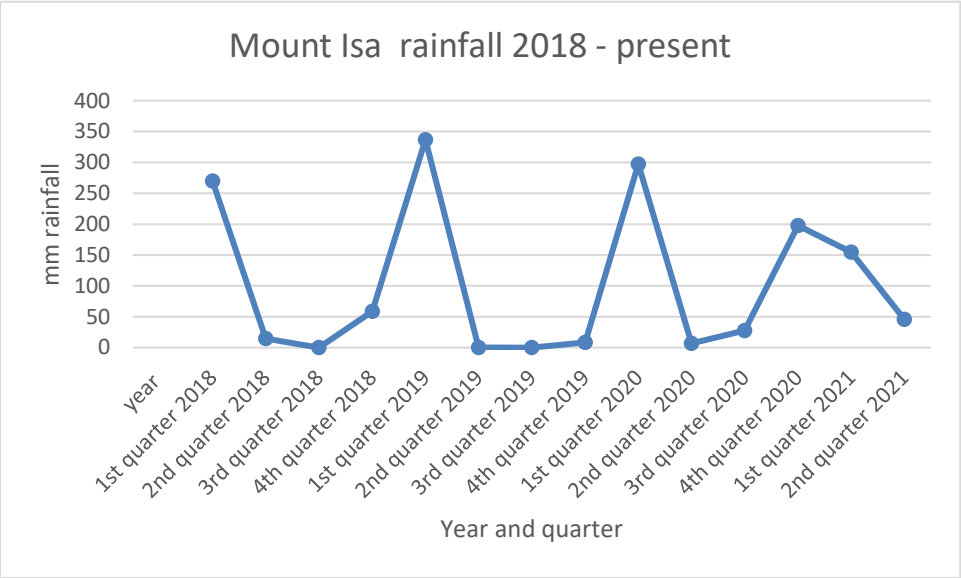

Figure 3. Mount Isa rainfall

2.2. Land Systems

The 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, geological material, landform, soil and native vegetation. The following table describes each of the land systems traversed by the ROW.

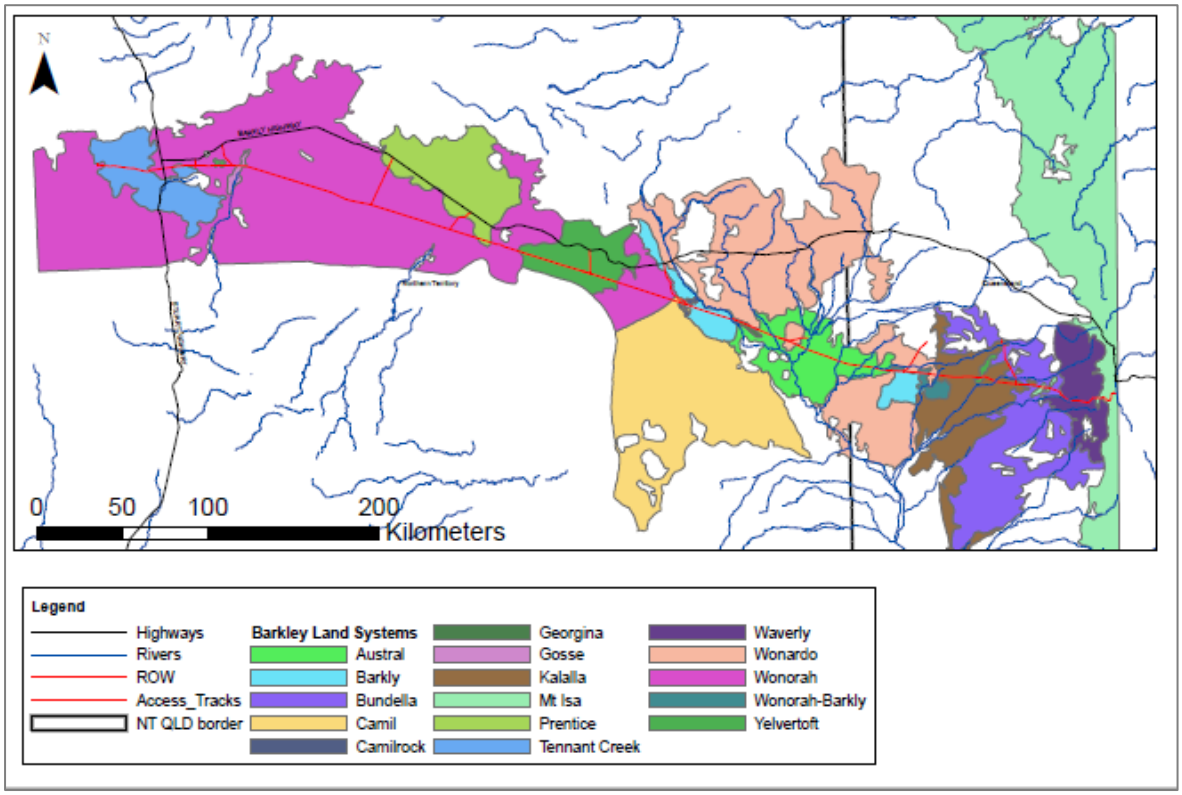

Figure 4. land systems of the Barkley region

Land System	Description
Mt Isa	This lightly-timbered, rugged, hilly country with North-South ridges extend from the South East 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 South West corner of the region.
Gosse	A number of small, scattered areas of sandy, seasonally flooded flats in the South West '"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 latcritie 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
Yelvertoft	Numerous widely separated areas of undulating timbered country in the S. half of the region with gravelly and stony latcritie soils.
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 North West of Lake Nash Homestead
Wonardo	Irregular areas of gently undulating to nearly flat Mitchell grass plains confined to the Georgina valley in the SE. portion of the region
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.
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.

Camilrock	Several small areas of gently undulating country with numerous limestone outcrops, and carrying spinifex and low shrubs to the West and North West of Lake Nash Homestead
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
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 Gerorgina Basin
Bundella	Undulating, sandy, low-scrub country extending from Barkly Downs Homestead SB. and S. towards Admore Homestead.
Yelvertoft	Numerous widely separated areas of undulating timbered country in the S. half of the region with gravelly and stony latcritie soils.
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.
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%.
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
Mt Isa	This lightly-timbered, rugged, hilly country with North-South ridges extend from the South East corner of the area to about 193Km North and West of lawn Hill Homestead.
Kalalla	Flat to very gently undulating plains with occasional internal drainage depression. Slopes <2%.
Mt Isa	This lightly-timbered, rugged, hilly country with North-South ridges extend from the South East corner of the area to about 193Km North and West of lawn Hill Homestead.

