Australian Gas Infrastructure Group

Tanami Gas Pipeline

EPBC 2017/7997

COMPLIANCE ASSESSMENT REPORT 2018-2019

E-REP-035

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August 2019

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	Title	Name
Author	Senior HSE Advisor	M Brown
Reviewed	HSE Manager	L Watson
Approved	General Manager Transmission Asset Management	T Rakai

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1. Introduction

1.1. Background

On 1 June 2018, the Department of Environment and Energy (DoEE) approved the Tanami Gas Pipeline (TNP) project under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The TNP is a 440km natural gas pipeline and associated infrastructure connecting the existing Amadeus Gas Pipeline to the Granites and Dead Bullock Soak mines, near Yuendumu, Northern Territory (NT) (EPBC 2017/7997).

This report covers activities between 1 June 2018 and 31 May 2019 which include the construction, commissioning and operational activities undertaken in this period.

Practical completion (as defined in the approval) of the pipeline was achieved on the 4 December 2018 with Consent to Conduct Commissioning received from the Department for Primary Industry and Resources (DPIR) on 4 February 2019.

Gas transportation operations commenced 4 February 2019 with ten day staged commissioning program. Consent to Operate was received 15 February 2019.

1.2. Proponent

The proponent for the project is the AGI Tanami Pty Limited (AGIT) (ACN 622 012 560).

AGIT is operated as part of the Australian Gas Infrastructure Group (AGIG) and is 100% owned by a consortium comprising CK Infrastructure Holdings Limited (CKI), CK Asset Holdings Limited (CKA) and Power Asset Holdings Limited (PAH). These are all part of the CK Group, a leading global investor in energy and other infrastructure, in the UK, Australia and other developed countries.

AGIT relies on the services of DBNGP (WA) Nominees Pty Ltd (DBP), the owner of the Dampier to Bunbury Natural Gas Pipeline (DBNGP), for the provision of labour and equipment to enable AGIT to undertake its business. The services are provided under a support services agreement.

1.3. Objectives and Scope

The objective of this document is to review the compliance with conditions set out in EPBC 2017/7997. Specifically, the scope of this document covers the period commencing 1 June 2018 through to 31 May 2019.

Additionally this report provides a brief summary of other compliance requirements and permits issued for the project.

Figure 1: Location of the Tanami Gas Pipeline

2. Activity Description

During the reporting period the construction of the TNP was conducted including commissioning and through to operations. This entailed the following main activities:

- Clearing of 1,120 hectares (ha) of vegetation;
- Camp construction and management;
- Pipeline construction:
    - Survey
    - Clear and grade
    - Trenching
    - Pipe haulage and stringing
    - Welding
    - Coating (joints)
    - Quality review (non-destructive testing)
    - Lowering in
    - Backfill
    - Reinstatement and Rehabilitation
- Facility construction of 5 facilities including an inlet, two scraper stations and two meter (outlet) stations;
- Commissioning of the pipeline (including hydrotesting); and
- Operations of the pipeline.

As set out in the Construction Environment Management Plan (CEMP), Table 1: Activity Key Characteristics details activities completed by the project.

Table 1: Activity Key Characteristics

ACTIVITY	OUTCOME
Clear and grade activities undertaken	1,120ha
Rehabilitation / reinstatement completed	1,105ha
Pipeline construction (Open Cut)	439 km
Pipeline construction (HDD) – horizontal direct drilling	~1km (5 locations)
Pipeline testing (hydrotesting)	440 km
Pipeline commissioning	440 km (Feb 2019)
Facility construction	Inlet Meter Station; Scraper Station 1; Scraper Station 2;

	Granites Meter Station; and Dead Bullock Soak (DBS) Meter Station
Facility commissioning	Five (5) locations - February 2019
Water abstraction	Estimated water use for the project was 4.54ML/week for construction activities Achieved 3.9ML/week.
Water treatment and disposal	Water treatment onsite at camps managed through licence with Department of Health

AGIT conducted two Health, Safety and Environment (HSE) Audits during the reporting period. AGIT audits were conducted on the Pipeline Construction Contractor in October 2018 and the Facilities Contractor in November 2018. AGIT ensured HSE resources were employed on the project to review daily compliance to HSE obligations on the project.

2.1. Identified new risks

There were no new risks identified during the construction program. Rehabilitation monitoring shall commence in 2020 (based on seasonal requirements) and this will be provided as part of the new annual report.

3. Compliance Assessment

A compliance assessment was conducted against EPBC 2017/7997 for the period 1 June 2018 through to 31 May 2019 (Table 3). This assessment was conducted in accordance with the Department of Environment Annual Compliance Report Guidelines (DoE 2014).

All conditions have been assessed and assigned a compliance status as defined in Table 2 below.

A declaration of accuracy forms part of this submission and is included at Appendix A.

Table 2: Compliance status definitions and abbreviations

Compliance Status Terms	Abbrev	Definition
Compliant	C	'Compliance' is achieved when all the requirements of a condition have been met, including the implementation of management plans or other measures required by those conditions.
Non-compliant	NC	A designation of 'non-compliance' should be given where the requirements of a condition or elements of a condition, including the implementation of management plans and other measures, have not been met.
Not applicable	NA	A designation of 'not applicable ' should be given where the requirements of a condition or elements of a condition fall outside of the scope of the current reporting period. For example a condition which applies to an activity that has not yet commenced.

Table 3: MS112 Audit Table

Condition number	Condition	Status	Evidence / Comments
1	For the protection of listed threatened species the approval holder must do the following: a. Clear no more than 1,136 ha of vegetation; b. Not clear any vegetation outside the pipe alignment corridor, except as required to establish up to four work camp sites; c. Implement the plans referred to in these conditions.	Compliant	Yes, clearing was kept below the approved 1,136 hectares (ha). Total clearing for the project was 1,120ha; due to minimisation of clearing the project came in 16ha less than the expected clearing area. Final plans and surveys confirm the total clearing with the Vegetation Clearing Register provided in Appendix B. No vegetation was cleared outside of the 300m pipe alignment corridor. AGIT was also able to locate the four work camp sites and approved access tracks within the corridor. The Construction Environment Management Plan (CEMP), Rehabilitation Plan, Night Parrot Management Plan and Trench Clearing Procedure were all implemented as part of project delivery. To confirm implementation, HSE audits were undertaken by AGIT against the construction contractors to manage compliance. A copy of the report is available in Appendix C. Minor non-conformances and opportunities for improvement were identified and actions arising from the audits were added to the Event Management System and tracked to close out. Additionally, the Construction Contractor undertook internal inspections and audits against the requirements of the CEMP. Any actions arising were added to the project Corrective Action Register and tracked to close out. The Construction Contractor also completed a compliance review as part of the project close out. This provided information and evidence against the EPBC conditions.
2	For the protection of Greater Bilby *(Macrotis lagotis)* and Great Desert Skink *(Liopholis kintorei) ,* the approval holder must do the following: a. Undertake pre-clearance surveys to determine presence of burrows in the construction right of way; b. Avoid destruction or damage to burrows, including (without limitation) micro-siting the pipeline; c. Comply with the Trench Clearing Procedure and Construction Environmental Management Plan.	Compliant	A major pre-project survey was undertaken to detect presence of burrows by Eco Logical Australia (ELA) in February and March 2018. This survey was provided to the Construction Contractor to assist in avoidance of burrows and micro-siting of the pipeline. A large number of Skink burrows were located during the pre-clearance survey work within the 100m pipeline license area. Pre-clearance survey work was conducted by the Construction Contractor working in front of the clear and grade crew to avoid Skink burrows, Bilby burrows, potential Princess Parrot active trees and to cover off on all other environmental controls such as waterway crossings, riparian vegetation, erosion risk areas and weeds. An additional Skink burrow (not previously identified) was located by the pre-clearance survey at KP418 as well as six additional burrow entrances in the high density area (below). The project surveys identified a high density area of Skink burrows, located between Kilometre Point (KP) 343 and 358 which was a key target area for realignment of the pipeline. To assist in minimising impacts on Skinks, potentially impacted burrows were pegged and the pipeline right of way diverted to avoid these burrows wherever possible. With realignment, only eight out of the 323 burrows in this area were minimally impacted within the approved working area. This was a reduction from the original alignment which would have impacted 70 burrows. Realignment and a reduction of the disturbance area (construction right of way) to 21m (instead of the approved 25m) was used to minimise impacts. Burrows were then flushed prior to and during disturbance to ensure Skinks were relocated prior to any impacts. Realignment in other areas (KP66, KP418 and KP491 and KP425) was also completed with no impacts to burrows. By realigning around burrows, the project was delivered with just one Skink fatality occurring from disturbance of a burrow. Unfortunately despite preventative controls such as reduced clearing pace, burrow flushing and the presence of fauna personnel, a further 11 Skink fatalities occurred in association with clearing activities as Skinks moved throughout the vegetation. All 12 Skink fatalities

			were reported to DoEE, as per requirements under the CEMP (correspondence dated 17 August 2018 and 22 October 2018). No Greater Bilby's were encountered by personnel throughout the project. Fauna interaction records demonstrate that no relocations of the Greater Bilby during the project. The Construction Contractor conducted survey and tagging along the corridor to identify significant trees, burrows, heritage sites and waterway crossings. These colour coded tags ensured that personnel were informed regarding environmental or construction issues along the right of way. Compliance to the Trench Clearing Procedure was reviewed through the audit, daily reports and reviews of the fauna data provided by the Construction Contractor. Further details on the outcomes of the fauna activity on the project is included in Section 5 below. As required under the Trench Clearing Procedure, fatally injured specimens were collected and provided to the NT Museum to assist in collection increases and enable scientific review.
3	For the protection of Night Parrot *(Pezoporus occidentalis),* the approval holder must do the following: a. Implement the Night Parrot Management Plan; b. Notwithstanding any other condition, undertake surveys for Night Parrot in accordance with the Night Parrot Survey Guidelines; c. If Night Parrot is detected on or in the vicinity of the pipe alignment corridor: i. immediately cease all work within 5 km of the place where Night Parrot was detected; and, ii. notify the Department and Night Parrot Recovery Team; and, iii. not recommence work within the area specified in condition 3.c.i. until approved by the Minister in writing; d. If one or more Night Parrot individuals is injured or killed, and, in the opinion of the Department, the death or injury arises from or was contributed to in any way by the proposed action or the presence of the approval holder on or in the vicinity of the pipe alignment corridor, the approval holder must report the injury or death to the Department within 48 hours, and contribute $50,000 per individual to a fund or program nominated by the proponent and approved by the Department.	Compliant	Yes, the requirements of the Night Parrot Management Plan were implemented as required. The key obligation of the Night Parrot Management Plan was to conduct additional acoustic survey work to support the field and desktop analysis of the locations of highest likelihood. Adaptive NRM with Stephen Murphy as Principal (a member of the Night Parrot Recovery Team) conducted field acoustic survey work for Night Parrots in high likelihood locations (structurally and floristically suitable) based on a number of factors. This survey report is included in Appendix D. The report, including over 1,000 hours of acoustic data collected from 13 of the most likely locations, found no evidence of Night Parrot activity in the area. Once this report was received, work was able to proceed in these areas. No Night Parrots, or evidence of Night Parrots, was found during the project construction works.
4	For the protection of Dwarf Desert Spike-rush *(Eleocharis papillosa),* the approval holder must comply with the Construction Environmental Management Plan. In particular, the approval holder must avoid disturbance of environmentally sensitive areas by utilising directional drilling methods.	Compliant	Yes, the CEMP was complied with throughout the project and no Dwarf Desert Spike Rush (DDSR) were impacted during the construction of the pipeline. To fully ensure the presence / absence of the DDSR, ELA completed a survey of all riparian vegetation that would potentially be impacted by the project. No DDSR was in evidence during this survey. The pre-clearance survey conducted by the Construction Contractor did not find any evidence of the DDSR prior to clear and grade activity. As per the CEMP, Horizontal Direction Drilling (HDD) was undertaken at sensitive or critical infrastructure as part of pipeline construction. At time of drafting the CEMP there were three potential locations identified due to environmental factors for HDD. This included the Chilla Well location, which consisted of a 100m HDD section to avoid the beds and banks of the main waterway with a large buffer either side of the waterway to avoid construction impacts. It should be noted that the vegetation at Napperby Creek and Yaloogarrie Creek were not found to be sensitive and the river beds was un-vegetated so HDD was not required at these locations.

5	For the protection of Princess Parrot *(Polytelis alexandrae),* the approval holder must undertake pre-clearance surveys for Princess Parrot to determine whether Princess Parrot is present in an area proposed to be cleared, and must avoid disturbance of any individuals, especially nesting birds, and must take all reasonably practicable measures to avoid trees containing hollows suitable for breeding.	Compliant	As per condition 2, pre project surveys and a pre-clearance survey was undertaken to minimise impacts to the Princess Parrot. This included the identification and demarcation of trees that had active hollows as well as the micro-siting of the pipeline to miss potential habitat trees. The ELA survey identified significant trees that were marked for 'keeping' as part of the pipeline alignment and included assessment of trees within heritage restricted work areas. Significant trees were identified using taping and were marked on GIS information to ensure clearing activities did not impact these trees. There were no event reports of the removal of significant trees and no external complaints were received.
6	For the protection of listed threatened species, the approval holder must undertake rehabilitation work in accordance with the Rehabilitation Plan.	Compliant	Rehabilitation work has been completed as set out in the CEMP and Rehabilitation Plan with the exception of 1ha set aside at Camp 1 and Camp 4 (2ha total) on request from the Northern Territory Department of Infrastructure, Planning and Logistics (DIPL) for future use. AGIT is in the process of submitting a revised CEMP and Rehabilitation Plan to account for operational requirements and this will be submitted as required under Condition 14. This will be accompanied by supporting environmental impact assessment to ensure additional risks are mitigated and no significant change to the impact of the project is identified. The Construction Contractor completed a Rehabilitation Photo Monitoring Report (Appendix E) as part of the project to demonstrate reinstatement completion and to meet requirements under the Rehabilitation Plan. This report, along with ongoing Field Inspections completed monitoring obligations required for the construction phase. Annual monitoring shall commence in 2020 with timing based on requirements of the Northern Territory 'Guidelines for Assessment of Impact on Terrestrial Biodiversity' (NT EPA 2013) to allow suitable floristic material to be available for plant identification. Therefore based on season (wet season) this is proposed for March/April 2020. A Field Inspection Checklist – Rehabilitation is also provided in Appendix F for the Camp 4 location to demonstrate compliance to the Rehabilitation Plan requirements.
7	Notwithstanding any other condition or provision of a plan, unless the Department determines otherwise, the approval holder must continue rehabilitation work until the completion criteria are met for all areas that are subject to the Rehabilitation Plan.	NA	
8	The approval holder must engage a suitably qualified independent expert approved by the Department to assess the level of success of rehabilitation and undertake the following tasks: a. Assess the construction right of way before any clearance is undertaken, to determine and record the baseline condition of the area, and determine the appropriate locations of the monitoring and control sites; b. Assess the success of rehabilitation three years after substantial completion of the project, to determine the extent that the completion criteria have been met; c. Produce and submit to the Department a report on the success of rehabilitation (Rehabilitation Report), within three months of the three year anniversary of substantial completion of the project; d. If required by the Department, undertake additional assessments, as directed by the Department, until the completion criteria have been met.	Compliant	Yes, suitably qualified independent experts, Ecological Australia (ELA) have been approved by DoEE to conduct rehabilitation assessment. In correspondence dated 12 August 2018, DoEE approved three personnel from ELA to undertake the specific tasks set out in Condition 8. Annual monitoring, as required under the Rehabilitation Plan shall commence in 2020 with timing based on requirements of the Northern Territory 'Guidelines for Assessment of Impact on Terrestrial Biodiversity' (NT EPA 2013) to allow suitable floristic material to be available for plant identification. Therefore based on seasonal impacts (just post wet season) this is proposed for March/April 2020.

9	If, based on the Rehabilitation Report provided by the approval holder in accordance with condition 8.c., the Department considers that the completion criteria have not been met in respect of a portion of cleared area, the approval holder will be required to provide an offset, in the form of a financial contribution, and may be required to undertake additional rehabilitation activities as specified by the Department. The financial contribution payable by the approval holder will be calculated as follows: Financial contribution = $1,500 x Area where Area means the area that does not meet the completion criteria, in hectares.	NA	
10	If a financial contribution is payable in accordance with condition 9, the approval holder and the Department will work together to agree on appropriate arrangements before any payment is made, taking into account the potential habitat that was cleared, and the matters of national environmental significance that are likely to have been impacted by the failure to meet the completion criteria in the relevant timeframe.	NA	
11	The approval holder must advise the Department in writing of the actual date of commencement and substantial completion within 14 days after commencement or substantial completion, as relevant.	Compliant	Commencement of activities began on the 2 June 2018 based on receival of the approval on the 1 June 2018. AGIT advised DoEE personnel verbally and via email that the project would commence as soon as approval was received. On 4 December 2018, AGIT advised DoEE of substantial completion of the pipeline. Substantial completion being defined in the approval as "….when the pipeline has been buried and the construction right of way has been reinstated in preparation for rehabilitation….." Completion of above ground facilities occurred in January 2019 with commissioning and operations commencing in February 2019.
12	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 plans 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.	Compliant	Yes, accurate records of clearing, micro-siting, survey work and other records pertaining to the compliance against the conditions of this approval and the approved plans were developed and maintained. A selection of these records (clearing register, audit reports etc) are included in this report. Additionally, information is held by the Construction Contractor in relation to their internal compliance processes. No external audits were completed during construction of the pipeline.
13	Within three months of every 12 month anniversary of commencement, the approval holder must publish a report on its website addressing compliance with each of the conditions of this approval, including implementation of plans as specified in the conditions (compliance report). Documentary evidence providing proof of the date of publication of the compliance report, and non-compliance with any of the conditions of this approval, must be provided to the Department at the same time as the compliance report is published. The approval holder is not required to provide compliance reports after all obligations under these conditions have been met, and two consecutive compliance reports that demonstrate compliance with all obligations under these conditions have been provided to the Department.	Compliant	Yes, this report will be published on the AGIG website (https://www.agig.com.au/articles/tanami-gas-pipeline) as part of the requirements under this condition. Evidence of the publication will be provided to DoEE at the same time in terms of a link to the website. The report will be published prior to 1 September 2019.
14	The approval holder may choose to revise a plan required by these conditions without submitting it for approval under section 143A of the EPBC Act, if the taking of the action in accordance with the revised plan would not be likely to	NA	

	have a new or increased impact. If the approval holder makes this choice they must: a. notify the Department in writing that the approved plan has been revised no later than four weeks before implementing the revised plan; b. provide the Department with an electronic copy of the revised plan, and an explanation of the differences (and reasons for them) between the revised plan and approved plan, no later than four weeks before the proposed implementation date for the revised plan; c. implement the revised plan on or after the proposed implementation date unless the Minister gives the approval holder notice that the Minister considers the revised plan is likely to have a new or increased impact; and d. notify the Department of the actual date of implementation of the revised plan.		
15	The approval holder may revoke its choice under condition 14 at any time by notice to the Department. If the approval holder revokes the choice to implement a revised plan, without approval under section 143A of the Act, the plan previously approved by the Minister must be implemented.	NA	
16	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 plan would be likely to have a new or increased impact, then: a. Condition 14 does not apply, or ceases to apply, in relation to the revised plan; and, b. The approval holder must implement the plan previously approved by the Minister.	NA	
17	To avoid any doubt, condition 16 does not affect any operation of conditions 14 and 15 in the period before the day the notice is given.	NA	
18	At the time of giving the notice the Minister may also notify that, for a specified period of time, condition 16 does not apply for one or more specified plans.	NA	
19	Conditions 14-18 are not intended to limit the operation of section 143A of the EPBC Act, which allows the approval holder to submit a revised plan to the Minister for approval	NA	
20	Unless otherwise agreed to in writing by the Minister, the approval holder must publish all plans and reports referred to in these conditions of approval on its website. Each of these documents must be published on the website within one month of being approved by the Minister or being submitted to the Department under the relevant condition.	Compliant	All plans and procedures as referenced in these conditions (as listed below) are published on the AGIG website at (https://www.agig.com.au/articles/tanami-gas-pipeline). Before this all preliminary documentation and plans were available at www.dbp.net.au . • Construction Environment Management Plan (CEMP) • Rehabilitation Plan • Trench Clearing Procedure • Night Parrot Management Plan

4. Territory Compliance

4.1. Vegetation Clearing Permits

Two vegetation clearing permits were issued by the Department of Environment and Natural Resources (DENR) for Crown Land and Aboriginal Land for the project. Together these two permits approved clearing through road reserves, stock routes and Aboriginal Land tenure.

Requirements of the permits included working under a DENR approved Weed Management Plan and ensuring controls as set out in the CEMP were implemented. A specific report was developed as required under the conditions of one of the permits and provided to DENR to close out clearing completion. No non-compliances were identified.

The project was able to minimise clearing by approximately 16ha by reducing the right of way width and aligning with existing tracks or infrastructure.

4.2. Waste Treatment Plant

Waste water treatment plant permits were approved by the Department of Health for each of the temporary construction camps. The permits were issued to NTC Link as the Camp Operators and included requirements for the quality of irrigation waste water once treated. Any non-compliances were immediately reported to the Department of Health and repaired onsite. Minor spills of untreated waste water were immediately rectified. No major spills of untreated water occurred.

4.3. Permit to Interfere with Wildlife for Commercial Purposes

The Construction Contractor was granted two permits to cover fauna interactions under the *Territory Parks and Wildlife Conservation Act*. These permits allowed for the 'catch and release' process defined in the Trench Clearing Procedure. The Construction Contractor provided detailed fauna data to the Department of Parks and Wildlife on 1 March 2019 on completion of the project to close out the requirements of the permits.

More details on Fauna interactions is in Section 5.

4.4. Cultural Heritage

An Agreement was reached between the NT Government, Central Land Council and specific land owners to complete construction and operation of the TNP including the following:

- Indigenous Land Use Agreements (ILUA);
- Aboriginal Land Rights Act (Section 19's); and
- Aboriginal Areas Protection Authority.

5. Fauna management

The project implemented a rigorous fauna management process to ensure animals impacted from the construction of the trench (under the Trench Clearing Procedure) had a high chance of being found and relocated. Over 16,000 animals were interacted with during the project construction and stringent controls were in place to mitigate impacts.

Controls implemented throughout the project included:

- Ensuring all trench was inspected daily within timeframes set out in the procedure;
- Ensuring a trained fauna personnel were involved in daily trench inspections and relocation programs;
- Confirming fauna handling and relocations data logs were in place;
- Checking deceased fauna was collected for museum specimen provision; and
- Ensuring ramps and shelters were installed as required to ensure maximum protection or egress if fauna were trapped in the trench.

The audit identified that tracking and documentation of trench 'open' time could be improved to demonstrate how the 15 day requirement was being complied with.

16,286 fauna interactions occurred during the project. Of these, 15,016 (92.2%) were relocated or shepherded offsite with no impacts. There were 13 threatened species fatally impacted by the project including one Brush-tailed Mulgara and twelve Great Desert Skinks. Final numbers encountered throughout the fauna tracking for the project are set out in Table 4.

Table 4: Fauna Interaction Data Summary

Inspection Type	Amphibian	Bird	Feral	Mammal	Reptile	Threatened Species	Other	Total
Call out by Crew	1	2	-	-	11	2	-	16
End of Day KP	-	-	2	-	4	-	-	6
Great Desert Skink Inspection	-	-	-	-	-	15	-	15
Laydown / Camp Inspection	4	-	2	6	93	-	-	105
Pre-clearing inspection	79	39	3	57	1,609	33	59	1,879
Start of day KP	-	-	1	1	7	-	-	9
Trench Inspection (daily)	219	3	1	1,154	12,692	115	21	14,205
Trench Inspection (shelters and escapes, end caps)	-	-	-	-	1	-	2	3
As required	-	-	-	1	45	-	2	48
Total	303	44	9	1,219	14,462	165	84	**16,286**

Figure 2: Fauna team conducting removal from trench

Figure 3: Example of Great Desert Skink burrow demarcation and signing adjacent to right of way

6. Project initiatives

6.1. Micro-siting

Realignment of the pipeline based on the results of surveys was a vital tool in reducing impacts to threatened fauna in the area. Through the high density Great Desert Skink area the ability to realign the pipeline within the pipeline licence area reduced potential burrow impacts from 70 burrows down to eight (8) burrows. This greatly reduced the potential impact of the project.

