Appendix K Risk Assessment

Ref	Environmental Factor	Risk scenario description	Risk Source	Activity			Code of Practice	Control / mitigation measures	Detect	Recover	Risk rating (final)			ALARP criteria achieved?	Residual risk ALARP and Acceptable Statement	Acceptable criteria achieved?	Scientific Uncertainty Ranking
				Construction & commissioning	Ops & emergency management	Decommissioning & rehabilitation		Prevent			Consequence	Likelihood	Risk Rating				
1	**Hydrological processes**	Contamination of aquifer from surface activities (chemical and waste storage, handling, treatment, piping, recycling and spills) impacting a receptor (groundwater user or GDE).	Storage, handling and transportation of chemicals, hydrocarbons and wastes/ wastewater, including during the wet season. Surface spills from the handling and transferring of wastewater (including wastewater pipelines). Storage and management of oily wastewater.	X	X		A.3.8 Containment of Contaminants C.3 Wastewater Management Framework C.7.1 Wastewater Management Plan C.7.2 Spill Management Plan	- Wastewater from the SPCF will be managed via the tanks on the Shenandoah S2 well pad, as per the approved Shenandoah South E&A Program EMP (TAM1-3). -HAZOP completed to identify process hazards, with engineering controls and procedure in place to prevent risk (such as earth points for vacuum truck hose connections and procedures) - All chemicals stored in designated areas with secondary containment. - Spill Management Plan implemented to prevent, detect and respond to spills. - The SPCF compressor pad is compacted to above 100 kpa to achieve a permeability of approximately 1x10 m-7/s. - Chemical storage & handling areas to have secondary containment, with an impermeable membrane with coefficient of permeability of <10-9 m/s. - Separation between pipework/ chemical/ waste storages and closest aquifer over 70 m, with interbedded clays likely to limit any contaminant migration. - Wastewater pipework connecting Shenandoah S2 wastewater storage area to be constructed in accordance with Code of Practice for Upstream Polyethylene Gathering Lines in the CSG Industry, pressure tested and have leak detection. - Licenced chemical and waste transporters are used for all dangerous goods and listed waste transportation. - No chemical or wastewater transportation during the wet season, unless transportation is undertaken in accordance with a risk assessment that has determined the activity is safe and low risk. - Nearest pastoral extraction bore 2.5 km away. - Spills and leaks to be cleaned up immediately. - No major GDE linked to CLA within 20 km of extraction point, although stygofauna eDNA has been detected in the Amungee NW1 bore; impact likely to be localised.	- Weekly inspections to identify any potential leaks or spills from storage and handling areas. - Transport incident statistics collected and monitored. - Onsite assurances and fit for work assessments completed periodically on transport companies.	- Spill management plan implemented outlining leak classification, response and reporting requirements - All leaks to be cleaned up as soon as practicable. - Emergency Response Plan implemented to prevent, detect and respond to spills. - Contractor performance reviews completed where breaches in requirements are escalated and actions implemented to rectify defects. - Any contamination event to be characterised and have remediation plans developed and executed in accordance with the process outlined in Appendix A National Environment Protection (Assessment of Site Contamination) Measure 1999 (the ASC NEPM).	**2**	**1**	L	Yes	The regulatory regime legislating the storage, handling and transportation of dangerous goods and combustible liquids in Australia is mature. Regulatory requirements covering wastewater and containment of contaminants is extensive. Double lined tanks will be used which will reduce the potential for spills/ leaks. Any spillage is likely to be locally restricted, small and rapidly detected. Consequences are considered moderate, with impacts spatially restricted to the SPCF pad, primarily located on the surface and is likely to be of a short term (days to weeks). The likelihood of contamination is influenced by the rapid detection, separation distance between aquifer and the surface and rapid detection of any spills. The likelihood of a groundwater event from condensate management is considered remote with a <1% probability. This is primarily influenced by the lack of spill sources, separation distance between aquifers and the surface, and implementation of the spill management plan that will rapidly detect any spills.	Yes	Low
2	**Hydrological processes**	Contamination of aquifer from surface activities (chemical and waste storage, handling, treatment, piping, recycling and spills) impacting a receptor (groundwater user or GDE).	Failure of underground drain oil/water separator tank or wastewater pipe		X		A.3.8 Containment of Contaminants C.3 Wastewater Management Framework C.7.1 Wastewater Management Plan C.7.2 Spill Management Plan	- Wastewater from the SPCF will be managed via the tanks on the Shenandoah S2 well pad, as per the approved Shenandoah South E&A Program EMP (TAM1-3). -HAZOP completed to identify process hazards, with engineering controls and procedure in place to mitigate a potential risk - All oily water tanks to be double skinned - Wastewater Management Plan implemented in accordance with the Code. - The oily water separator underground tank is double skinned and fitted with a level gauge in the final separator section. - all tanks are compliant to the European Standard BS EN 858-1:2002, the Environment Agency's Pollution Prevention Guidelines PPG3 and the Construction Products Regulations. - An automatic closure device is fitted to close off the separator when the contained oil exceeds the maximum oil storage volume. - Wastewater pipework connecting Shenandoah S2 wastewater storage area to be constructed in accordance with Code of Practice for Upstream Polyethylene Gathering Lines in the CSG Industry, pressure tested and have leak detection. - No mapped watercourses in proximity to Shenandoah S2 site. Closest stream order 1 ~12 km away with closest major wetland >90 km away (Lake Woods).	- Level monitoring located within oily water separation tanks. - Routine maintenance and transfer of wastes to maintain functionality - Weekly site inspections, with daily wet season bund inspections.	- Structural defects on all oily water tanks to be rectified as soon as possible. - oily wastewater to be transferred from defective tank to an alternative tank onsite until repairs are completed. - Pumps located onsite to recover fluid and transfer into existing tanks, with spills and leaks to be cleaned up and rectified immediately. - Earthmoving equipment available regionally to clean up contaminated material. - Emergency response plan implemented. - Any contamination event to be characterised and have remediation plans developed and executed in accordance with the process outlined in Schedule A of the ASC NEPM.	**1**	**2**	L	Yes	The consequence and likelihood of a containment failure are negated through the double skinned design of the vessel and onerous wastewater management requirements stipulated in the Code. These tanks are used extensively across a multitude of industries, including but not limited to: airports, airfields, military bases, service stations, supermarkets, railways. The area is not in close proximity to major watercourse with 27 km separation distance between the Shenandoah S2 site and the nearest mapped watercourse. The consequences are likely to be "minor", localised reversible impacts. Given the separation distance and robust construction of the vessel, the likelihood is considered "highly unlikely", with the probability of occurring less than 1%.	Yes	Low
3	**Inland water environmental quality**	Contamination of surface water or soils from surface activities.	Storage, handling and transportation of chemicals, hydrocarbons and wastes/ wastewater, including during the wet season. Surface spills from storage, handling, treatment, piping and transportation of wastewater. Chemical and waste transportation accident.	X	X		A.3.8 Containment of Contaminants C.7.2 Spill Management Plan	- Wastewater from the SPCF will be managed via the tanks on the Shenandoah S2 well pad, as per the approved Shenandoah South E&A Program EMP (TAM1-3). -HAZOP completed to identify process hazards, with engineering controls and procedure in place to mitigate a potential risk - All chemicals stored in designated areas with secondary containment - Spill Management Plan implemented to prevent, detect and respond to spills. - The SPCF pad is compacted to above 100 kpa to achieve a permeability of approximately 1x10 m-7/s. - Chemical storage & handling areas to have secondary containment, with an impermeable membrane with coefficient of permeability of <10-9 m/s. - All oily water tanks to be double skinned - Separation between surface and closest aquifer over 70 m, with interbedded clays likely to limit any contaminant migration. - Licenced chemical and waste transporters are used for all dangerous goods and listed waste transportation in accordance with the NT Dangerous Goods Act and Waste Management Pollution Control Act. - No chemical or waste oily water transport during the wet season, unless transportation is undertaken in accordance with the EMP stated controls and a risk assessment that has determined the activity is safe and low risk. -All wastes, including waste mercury, to be disposed of to offsite licenced facilities using authorised transporters under the WMPC Act. - Nearest pastoral extraction bore 2.5 km away. - Spills and leaks to be cleaned up immediately. - No major GDE linked to CLA within 20 km of extraction point, although stygofauna eDNA has been detected in the Amungee NW1 bore; impact likely to be localised.	- Weekly site inspections to identify any potential leaks or spills from storage and handling areas. - Daily west season inspections and weekly dry season inspections of all secondary containment. - Transport incident statistics tracked through incident management system - Onsite assurances and fit for work assessments completed periodically on transport companies.	- Spill management plan implemented outlining leak classification, response and reporting requirements - All leaks to be cleaned up as soon as practicable. - Emergency Response Plan implemented to prevent, detect and respond to spills. - Contractor performance reviews completed where breaches in requirements are escalated and actions implemented to rectify defects. - Any contamination event to be characterised and have remediation plans developed and executed in accordance with the process outlined in Appendix A of the ASC NEPM.	**3**	**1**	L	Yes	The transportation of wastes and chemicals is a tightly controlled industry with mature practices designed to prevent, detect and respond to transportation spills. Any accident is likely to be restricted to road corridors and result in "serious", short term (days-weeks) reversible impacts. All contractors must be appropriately licenced, with National uniform legislation in place to offer a high level of regulatory protection. This risk is considered identical to that of bulk diesel and other dangerous goods transportation- a common activity throughout Australia. Fuel and chemical transport accidents are rare given the number of transportation movements in Australia. The likelihood of an event occurring is therefore considered "remote", what a probability of less than 1%.	Yes	Low
4	**Inland water environmental quality**	Contamination of surface water or soils from surface activities.	Release of contaminated stormwater from activities to surface water, including during flooding. Land clearing and access track sediment releases	X	X		A.3.1 Site selection and planning A.3.4 Erosion and sediment control and hydrology	- Clearing under this EMP has been minimised to 3.0 ha (2.0 camp and 1.0 fencing/firebreak). The SPCF will be located on the repurposed 5.0 ha laydown area approved under the Shenandoah South E&A Program EMP (TAM1-3). - All oily water tanks to be double skinned - Erosion and sediment controls implemented around the sites and access tracks to minimise erosion and sediment releases. - Existing access tracks used, with maintenance completed to minimise erosion and sediment releases. - Stockpiled debris to be used to discourage water concentration. - Site to be maintained, with vegetation cover on exposed bunds/ stockpiles established and erosion and sediment controls kept in working order. - Sediment basin installed onsite to allow stormwater to settle prior to release. - Weekly monitoring of sediment basin quality during wet season (with insufficient volume anticipated during dry season). -Contaminated stormwater to be transferred to wastewater tanks. -All wastes, including waste mercury, to be disposed of to offsite licenced facilities using authorised transporters under the WMPC Act. - SPCF located away from watercourses or regional flow paths with flood modelling completed. - Area is remote with closest watercourse 27 km to the west of the Shenandoah S2.	- Pre-wet season site assessment completed to identify any maintenance requirements on pads and access tracks. - Stormwater captured in the SPCF sediment basin to be routinely tested and released offsite via a spillway. - Weekly site inspections designed to identify any issues during the wet season.	- Maintenance to be undertaken on erosion and sediment controls to ensure ongoing functionality - Any spills to be investigated and corrective actions implemented.	**1**	**2**	L	Yes	All clean stormwater will be directed to a sediment basin where it will be allowed to settle out sediment. Weekly testing of the sediment basin during the wet season will ensure no contamination is occur. Dirty stormwater from drip trays and bunds will be collected and treated, with wastewater sent to the existing wastewater tanks. The segregation of clean and dirty water ensures the risk of contamination is minimised. The likelihood is reduced down to remote (<1% probability of occurring) based on the 27 km separation distance between the Shenandoah S2 site and the nearest mapped water course.	Yes	Low
5	**Inland water environmental quality**	Contamination of surface water or soils from surface activities.	Runoff from sewage treatment irrigation areas. Greywater and sewerage disposal (camps).	X	X	X	A.3.1 Site selection and planning	- All land clearing completed in accordance with the NT Land Clearing Guidelines. - Sewage wastewater treatment irrigation areas located away from watercourses. - A wastewater suitability acceptance assessment has been completed and a design approval for wastewater disposal received in accordance with the NT Department of Health Code of Practice for On-site Wastewater Management (July 2014). - Wastewater irrigation to comply with DOH requirement for On-site Wastewater Management (July 2014). - Areas appropriately sized to accommodate irrigation volume. - Area is remote with closest watercourse 27 km to the west of the Shenandoah S2.	- Wastewater system performance to be monitored in accordance with the manufacturers requirements.	- Where wastewater specifications are exceeded, corrective actions will be implemented to ensure wastewater is returned back into specification.	**1**	**2**	L	Yes	New clearing under this EMP is limited to 3.0 ha, through the repurposing of the existing approved 5.0 ha laydown area to accommodate the SPCF. The management of sewerage and greywater is mature with various NT wastewater management guidelines. Due to the temporary nature of the activity, the maximum contamination resulting from sewerage and grey water irrigation is likely to be minor, with any impacts locally restricted and temporary in nature. The closest watercourse is 27 km west of the Shenandoah S2 site. The potential contamination of these features considered remote (probability <1%).	Yes	Low
6	**Inland water environmental quality**	Contamination of surface water or soils from surface activities.	Uncontrolled release of waste oily water, wastewater chemicals or fuel from site due to regional flooding.		X		A.3.1 Site selection and planning A.3.4 Erosion and sediment control and hydrology	- No offsite release of wastewater or oils. - Stormwater collected in bunds and drip trays managed via a purpose built open drain system to treat any oily water onsite. - Liquids directed to the underground water/oil separator tank for treatment to achieve a water discharge quality of less than 5 parts per million (ppm) of oil and hydrocarbons, complying with European Standard EN 858.1: 2006 (Separator Systems for Light Liquids). - Area is remote with closest watercourse 27 km to the west of the Shenandoah S2. - No major wetlands, with Longreach Lagoon 50 km+, Lake Woods 90 km+. - Flood modelling of well pad, including SPCF pad completed to optimise site location, away from regional flow paths with low erosivity of flood anticipated. - Erosion and sediment controls implemented around the sites to minimise erosion and sediment releases, including diversion bunds. - Stockpiled debris to be used to discourage water concentration. - Stormwater retained within the sediment basin prior to release offsite via engineered spillway. - Routine (weekly) monitoring of the sediment basin quality during the wet season. - Contaminated stormwater to be transferred to SS2 wastewater tanks. - The site will be maintained, with vegetation cover on exposed bunds/ stockpiles established and erosion and sediment controls kept in working order. -HAZOP completed to identify process hazards, with engineering controls and procedure in place to mitigate a potential risk - Wastewater transferred to Shenandoah S2 wastewater storage area for management under existing approved Shenandoah South E&A Program EMP (TAM1-3). - Wastewater pipework connecting Shenandoah S2 wastewater storage area to be constructed in accordance with Code of Practice for Upstream Polyethylene Gathering Lines in the CSG Industry, pressure tested and have leak detection. -Wastewater Management Plan implemented in accordance with the Code to mitigate the risk associated with wastewater generation and management. - Spill Management Plan implemented to prevent, detect and respond to spills. - Regional flooding would involve order of magnitude larger volume of low electrical conductivity water (many GL) mixing with relatively small volumes of contaminants. - Dilution would reduce any potential contamination impact down to negligible.	- Pre-wet and post season site assessment completed to identify any erosion/sediment maintenance requirements. - Stormwater captured in sediment basin to be routinely tested and released offsite in a controlled manner.	- Maintenance to be undertaken on erosion and sediment controls to ensure ongoing functionality.	**1**	**2**	L	Yes	All stormwater directed to a purpose built sediment basin and routinely tested. Stormwater will be allowed to overflow via an engineered sediment basin. All process water is managed in a separate system which is not connected to the stormwater system. The release of stormwater will also be via a "sediment sock", with a reasonable consequence of minor, localised reversible impacts. The area is not in close proximity to major watercourse with 27 km separation distance between the Shenandoah S2 site and the nearest mapped watercourse. The likelihood is reduced down to remote (<1% probability of occurring).	Yes	Low