3. FIELD SURVEY RESULTS

3.1. Weeds

The transitional rehabilitation actions (Table 4-2) outlined in the rehabilitation management plan include "No weed incursion or spread within the NGP footprint" as a performance indicator for transitional rehabilitation. This survey included monitoring of weeds within the reinstated areas. Weeds were not a focus in the 2019 survey undertaken by EcOz Environmental Consultants, and it is understood that this is the first transitional rehabilitation survey that has included weeds in the survey scope. The 2019 EcOz report recommended weeds be assessed after the 2019/2020 summer wet season.

Overall, the pipeline easement is relatively free of weeds. Table 1 includes the introduced flora species which were observed during the survey and their weed classification status in the NT and QLD and whether they are classified as a weed of national significance (WONS). In several cases weeds were observed on the land adjacent to the pipeline easement (ROW) and not within the pipeline easement, in other cases weeds were well established in land adjacent to the pipeline easement and were also establishing within the pipeline easement. Kapok was the only introduced flora species which appeared to have been spread along the pipeline easement as it was observed to be establishing within the disturbed easement and was not observed on the land immediately adjacent to the pipeline easement. Kapok bush establishing within the pipeline easement was mostly observed within the easternmost section of the pipeline within 40km of Mt Isa.

Table 1: Introduced flora species observed during the survey and state and national weed category

Common Name	Scientific Name	NT Weed Category	Qld Weed Category	WONS
Farnesiana	Vachellia farnesiana	Not declared	Not Listed	-
Mesquite	Poposis spp.	Class A and C	Prohibited and Restricted	Yes
Prickly Acacia	Acacia nilotica	Class A and C	Restricted	Yes
Buffel Grass	Cenchrus ciliaris	Not declared	Not Listed	-
Rubber Bush	Calotropis procera	Class B and Class C	Other	-
Kapok Bush	Aerva javanica	Not Declared	Not Listed	-
Paddy Melon	Cucumis myriocarpus	Not Declared	Not Listed	-
Cattle Bush	Trichodesma zeylanicum	Not Declared	Not Listed	-
Noogoora Burr	Xanthium strumarium	Class B and Class C	Other	No
Spiked Malvastrum	Malvastrum americanum	Not Declared	Not Listed	-
Hyptis/Horehound	Hyptis suaveolens	Class B and Class C	Not Listed	No

A map of the introduced flora species observed during the survey is presented in Figure 5 below. Observation points are displayed by weed category and whether they were growing inside the pipeline ROW or on land adjacent to the ROW.

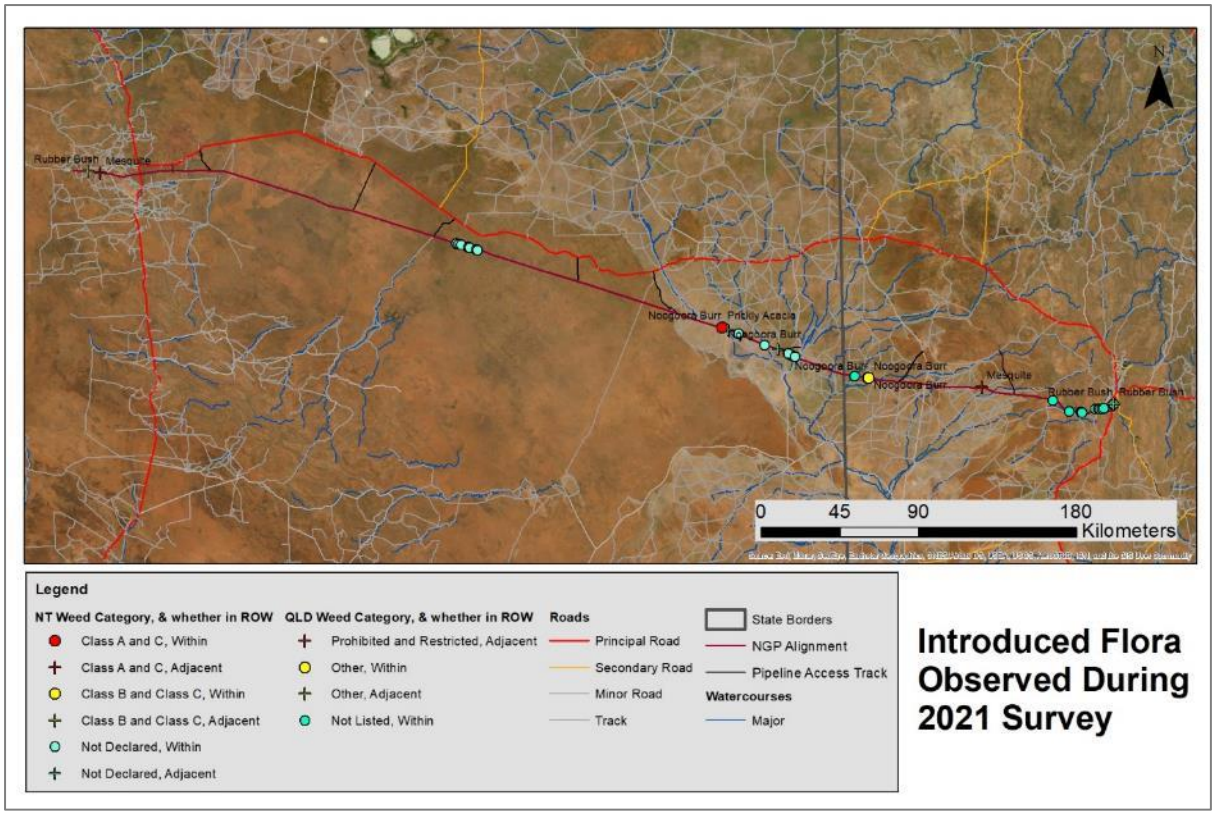

Figure 5: Map of introduced flora species observed during the survey, displayed by weed category.

Figure 6: Prickly Acacia and Noogoora Burr establishing within ROW on eastern flood-out overbank of Six Mile Creek (KP 383.5).

Figure 7: Noogoora Burr established along the foot of the bank of Six Mile Creek within the ROW (KP 383.5).

Figure 8: Farnesiana establishing in a small depression within ROW east of creekline (KP 424.1).

Figure 9: Noogoora Burr established along creek banks within ROW in QLD (KP 472).

It is recommended that Jemena continue to undertake control of areas of weed incursion within the disturbed areas. Jemena should also consider working with adjacent landholders to control weeds immediately adjacent to the pipeline ROW to reduce likelihood of spread from adjacent land onto the ROW. Control of declared weeds within the ROW should be prioritised. Future monitoring should reinspect these locations to ensure control has been effective and weeds have not spread.