6.2. Fauna tracking

Fauna interactions were geospatially logged using mobile digital technology which enabled the collection of recovery and release location data, in addition to photos where relevant. This information will be provided to the NT Museum and the Living Atlas of Australia to contribute and build the knowledge of species in this remote area.

6.3. Visual information cards

The Construction Contractor implemented a program of colour coding of important issues along the right of way to assist in informing personnel and contractors of what is important along the route. This include (as per below) significant trees, heritage locations and waterway crossings. By linking these to survey pegging, personnel were given these cards to provide an ongoing reference as to what sensitive receptors could be in any given location.

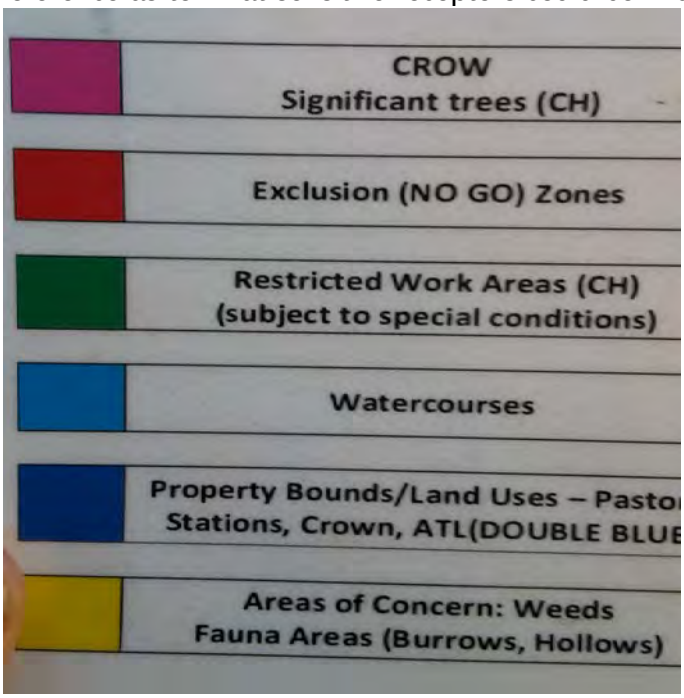

Figure 4: Visual environmental information cards

6.4. Princess Parrot Nesting Boxes

In accordance with the CEMP, where the project impacted any area of confirmed princess parrot habitat or any densely vegetated areas of potential princess parrot habitat, the requirement for alternative safe habitat was assessed. Accordingly, approximately 28 nesting boxes were constructed by Local Traditional Owners (Yapa-Kurlangu Ngurrara Aboriginal Corporation) and fitted to trees adjacent to the pipeline route.

Figure 5: Nesting box installed adjacent to the right of way

6.5. Museum Specimen Collection

The project Construction Contractor (MPC Kinetic) as part of the project commitments under the Trench Clearing Procedure and CEMP collected, treated and stored a range of species that were fatally impacted by the project and provided these as specimens to the Northern Territory Museum. Through this work, approximately 190 specimens were delivered to the museum for future use and to promote knowledge of fauna in the Tanami Desert region. The dataset of fauna interactions was also supplied to Atlas of Living Australia.

6.6. Non-destructive testing (NDT)

A recent initiative led by the Construction Contractor allowed for improved environmental outcomes in relation to the completion of non-destructive testing of welds and quality checks on pipework coating.

Moving away from the traditional x-ray process, which is chemically dependant and produces waste through the development of film. The project implemented a 'phosphorous' wrap process which used a digital processing system and made the wrap available for reuse. This reduced the waste footprint of the process greatly and minimised the amounts of hazardous chemicals required onsite.

6.7. Traditional Owner Art Project

The Construction Contractor awarded local Traditional Owner Group Artists with a project to utilise old car bonnets as part of an arts project to utilise as signage for each of the four temporary camp locations. These bonnets served as improved location signage and was a way to keep the local Traditional Owners aware of the project progress.

Figure 6: Local Traditional Owner Artist with Camp Signage Project

7. Conclusion

During the reporting period AGIT conducted works in compliance with the CEMP and achieved a 16ha reduction in amount of land approved for clearing.

There were no Night Parrots found (or evidence of) during the multiple surveys, construction or operational periods to date.

The ability to micro-site (realign) the pipeline to meet ground environmental conditions enabled a large reduction on the potential impacts to the Great Desert Skink.

There was a large number of fauna interactions during the project with over 16,000 interactions occurring. Fauna data and specimens collected have added to the knowledge base including the NT Museum and the Atlas of Living Australia.

Overall compliance against the conditions to date has been met and the completion of the construction within a short timeframe has reduced impacts across the region.

Annual rehabilitation monitoring shall commence in 2020 to assess progress to date and shall be provided in the next reporting period.

This report provides evidence against the closure of construction related conditions. Ongoing conditions including rehabilitation shall be included in future annual reports. Management Plans shall be reviewed as required for those relevant to open conditions and operations.

Appendix A: 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	Ben Wilson
Full name (please print)	BEN WILSON
Position (please print)	CHIEF EXECUTIVE OFFICER
Organisation (please print including ABN/ACN if applicable)	AGI Tanami Pty Limited ACN 622 012 560
Date	26/8/19

Appendix B: Vegetation Clearing Register

VEGETATION CLEARANCE AREA DRAWDOWN REGISTER

Total Vegetation Clearance Allowed	1,136	ha
Total Vegetation Cleared	1,120	ha
REMAINING AREA AVAILABLE FOR VEGETATION CLEARANCE	15.95	ha
	159,459	m2

	TABLE A: TOTAL AREA	Length (m)	Width (m)	Area (m2)	Area (ha)
1	Mainline	389733	24.5	9,541,665	954.1665
2	Mainline to KP50.5	50500	25	1,261,350	126.135
3	Camp 1	297.6	352.6	101,247	10.12
4	Camp 2	250.6	359.6	89,074	8.91
5	Camp 3	236	236	53,048	5.30
6	Camp 4	270	253	68,325	6.83
			Total Area	**11,114,709**	**1,111**

	TABLE B: AREAS THAT WERE NOT CLEARED	Length (m)	Width (m)	Area (m2)	Area (ha)
			Area that were not cleared	**22880.0**	**2.288**
HDDs	Tilmouth Well - Napperby Creek (172 x 25) - **DELETED**				
	Stuart Range (240 x 25) - **DELETED**				
	Yaloogarrie Creek (multiple tributary crossings) (80 x 25) - **DELETED**				
	Chilla Well	80	24.5	1,960	0.20
	Tanami Road crossing	20	24.5	490	0.05
	Tanami Road crossing	20	24	480	0.05
	DBS Mine Road	20	24.5	490	0.05
	DBS Mine Road at Termination	20	24.5	490	0.05
Granites Facility	Granites Facility (as per survey data dated 28/10/18)			1,605	0.16
DBS Facility	DBS Facility (as per survey data dated 28/10/18)			855	0.09
Reduced ROW	Stuart Range - 10meters	494	15	7,410	0.74
Gravel Tracks	91 tracks	2275	4	9,100	0.91

S. Nos.	TABLE C: ADDITIONAL CLEARED AREAS	Length (m)	Width (m)	Area (m2)	Area (ha)
			Additional cleared areas	**108,712**	**10.87**
1	Telstra Pads (total), calculated as of 15/9/18 (final)			2,415	0.2415
2	BLANK				
3	BLANK				
4	Set out access tracks calculated as of 15/9/2018 (final)			43,417	4.3417
5	EWS at Napperby Creek (Crossing) (Email approval by JQ dated 26/6/18)	150	25	3,798	0.3798
6	EWS at Napperby Creek (Crossing) (Email approval by JQ dated 26/6/18)	50	25	1,253	0.1253
7	BLANK			-	
8	EWS at Stuart Bluff	150	25	3,760	0.376
9	BLANK				
10	KP 21 Water bore turkey nest (new)	70	70	4,900	0.49
11	EWS at KP0			-	0
12	EWS for Hydrotesting (TQ135) - NOT CLEARED YET (7000 m2)				0
13	EWS Truck Turnaround (KP437+539 and KP439+395), 30x30m each (TQ-144)			1,800	0.18
14	KP314 Water bore turkey nest (new)	20	20	400	0.04
15	KP354 Water bore turkey nest (new)	20	20	400	0.04
16	EWS KP 184 and 184.5 (3OFF 25x50 metres) (TQ-141)	25	50	3,545	0.3545
17	EWS Napperby Creek washdown bay (Email approval by JA dated 24/6/18)	12	8	109	0.0109
18	EWS Chilla Well HDD (25 x 50) - Request Not Approved Aboriginal Land			-	0
18	EWS Hydro Pond at KP 214 (Email approval by JQ dated 16/9/18)	180	33	5,940	0.594
19	EWS Hydro Pond at KP 332 (Email approval by JQ dated 16/9/18)	180	42.5	7,650	0.765
20	EWS Haulage Road HDD at KP 439 (Email approval by JQ dated 16/9/18) - NOT CLEARED YET (1800 m2)				0
21	KP 258 Water bore turkey nest (new)	20	20	400	0.04
22	EWS Hydro Pond at KP397 (TQ-127)	approx 193	approx 32	6,121	0.6121
23	EWS for RO Reject Pond at KP 73	45	48.5	2,183	0.21825
24	KP0 Surface Facility (as per survey data provided 28/10/18)			4,274	0.4274
25	KP144 Surface Facility (as per survey data provided 28/10/18)			2,608	0.2608
26	KP279 Surface Facility (as per survey data provided 28/10/18)			2,157	0.2157
27	KP0 Anode bed (as per survey data provided 28/10/18)			5,416	0.5416
28	KP144 Anode Bed (as per survey data provided 28/10/18)			3,126	0.3126
29	KP279 Anode Bed (as per survey data provided 28/10/18)			3,040	0.304
				-	0
				-	0
				-	0

Appendix C: HSE Audit

ZERO HARM

HSE-AUD-053
Tanami Newmont Gas Pipeline
Main Contractor - MPC Kinetic
HSE Audit

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CONTENTS

1. DETAILS

Date: 28 September 2018 (IVMS – Desktop) and 24-28 September 2018 onsite HSE

Location: Tanami Gas Pipeline (TNP)

Activity: Construction

Scope:

- MPC Kinetic Work Health and Safety Management Plan (WHSMP)
- MPC Kinetic Journey Management Procedure
- MPC Kinetic Traffic Management Plan
- MPC Kinetic Environmental Management Plan
- EPBC 7997/2017 Approval (and associated documents)

Participants:

- Lead Auditor – Mark Brown
- Auditee Representatives – Brendan McGuckan, Morgan Hawkes, Vaughn Hampton, Tony Henderson, Paul Druery, Veronica Cavanaugh

2. OVERVIEW

- Training records are incomplete or not updated regularly for MPC Kinetic personnel. This includes a gap for Chain of Responsibility (COR) training (only two MPC personnel listed as completed).
- Training records for subcontractors are not in any database, split over departments and were found to be incomplete. They also do not provide an easy method for checking or review by onsite personnel.
- Permit systems indicate a potential gap early in the project, the recent permit register development will help to track these better.
- There is an identified gap between what is described in the WHSMP and the actual processes taking place onsite in terms of document records and review of these processes. Risks are being managed but partial or limited application does not provide evidence of implementation. This includes management of register (lifting, electrical and Safety Data Sheets (SDS)).
- The reviews of subcontractor Safe Work Method Statements (SWMS) are being completed to a high level.
- Recent improvements such as the KPI tracking process show a good trend on behalf of MPC to ensure commitments under the WHSMP are being documented and reviewed.
- The lack of geo-fencing of the IVMS limits the capability to track and monitor safe driving behaviour on the project. This has recently been updated (29 September 2018) to manage the 80km zone and was implemented by MPC based upon early discussions from this audit.
- There is no documented evidence that the IVMS reports received are reviewed for tracking of speed on unsealed roads or to track Right of Way (RoW) as required in the Journey Management Procedure (JMP).

3. BACKGROUND

Australian Gas Infrastructure Group – Tanami (AGIT) undertook a desktop audit of the MPC Kinetic In-vehicle Monitoring System (IVMS) in late August 2018.

In late September AGIT undertook an onsite HSE audit of the project including onsite interviews with personnel, camp inspections and a review of HSE systems on location. The desktop IVMS audit was linked into the onsite audit as part of the review of onsite evidence.

This is the second audit undertaken on MPC Kinetic with the first pre-mobilisation audit completed in May 2018.

It was found that there are some well understood and implemented HSE processes on site and this was present through interviews with site personnel and field staff. However there is a disconnect in relation to records management and provision of evidence to back up the field activities.

It was noted that with recent changeovers to personnel and a new revision of the WHSMP there has been recent improvements in the tracking of Key Performance Indicators (KPI) especially in relation to personnel completion of audits and inspections.

The Auditor would like to thank MPC Kinetic for their assistance during the audit.

4. EVIDENCE

IVWM reports were made available for review for the desktop assessment and included in Appendix A.

Documentation reviewed onsite included the Training register (MPC Kinetic), personnel folders for sub-contractors, registers (where available), audit and inspection schedules and other day to day documentation. A table of evidence reviewed onsite and associated photos is available in Appendix B.

Where evidence was not available it is requested in Section 6 of this report.

5. RESULTS

Source	Section / Reference	Obligation	Finding	Comment
WHSMP Rev B	9.1.2 WHS FRM 058	New Worker Form	NC	There is no evidence of this process being implemented and uncertainty over who is responsible (HSE / Corporate / HR) Camp 4 discussions revolved around the attempt to introduce this process but mentors etc were difficult to arrange
WHSMP Rev B	25.3 GRP FRM 006	HSE Management Review	NC	There is no evidence of the implementation of this process or use of this form in INX. Are reviews being completed and if so this needs to be captured including actions arising. It was noted that HSE Department meetings are occurring however not as described.
WHSMP Rev B	5.3 WHS FRM 068	Project Legal Register	NC	Not in evidence at time of audit, a MPC Kinetic legal register existed but this is at the group level and not the project level.
WHSMP Rev B	Hazardous substances 22.2	SDS Register	NC	Limited implementation: No evidence of the SDS Register on Share point being up to date or regularly maintained (9 items). If register is in ChemWatch then this is not well understood onsite and duplicated somewhat in Sharepoint Interviews demonstrated that the Chemwatch system is not well known or understood and ability to access is sometimes limited

				Additionally, replacement personnel may not have access to registers as required
Worksafe NT	Training and competency 9.4	While not included in the WHSMP, this is more a trained for the role requirement Training database	NC	In General training records were held contrary to WHSMP as there is no database or matrix present for contractors. Training details are spread over camp locations or to certain personnel and not readily available for Supervisors or HSE to check. Some contractor personnel reviewed at the time of audit did not have personnel folders in the HSE system (i.e. no record). Details such as inductions are missing or not updated from hard copies into the MPC matrix. Fire spotters as per 'hot work tags' do not have fire training. There is no fire training in the training matrix for MPC Kinetic personnel (but at least three personnel listed as fire spotters in hot work tags). It is a general duty of are that personnel are trained in the roles they undertake under legislation and therefore fire spotters should have some level of fire training.
WHSMP Rev B	CoR 9.7	Chain of responsibility (COR) training as per NHVR guidelines	NC	On review of the Training Register only two MPC Kinetic personnel have COR training. Even four truck drivers (MPC Kinetic) do not have it and this does not meet the NHVR guidelines for COR training
WHSMP Rev B	21.5.1 (Lifting) 22.3.1 (Electrical Recording of Tests)	Documented maintenance records for the lifting gear to remain at the workplace. All testing of electrical equipment shall be retained	NC	Lifting and electrical registers are managed adhoc and Camp 4 lifting register or electrical register were not available at time of audit. Responsibility sat with storeperson and some obligations were not known by personnel in those roles (acknowledging not the normal storeperson at Camp 4).
EMP and WHSMP	23.2 (WHSMP) 20 (EMP)	Non-conformances	OFI	The capture and reporting of known non-conformances was noted to be absent in some cases. Specifically when fauna trench inspections are well outside of 5 hour limits (i.e. 7-8 hours) this needs to be captured and actions tracked.
WHSMP Rev B	8.1.5 WHS FRM 018	Senior Management shall completed the Senior Management Inspection Checklist when visiting site	OFI	Partial implementation: While Leadership walks were in evidence from Senior Leaders the completion of this form and process was not in evidence
WHSMP Rev B	8.1.4	HSE Inspection Schedule	OFI	Partial Implementation: There is no schedule used however inspections are being conducted as per KPI requirements
WHSMP Rev B	8.1.6	Supervisor Weekly Inspection Checklist	OFI	Partial implementation: the KPI tracking spreadsheet indicates several Supervisors not completing these on a weekly basis (i.e. 0 out of 4 for the month). The tracking is only a new initiative this month which should help track this progress and lead to improvements

WHSMP Rev B	11.1 WHS FRM 004	MPC SWMS Review Form	OFI	Partial implementation: a selection of subcontractor SWMS reviews were loaded into the system but others seem to be missing or not loaded or are held on personal computers only These reviews have been completed well for those viewed, however record management to confirm completion and a register of contractor SWMS is not in place and with improved communications this should be improved
WHSMP Rev B	15.3 WHS FRM 045	All drills shall be evaluated using WHS FRM 045	OFI	Partial implementation: This form is either incorrect or another form (i.e. WHS FRM 227?) is being utilised for drills Drills are being completed, recent non work related or non project related emergencies have worked well and include a lessons learnt (debrief) process
WHSMP Rev B	25.1 Group Audit Schedule QUA FRM 169	All audits shall be conducted in accordance with the Group Audit Schedule	OFI	While the Group Audit Schedule is in place there is no evidence of these being completed to date, or evidence of rescheduling for the project HS or Quality audits or the Managers are not aware of these occurring.
WHSMP Rev B	General 25.3	Audits	OFI	While Group and external audits are mentioned there is no process (other than CMR audits and subcontracting) for internal auditing
EMP	Trench Clearing Procedure	15 days open trench	OFI	There is no set tracking of this requirement. While data can be extrapolated from other sources this obligation is not measured
WHSMP Rev B	6	CMR Audits	OFI	It was noted on review of the CMR audits that a section had been ticked 'No' in terms of compliance. There was no evidence of any follow up or actions resulting from this (noting that it could be an error) however a process needs to be in place to ensure a response to audit findings
WHSMP	15.6 First Aid Training	2 per work crew (suggested minimum)	OFI	Recent training has lifted MPC Kinetic numbers from 7 to 30 (17th Sept) However records are not available at time of audit for contractor work crews to meet the minimum. (Steel Diamond only one trained first aider) from records at Camp1, this increased to 4 at Camp 2. Only one Fyfe personnel has a first aid certificate on file and this is expired. (Camp 1 data)
WHSMP Rev B	15.3 Incident Response Group	Requires additional training	OFI	There is verbal evidence of some internal training being undertaken but this is not captured in the training matrix or is it an official or documented course.

6. REQUESTS FOR FURTHER INFORMATION

I. Please provide an electrical register from ACS (Camp Management) or NT Links in relation to management of camp electrical equipment.

II. Please provide the relevant tickets and VOC's for Pacific Towers working at heights personnel (2 personnel involved in working at heights).

III. Pre-start records for TNP137 (NT Links equipment) – UpVise records

7. GOOD PRACTICE

Obligation	Comments
Breach management - IVMS	Where a breach has been reported and detected this has been investigated and appropriately managed.
IVMS Alarms	The in-vehicle alarms for breaches works well including speeding and seat belts.
Pre-starts	Upvise (App) or prestart book use well understood by personnel interviewed onsite and implemented
CMR Audits	Recent CMR auditing has improved greatly and include a range of activities
Monthly Environmental Inspections	Documented inspection in place since commencement of project and includes action tracking
Fauna Statistics	Are well compiled and well documented including data review
VOC for Vac Lift	Addition of a Vac Lift Verification of Competency (VOC) post initial incidents and as an action from the pre-mobilisation audit was developed and implemented and records available.
Hot Work Tags	Hot work tags for daily activities (non permit) are in place and well implemented
Permits for excavation services	Permits for these are in the permit register
Waste Management	Waste management on the CROW and the Camp locations is at a high level
New KPI tracking	New KPI form will lead to better management and review of KPI performance against HSE indicators

8. CONCLUSION

MPC Kinetic has made some recent HSE improvements to ensure that activities being completed on ground are tracked and actioned as required. It can be seen however that there was limited support in the early stages of the project to ensure that systems and records management as required under the WHSMP were enacted. This is demonstrated through a lack of knowledge of background systems (ChemWatch, InX, CMR audits) as well as no knowledge of Group Audits by the majority of HSE personnel.

MPC Kinetic management of risks on site and the safety culture amongst those interviewed was at an appropriate level.

MPC Kinetic recent updates provides confidence of system improvements yet a lot of work is required to ensure systems such as registers, especially training and competency documentation is managed at a level that assists the project to run efficiently and effectively and to ensure the safety of personnel.