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				Construction & commissioning	Ops & emergency management	Decommissioning & rehabilitation		Prevent			Consequence	Likelihood	Risk Rating				
7	**Terrestrial environmental quality**	Loss in long-term soil productivity and viability.	Soil compaction of the SPCF pad. Soil erosion from cleared areas.	X	X		A.3.1 Site selection and planning A.3.4 Erosion and sediment control and hydrology A.3.9 Rehabilitation	- Clearing under this EMP has been minimised to the 3.0 ha (2.0 camp and 1.0 fencing/firebreak). - The SPCF pad will be rehabilitated to reduce impacts associated with compaction. - The total disturbance area is small (<0.01% of EP 98 and <0.006% of total tenure area). - Erosion and Sediment Control Plan in place and maintained in functioning condition. - The site will be maintained, with erosion and sediment controls kept in working order. - Stockpiled debris to be used to discourage water concentration. - Sediment basin used to settle out sediment prior to release.	- Pre-wet season site assessment completed to identify any erosion/sediment maintenance requirements. - Rehabilitation monitoring to assess soil productivity impacts.	- Maintenance to be undertaken on erosion and sediment controls to ensure ongoing functionality. - Areas with poor rehabilitation will be maintained to reduce impact.	**1**	**3**	L	Yes	The site will be compacted during construction. Long term impacts of this compaction will be addressed during the rehabilitation of the site. A loss of productivity is anticipated in the earlier stages of rehabilitation, returning back to pre-disturbed state within ~10 years. This will be accelerated through removal of hard stand areas, ripping and scarifying compacted surface. the consequences is likely to be "moderate", being locally restricted, with a moderate- long (years) recovery time. The likelihood of long term productivity impairment is considered "unlikely" (probability <30%), given the observed rehabilitation from previous disturbance activities.	Yes	Low
8	**Terrestrial ecosystems**	Impact to listed threatened habitats and listed threatened flora and fauna, including habitat fragmentation, impacts to non-listed fauna and livestock from exploration activities.	Activity (vehicle, machinery and equipment) noise and lighting.	X	X	X	A.3.1 Site selection and planning A.3.3 Noise	- Site location avoids areas of high conservation value as a priority. - Areas are not considered high conservation value, are not threatened/endangered and not fragmented, with impacts unlikely to result in significant disturbance to threatened/endangered species. - Impacts likely to be temporal, with fauna able to move to adjacent areas to escape impacts. - Fauna monitoring at Kyalla has not identified any impacts, with fauna identified in areas around operations. - Noise and activity at SPCF likely to deter fauna from interacting with facility. -Site fenced.	- Anecdotal evidence form pastoralists and Traditional Owners. - Impacts are likely to be temporal, with detection extremely difficult.	- Where impacts are identified, practices will be reviewed and modified to reduce impact on fauna.	**1**	**3**	L	Yes	Fauna may be disturbed through transport movements along access tracks around the SPCF. The consequence of activity nuisance is anticipated to be minor, with localised, short term impacts to areas immediately adjacent to access tracks. The likelihood of the risk is reduced through the isolated location (lack of environmental and community receptors), regionally extensive vegetation communities (good outside refuge away from access tracks and limited transport movements during the evenings.	Yes	Low
9	**Terrestrial ecosystems**	Impact to listed threatened habitats and listed threatened flora and fauna, including habitat fragmentation, impacts to non-listed fauna and livestock from exploration activities.	Introduction and spread of weeds from the SPCF site. Poor rehabilitation of the site reduces regional habitat and promotes weeds. Land clearing.	X	X		A.3.1 Site selection A.3.6 Weed management A.3.9 Rehabilitation	-Minimal vegetation clearing proposed, with total new clearing less than 3 ha. - Activity located away from threatened species nesting locations. - Land clearing undertaken in accordance with NT Land Clearing Guidelines. - Vegetation clearing at exploration sites to be conducted with visual checks to identify fauna/fauna habitat during clearing- specifically grey falcon nests. - Large habitat trees to be avoided where possible. - Scouting completed prior to clearing to identify threatened species All equipment and vehicles to be washed-down and to have a Biosecurity Declaration Certificate prior to access to site - Areas of proposed exploration have been surveyed and are deemed to have low weed abundance - Activity will be restricted to defined well site, including ancillary activities such as use of access tracks, gravel pits, etc. - A site specific Rehabilitation Plan has been developed and will be implemented progressively. - Areas will have infrastructure and wastes removed, topsoil respread and vegetation re-introduced. - Rehabilitation timing will consider seasonal constraints, with rehab completed prior to the wet season to maximise revegetation.	- 6 monthly monitoring implemented around infrastructure to detect the spread/ introduction of weed species. - Tamboran assurance activities to target equipment wash-down certificates to ensure standards are being met. - Rehabilitation monitoring to be undertaken to track rehabilitation progress.	- Where weed outbreaks are identified associated with Tamboran's activities, infestations will be treated in accordance with the Weed Management Plan. - Corrective actions implemented where ongoing biosecurity breaches are identified. - Rehabilitation maintenance will be undertaken periodically to fix any defects.	**2**	**2**	L	Yes	The area in the vicinity of the SPCF is free of weeds. Weeds are present across the broader property. Any introduction of weeds is likely to result in localised impact, with weed management requirements likely to reduce the consequence down to "moderate, short term. Risks associated with land clearing and rehabilitation are well known. Due to the inherent nature of weed prevention the risk likelihood is considered unlikely, with a probability less than <30%.	Yes	Low
10	**Terrestrial ecosystems**	Impact to listed threatened habitats and listed threatened flora and fauna, including habitat fragmentation, impacts to non-listed fauna and livestock from exploration activities.	Accidental ignition of fire during civil construction Rupture of high pressure piping in SPCF or at the wellhead, resulting in fire, explosion and flying debris. Fire within the gas plant during maintenance or routine operation caused by ignition source, including static electricity Liquid hydrocarbon carryover to flare causing the release of liquid hydrocarbon on fire.	X			A 3.7 Fire management	- Activity located away from threatened species nesting locations. - Scouting completed prior to clearing to identify threatened species. - Bushfire management plan implemented to prevent and respond to bushfires- including establishment of communication and fire response protocols with pastoralists. - Bushfire awareness included in site inductions. - Designated smoking areas on-site. - Firefighting equipment to be available to deal with fires. - Fire breaks have been constructed around the well site, including SPCF. - Separation distance between high pressure areas and vegetation designed to accommodate jet fire event - Minimum of 45 m separation distances between flares and surrounding vegetation -Flare Knockout Out Drum is designed for the blowdown of the entire facility to API 521 requirements and is sized to remove droplets greater than 300 microns - The facility pipework and vessels are covered by flame detectors which will initiate an emergency blowdown of the facility. - Ignition sources placed outside of the hazardous area. -HAZOP completed to identify process hazards, with engineering controls and procedure in place to prevent risk (such as earth points for vacuum truck hose connections and procedures) -permit to work system to be utilised for all operational and maintenance activities with the potential to cause ignition - Intrinsically safe equipment used in hazardous area. - Hazardous area drawing will provide classification of hazardous zones. - No flaring during periods of total fire ban, without first obtaining all relevant permits under the *Bushfire Management Act 2016* . - Activities will comply with pastoralist and regional bushfire management plans. - Area in the vicinity of well site, including SPCF have had recent (within 1-2 years) fire activity, reducing the fuel load.	- Annual fire preparedness assurance activities completed where activities are proposed during high fire risk periods. - Daily monitoring of bushfires in the region during periods of high fire danger. - Annual fire frequency mapping using the Northern Australia fire Information fire history database. - Risk based equipment/ piping inspection and condition monitoring program.	- Fire hazard reduction strategies (such as back burning) to be implemented to reduce the risk of fire ignition/ impact as required. - Where a bushfire is started and cannot be controlled, Tamboran to engage with pastoralist to coordinate response activities.	**3**	**2**	M	Yes	Fire is a common occurrence within the Barkly Region. A fire is likely to have a serious impact, with moderate term reversible impacts (years). With the appropriate controls, such as separation distances, firebreaks, and adherence to the Bushfires Management Act 2016, the likelihood of causing a fire from operation of the SPCF is anticipated to be highly unlikely, with a predicted occurrence of <10%.	Yes	Low
11	**Terrestrial ecosystems**	Impacts to listed threatened habitats and listed threatened flora and fauna, impacts to non-listed fauna and livestock from exploration activities.	Contaminants in water and soil pass through the food chain and bioaccumulate in fauna causing detrimental impacts to local species and communities.	X	X		A.3.8 Containment of Contaminants C.4.2 Management of produced water from petroleum wells C.7.2 Spill Management Plan	- All wastewater transferred to enclosed tanks on the Shenandoah S2 well pad and managed under the existing approved Shenandoah South E&A Program EMP (TAM1-3). - Activity located away from threatened species nesting locations. -All chemicals and waste oils are stored in designated areas with secondary containment. - No offsite wastewater discharge. - The SPCF will be fenced to prevent livestock accesses. - The SPCF will tie-in to the existing gathering lines which are designed, constructed, tested and operated in accordance with the Code of Practice for Upstream Polyethylene Gathering Network in the CSG Industry, Version 5, August 2019 (APGA 2019). - All wastes, including waste mercury, to be disposed of to offsite licenced facilities using authorised transporters under the WMPC Act.	- Routine site weekly inspections to identify poor chemical handling or wastewater storage practices. -daily inspections of secondary containment during the wet season and weekly during dry season. - Monitoring of fauna interactions of the site.	- Where ongoing fauna interactions with wastewater or chemicals are identified through monitoring, additional controls shall be implemented as appropriate to reduce the potential for exposure (such as additional fencing, deterrents etc.). - All spills are to be cleaned up immediately, preventing the exposure to livestock and fauna.	**2**	**1**	L	Yes	The risks associated with fauna ingestion of chemicals is well known and measures to prevent ingestion (such as fences and separation distances to activity) are deployed as standard practice. Tamboran has extensive operational experience to date with no evidence of impacts on biota from chemicals. Combined with the availability of habitat in the area which would be impacted by a release/ spill- the risk is considered minor, with the likelihood remote.	Yes	Low
12	**Terrestrial ecosystems**	Impact to listed threatened habitats and listed threatened flora and fauna, impacts to non-listed fauna and livestock from exploration activities.	Vehicle and machinery collisions result in a localised impact to listed threatened species.	X	X	X	A.3.5 Biodiversity protection	- Activity located away from threatened species nesting locations. - SPCF noise will typically deter fauna from interacting with plant during operations. - Vehicle speed limited to 60 km/hr to be reduced around areas of high risk of fauna collision. - Vehicle movements to minimise driving at night. - Fauna collisions observed during the existing activities have been minimal, with collision restricted to several wallabies along access tracks. - Absence of listed threatened species identified in the vicinity of the Shenandoah S2 site during the land condition assessment.	- Fauna mortality data is collected as part of Tamboran's incident and observation management procedures.	- Where ongoing fauna collisions are reported, additional controls shall be investigated, such as reduced speed limits in high risk areas will be implemented.	**1**	**3**	L	Yes	The estimated traffic increase for the SPCF is ~23 vehicles per day. Fauna collisions with vehicles are a commonly associated with roads. It is anticipated that a small number of fauna collisions will be experienced during the activity (1-2 animals per month), with minor, short term, reversible impacts to local fauna populations. The likelihood of causing a localised decline in species abundance is considered remote.	Yes	Low
13	**Terrestrial ecosystems**	Impact to listed threatened habitats and listed threatened flora and fauna, impacts to non-listed fauna and livestock from exploration activities.	Encouragement of feral animals and other pest species increases leading to competition with native species. This includes the introduction of cane toads.	X	X	X	A.3.5 Biodiversity protection	- Camp wastes to be storage to be animal proof. - All food scraps to be removed from site and disposed of at a licenced facility. - Food scraps to be frozen and stored within freezer during wet season. - Experience from existing activities has not detected increased feral animal prevalence, with only 1 feral dog identified in 6 months of camp operations. - Equipment inspections.	- Feral fauna observation data is collected as part of Tamboran's incident and observation management procedure.	- Where ongoing feral animal presence is detected, additional controls will be investigated in consultation with the pastoralist (such as fencing, removal of water sources etc.)	**1**	**3**	L	Yes	Feral animals may be increased through the provision of access to water, food (camps) and hunting habitat (such as road corridors). The use of the existing site and access tracks limits the additional risk associated with the provision of additional hunting habitat. Food scraps and waste will be frozen and disposed of offsite, which will reduce the food availability for pests. The anticipated consequence is minor, with the potential pest species increase anticipated to be small. The likelihood is determined to be unlikely, with a probability of less than 30%.	Yes	Low
14	**Culture and heritage**	Disturbance of sacred site or culturally sensitive area, loss of spiritual connection with land and decline in environmental value of area used for hunting, foraging and enjoyment.	Sites disturbed directly by exploration activities. Personnel unauthorised access to sacred site.	X	X	X	A.3.1 Site selection and planning	- Exploration Agreements in place with traditional owners covering all proposed exploration activities. - All areas of the proposed activity to be cleared by NLC and archaeologist. - AAPA certificates for proposed work program have been granted. - Areas of cultural significance are identified through Restricted Work Areas - Implementation of the unexpected heritage finds procedure. - All staff, contractors and visitors to be inducted covering restricted work areas and cultural heritage. - Access off lease not permitted.	- Archaeologists complete cultural heritage assessment to identify culturally sensitive areas. - Tamboran completes assurance activities to verify that personnel/vehicles/equipment have not left the approved work area.	- N/A- no access to sacred sites anticipated.	**3**	**1**	L	Yes	All sites of the proposed activity must have Traditional Owner clearance via the NLC and informed by Cultural Heritage Assessment by a trained archaeologist. AAPA certificates are required for all activities to ensure sacred sites are not impacted by activities. The remote location of the activity, lack of sacred sites in the vicinity of the SPCF and contractual requirements prohibiting access reduce the likelihood down to "highly unlikely", with a probability lower than 10%.	Yes	Low

