1.1 Provide a detailed description of the proposed action, including all proposed activities [5000 character limit]

DDG propose to construct and operate the Tanami Gas Pipeline (TGP), connecting the existing Amadeus Gas Pipeline to the Granites and Dead Bullock Soak mines, operated by Newmont Mining. Operation of the Tanami Gas Pipeline will facilitate transition of the power to the two mines from diesel to natural gas.

The pipeline alignment ties-in to the Amadeus Gas Pipeline adjacent to the Tanami Road Scraper Station and follows a north westerly route to the two mines, for the most part following the north-eastern side of the Tanami Road (the alignment will be outside of the road reserve which is nominally 50 m from the road centreline). The pipeline will be buried and require above ground infrastructure including: metering station, mainline valves, and tie-in stations.

Construction of the pipeline will require clearing of a 30 m Right of Way (RoW) and access tracks to the RoW from the Tanami Road. For assessment and approval purposes the RoW will be established within a 300 m wide pipeline corridor, to accommodate deviations in the alignment required to address site constraints (this may necessitate placing the pipeline on the south-western side of the Tanami Road for short distances).

Project components

The project components include clearing of a 30 m pipeline RoW within which the pipeline will be buried, construction of temporary access tracks to the RoW, establishment of temporary construction camps for the workforce, additional clearing for ancillary activities such as turn-around points, and above ground facilities for the operation of the pipeline (metering station, mainline valves and tie-in stations).

Five above ground facilities are proposed:

- Tanami metering station (at tie in with the Amadeus Gas Pipeline)
- Two mainline valves located along the pipeline
- Granites Mine Tie-in Station
- Dead Bullock Soak Mine Tie-in Station.

The project components and the associated temporary and permanent footprints are set out in Table . Construction of the Tanami Gas Pipeline will require clearing of up to 1348.5 ha of native vegetation along its 439 km length, of which 1125 ha (83%) will be rehabilitated (Table 1). Much of the disturbance footprint will be allowed to return to woody native vegetation over time. The total permanent disturbance footprint will be up to 223.5 ha, which is required for a 5 m wide permanent access track along the length of the alignment to enable ongoing access for maintenance of the pipeline, for the permanent above ground facilities, and for permanent access tracks from the Tanami Road to the pipeline.

Table 1: Disturbance footprint for Tanami Gas Pipeline

Project component	Area disturbed (ha)	Area rehabilitated (ha)	Permanent disturbance (ha)
Construction Corridor (439 km x 30m)	1317	1097	220

Project component	Area disturbed (ha)	Area rehabilitated (ha)	Permanent disturbance (ha)
Construction access tracks (Tanami Road to construction corridor)	1	0.5	0.5
Camp (2ha x 5)	10	10	0
Laydown (1.5ha x 5)	7.5	7.5	0
Pipeyard (1ha x 5)	5	5	0
Turkeys Nests	3	3	0
Permanent facilities	5	2	3
TOTAL	**1348.5**	**1125**	**223.5**

Schedule

Construction of the pipeline is scheduled to begin in February 2018 and to be completed by December 2018. Construction will be progressive and commence at the tie-in with the Amadeus Gas Pipeline and finish at the Dead Bullock Soak Mine.

Pipeline construction

The pipeline will be constructed and operated in accordance with the requirements of AS 2885 Pipelines - Gas and Liquid Petroleum, and the Australian Pipelines and Gas Association: Code of Environmental Practice Onshore Pipelines (2013).

Construction will typically be carried out within a 30 m wide RoW using a production line approach. A number of turnaround points and potentially some water course crossings will require a wider disturbance width. 'Turkey nest dams' will be constructed to temporarily store hydro-test and construction water.

Construction of the pipeline will be undertaken by a number of specialised teams that will fabricate and install the pipeline along the RoW. The construction RoW will be progressively rehabilitated as construction activity moves along the alignment. A 5 m wide permanent access track within the RoW will be maintained for the period of pipeline operation. A description of the pipeline construction activities is provided in Table 2.