Appendix A

Evidence – IVMS Reports provided - examples

Pipe and Civil

Exceptions Details Report

From Sep 03, 2018
To Sep 09, 2018

km
km/h

Device	Device Group	Driver Group	ExceptionRule	Longitude	Latitude	Location
(S866BWD) Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	130.4042363	-20.6068993	State Route 5, Chilla Well NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.941269	-20.5343742	Unnamed Road, Tanami NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.943451	-20.5351429	Unnamed Road, Tanami NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.944214	-20.53545	Unnamed Road, Tanami NT 0872, Australia
S851BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	131.364563	-22.1017609	State Route 5, Lake MacKay NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.9469503	-20.53533428	Unnamed Road, Tanami NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.9477478	-20.53498306	Unnamed Road, Tanami NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.9484307	-20.5346902	Unnamed Road, Tanami NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.948883	-20.53446118	Unnamed Road, Tanami NT 0872, Australia
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	129.9496305	-20.5338879	Unnamed Road, Tanami NT 0872, Australia
(S866BWD) Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	130.404327	-20.6068478	State Route 5, Chilla Well NT 0872, Australia
(S866BWD) Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	130.4045962	-20.6084347	State Route 5, Chilla Well NT 0872, Australia
(S711BWG) Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	132.086578	-22.4545021	State Route 5, Yuendumu NT 0872, Australia
(S866BWD) Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	874 Tanami	ST - CSG - Drive without Seatbelt (>5kph, >5sec)	130.785995	-21.13344	State Route 5, Chilla Well NT 0872, Australia

JMC Report

Prepared On: 7/09/2018

Reporting Period: 27 August - 2 September 2018

Trip Number	Company	License Plate	Departure Location	Departed	Destination Location	ETA	Arrived
106409	Murphy Pipe and Civil - 874 Tanami	CD19FT	Camp 2 - Tanami Project	27/08/2018 06:45 AM	KP 385 (Camp 4)	27/08/2018 09:09 AM	27/08/2018 09:09 AM
106412	Murphy Pipe and Civil - 874 Tanami	188YDI	Alice Springs	27/08/2018 09:22 AM	Camp 2 - Tanami Project	27/08/2018 13:22 PM	27/08/2018 13:22 PM
106413	Murphy Pipe and Civil - 874 Tanami	CD19FT	KP 385 (Camp 4)	27/08/2018 10:37 AM	Alice Springs, NT	27/08/2018 18:43 PM	27/08/2018 18:43 PM
106415	Murphy Pipe and Civil - 874 Tanami	S546BWL	Yuendumu, NT	27/08/2018 12:38 PM	Camp 1 - Tilmouth	27/08/2018 13:22 PM	27/08/2018 13:21 PM
106416	Murphy Pipe and Civil - 874 Tanami	085XYY	Alice Springs, NT	27/08/2018 13:46 PM	Camp 2 - Tanami Project	27/08/2018 17:54 PM	27/08/2018 17:53 PM
106417	Murphy Pipe and Civil - 874 Tanami	S856BWD	Camp 2 - Tanami Project	27/08/2018 15:38 PM	KP 385 (Camp 4)	27/08/2018 18:51 PM	27/08/2018 18:51 PM
106418	Murphy Pipe and Civil - 874 Tanami	102XYY	Alice Springs, NT	27/08/2018 16:20 PM	Camp 1 - Tilmouth	27/08/2018 18:19 PM	27/08/2018 18:19 PM
106419	Murphy Pipe and Civil - 874 Tanami	S546BWL	KP 110	27/08/2018 16:54 PM	KP 170 (Camp 2)	27/08/2018 17:53 PM	27/08/2018 17:53 PM
106423	Murphy Pipe and Civil - 874 Tanami	188YDI	Camp 2 - Tanami Project	28/08/2018 11:44 AM	KP 385 (Camp 4)	28/08/2018 14:46 PM	28/08/2018 14:46 PM
106424	Murphy Pipe and Civil - 874 Tanami	CC16BC	Alice Springs, NT	28/08/2018 13:27 PM	Camp 2 - Tanami Project	28/08/2018 17:29 PM	28/08/2018 17:29 PM
106425	Murphy Pipe and Civil - 874 Tanami	S861BWD	Alice Springs, NT	28/08/2018 15:30 PM	Camp 1 - Tilmouth	28/08/2018 18:16 PM	28/08/2018 18:16 PM
106427	Murphy Pipe and Civil - 874 Tanami	187XHY	Camp 1 - Tilmouth	29/08/2018 06:37 AM	Alice Springs	29/08/2018 09:49 AM	29/08/2018 09:49 AM
106428	Murphy Pipe and Civil - 874 Tanami	051VYL	Camp 1 - Tilmouth	29/08/2018 06:37 AM	Alice Springs	29/08/2018 09:49 AM	29/08/2018 09:49 AM
106430	Murphy Pipe and Civil - 874 Tanami	985864	Alice Springs	29/08/2018 08:04 AM	Camp 1 - Tilmouth	29/08/2018 11:47 AM	29/08/2018 11:47 AM
106432	Murphy Pipe and Civil - 874 Tanami	985864	Camp 1 - Tilmouth	29/08/2018 12:00 PM	Camp 3	29/08/2018 15:59 PM	29/08/2018 15:59 PM
106435	Murphy Pipe and Civil - 874 Tanami	985864	Camp 3	29/08/2018 16:30 PM	Camp 2 - Tanami Project	29/08/2018 20:42 PM	29/08/2018 20:42 PM
106440	Murphy Pipe and Civil - 874 Tanami	274XMX	Darwin, NT	30/08/2018 05:58 AM	Tennant Creek, NT	30/08/2018 16:33 PM	30/08/2018 16:33 PM
106441	Murphy Pipe and Civil - 874 Tanami	188YDI	KP 385 (Camp 4)	30/08/2018 06:11 AM	Camp 2 - Tanami Project	30/08/2018 09:16 AM	30/08/2018 09:02 AM
106442	Murphy Pipe and Civil - 874 Tanami	985864	Camp 2 - Tanami Project	30/08/2018 06:23 AM	Camp 1 - Tilmouth	30/08/2018 08:52 AM	30/08/2018 08:52 AM
106443	Murphy Pipe and Civil - 874 Tanami	CB19ST	Alice Springs, NT	30/08/2018 07:05 AM	Camp 3	30/08/2018 12:40 PM	30/08/2018 12:40 PM
106444	Murphy Pipe and Civil - 874 Tanami	CC16BC	Camp 2 - Tanami Project	30/08/2018 07:37 AM	KP 385 (Camp 4)	30/08/2018 12:26 PM	30/08/2018 12:26 PM

B	C	D	E	F	G	H	I
Sep 03, 2018							

Aug 27, 2018 **Distance Unit** km
Sep 02, 2018 **Speed Unit** km/h

Group	Drive Time	Average Speed	Idling > 5 mins.	Idling Duration	After Hours Trips	Total Distance	Total Stops
874 Tanami	5:30:20	77	1	0:24:03	9	426.51	10
874 Tanami	1:35:15	64	3	1:03:08	5	100.85	8
874 Tanami	2:06:15	70	1	0:24:45	6	147.68	6
874 Tanami	5:52:02	73	5	0:51:37	26	429.90	29
874 Tanami	0:15:24	32	0	0:00:05	2	8.13	2
874 Tanami	0:06:13	1	0	0:00:00	4	0.07	4
874 Tanami	2:50:47	80	5	1:34:20	9	227.68	13
874 Tanami	3:29:45	69	4	2:16:31	11	242.51	11
874 Tanami	0:01:08	18	0	0:00:04	1	0.34	1
874 Tanami	1:50:46	78	0	0:00:04	3	143.29	3
874 Tanami	3:30:49	41	6	1:15:01	9	144.14	9
874 Tanami	8:17:03	6	0	0:00:51	16	51.30	49
874 Tanami	15:11:31	155	18	5:24:43	17	2358.95	55
874 Tanami	1:43:57	59	1	0:13:06	8	101.97	8
874 Tanami	3:54:22	47	6	2:12:54	9	182.14	9
874 Tanami	3:42:14	68	7	2:10:22	12	252.36	12
874 Tanami	1:05:21	12	0	0:02:17	2	13.57	3
874 Tanami	1:10:44	12	0	0:04:01	4	14.49	4
874 Tanami	1:34:27	74	0	0:04:06	1	116.56	1
874 Tanami	3:37:52	27	1	0:22:23	6	98.97	6
874 Tanami	15:00:03	68	16	7:25:44	16	1015.93	45
874 Tanami	0:22:28	81	0	0:00:07	0	30.48	1
874 Tanami	0:44:36	28	0	0:00:49	3	20.49	3

Vehicle Utilisation Report

Created	Sep 02, 2018
From	Aug 27, 2018
To	Sep 02, 2018
Distance Unit	km
Speed Unit	km/h

Item	Group	Aug 27, 2018	Aug 28, 2018	Aug 29, 2018	Aug 30, 2018	Aug 31, 2018	Sep 01, 2018	Sep 02, 2018	Grand Total
(026XUQ) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.01	281.71	281.72
(051VYL) Isuzu NPS 300	Truck Hire Solutions, Heavy Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(124WMX) Volvo FM Series	Truck Hire Australia, Heavy Vehicles, 874 Tanami	0.38	0.10	0.00	0.58	0.00	0.00	0.00	1.06
(141XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	142.70	20.50	0.00	163.20
(142XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	53.99	53.99
(156XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	6.53	63.76	21.94	92.22
(157XYY) Toyota Hilux 2018	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
(158XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.03	4.54	6.82	82.41	37.99	131.78
(159XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.03	0.00	0.00	0.00	323.06	333.26	656.35
(169TSY) Mitsubishi Fuso Canter	Truck Hire Australia, Heavy Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	182.14	182.14
(180XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(183XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	474.53	0.00	0.00	474.53
(185XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	0.62	0.62
(186XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	42.80	45.03	43.87	46.31	49.49	0.18	34.89	262.58
(1CZD574) Volvo FH Series 16	Truck Hire Australia, Heavy Vehicles, 874 Tanami	0.00	0.00	0.00	275.98	0.00	0.00	32.87	308.84
(1EVP559) Isuzu NPS 300 - Rego not in Jobpac	Heavy Vehicles, 874 Tanami, On Hire	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25
(1GMD088) - Water Cart	Truck Hire Australia, Heavy Vehicles, 874 Tanami	0.20	0.00	0.00	0.00	0.00	0.00	28.87	29.07
(216XGE) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	2.42	0.00	0.00	88.11	13.23	103.76
(217TLX) Toyota HiAce Commuter	Truck Hire Australia, Light Vehicles, 874 Tanami	0.00	0.00	0.01	0.00	0.00	248.24	574.37	822.62
(270XMX) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	14.84	87.75	102.59
(272XMX) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
(274XMX) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	46.41	21.30	58.78	991.64	511.91	0.00	0.00	1630.04
(275XMX) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(265WSN) Ford Ranger PX2	JWA On Site Services, Light Vehicles, 874 Tanami	0.25	0.23	0.13	4.97	0.00	227.83	159.90	492.30

Murphy Pipe and Civil

Watchdog Report

Created Sep 03, 2018
Measurements km
Movement Interval (hours) 24

OK	103
Offline for 2 - 3 days	1
Offline for 3 - 21 days	5
Offline for 21+ days	3
Not installed	0
Not active	0

Vehicle	Group	Status	Odometer	Engine Hours	Last Communication Date	Days Since Communicated	Serial Number	Last Trip Record
S855BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	1833.35	37:34:40	Sep 03, 2018 2:20:15 PM		G7C820EF130E	09/03/2018 2:16:07 PM
181YDG Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	3835.00	56:00:07	Sep 03, 2018 2:20:13 PM		G73020F19C7D	09/03/2018 10:48:42 AM
(1GMD088) - Water Cart	Truck Hire Australia, Heavy Vehicles, 874 Tanami	OK	24809.24	566:25:54	Sep 03, 2018 2:20:08 PM		G73A20E0847E	09/03/2018 2:20:08 PM
(CC24SX) Mitsubishi Fuso Canter	Truck Hire Australia, Heavy Vehicles, 874 Tanami	OK	32652.50	11:16:55	Sep 03, 2018 2:20:07 PM		G78120E083C4	09/03/2018 1:50:14 PM
S545BWL Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	1802.76	28:21:23	Sep 03, 2018 2:19:52 PM		G76C20EF13AA	09/03/2018 2:18:35 PM
S667BWG Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	3662.44	91:45:00	Sep 03, 2018 2:19:52 PM		G76820EF13AE	09/03/2018 2:19:52 PM
S858BWD Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	1469.46	40:18:47	Sep 03, 2018 2:19:52 PM		G77C20EF13BA	09/03/2018 2:18:13 PM
177YDG Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	3232.65	50:10:35	Sep 03, 2018 2:19:38 PM		G78320F18CDE	09/03/2018 1:34:48 PM
266XMX Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	24895.47	315:05:03	Sep 03, 2018 2:19:30 PM		G79C20EF135A	09/03/2018 2:11:28 PM
592XKI Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	13444.00	189:58:26	Sep 03, 2018 2:19:29 PM		G7E420E3A386	09/03/2018 11:17:55 AM
S546BWL Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	4570.30	71:25:51	Sep 03, 2018 2:19:21 PM		G7D720EF0F15	09/03/2018 2:19:21 PM
102XYY Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	23313.00	372:00:37	Sep 03, 2018 2:19:16 PM		G7E320EF1325	09/03/2018 10:47:29 AM
S549BWL Isuzu D-MAX	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	1543.75	28:07:56	Sep 03, 2018 2:18:54 PM		G78A20EF1049	09/03/2018 2:01:31 PM
(790XBC) Volvo FH Series 16	Truck Hire Australia, Heavy Vehicles, 874 Tanami	OK	996452.13	181:03:16	Sep 03, 2018 2:18:49 PM		G70B20F09D44	09/03/2018 2:18:49 PM
(275XMX) Toyota Prado	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	32399.30	470:30:07	Sep 03, 2018 2:18:37 PM		G7AB20EF116B	09/03/2018 2:04:14 PM
(183XYY) Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	7935.00	117:10:45	Sep 03, 2018 2:18:28 PM		G70420E3A665	09/03/2018 1:16:38 PM
103XYY Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	14192.00	248:34:40	Sep 03, 2018 2:17:33 PM		G79F20EF1359	09/03/2018 2:17:29 PM
084XYY Toyota Hilux	AVIS Brisbane, Light Vehicles, 874 Tanami	OK	17072.63	294:46:08	Sep 03, 2018 2:17:11 PM		G78220EF1344	09/03/2018 2:17:11 PM

Appendix B

HSE Evidence Tale and photos

Evidence	Details	Comments
CMR Audits	WHS FRM 002 completed by B McGuckan (Hard copy) Environmental in InX #35844 includes NC actions CMR Audits in InX: #35873, 35875, 35872, 35882, 35890, 35909	35882 had a No entered but no evidence of any follow up on this identification CMR Audit lists only 2 completed in June (both enviro); 2 in July (enviro and unloading) and then 6 in August. Noted that WHSMP requires CMR audits to commence at the beginning of the project a large gap noted here (except enviro)
Supervisor Weekly Inspection Checklist	David Healy 8/9/18 Coating – NC raised on signage Frank Schramm and Darrel West 9/9/18 - NC raised for dust from rock breaking Troy Dean 3/9/18 – Special Crossings; good comments David Healy 9/8/18 Oceaneering NDT X-ray	KPI tracking has poor performance for some Supervisors (now being tracked as of September) i.e. Mark Simpson, Lenny Farmer, Pat Finlon, Tom Allen KPI tracking also demonstrated some poor performance in relation to JHA reviews and CMA audits.
HSE Leadership Checklist	Leadership Walk in InX only #35072 and 35019 No documentation only comments	WHS FRM 018 only evidence found used by Hoang Nguyen (not senior leadership)
New Worker Form	No evidence available	
HSE Inspection Schedule	Not in evidence until later developed during audit Only a template is in doc control	KPI inspections are being undertaken but the Schedule is not implemented at this stage
KPI Tracker	Reviewed and now implemented to track HSE performance (leading indicators)	Senior Management Inspection process not well defined in WHSMP.

Subcontractor SWMS Review	Forms in place and captured in Sharepoint WHS FRM 004 and QUA FRM 071 being used 14/5/18 Simocco SWMS Hand tools – reviewed by Tony Henderson Fauna Catcher SWMS - reviewed NT Link SWMS load and unload, Install footings, Generator servicing – all reviewed	Internal SWMS approval – by HSE Coordinator and nominated SWMS manager, is this a high enough level of oversight? There is no Contractor SWMS register so telling what is and isn't approved is difficult and relies on good access and knowledge to find in share point.
Document HSE Review	WHS FRM 075 or QUA FRM 071 used for review of plan documents from sub contractors Qube, GNS Transport and NT Link Safety Plans	
Fauna Statistics	Reviewed outputs from App Reviewed statistics trending in excel App includes locations of ramps and shelters	Well captured information 63 specimens are captured for the Museum to date
Potable Water	Testing results reviewed (both sets) Testing process reviewed (desktop) and locations discussed Testing procedure viewed onsite Analysis results reviewed Sample of Chlorine records from Remote Concrete on water delivery	NATA lab certification in place Difficulty in ensuring lab analysis completed within holding period times (i.e. only a Darwin lab available for full chemical analysis)
Hazardous substances	Storepersons responsibility SDS reviewed at location No SDS register available SDS – CRC Brakleen, Argoshield, LPG, Denso, Dy-mark	Cat Oil requested SDS not in file at Camp 4 Ensure awareness of Australian Compliant SDS onsite (i.e. Australian supplier or manufacturer)

Vegetation Clearing Permit	Advised was with clearing crews when clearing undertaken	Verbal
HSE Management Review Meetings	Not documented as described Diary notes of meetings only	
Permit Register	Only captures 8 permits to date Cancelled Permit with Camp 4 but soft copy – no reason for cancellation	Camp 1 had three permits but no other camps had a permit raised All permits held (of the 8) were by the same Supervisor Whereabouts of other hard copies of completed permits unknown Camp 4 HSE not aware of Permit Register
Permits	TNP-005 only hard copy on file TNP-009 hard copy reviewed at Camp 2 due to recent activity to be sent to Camp 1 for filing	Permit Authority and Permit Holder training underway TNP-009 had a good rescue plan included Noted that for WaH the prompt for the rescue plan was removed but still in the excavation and CSE permits.
Training Review (personnel) – HSE records	MPC Kinetic – Steve Parsons NT Link – Dean Hanger MPC Kinetic – Cameron Graham Oceaneering – Aiden Smith Fyfe – Julie Nacaisse Steel Diamond – Jace Chapman, Shane Fagan, Elliot Cleary MPC Kinetic – Michael Volbeda (Supervisor)	Steve Parson – induction not in Matrix, hard copy form 1/5/18 found in file but not entered. Matrix has a NYC for grader operations which is what Steve is currently operating Dean Hanger – only 4WD VOC Cameron Graham – only 4WD VOC and Project Induction 11/8/18, no fauna handling, no DL, no 4WD training tickets. Aiden Smith – no HSE records Julie Nacaisse – no HSE records Mike Volbeda – good records but VOC expired in some cases (Excavator) – also duplication on register due to multiple roles. Welding quals

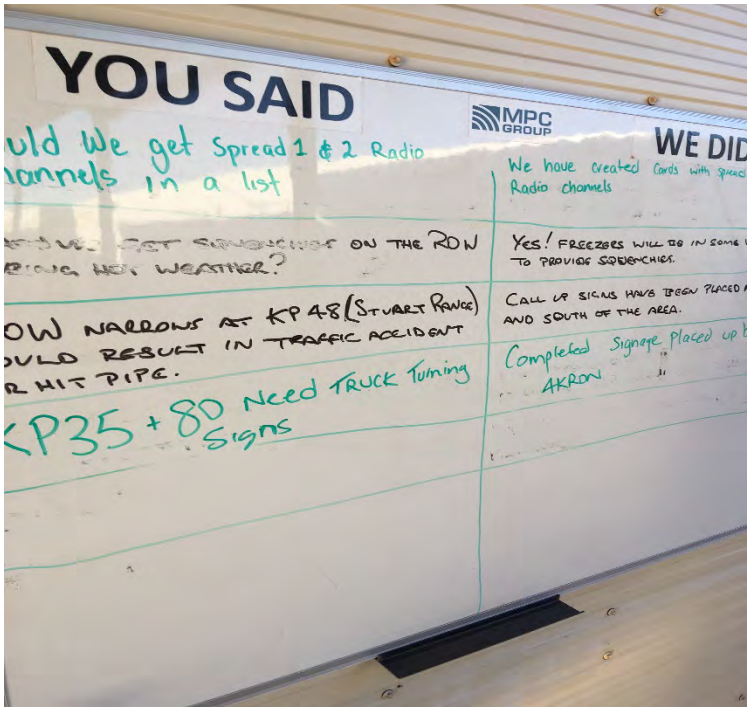
		included in MPC Kinetic training register (butt welds) this should all be quality or all HSE not a mix. Jace Chapman – only site induction Shane Fagan – NMT entry requirements and induction and white card Elliot Cleary – 4WD VOC and RIIVEH305E
Training Register (HR Records)		
Training Register – specific training; first aid, fire, CoR.	Only 7 completed first aids in MPC Kinetic register (about 160 people) Recent training of 23 personnel to be entered (hard copy)	Shaun Wittenby only welder with first aid in HSE records Fyfe – only one person with first aid and this was expired (2013) Hot Work tag names (Fire Spotter) – Jake Dean, Shane Gilbert, David Healy = no fire training in matrix (all MPC staff) CoR training – only two names in MPC Kinetic matrix completed David King, Joseph Wyath. Other truck / water cart drivers no CoR (Bruce Masters, James Moriarty, Owen Waldron, Grant Garvie) No records of contractor CoR in evidence (St George, Toll or GNS). Incident Response Group – extra training – not known what extra training is, not captured in matrix.
VOC	MPC Kinetic VOCs for 4WD and WaH in evidence 3rd Party VOC (WaH) Protector Allsafe in folders (Dylan Doherty from A.R.T) 17/8/18	WHSMP does not state allowance for third party VoC's only shows the MPC Kinetic VOC process

Registers	Camp 1 lifting register in evidence Camp 4 lifting register not available Camp 4 electrical register not available	Using Sept-Nov – yellow tags
Lifting gear	Shackles etc in evidence (as per photo samples)	
Group Audit Schedule	Has older – non completed audits and no new audits scheduled (especially HS) No group environmental audits planned	Information on audits and results of audits limited and many HSE personnel unaware of audit being completed. No audit report available at time of audit

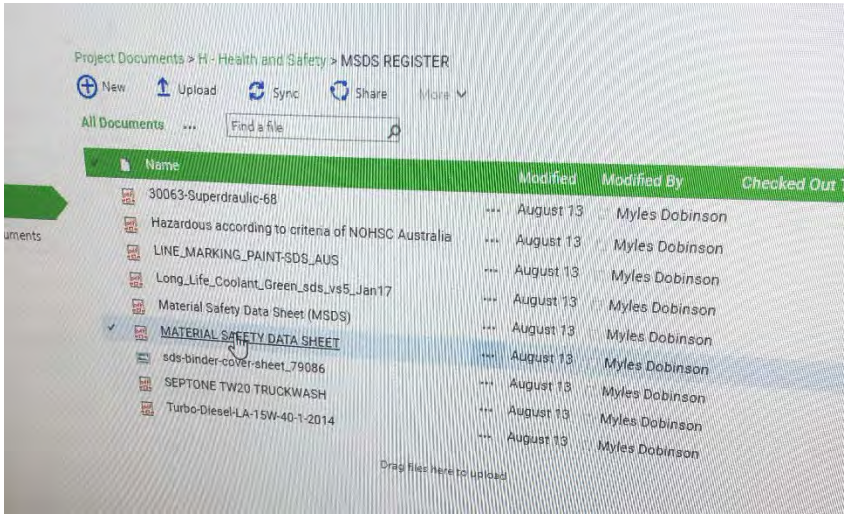

MPC GROUP
First Aider's on Site
Spread 1
The Nearest First Aid Kit is Situated:
Allocated Crew Vehicle


HSSE ALERT
ALERT NUMBER: 877 W2BH 008
Indicator: Minor Plant Damage
Date: 04/06/2018
Subject: Excavator Struck Rail Underpass
Observation Details
Contributing Factors
Equipment Used
Causation
Damage to Property
Corrective actions/Recommendations
IMPORTANT NOTE
MPC GROUP

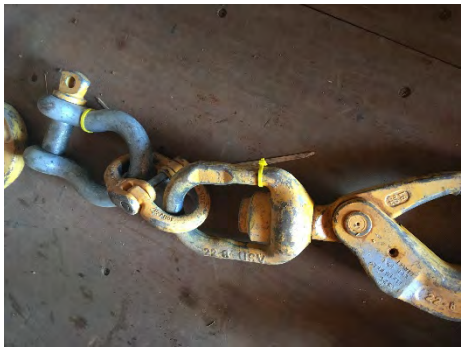

GROUP
HSSE ALERT
ALERT NUMBER: 005
Date: 20th of September 2019
Subject:
Incident details
Potential Contributing Factors
Hazard
Corrective actions/recommendations
IMPORTANT NOTE
DBP HSE HAZARD ALERT
Dampier B
DBP HSE HAZARD ALERT
Dampier B


YOU SAID
uld We get Spread 1 & 2 Radio
annels in a list
ON THE ROW
WEATHER?
OW NARROWS AT KP 48 (STUART RANGE)
ULD RESULT IN TRAFFIC ACCIDENT
R HIT PIPE.
KP35 + 80 Need TRUCK Turning
Signs
MPC GROUP
WE DID
We have created Cards with spread
Radio channels
YES! FREEZERS WILL BE IN SOME
TO PROVIDE SOLUTIONS.
CALL UP SIGNS HAVE BEEN PLACED
AND SOUTH OF THE AREA.
Completed Signage Placed up
AKRON


HSE Notice
MPC GROUP
Topic
Snakes
Date
4/9/18
Details of the Notice:
Please be aware snakes have been seen at camps.
Key Points
Ensure you are alert of your surrounds. Ensure all doors around Camps are kept shut and that you wear enclosed shoes where possible. Check that you have a First-Aid kit in your vehicle that includes a snake bite kit.
Black headed python
Photo
Actions required
As above
This HSE Notice is to be posted on all workplace notice boards and used as a subject for discussion at a Pre-start or Toolbox Meeting within 7 days of issue.
See it) Solve it) Do it)


Project Documents > H - Health and Safety > MSDS REGISTER
New
Upload
Sync
Share
More
All Documents
Find a file
Name
Modified
Modified By
Checked Out
30063-Superdraulic-68
Hazardous according to critena of NOHSC Australia
LINE_MARKING_PAINT-SDS_AUS
Long_Life_Coolant_Green_sds_vs5_Jan17
Material Safety Data Sheet (MSDS)
MATERIAL SAFETY DATA SHEET
sds-binder-cover-sheet_79086
SEPTONE TW20 TRUCKWASH
Turbo-Diesel-LA-15W-40-1-2014
August 13
Myles Dobinson
Drag files here to upload