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15	**Culture and heritage**	Disturbance of sacred site or culturally sensitive area, loss of spiritual connection with land and decline in environmental value of area used for hunting, foraging and enjoyment.	Accidental ignition (fire) by site activities.	X	X		A 3.7 Fire management	- Bushfire management plan implemented to prevent and respond to bushfires- including establishment of communication and fire response protocols with pastoralists. - Bushfire awareness included in site inductions. - Designated smoking areas on-site. - Firefighting equipment to be available to deal with fires. - Fire breaks have been constructed around the well site, including SPCF and camp pads. - Minimum of 45 m separation distances between flares and surrounding vegetation. - The facility pipework and vessels are covered by flame detectors which will initiate an emergency blowdown of the facility. -HAZOP completed to identify process hazards, with engineering controls and procedure in place to prevent risk (such as earth points for vacuum truck hose connections and procedures) -permit to work system to be utilised for all operational and maintenance activities with the potential to cause ignition - Intrinsically safe equipment used in hazardous area. - Ignition sources placed outside of the hazardous area. - Intrinsically safe equipment used in hazardous area. - Hazardous area drawing will provide classification of hazardous zones associated with the SPCF. - No flaring during periods of total fire ban, without first obtaining all relevant permits under the *Bushfire Management Act 2016* . - Activities will comply with pastoralist and regional bushfire management plans.	- Annual fire preparedness assurance activities completed where activities are proposed during high fire risk periods. - Daily monitoring of bushfires in the region during periods of high fire danger. - Annual fire frequency mapping using the Northern Australia Fire Information fire history database.	- Fire hazard reduction strategies (such as back burning) to be implemented to reduce the risk of fire ignition/ impact as required - Where a bushfire is started and cannot be controlled, Tamboran to engage with pastoralist to coordinate response activities	**3**	**2**	**M**	Yes	Fire is a common occurrence within the Barkly Region. A fire is likely to have a serious impact, with moderate term reversible impacts (years). With the appropriate controls, such as separation distances, firebreaks, and adherence to the Bushfire Management Act 2016, the likelihood of causing a fire from operation of the SPCF is anticipated to be highly unlikely, with a predicted occurrence of <10%.	Yes	Low
16	**Culture and heritage**	Disturbance of sacred site or culturally sensitive area, loss of spiritual connection with land and decline in environmental value of area used for hunting, foraging and enjoyment by community (including native title holders).	Contaminants in water and soil pass through the food chain and bioaccumulate in fauna (livestock and native animals) causing detrimental impacts to local species and communities that rely on the animals for food/ livelihood / spiritual connection.		X		A.3.8 Containment of Contaminants C.4.2 Management of produced water from petroleum wells C.7.2 Spill Management Plan	- Environmental management plan in place to prevent release of contaminants into the environment to protect country and maintain ability to forage and support Native Title Holders ongoing way of life. - Stakeholder engaging with Native Title Holders and community to provide descriptions of regulated activity and controls. - All chemicals and waste oils stored in designated areas with secondary containment. - No offsite wastewater or waste discharge. - Wastewater pipework connecting Shenandoah S2 wastewater storage area to be constructed in accordance with Code of Practice for Upstream Polyethylene Gathering Lines in the CSG Industry, pressure tested and have leak detection. -Spill management plan implemented with all spills cleaned up immediately. - The SPCF will be fenced to prevent livestock accesses. - The SPCF will tie-in to the existing gathering lines which are designed, constructed, tested and operated in accordance with the Code of Practice for Upstream Polyethylene Gathering Network in the CSG Industry, Version 5, August 2019 (APGA 2019). Air dispersion modelling confirms no impact to air quality from operations. - Sediment basin used to minimise sediment releases, with routine testing of water from facility. - All wastes to be appropriately stored onsite and removed to a licences waste facility.	- Routine site weekly inspections to identify poor chemical handling or wastewater storage practices. - Monitoring of fauna interactions on site.	- All spills are to be cleaned up immediately, preventing the exposure to livestock and fauna.	**2**	**1**	**L**	Yes	The risks associated with fauna ingestion of chemicals is well known and measures to prevent ingestion (such as fences and separation distances to the activity) are deployed as standard practice. Tamboran has extensive operational experience with no evidence of impacts on biota from chemicals. Combined with the availability of habitat in the area which would be impacted by a release/ spill- the risk is considered minor, with the likelihood remote (1%).	Yes	Low
17	**Community and economy**	Loss of visual amenity, experience and sense of place for pastoralist, community members and tourists.	Industrialisation of landscape. Increased traffic. Light emissions impact on community receptor (e.g. pastoralist) Influx of workers to region. Noise emissions from activities.		X		A.3.1 Site selection and planning A.3.2 Well pad specific site selection A.3.3 Noise A.3.9 Rehabilitation	- Site is located away from environmental and community receptors and not clearly visible from main roads. - Traffic impact assessment completed assessing the increased traffic levels as negligible: reflective of limited size and scope of activity. - Traffic impacts are expected to be primarily associated with construction, with impacts temporary. Ongoing SPCF operational traffic is anticipated to be minor. - Access route is away from Hayfields Homesteads. - Activity intensity is restricted to specific periods, with most activity restricted to the adjoining well pad and SPCF site. - Workers are flown in and out of Daly waters from Darwin. Buses are used to limit vehicle transport movements between the Daly Waters airport and remote camps- there is limited drive in/drive out workers into the Beetaloo, except where local or regional contractors are used. - Camps used to minimise impact on local accommodation and tourism. - Where practical, the noisiest works will be undertaken during the recommended standard hours. - Plant will be regularly maintained; equipment that becomes noisy will be repaired or replaced. - Noise modelling completed confirming impacts from noise restricted to immediate vicinity of site. - Progressive rehabilitation to occur when sites are no longer required for future operations. - Community living areas are not located near the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity.	- Ongoing pastoralist and community engagement to monitor performance and identify potential impacts from activity on local amenity.	- N/A- site location and activity intensity is unable to be changed. - Complaints will be dealt through Tamboran's complaint resolution process. Where valid complaints are received, additional controls will be implemented to address community complaints (such as changes to vehicle load movements, etc.)	**1**	**1**	**L**	Yes	The SPCF Project is located away from major transport routes, homesteads and communities. The consequences of activities may result in minor changes to the aesthetics in the vicinity through visibility of exploration activities (e.g. presence of workers and vehicles). A noise modelling and assessment indicates all representative receptors are predicted to comply with the relevant external operational noise limits during the operation of the SPCF. The probability that the activity will result in an industrialisation of the landscape is considered remote, with a probability less than 1%.	Yes	Low
18	**Community and economy**	Reduction in land productivity.	Introduction and spread of weeds in the area. Bushfire from accidental ignition.	X	X		A.3.6 Weed management A.3.7 Fire management	- All equipment and vehicles to be washed-down and to have a Biosecurity Declaration Certificate prior to access to site. - Areas of proposed exploration have been surveyed and are deemed to have low weed abundance. - Activity will be restricted to defined well site and SPCF. - Bushfire management plan implemented to prevent and respond to bushfires- including establishment of communication and fire response protocols with pastoralists. - Bushfire awareness included in site inductions. - Designated smoking areas on-site. - Firefighting equipment to be available to deal with fires. - Fire breaks will be installed around infrastructure. - Minimum of 45 m separation distances between flares and surrounding vegetation. - The facility pipework and vessels are covered by flame detectors which will initiate an emergency blowdown of the facility. --HAZOP completed to identify process hazards, with engineering controls and procedure in place to prevent risk (such as earth points for vacuum truck hose connections and procedures) -permit to work system to be utilised for all operational and maintenance activities with the potential to cause ignition - Ignition sources placed outside of the hazardous area. - Intrinsically safe equipment used in hazardous area. - Hazardous area drawing will provide classification of hazardous zones within the SPCF. - Activities will comply with pastoralist and regional bushfire management plans.	- 6 monthly monitoring implemented around infrastructure to detect the spread/ introduction of weed species. - Tamboran assurance activities to target equipment wash-down certificates to ensure standards are being met. - Annual fire preparedness assurance activities completed where activities are proposed during high fire risk periods. - Daily monitoring of bushfires in the region during periods of high fire danger. - Annual fire frequency mapping using the Northern Australia Fire Information fire history database. - risk based corrosion and integrity inspections of pipelines and equipment	- Where weed outbreaks are identified associated with Tamboran's activities, infestations will be treated in accordance with the Weed Management Plan. - Fire hazard reduction strategies (such as back burning) to be implemented to reduce the risk of fire ignition/ impact as required. - Where a bushfire is started and cannot be controlled, Tamboran to engage with pastoralist to coordinate response activities.	**3**	**2**	**M**	Yes	The area in the vicinity of the SPCF is free of weeds. Weeds are present across the broader property. Any introduction of weeds is likely to result in localised impact, with weed management requirements likely to reduce the consequence down to "moderate, short term. Due to the inherent nature of weed prevention the risk likelihood is considered unlikely, with a probability less than <30%. Fire is a common occurrence within the Barkly Region. A fire is likely to have a serious impact, with moderate term reversible impacts (years). With the appropriate controls, such as separation distances, firebreaks, and adherence to Bushfires Management Act, the likelihood of causing a fire from SPCF activities is anticipated to be highly unlikely, with a predicted occurrence of <10%.	Yes	Low
19	**Community and economy**	Reduction in land productivity.	Impact to surface hydrology changes water flows impacting the land use/productivity	X			A.3.1 Site selection and planning A.3.4 Erosion and sediment control and hydrology	- The Shenandoah S2 site is located away from watercourses and regional flow paths, with closest watercourse 27 km west of the Shenandoah S2 site. - The site is designed to divert stormwater around, without impeding natural surface water flows. - Stockpiled debris to be used to discourage water concentration, with vegetation establish on stockpiles to reduce exposed surfaces - Area is remote.	- Erosion and Sediment Control Plan in place with routine pre and post wet season inspection and maintenance.	- Maintenance to be undertaken on erosion and sediment controls to ensure ongoing functionality and the controls are adequate.	**1**	**1**	**L**	Yes	The existing 5.0 ha Shenandoah S2 laydown area will be repurposed, with 3.0 ha of additional clearing required. The Shenandoah S2 site has been located outside the major regional flow paths and designed to divert stormwater around the infrastructure. The consequence is anticipated to be minor, with the likelihood remote (based on the site being existing).	Yes	Low
20	**Community and economy**	Reduction in land productivity and surface water quality	Loss of sense of place and connection to land and country Reduction in foraging and support of traditional lifestyle Poor rehabilitation/ reinstatement of exploration infrastructure. Impacts on surface water quality due to sediment releases			X	A.3.1 Site selection and planning A.3.4 Erosion and sediment control and hydrology A.3.9 Rehabilitation	- All exploration activities are undertaken under Exploration agreements with Native Title Holders. -Environmental management plan in place to prevent release of contaminants into the environment to protect country and maintain ability to forage and support Native Title Holders ongoing way of life. -Existing access tracks utilised, with erosion and sediment controls in place to minimise sediment releases - Exploration agreements have specific environmental and reporting requirements. - Native title holders receive royalties and employment from exploration activities. - On country meetings held to discuss activities, risk and controls. - Site inspections held with Native Title Holders prior to commencement of activities and routinely to inspect activities as they progress. - Cultural managers used or perform sacred site clearances and heritage surveys to identify features required to be protected. - Cultural managers used for pre-clearance surveys. - Community living areas are not located near to, or downstream of the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity. - A site specific Rehabilitation Plan has been developed and will be implemented progressively. - Areas will have infrastructure and wastes removed, topsoil respread and vegetation re-introduced. - Rehabilitation timing will consider seasonal constraints, with rehab completed prior to the wet season to maximise revegetation chance.	- Routine meetings are held with Native Title Holders to discuss activities, with any concerns raised responded to. - Rehabilitation monitoring to be undertaken to track rehabilitation progress.	- Complaints regarding Tamboran's activities will be dealt through Tamboran's complaint resolution process. Where complaints are received, Tamboran will investigate and work with the party to attempt to come to an amicable resolution. - Rehabilitation maintenance will be undertaken periodically to fix any defects.	**2**	**2**	**L**	Yes	Exploration Agreements under the Native Title Act are required to be in force covering all exploration activities. These dictate ongoing engagement and consent processes with Native Title Holders. Tamboran provides information on their proposed activities, including the avoidance of impacts and risk mitigation strategies. The Code outlines extensive controls which fundamentally protect the environment and therefore the interests of Native Title Holders. Rehabilitation success will be determined through the timing of rehabilitation, with rehab activities undertaken before the wet season to maximise success. Ongoing monitoring and maintenance of rehabilitated areas will be critical to identify and repair areas where rehabilitated success is poor. Consequences are likely to be moderate, with impacts likely to have moderate, locally restricted and medium to long term (1-5 years). The	Yes	Low
21	**Community and economy**	Reduction in land productivity.	Disruption of agricultural operations due to ongoing access, traffic, helicopter movements, etc.	X	X		A.3.1 Site selection and planning A.3.3 Noise	- All activities require engagement with pastoralists. - The site has been located to avoid disruption to agriculture operations and infrastructure. - Engagement will be undertaken in accordance with NT Petroleum (Environment) Regulations. - Traffic levels are anticipated to be small- as per traffic impact assessment. -compensation paid to compensate for disruption too pastoral activities from construction and operational activities. - Helicopter movements to be restricted to wet season when pastoralist activities are minimal. - Helicopter movements to be undertaken in consultation with leaseholder to avoid impacts to livestock, cattle yards, watering points, homesteads and other sensitive areas as advised by leaseholder.	- Ongoing pastoralist engagement to monitor performance and identify potential impacts from activity on local amenity.	- Complaints regarding Tamboran's activities will be dealt through Tamboran's complaint resolution process. Where complaints are received, Tamboran will investigate if additional controls are needed and implement to address the complaint (such as shrouds, changes to flare configuration etc.)	**1**	**1**	**L**	Yes	Tamboran has extensive experience in co-existing its activities with agricultural users. Consultation with pastoralists is undertaken to ensure impacts on their activities are mitigated. These impacts are addressed in the compensation agreements and access guidelines. It is noted that there is an impact on stakeholder in regards to working with proponents to plan E&A activities. this is unavoidable and required to ensure the activities can be designed to accommodate the activities of both parties. Consequences are anticipated to be minor for E&A activities, with the likelihood unlikely.	Yes	Low

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22	**Community and economy**	Increased traffic movements impacts pastoralists, community (including native title holders), tourists, workers and contractors	Vehicle (light or heavy) accident.	X	X	X	A.3.1 Site selection and Planning	- Traffic impact assessment completed, with traffic levels are anticipated to be small. - Alcohol and drug policy implemented with zero tolerance (0.00% BAC and no illicit substances). - Land Transport Procedures. - Workers are flown in and out of Daly waters from Darwin. Busses are used to limit vehicle transport movements between the Daly Waters airport and remote camps- there is limited Drive In/Drive Out workers into the Beetaloo, except where local or regional contractors are used. - The camp is located away from major roads with most movements internal between the camp and SPCF. - Stuart Highway intersection design to be approved by DIPL with appreciate line of site provided for vehicles to identify turning vehicles. -Stuart Highway upgrade to be upgraded with turning lanes as per DIPL requirements and approvals. - Ongoing engagement with DIPL. - Community living areas are not located near the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity.	- Ongoing community engagement to monitor performance and identify potential impacts from activity on local amenity.	- Complaints regarding Tamboran's activities will be dealt through Tamboran's complaint resolution process. Where valid complaints are received, additional controls will be implemented to address community complaint. - Emergency response plan implemented.	4	2	M	Yes	E&A activities will increase traffic levels up to an estimated 23 vehicles per day during the peak. This traffic volume is well below the Level of Service for the highway, which is estimated to be above 1100 vehicles per hour. Accidents from trucks turning into access tracks or from general vehicle accidents could have a major consequence, with an injury to community members/ tourist requiring hospitalisation. Upgrades to the intersection required by DIPL will reduce the likelihood of this incident from occurring. Smaller volumes of traffic are required for Beetaloo, combined with the lack of road users, traffic management plan for all access track turn ins, zero tolerance for alcohol and drugs and use of trained drivers to minimise the risk. Given traffic accidents can result in injuries, the consequence remains major with a likelihood probability of <10%.	Yes	Low
23	**Community and economy**	Loss of primary containment (process safety event or sabotage) impacts workers, community and the environment.	Rupture of high pressure piping in SPCF. Gas leak into enclosed area (with no ignition). Gas leak into enclosed area (with ignition). Operating high pressure gas processing plant and equipment. Uncontrolled release of gas from SPCF due to sabotage. Bushfire impacts facility		X		B.4.1 Well integrity management B.4.3 Well design and barriers D.5.4 Emission detection and management D.5.6 Leak remediation and notification	- Design of hydrocarbon facilities to accepted industry codes and standards. - Independent validation of the SPCF and pipeline designs. - Quality assurance of installed equipment. - Pipeline and associated infrastructures designed as per AS 2885. - Pipe design and properties to prevent rupture and corrosion. - routine pipeline and vessel inspection and condition monitoring program. - The facility pipework and vessels are covered by flame detectors which will initiate an emergency blowdown of the facility. - Gas detection in the enclosure to identify leaks and initiate emergency blowdown of the facility. - Flash proof electrical installation. - Remote monitoring of pressure and flow. - Remotely operated isolation at mid line valves. -HAZOP completed to identify operational hazards, with engineering controls and procedure in place to prevent risk (such as earth points for vacuum truck hose connections) -permit to work system to be utilised for all operational and maintenance activities with the potential to cause ignition - Intrinsically safe equipment used in hazardous area. - Secured area. - Emergency shut down systems and response procedures. - Sites manned during operation. - Security cameras located on site. - Sites locked. - Valves locked. -Bushfire management plan implemented with firebreaks and emergency response plans - Community living areas are not located near the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity.	- Routine 6 monthly well leak detection. - Routine (monthly) well inspections. - Risk based inspection and condition monitoring program. - Remote monitoring of pressure and flow. - Routine site inspections of fencing and perimeter. - 24 hour remote camera detection. - Risk based equipment/ piping inspection and condition monitoring program.	- Any leaking wells to be reported and remediated at a frequency consistent with the Code depending on severity. -Emergency Response Plan to respond to emergency events.	4	1	M	Yes	The consequence of a gas leak with ignition or sabotage could be major. However, the likelihood is considered highly unlikely with a occurrence probability less than 1%, based on the SPCF designed, construction and operation requirements mandated by the Code, Australian Standards and industry practices. Leak detection and reporting requirements are also controls to ensure any leaks are promptly identified and fixed. Implementation of security cameras and emergency shutdown protocols, also minimise potential impacts.	Yes	Low
24	**Community and economy**	Labour competition with local businesses and agricultural procedures.	Exploration activities compete with agricultural industry for resources.	X	X	X	N/A	- Proposed activity is temporary with no major labour requirements. - Ongoing stakeholder engagement to ensure they know the temporal nature of work. - Local and regional contractors will be utilised where available, representing a significant benefit to local suppliers. - Majority of operational and maintenance work will require a skilled workforce sourced regionally/interstate. - Contracts will be structured to reduce 'boom and bust' cycle (clear understanding of limited scope of work).	- Ongoing community engagement to monitor performance and identify potential impacts from activity on local amenity.	- Complaints regarding Tamboran's activities will be dealt through Tamboran's complaint resolution process. Where valid complaints are received, additional controls will be implemented to address community complaint.	1	1	L	Yes	Labour competition is a consequence that may occur in a full scale shale development and is not anticipated to have a major impact during exploration. Exploration activities are generally short term campaigns and are completed similar to most small infrastructure projects (such as road upgrades). Local contractors are to be used where available, with a priority on using Traditional Owner businesses. The consequence of labour competition during E&A is minor, with a likelihood of remote (<1% probability).	Yes	Low
25	**Air quality**	Reduction in air quality.	Emissions from the combustion of diesel engines, gas fired compressors and generators. Air emissions from gas and condensate flaring. Air emissions from chemical releases during SPCF activities.	X	X	X	A.3.1 Site selection and planning D.4.1 Baseline assessment D.5.9 Venting and flaring	- Low emission equipment to be used, with catalytic converters used on selected engines. - Beetaloo shale gas is lean (methane), lacking high concentrations of VOCs such as BTEX and other volatiles. - All equipment to be maintained in accordance with the manufacturer's recommendations. - Emissions of NOx, CO and TVOC are small and not anticipated to reduce ambient air quality as there are no regional sources. Air dispersion modelling completed to confirm compliance with NEPM standards for NOx and CO. - Vertical flare stack used for gas and maximising dispersion. - No routine flaring during SPCF operation with field turn down strategy used. - Flares onsite to combust hydrocarbons and minimise venting. - Flares have been designed and will be operated to maximise combustion efficiency - Flares to be designed and operated to minimise smoking under all flaring scenarios- noting no routine flaring proposed. - No community receptors within 15 km. Nearest environmental receptor (pastoral bore) is 2.5 km away. - National Occupational Health and Safety Codes: Code of Practice for the Control of Workplace Hazardous Substances. - Chemical handling and mixing practices to reduce particulate emissions. - Community living areas are not located near the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity.	- Regular equipment condition monitoring and maintenance. - Routine site inspections and assurance undertaken to ensure equipment is maintained and operated as per manufacturers' requirements. - Routine site inspections and assurance undertaken to ensure ongoing chemical handling and mixing practices do not result in an offsite release of substances.	- All equipment defects identified by site inspection and assurances to be rectified promptly. - Corrective actions implemented to address poor chemical handling and mixing practices.	1	1	L	Yes	Impacts to environmental or community receptors are not anticipated, with the closest receptor at least 15 km away. No routine flaring will be completed, with turn down strategy implemented to minimise flaring. Low emission equipment, such as catalytic converters is a standard practice to minimise emissions. Modelling of the SPCF confirms potential air quality issues are not anticipated y due to lack of regional sources and low emission intensity of activity. Velkerri shale gas quality lacks higher risk volatile components such as BTEX and other contaminants which reduces potential risk. Due to overriding occupational health safety requirements to limit worker exposure and lack of local receptors, the consequence is anticipated to be minor. The likelihood of a receptor being exposed to emissions above the NEPM guidelines is remote (<1%), given the large separation distances between the activity and closest receptors, being >15 km.	Yes	Low
26	**Air quality**	Reduction in air quality associated with appraisal emissions.	Rupture of high pressure piping in SPCF or at the wellhead, resulting in fire, explosion and flying debris. Gas leak into enclosed area (with ignition), causing explosion, flying debris, fire. Lightning strike to plant causing fire.		X		B.4.1 Well integrity management B.4.3 Well design and barriers D.5.4 Emission detection and management D.5.6 Leak remediation and notification	- Design of hydrocarbon facilities to accepted industry standards and codes. -Hazop completed to identify design and operational risk management requirements to prevent explosions - Independent assurance of SPCF and pipeline design. - Quality assurance of installed equipment. - Pipe design, and over pressure protection to prevent rupture and corrosion. - Inspection and condition monitoring programs (including corrosion monitoring) - The facility pipework and vessels are covered by flame detectors which will initiate an emergency blowdown of the facility. . -leak detection system and automated shut downs used in compressor housing - Remotely operated isolation valves. - flame detection instruments installed and alarm process initiated - Non-return valves. - Lightning protection to be used. - Strict permit to work in place to prevent ignition sources accessing hazardous areas or dangerous activities from occurring in SPCF - Ignition sources placed outside of the hazardous area. - Intrinsically safe equipment used in hazardous area. -Exclusion zones between plant and surrounding vegetation reduce risk of bushfire base don predicted jet flame extent. - Emergency shut down systems, training and response procedures in place to prevent and respond to emergency incidents. - Community living areas are not located near the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity.	- Routine 3 monthly well leak detection. - Routine (3 monthly) well inspections. - Inspection and condition monitoring program. - Remote monitoring of pressure and flow. - Risk based equipment/ piping inspection and condition monitoring program.	- Any leaking wells to be reported and remediated at a frequency consistent with the Code depending on severity. -Emergency Response Plan to respond to emergency events.	2	2	L	Yes	The consequence of a well leak are anticipated to be minor with impacts likely to be small (<1000 L/hour) and restricted in duration (days to weeks). The likelihood is considered highly unlikely with a occurrence probability less than 10%, based on the well designed, construction and operations requirements mandated by the Code. Leak detection and reporting requirements are also controls to ensure any leaks are promptly identified and fixed.	Yes	Low
27	**Air quality**	Increased nuisance from dust and particulate emissions associated with exploration activities caused impacts to regional ecosystems and fauna	Traffic movements. Bushfire from accidental ignition source.	X	X		A.3.7 Fire management	- Water trucks will be used to decrease dust emissions; roads maintained to prevent bull dust generation during construction. - Roads appropriately maintained to minimise bull dust generation. - Bushfire management plan implemented to prevent and respond to bushfires- including establishment of communication and fire response protocols with pastoralists. - Bushfire awareness included in site inductions. - Firefighting equipment to be available to deal with fires. - Fire breaks will be installed around infrastructure. - Minimum of 45 m separation distances between flares and surrounding vegetation. - Ignition sources placed outside of the hazardous area. - Intrinsically safe equipment used in hazardous area. - Hazardous area drawing will provide classification of hazardous zones associated with the SPCF. - Activities will comply with pastoralist and regional bushfire management plans. - Vehicles to be equipped with fire extinguishers. - Activities will comply with pastoralist and regional bushfire management plans. - Permit to work system introduced to control routine and non-routine activities within SPCF. - Community living areas are not located near the planned activities, with Jingaloo located 35 km and Lily Hole 50 km from activity.	- Routine site inspections and assurance undertaken to identify and rectify high dust emissions. - Annual fire preparedness assurance activities completed where activities are proposed during high fire risk periods. - Daily monitoring of bushfires in the region during periods of high fire danger. - Annual fire frequency mapping using the Northern Australia fire Information fire history database. - Incident management system to detect complaints and incidents associated with dust generation.	- Dust control to be implemented where unacceptable dust from transport activities occur. -maintenance of roads triggered where unacceptable dust generation occurs. - Fire hazard reduction strategies (such as back burning) to be implemented to reduce the risk of fire ignition/ impact as required. - Where a bushfire is started and cannot be controlled, Tamboran to engage with pastoralist to coordinate response activities. -Emergency response plan in place to respond to bushfires	3	2	M	Yes	**Dust** will be generated through transport movements along access tracks and around the site. The consequence of dust is anticipated to be moderate, with localised, short term impacts to areas immediately adjacent to access tracks. The likelihood of the risk is reduced through the isolated location (lack of environmental or community receptors), regionally extensive vegetation communities (good outside refuge away from access tracks and use of dust suppression. **Fire** is a common occurrence within the Barkly Region. A fire is likely to have a serious impact, with moderate term reversible impacts (years). With the appropriate controls, such as separation distances, firebreaks, and adherence to total fire bans (including permit exemptions), the likelihood of causing a fire operation of the SPCF is anticipated to be highly unlikely, with a predicted occurrence of <10%.	Yes	Low