3.2. Land Stability

3.2.1. Erosion

The current condition of the observed erosion along the ROW was predominately at a minor level. A small percentage of the erosion occurrences were advancing to a moderate level. Most of the erosion has occurred along the access track within the ROW. The rest of the ROW appeared to be relatively stable. Cattle tracking along the access track and the pipeline intensified water channelling and erosion in some places. However, this was also observed outside of the ROW. There were 34 locations/areas where moderate erosion was observed and 142 locations where minor erosion was observed along the 622km pipeline ROW. To prevent the minor and moderate erosion from advancing further, and channelling more water and removing greater amounts of topsoil, monitoring and some works are recommended.

Recommendations:

- Monitor minor erosion occurrences.
- Where appropriate, fill and smooth moderate erosion occurrences to prevent further advancement and encourage vegetation to establish. Eroded sediment from downslope could be used where available.
- Repair compromised berms, and extend and make them more robust as appropriate.
- Construct additional berms as required upslope of areas where erosion is developing due to water channelling along ROW/track.

Recent Erosion Repairs Alterations:

In the Barrier Range at approximately KM 620 the water diversion channel at the top of the slope above the recent repairs should be filled (refer Figure 15) the water is pooling and collectively travelling down the rocky slope, causing an erosion gully to develop (refer Figure 16). Filling the water diversion channel would allow the water to surface flow across the repaired area preventing further erosion and encouraging vegetation growth which would aid in land stabilisation.

Refer to Figure 10 for the moderate erosion locations. Refer Appendix 7.1 for summary table with locations and recommended actions.

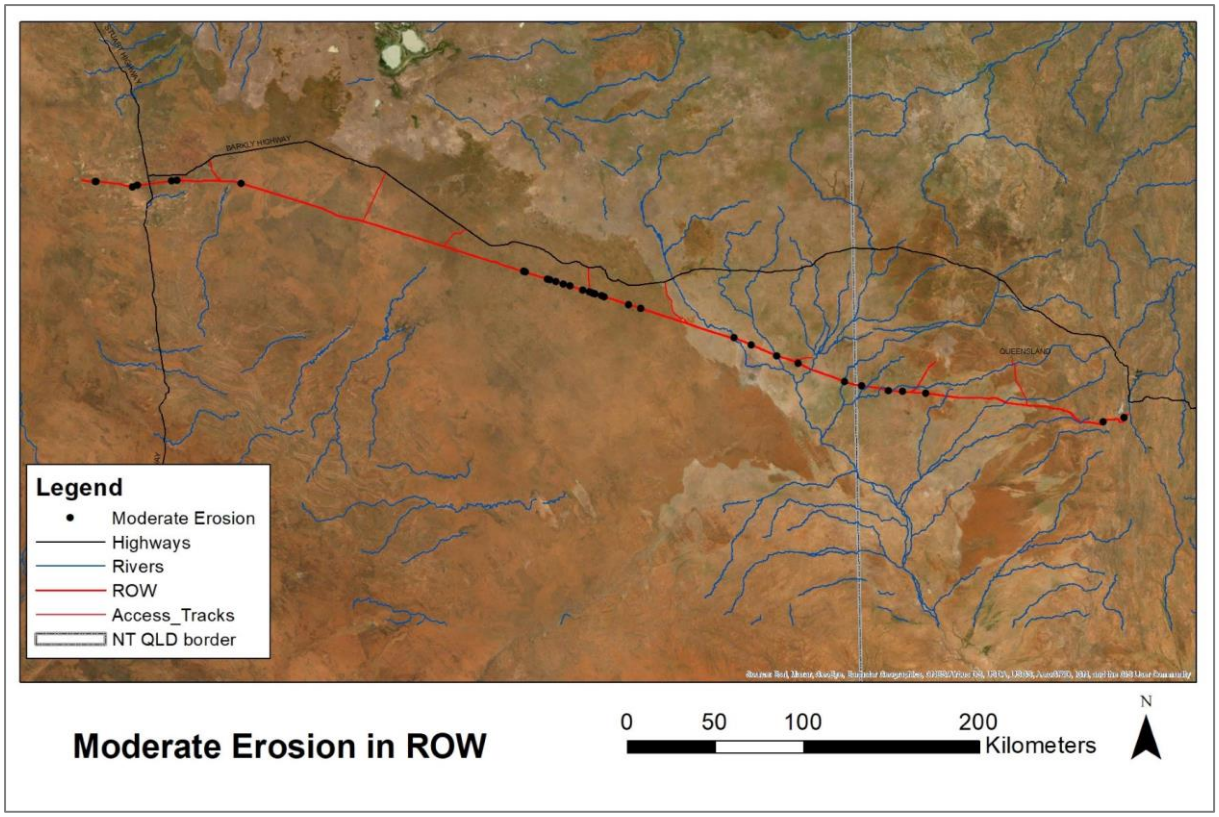

Figure 10 Map showing location of moderate erosion observed

Figure 11: Minor shallow rill erosion (KP 24.7 & KP 27.4)

Figure 12 Moderate Channelling Erosion, note water tracking down pipe trench (KP 7.6)

Figure 13 Moderate Extensive Erosion (KP 410.3)

Figure 14 Moderate Localised Erosion (KP 8.4 & KP 29.3)

Figure 15 Water diversion trench on slope at ~KP 620

Figure 16 Erosion Gully forming down slope at ~KP620

3.2.2. 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 (refer figure Figure 18). 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 places creating water pathways through berms.

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 cultural clearances at the time the berms were constructed, berms could not be constructed to extend outside the ROW easement. In places where the access track runs along the edge of the ROW easement, 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. LES recommends that Jemena obtain the necessary clearances and extend berms to disperse water into undisturbed land adjacent to the ROW.

The berms that were recently repaired and redesigned at (-20.1432, 136.6717) are effectively diverting the water flow. However their size and shape is currently un-trafficable. It is recommended that an access track be made available that is trafficable whilst still successfully diverting the water. This could be achieved by widening a vehicle width

Recommendations:

- Repair existing compromised berms, and make them more robust as appropriate.
- Extend most of the berms, to more effectively divert water beyond the ROW. Currently water is often flowing around the end of the berms and continuing down the track.
- Construct additional berms in areas with susceptibility to water flow and erosion.
- Raise the height of some of the berms to dissuade cattle.

The map in Figure 17 below shows the locations of areas of observed compromised berms along the Northern Gas Pipeline. Refer Appendix 7.1 for a summary table of compromised berm observation points with GPS coordinates.