5M
10 NUB
MSW

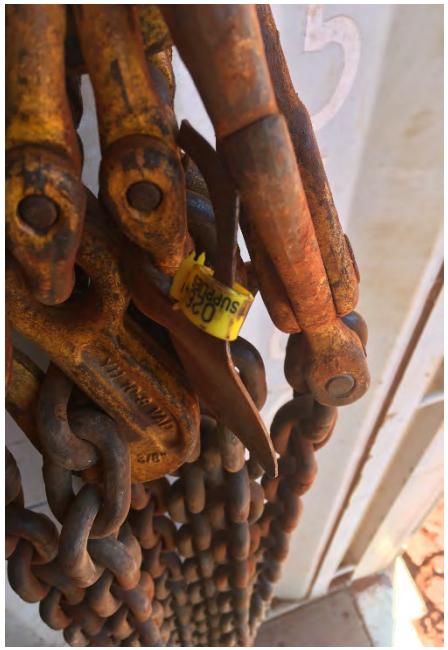


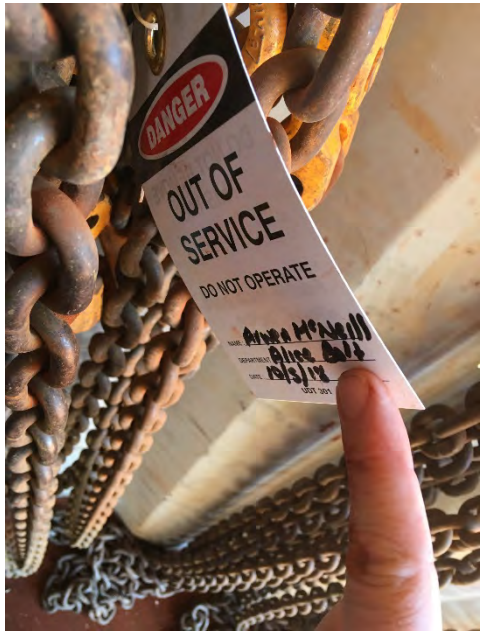

0253
ALTE BOLT SUPPLIES

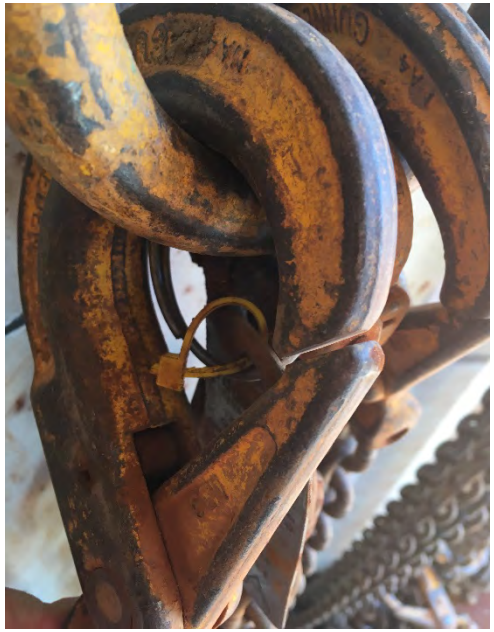

Tradesman Rigger
TRR01 Belay Loops
Fail not to exceed
Only COMPETENT users
equipment
Manufacturer's instruc
followed
DOM:01-2012 Destroy Befo
Australian Standard
AS/NZS 1891.1:2007
Lic 21481
CE 0158
EN 361
Read Manufacturer's Instructions
SA 40504


ALICE SOL
ALLOY SLING GRADE T (80)
Straight
Angle
9.2 T
7.5 T
5.3 T
120°
6099Y
6
2013


Lifting Solutions
Robertsons
lifting > rigging > height safety
WLL
5 T
DATE
RLR 06/16
I.D.
5G831




DANGER
OUT OF
SERVICE
DO NOT OPERATE




Batch No: 2011
Harness for
Fall Arrest
Tradesman Rigger
TRR01 Belay Loops
Fall not to exceed 2 meters.
Only COMPETENT users should use this
equipment.
Manufacturer's instructions must be
followed.
DOM:01-2012 Destroy Before:01-2022
Australian
Standard
AS/NZS
1891.1:2007
Lic 21481
CE 0158
EN 361
Read
Manufacturer's
Instructions
SA 40555

Appendix D: Night Parrot Survey Report

Survey for Night Parrots along the proposed Tanami gas pipeline, Northern Territory: Habitat assessment and acoustic survey

Adaptive NRM Pty Ltd

July 2018




Recommended citation:

Adaptive NRM (2018). *Survey for Night Parrots along the proposed Tanami gas pipeline, Northern Territory: Habitat assessment and acoustic survey.* Report to Eco Logical Australia. Adaptive NRM, Malanda.

Table of Contents

1. Scope of this report

The report provides details about the methods, results and conclusions of a targeted, field-based Night Parrot survey along a proposed gas pipeline corridor in the Tanami Desert, Northern Territory in May 2018. It accompanies a previous report (Adaptive NRM 2018) that presents the methods and results of desktop spatial analyses for the same area, which concluded there was enough evidence and reason to undertake field assessments.

2. Contributors

Name (organisation)	**Role in this project**
Stephen Murphy (ANRM)	principal analyst, field ecologist and lead author
Rachel Paltridge (Desert Wildlife Services)	analyst, field ecologist and author
Nick Leseberg (ANRM; UQ)	acoustic proofing
Matthew McKown (Conservation Metrics Inc.).	lead acoustic analyst
Hafiz Stewart (ELA)	field ecologist

3. Summary

- Using field data, we aimed to validate the findings of desktop analyses (Adaptive NRM 2018) that assessed the potential for Night Parrot habitat along the proposed Tanami gas pipeline. A rapid habitat survey protocol showed there was statistically significant agreement in habitat scores between the desktop assessment and the field-based assessment, although the former did tend to overestimate habitat quality (but not significantly).
- A series of focal surveys at the most likely looking sites along the alignment showed there were areas that were structurally and floristically suitable for Night Parrots. However, predation pressure by introduced mammals (cats and foxes) and total grazing pressure (rabbits, cattle, horses/donkeys and camels) appeared to be higher than that recorded at sites permanently occupied by Night Parrots in Queensland.
- More than 1000 hours of acoustic data collected at 13 of the most likely Night Parrot sites along the pipeline alignment failed to detect the species. The equipment, sampling strategy and analytical method we used in this study are known to be very reliable methods to detect Night Parrots elsewhere.
- We conclude that, despite some areas being floristically and structurally suitable, the pipeline corridor is unlikely to support Night Parrots, mainly because of frequent, widespread fires, predation pressure and grazing pressure.

4. Introduction

Night Parrots (*Pezoporus occidentalis*) are listed as Endangered in the federal *Environment Protection and Biodiversity Conservation Act 1999*. Historical records show that the species once had a widespread distribution throughout Australia's arid zone (Higgins 1999). Over the past 100 or so years, a combination of increased predation by introduced cats and foxes, and widespread fires has reduced their distribution markedly, such that they are known only from a few widely separated locations in Queensland and Western Australia (Murphy *et al.* 2017b). However, thanks to a recent increase in our understanding of Night Parrot ecology coupled with advancements in acoustic field survey technology, it is likely that more populations will be found.

This report provides details about a targeted Night Parrot survey in the Tanami Desert in May 2018. It was commissioned as part of an environmental assessment process for the construction of a proposed gas pipeline (Figure 1). This report is an extension of earlier desktop analyses (Adaptive NRM 2018) which combined the contemporary knowledge of Night Parrot ecology, spatial data and local knowledge of the Tanami to conclude there was a "*reasonable case for conducting targeted field-based Night Parrot surveys*" along the proposed pipeline corridor. Generally speaking this conclusion was based on:

- historical Night Parrot sightings in the region (Murphy *et al.* 2009)
- a low introduced predator density (especially in the north (Southgate *et al.* 2007))
- the presence of other threatened species, most notably Greater Bilbies (*Macrotis lagotis*) and Great Desert Skinks (*Liopholis kintorei*). Threatened species are spatially correlated with Night Parrot occurrence elsewhere (Murphy *et al.* 2017b).
- some areas of long-unburnt vegetation which could act as long-term roosting/breeding refugia for Night Parrots (based on moderate resolution fire scar mapping)
- the presence of potential Night Parrot feeding areas and food plants

It was acknowledged that the spatial datasets that underpinned the desktop analyses were error-prone, both in terms of attribute comprehensiveness and spatial accuracy, and that field validation was required to inform any subsequent targeted Night Parrot surveys. Consequently, a field survey was undertaken in May 2018 that had three objectives:

1. to validate the desktop habitat analyses presented in Adaptive NRM (2018)
2. to select sites that field inspection and expert opinion suggested had a reasonable chance of supporting Night Parrots and install automated sound recording devices
3. a subsequent objective was to analyse the acoustic data using the best available automated systems, coupled with manual listening of a subset of data.

This report outlines the methods, results and conclusions of these objectives.

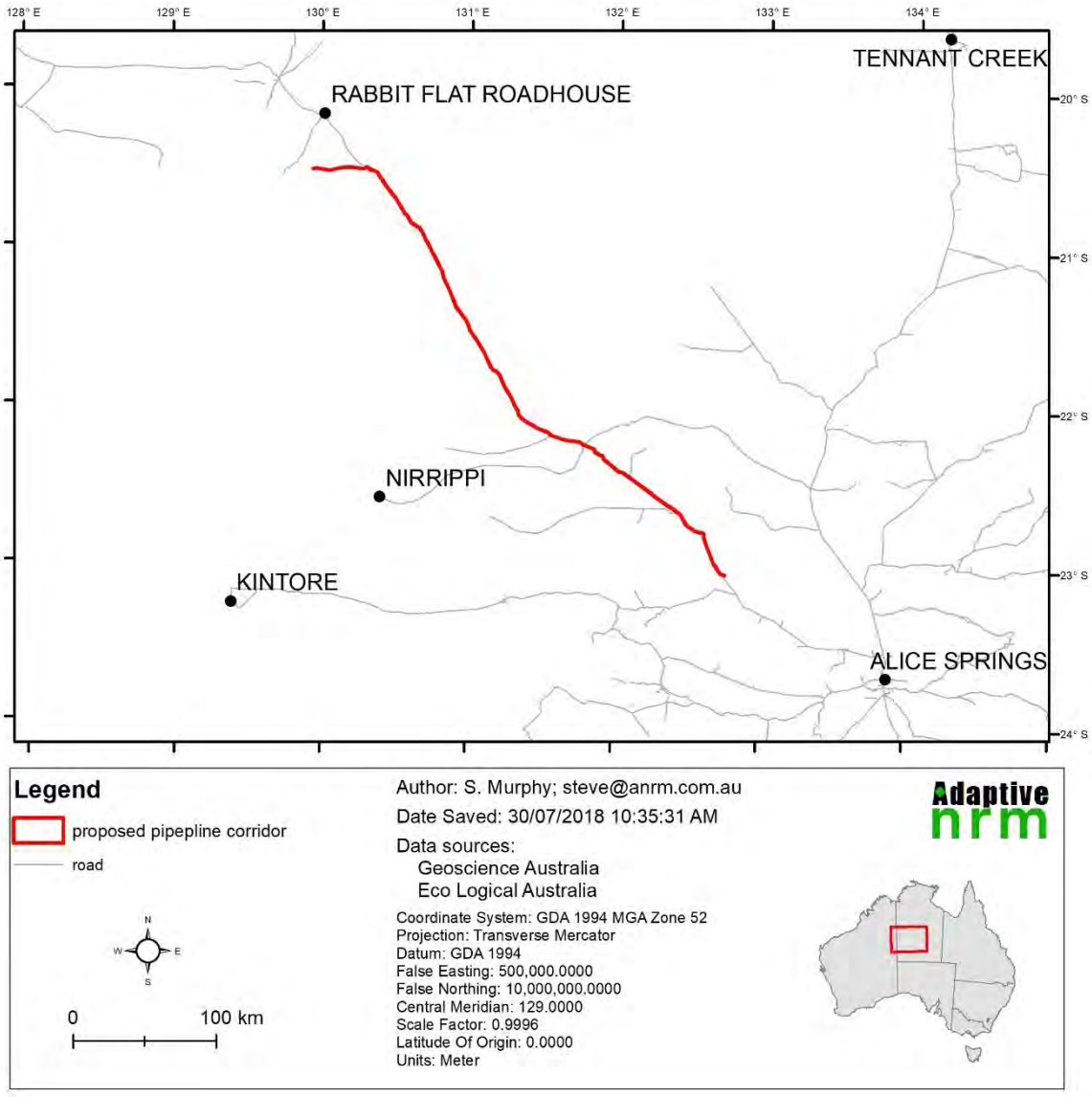


Figure 1. Location of proposed pipeline corridor.

5. Methods

5.1. Rapid habitat assessment

The desktop analyses presented in Adaptive NRM (2018) calculated a "priority score" for 118 5x5 km cells along the pipeline corridor. The scores were based on the suitability of each cell for Night Parrots using quantitative assessments of:

1. presence of threatened species
2. presence of long-unburnt habitat
3. presence of suitable *Triodia* for roosting/breeding
4. presence of potential feeding areas, based on floristics and run-on zones (which have been shown to be important feeding areas)

We aimed to validate the priority scores of as many of the 118 cells as possible using a rapid field survey protocol. Not all cells could be inspected due to access restrictions near the Granites Gold Mine: cells 107-118 could not be assessed. Table 1 defines the four attributes that were assessed for each cell using a binary (1/0) score. For cells that had heterogeneous qualities, the attribute that best defined the majority of the cell was used. Scores were given as we drove through or alongside each cell at less than 40km/h. Where the Tanami Track diverged from the alignment, we either walked in or used binoculars for closer inspection. For subsequent analyses, the binary scores were summed to give a total score for each cell. The proforma used in the field is shown in Appendix 1.

Table 1. Attributes scored during rapid assessments

Attribute	**Rationale**
Complex vegetation structure	A complex vegetation structure (i.e. one with multiple age classes) typically reflects a patchy fire history that could be conducive to the maintenance of Night Parrot habitat, compared to areas that are maintained in a simple structure by frequent and widespread fires.
Suitable *Triodia* species present	Research in QLD (Murphy *et al.* 2017c; Murphy *et al.* 2017a) and WA (Jackett *et al.* 2017) shows that Night Parrots rely on *Triodia* hummocks for roosting and breeding. Not all *Triodia* species form hummocks that are structurally suitable for Night Parrots. We scored *T. basedowii*, *T. spicata, T. schinzii* and *T. pungens* (Palya form) as suitable. Areas that supported these species but that were recently burnt or in earlier stages of post-fire recovery were considered suitable, because past or future appropriate fire patterns could make them usable by parrots.
Presence of potential run-on areas	Murphy *et al.* (2017c) shows that run-on areas are important feeding areas for Night Parrots. These can be very small features only a few metres across.
Overall expert opinion of suitability	An overall assessment of a cell's suitability for Night Parrots, based on expert opinion. This qualitative attribute considered the above qualities, and also included aspects such as juxtaposition of feeding and breeding/roosting habitats, overall habitat quality and similarity of the cell to known occupied sites in Queensland.

5.2. Focal habitat assessment

For a subset of cells, we undertook a detailed field inspection involving an approximately 10-15 minute focal search by three experienced ecologists (RP, HS and SM) within an area of approximately 2 ha. The attributes we scored, their scale and rationale appear in Table 2.

In addition to providing a greater understanding of habitat quality, these assessments helped inform and justify site selection for further acoustic surveys. The subset of cells chosen for focal surveys was based on those with high scores from the rapid habitat assessment and/or because they contained sites of particular interest such as locations proposed to build temporary construction camps.

The specific locations of the 2ha searches within the prioritised 5 x 5 km cells were partially informed by a refinement of site prioritisation by an ecologist with local expertise in Tanami Desert vegetation communities (RP). Local knowledge of habitats likely to support succulent food plants preferred by Night Parrots suggested that palaeodrainage and/or salt lake margin vegetation communities were the run-on habitats that were most likely to provide suitable feeding areas. This emphasised the importance of searching cells along the corridor that lay in the vicinity of Lake Lewis, Chilla Well and Sangster's Bore. The salt lake systems associated with Lake Lewis and Sangster's Bore were also considered the most suitable habitats for the Palya form of *Triodia pungens*. A third reason for prioritising habitats near the salt lakes and palaeodrainage channels was that the drainage lines provide barriers to fire and often protect refugial stands of unburnt spinifex.

Within these three general areas we examined the most recent cloud-free Landsat 8 satellite image to select the areas of oldest spinifex within the pipeline corridor.

A fourth area that was prioritised was rocky range habitat within the Yuendumu hills area, because it supports *Triodia spicata* which is considered likely to produce suitable hummocks for roosting. The oldest patches of spinifex habitat along the section of corridor throughout the Yuendumu hills were selected for ground truthing.

The site refinement process produced a list of 20 KP sites that required ground-truthing as to their suitability for further survey. Although this provided a useful guide to direct our efforts, ultimately the specific sites chosen for ground survey could only be chosen in the field when we could see the structure of the spinifex hummocks and observe other influences such as grazing pressure. Some sites were immediately discounted if the spinifex structure was clearly unsuitable; others were moved to nearby sections of corridor if better habitat was found to occur nearby.

Table 2. Attributes scored during focal habitat surveys

Attribute	**Score**	**Rationale**
Suitable *Triodia* species present	Ordinal 0-3 0 = none 1 = some scattered suitable hummocks among unsuitable matrix 2 = suitable hummocks common, but area dominated by unsuitable 3 = suitable hummocks dominant Suitable hummocks were deemed to be at least knee high and of a density such that the ground could not be seen when viewing from above.	See Table 1
Presence of potential run-on areas	Binary 0/1 0 = no run-on observed 1 = run-on observed, no matter how small and including that created by earthworks (e.g. roadside table drains)	Murphy *et al.* (2017c) shows that run-on areas are important feeding areas for Night Parrots. These can be very small features only a few metres across.
Herbaceous diversity score	Ordinal 1-3 1 = 1-2 morphospecies 2 = 3-5 morphospecies 3 > 5 morphospecies	Night Parrots are known to eat a range of small herbaceous plants. In the absence of doing comprehensive floristic surveys (which time did not permit), we counted the number of morpho-species which informed the ordinal score
Significant area of non-wooded vegetation	Binary 0/1 0 = no open areas (non-woody) observed 1 = open areas (non-woody) observed > 1ha	Murphy *et al.* (2017c) demonstrates that Night Parrots seem to prefer habitats that have a very sparse woody stem density. Accordingly, we recorded whether or not there were large areas of non-woody habitat greater than about 1 ha.
Presence/absence of: • rabbits • cows • horses/donkeys • camels • cats • foxes • dingoes/wild dogs • bilby • mulgara • great desert skinks	Binary 0/1 0 = absence 1 = presence	Rabbits, cows, horses/donkeys and camels are thought to reduce the availability of food available to Night Parrots by grazing. Cats and foxes are almost certainly important predators of Night Parrots (Murphy *et al.* 2017b) Dingoes/wild dogs could exert a regulatory effect on cats and foxes, and their presence is probably beneficial (Murphy *et al.* 2017b) Bilbies, Mulgaras and Great Desert Skinks are the other likely threatened species in the project area. In Queensland, the occurrence of Night Parrots is spatially correlated with the presence of other threatened species.

5.3. Acoustic survey

Leseberg *et al.* (in prep) demonstrate that Night Parrots are reliably vocal birds at their *Triodia* roost sites. They also show that passive, automated acoustic recorders are a reliable way to detect the species.

We installed Song Meter 4 (SM4; Wildlife Acoustics, Massachusetts, USA) at 13 locations deemed to have either (1) the highest likelihood of supporting Night Parrots along the pipeline corridor or n = 11); or (2) were near to a proposed construction camp (n = 2).

SM4s were set to record from dusk until dawn for a minimum of 6 nights. At occupied sites in Queensland, the probability of not detecting a Night Parrot over 6 nights is almost 0 (Leseberg *et al.* in prep). Recordings were made in mono with 48 kHz sample rate and in uncompressed wav file format.

Analyses of the acoustic data from one site (KP48) was expedited to avoid delays in the pipeline planning process, given that construction will begin from the south and KP48 is an outlier (all other potential sites are significantly farther north). While all the data from KP48 was subsequently included in the comprehensive machine learning analyses presented below, a subsample of audio files collected during known peak calling periods was manually screened by eye (using spectrograms) and by ear to detect Night Parrot calls. The results of this analysis is presented in a previous report (Murphy and Leseberg 2018).

Acoustic data were analysed using a deep neural network (DNN) model that is trained to identify three distinct Night Parrot vocalisations: *dink-dink*, *croak* and *hollow whistle*. Field observations in Queensland and Western Australia show that these calls are given at both places and as such it is reasonable to assume that Night Parrots elsewhere, including in the Tanami, make the same calls. Results from the automated DNN analyses were proofed by ear by people with extensive experience listening to Night Parrots in the field (SM and NL).

6. Results

6.1. Rapid habitat assessment

106 out of 118 (90%) of cells were scored along approx. 380km of the proposed pipeline corridor. Figure 2 shows a histogram of cell score values. Figure 3 shows a map of the cells and their associated score.

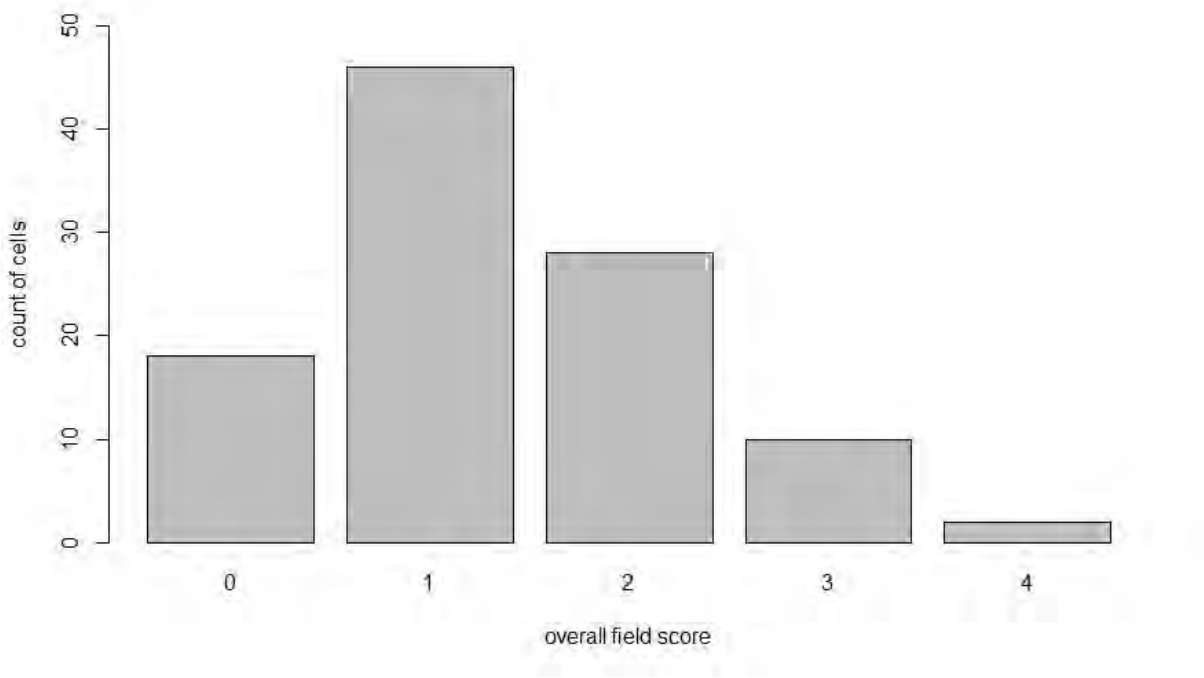


Figure 2. Histogram of scores for 106 cells along the pipeline corridor.