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				Construction & commissioning	Ops & emergency management	Decommissioning & rehabilitation		Prevent			Consequence	Likelihood	Risk Rating				
28	**Atmospheric processes**	Greenhouse gas emissions from the activity have a direct and measurable adverse impact on climate	Combustion of diesel for all exploration activities Combustion of gas from gas fired compressors and generators. Flaring of gas and condensate production.	X	X		A.3.1 Site selection and planning D.5.9 Venting and flaring	- Beneficial use of gas to minimise emission from flaring. - Australian emission standards adopted for all equipment ensures minimum operating efficiency. - All equipment to be maintained in accordance with the manufacturer's recommendations. - Venting to be minimised with all venting reported under NGERS. - No routine flaring, with field turn down strategy implemented. - Pilot system on flares implemented to ensure flares operate during plant trips. - Flares have been designed and will be operated to achieve 98% efficiency - Total worst case emissions from activity are not significant- being ~1.3% of NT's Total GHG emissions and 0.05% of Australia's GHG emissions.	- Equipment condition and maintenance to be built into contract - Routine site inspections and assurance undertaken to ensure equipment is maintained and operated as per manufacturers requirements.	- All equipment defects identified by site inspection and assurances to be rectified promptly. - Where excessive smoking of flares is identified, the flare operating status will be reviewed and optimise to reduce particulate generation. -Emergency response plan implemented.	2	2	L	Yes	The risks associated with GHG generation are well documented in literature and domestic/international greenhouse policy (such as NGERS and IPCC). The sale of appraisal gas is specifically designed to address this issue to ensure appraisal activities can be conducted with minimal GHG emissions. The consequences of GHG generation from exploration activities is moderate, with less than 1% of the NT emissions generated. The likelihood of the level of GHG production being unsustainable is considered remote, with a probability less than 1%. The risks associated with greenhouse gas generation through well sabotage is anticipated to be moderate, with impacts likely to be restricted in duration (hours to days). The likelihood is considered remote (probability <1%), with the site remote and multiple valves locked on the well to prevent tampering.	Yes	Low
29	**Cumulative risk**	Cumulative impacts on groundwater quantity, including unsustainable groundwater extraction impacts on pastoralists and GDEs.	Groundwater take from surrounding land users exceeds the natural recharge rate of the Basin.	X	X		Water extraction licences under the NT Water Act	- Estimated groundwater take for the SPCF is minimal: <60 ML over the life of the Project, or an average of 12 ML/annum. - Groundwater take authorised under a Water Allocation Plan which considers cumulative, current and future groundwater users. - Petroleum allocation under the Water Allocation Plan is 10,000 GL/year or 4% of total allocation. - Water Extraction Licence value of 450 ML/year is 0.001% of total available resource The total quantity of existing petroleum activity groundwater extraction licences for the region is 752.5 ML/year. - Cumulative impacts considered in the water extraction licence under the NT Water Act. - Groundwater extraction volumes are monitored and kept below WEL. - Strategic Regional Environmental Baseline Assessment (SREBA) completed to collected baseline environmental data, with environmental impact assessments completed to address cumulative impacts from industry.	- Groundwater monitoring of control and impact monitoring bores will detect localised groundwater depressurisation before regional impacts occur.	- Where sustained groundwater depletion is observed in regional aquifers, alternative water supplies may be required, such as deeper aquifers with limited extraction. - Water Act make good provisions to ensure any impacts on users from exploration activities are "made good".	2	1	L	Yes	The regional understanding of the CLA is sufficient to understand the risks associated with groundwater extraction. The absence of users and small exploration take reduces the uncertainty of the activity. This risk has been assessed as a part of the WEL application and approval. Due to the lack of receptors, the consequence is considered moderate (i.e. 1 user within 16km) and likelihood remote (probability less than 1%	Yes	Low
30	**Cumulative risk**	Cumulative impacts on terrestrial ecology.	Impacts from exploration activities and existing agricultural activities results in impacts to vegetation communities, fragmentation and poses a threat to protected flora and fauna.	X			A.3.1 Site selection and planning A.3.2 Well pad specific site selection A.3.5 Biodiversity Protection	- Area has limited development with no widespread land clearing or other pressures from agriculture or other users. - Petroleum activity is limited in scale (0.0227% of total area) and will not materially decrease availability of habitat across the region. - Cumulative clearing impacts from petroleum exploration are an order of magnitude lower than existing land users (~900 ha versus ~26,000 ha). - The Shenandoah S2 site is located in close proximity to existing access tracks to minimise disturbance and habitat fragmentation. - SREBA completed to collect baseline environmental data, with environmental impact assessments completed to address cumulative impacts from industry.	- Ongoing scouting and infrastructure design will be undertaken to ensure scope creep doesn't result in increased habitat fragmentation.	- All disturbance to be rehabilitated to pre-existing levels in accordance with the Code.	2	1	L	Yes	The region has low land clearing pressure with no applications for large scale land clearing present. The level of disturbance proposed is small (8.0 ha total, including repurposing of the Shenandoah S2 laydown area), with field ecological scouting confirming ecological communities present. The consequence of habitat fragmentation from this Project, posing a threat to protected flora and fauna is considered moderate from a cumulative perspective with a likelihood of highly unlikely.	Yes	Low
31	**Cumulative risk**	Cumulative impacts on amenity.	Exploration activities further reduces amenity (visual, noise, traffic and lighting) through additional landscape modification, dust, noise, light and traffic.	X	X		A.3.1 Site selection and planning A.3.2 Well pad specific site selection	- The Shenandoah S2 site is located in a remote/rural landscape, away from environmental and community receptors. - Cumulative clearing impact from petroleum exploration order of magnitude lower than existing land users (~900 ha versus ~26,000 ha). - Any flaring may create a visible hue on the horizon consistent with that of a small town. However the impact will be temporary. - Additional traffic volumes are anticipated to be small (23 additional vehicles during peak mobilisation), well below existing industries and will not impact on the level of service of the Stuart Highway. - A traffic management plan covering the intersection upgrade work will be submitted to DPIL for approval prior to the commencement of works. - Low level of development activity within the region, with activity unlikely to cause declines in amenity.	- Community complaints regarding nuisance (including dust, traffic, etc) to be used to detect cumulative impacts.	- Complaints are to be investigated and additional controls implemented where appropriate.	1	2	L	Yes	The region is under-developed with the activity located away from major transportation routes, homesteads and communities. The activity is of a small size and unlikely to result in any loss of amenity. Any loss of amenity is therefore likely to be minor, with a likelihood of highly unlikely.	Yes	Low
32	**Cumulative risk**	Cumulative impacts on surface water quality.	Exploration activities (including access tracks and SPCF) in addition to existing surrounding land use (agriculture) reduces surface water quality.		X		A.3.1 Site selection and planning A.3.2 Well pad specific site selection A.3.4 Erosion and sediment control and hydrology	- No surface water take or wastewater releases permitted with controls in place to mitigate spills and offsite releases. - Area has limited development with no widespread land clearing pressures from agriculture or other users likely to reduce water quality. - Land clearing practices and erosion and sediment controls ensure impacts to surface water from sediment and changes in hydrology are reduced to ALARP. - Clearing has been minimised to 3.0 ha through the repurposing of the existing approved 5.0 ha laydown area on the Shenandoah S2 well site. -access racks maintained to minimise erosion and sediment controls. - No surface water take or wastewater releases permitted. - SREBA completed to collect baseline environmental data, with an environmental impact assessment completed to address cumulative impacts from industry.	-incident management system tracks incidents which could potentially threatened regional surface water quality like spills and releases	-Emergency response plan and incident management system in place to respond to incidents ensuring regional impacts do not occur.	1	1	L	Yes	The region is under-developed with the activity located away from major flow pathways with limited topographic variation. The activity is of a small size and unlikely to result in any material increase in sediment loads to surface waters.	Yes	Low
33	**Cumulative risk**	Cumulative impacts-greenhouse gas emissions from the Beetaloo have a direct and measurable adverse impact on climate	The release of GHG emissions during exploration activities materially increases the NT's and Australia's Greenhouse Gas emissions, and increasing climate change impacts on the environment		X		B.4.1 Well integrity management B.4.3 Well design and barriers B.4.13 Hydraulic Stimulation and flow back operations D.5.9 Venting and flaring	- The beneficial use of gas will lead to a significant reduction in scope 1 GHG emissions directly minimising cumulative emissions - Total greenhouse gas emissions for the Beetaloo Sub-basin are low compared to the total NT and broader Australia greenhouse gas emissions. The percentage of total NT and Australian GHG emissions is estimated at 1.35% and 0.04% respectively. - Climate change is a global issue resulting from a culmination of human activities and natural processes across the planet. This activity will not cause climate change, but will contribute to the carbon budget of the atmosphere. - Management of climate related impacts are required at a national and internal level. Tamboran will abate a % of residual GHG emissions in alignment with the NT net zero by 2050 trajectory. For example, emission offsets will increase year on year by 3.7% based on a baseline FY of 2023 to achieve net zero by 2050. - All emissions over 100 KT CO2 to be offset using ACCUs in accordance with the NGERS Safeguard Mechanisms. - Activities required to prove up natural gas resources, with all available technology used to reduced emission intensity of exploration activities. - Routine flaring, with field turn down strategy utilised. - Full development (if technically and commercially viable) likely to provide a viable transition fuel with up to 50% emissions of coal - Full development to be scope 1 neutral. - SREBA completed, with an environmental impact assessment completed to address cumulative impacts from industry.	N/A: Greenhouse gas emissions are approved prior to commencement of activity.	N/A: Greenhouse gas emissions are approved prior to commencement of activity	1	1	L	Yes	The beneficial use of gas is specifically designed to minimise GHG emissions required for long term appraisal. Tamboran has aligned its emission reductions strategies in accordance with the Code, NT Large Emitters policy, and the net zero objective of the NT and Commonwealth, and the Commonwealth NGERS safeguard mechanism emission requirements. The role natural gas plays as a low carbon intensity transition fuel to support renewable energy use is well known. Broad adoption of natural gas within the US has replaced coal in energy production and has been responsible for a continued decline in carbon emissions. The use of natural gas is one of the lowest carbon intensity fuels required to reduce carbon emissions in the near term, with wide recognition of the importance of ensuring energy security during the energy transition.	Yes	Low

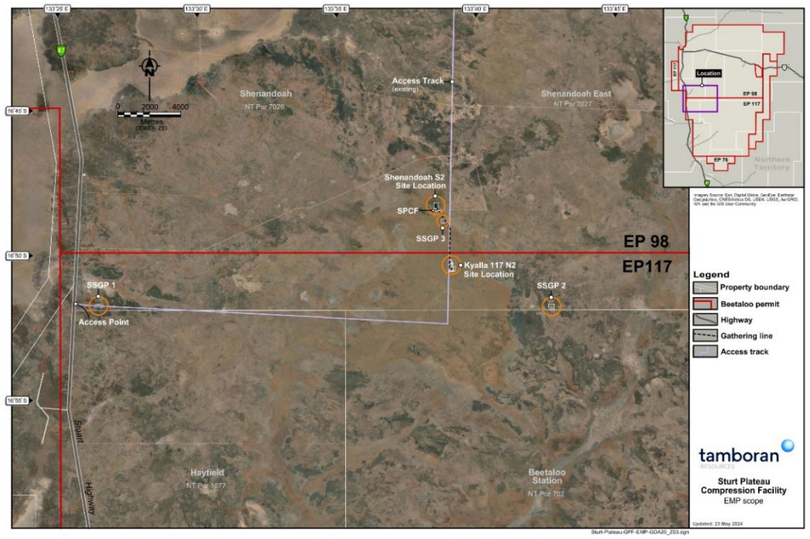
Appendix L Rehabilitation Management Plan

Exploration Permit 98
Rehabilitation Management Plan 2024 onwards
Sturt Plateau Compression Facility (SPCF)
Shenandoah South 2 (Shenandoah S2)

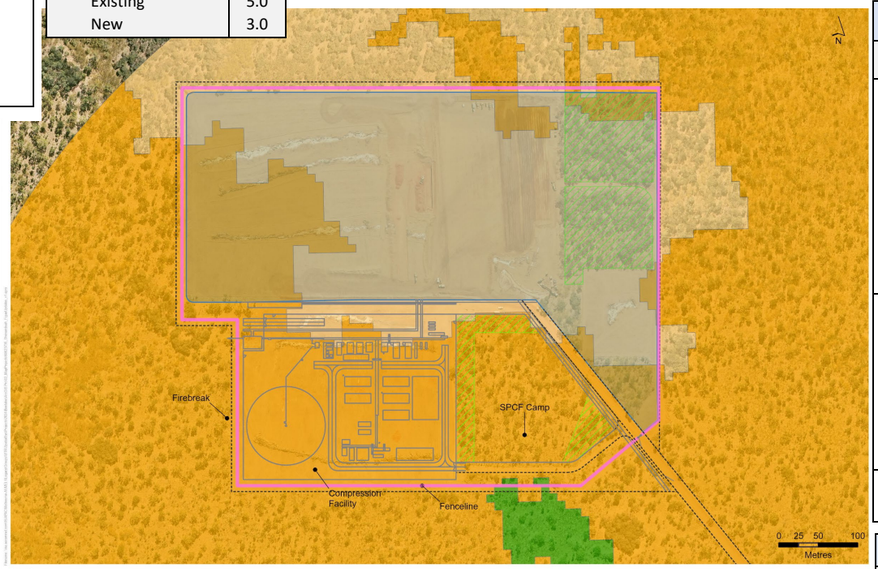
Rev 4, September-2024

Name	Contact details
Robert Wear Beetaloo Field Manager	Mobile: [redacted] Satellite Phone: [redacted] Email: [redacted]

Location of Shenandoah S2	
Property and land uses	Gas exploration, cattle grazing, and native title rights and interests recognised by the native title determinations over the land and waters.
Climate	The permit area is described as arid to semi-arid. Climate is influenced by the monsoon and there is a distinct wet and dry season. Most rainfall (90%) occurs during the summer months, between October and March. Annual rainfall varies across the permit area is around 680 mm, with rainfall totals show moderate variability and drought conditions are known to occur every 10 years.
Pre-disturbance land condition summary	The Shenandoah S2/SPCF location (GDA94, Zone 53, 355291.00mE, 8140676.00mN). The natural vegetation community is *Corymbia dichromophloia ± Erythrophleum chlorostachys* open woodland over *Acacia difficilis ± Terminalia canescens, Erythrophleum chlorostachys open shrubland* over hummock grassland and *Acacia shirleyi, Corymbia dichromophloia ± Eucalyptus leucophloia, Corymbia polycarpa* open woodland, over *Macropteranthes kekwickii, Petalostigma pubescens, Hakea arborescens* open shrubland, over tussock grassland. The landform at Shenandoah S2 is characterised by lateritic plains and rises associated with deeply weathered profiles (laterite) including sand sheets and other depositional products, sandy and earth soils. Habitat surrounding the site is in good condition. The habitat contained good refuge opportunities for small birds and reptiles in the form of dense grass cover, with some large woody debris and tree hollows and logs.



Rehabilitation zones			
Infrastructure	**Size (ha)**	**Soil type / slope canopy / ground cover**	**Vegetation community / dominant species**
SPCF (existing site) SPCF camp Fencing and firebreaks	5.0 2.0 1.0	Lateritic plains and rises associated with deeply weathered profiles (laterite) including sand sheets and other depositional products, sandy and earth soils.	Comm 2a-*Corymbia dichromophloia ± Erythrophleum chlorostachys* open woodland, over *Acacia difficilis ± Terminalia canescens, Erythrophleum chlorostachys* open shrubland, over hummock grassland
			Comm 2b-*Acacia shirleyi, Corymbia dichromophloia ± Eucalyptus leucophloia, Corymbia polycarpa* open woodland, over *Macropteranthes kekwickii, Petalostigma pubescens, Hakea arborescens* open shrubland, over tussock grassland
Total disturbance: Existing New	**8.0** 5.0 3.0		



Pre-disturbance photos of vegetation community

Rehabilitation aims and objectives	
Site management aim	The aim is to rehabilitate any part of the land affected by the regulated activity to a safe condition consistent with industry standards, the Code and in consultation with the landholder.
Rehabilitation objectives	The rehabilitation objective is to provide a stable landform, which supports a) the rights and interests of the Native Title Holders in the land and water, and b) a resilient self-sustaining vegetation community that can withstand impacts including fire and cattle grazing and is safe to humans and wildlife.