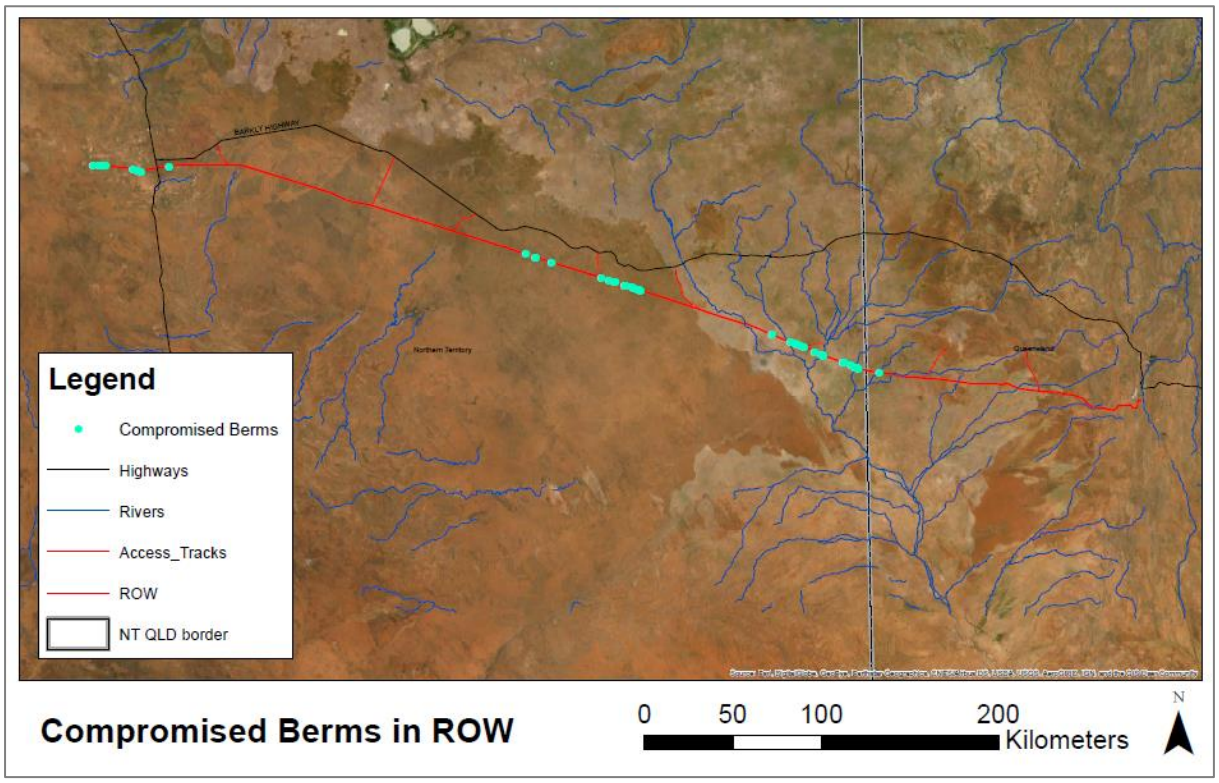

Figure 17 Map of Compromised Berm Locations

Figure 18 Berm completely eroded through and erosion developing in track (KP 306.6)

3.2.3. Subsidence

Minor to moderate subsidence was observed at several locations along the pipeline, with the deepest subsidence approximately 300mm deep. To prevent water channelling and eroding the pipeline trench monitoring and minor works are recommended.

Recommendations:

- Where appropriate, back fill subsidence to ground level.
- Repair nearby berms and/or add additional berms up slope of subsidence locations where water has been tracking along subsided trench.

The map in Figure 19 below shows the locations of observed subsidence along the Northern Gas Pipeline. Refer Appendix 7.1 for a summary table of subsidence observation points with GPS coordinates.

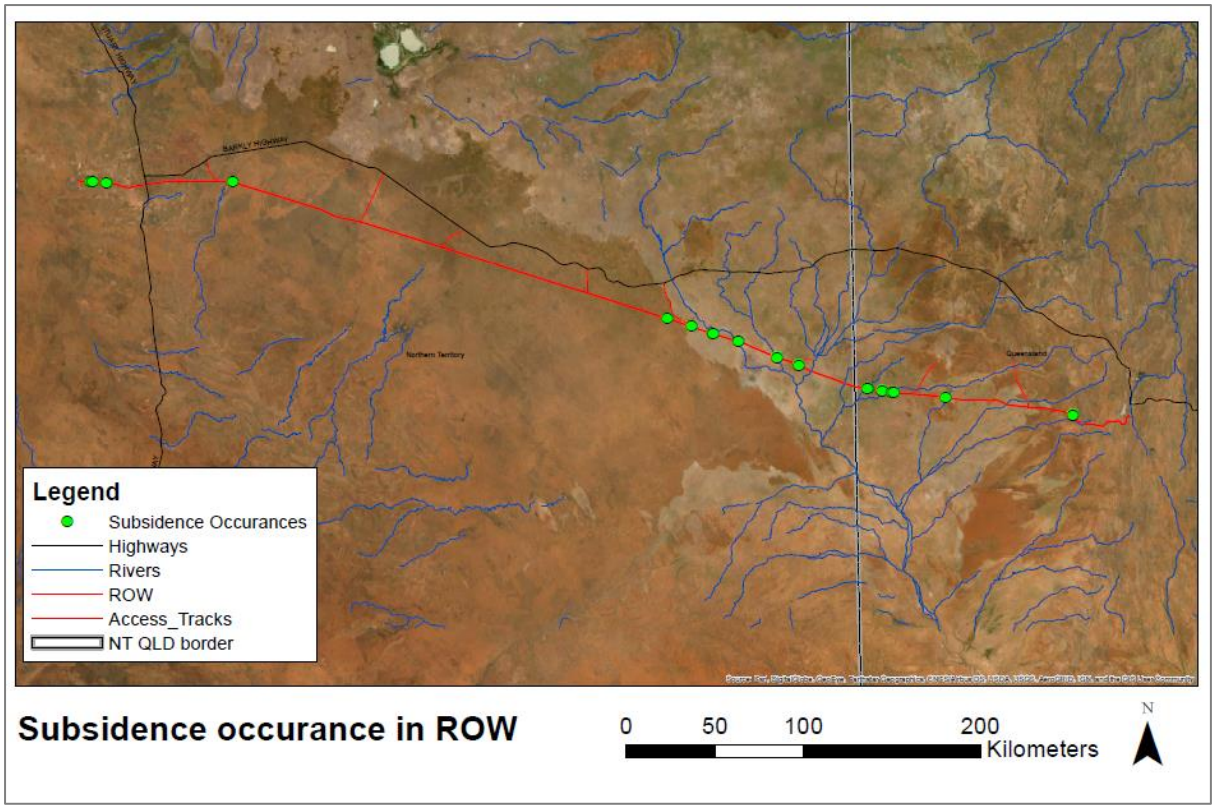

Figure 19: Map showing locations of observed subsidence

Figure 20: Minor Subsidence

Figure 21: Moderate subsidence with water channelling and potential to erode further

3.3. Revegetation

Overall the 622 km long ROW for the Northern Gas Pipeline is rehabilitating well. The pipeline traverses several different land systems contained within different IBRA bioregions. Across all land systems there are signs of revegetation and plant re-entry into the site, with growth across tree, shrub and grass layers. 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 pipeline area. In these areas over story trees 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 (see figure 1.). In the cracking clay soils of the Austral and Wonardo land systems revegetation is slower with the dominant species Mitchell grass (*Astrebla pectinata*) gradually re-entering the site in some areas. Flinders grass (*Iseilema vaginiflorum)* is also common in these areas. Across the steeper slopes of the Bundella, Waverly and Mount Isa land systems revegetation is dominated by *Eucalyptus brevifolia, Acacia spp* and *Spinifex spp,* with strong growth along low lying areas and around water courses.