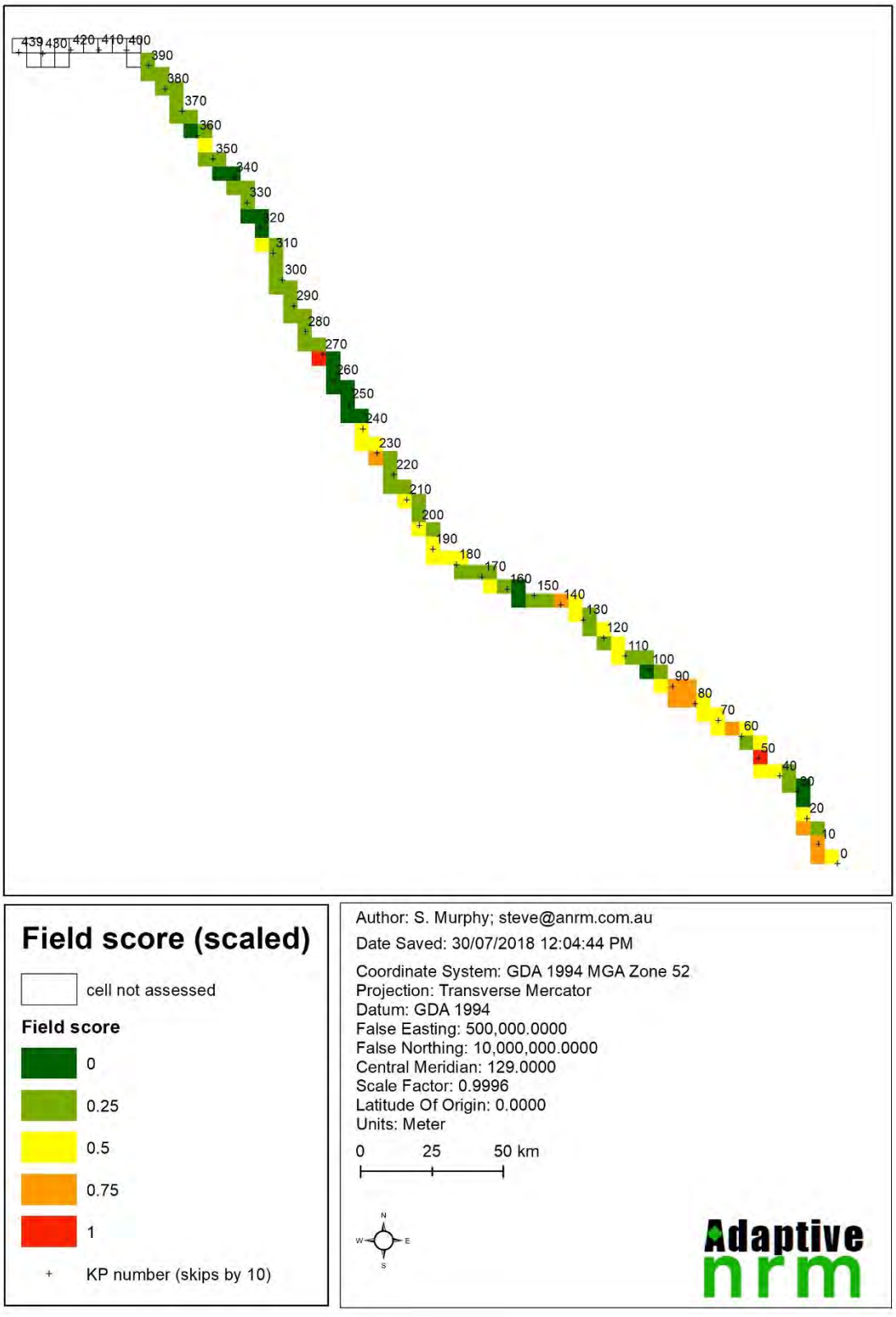


Figure 3. Map showing field-based score for each 5x5km cell along the alignment.

The field scores matched the desktop scores reasonably well, as demonstrated by the statistically significant relationship between the two (Adjusted R-squared = 0.1153; $F_{1,104} = 14.68$, $p < 0.001$; Figure 4). There was a tendency for the desktop scores to overestimate habitat suitability (i.e. give higher scores) which explains the relatively modest slope of the line in Figure 4 (i.e. the low Adjusted R-squared value). Note that for this analysis the scores were re-scaled to make them comparable.

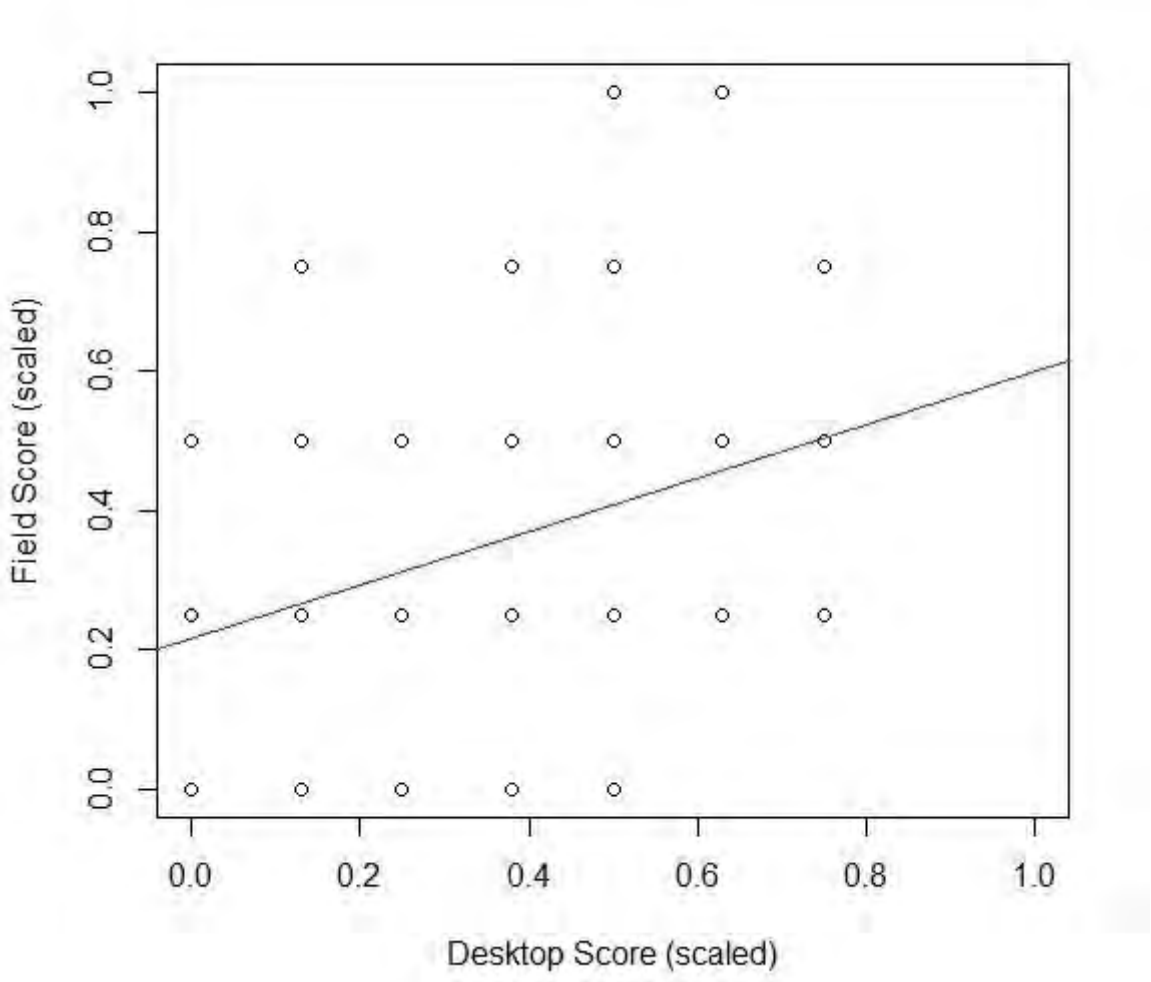


Figure 4. Field score as a function of desktop score, showing significant agreement.

Most of the corridor was deemed to be of low value for Night Parrots, based on our current understanding of their ecology (Table 3; Figure 5). Just over half of the cells (58%) exhibited a simple vegetation structure, reflecting the region's history of repeated, large-scale single fire events. Cells that did have a complex vegetation structure were more likely to be woodlands and not suitable for Night Parrots. Cells with suitable run-on areas were not uncommon (36%) and 53% of cells contained suitable *Triodia* hummocks. However, expert opinion rated only a small number of cells as having high quality Night Parrot habitat (4%), which was mostly driven by the region's history of repeated large fires that has impacted on the availability of long-unburnt Night Parrot habitat.

Table 3. Numerical summary of rapid habitat assessment

	Complex Vegetation	Suitable Hummocks	Run-On Areas	Expert Opinion
0	62	50	68	102
1	44	56	38	4

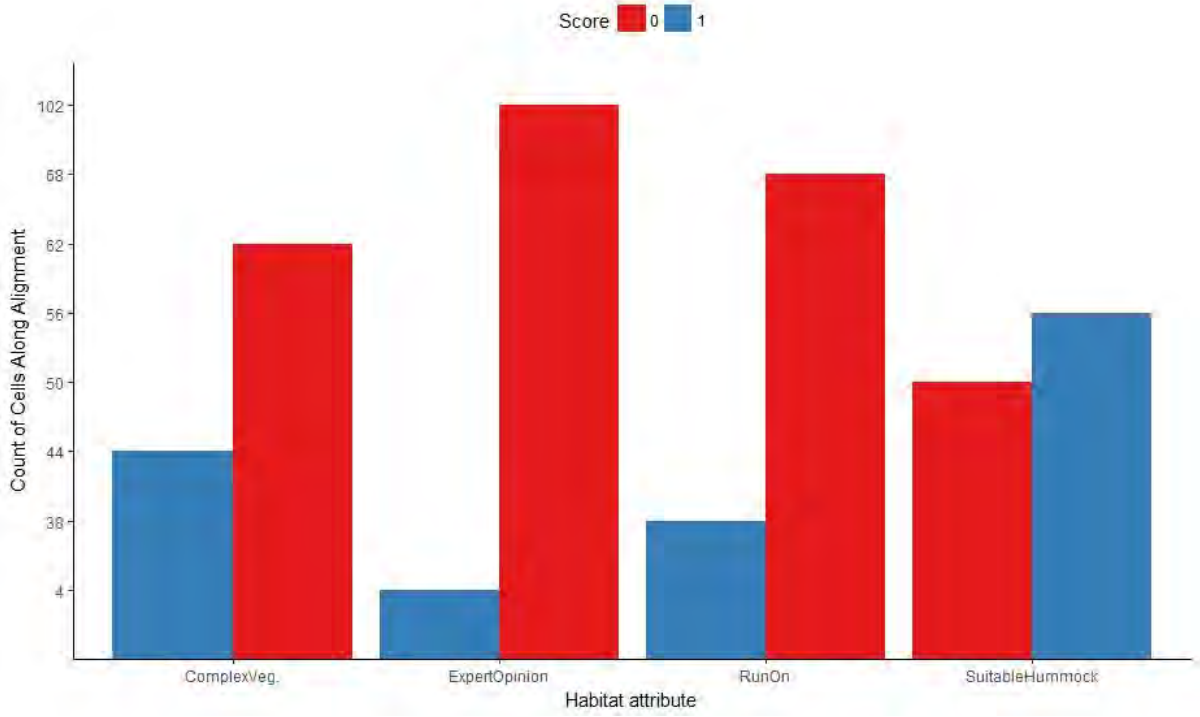


Figure 5. Plot of habitat attributes observed along the corridor from rapid assessment

6.2. Focal habitat assessment

Eighteen focal habitat surveys were conducted in areas deemed to have reasonable quality Night Parrot roosting/breeding or feeding habitat (n = 16), and/or areas considered a high priority due to the imminent construction of accommodation camps (n = 2; Table 5; Figure 6). The 16 sites not associated with camp construction all had some qualities that we considered could make them important for Night Parrots, including structurally suitable *Triodia* hummocks and/or floristically diverse run-on areas (including observations of some known Night Parrot food plants e.g. *Trianthema triquetra*), and were often accompanied by the presence of other threatened species.

Observations for habitat attributes for each focal assessment site is shown in Table 5. Table 6 shows a descriptive summary of the data where some attributes are combined and summed across scores. "N/A" values are not applicable due to the scoring system (described in Section 5.2). There was bimodality in suitable hummocks and run-on areas, which reflected our predisposition to select the best potential feeding and roosting/breeding areas we could find. Similarly, the high frequency of sites with non-wooded areas reflects our non-random site selection. Of greater interest is the relatively low herbaceous diversity scores, which could reflect the season in which we sampled (i.e. cool and dry, and not optimal for detecting annual plants) or a depauperate flora (perhaps due to frequent fire), or both. Cats and foxes were commonly detected with 28% of sites having one or the other, and 17% of sites having both. Dingoes/wild dogs were also commonly detected (56% of sites). Total grazing pressure (including rabbits, cattle, horses/donkeys and camels) was high, with 67% of sites having one grazing species and 17% having two or more. Threatened species were detected reasonably often, with 33% of sites having either mulgaras or great desert skinks, while no sites had both.

We attempted to discover relationships among some habitat attributes that might indicate the presence of ecological processes that are known to relate to the presence of threatened species elsewhere (including Night Parrots (Murphy *et al.* 2017b)). We did this by fitting linear models using the software "R" (R Core Team 2016). Models and results are presented in Table 4. None of the relationships were significant, although we note that our sample size was small.

Table 4. Models exploring key ecological processes

Model	**F-statistic**	**p-value**	**Significance**
Threatened species ~ Predation pressure (cats/foxes)	$F_{1,16} = 0.04$	$p > 0.8$	Not significant
Predation pressure (cats/foxes) ~ Dingoes/wild dogs	$F_{1,16} = 0.4444$	$p = 0.5$	Not significant
Grazing pressure ~ Dingoes/wild dogs	$F_{1,16} = 0.003$	$p > 0.9$	Not significant

Table 5. Observations of habitat attributes recorded during focal surveys

FOCAL SURVEY NUMBER	NEAREST KP	LAT	LON	SUITABLE HUMM	RUNON	HERB DIV SCORE	SIG.NON-WOODED AREAS	RABBIT	CAT	FOX	DOG	COW	HORSE/DONK	CAMEL	BILBY	MULGARA	G.D.SKINK	NOTES
1	17	-22.948069	132.661623	2	1	1	1	0	0	1	1	1	0	0	0	1	0	Dense melaleuca
2	212	-21.92392	131.254996	2	0	1	1	0	0	0	1	1	0	0	0	0	0	Expansive; T. pungens Payla; heavily grazed
3	267	-21.509236	130.988394	2	1	1	0	0	0	1	0	0	0	1	0	0	0	
4	268	-21.501443	130.981251	0	1	3	1	1	0	0	1	1	1	1	0	0	0	Trianthema and Tecticornia (NP foods)
5	138	-22.276911	131.82386	3	0	1	1	0	0	0	0	1	0	1	0	0	0	Triodia spicata
6	355	-20.831098	130.572379	0	1	2	1	0	0	0	1	0	0	0	0	0	1	Near tower
7	353	-20.847183	130.583132	0	1	2	1	0	0	0	1	0	0	1	0	0	0	Trianthema
8	343	-20.904374	130.654684	3	1	2	1	0	0	0	1	0	0	1	0	0	1	Trianthema; Probable Spectacled Hare-wallaby tracks
9	342	-20.90898	130.658158	3	1	2	1	0	1	0	1	0	0	1	0	0	0	Trianthema
10	342	-20.914973	130.66131	3	1	2	1	0	1	1	1	0	0	1	0	0	0	
11	330	-21.007518	130.715543	2	1	1	1	1	0	1	0	0	0	1	0	1	0	T. pungens and T. schinzii
12	309	-21.17327	130.808692	2	0	1	1	0	1	1	0	0	0	1	0	0	0	
13	295	-21.291386	130.858243	2	0	1	1	0	1	1	0	0	0	1	0	1	0	Patches of long unburnt
14	286	-21.364834	130.889654	0	0	1	1	0	0	0	0	1	0	0	0	0	0	Proposed camp site; Emu tracks
15	171	-22.180184	131.520796	0	0	1	0	0	0	0	0	1	0	0	0	0	0	Proposed camp site; grazed mulga woodland
16	48	-22.757153	132.491816	2	0	3	1	0	0	0	1	0	0	1	0	0	0	T. spicata on adjacent slope
17	389	-20.58192	130.38467	2	0	1	1	0	0	0	0	0	0	0	0	1	0	Lge patch of open Triodia grassland, with 50% shrub cover
18	385	-20.6082	130.40488	3	0	1	1	0	1	0	1	0	0	0	0	0	0	Mature, good quality Triodia; possible Mulgara

Table 6. Summary of attributes recorded during focal surveys

	Suitable hummocks	Run-On Areas	Herbaceous diversity	Non-woody areas	Predation pressure	Dogs	Grazing pressure	Threatened species
0	5	9	n/a	2	10	8	3	12
1	0	9	11	16	5	10	12	6
2	8	n/a	5	n/a	3	n/a	2	n/a
3	5	n/a	2	n/a	n/a	n/a	1	n/a

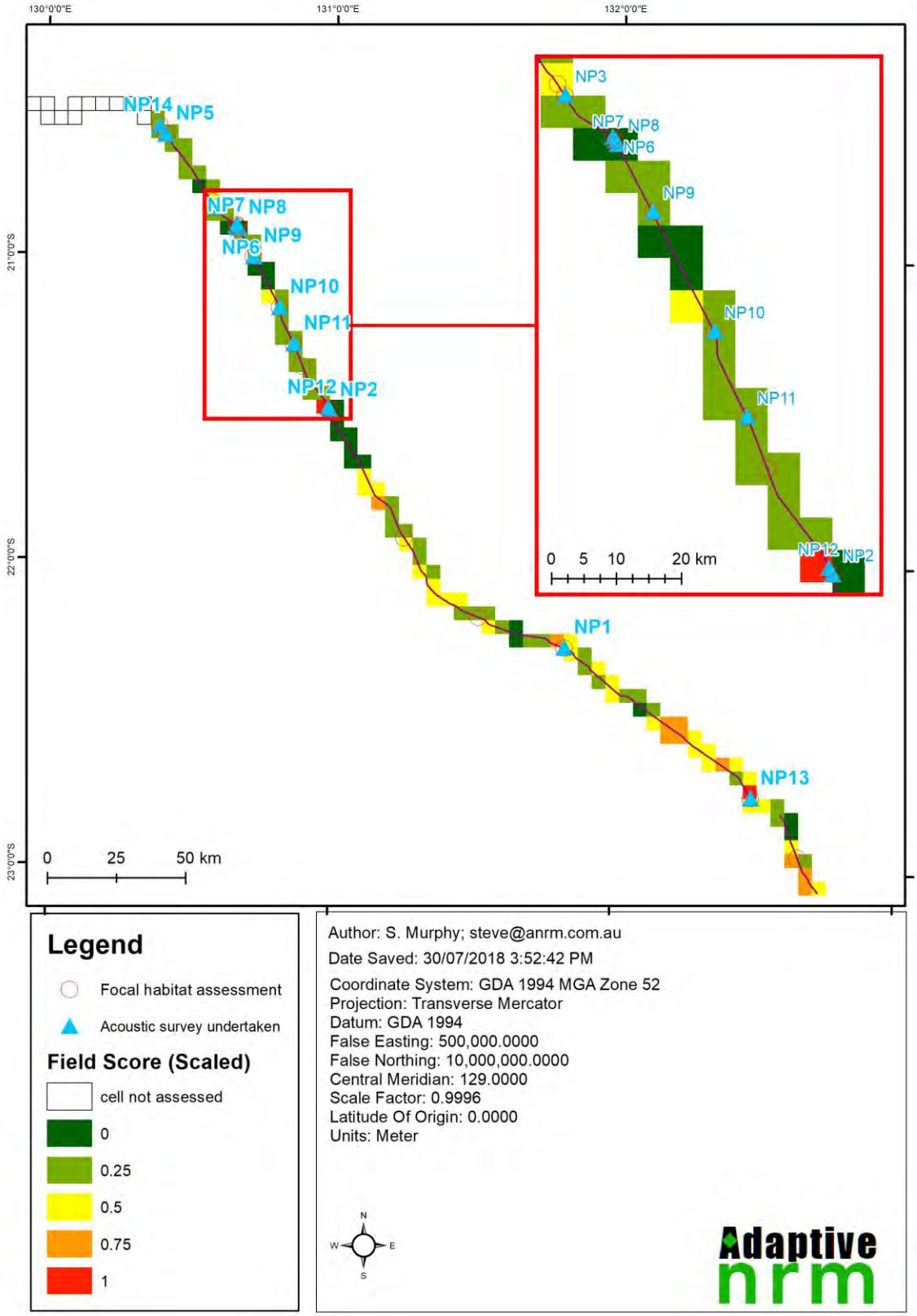


Figure 6. Map of focal habitat assessment and acoustic surveys

6.3. Acoustic survey

6.3.1. Effort

Thirteen SM4s were deployed between May 23 and June 1 (Figure 6; Figure 7). They recorded 1,102.35 hours of acoustic monitoring data across 97 sensor-nights (Table 7).

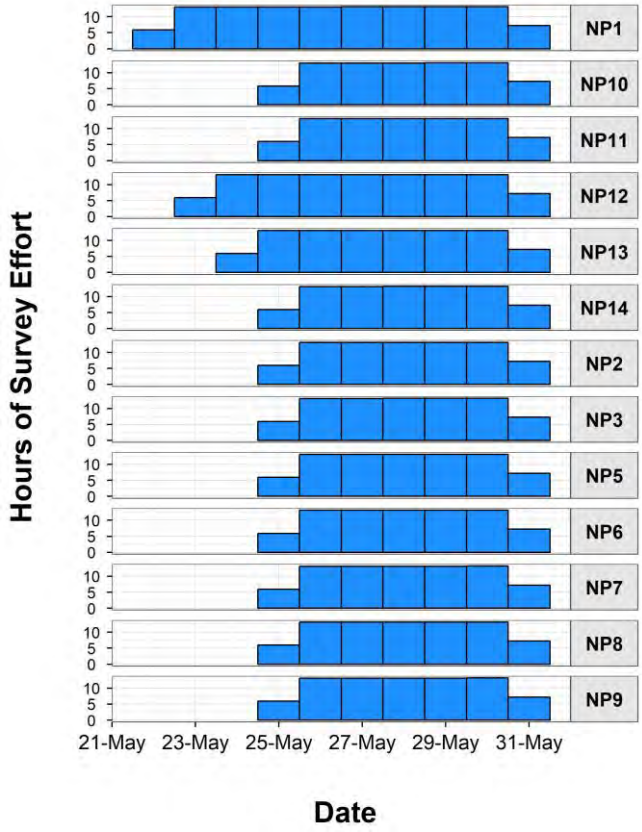


Figure 7. Acoustic survey effort by date and site.

Table 7. Acoustic survey effort

Site	Total Nights	Total Hours
NP1	10	117.93
NP2	7	78.82
NP3	7	78.82
NP5	7	78.82
NP6	7	78.82
NP7	7	78.82
NP8	7	78.82
NP9	7	78.82
NP10	7	78.27
NP11	7	78.82
NP12	9	104.87
NP13	8	91.9
NP14	7	78.82
TOTAL	**97**	**1102.35**

6.3.2. Model performance

The accepted method of evaluating real-world performance of a DNN model requires creation of a test dataset that is independent of both the model training and model cross-validation datasets. The model can then be run on the independent test dataset, and accuracy (ratio of false positives to total positives) and sensitivity (ratio of true positives to false negatives) can be calculated. Ideally, a test dataset should contain a representative sample of data from all monitoring sites, sampling from across the monitoring period, and sampling across the range of acoustic conditions in local soundscapes. It should also contain randomly selected examples of positive events (target species vocalizations), and negative events, in the same proportion that they occur in the natural soundscape. Thus, creation of an ideal test dataset is a challenge that requires manual review and labelling of many thousands of randomly selected clips of acoustic data. Due to the rarity of the calls being searched for in this survey, it was impossible for us to develop this ideal type of test dataset.

We instead evaluated model performance using a sample of validated calls from the full range of Night Parrot acoustic monitoring data that we currently have access to. This includes negative examples from data collected at locations across the spatial range of this survey effort, as well as both positive and negative examples from surveys conducted in Queensland with a higher concentration of Night Parrot activity. Since our current model was trained largely on Queensland data, the representation of performance presented here is likely to be positively biased.

We manually reviewed all acoustic events that our model determined to have a signal probability greater than .001. At this probability threshold, accuracy on the model evaluation dataset is 11.8% and 10.5% for 'croak' and 'dink dink', respectively. The model sensitivity is 100% for both signals at this threshold. We do not have enough confirmed Night Parrot hollow whistle calls to determine model performance for this signal.

6.3.3. Detections

The DNN analysis identified five calls resembling the Night Parrot *hollow whistle* call. Four of these calls occurred within a one-minute period at NP03, and one solitary call occurred at NP14. The Pallid Cuckoo (*Cacomantis pallidus*) gives a call that is very similar to the Night Parrot's *hollow whistle*. Consequently, these calls were reviewed multiple times by experienced observers and the conclusion drawn that they lack the tonal consistently and percussion of confirmed Night Parrot *hollow whistle* calls. It is unlikely that these calls were made by Night Parrots.

7. Conclusion

Our rapid habitat assessments suggest that most of the habitat along the gas pipeline alignment is unsuitable for Night Parrots. The previous desktop analyses (Adaptive NRM 2018) tended to overscore habitat quality, although the overall conclusions of those analyses were supported, given there was a statistically significant relationship between desktop scores and those based on field data. In areas that appeared to be floristically suitable (i.e. with suitable hummock-forming *Triodia* species) the main factor driving overall poor habitat quality along the alignment appeared to be a long history of large-scale, single fires.