Soil and general environmental condition (Dec 2022)

Rehabilitation risk	
Key Risks	**Controls**
Drought - impacting the establishment of rehabilitated vegetation	• Time rehabilitation actions to coincide with the beginning of the wet season, to ensure access to the site and maximise the establishment period of vegetation over the wet season. • Re-spread topsoil across the site to utilise the local seed bank. • Ongoing monitoring to identify if further seed inputs are required. • Collection of seed from the local area to ensure seed stock is suited to the climatic conditions of the site.
Fire - impacting revegetation	• Establish a mix of perennial and annual grass species. • Establish a mix of resprouting (e.g., *Eucalyptus* spp. and *Corymbia* spp.) and reseeding species (e.g., *Acacia* spp.). • Ongoing monitoring to determine fire impacts on revegetation. • Ongoing monitoring to determine if further seed inputs are required.
Grazing - impacting revegetation	• Establish a mix of perennial and annual grass species. • Re-spread timber with topsoil. • Ongoing monitoring to determine grazing impacts on revegetation. • Ongoing monitoring to determine if further seed inputs are required. • Ongoing monitoring to determine if fencing is required.
Exposed ground - leading to an increase in weed establishment and/or erosion	• Remove windrows and topsoils. • Respread of topsoil and vegetated matter across the site. • Annual weed surveys of rehabilitated area once rehabilitation is established. • Control of any weed incursions.

Rehabilitation strategy

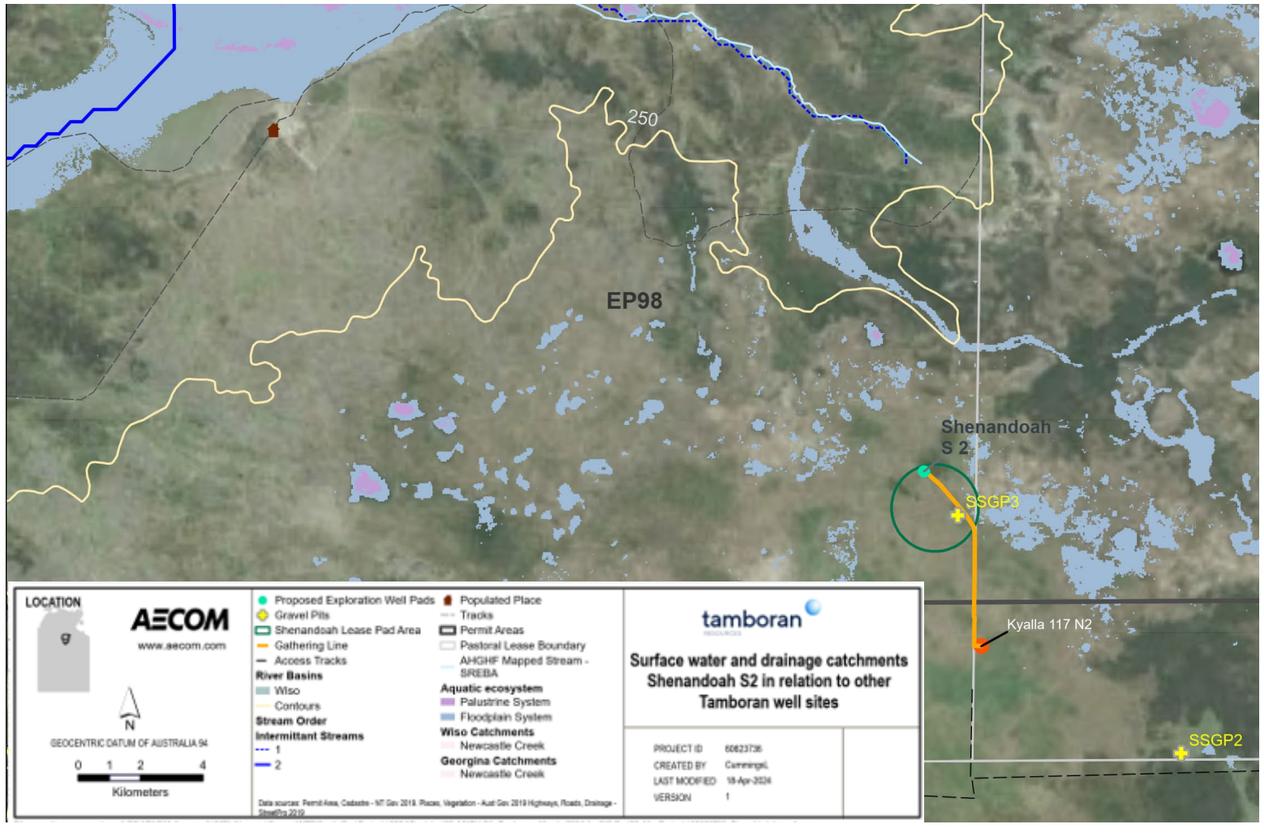
Parameter	Methods	Objective
Vegetation	• Rehabilitation will be implemented for disturbance areas following completion of the individual activity within 12 months. • Disturbed areas to be allowed to naturally regenerate or revegetate on completion of the regulated activity. • All compacted areas to be ripped and scarified to promote regeneration of vegetation, this may require assistance through spread of native seed stock. Where possible, native seed stock would be supplied by local indigenous suppliers.	• Establish vegetation trending toward the target vegetation community for the area disturbed (i.e. species richness, %cover and structure) and in accordance with the Code (Clause A.3.9(d)). • Reinstate disturbance area to its pre-disturbed condition. • The type of ground cover applied to completed earthworks is to be compatible with the anticipated long-term land use, environmental risk, and site rehabilitation measures.
Ground cover	• Previously removed vegetation and topsoil will be uniformly respread over disturbed area. This will assist with the rehabilitation process by increasing infiltration and returning seed-bearing topsoil, as well as reducing erosion. • After first 12 months, additional input of native seed mix may be required from the area to assist rehabilitation process.	
Landform stability	• All windrows are to be removed post construction and at completion of the activities.	

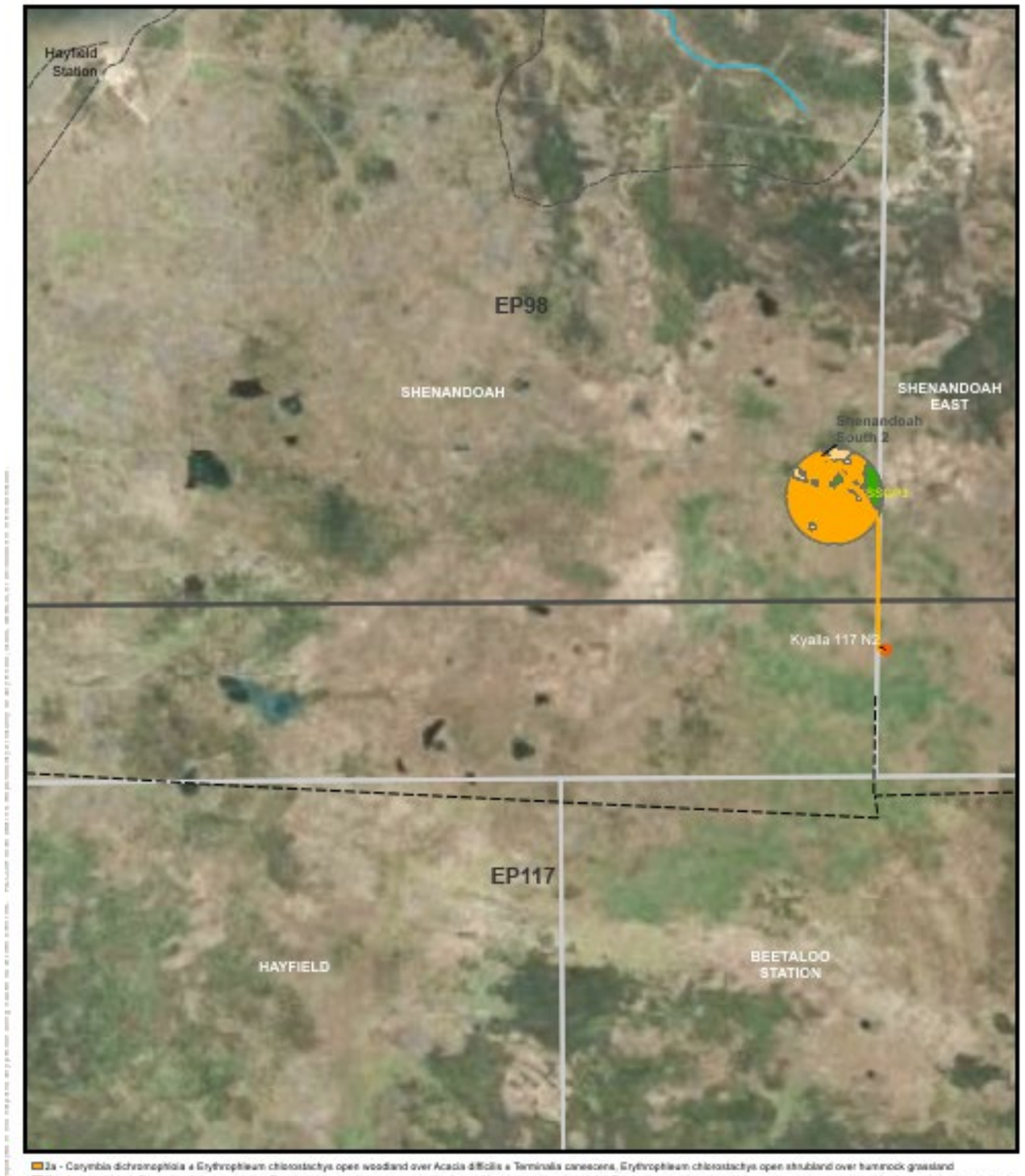
Final success criteria	
Area to be rehabilitated	• Total area of approved surface disturbance is 5.0 ha. • Total area required for rehabilitation 8.0 ha.
Vegetation composition	• Vegetation composition (i.e. type, density) trending towards the target vegetation community and self-sustaining. • Vegetation is sustainable for long term with the only required maintenance consistent with the final land use. • Sign of woody vegetation regrowth (i.e. Acacia, Eucalypt and Bullwaddy) following rehabilitation and within 12-18 months. • Ground foliage cover consistent with the target vegetation community where disturbance occurred. • Achieve minimum of 30% diversity within the first 12 months and maintained for at least 3 years following rehabilitation consistent with analogue sample site. • Final success based on the following attributes - % canopy and ground cover, stratum 3 species richness, woody species diversity.
Watercourse crossings	• All stream crossings, where intersected, to be reinstated to the original topography. • No evidence of erosion as result of activity present within first 12 months.
Erosion	• Site stabilisation to occur and all erosion and sediment control infrastructure removed. • Less than 5 % erosion should be evident after the first 12 months and no subsidence or erosion should be evident for at least 5 years after completion.
Weeds	• No establishment of weed species declared under the NT *Weeds Management Act*.
Hazardous materials and waste	• All hazardous material and waste removed from site upon completion of works to licensed landfill facilities or recycling facilities. • No residual soil contamination that poses a threat of environmental harm.
Safety for humans and wildlife	• Rehabilitation of disturbance areas should be similar in landform to the surrounding area. No steep slopes or barriers to remain on site that endanger wildlife, livestock or humans. • Windrows removed. • Water bores and exploration wells to be sealed and isolated (as required). • Removal of all surface facilities including fencing (star pickets / fencing wire).

Monitoring program and schedule			
Stage	**Timing**	**Method**	**Measurable attributes**
Progressive rehabilitation	Within 6-12 weeks of completion of activities	• Topsoil, windrows and cleared vegetation stockpiled are to be respread following the works. • Refer to detail in Tamboran's Erosion and Sediment Control Plan	• All disturbed areas must be considered suitably stabilised as per IECA Table in the Tamboran Erosion and Sediment Control Plan.
Preliminary assessment	Post rehabilitation, end of wet season survey (February to June) within 12 months.	• Analogue sites will be established for the two vegetation communities identified in the baseline Land Condition Assessment (AECOM 2023) at adjacent undisturbed sites. • Permanent 100 m x 4 m transects (one per vegetation community), will be established at disturbed and analogue sites including photo monitoring point(s). • Collect 1 x 1 m ground cover quadrats every 10 m along each 100 m transect. • Transects to be positioned <20 m from pastoral and gas infrastructure assets (i.e. access tracks, fence lines, well pads, water troughs) to reduce edge effects.	Following measurable attributes will be compared with analogue sites: • Seedling/sapling density of dominant species respective to each vegetation community. • Percentage of ground cover respective to bare land and vegetation. • Number of species at canopy, mid and ground strata. • Evidence of erosion (type of erosion, approximate area of erosion). • Weed presence/absence (species and density). • Disturbance (fire frequency and intensity, evidence of feral animal/ cattle) • Incidental observations.

Early rehabilitation	Years 1, 2 and 3 post rehabilitation, end of wet season survey (February to June).	• Monitoring to be undertaken using permanent transects at analogue and disturbed sites.
		• Collect data as per preliminary methods.
		• Compare results from monitoring sites with analogue sites and previous year's assessment to determine if require additional management inputs (i.e. seeding, stabilisation).
		  • Implement reseeding if species richness does not show a trajectory to achieving pre-disturbance conditions 5 years post disturbance.
		  • Species which fail to naturally recover from soil seed bank will be selected for reseeding.
		• Annually review success criteria.
			• Early assessment of rehabilitation will determine attributes of woody plants in each 100 m x 4 m transect.
			• Including assessment of species, DBH (>1.5 cm) and height (>2 m), in addition to parameters described within the preliminary assessment.

Long-term rehabilitation	Annually until final success criteria has been met, end of wet season survey (February to June).		• Long-term assessment to determine establishment, recruitment, and growth rate attributes of plant species, in addition to parameters described during early rehabilitation stage.





Appendix M Environmental Commitment Register

Obligation details	Accountability	When
The layout of the site and exact placement of infrastructure will be informed by the environmental sensitivities and mitigation measures identified in this EMP. This includes additional scouting as required, where infrastructure placement and 2D seismic lines need to be moved to accommodate pastoral or new / additional cultural heritage considerations.	Project Manager and Beetaloo Field Manager	Site establishment
Land clearance will not be undertaken as a part of this activity, unless authorised to do so.	VP Drilling and Completions and Beetaloo Field Manager	Continuous
The monitoring and maintenance under the erosion and sediment control plan shall be implemented.	VP Drilling and Completions	Pre and post wet season
The spill management plan will be implemented including spill prevention, detection, response and reporting measures.	VP Drilling and Completions	Throughout the activity
The wastewater management plan will be implemented including the use of covered tanks, wastewater characterisation, storage monitoring and appropriate disposal.	VP Drilling and Completions	Throughout the activity
The bushfire management plan will be implemented to reduce the risk of bushfires. This includes the use of appropriate separation distances between flares and the surrounding vegetation.	VP Drilling and Completions	Throughout the activity
The methane emission management plan shall be implemented, including strategies to prevent, detect, remediate and report potential leaks.	VP Drilling and Completions	Throughout the activity
Secondary containment will be implemented for all chemical storage and handling areas.	VP Drilling and Completions	Throughout the activity
Tamboran and its subcontractors will prioritise the use of local labour where such skill sets are available.	Project Manager Contracts Administrator	Activity planning
The weed management plan shall be implemented, including assuring all equipment and vehicles on-site have a valid weed hygiene certificate and routine monitoring is completed. All identified weeds associated with Tamboran's activities to be treated and managed in consultation with the DEPWS Onshore Petroleum Weed Management Officer.	Beetaloo Field Manager VP Drilling and Completions	Throughout the activity
Records of weed distribution will be maintained within Tamboran's GIS and if required provided to the DEPWS Onshore Petroleum Weed Management Officer.	Environment and Approvals Manager	Throughout the activity
The site shall be fenced to prevent fauna and livestock access to wastewater.	Beetaloo Field Manager VP Drilling and Completions	Site establishment and post drilling
Where monitoring confirms fauna mortality associated with on-site wastewater storages above the investigation thresholds outlined in the EMP, Tamboran may implement additional preventative controls.	VP Drilling and Completions	During wastewater storage
The Well Operations Management Plan (WOMP) approved by DITT will be implemented to ensure the protection of aquifers and the environment. This includes protecting aquifers through multiple cement and casing barriers and performing the specified well integrity verification testing.	VP Drilling and Completions	All E&A drilling, stimulation, well testing and decommissioning activities

Obligation details	Accountability	When
All groundwater will be extracted, monitored and recorded in accordance with the water extraction licence.	VP Drilling and Completions and Environment and Approvals Manager	Throughout the activity
All wastes will be transported and disposed of at licensed facilities in accordance with the *NT Waste Management and Pollution Control Act 1998*.	VP Drilling and Completions	Throughout the activity
Drilling muds and cuttings will be tested in accordance with the Code. Where an independent expert considers on-site disposal of muds and cuttings as being environmentally sound, a report will be submitted to DEPWS for approval a to the proposed disposal approach and potential risks.	HSE Manager and Environment and Approvals Manager	Prior to the disposal of muds
Where Tamboran's activities cause a material impact on the quality and quantity of a stock or domestic bore, Tamboran will make good such impacts in accordance with section 7.5.2.2 of the Inquiry Report. This may include adjusting pump heights, compensation or where appropriate, re-drilling/modifying the bore into an alternative water source.	Project Manager	Upon confirmation an activity has resulted in impairment to a water supply point
No material changes in the quality and quantity of aquifers will result from Tamboran's activities.	Project Manager	Throughout the activity
Surface water will not be used for any activities proposed in this EMP or future operations.	Project Manager	Throughout the activity
Stormwater flooding across the cleared site will be managed to minimise impacts from erosion and sedimentation.	Project Manager	Throughout the activity
Tamboran have committed to comply with conditions as prescribed by AAPA for the duration of the program.	Project Manager	Throughout the activity
Tamboran has committed resources and time to allow competent and experienced personnel to participate in educational and community information sessions from Darwin in the north, to Alice Springs in the south and across to Borroloola in the east.	Project Manager	Planning and implementation of activities
Appropriate housekeeping standards will be maintained, and the site will be maintained free of rubbish.	Beetaloo Field Manager or Operating Company Representative (OCR)	Throughout the activity
Camps will be used to mitigate the impact on available accommodation and townships.	Project Manager/	Throughout the activity
Wastewater, sewage and sullage generated by the domestic camp activities will be managed by a Department of Health approved sewage treatment system or captured and removed from site.	VP Drilling and Completions	During wastewater (sewage) management
Monitor road conditions to ensure deterioration with possible increase in dust creation, does not occur and undertake road rehabilitation as required.	Beetaloo Field Manager or Operating Company Representative (OCR)	Daily during the activity
Tamboran will progressively implement a rehabilitation plan to rehabilitate all disturbed areas.	Health Safety and Environment Representative	With 12 months of determining an asset is no longer required
Work instructions summarising the requirements of this EMP shall be prepared and submitted to contractors performing work under this EMP.	HSE Representative	Prior to commencement of an activity.