Figure 22. Spinifex revegetation

Throughout the ROW there is a recurring pattern of distinct areas with little or no revegetation. These areas, characterised by bare ground or regrowth restricted to annual grasses, are visible in the aerial photograph shown below and the survey photographs taken at the same location. These areas may be caused by the methods used in the redistribution of top soil 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. It is suggested that a process of ripping along contours is used to encourage water retention and allow endemic seeds to be captured in these areas to encourage revegetation.

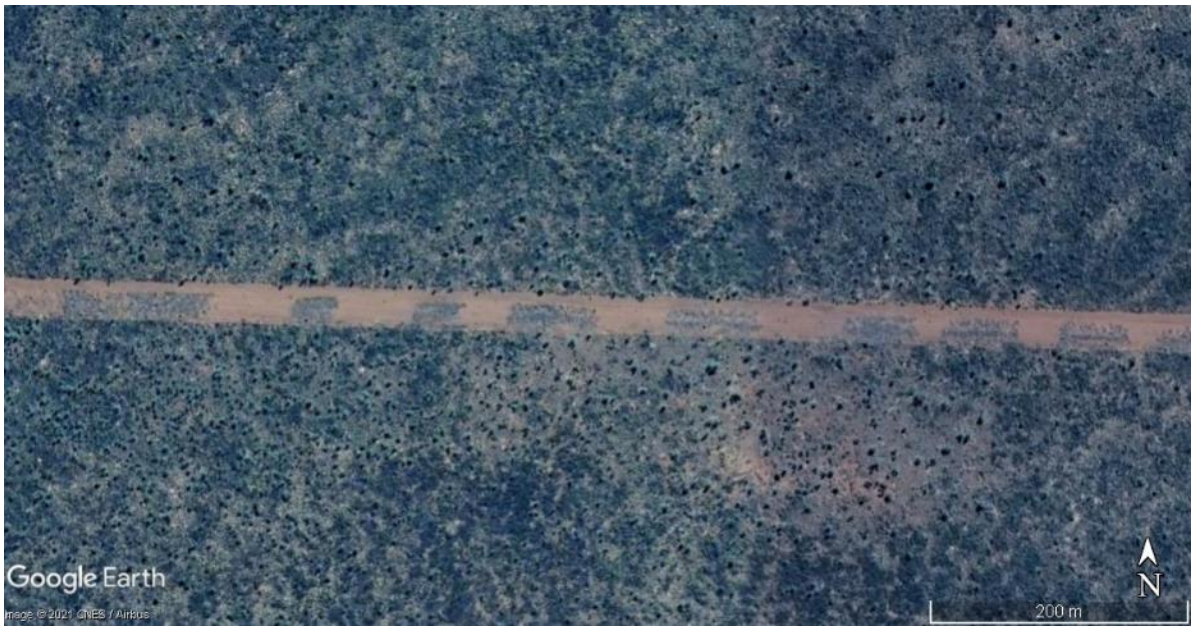

Figure 23. aerial photograph of areas without revegetation taken at place mark 68

Figure 24. photograph of area without vegetation taken at placemark 68

Intermittently along the ROW, particularly across the Wonorah land system, *Eucalypt spp*, up to 4 metres tall have seeded and grown directly over the pipeline. These trees map negatively impact the asset in the future and management action is suggested to mitigate this risk. Similarly in some areas extremely dense Acacia stands are likely to obstruct access to the track alongside the pipeline (figure 25 and 26). *Acacia lysiphloia*, *Acacia colei* and *Acacia stipuligera* all occur in very dense clumps in some areas of the ROW and are already encroaching on the pipeline access track. Future management actions may be required to ensure that the entirety of the ROW remains accessible.

Figure 25. dense growth along pipeline

Figure 26. dense *Acacia Colei* along ROW

Throughout the ROW cattle tracking through the revegetating areas is negatively impacting plant reestablishment. This is particularly notable in the cracking clay Mitchel grass plains area where cattle tracks have stopped Mitchell grass from regrowing along the ROW and at some water courses where cattle tracking may lead to destabilisation. It is suggested that some type of physical barrier is constructed at watercourse locations to prevent stock from preferentially using the ROW in these areas and therefore causing significant loss of vegetation and stability.

Figure 27: River generally in good uneroded condition. Cattle impacting stabilisation and revegetation in part of easement (left of photo). Well vegetated except where cattle have trampled and pugged (KP 451.2).

Recommendations:

To ensure that native groundcover establishing along the entirety of the ROW the following recommendations are suggested

- Rip or scarify soil in areas with no vegetation to encourage water retention and wild seed capture and germination
- Remove large trees that are growing directly over the pipeline and clear vegetation from access track
- Erect barriers at the edges of major watercourses to prevent cattle from preferentially tracking through these areas and causing the loss of vegetation on steep banks.

4. 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 2 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 which meets this criteria. 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. This is further outlined in section 3.2

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 in disturbed areas, or an alternative soil stabilisation methodology that achieves effective stabilisation is implemented and maintained within 12 months	Overall the 622 km long ROW for the Northern Gas Pipeline is revegetating well and the majority of it meets the transitional rehabilitation criteria. To fully address this criteria further intervention is needed to address the limited areas currently lacking ground cover. Refer section 3.3 for recommendations.
No weed incursion or spread within the NGP footprint. (performance indicator for transitional rehabilitation)	The western half of the pipeline in the desert regions were weed free. There were limited weed occurrences in the eastern half of the pipeline particularly in pastoral lands and in the Barrier range in the Waverly land system. Declared weeds are restricted to 6 locations and result from incursion from adjacent populations on pastoral lands.

5. CONCLUSION AND RECOMMENDATIONS

The transitional rehabilitation survey of the Northern Gas Pipeline undertaken in August 2021 found the disturbed areas are generally rehabilitating well. The majority of the disturbed areas along the pipeline easement meet the criteria designated in the RMP for this transitional phase of the rehabilitation process. However, there were instances where limited sections of the pipeline did not meet the criteria for various reasons. These reasons included limited occurrences of weeds, areas currently lacking ground cover and areas of erosion, subsidence and ineffective and deteriorating berms. Intervention is needed in order 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.