A relatively small number of sites appeared to be better quality Night Parrot habitat (n = 16), and the focal habitat surveys confirmed that these did indeed have attributes that could conceivably support Night Parrots (suitable hummocks, open non-wooded areas and/or potential feeding areas).

However, cats and foxes were detected commonly, as too were introduced herbivores. We suspect that these factors lower the overall value of habitat that otherwise appears suitable for Night Parrots. This relates to a key finding by Murphy *et al.* (2017b) who showed that a relatively lower predation pressure, driven by the complete absence of foxes and mesopredator regulation by dingoes, and a system that is resilient to grazing pressure, has allowed Night Parrots to persist at key sites in Queensland.

Subsequent acoustic analysis of over 1000 hours of recordings at 13 of the most likely Night Parrot sites along the alignment failed to detect Night Parrots.

We conclude that the poor quality of the habitat means that Night Parrots are unlikely to occur along the pipeline corridor. It is possible that individuals may use some parts at some times, but the likelihood that the area is permanently occupied is extremely low. Our observations suggest that this is driven by frequent fire, coupled with the relatively high cat/fox predation and total grazing pressure.

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9. Appendices

9.1. Appendix One – Rapid assessment proforma

Tanami gas pipeline - NIGHT PARROT HABITAT RAPID ASSESSMENT						
CELL ID	**DESKT. SCORE**	**COMPLEX VEG. STRUCTURE** 1/0	**SUITABLE HUMMOCK** 1/0	**RUN-ON** 1/0	**EXPERT OPINION** 1/0	**NOTES**
1	0.5					
2	0.5					
3	1.5					
4	1.5					
5	1.5					
6	2.5					
7	1.5					
8	1.5					
9	3					
10	2.5					
11	2.5					
12	3					
13	2					
14	1					
15	1					
16	2					
17	2					
18	2					
19	1					
20	1					
21	1					
22	3					
23	2					
24	2					
25	2					

Appendix E: Rehabilitation Photo Monitoring

Tanami Newmont Pipeline
Rehabilitation Photo Monitoring Report
Doc No: 874 ENV FRM 235 Rev: 0
Issued: February 2019

Contract Number: CA2401021

Table of Contents

1. Introduction

Rehabilitation was undertaken to revegetate areas that were disturbed during the construction of the Tanami Newmont Pipeline, that are not required for operational use.

This Rehabilitation Photo Monitoring Report presents photo compliance monitoring at the nominated rehabilitation monitoring points and associated control sites to document the site condition and vegetation cover immediately following reinstatement in accordance with Section 7.3.6 of the AGIT Tanami Newmont Gas Pipeline Environmental Management Plan (CP2800001-Z-PLN-005-01_A) dated 1 February 2018 (CEMP). Deviations from the original locations are described in section 5.1.

In accordance with the AGIT Tanami Newmont Gas Pipeline Rehabilitation Plan (E-PLN-027) Revision dated March 2018 (Rehabilitation Plan), at each point, two photographs will be taken along each direction of the pipeline corridor. All photos will be taken with the App 'Theodolite' which date stamps and records the photo reference, direction (either positive or negative) and coordinates. Each photo will be taken at shoulder height with landscape orientation.

In addition to the requirements of the AGIT CEMP and Rehabilitation Plan, this Rehabilitation Photo Monitoring Report presents evidence of reinstatement completed at:

- Access tracks to the Right of Way (ROW) to provide evidence of reinstatement:
    - Of the Tanami Road road reserve with regard to Condition 1 of the Road Agency Approval - 2017-0170-D2 which references the Roadworks Master Specification requirement rehabilitation outcomes to be generally consistent with its untouched surrounds.
    - In accordance with Section 6.1 of the AGIT Primary Erosion and Sediment Control Plan (TNP-Z-PLN-001-01_A) of:
        - Removal of culverts/crossings
        - Lightly ripping compacted surface
        - Replacement of vegetative matter and woody debris.
- Within the ROW both positive and negative at nominally 10km intervals.

Reinstatement requriements also address Section 16 Clean-Up of the Construction Technical Specification, specifically sections 16.1-16.3, and 16.7-16.8.

2. Purpose

The purpose of this Rehabilitation Photo Monitoring Report by the Principal Contractor is to provide evidence of reinstatement upon project completion for AGIT to monitoring annually for a minimum of 3 years post construction to determine the rehabilitation success.

3. Scope

The Rehabilitation Photo Monitoring Report includes photo monitoring of the established 15 monitoring sites (with only 1 photo in each direction provided in this report) and at nominally 10km intervals along the ROW (and reinstated access tracks), including spot checks of works in progress to demonstrate reinstatement staging including subsoil ripping in compacted areas, topsoil respread and vegetation debris respread.

Ancillary areas disturbed for temporary infrastructure (eg. Extra work spaces, water and quarry materials supply) does not form part of this Report.

Note, the requirement for photo monitoring prior to vegetation clearing and grade was the responsibility of AGIT, including annually for 3 years 12 months following reinstatement.

4. Reference Documents

Document No.	Document Name
CP2800001-Z-PLN-005-01_A	AGIT Tanami Newmont Gas Pipeline Environmental Management Plan
E-PLN-027	AGIT Tanami Newmont Gas Pipeline Rehabilitation Plan
874 ENV PLN 109	MPC Reinstatement and Rehabilitation Management Plan

5. Photo Monitoring

Photo monitoring evidence provided in this section identifies the relevant location based on either Kilometre Point (KP) reference or Rehabilitation Monitoring Point (RMP).

Spot checks during reinstatement were recorded in environmental assurance inspections stored in MPC INX InControl and available on request.

Permanent erosion and sediment controls have been installed at agreed locations with AGIT.

5.1 Deviations

A review of the RMP at the locations have been undertaken as part of completing this Rehabilitation Photo Monitoring Report. The majority of the permanent monitoring sites were not located within the RoW or were on the edge of the RoW. As a result, the locations were updated as shown in the table below. The final locations of the permanent monitoring locations have been provided to AGIT in shapefiles format.

The original RMP6A and 6B was located within Exclusion Zone 39 identified in the Sacred Site Clearance Certificate 2018-194 Variation 3 (Floodout Bore). No access to this location is permitted for rehablitation monitoring. These RMPs have been relocated to outside of the exclusion zone in the proximity of the original RMPs.

RMP8A and 8B was located within Exclusion Zone 41 identified in the Sacred Site Clearance Certificate 2018-194 Variation 3 (Chilla Well). There was no clearing in or around the exclusion zone at Chillawell. No similar vegetation type was cleared in the Project footprint. This Rehab point was removed from the permanent monitoring program. Note that 7A and 7B are located just outside the limits of EZ41 to the south.

Permanent Monitoring Site	Lattitude	Longitude	KP	Comment
1A	-22.80451597	132.607025	34.7	Original location
1B	-22.80556496	132.603843	34.7	Original location
2A UPDATED	-22.77156	132.51625	44.9	Moved to be in RoW
2B	-22.77091099	132.517086	44.9	Original location
3A	-22.76119804	132.499137	47	Original location
3B	-22.76051802	132.499469	47	Original location
4A UPDATED	-22.12535097	131.399423	185	Moved to be in RoW
4B UPDATED	-22.12549103	131.398937	185	Moved to be adjacent to RoW
5A UPDATED	-21.81218002	131.188512	227	Moved to be in RoW
5B UPDATED	-21.81180803	131.188833	227	Moved to be adjacent to RoW

Permanent Monitoring Site	Lattitude	Longitude	KP	Comment
6A UPDATED	-21.80342898	131.17847	228.4	Moved outside of EZ39 area
6B UPDATED	-21.80305498	131.17873	228.4	Moved outside of EZ39 area
7A UPDATED	-21.51452699	130.991689	266.4	Moved to be in RoW
7B UPDATED	-21.51464702	130.991226	266.4	Moved to be adjacent to RoW
9A UPDATED	-20.87560502	130.606474	349	Moved to be in RoW
9B UPDATED	-20.87521702	130.606723	349	Moved to be adjacent to RoW
10A UPDATED	-20.53036298	129.971332	435.5	Moved to be in RoW
10B UPDATED	-20.52995302	129.971485	435.5	Moved to be adjacent to RoW
11A	-22.39293502	131.979203	115.67	Original location
11B	-22.39242498	131.97991	115.67	Original location
12A UPDATED	-21.96610001	131.286637	206.9	Moved to be in RoW
12B UPDATED	-21.96576096	131.287109	206.9	Moved to be adjacent to RoW
13A UPDATED	-21.64860198	131.073377	249	Moved to be in RoW
13B UPDATED	-21.64838397	131.073826	249	Moved to be adjacent to RoW
14A	-21.10099699	130.767628	318.25	Original location
14B	-21.09999502	130.768076	318.25	Original location
15A UPDATED	-20.53112397	130.268783	404	Moved to be in RoW
15B UPDATED	-20.53067897	130.268794	404	Moved to be adjacent to RoW

5.2 Results

Photo monitoring indicates compliance with the requirements of reinstatement including compaction relief, topsoil grading, installation of permanent erosion and sediment controls, and vegetation debris spreading.

5.3 Rehabilitation Monitoring Points

RMP: 1A POSITIVE AND NEGATIVE	RMP: 1B POSITIVE AND NEGATIVE
	
	

Rehabilitation Photo Monitoring Report

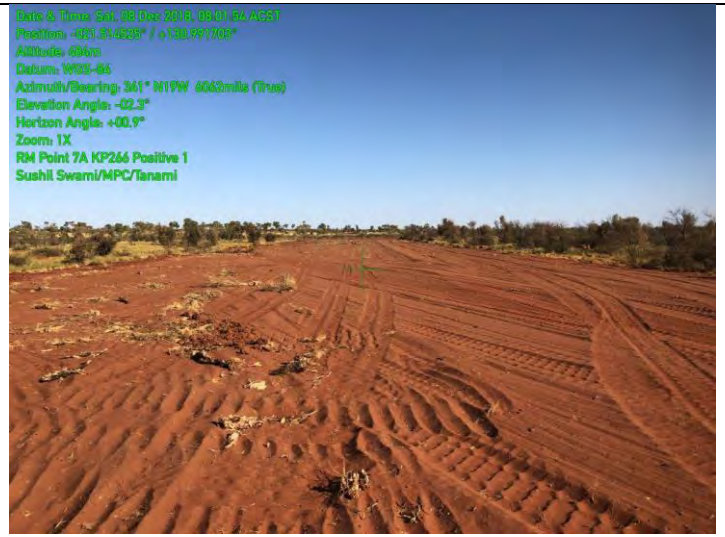
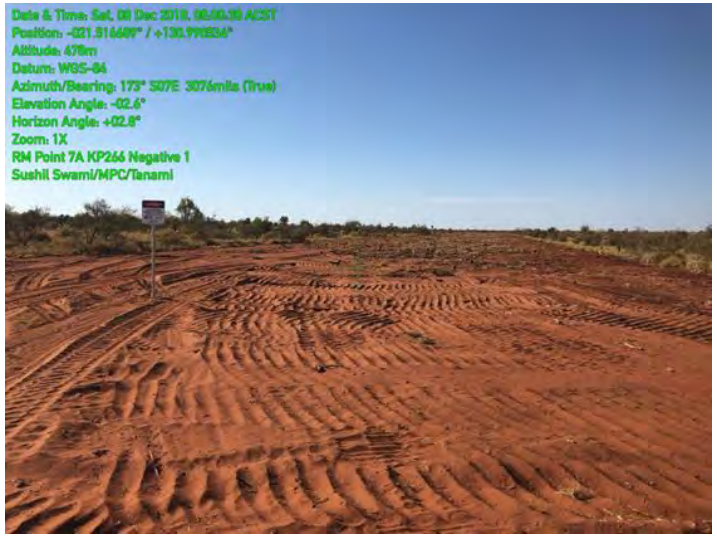
RMP: NEW 2A POSITIVE AND NEGATIVE	RMP: 2B POSITIVE AND NEGATIVE
	
	

RMP: 3A POSITIVE AND NEGATIVE	RMP: 3B POSITIVE AND NEGATIVE
	
	

RMP: 4A POSITIVE AND NEGATIVE	RMP: 4B POSITIVE AND NEGATIVE
	
	

RMP: 5A POSITIVE AND NEGATIVE	RMP: 5B POSITIVE AND NEGATIVE
	
	

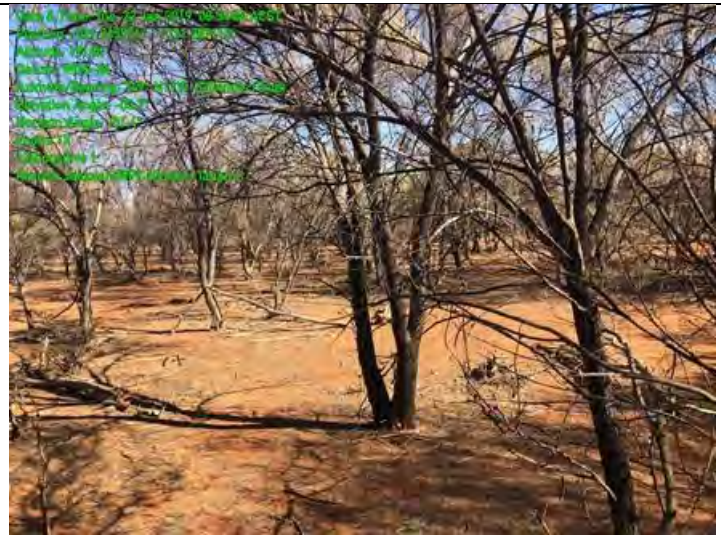
RMP: 6A POSITIVE AND NEGATIVE	RMP: 6B POSITIVE AND NEGATIVE
	
	

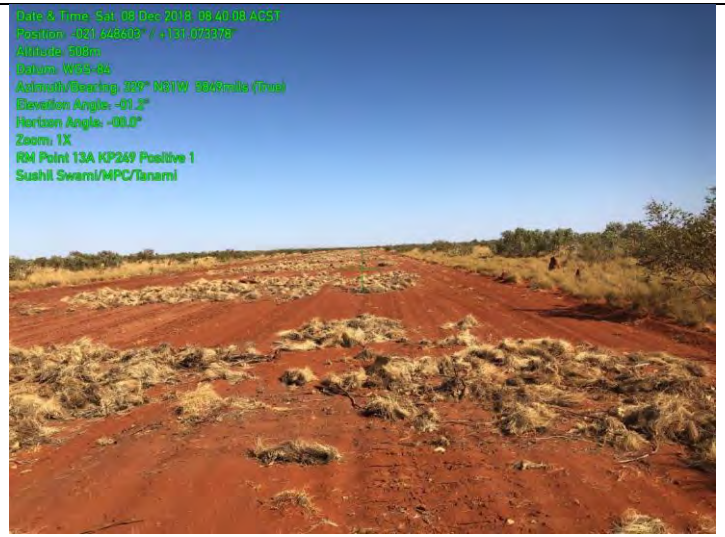
RMP: 7A POSITIVE AND NEGATIVE	RMP: 7B POSITIVE AND NEGATIVE
	
	

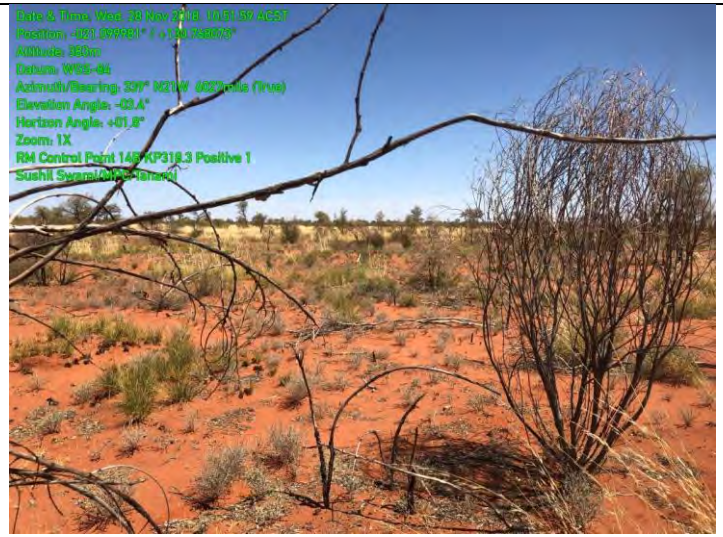
RMP: 9A POSITIVE AND NEGATIVE	RMP: 9B POSITIVE AND NEGATIVE
	
	

RMP: 10A POSITIVE AND NEGATIVE	RMP: 10B POSITIVE AND NEGATIVE
	
	

RMP: 11A POSITIVE AND NEGATIVE	RMP: 11B POSITIVE AND NEGATIVE
	
	

RMP: 12A POSITIVE AND NEGATIVE	RMP: 12B POSITIVE AND NEGATIVE
	
	

RMP: 13A POSITIVE AND NEGATIVE	RMP: 13B POSITIVE AND NEGATIVE
	
	

RMP: 14A POSITIVE AND NEGATIVE	RMP: 14B POSITIVE AND NEGATIVE
	
	

RMP: 15A POSITIVE AND NEGATIVE	RMP: 15B POSITIVE AND NEGATIVE
	
	

5.4 Nominal 10km ROW Reinstatement Completed (generally in line with access points)

KP:2 POSITIVE	KP: 2 NEGATIVE
	

KP:10 POSITIVE	KP: 10 NEGATIVE
	

KP:21 POSITIVE	KP: 21 NEGATIVE
	

KP:32 POSITIVE	KP: 32 NEGATIVE
	

KP:35 POSITIVE	KP: 35 NEGATIVE
	

KP:50 POSITIVE	KP: 50 NEGATIVE
	

KP:63 POSITIVE	KP: 63 NEGATIVE
	

KP:73 POSITIVE	KP: 73 NEGATIVE
	

KP:80 POSITIVE	KP: 80 NEGATIVE
	

KP:90 POSITIVE	KP: 90 NEGATIVE
	

KP:100 POSITIVE	KP: 100 NEGATIVE
	

KP:110 POSITIVE	KP: 110 NEGATIVE
	

KP:119 POSITIVE	KP: 119 NEGATIVE
	

KP:130 POSITIVE	KP: 130 NEGATIVE
	

KP:141 POSITIVE	KP: 141 NEGATIVE
	

KP:151 POSITIVE	KP: 151 NEGATIVE
	

KP:161 POSITIVE	KP:161 NEGATIVE
	

KP: 170 POSITIVE	KP: 170 NEGATIVE
	

KP: 186.7 POSITIVE	KP: 186.7 NEGATIVE
	

KP: KP191.6 POSITIVE	KP: KP191.6 NEGATIVE
	

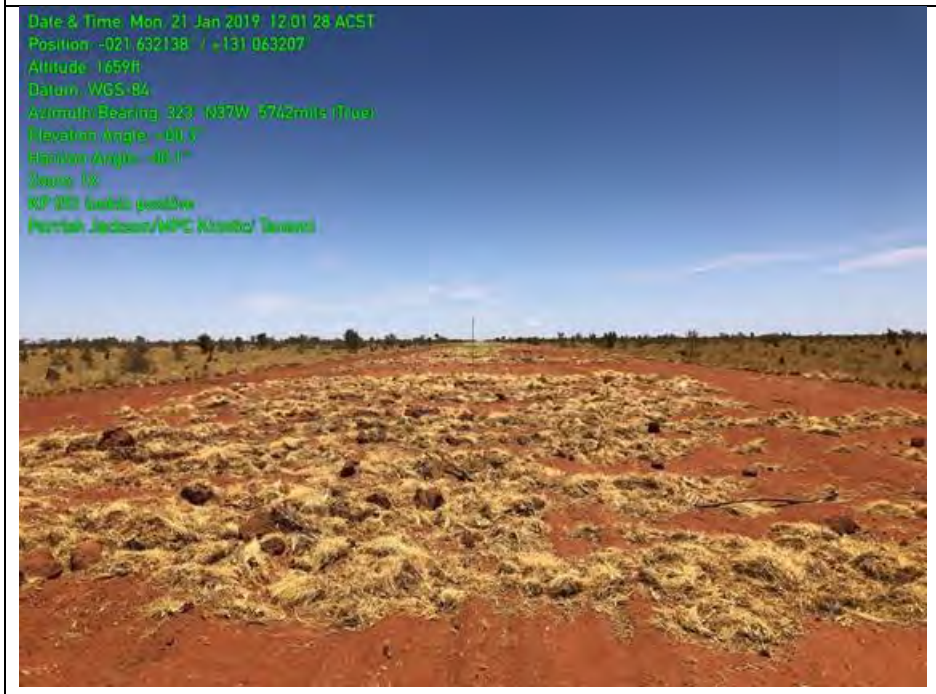
KP: 201 POSITIVE	KP: 201 NEGATIVE
	

KP: 211 POSITIVE	KP: 211 NEGATIVE
	

KP: 221 POSITIVE	KP: 221 NEGATIVE
	

KP: 233 POSITIVE	KP: 233 NEGATIVE
	

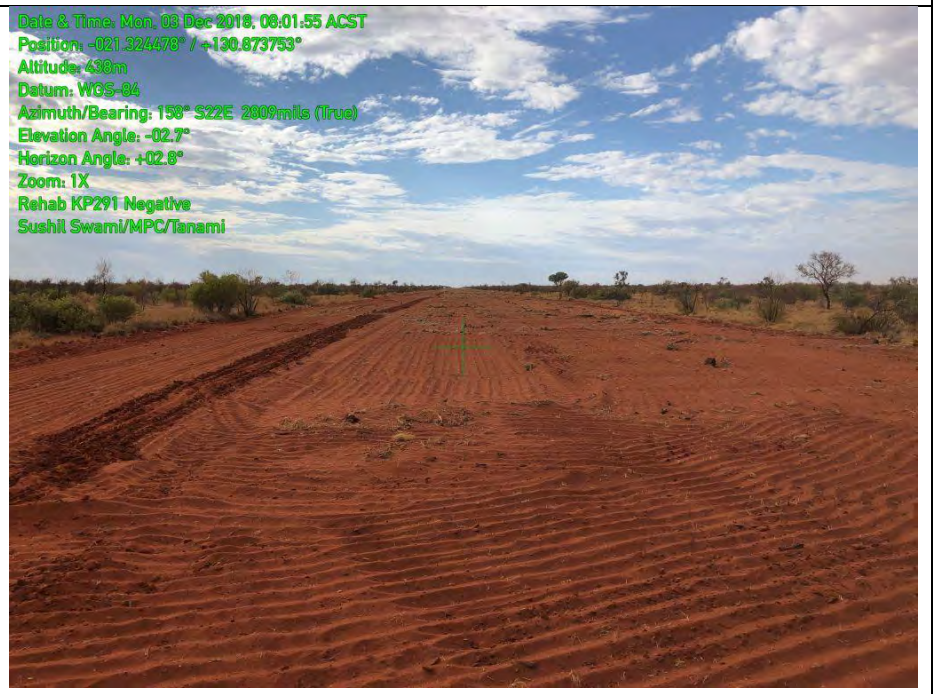
KP: 241 POSITIVE	KP: 241 NEGATIVE
	

KP: 251 POSITIVE	KP: 251 NEGATIVE
	

KP: 261 POSITIVE	KP: 261 NEGATIVE
	

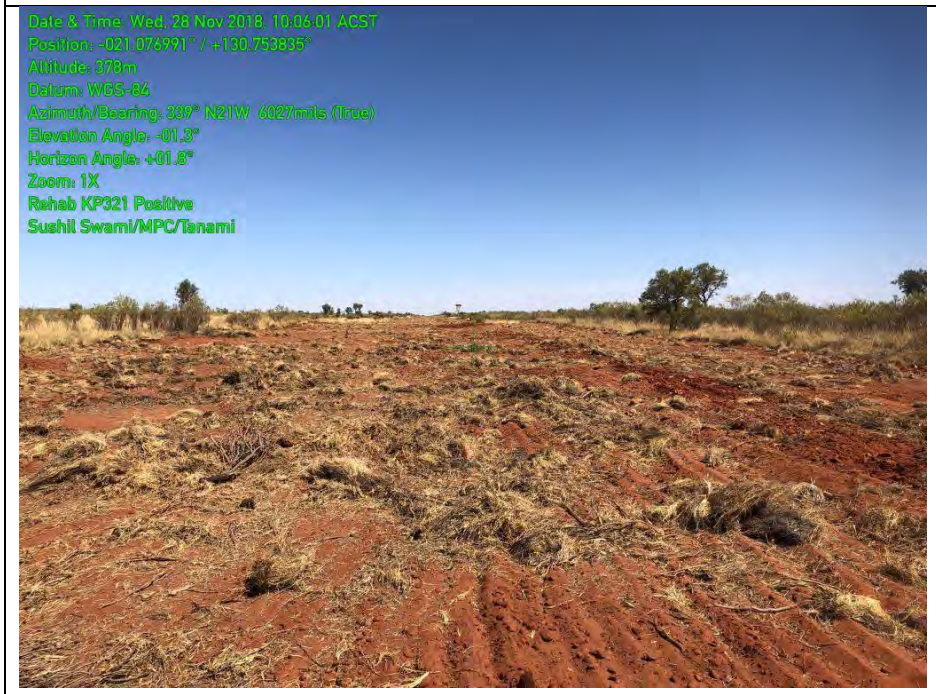
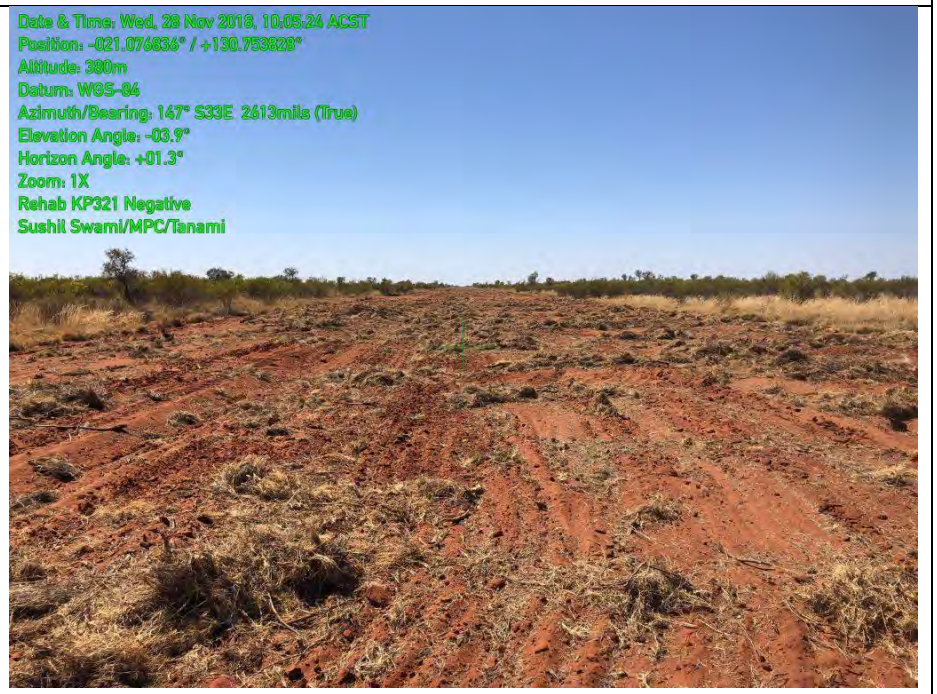
KP: 271 POSITIVE	KP: 271 NEGATIVE
	