Table2: Construction activities for Tanami Gas Pipeline

Activity	Description
Access	Access during construction will be via the Tanami Road and a number of small (50-120 m in length) temporary access tracks to link to the construction RoW. The location of these access tracks is yet to be determined, but will allow for flexibility to avoid significant environmental values. Clearing of up to 1ha is estimated to be

Activity	Description
	required for construction of these additional access tracks (Table 6). Some of these access tracks will not be required post construction and they will be rehabilitated. Post construction, an access track (approximately 5 m wide) will be maintained from within the construction RoW for ongoing operational access.
Clear and grade	Graders and bulldozers will be used to remove vegetation and topsoil within a 30 m wide area to provide for construction activities. This RoW may be widened at watercourse crossings. Vegetation will be pushed aside and residue vegetative material stockpiled in windrows for final respreading out over the reinstated ground following trench backfill. Within the disturbance footprint, topsoil will be graded to a depth of 100 to 150 mm and stockpiled separately for return to the source area during rehabilitation and will be stockpiled separately to overburden.
Trenching and pipeline installation	As the RoW is progressively cleared, a trench will be dug for installation of the pipeline in accordance with pre-defined depths of burial (the trench will typically be 1.2 m deep but this is subject to detailed design). Desktop assessment of possible ground conditions indicates that trenching or rip and hoe techniques will be suitable for most of the length of the pipeline alignment. The need for rocksaw and/or dill and blast techniques is expected to be minor. Trench spoil will be stockpiled in the construction RoW, usually on the non-working side, and will be stockpiled separately to topsoil. The length of open trench at any one time will be monitored daily for fauna entrapment. Fauna refuges (hessian bags or similar) will be placed in the trench to provide protection for fauna that temporarily occupy the trench. The trenches will be ramped at regular intervals to allow larger fauna to escape.
Stringing	Steel pipe will be trucked to the construction site and sections laid end-to-end next to the trench as the excavation progresses from south-east to north-west. The sections will be placed on sandbags and raised on blocks of wood (timber skids) to protect the pipe from corrosion and coating damage.
Bending	Where required, pipe sections will be bent to match changes in either elevation or direction of the route.
Welding	After stringing and, if required, bending, pipe sections will be welded together.
Non-destructive weld testing	The pipe welds will be inspected using x-ray or ultrasonic equipment as per AS2885.2.
Joint coating	The area around the weld will be grit blasted and then coated with a protective coating to prevent corrosion.
Padding	Where required, padding machines will be used to sift the excavated subsoil to remove coarse materials to prevent damage to the pipe coating. The remaining

Activity	Description
	fine material will be used to pad beneath and on top of the buried pipe. In some instances (e.g. rocky soils), imported sand or foam pillows will be used for padding.
Lowering in	Side booms or excavators will be used to lower the welded pipe into the trench. Trench spoil will be returned to the trench and material compacted to minimise the likelihood of subsidence of material over the pipe.
Backfilling	The period of time that any part of the trench is left open will be minimised. Trenches will be stopped and started at regular intervals with “plugs” between these sections to allow for unimpeded movement of fauna that may fall into the trench. Where possible, trenching will be delayed until completion of welding and joint coating as part of ensuring that the trench is open for the minimum amount of time necessary.
Road crossings	All roads intersecting the pipeline alignment are unsealed and open cut methods will be used to install the pipeline. Should crossing a sealed section of the Tanami Road be required to accommodate site constraints, bored installation would be employed.
Watercourse crossings	The preference will be to install the pipeline at dry or no-flow using open cut (trenching) methods during the construction period. Erosion and sediment control measures will be implemented to ensure there are no significant impacts at these crossings. Consideration will be given to the use of horizontal direct drilling at water course crossings that have high environmental or cultural values.
Pressure testing	Pipeline integrity will be verified using hydrostatic testing in accordance with Australian Standard (AS) 2885.5 or the American Society of Mechanical Engineers (ASME) Code for Pressure Piping (B31.3) as required. During hydrostatic testing, the pipeline will be capped with test manifolds, filled with water and pressurised to at least 125% of design maximum operating pressure for a minimum of two hours. A minimum 24-hour duration leak test will then be conducted. Post each section of the pipeline being tested, they hydrotest water will generally be pumped forward in the pipeline for re-use in the next section. The sourcing of hydrotest water is yet to be determined but may include one or a mixture of options including: groundwater extraction from local existing bores, groundwater extraction from temporary bores constructed for the project, or cartage from more distant sources. Extraction of groundwater will be in accordance with water extraction licensing under the *Water Act*. In general, it is expected that no chemicals will be added to the hydrotest water as the pipeline is internally coated. However, in some locations chemicals may need to be added if there is danger of corrosive water affecting the integrity of the internal coating. In these cases and where necessary, the water will be treated to neutralise alkaline elements to an appropriate standard before discharge. Disposal of the hydrotest water will be undertaken to an approved plan and in accordance with discharge licensing requirements under the *Water Act*. It is generally anticipated (and subject to licensing requirements and landholder

