

Diesel

Fuel storage tanks will be required at the site for the supply of diesel fuel for dual-fuel power generation turbines, vehicles and equipment during operations. These will be located on hardstands on site in the administration and processing plant areas. During construction, a temporary fuel system with pumps, storage tanks and pipework will be required to service light vehicles, construction equipment and temporary diesel power generator sets.

Heating medium

Many of the process units in the LNG trains require heat. This heat will be provided by a hot-oil based system, which will aim to maximise the use of waste heat from the exhaust of the main compressor's gas turbine driver on each gas processing train. Once the heating medium has been heated, it will be circulated through the system in a closed loop.

Compressed air

Compressed air is required for three main purposes: plant air for general use, instrument air for control systems, and feed for the nitrogen plant air separation unit. In the event that instrument air supply pressure begins to drop, the plant air system will be shed to ensure the availability of instrument air.

Plant lighting

Lighting will be required throughout the process and non-process areas to provide light for operability and plant safety. This is part of INPEX's duty of care obligation to its employees and contractors. A lighting system will be adopted for the gas processing plant site with a range of lighting options dependent on the area in question and the type of operation.

Power generation and distribution

A total of nine open-cycle power generation turbines (c.40 MW each) will be required to service the operation of both LNG trains. However, INPEX is also investigating a combined cycle gas turbine configuration which will reduce the required number of gas turbines and improve the efficiency of the onshore plant.

Power generation from diesel generators will also be employed for emergency power and during the initial commissioning of the facilities. These diesel generators are additional to, and independent of, the main power generation system and will be provided to supply power for those services required to ensure the safety of the installation and personnel in the event of a major incident. During the construction phase, temporary diesel power generators will be used, and power may also be imported from the

Northern Territory Government's power distribution system (operated by the Power and Water Corporation (PWC)) at a point on Wickham Point Road. Distribution infrastructure, facilities and transformers may also be required.

To reduce diesel use further and to aid commissioning activities it is planned to import gas from the PWC gas transmission line. Once permanent feed gas is established from the gas export pipeline this connection to the PWC supply will be isolated (as it may be required again in the future during unforeseen events and/or emergencies).

Control of nitrogen oxides

The compressor and power generation gas turbines will be designed to achieve a low nitrogen oxides (low-NO_x) outcome. Options specific to the design of the facility are being investigated. The final selection will be determined in the detailed design phase. Further discussion on NO_x emissions is provided in chapters 5 and 8.

Water demand and supply

Potential water demand and sources have been investigated to determine how water will be provided for the Project. These investigations have considered the requirements for the various stages of the Project's life, from the site preparation and construction phases up to and including the operations phase.

The levels of water demand can be separated by Project phase:

- Construction: During the construction phase, potable water demand will gradually increase from the start of site preparation (as personnel numbers and construction activities increase) to approximately 1200 m³/d. This includes service water and water required for concrete batching and dust suppression. It should be noted that water use is likely to be mainly during the daytime period and construction water usage will vary depending on the season (e.g. there will be reduced water demand for dust suppression in the wet season).
- Precommissioning: The peak water demand for the Project will be during the tank hydrotesting phase. During this period of approximately 16 months, large volumes of water will be required for the hydrotesting of storage tanks. It is anticipated that water demand could peak at approximately 7800 m³/d, which would be required 24 hours a day intermittently for a few weeks. Where technically feasible, water demand will be minimised through reuse of tank hydrotest water.

- Operations: During the operations phase, water demand will be required at a consistent level over the plant's projected lifetime of approximately 40 years. Potable water required for the operation of the gas processing facility and the site administration area would amount to approximately 2000 m³/d. This would supply service water and water for the gas production process.

In addition, major shutdowns are expected to occur periodically (once every 6–8 years), with each shutdown expected to last between 5 and 35 days. When one LNG train is shut down, the process water demand will reduce; however the manning level is expected to increase to 500–600 people on site during this time and the net water demand may therefore not differ significantly from that of normal operations.

The supply of water is likely to come from the existing water main located in the road reserve of Wickham Point Road, which connects into the Darwin water supply scheme through the McMinns Water Treatment Storage Facility. Recent advice from the PWC has indicated that there will be sufficient capacity to accommodate the water demands of the Project.

Infrastructure that may be required to provide PWC water to the onshore development area includes a potential booster station near Elizabeth River Bridge and upgrading pumping capacity at the McMinns storage facility. Alternatives to using PWC water and incorporating water efficiency measures into the design of the onshore gas processing facility are being investigated.

Sewage and greywater treatment

Sewage and greywater treatment will be required from the commencement of activities at Blaydin Point. As with water demand, sewage treatment capacity will be increased progressively as the Project workforce expands. The sewage management requirements for the different stages of the Project are likely to be met by packaged sewage treatment plants, self-contained septic tank systems and ablution blocks. During construction, sewage will either be stored at site followed by disposal to existing sewage treatment facilities in the Darwin area or it will be treated and discharged to the marine environment through a temporary outfall. Ground infiltration of treated wastewater is also an option being considered; this, however, will be subject to assessment for its environmental acceptability.

A permanent sewage treatment facility will be installed to provide for operational and maintenance requirements. Separate sewage treatment and

discharge facilities will be required at the process and administration areas during operations. Treated sewage from these facilities will either be used for irrigation or infiltration within a designated area or be directed to the jetty outfall.

INPEX or its subcontractors will be responsible for the operation and maintenance of the sewage and greywater treatment facilities.

Firewater system

A firewater system will be designed with deluge and fire monitoring systems for use in emergencies. The fire pumps will meet all statutory requirements for safety systems. During normal operations, the maintained pressure in the firewater ring main will be supplied from a freshwater tank, which can be used for testing purposes. The fire system will normally be maintained in a freshwater environment. Provision for a backup seawater supply to the firewater system is also included in the design.

Chemicals

A range of chemicals will be required for the operation of the gas processing facilities. To ensure that chemicals are contained securely to protect underlying groundwater from accidental spills and leaks, adequate storage for all hazardous and non-hazardous liquids and chemicals will be provided at the appropriate facilities. Permanent storage areas will have the following features:

- bunded areas with drainage and adequately sized sumps
- laydown areas provided with adequate protection and lashing points
- custom-built skids with provision for spare portable tanks
- custom-built skids for transfer from portable tanks into a facility storage tank.

Temporary bunding will also be required for liquid and chemical storage in the construction phase.

Bunding and storage facilities for hazardous liquids and chemicals, including fuels, will be constructed in accordance with the relevant Australian standards and any Northern Territory requirements for dangerous goods storage.

The provision of adequate storage areas for liquids and chemicals will be critical to the effective implementation of the spill prevention and waste management plans as described in Chapter 8 Terrestrial impacts and management and Chapter 11 Environmental management program.