Recommendations include:

- Continue to undertake control of areas of weed incursion within the disturbed areas. and consider working with adjacent landholders to control weeds immediately adjacent to the pipeline.
- Maintain land stability by repairing and remodelling existing berms and constructing additional berms to effectively divert water flows, and address existing moderate erosion and subsidence.
- Ensure that native groundcover is establishing along the entirety of the ROW by ripping or scarifying soil in areas with no vegetation.

6. REFERENCES

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7. APPENDICES

7.1. Land Stability Observation Locations and Recommended Actions Table

This table includes all observations of erosion, compromised berms and pipeline trench subsidence along the 620 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 design, improving design where appropriate
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.

Land Stability Obs. ID	Latitude	Longitude	Land Stability Observation Category	Recommended Action
1	-19.45293938	133.8748871	Compromised Berm	Repair Berm
2	-19.45640235	133.8962148	Minor Erosion.	Monitor Erosion
3	-19.45641082	133.8963197	Minor Erosion.	Monitor Erosion
4	-19.45666489	133.8991039	Minor Erosion.	Monitor Erosion
5	-19.45718949	133.905587	Compromised Berm	Repair Berm
6	-19.45760471	133.9093118	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
7	-19.4580313	133.9147524	Compromised Berm	Repair Berm
8	-19.4581537	133.9156239	moderate subsidence	Fill
9	-19.45837276	133.9183542	moderate subsidence	Fill
10	-19.45895848	133.9243564	Compromised Berm	Repair Berm and Add
11	-19.45894809	133.9246802	Compromised Berm	Repair Berm
12	-19.45908392	133.9260765	Moderate erosion.	Fill and Smooth
13	-19.45882521	133.9282806	Moderate subsidence and moderate erosion	Repair Berm and Add & Fill and Smooth
14	-19.45817375	133.931476	Minor Erosion.	Monitor Erosion
15	-19.45761931	133.9337627	Minor Erosion.	Monitor Erosion
16	-19.45760037	133.9340781	Minor Erosion.	Monitor Erosion
17	-19.45753751	133.9341203	Minor Erosion.	Monitor Erosion
18	-19.45727615	133.9356125	Minor Erosion.	Monitor Erosion
19	-19.45732565	133.9371007	Compromised Berm	Repair Berm
20	-19.45729894	133.9380176	Minor Erosion.	Monitor Erosion
21	-19.45736241	133.9416247	Minor Erosion.	Monitor Erosion
22	-19.45762368	133.9428577	Compromised Berm	Repair Berm and Wrap
23	-19.46167567	133.9642984	Minor Erosion.	Monitor Erosion
24	-19.46805535	134.0007425	Moderate subsidence	Fill
25	-19.48494384	134.0844073	Minor Erosion.	Monitor Erosion
26	-19.48572869	134.0864894	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
27	-19.49200243	134.1082206	Minor Erosion.	Monitor Erosion
28	-19.49202287	134.1087525	Compromised Berm	Add Berm/s
29	-19.49335505	134.1142943	Minor Erosion.	Monitor Erosion
30	-19.49528644	134.1267497	Moderate erosion.	Fill and Smooth
31	-19.49570315	134.1287693	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
32	-19.4943602	134.1339	Additional berm/s needed	Add Berm/s
33	-19.48889619	134.1430487	Minor Erosion.	Monitor Erosion
34	-19.48852346	134.1467353	Additional berm/s needed	Add Berm/s
35	-19.48798536	134.1519875	Moderate erosion.	Fill and Smooth
36	-19.48441558	134.1884985	Minor Erosion.	Monitor Erosion
37	-19.48390254	134.1934759	Minor Erosion.	Add Berm/s & Monitor Erosion
38	-19.4822947	134.2096396	Minor Erosion.	Monitor Erosion
39	-19.48170147	134.2162228	Minor Erosion.	Monitor Erosion
40	-19.48149994	134.2178722	Minor Erosion.	Monitor Erosion
41	-19.48017272	134.2312124	Minor Erosion.	Monitor Erosion
42	-19.4800239	134.2330152	Minor Erosion.	Add Berm/s & Monitor Erosion
43	-19.47954967	134.2378119	Minor Erosion.	Monitor Erosion
44	-19.47539359	134.2801399	Compromised Berm	Repair Berm
45	-19.4753432	134.2806349	Additional berm/s needed	Add Berm/s
46	-19.47317582	134.3069734	Compromised Berm	Repair Berm
47	-19.47139009	134.3342366	Minor Erosion.	Monitor Erosion
48	-19.47119813	134.3351829	Moderate erosion.	Fill and Smooth
49	-19.47121465	134.3357969	Minor Erosion.	Monitor Erosion
50	-19.47110807	134.3381117	Minor Erosion.	Monitor Erosion