Activity	Description
	approval) that hydrotest water will be discharged to the surrounding environment. Discharge would be once-off during commissioning of the pipeline.
Signage	Information signs on the presence of the buried pipeline will be erected in line of sight along the pipeline RoW as per AS 2885.1.
Restoration and rehabilitation	The construction RoW will be re-contoured to match the surrounding landforms, and erosion controls constructed where necessary. Separately stockpiled topsoil will then be respread evenly across the RoW and any stockpiled vegetation placed across the RoW to assist in soil retention, provision of seed stock and fauna shelter. Active reseeding or revegetation of the RoW using appropriate species will be undertaken to restore vegetation cover if and where areas do not respond to the initial rehabilitation treatment, as evaluated by monitoring.

Other construction requirements

Construction camps

A workforce of between 250 and 350 people will be required during the construction period. The construction workforce is proposed to be accommodated in a temporary workcamp, generally established no greater than 50 km from the work front. The workcamps will have a capacity of 120 people each and will move to a new location at approximately 100 km intervals, as construction proceeds. Construction will initially require two camps and at the peak require up to four operational camps with varying occupancy and water usage.

Water

Water will be required for potable use (i.e. accommodation camps), dust suppression and hydrotesting. The peak requirements are as follows:

- Potable camp water: 0.54 kL /per day
- Construction/Process Water: 4.54 kL/per day (roads and hydrotesting).

The source of the water supply is yet to be determined and will be evaluated during further design. A combination of the following options is likely:

- Established bores near the pipeline alignment
- Drilling of new bores where practical
- Constructed turkey nest dams to contain bore supplies
- Cartage from more distant water sources
- Potable water to be carted in from Alice Springs.

Water extraction of groundwater for the project will be undertaken in accordance with water extraction licences issued under the *Water Act*.

Power

Solar power will be utilised at the metering station. There are no power requirements at the mainline valve stations. Power to the mine tie-in stations will be provided from the respective mines.

Waste

Construction activities will generate most of the waste arising from the proposal. Subject to consultation with the relevant local government, existing approved municipal landfill services will be used to dispose of non-hazardous waste, particularly waste deriving from construction camps.

Sewage from construction camps will be treated on-site and disposed of in accordance with the Code of Practice for On-site Wastewater Management (DoH 2014), and approval from the Department of Health.

Hazardous wastes generated during construction will include hydrocarbon waste, paints, coating residues, batteries, chemical drums and miscellaneous wastes (aerosols etc) and these will be removed from site and transported to an approved facility for treatment and disposal. The quantities of these wastes are expected to be small.

Pipeline operation

The pipeline will transport gas from the tie-in with the Amadeus Gas Pipeline to power stations at the Granites and Dead Bullock Soak mines. All permanent above ground facilities will be unmanned

The pipeline and permanent above ground facilities will be operated and maintained in accordance with the Australian Standard and industry guidelines. Maintenance crews will undertake external inspection of the pipeline at regular intervals. The asset management and maintenance requirements are prescribed in the Australian Standard 2885. A 5 m wide access track will be maintained alongside the pipeline length within the ROW. Maintenance crews will also maintain line of sight to pipeline warning signage along the pipeline by regularly removing tall woody vegetation nominally 2 m either side of the pipeline (4 m width in total).

Greenhouse gas and other atmospheric emissions (Co(x), NO(x), SO(x) and hydrocarbons) will arise from planned venting activities, fugitive losses, and maintenance requirements.

No waste generation and water-use will occur during the operational phase.

Pipeline decommissioning

The Tanami Gas Pipeline will be designed with an operational life of 20 years and will be designed fit for purpose. With continued protection the pipeline may have a much longer operational life dependent on continued mining activity.

Areas disturbed as part of the permanent footprint will be rehabilitated and the pipeline decommissioned consistent with the requirements of legislation, Australian Standards and industry practices at the time, and the views of landholders and regulatory authorities. At the appropriate time, a detailed decommissioning and rehabilitation plan will be prepared to guide these activities.