Appendix N Emergency Response Plan

Beetaloo Basin

Emergency Response Plan

Sturt Plateau Compression Facility

TAMBORAN RESOURCES LIMITED INTEGRATED MANAGEMENT SYSTEM		
DOCUMENT TITLE:	Emergency Response Plan – Sturt Plateau Compression Facility	
DOCUMENT NO:	TBN-HSE-MP-19	REVISION NO: 1
DOCUMENT CUSTODIAN:	HSE Manager	REVISION DATE: 16/06/2024

Revision

Rev. No	Revised By	Justification	Date
1		Issued for use	16/06/2024

Document Approval

Responsibility	Approver
Owner of the Emergency Response Plan	Mike Jacobson Tamboran Project Manager

Abbreviations

Abbreviations and acronyms used within this document.

Abbreviation	Definition
AAR	After Action Review
CMT	Crisis Management Team
DEPWS	Department of Environment, Parks, and Water Security
DITT	Department of Industry, Tourism and Trade
DMO	Duty Medical Officer
EMT	Emergency Management Team
EMT-L	Emergency Management Team Leader
EMP	Environment Management Plan
ERP	Emergency Response Plan (this document)
ERT	Emergency Response Team
HAZCHEM	Hazardous chemicals
OSC	On-Scene Commander
MAE	Major Accident Event
PPE	Personal protective equipment
PPRR	People, Environment, Assets, Reputation, Liability
SITREP	Situation Report
SEMT	Site Emergency Management Team
SEMT-L	Site Emergency Management Team Leader
SERP	Site Emergency Response Plan
SERT	Site Emergency Response Team
SPCF	Sturt Plateau Compression Facility
SMP	Spill Management Plan

Table of Contents

Appendices

1 Introduction

1.1 Purpose

This Emergency Response Plan (ERP) is designed to guide the Site Emergency Team to respond effectively to a site level emergency within the Sturt Plateau Compression Facility (SPCF) and return the facility to normal operations.

The plan will:

- Describe the emergency response philosophy and structure
- Explain the notification and escalation pathway
- Identify key personnel and their role in an emergency scenario
- Describe information about the site including:
  - Site location/s and geographic area
  - Emergency equipment and medical resources available
  - Exclusion zones (if applicable)
- Identify the tools for use during an emergency
- Identify the escalation process from site emergency response team up to the crisis management team.

Support for the Emergency Management Team is provided through the Tamboran Crisis Management Plan (TRL-HSE-PL-03).

1.2 Scope

This ERP encompasses all regulated activities approved under the environment management plan (EMP) for the operation of the compression facility. The plan applies to all employees, contractors, and visitors at the SPCF.

Out of scope:

Construction and commissioning of the SPCF. For this phase of work, an emergency response will be managed by a Principal Contractor. If required, an emergency response interface plan or bridging document will be implemented.

1.3 Compliance with Legislation

This plan meets the requirements as identified by legislation for emergency response plans including:

- *Work Health and Safety (National Uniform Legislation) Act 2011*
- Work Health and Safety (National Uniform Legislation) Regulations 2011
- *Petroleum Act 1984*
- Petroleum Regulations 2020
- Petroleum (Environment) Regulations 2016
- Code of Practice for Petroleum Activities in the Northern Territory 2019
- *Bushfire Management Act 2016*
- Bushfire Management (General) Regulations 2018
- *Dangerous Goods Act 1998*
- Dangerous Goods Regulations 1985
- Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act and Regulations
- *Waste Management and Pollution Control Act 2016*
- Northern Territory Contaminated Land Guideline (June 2017)

1.4 Site Location

The SPCF is located within Beetaloo Basin, approximately 700 km south of Darwin. The facility itself is located adjacent to the Shenandoah S2 well site as per Figure 1. (See Appendices G and H for further location and site layout detail.)

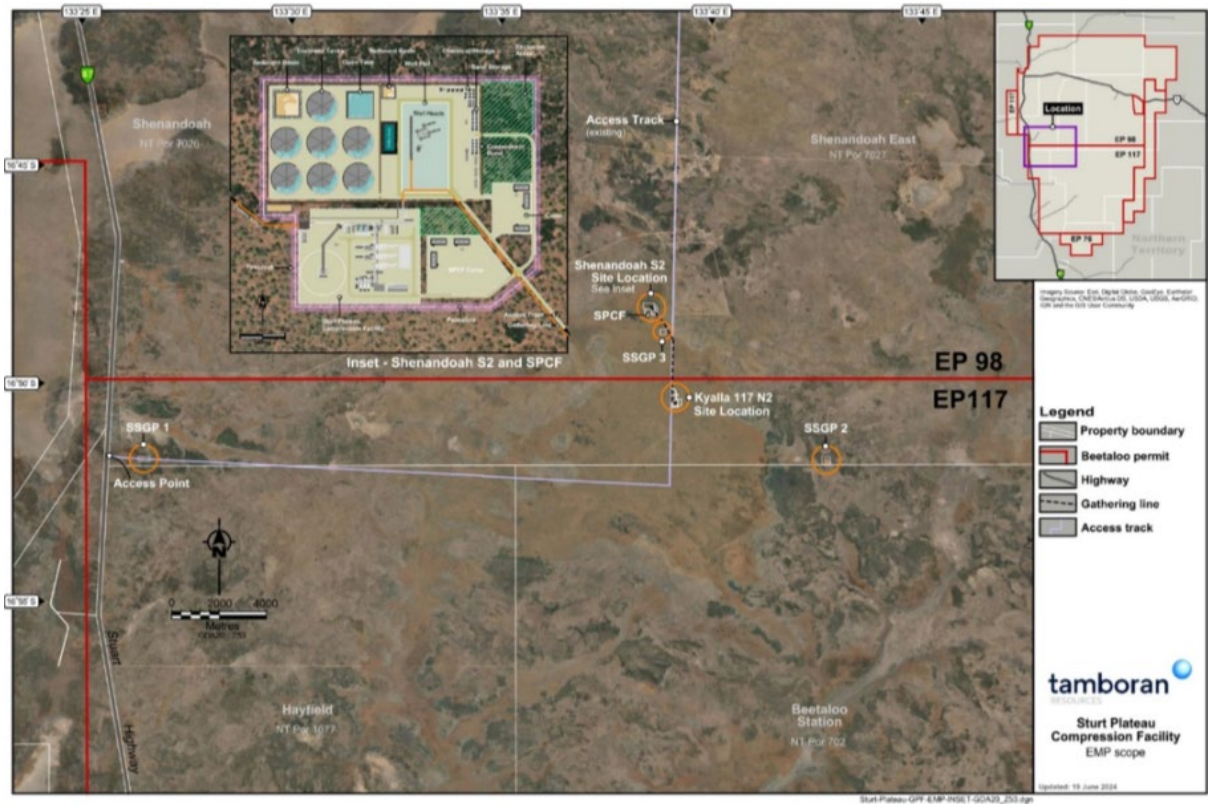


Figure 1. SPCF location

Table 1 site location

Site name:	Sturt Plateau Compression Facility (SPCF)
Location:	SPCF is located within the Shenandoah South 2 well site (EP117) E: 355291; N: 8140676 (MGA Zone 53)
Nearest town by vehicle:	Daly Waters
Nearest major road:	Stuart Highway
Nearest airstrip by vehicle:	Daly Waters: 1hr 10 mins (73 km)
Nearest hospital by vehicle:	Katherine Hospital (367 km)

1.5 Operator Details

Tamboran Resources
100 Barangaroo Avenue
New South Wales 2000

2 Emergency Management Structure and Escalation

2.1 Emergency Response Philosophy

The site emergency response team will have the ability to provide a basic response to small fires, spills and medical emergencies to preserve life and reduce the impact to people, environment, assets and community.

Personnel dealing with emergencies in the SPCF will strictly adhere to the PEARL[1] process as the safety of people is the highest priority. This philosophy is a hierarchal approach to emergency response in the below order.

Where increased response capability to mitigate the consequences of incident types such as loss of containment (Appendix F) or bushfire, specialist contractors (including emergency services) will be engaged to undertake the response.

Table 2. PEARL process

PEOPLE	• Evacuate and muster (if deemed necessary) • Account for all people and determine missing persons • Prevent unauthorised access to the site • For emergencies that are safe to manage, (such as small fires in non-hazardous areas, leaks and/or medical first aid emergencies. • Provide a technical resource to the Emergency Services when called • Alert other nearby stakeholders
ENVIRONMENT	• Control and contain the emergency to minimise environmental impact
ASSETS	• Monitor automatic shutdown of the equipment or part thereof or initiate manual shutdowns where safe to do so. • Mobilise emergency services to intervene
REPUTATION	• Notification to relevant stakeholders if required. Including TO's, Pastoralists and Regulatory Bodies
LIABILITY	• All personnel responsible for responding to an emergency will be trained in this ERP • The ERP will be reviewed annually and updated as necessary • Exercises and drills will be conducted regularly each year in accordance with the drill schedule.

[1] People, environment, assets, reputation, liability.

2.2 Structure

The overall Emergency Management structure is three-tiered as shown in Figure 2 with:

- An Emergency Response Team (ERT) on site. This will be led by a Tamboran Representative and supported by specialist contractors and local emergency services.
- An office-based Emergency Management Team (EMT) lead by a Tamboran Operations Representative.
- The Tamboran Crisis Management Team (CMT) is led by the Tamboran Chief Operating Officer.

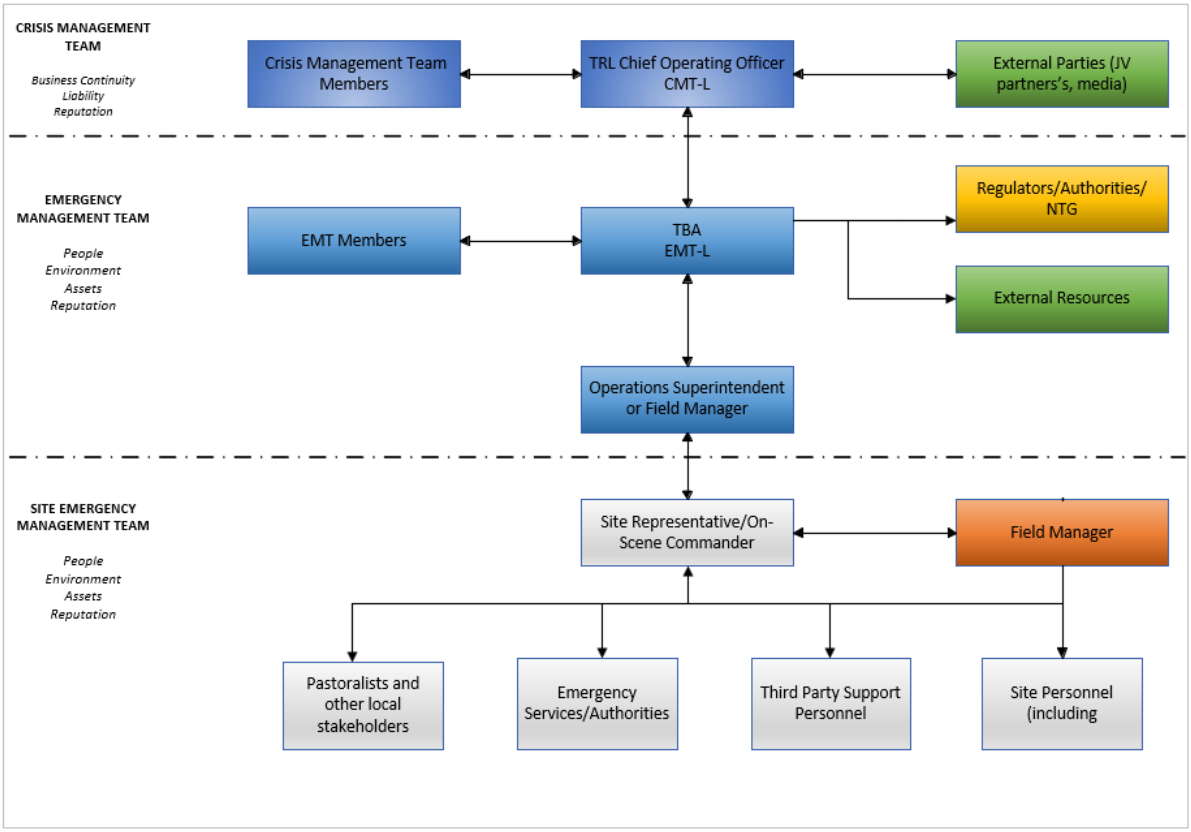


Figure 2. Emergency Management Structure

3 Emergency Management

3.1 Definition of a Site Emergency

An emergency is defined as an unplanned event which requires a response to normalize an activity that has or could result in harm to people, the environment, assets or Tamboran's reputation.

Tamboran's response to an emergency has a tiered 3 level approach.

Level 1 – an event that can be managed on site using the response resources readily available. This type of event typically does not require additional resources or assistance.

Level 2 - an event that requires or may require additional or external resources to respond to or recover from an emergency event.

Level 3 - an event where high-level strategic direction and decision making is required to respond to or recover from an emergency event. Given the complexity of level 3 events, strategic direction due to impact to business continuity, reputation and liability is required.

3.2 Emergency Response Plan Activation

The Site Emergency Management Team Lead (SEMT-L) has the authority to activate this Site Emergency Response Plan (SERP). Escalation to the Emergency Management Team Lead (EMT-L) must occur so that activation of the EMT can be considered and stood up if required.

Appendix A describes activation pathway for the Site Emergency Response Team (SERT).

3.3 Escalation

Escalation of emergencies should be undertaken in accordance with the following. If in doubt, escalate up, it is always easy to de-escalate if required.

Table 3. ERP activation and escalation

Tamboran Response	ERP activation SERT-Leader must notify immediate line manager who will notify the EMT-L	EMT activation (EMT Leader will brief CMT leader)	CMT Activation CMT activation can occur in the event there is a developing threat or issue or in a standalone event where the SERT or ERT are not activated.
Severity Level	**Site Emergency Response – L1**	**Emergency Management – L2**	**Crisis Management – L3**
People **Environment** **Asset** **Reputation** **Liability (including business continuity)**	A level-1 event is an event that can be managed on site using the response resources available. A level 1 event does not require additional assistance however the SERT-L should consider the potential for the situation to escalate. Example (including but not limited to): • Injury or ill health requiring medical treatment (Tamboran or Contractor • Non-work-related illness (Tamboran or Contractor) that requires medivac • Loss of containment to land (spill) within the confines of the site (eg facility, well site) • Minor fire (non-hazardous area with facility or well pad) • Bushfire (non-threatening) • Potential for production loss • Local community concerns • Predicted localized flooding or storm causing damage to assets • Possible security concern or protest activity	A level-2 event is an event that requires or may require additional or external resources to respond to or recover from an emergency event. Example (including but not limited to): • Serious injury ill health requiring extensive medical treatment and medivac (Tamboran or Contractor) • Loss of containment to land (spill) that is not contained within the site causing extensive environmental damage or contamination • Loss of containment (hydrocarbons) unable to be isolated or contained. • Overdue or lost aircraft • Missing worker • Non-compliance with conditions of license to operate an asset or to conduct an activity. • Litigation and exposure to damages/fines/costs. • A fire in a hazardous area • Production loss • A bushfire threatening site operations with the potential for site evacuation	A level-3 event is an event where high-level strategic direction and decision making is required to respond to or recover from an emergency event. Given the complexity of level 3 events, strategic direction due to impact to business continuity, reputation and liability is required. Example (including but not limited to): • Life-threatening injury/illness, fatality or multiple fatalities (Tamboran or Contractor) • Destruction of an area of significant environmental or cultural significance with remediation not possible • Major litigation/prosecution with damages or fines • Criminal charges against an employee, director or senior executive • Suspension of operational activities or restrictions placed on operations • Loss of production and facility shutdown • Major security incident or cyber attack • JV partner crisis

3.4 Emergency Response Scenario Guides

The Emergency Scenario Guides provide an easy to understand, detailed response to emergency situations. The guides define the key roles and responsibilities to ensure essential response actions are undertaken and should be used in conjunction with this plan.

Category	Response Procedures
Fire or Explosion	▪ Bushfire ▪ Plant fire or explosion
Personal Safety and Security	▪ Medical emergency ▪ Vehicle accident ▪ Snakebite ▪ Man down ▪ Electrical ▪ Security alert (bomb threat)
Environment	▪ Environment – weather related incident – storm and lightning/cyclone/flood ▪ Loss of containment – wastewater or chemical spill
Process safety	▪ Loss of containment o Hydrocarbons (gas, diesel) o Chemicals
Structural	▪ Major structural or mechanical failure

3.4.1 Spill Response

The Beetaloo Spill Management Plan (TB2-HSE-MP-09) provides specific information on how to manage and handle spill response within the SPCF. This document should be referenced for all emergency spill response scenarios.

3.4.2 Hazardous Materials

A chemical response guideline will be developed to provide information for chemicals that are used and stored within the SPCF. The guideline provides information on:

- PPE requirements
- Chemical details and description
- First aid considerations
- Fire and spill management

A hard copy emergency manifest, identifying notifiable quantities of hazardous substances (schedule 11 and 15 substances) must be included in the red HAZCHEM (hazardous chemicals) case at the emergency muster point. Safety data sheets (SDS') for each stored chemical must also be included.

3.4.3 Bushfire

A bushfire management plan has been prepared for the Shenandoah South 2 site and encompasses this facility. A copy of the plan must be kept on site and easily accessible for all personnel.

The below tools shall be utilized by site personnel for additional support and guidance during bushfire season (Northern Territory runs from April – November) can provide technical advice in developing bushfire management processes and emergency planning during the fire season.