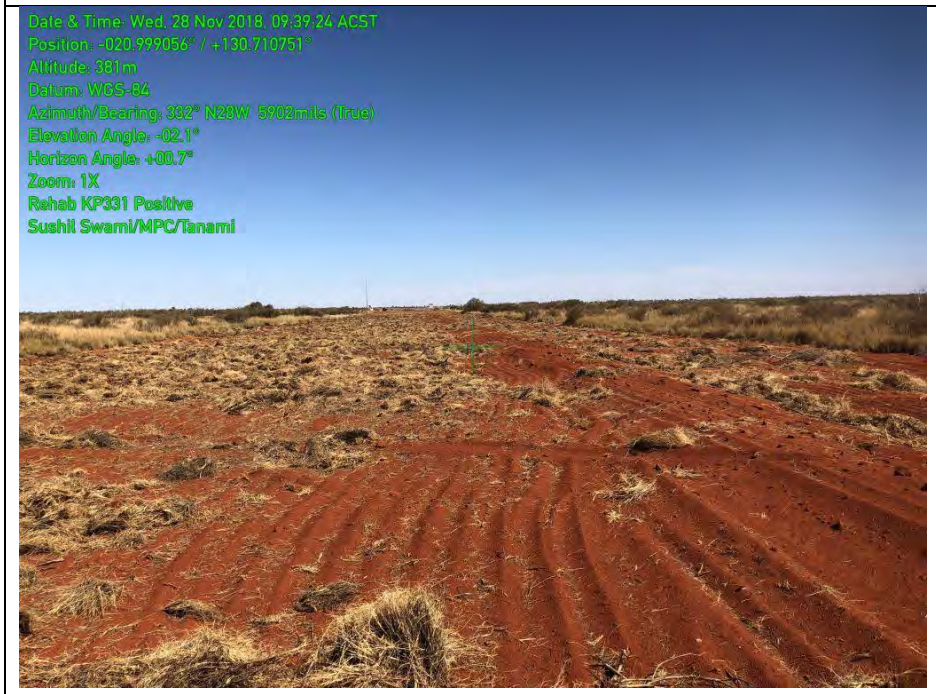
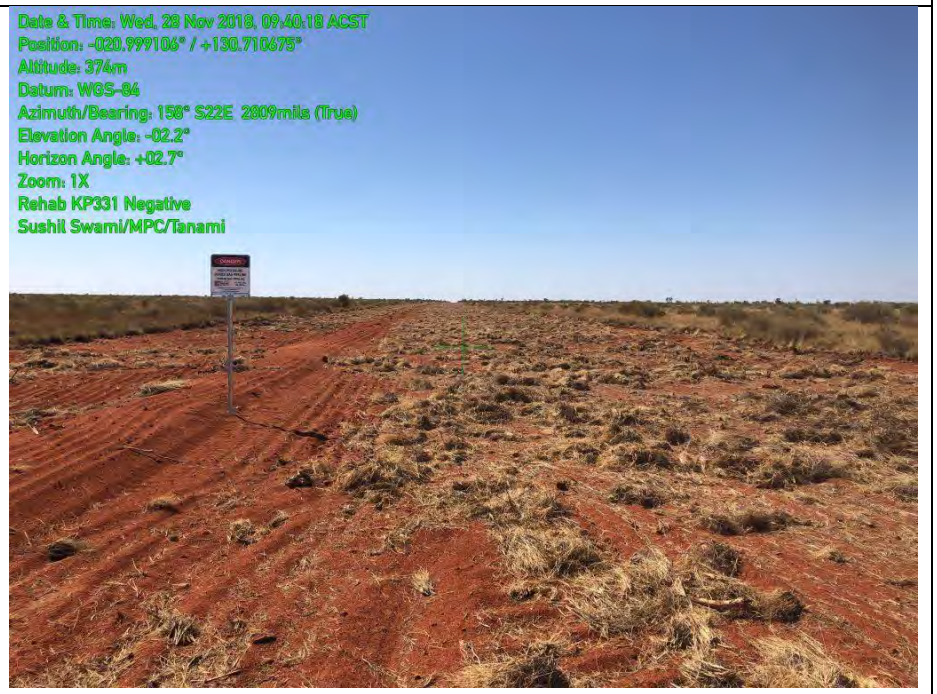
KP: 281 POSITIVE	KP: 281 NEGATIVE
	

KP: 291 POSITIVE	KP: 291 NEGATIVE
	

KP: 301 POSITIVE	KP: 301 NEGATIVE
	

KP: 311 POSITIVE	KP: 311 NEGATIVE
	

KP: 321 POSITIVE	KP: 321 NEGATIVE
	

KP: 331 POSITIVE	KP: 331 NEGATIVE
	

KP: 341 POSITIVE	KP: 341 NEGATIVE
	

KP: 351 POSITIVE	KP: 351 NEGATIVE
	

KP: 361 POSITIVE	KP: 361 NEGATIVE
	

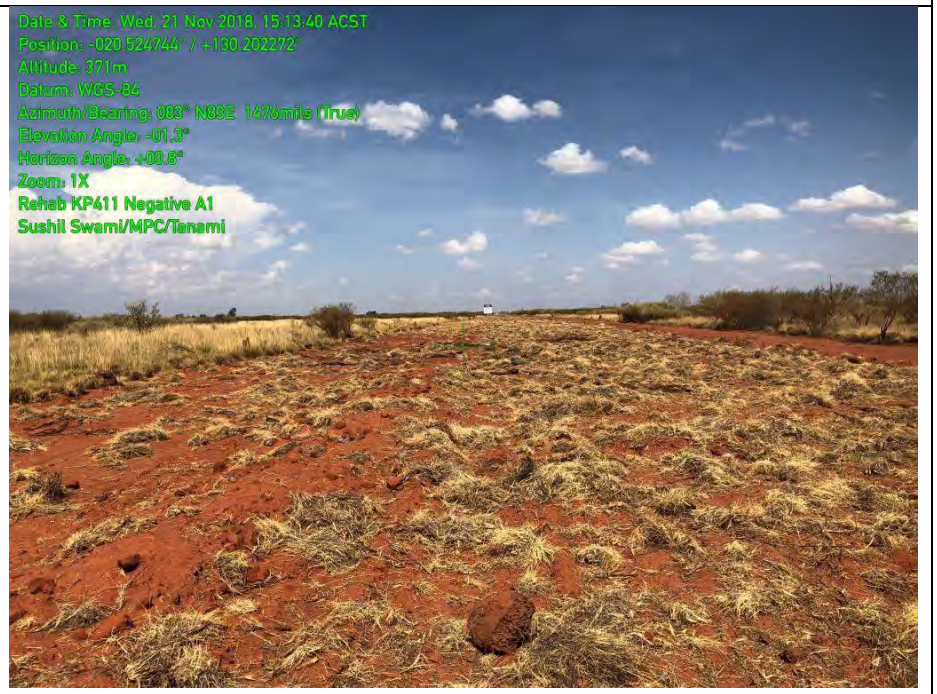
KP: 371 POSITIVE	KP: 371 NEGATIVE
	

KP: 381 POSITIVE	KP: 381 NEGATIVE
	

KP: 391 POSITIVE	KP: 391 NEGATIVE
	

KP: 397 EAST	KP: 397 WEST
	

KP: 401 POSITIVE	KP: 401 NEGATIVE
	

KP: 411 POSITIVE	KP: 411 NEGATIVE
	

KP: 421 POSITIVE	KP: 421 NEGATIVE
	

KP: 431 POSITIVE	KP: 431 NEGATIVE
	

KP: 439 POSITIVE	KP: 439 NEGATIVE
	

5.5 Access Tracks Reinstatement

KP10	KP32
	

KP38	KP50
 Date & Time: Thu, 18 Oct 2018, 11:18:15 ACST Position: 022.799402°S / 132.571861°E Altitude: 565m Datum: WGS-84 Azimuth/Bearing: 010° N10E 0178mils (True) Elevation Angle: -03.0° Horizon Angle: +00.6° Zoom: 1X KP38 access track construction reinstatement completed	 Date & Time: Thu, 18 Oct 2018, 12:06:54 ACST Position: 022.738400°S / 132.479271°E Altitude: 573m Datum: WGS-84 Azimuth/Bearing: 052° N52E 0924mils (True) Elevation Angle: -02.0° Horizon Angle: +00.6° Zoom: 1X KP50 access track construction reinstatement completed

KP65 Camp 1
Access to Camp 1 is still intact as @ 21/02/2019 and is included in a separate report. Refer to 874 ENV FRM 344.

KP80	KP90
	

KP100	KP110
	

Date & Time: Thu. 18 Oct 2018. 14:19:54 ACST
Position: 022.468835°S / 132.106858°E
Altitude: 620m
Datum: WGS-84
Azimuth/Bearing: 049° N49E 0871mils (True)
Elevation Angle: -02.3°
Horizon Angle: +00.5°
Zoom: 1X
KP100 access track construction reinstatement completed

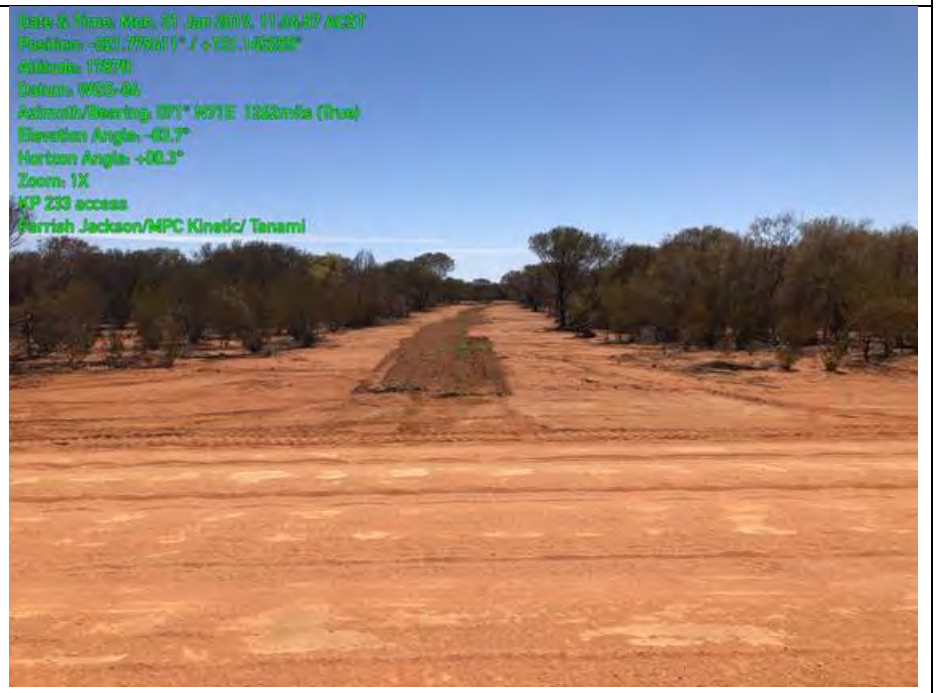
Date & Time: Thu. 18 Oct 2018. 14:07:56 ACST
Position: 022.644433°S / 132.360009°E
Altitude: 571m
Datum: WGS-84
Azimuth/Bearing: 047° N47E 0836mils (True)
Elevation Angle: -02.3°
Horizon Angle: +00.1°
Zoom: 1X
KP110 access track construction reinstatement completed

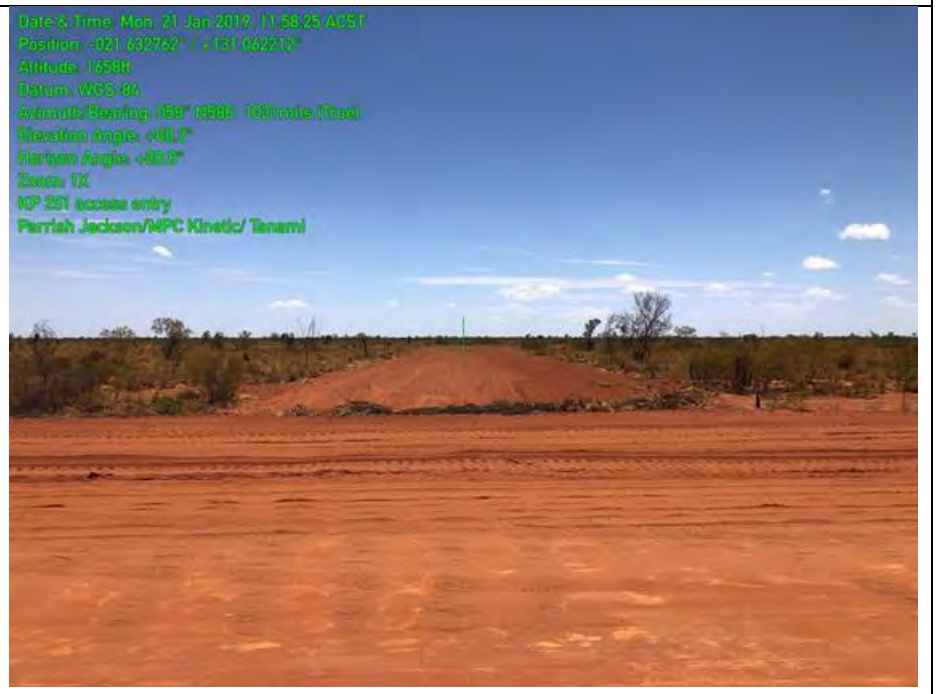
KP131	KP151
	 Date & Time: Sun, 04 Nov 2018, 07:48:09 ACST Position: 022.239597°S / 131.696682°E Altitude: 647m Datum: WGS-84 Azimuth/Bearing: 355° N05W 631 mils (True) Elevation Angle: -03.0° Horizon Angle: +03.5° Zoom: 1X KP151 access track reinstatement completed (records in progress)

KP161	KP170 Camp 2
	Access to Camp 2 still intact as @ 21/02/2019 and is included in a separate report. Refer to 874 ENV FRM 344..

KP186.7

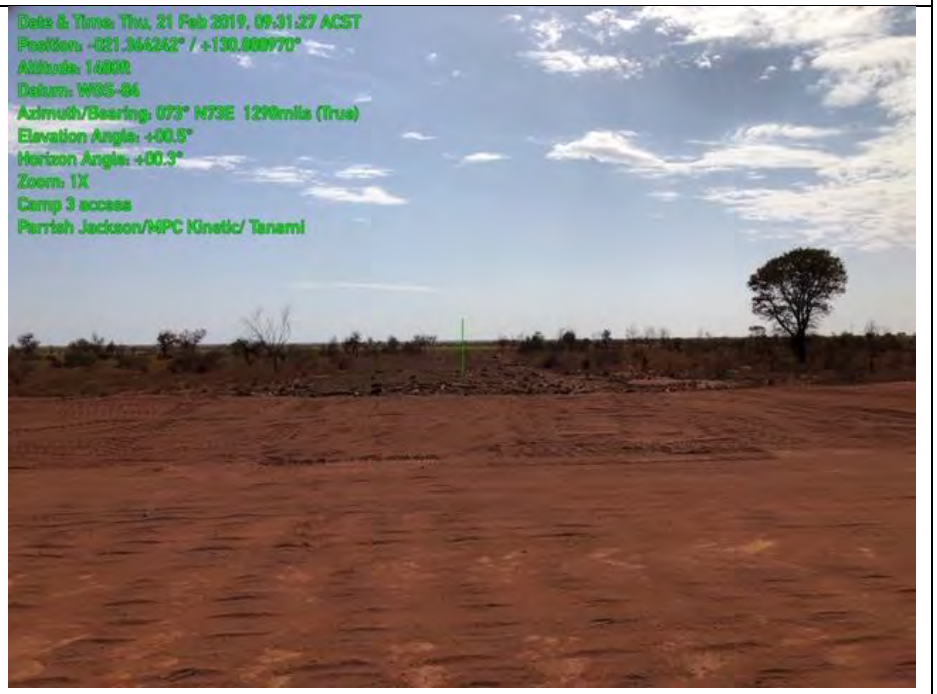
KP201	KP211
	The access track at KP211 is still intact as at 21/02/2019 and is subject to a separate report. Refer to 874 ENV FRM 344.

KP221	KP233
	

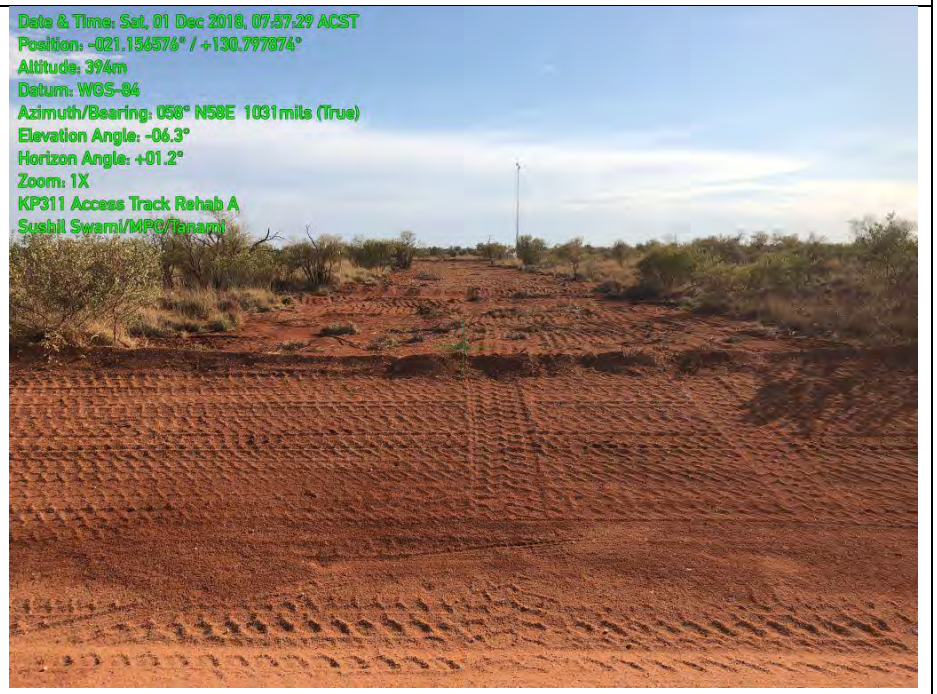
KP241	KP251
 Date & Time: Sat, 08 Dec 2018, 09:07:35 ACST Position: -021.710785° / +131.110481° Altitude: 519m Datum: WGS-84 Azimuth/Bearing: 069° N69E 1227mils (True) Elevation Angle: -06.5° Horizon Angle: +01.3° Zoom: 1X Rehabbed Access Track KP241 A Sushil Swami/MPC/Tanami	 Date & Time: Mon, 21 Jan 2019, 11:58:25 ACST Position: -021.632762° / +131.062213° Altitude: 1658ft Datum: WGS-84 Azimuth/Bearing: 159° NSSE 1031mils (True) Elevation Angle: +01.7° Horizon Angle: +03.8° Zoom: 1X KP 251 access entry Perriah Jackson/MPC Kinetic/ Tanami

KP261	KP272
	

Date & Time: Mon, 03 Dec 2018, 07:32:43 ACST
Position: -021.468173° / +130.961520°
Altitude: 489m
Datum: WGS-84
Azimuth/Bearing: 051° N51E 0907mils (True)
Elevation Angle: -03.3°
Horizon Angle: +00.6°
Zoom: 1X
KP272 Access Track Rehab A
Sushil Swami/MPC/Tanami

KP279 – Facilities	KP286 – Camp 3
Access track to facilities at KP279 was in still intact as @ 21/02/2019 and is included in a separate report. Refer to 874 ENV FRM 344.	

Rehabilitation Photo Monitoring Report

KP301	KP311
	

KP321	KP331
	

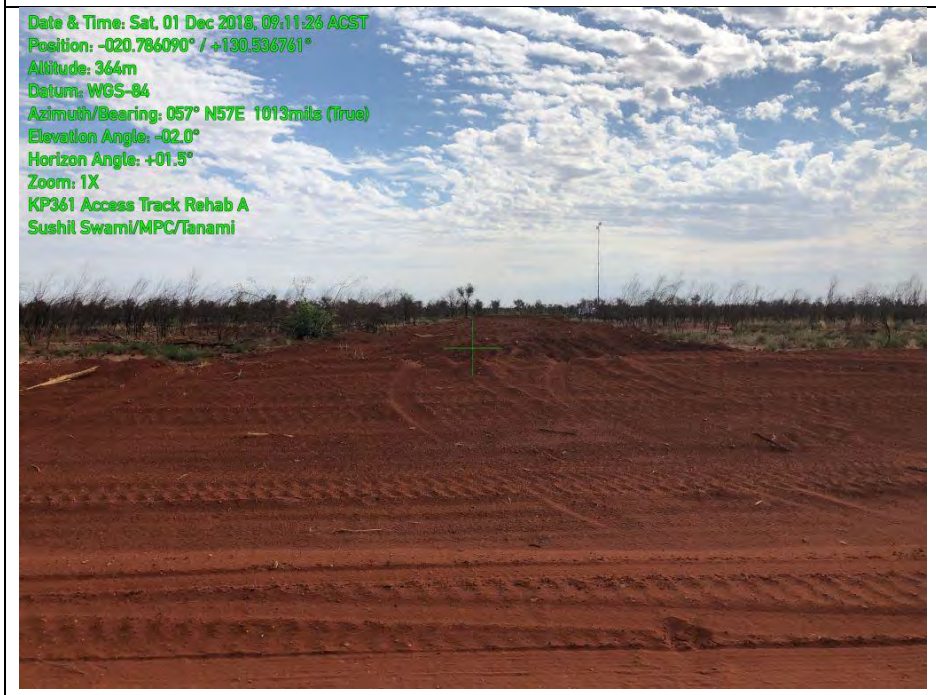
Date & Time: Sat, 01 Dec 2018, 08:15:16 ACST
Position: -021.077021° / +130.752384°
Altitude: 382m
Datum: WGS-84
Azimuth/Bearing: 062° N62E 1102mils (True)
Elevation Angle: -05.5°
Horizon Angle: +01.8°
Zoom: 1X
KP321 Access Track Rehab A
Sushil Swami/MPC/Tanami

Rehabbed Access Track KP331 A
Sushil Swami/MPC/Tanami

KP341	KP351
	

Date & Time: Sat, 01 Dec 2018, 08:38:53 ACST
Position: -020.917686° / +130.662587°
Altitude: 369m
Datum: WGS-84
Azimuth/Bearing: 062° N62E 1102mils (True)
Elevation Angle: -04.9°
Horizon Angle: +01.7°
Zoom: 1X
KP341 Access Track Rehab A
Sushil Swami/MPC/Tanami

Date & Time: Sat, 01 Dec 2018, 08:55:38 ACST
Position: -020.840073° / +130.591399°
Altitude: 359m
Datum: WGS-84
Azimuth/Bearing: 054° N54E 0960mils (True)
Elevation Angle: -04.6°
Horizon Angle: +01.1°
Zoom: 1X
KP351 Access Track Rehab A
Sushil Swami/MPC/Tanami

KP361	KP371
	

KP385 Camp 4
Acess to Camp 4 still intact and included in a separate report. Refer to 874 ENV FRM 340.