51	-19.47198719	134.3659261	Moderate erosion.	Add Berm/s & Fill and Smooth
52	-19.4721548	134.3723921	Minor Erosion.	Monitor Erosion
53	-19.4722683	134.3754805	Minor Erosion.	Monitor Erosion
54	-19.47234036	134.3788212	Minor Erosion.	Add Berm/s & Monitor Erosion
55	-19.47231682	134.3808787	Minor Erosion.	Monitor Erosion
56	-19.47245254	134.3821177	Minor Erosion.	Monitor Erosion
57	-19.47254342	134.3846902	Minor Erosion.	Monitor Erosion
58	-19.47277448	134.3918249	Minor Erosion.	Monitor Erosion
59	-19.47315499	134.4041405	Minor Erosion.	Monitor Erosion
60	-19.47325199	134.4066902	Minor Erosion.	Monitor Erosion
61	-19.47368528	134.4198264	Moderate erosion.	Fill and Smooth
62	-19.47404234	134.4332337	Minor Erosion.	Monitor Erosion
63	-19.4743133	134.4359043	Minor Erosion.	Monitor Erosion
64	-19.4769316	134.4721745	Minor Erosion.	Monitor Erosion
65	-19.47693954	134.4916582	Minor Erosion.	Monitor Erosion
66	-19.47695699	134.5087286	Minor Erosion.	Monitor Erosion
67	-19.47697368	134.5098415	Minor Erosion.	Monitor Erosion
68	-19.48364804	134.6455812	Minor Erosion.	Monitor Erosion
69	-19.48684901	134.6763947	Minor subsidence	Monitor Subsidence
70	-19.4973674	134.708294	Moderate erosion.	Fill and Smooth
71	-19.50110634	134.7196159	Minor Erosion.	Monitor Erosion
72	-19.55452087	134.8813399	Minor Erosion.	Monitor Erosion
73	-19.59288001	134.9974172	Minor Erosion.	Monitor Erosion
74	-19.59750602	135.0114306	Minor Erosion.	Monitor Erosion
75	-19.59857046	135.0146424	Minor Erosion.	Monitor Erosion
76	-19.6273987	135.1018685	Minor Erosion.	Monitor Erosion
77	-19.63743297	135.1322943	Minor Erosion.	Monitor Erosion
78	-19.63866886	135.1360582	Minor Erosion.	Monitor Erosion
79	-19.73199759	135.4187587	Minor Erosion.	Monitor Erosion
81	-19.83798787	135.7396133	Minor Erosion.	Monitor Erosion
82	-19.88454187	135.8799697	Minor Erosion.	Monitor Erosion
83	-19.88954532	135.8958365	Minor Erosion.	Monitor Erosion
84	-19.89670376	135.9176205	Minor Erosion.	Monitor Erosion
85	-19.89960275	135.9264188	Minor Erosion.	Monitor Erosion
86	-19.90645667	135.9470552	Minor Erosion.	Monitor Erosion
87	-19.90784689	135.9512768	Minor Erosion.	Monitor Erosion
88	-19.91150563	135.9623868	Minor Erosion.	Monitor Erosion
89	-19.9210452	135.9913176	Minor Erosion.	Monitor Erosion
90	-19.92118534	135.9915579	Minor Erosion.	Monitor Erosion
91	-19.92477912	136.0026054	Minor Erosion.	Monitor Erosion
92	-19.92483598	136.002769	Minor Erosion.	Monitor Erosion
93	-19.92819815	136.0132114	Minor Erosion.	Monitor Erosion
94	-19.98222601	136.1769141	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
95	-19.98227527	136.1769258	Minor Erosion.	Monitor Erosion
96	-19.99484781	136.2136881	Minor Erosion.	Monitor Erosion
97	-19.99591311	136.2173305	Moderate erosion.	Add Berm/s & Fill and Smooth
98	-19.99875496	136.226875	Compromised berm and moderate erosion	Repair Berm & Fill and Smooth
99	-19.99877973	136.2270732	Minor Erosion.	Extend berm & Monitor Erosion
100	-19.99964396	136.2296199	Compromised Berm	Repair Berm
102	-20.02721095	136.3131609	Compromised Berm	Repair Berm and Raise
104	-20.0358438	136.339409	Minor Erosion.	Monitor Erosion
105	-20.03695244	136.3426886	Minor Erosion.	Add Berm/s & Monitor Erosion
106	-20.0382491	136.3465784	Moderate erosion.	Repair Berm & Fill and Smooth
107	-20.04208594	136.3583219	Moderate erosion.	Fill and Smooth
108	-20.04295657	136.360829	Minor Erosion.	Monitor Erosion
109	-20.05326547	136.3924318	Moderate erosion.	Fill and Smooth
110	-20.05543057	136.3989522	Minor Erosion.	Monitor Erosion
111	-20.06252285	136.4215763	Minor Erosion.	Monitor Erosion
112	-20.062975	136.4230267	Minor Erosion.	Monitor Erosion
113	-20.06498053	136.4294799	Moderate erosion.	Fill and Smooth
114	-20.06574568	136.4319175	Minor Erosion.	Monitor Erosion
115	-20.07231228	136.4516681	Minor Erosion.	Monitor Erosion
116	-20.07287847	136.4547017	Additional berm/s needed	Add Berm/s
117	-20.07626764	136.4655232	Moderate erosion.	Spread windrow out but would require veg disturbance. & Fill and Smooth
118	-20.07872622	136.4733787	Minor Erosion.	Monitor Erosion
119	-20.07929024	136.4752192	Minor Erosion.	Monitor Erosion
120	-20.07929024	136.4752192	Minor Erosion.	Monitor Erosion
121	-20.0956707	136.5270848	Minor Erosion.	Monitor Erosion
122	-20.09859448	136.5364572	Moderate erosion.	Fill and Smooth

124	-20.10429933	136.5545967	Minor Erosion.	Monitor Erosion
125	-20.10972303	136.571193	moderate erosion.	Add Berm/s & Fill and Smooth
126	-20.11102654	136.5752346	Minor Erosion.	Monitor Erosion
127	-20.11102654	136.5752346	Minor Erosion.	Monitor Erosion
128	-20.11244016	136.5794386	Compromised Berm	Repair Berm and Extend
129	-20.1153753	136.5885272	Moderate erosion.	Fill and Smooth
131	-20.12017437	136.6029864	Moderate erosion.	Fill and Smooth
132	-20.12606301	136.6206025	Compromised Berm	Repair Berm
133	-20.12761109	136.6253554	Additional berm/s needed	Add Berm/s
134	-20.1284699	136.6279466	Minor Erosion.	Add Berm/s & Monitor Erosion
135	-20.13169516	136.6376495	Moderate erosion.	Fill and Smooth
136	-20.13217635	136.6390849	Minor Erosion.	Monitor Erosion
137	-20.13503641	136.647757	Additional berm/s needed	Add Berm/s
138	-20.13566777	136.6494329	Compromised Berm	Repair Berm
139	-20.13606085	136.6508138	Compromised berm and moderate erosion	Repair Berm and Raise & Fill and Smooth
140	-20.1359577	136.6511771	Moderate erosion.	Add Berm/s & Fill and Smooth
141	-20.13683505	136.6531765	Compromised Berm	Repair Berm
142	-20.13785978	136.6561757	Compromised Berm	Repair Berm
143	-20.14127594	136.666471	Minor Erosion.	Monitor Erosion
145	-20.15373048	136.7039803	Compromised Berm	Repair Berm
146	-20.1537337	136.7041386	Compromised Berm	Repair Berm
147	-20.15425481	136.7057769	Compromised Berm	Repair Berm
148	-20.15536856	136.7096129	Compromised Berm	Repair Berm
149	-20.15979077	136.7222919	Minor Erosion.	Monitor Erosion
150	-20.16660621	136.7429093	Compromised Berm and Minor Erosion.	Repair Berm and Add
151	-20.16901012	136.7500394	Minor Erosion.	Monitor Erosion
152	-20.16968888	136.7524998	Minor Erosion.	Monitor Erosion
153	-20.1700653	136.7534272	Compromised Berm and Minor Erosion.	Repair Berm and Add & Monitor Erosion
154	-20.17050002	136.7546795	Minor Erosion.	Monitor Erosion
155	-20.17107903	136.7563853	Minor Erosion.	Add Berm/s & Monitor Erosion
156	-20.174964	136.7680453	Minor Erosion.	Monitor Erosion
158	-20.17709359	136.774529	Compromised Berm and Minor Erosion.	Repair Berm, Extend and Add & Monitor Erosion
159	-20.17775438	136.7763439	Compromised Berm	Repair Berm
160	-20.17871909	136.7792744	Minor Erosion.	Monitor Erosion
161	-20.1796509	136.7822161	Moderate erosion.	Fill and Smooth
162	-20.1800339	136.7830719	Compromised Berm	Repair Berm
164	-20.18161024	136.7881585	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
165	-20.18160861	136.788403	Minor Erosion.	Monitor Erosion
166	-20.18690474	136.8041738	Minor Erosion.	Monitor Erosion
167	-20.19151141	136.8179714	Minor Erosion.	Monitor Erosion
168	-20.20077288	136.8461608	Moderate erosion.	Add Berm/s & Fill and Smooth
169	-20.20092871	136.8465273	Minor Erosion.	Monitor Erosion
170	-20.20666053	136.8637119	Minor Erosion.	Monitor Erosion
171	-20.21274651	136.882127	Minor Erosion.	Add Berm/s & Monitor Erosion
172	-20.22067523	136.9059431	Minor Erosion.	Monitor Erosion
173	-20.22286843	136.9126644	Minor Erosion.	Monitor Erosion
174	-20.22611082	136.9224612	Minor Erosion.	Monitor Erosion
176	-20.22945105	136.9324555	Compromised Berm	Repair Berm and Raise
177	-20.23392263	136.9461026	Minor Erosion.	Monitor Erosion
178	-20.2389322	136.961198	Minor Erosion.	Monitor Erosion
179	-20.23984038	136.9631465	Minor Erosion.	Extend berm & Monitor Erosion
180	-20.23995154	136.9642542	Minor Erosion.	Monitor Erosion
181	-20.24038649	136.9653445	Minor Erosion.	Extend and Raise berm & Monitor Erosion
182	-20.24295878	136.9733225	Minor Erosion.	Monitor Erosion
183	-20.24596386	136.982322	Minor Erosion.	Monitor Erosion
184	-20.2474105	136.9867316	Minor Erosion.	Monitor Erosion
185	-20.24815659	136.9890346	Minor Erosion.	Monitor Erosion
186	-20.24849825	136.9898826	Minor subsidence and minor Erosion	Monitor Subsidence and Erosion
187	-20.25046198	136.9958187	Moderate subsidence	Fill
190	-20.25958134	137.0235657	Compromised Berm	Repair Berm and Extend
191	-20.29175845	137.1188368	Minor subsidence	Monitor Subsidence and Erosion
192	-20.33007081	137.2320968	Minor subsidence	Monitor Subsidence
193	-20.33109454	137.235261	Minor subsidence	Monitor Subsidence
194	-20.36356	137.343745	Minor Erosion.	Monitor Erosion
195	-20.36346762	137.3482461	Moderate subsidence	Fill
196	-20.3632775	137.3514409	Moderate erosion.	Fill and Smooth
197	-20.37115004	137.3688602	Minor subsidence	Monitor Subsidence
198	-20.37985208	137.3915153	Minor Erosion.	Monitor Erosion
199	-20.40108115	137.4420992	Minor Erosion.	Extend berm & Monitor Erosion