- https://www.pfes.nt.gov.au/incidentmap
- NAFI (firenorth.org.au)

3.4.4 Security

In addition to the ER response guide, the Tamboran Beetaloo Basin Security Plan (TBN-OPS-MP-01) should be enacted and supports a response to security scenarios.

3.4.5 Aviation

Daly Waters Airstrip

Daly Waters Airstrip is used for undertaking medical retrievals by Care Flight and The Royal Flying Doctors. Tamboran has supplied a set of emergency landing lights which must be deployed for night landings. These lights are for use by Tamboran and the Daly Waters community and are stored within the Tamboran storage shed at Daly Waters. Contact the Tamboran Field Manager for deployment or access to the lighting. See Appendix I for Daly Waters Emergency Landing Lights Layout.

Helicopter Landing Site Officer (HLSO)

If a helicopter is required for an emergency a designated trained Helicopter Landing Site Officer (HLSO) should be sourced (where available) to support ground activities (Appendix J). It is the responsibility of the HLSO to ensure that they are familiar with the landing location.

A purpose-built helicopter landing pad is located at Kyalla 117 well pad.
Landing site coordinates: 16°50’18.44”S 133°39’04.68”E

3.4.6 Medical Emergency

First Responders must notify the On-Scene Commander (OSC) and in turn the SEMT-L if they call Emergency Services. Once notified, the OSC is responsible for all communications back to the SEMT. In the event of a medical emergency, the medical clinician, and first aiders (if requested to assist) will commence immediate treatment.

Due to the remoteness of the Beetaloo Basin, there may be a delay to external medical resources responding should they be required therefore life-threatening injury/illness should be escalated without delay.

To initiate external medevac support for priority 1 and 2 patients:

- The onsite medical clinician is to contact emergency services by calling the St John on call Duty Medical Officer (DMO) on 08 8999 8666 or using 000
- External medical resources will be arranged by the DMO and deployed. Providers include Care Flight, St Johns Ambulance (from Katherine) and Royal Flying Doctor Service.
- At the first available opportunity, the Aspen Duty Medical Officer will also be contacted by the medical clinician and informed of the incident, the patient’s condition, and current treatment / medivac plan.

Depending on the situation, the Aspen Duty Medical Officer will assist with telehealth advice in consultation with the Care Flight and Top End Health Services Duty Medical Officers.

Priority 1 – Life threatening / time critical

Priority 2 – Urgent (early surgical intervention required)

Priority 3 - Serious but not time critical

For Priority 3 patients alternate medivac options may be available to the medical clinician and these need to be considered on a case-by-case basis in consultation with the Duty Medical Officers and Tamboran Site Representative

Priority 4 (illness/injury that can be treated onsite with capability and resources available) the medical clinician will commence treatment and will contact the Aspen Duty Medical Officer as required to discuss treatment strategies.

3.5 Major Accident Event

A Major Accident Event (MAE) is an uncontrolled incident, including fire, explosion, or release of dangerous substance with the potential to lead to multiple fatalities of persons at or near the facility.

MAE's will be identified during the hazard and operability study with guidance provided to the ER teams on how to manage these.

4 Roles and Responsibilities

The following roles and responsibilities are essential to ensure effective communication when responding to emergency events.

- First Responder (FR), located at the incident scene and may be a Contractor
- Site Emergency Management Team Leader (SEMT-L)
- On Scene Commander (where appointed will be located at the incident scene)

Individuals may undertake multiple roles depending on the nature of the emergency, its duration and complexity. The functional roles that will assist are listed below and known as the Emergency Management Team (EMT).

- Operations
- Planning
- Logistics
- Log Keeper

Additional roles such as technical engineering, travel and accommodation services may support the CMT depending on the type of incident.

If the EMT-L is unable to undertake their responsibilities a competent alternate or delegate must be appointed to ensure the EMT continues to function.

Roles	Responsibilities
First Responder	▪ Activate ESD/isolate equipment as necessary and safe to do so. ▪ Raise the alarm (location, type and extent of incident) by radio or phone to the SERT-L. ▪ Provide first aid as required and if qualified to do so. ▪ Follow instructions from Emergency Controller, Emergency Services personnel, First Aiders, and other designated emergency personnel as appropriate.
First Aiders	▪ Provide first aid treatment or assessment as needed whilst working within their skill level. ▪ Determine need for medical assistance and provide information to medical personnel or emergency services as required. ▪ Ensure that all treatments provided, regardless of the type or complexities are recorded.
Site Medical	▪ Provide emergency healthcare on site (12 hr workday and on call 24/7). ▪ Ensure that medical response emergency equipment (including medications and ambulance) is fit for purpose, in date and in good working order. ▪ Liaise with external medical emergency services (Care Flight, St Johns etc).
Site Emergency Response Team Leader (SERT-L)	▪ Manage first response at site level. During first response, ensure safety of other personnel and ensure that the emergency is communicated effectively to the required people. ▪ Nominate personnel to act in support roles (log keeper, logistics). ▪ Mitigate hazards to ensure personnel safety. ▪ Escalate to Emergency Services, if required. ▪ Ensure that emergency equipment is maintained in good working order
On-Scene Commander	▪ Is deployed as determined by SERT-L and should be utilised when external support for an emergency is required. ▪ Manage site access and restrictions. ▪ Manage communications to the SERT-L. ▪ Co-ordinate emergency actions as requested by SERT-L. ▪ Liaise with emergency services. ▪ Mitigate hazards to ensure personnel safety.
Site ERT members	▪ Follow the direction of the SERT-L, keeping themselves and others safe from danger during an emergency. ▪ Escorting the emergency services upon arrival to where the Site ERT Leader is situated. ▪ Managing additional communications. ▪ Providing information relating to site safety.
Emergency Management Team	▪ Ensure adequate personnel and resources are available to manage and support an emergency. ▪ Nominate personnel to act in support roles (log keeper, logistics etc). ▪ Provide technical support and advice. ▪ Support field team with emergency service direction/calls as requested. ▪ Escalate and communicate with Crisis Management Team if required.

Table 4. Roles and Responsibilities

4.1 Toolkit and Supporting Resources

The below forms and checklists provide a detailed overview of the additional administrative tools to be utilized by the emergency team.

Operations Checklist	TBN-HSE-FRM-02
Planning Checklist	TBN-HSE-FRM-03
Logistics Checklist	TBN-HSE-FRM-04
Administration/Log Keeper Checklist	TBN-HSE-FRM-05
Situation Report Form (SITREP)	TBN-HSE-FRM-06

4.1.1 Emergency Response Equipment

The below emergency response equipment is available within the facility. An equipment map showing the exact location of the equipment will be developed.

Additional emergency response equipment will be onsite during the wet season and determined after a risk assessment.

Equipment	Location
Medical	
Remote Area Nurse/Paramedic and Ambulance and medical clinic	Based within the camp accommodation and supports the SPCF. Used to provide basic primary health care and emergency medical care.
First aid kits	Site vehicles Workshop Control room
Defibrillator	Control room
Environmental	
Spill kits (oil/fuel and general purpose)	Spill kits are strategically located within the facility. The size of kits is dependent on type and volume of substances stored.
Vac truck	Vac truck – onsite during wet season as required
Firefighting – PORTABLE	
Fire extinguishers	Fire extinguishers to be strategically located in: ○ Control room ○ Diesel generators ○ Workshop
Fire trailer	Within facility compound
Firefighting - FIXED	
Fire detection and protection	A fire detection and deluge system may be installed in certain areas of the facility.
Safety and Emergency Shutdown	
Safety and emergency shutdown systems	Emergency shutdown system may be installed to shut down the facility
General Safety	
Gas detectors	Within facility compound between the hazardous and non-hazardous areas
Combination safety shower/eyewash unit	Within facility compound in chemical storage and use areas.
Low voltage rescue kit	Workshop

5 Emergency Management and Control

After an emergency is detected, the following management stages will be used to control and contain the incident and return to business as usual (see Appendix B).

- Raise the alarm
- Isolate and secure
- Evacuate and muster
- Communicate and escalate
- Respond and recover

5.1 Raise the alarm

To raise the alarm, one or more of the following methods can be used:

- in person
- radio (UHF)
- phone (mobile, satellite or landline)
- emergency alarm/siren

5.2 Isolate and secure

Stop all work and make sure the immediate work area is safe. If safe to do so:

- Isolate and de-energise equipment
- Initiate emergency shutdown system (where installed)
- Activate fixed fire protection e.g. deluge or fixed monitors to provide initial containment and/or suppression (if installed)

5.3 Evacuate and muster

If you need to abandon a vehicle:

- pull over and park in a safe area
- ensure access and egress to the site is not impeded
- switch off and leave the keys in the ignition

Plan a safe route to the muster point and avoid movement through unsafe areas:

- account for all people
- standby at the muster point until instructed to evacuate

The primary muster point for the SPCF is located at the main gate. If the primary muster point is compromised, an alternate muster point shall be utilized.

A site-specific evacuation plan workplace illustrating the location of fire protection equipment, emergency exits, and muster points will be developed.

5.4 Communicate and escalate

- Gather information – where is the emergency, what has happened, who is affected, is anyone missing, where are the safe areas
- Advise and update the Tamboran Supervisor
- Appoint on on-scene commander (if required)
- Call Emergency Services (Police, Ambulance, Fire) if required
- Identify meeting points for responders
- EMT and/or CMT to be activated if required

5.5 Respond and recover

- Apply first aid to injured people (if safe to do so)
- Consider Simultaneous Operations (SIMOPS), advise nearby work groups
- Assist Emergency services
- Follow response procedures.
- Secure the scene if Regulator involvement is required. This should include physical barricading (flagging, rope) to ensure equipment is not interfered with.
- Initiate incident investigation
- Conduct after action review of the emergency response effort and assign corrective actions

6 Other Considerations

6.1 Meeting Emergency Services

Where Emergency Services such as Ambulance, Police and Fire are dispatched by road or air, a Tamboran employee will meet the Emergency Service at a designated location and guide them to the incident site.

Designated location: Property entrance off Stuart Highway.
GPS co-ordinates: 16°51’40.20”S 133°25’34.75”E

Additional meeting points can be established and identified and communicated on call out. These will be dependent on the type of emergency, access availability and exclusion zones.
To enable an effective response, a copy of this ERP will be provided to NT Police, Fire & Emergency Services.

Handover to the emergency services is required to be efficient and effective to ensure the continuity of emergency control objectives. The On-Scene Commander is responsible for the handover to emergency response personnel involved in the emergency. This will be achieved by:

- Having the appropriate information on hand to brief the incoming emergency services personnel
- of the current situation.
- Establishing a contact as a continuous liaison point with the emergency services personnel.

6.2 Hazard Awareness

All personnel arriving at the incident site must be made aware of:

- Hazards present because of the incident (fire, heat radiation, chemical exposure etc)
- Hazardous areas and exclusion zones
- Safe locations and muster points
- Additional personal protective equipment (PPE)

6.3 Shift Changeover

Shift changeovers are required for continuity of emergency management. The EMT-L is responsible for changeover of personnel involved in the emergency. Effective changeover will be achieved by:

- Staggering changeover times
- Avoiding changeovers during critical periods
- Having changeovers in daylight, where possible
- Briefing incoming personnel

7 Termination of Emergency

The emergency can be considered over when:

- Emergency services have declared the emergency over and have returned control of the site back to Tamboran
- The emergency team has returned the site to a safe condition
- All personnel are accounted for
- Injured/ill personnel have been stabilized and/or evacuated
- Environmental controls are in place

8 Recovery and Post Emergency Actions

8.1 After Action Review

After Action Review (AAR) is to be held after each emergency. This process is designed to discuss strengths and weaknesses and necessary improvements for this plan and related procedures. All actions arising from the review shall be entered into Tamboran's Risk and Compliance Management System and tracked through to completion and closure.

8.2 Incident Investigation

Incident investigations should be undertaken in accordance with Tamboran's Incident Investigation processes with the following steps being considered:

- Securing the incident site and restricting access until investigators (both internal and external) have completed their work and handed back control of the site.
- Gathering of evidence that may assist the investigation (list of personnel involved, response logs, situation boards, photographs)

8.3 Recovery Actions

Prior to resuming work, develop a recovery plan that considers the following:

- Check plant and equipment for structural, physical, and electrical/instrumentation integrity
- Ensure all active detection and protection systems are restored
- Replenish emergency response equipment as required
- Replace or return third-party emergency equipment

In addition, consider the following points:

- People who were involved may require counselling, depending on the nature of the incident
- People should be debriefed with all relevant information captured for a "lessons learnt"
- Conduct a toolbox talk on specific start up activities before restarting work
- Consider the potential for loss of confidence or potential IR issues following the incident or the response to that incident
- Emergency response plans and training may need to be revised before resuming the work activity

8.4 Clean Up

Post incident clean up should be done using the following guidelines:

- Conduct initial site inspection to identify extent of equipment and/or plant damage
- Assess potential decontamination requirements (removal of chemicals/foam/oil/contaminated soil)
- Store all contaminated material in proper containers pending offsite disposal by licensed hazardous waste contractors
- Assess damage or potential damage to surrounding environment. This may include conducting soil testing of contaminated areas to inform site remediation requirements.

- Repair and/or replace damaged equipment/plant
- Inspect and test affected equipment

9 Training and Capability

All personnel must be given specific training on how to respond to an emergency, fulfill their role in the site ERT and use of emergency equipment available.

Training may be in the form of:

- External or internal competency-based training
- Emergency response drills (both practical and desktop exercises)

9.1 Exercises and Drills

Emergency response exercises using credible scenarios will be conducted monthly as per the schedule below.

Exercises must involve escalation and activation of the Emergency Management Team (EMT) and Crisis Management Team (CMT) as indicated on schedule below.

	JAN	FEB	MAR	APR	MAY	JUN
Primary	HAZMAT	Structural failure	Environment	Personnel safety – medical emergency	Fire	Personnel safety
Secondary	Flood	Personnel safety	HAZMAT	Personnel safety	Personal safety	Personnel safety

	JUL	AUG	SEP	OCT	NOV	DEC
Primary	Personnel safety	Fire	Environment – oil/chemical spill	Personal safety – medical emergency	Flood	Structural failure
Secondary	Security - protest	Personal safety	HAZMAT	Security	Personal safety	Environment - loss containment

Table 5. Emergency response exercise schedule. Note white shading indicates inclusion of EMT and CMT in the exercise

Muster alarm testing and full site evacuation drills will be undertaken at a frequency to be determined.

All lessons learned from the exercises should be incorporated when appropriate to continually improve Tamboran's response to such an event.

10 Stakeholder Management

10.1 Pastoralists

Contact with Pastoralists can be initiated by the SEMT-L in urgent circumstances (i.e. bushfire threat) however, the Landholder Relations Advisor should be used in the first instance. See Appendix E for contact details.

10.2 Next of Kin

In the event of a death, serious injury or other emergency, involving Tamboran personnel, advice to relatives about the condition of a person or about the incident will be coordinated by Human Resources through the Crisis Management Team.

During or after an emergency, the SEMT-L will refer any queries or concerns from relatives to Human Resources. Human Resources may also activate Employee Assistance Program (EAP) providers to support site personnel or relatives affected by an incident.

Contractor companies are responsible for management of next of kin communication in consultation with Police services, and EAP management in accordance with their emergency response plans and HR procedures.

10.3 Dealing with Media Enquires

During an emergency event, media attention may occur at the affected site.

If personnel receive an enquiry from a journalist or reporter, whether in person or by phone and are asked about Tamboran, they should say *"I am not able to comment. If you give me your name and telephone number I will organize for the most appropriate person to call you."*

Always ask for:

- the journalist / reporter's name.
- publication / media outlet.
- contact phone number and/or email.

It is important to remember that there is no such thing as "off the record". Even if you are speaking informally, you may be quoted at any time.

The EMT-L will advise the CMT-L of any media contact or enquiry.