Appendix F: Field Inspection Checklist - Rehabilitation

Reinstatement Progress

Camp 4

INSPECTION REPORT

INSPECTION SUMMARY

INSPECTION DATE	PROJECT NAME	INSPECTED BY	PREPARED BY
21st January 2019	Tanami, WF2	Hoang Nguyen – Project Engineer Sushil (Sam) Swami – Environmental Coordinator	Sushil (Sam) Swami

INSPECTION DETAILS

COMMENTS

- Sediment traps, temporary erosion and sediment control and access drainage in place;
- Topsoil reinstated (approx. 90m x 250m) work from negative side of camp access track and fenced;
- Vegetation windrow still at camp's original boundary, waiting for topsoil to be leveled across the camp pad;
- Fuel cell fully operational;
- Waste bins are in place;
- Irrigation area barricaded;
- CP Box, gauge plates, and fencing material present at camp yard;
- VALMEC's material also present at camp yard.

CAMP ACCESS

CAMP ACCESS

CAMP ACCESS

CAMP ACCESS

CAMP REINSTATEMENT

CAMP REINSTATEMENT

CAMP REINSTATEMENT

CAMP REINSTATEMENT

CAMP REINSTATEMENT

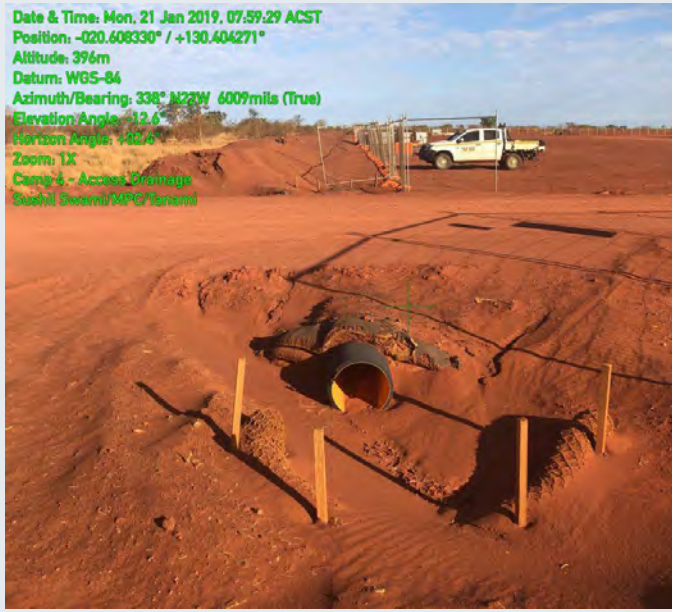
CAMP REINSTATEMENT

CAMP REINSTATEMENT

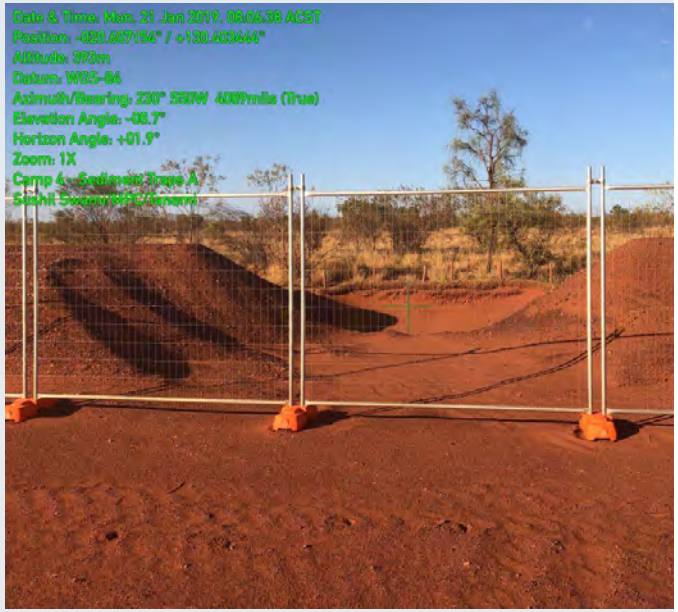
VEGETATION WINDROW

VEGETATION WINDROW

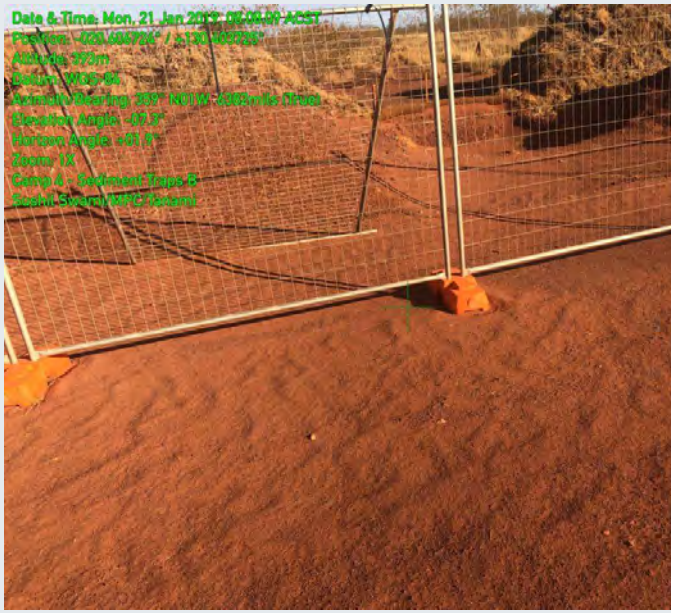
ACCESS DRAINAGE



SEDIMENT TRAP



SEDIMENT TRAP



TEMPORARY EROSION CONTROL

TEMPORARY EROSION CONTROL

TEMPORARY EROSION CONTROL

TEMPORARY EROSION CONTROL

TEMPORARY EROSION CONTROL

TEMPORARY EROSION CONTROL

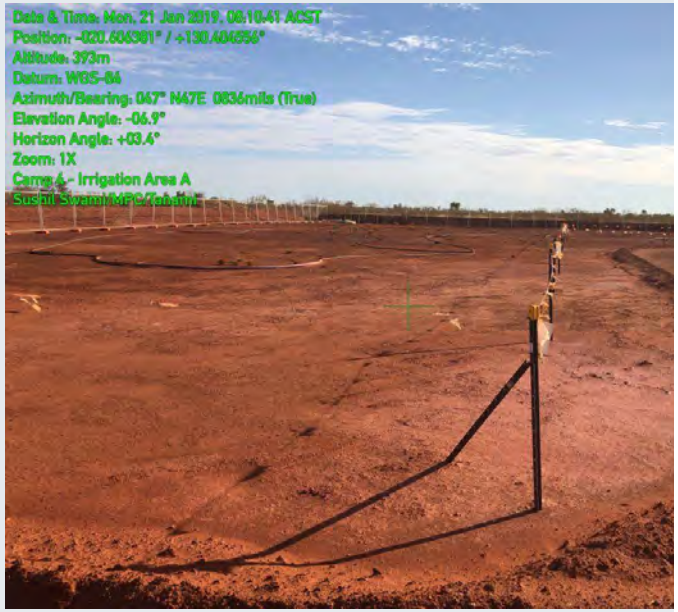
WASTE MANAGEMENT

WASTE MANAGEMENT

WASTE MANAGEMENT

WASTE MANAGEMENT

IRRIGATION AREA



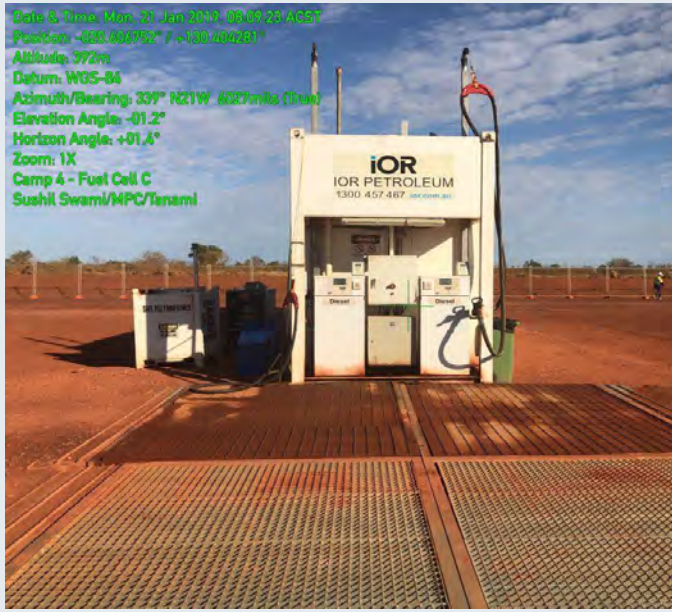
IRRIGATION AREA

IRRIGATION AREA

FUEL CELL

FUEL CELL

FUEL CELL

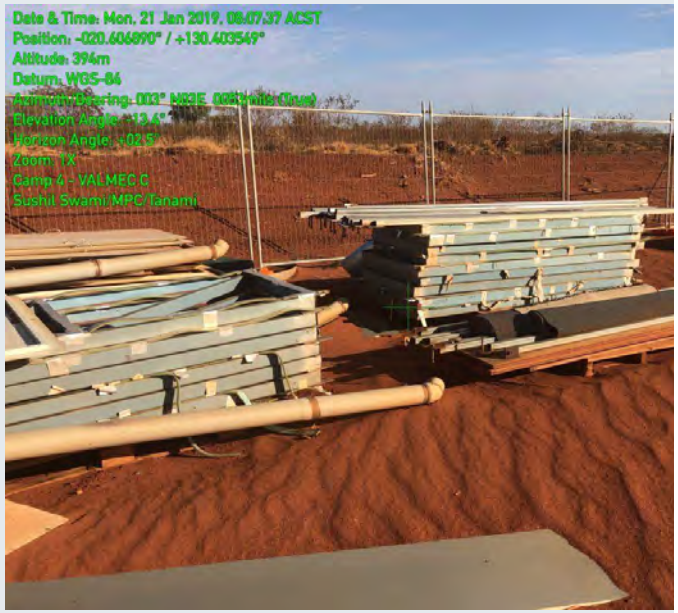


FUEL CELL

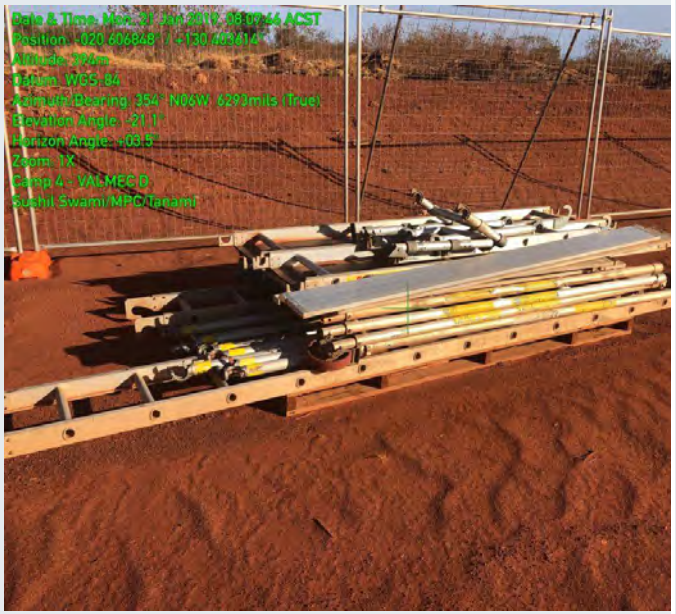
VALMEC

VALMEC

VALMEC

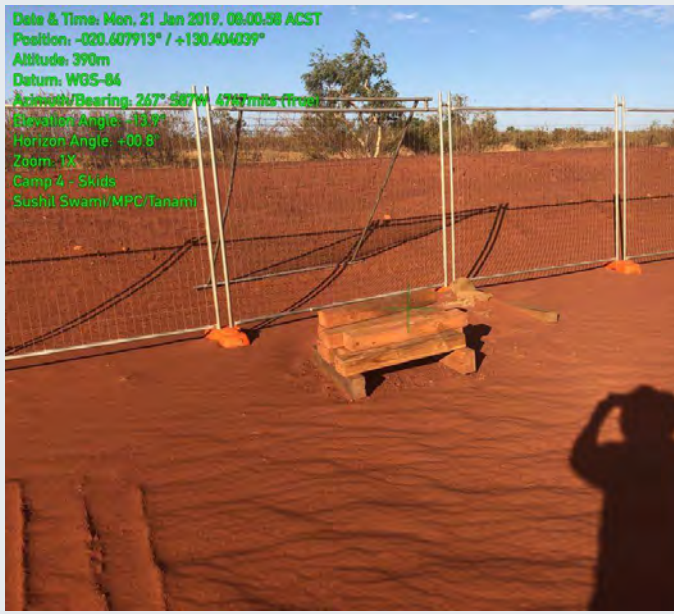


VALMEC

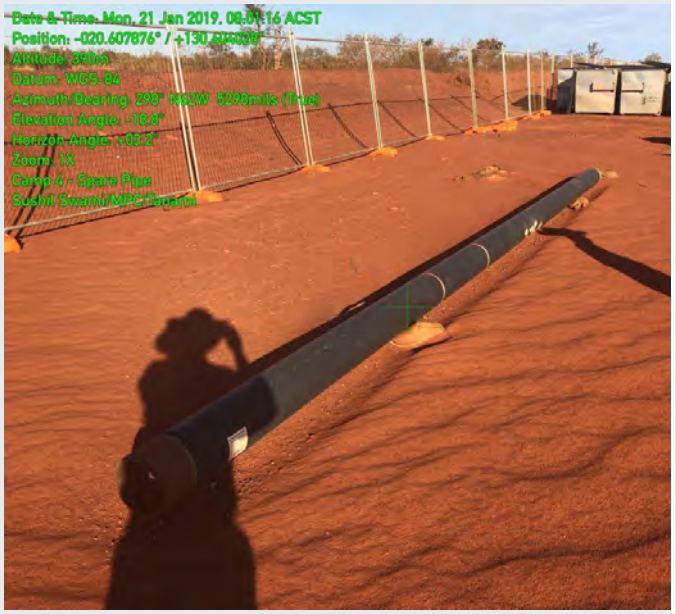


VALMEC

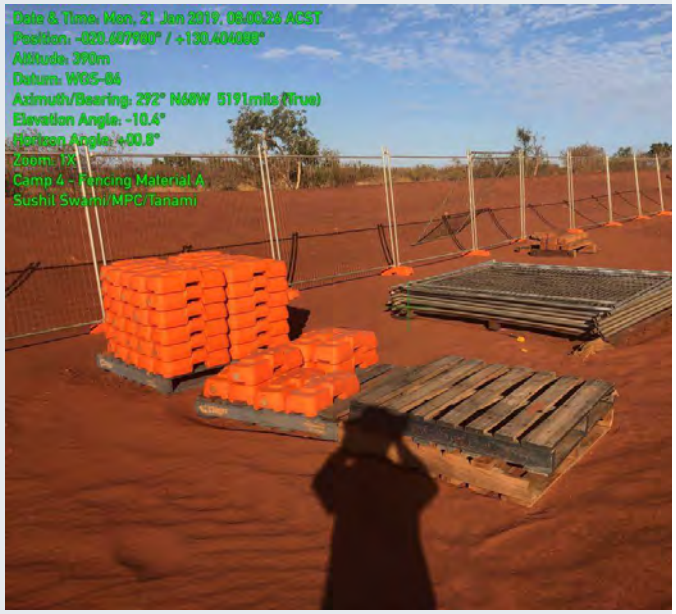
SKIDS



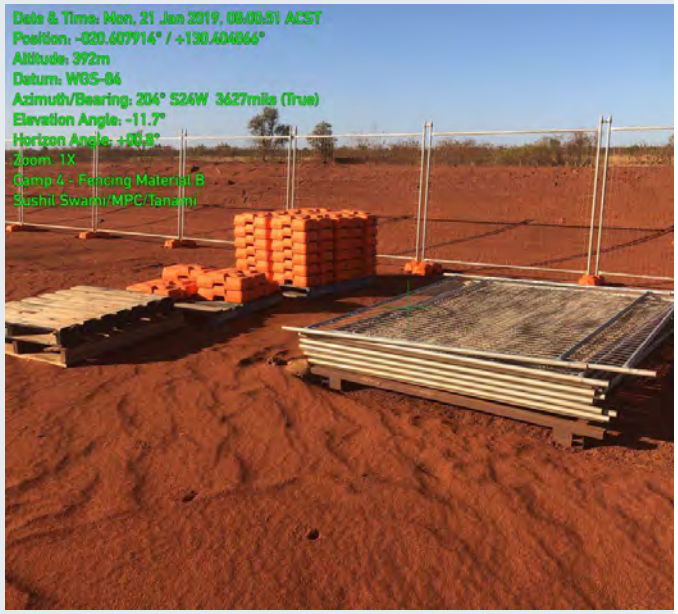
SPARE PIPE



FENCING MATERIAL



FENCING MATERIAL



GAUGE PLATES

CP BOX

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

CAMP YARD

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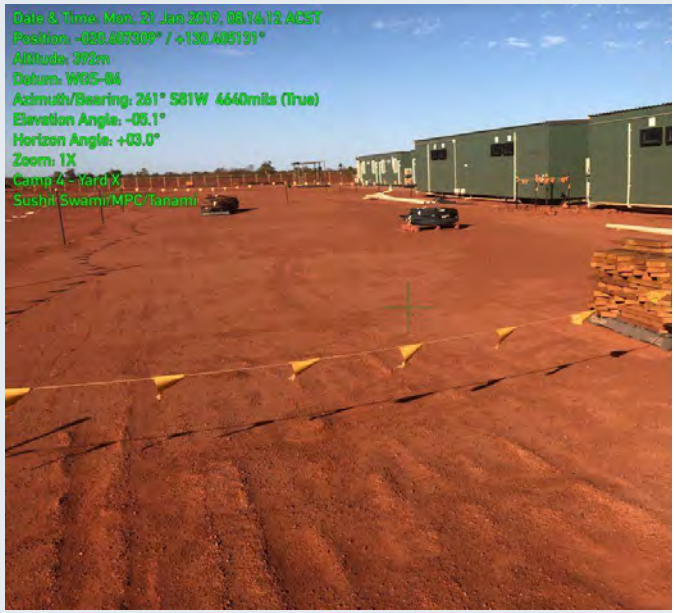
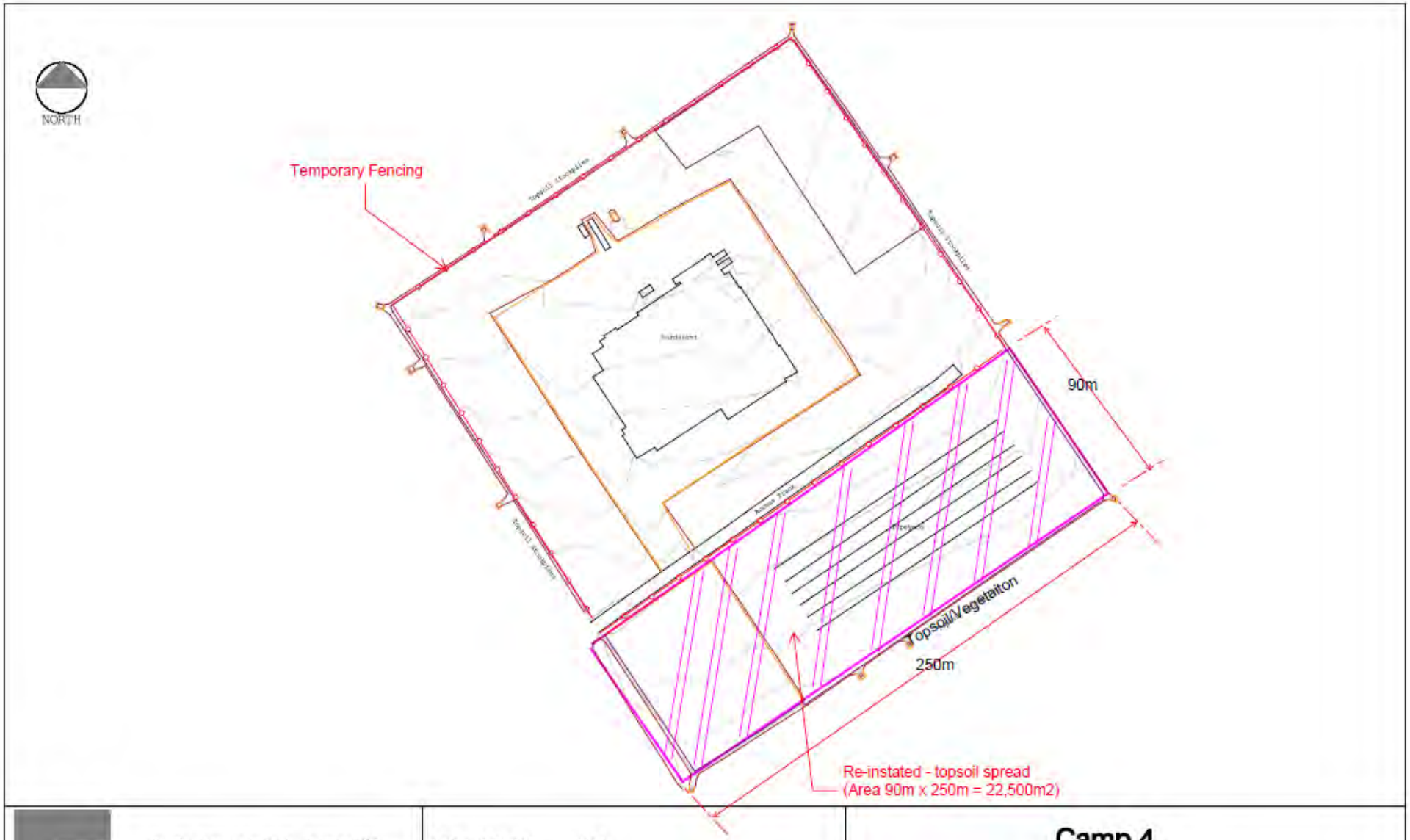


CAMP YARD



Darwin Corporate Park, Tenancy 412
Building 4, Level 1, 631 Stuart Highway
Berrimah NT 0828
PO Box 37869
WINNELLIE NT 0820
TELEPHONE 61 8 8944 7888
info@fyfe.com.au
www.fyfe.com.au

LEVEL DATUM :	AHD			
SCALE :	Not to Scale			
LOCAL AUTHORITY :	MGA94 Zone 52			
SURVEYED BY :	SP	DATE :	16/08/2018	
DRAWN BY :	JTR	DATE :	16/08/2018	
CHECKED BY :	JTR	DATE :	16/08/2018	

Camp 4

Site Drainage Plan

SKETCH NO: TGP-S-004

REV. A