200	-20.42342799	137.4938368	Compromised Berm and Minor Erosion.	Repair Berm, Extend and Add & Monitor Erosion
201	-20.45954749	137.5786706	Compromised berm, Moderate subsidence and Moderate erosion	Repair Berm and Wrap & Fill and Smooth
202	-20.45973277	137.5811504	Minor Erosion.	Repair Berm & Monitor Erosion
203	-20.46226623	137.5907061	Compromised Berm	Repair Berm and Extend
204	-20.47053675	137.6156684	Compromised Berm	Repair Berm
205	-20.47521543	137.6297982	Compromised Berm	Repair Berm
206	-20.48025094	137.6450493	Compromised Berm	Repair Berm
207	-20.48681216	137.6640606	Compromised Berm	Repair Berm
208	-20.50059571	137.6949805	Minor subsidence and minor erosion	Monitor Subsidence and Erosion
209	-20.50140723	137.6966862	Moderate erosion.	Fill and Smooth
210	-20.51343496	137.721912	Compromised Berm and Minor Erosion.	Repair Berm and Extend & Monitor Erosion
211	-20.53140509	137.7589891	Compromised Berm	Repair Berm
212	-20.53347842	137.7648466	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
213	-20.53408819	137.7667451	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
214	-20.57000522	137.870566	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
215	-20.57112445	137.8745186	Compromised Berm	Repair Berm
216	-20.57392469	137.8812545	Compromised Berm	Repair Berm
217	-20.58767068	137.9147718	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
218	-20.59686249	137.9372923	Compromised Berm	Repair Berm
219	-20.5977776	137.9391031	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
220	-20.5993848	137.9445956	Compromised berm and moderate erosion	Repair Berm & Fill and Smooth
221	-20.60119662	137.9505468	Compromised Berm and Minor Erosion.	Repair Berm & Monitor Erosion
222	-20.603194	137.957315	Compromised Berm	Repair Berm
223	-20.621118	138.0379205	Moderate erosion.	Fill and Smooth
224	-20.62489064	138.063931	Moderate subsidence	Fill and Smooth
225	-20.62543143	138.0676776	Minor subsidence	Monitor Subsidence
226	-20.62549741	138.0681228	Compromised Berm	Repair Berm
227	-20.63791414	138.1439339	Minor Subsidence and Erosion	Add Berm/s & Fill and Smooth
228	-20.64875986	138.1855084	Moderate erosion.	Fill and Smooth
229	-20.64939076	138.19516	Minor subsidence	Monitor Subsidence
230	-20.650231	138.2053001	Moderate subsidence	Repair Berm & Fill and Smooth
231	-20.65276205	138.2357911	Additional berm/s needed	Add Berm/s
232	-20.65485181	138.2610438	Moderate erosion.	Add Berm/s & Fill and Smooth
233	-20.66519102	138.386159	Moderate erosion.	Add Berm/s & Fill and Smooth
234	-20.67921117	138.4847658	Minor subsidence	Repair Berm & Monitor Subsidence
235	-20.7286023	138.8911089	Minor Erosion.	Monitor Erosion
236	-20.77605478	139.1746922	Minor subsidence	Monitor Subsidence
238	-20.82994521	139.3043097	Minor Erosion.	Monitor Erosion
239	-20.83136185	139.3427566	Minor Erosion.	Monitor Erosion
240	-20.82390095	139.3509394	Minor Erosion.	Monitor Erosion
241	-20.82355096	139.3512585	Moderate erosion.	Fill and Smooth
242	-20.81098771	139.3657317	Minor Erosion.	Monitor Erosion
243	-20.81338561	139.3815495	Minor Erosion.	Monitor Erosion
245	-20.82374747	139.4370781	Minor Erosion.	Monitor Erosion
248	-20.80328526	139.4652986	Moderate erosion.	Fill and Smooth
250	-20.80150363	139.4653297	Minor Erosion.	Monitor Erosion
251	-20.80386027	139.4653484	Minor Erosion.	Monitor Erosion
253	-20.79262375	139.4675614	Minor Erosion.	Monitor Erosion

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
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1