11 Review and Update

The ERP will be reviewed and updated as necessary in response to one or more of the following:

- annually
- when major changes have occurred, which may affect the response coordination or capabilities.
- following routine testing of the plan
- after an actual emergency

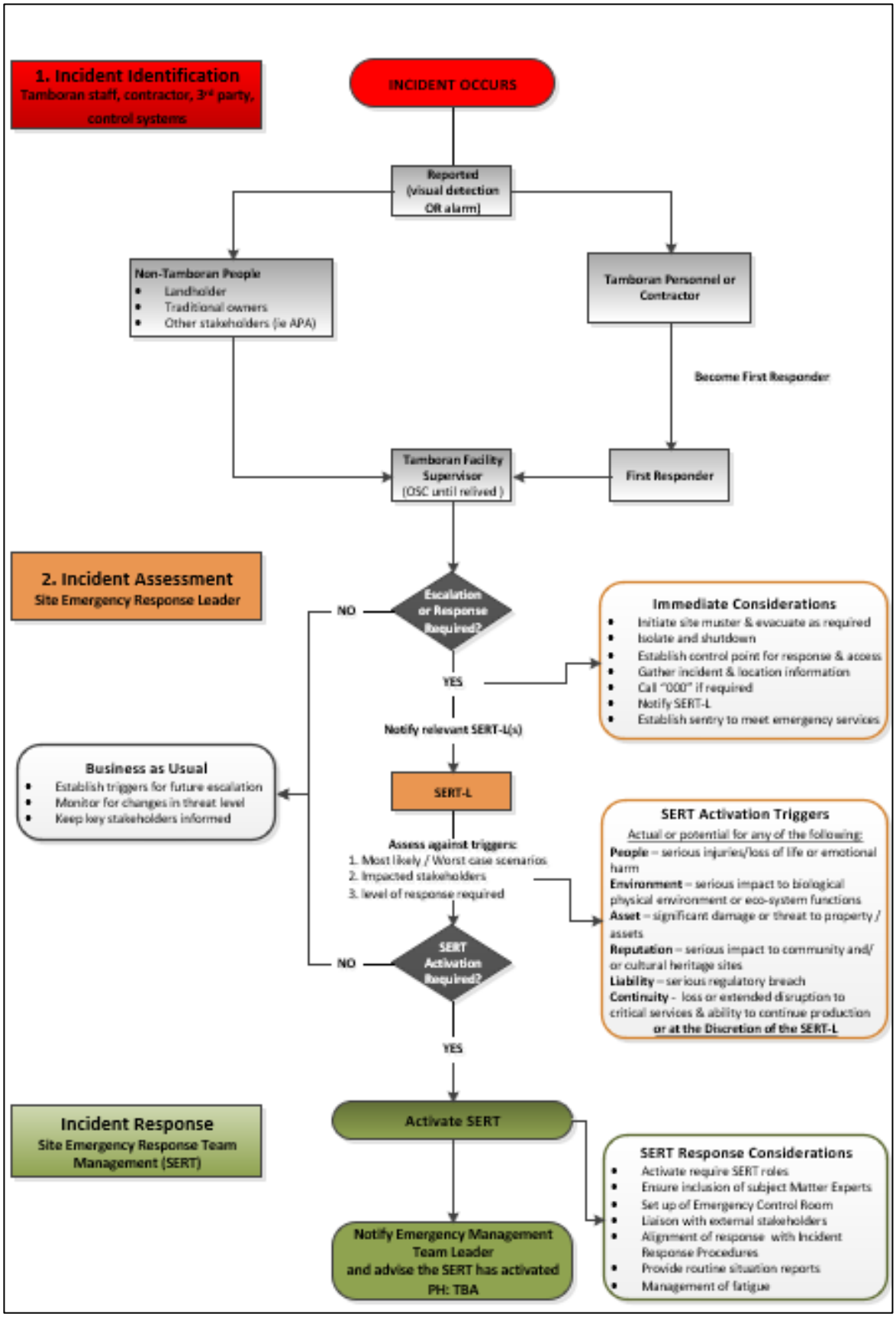
During the review, the following aspects are to be considered:

- lessons learned from an emergency
- changes in legal requirements
- improvements to effectiveness in terms of response strategy, management, and communication
- developments in the latest techniques and technology in handling an emergency.
- changes to, or movement of people within the organization
- changes to contact numbers of internal and external organizations
- revisions to existing or availability of emergency management tools and equipment, resource suppliers or contractors

12 Associated Documents

Document	Document Reference
Beetaloo Basin Spill Management Plan	TB2-HSE-MP-09
Emergency Response Scenario Guide	NA
After Action Review	TBN-HSE-FRM-07
Tamboran Risk Toolkit	NA
Bushfire Management Plan – Shenandoah South 2	NA
Tamboran Resources Crisis Management Plan	TRL-HSE-PL-03

Appendix A. ERP Activation Pathway



Appendix B. Emergency Management

Triggers for Activation			
People	Serious injury/illness or worse to any person/s		☐
Environment	Moderate effects on biological physical environment and serious short-term effect to eco-system functions		☐
Asset	Serious damage to plant, loss of containment, production loss		☐
Reputation	Serious impact to community or other stakeholder		☐
Liability	Serious breach of law or regulation		☐
1 – Isolate and Evacuate			
Muster	Account for all personnel (upwind) whilst assessing the situation		☐
Isolate	Either through Emergency Shutdown System (ESD's) or remotely		☐
	Activate fixed fire protection e.g. deluge or fixed monitors to provide initial containment and/or suppression		☐
Evacuate	If required evacuate to designated evacuation points either upwind or at a safe distance as determined by event type or respective response guideline		☐
Control	Establish control points to coordinate response and restrict access		☐
Meeting Points	Nominate pre-determined emergency services meeting point and establish personnel to meet emergency services upon their arrival		☐
2 – Communicate and Escalate			
Confirm	Confirm details of the emergency (type of emergency, injuries, contained or uncontained etc.) and response required.		☐
Activate	Activate SERT, EMT and CMT, contact Emergency Services and communicate with other Stakeholders		☐
Escalate	Consider likely impacts		☐
Impacts (actual & potential)	Most likely	What is realistically likely to happen and who / what is impacted?	
	Worst case	How bad could it really get and then who / what is impacted?	☐
3 – Respond			
• Continually reassess situation		• Appoint OSC	☐
• Designate communication channels		• Establish exclusion zones	☐
• Activate appropriate resources		• Develop SMEACS briefing	☐
• Apply Incident Response Guidelines		• Provide regular updates	☐
4 – Response Management			
Personnel	Appropriate personnel in the ERT, CMT and from outside resources		☐
Resources	Appropriate resources available to manage the incident		☐
Tools	Appropriate tools available for the ERT, CMT, OSC and other responders		☐

Appendix C. Contact List (Tamboran)

Tamboran Contacts		
Role	**Name**	**Primary contact details**
Field Manager	Robert Wear	[redacted]
Operations Superintendent	TBA	TBA
Production operator	TBA	TBA
Production operator	TBA	TBA
Tamboran Field HSE	Emma Cartwright Deb Rodger	[redacted]
HSE Manager	Gabrielle Bertini	[redacted]
VP Environment and Permit Approvals	Matt Kernke	[redacted]
Logistics Superintendent	Dean Langford	[redacted]
Senior Counsel	Rohan Vardaro	[redacted]
Landholder Relations	David Armstrong	[redacted]
Human Resources	Lisa Vassallo	[redacted]

Appendix D. Contact List (External Agencies)

External Agencies		
Role	**Name**	**Primary**
Emergency Services	Police, Fire, Ambulance	000 (or 112 from mobile)
St Johns Duty Medical Officer	N/A	(08) 8999 8666
Hospital	Katherine Hospital Kintore Clinic Katherine	(08) 8973 9211 (08) 8972 1677
SPCF accommodation camp	TBA	TBA
Bushfires NT	Fire control officer	Katherine (08) 8973 8871 Darwin (08) 8922 0844
Volunteer Bushfire Brigade	N/A	(08) 8975 9936
Emergency helicopter operations	HM Air Services	(08) 8975 0777 OR 0413 002 407
Regional Shire Council	Roper Gulf Shire	(08) 8972 9000 OR (08) 8977 2300 (Mataranka Office)
Regional Shire Council	Barkley Shire	(08) 8962 0000 OR 0448 071 878 (after hours emergency)
Police (non-emergency)	Police Link	131 444 Elliott – (08) 8969 2010 Katherine – (08) 8973 8000
Poisons Information Centre	N/A	13 11 26
Bureau of Meteorology	Cyclone Warnings Forecasts & Warnings	1300 659 211 (08) 8920 3826
NT DITT Petroleum Operations	N/A	+61 1300 935 250
NT DEPWS	N/A	1800 064 567 onshoregas.depws@nt.gov.au
NT EPA Pollution Hotline	N/A	1800 064 567
NT WorkSafe	N/A	1800 019 115 ntworksafe@nt.gov.au
National Land Council	N/A	(08) 8920 5100 (available business hours only)

Appendix E. Contact List (Pastoralists)

Property Name	Contact Name	Phone
Amungee Mungee	Adrian Brown	[redacted]
Beetaloo Station	Scott & Jane Armstrong	[redacted]
Sturt Plains Hayfield/Shenandoah	Brad & Lisa Dyer Justin & Sally Dyer	[redacted]

Appendix F. Loss of containment - wastewater

In the event of a loss of containment from the wastewater storage, the following guide will be used to ensure the appropriate steps are implemented to minimise environmental harm.

All actions are to be undertaken as a part of the steps outlined in section 5 of this plan and the Spill Management Plan.

1. Loss of containment detected	
Type of infrastructure involved: ▪ Enclosed tank ▪ Pipework	How has the loss of containment been detected? ▪ Routine inspection ▪ Remote telemetry/alarm

2. Response actions to be implemented
1. Commence rapid spill assessment in accordance with SMP and actions below. 2. Progress with site assessment and clean up in accordance with the SMP and actions below. 3. Confirm perimeter bund is intact and that wastewater hasn't left the site. 4. Inspect the storage infrastructure and identify exact location and cause of leak. 5. Determine whether further loss can be prevented. Consider: ▪ Closing or replacing valves ▪ Transfer of fluid to alternate storage (if available) ▪ Emergency earthworks using equipment available on site 6. Determine extent of contamination ▪ Estimate volume of the release ▪ Undertake field test of water quality (pH and EC) 7. Recovery response actions. For ponding and spilled wastewater, actions need to be planned with weather conditions and site access in mind, especially during periods of high rainfall (wet season) and constraints such as road closures. Equipment needed to recover fluid: ▪ Vacuum truck ▪ Trash pumps and hoses ▪ Front end loader ▪ Mobilisation of earthmoving equipment may need to be considered.

Appendix G. Sturt Plateau Compression Facility Layout

Appendix H. Sturt Plateau Compression Facility Location

Appendix I. Daly Waters Runway Lighting Plan

Daly Waters Aerodrome
Emergency Landing Lights Layout Procedure

origin

Purpose

This procedure describes how to layout the Eflare night landing lights for the safe arrival and departure of emergency aeroplanes such as Careflight and RFDS in under 60 minutes from the time of activation.

Scope

The Daly Waters community and any other stakeholders who may be able to assist in the lay out emergency landing lights in the event of an emergency.

Minimum Resources

Vehicles - to have UHF, amber flashing light / hazard lights and headlights on.

Personnel - to have torch, hi vis and reflective personal protective equipment.

Communications - UHF channel 16 is being monitored by all personnel in the aerodrome.

Key contacts

NT Careflight Operations
1300 650 654 or 0417 826 336

RFDS Alice Springs

For 24-hour medical and emergency assistance call:

NT (Central Australia) - 1800 733 768

HF Radio (4010kHz, 6890kHz or 8165kHz)

Satellite Telephone: 08 8648 9555 or +61 1800 733 772

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Activation from Emergency Services → **CONFIRM** who is in charge (for Origin this is the On Scene Commander) → **CONFIRM** the arrival time of the a/c and CTAF freq (126.7) → **ACTIVATE** oher personnel to assist (refer to Daly Waters Aerodrome Plan for contact numbers) → **COLLECT** Eflare kit from the Origin Office at the Daly Waters Pub → **MEET** at Daley Waters Aerodrome apron gate

Set up and planning

1. Split into 2-3 teams each with 2 persons and 1 vehicle.
   Teams: Runway 14, Runway 32 and Taxiway / Apron
2. Prepare vehicle - conduct radio checks, check lights and clear our rear seat including footwells.
3. Secure the respective eflare kit in back right seat of the vehicle with the seatbelt.
   Each kit to include the following lights and rubber bases:

Runway 14	Runway 32	Taxiway / Apron
• 24 x White lights	• 23 x White lights	• 2 x Orange hold point lights
• 4 x Red threshold lights	• 4 x Green/Red threshold lights	• 22 x Blue lights
• 8 x Green displaced threshold lights		

4. The On Scene Commander to monitor the time of arrival and monitor the CTAF frequency and provide updates and warning to personnel via UHF radio deploying eflares as necessary.
5. CAUTION: Where the aerodrome is delayed in setting up the eflares and leaving the aerodrome in an unsafe state for a landing, the pilot is to be notified on the CTAF 126.7 frequency advising on when the aerodrome will be available.
6. In the event an approaching aircraft is spotted either notify the aircraft directly or if unsuccessful notify personnel deploying the eflares on the UHF "Vacate runway immediately, aircraft on final, vacate runway immediately".
7. Where time permits a final runway inspection is conducted to identify any foreign objects or debris as part of the Eflare deployment. The vehicle should head on a 32 approach so approaching aircraft can be seen.

Placing and retrieving eflares

WARNING: When both deploying and retrieving eflares, the passenger needs to get out of the vehicle to place each light. Don't reach down from the vehicle as this risk over extension resulting in a back injury.

The driver must:

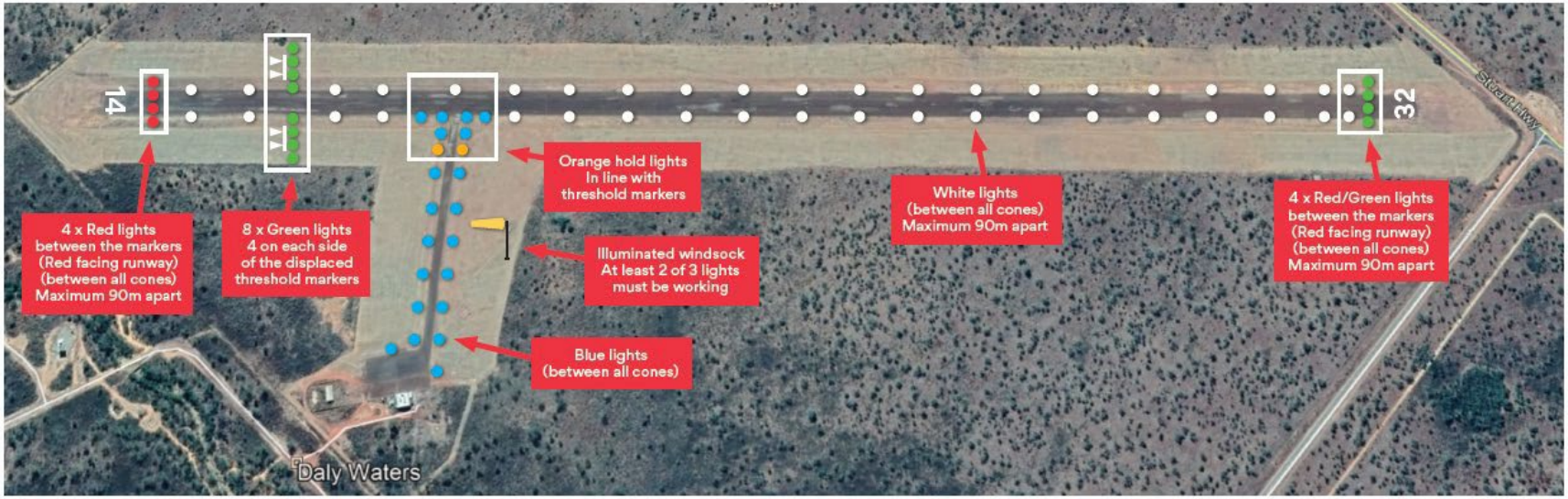
- Drive no faster than 25km/hr
- Drive on the right-hand side of the runway cones
- Stop in line with the rear left passenger door
- Wait for passenger to indicate they are ready before proceeding to the next light location

The person deploying the eflares must:

- Only remove the seatbelt on the runway when travelling less than 25km/hr
- Only set up 1 light at a time
- Avoid turning on the light in the vehicle
- Indicate to the driver when ready to go to next light location

Wait 10 minutes after aircraft has taken off before retrieving runway eflares.

Daly Waters Aerodrome Lighting Plan



Layout Procedures

Layout Runway 14

1. Start at the 14 end of runway (**turn left** from the taxiway).
2. 4 x Red lights - place evenly between the end cones. Locations are indicated with spray paint.
3. 4 x Green lights (each side) – placed each side on the white displaced threshold markers.
4. 8 x White runway lights – start on the East side or the **left side** if looking down the runway.
   Place a light between each cone so no more than 90m apart. Locations are indicated with spray paint markings.

Layout Runway 32

1. Start at the 32 end of runway (**turn right** from the taxiway).
2. 4 x Green/Red lights - place the Green side facing the away from the runway, evenly between the end cones. Locations are indicated with spray paint.
3. 23 x White runway lights – start on the East side or the **left side** if looking down the runway
   Place a light between each cone so no more than 90m apart. Locations are indicated with spray paint markings.

Layout apron / taxiway

1. Start on the runway and work back towards the apron.
2. 6 x Blue lights – 3 lights placed each side of the taxiway between the cones. Locations are indicated with spray paint.
3. 2 x Orange lights – place each side on the taxiway. Locations are indicated with spray paint.
4. 14 x Blue lights – placed between the cones along the taxiway. Remaining lights spaced approximately 60m apart.
5. 1 x Red light – placed near unserviceable marker in centre of apron.

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Appendix J. Care Flight Helicopter Briefing Card

Important information required by the helicopter

Location
- As a latitude and longitude from a GPS receiver.
- State direction and distance from an obvious landmark, town or major road.
- Military Grid Reference System (MGRS) may also be helpful.

Contact details of people at the scene, i.e. mobile phone, satellite phone and UHF (CB) radio.

Note: Helicopter will monitor UHF (CB) channel 16 simplex or marine 16.

Number of injured and nature of injuries.

Current weather conditions at your location.

WARNING: Significant dust and rotor wash hazard. DO NOT PLAN to land the helicopter close to accident debris or any patients. Dry season dust can be generated up to 200m.

Landing zone selection and preparation

- **Size:** prefer 40m x 40m, although smaller may be usable.
- **Slope:** area needs to be as flat as possible.
- **Surface:** prefer no dust. If dusty wet down surface if possible.
- **Surrounds:** prefer clear of wires, trees and poles.
- **Wind:** note direction the wind is coming from, as helicopter will land facing into wind.
- **Lighting:** illuminate landing zone as per diagram over page.
- **Security:** clear all non-essential personnel.
- **Loose articles:** remove all loose debris.
- **Traffic:** be ready to close through traffic if applicable.
- **Personnel:** brief on rotor wash hazards and need to protect eyes.
- **NEVER approach the helicopter:** the crew will come to you.

When helicopter is heard or seen

- **Contact the helicopter via radio:** if possible.
- **Describe landing zone:** HAZARDS, WIRES AND WIND.
- **Traffic:** close all through traffic.

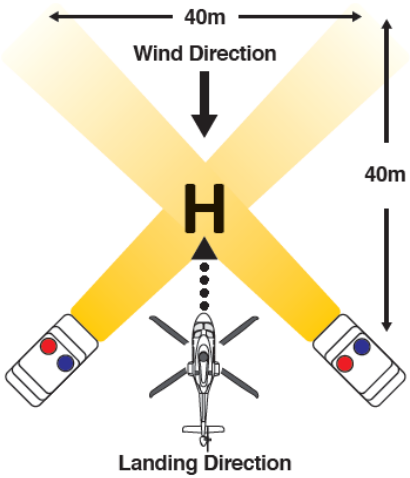
As helicopter approaches

- Confirm landing area is clear of personnel.
- **Protect** patient and all personnel from rotor wash/dust.
- **If night:** turn off beacons if safe to do so.
- Turn lights to low beam or **parkers if facing helicopter.**
- **Never** shine light towards the helicopter.
- If helicopter is landing close to you, go down on one knee and protect eyes.

After helicopter lands

- **Never** drive or permit any vehicles under the rotor blades.
- **Never approach the helicopter:** the crew will come to you.

CareFlight operate night vision goggles



Once helicopter has identified your location:
- **Use low beam only**
- Turn off beacons at landing zone if traffic hazard permits
- Avoid shining ANY light towards the helicopter

Appendix K. Emergency Response Planning