Onshore Oil and Gas Guiding Principles
# Table of contents

## Contents

Table of contents ................................................................. 2  
Overview ................................................................................ 3  
How these principles will apply ............................................. 4  
Proposed timeline ................................................................. 4  
Well design, construction and operation ................................ 5  
Water management ............................................................... 6  
Land access .......................................................................... 8  
Air and noise emissions ....................................................... 10  
Community and social impacts ............................................. 12  
General operations .............................................................. 14  
Hydraulic fracturing ............................................................. 16  
Chemical and waste handling and management ............... 18  
Rehabilitation and decommissioning ................................. 20  
Local content ....................................................................... 22
Overview

The NT Government is committed to ensuring the safety of the public and the preservation of the Northern Territory’s environment. Both public safety and the environment are to be significant themes as the Northern Territory develops its onshore oil and gas industry, and need to be key considerations at every stage of the exploration, production and rehabilitation lifecycle.

These Guiding Principles are an interim measure and set out the minimum expectations of how industry will conduct itself while a comprehensive review of the Northern Territory’s existing regulatory framework is undertaken. The review will examine the Petroleum Act and relevant statutes to identify options on how best to establish a contemporary leading practice regulatory framework to govern the exploration, production and rehabilitation activities of the Northern Territory’s onshore oil and gas industry.

These Guiding Principles support the NT Government’s objective of maintaining a balanced environment under Framing the Future.

The NT Government expects industry will adhere to these principles and the operational guidelines to address a range of key risks and areas of impact including:

- Well design, construction and operation
- Water management
- Land access
- Air and noise emissions
- Community and social impacts
- General operations
- Hydraulic fracturing
- Chemical and waste handling and management
- Rehabilitation and decommissioning
- Local content

The overarching guiding principles for the oil and gas exploration, production and rehabilitation lifecycle are:

1. Continue to develop and implement best practices to ensure the safety of employees and the community.
2. Continue to minimise the effect of the industry on the environment and focus on continuous improvement in environmental risk management.
3. Establish and maintain good relationships with land holders and the broader community; working and negotiating in good faith.
4. Continue to provide transparency in negotiations and operations including water use, chemical use and fugitive emissions.
5. Work to support and realise benefits for the local community including through engaging local suppliers and expertise.
How these principles will apply

These draft principles are being developed in consultation with industry, landholders and the broader community. It is expected that the onshore oil and gas industry will adhere to these overarching guiding principles following their implementation.

These principles will be utilised by the Department of Mines and Energy (DME) with the granting of future petroleum exploration and production licences being assessed and evaluated on the alignment of their application with these guiding principles. These principles, including the requirement for transparency in reporting, are enforceable via the DME’s approval processes outlined in relevant legislation and regulation.

These guiding principles are intended to remain in place whilst a review of the regulatory and legislative environment for the onshore oil and gas industry is undertaken.

It is important to note that many aspects of the principles are already captured in legislation and regulation. The consultation process in finalising these principles will enable concerns of the community and land holders to be addressed immediately whilst the regulatory review process is undertaken.

Proposed timeline

1st Quarter 2015
- Draft Onshore Oil and Gas Guiding Principles - consult with industry and community.
- Commence review of Northern Territory legislation.

2nd - 3rd Quarter 2015
- Release Onshore Oil and Gas Guiding Principles.
- Finalisation and implementation of draft Petroleum (Environment) Regulations.
- Commence review of approvals, compliance and monitoring processes.
- Commence legislative and regulatory amendments - consult with industry and community.

4th Quarter 2015
- Introduction of new or amendment legislation.
- Finalise and agree to approvals, compliance and monitoring processes across agencies.

1st Quarter 2016
- Passage of amendment legislation.
- Amendments to Northern Territory legislative and regulatory framework.

2nd Quarter 2016
- Commencement of enhanced Northern Territory legislative and regulatory framework.
## Background

The integrity of wells is paramount to the sustainable development of the Northern Territory’s onshore oil and gas industry. Well integrity, in addition to rigorous well control procedures, ensures that the products from the target formation are contained within the well until recovered at the surface. Well integrity failures can lead to aquifer contamination, fugitive emissions and increases in gas levels in natural water bores. As such, careful consideration to the design, construction and operation of wells for long-term integrity is essential.

## Operating principles

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Well design, construction and operation must always be conducted by appropriately qualified personnel. Extensive experience is required to understand the technical complexity for well design and any staff or contractors must meet skill and experience requirements as well as satisfy the operator that they have the project-specific knowledge to deliver the well program without incident.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Wells must be designed, constructed and operated in accordance with leading industry and engineering best practices and relevant informational standards. Common requirements include cementing to surface and having at least two physical barriers, having undertaken integrity validation, preventing potential flow of hydrocarbons to the surface.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Site specific hazard assessments must be undertaken to determine what control measures are required for each well. Considerations as part of this assessment must include local geology and hydrogeology, potable groundwater resources and the general environment.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Contingency measures must be developed in the event of a well integrity failure.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Well integrity must be demonstrated (including cement coverage, consistency and quality for the entire length of the well and pressure tests) prior to any hydraulic fracturing being undertaken. Records must be kept to demonstrate well integrity to the DME.</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>Drilling fluids and flowback must be managed appropriately. In the Northern Territory, only water based drilling fluids are allowed and the use of benzene, toluene, ethylbenzene and xylene (BTEX) chemicals in drilling fluids is not permitted. Storage of drilling fluids, drilling muds, cuttings and other returned fluids must be planned and managed responsibly.</td>
</tr>
</tbody>
</table>
Onshore Oil and Gas Guiding Principles

Water management

Background

Most forms of onshore oil and gas extraction require significant volumes of water to be managed. The various forms of natural gas (e.g. from shales, from coal seams and conventional) have different water profiles and requirements. Water is necessary for both conventional drilling as well as hydraulic fracturing. For the extraction of natural gas from deep shale formations in horizontal wells, up to 20 megalitres per fracture event can be required (such as for a deep horizontal multi-stage fractured well). The amounts of water required to be extracted vary greatly between geological formations. However, the general principles are equally applicable to all forms of onshore natural gas extraction.

The coexistence of the onshore gas industry with agricultural industries dependent on water for their livelihoods makes efficient water management throughout oil and gas project life cycles paramount. Consideration for municipal water supplies is also necessary for NT towns and communities in the vicinity of oil and gas activity.

Water management strategies must be developed early and in consultation with local communities and regulators and be consistent with requirements under the Water Act.

The onshore oil and gas industry and Government must work cooperatively together in the development of a framework and database for the baseline testing and ongoing monitoring of water aquifers.

Operating principles

Plan to manage water strategically

1. Predict and plan water production and usage requirements and delineate in a water management strategy.
2. Where operations fall within a Water Control District, proposed water extraction will be consistent with any Water Allocation Plan.
3. Investigate a range of preferred options for use and disposal of produced and flowback water and associated wastes.
4. The construction and works on water investigation, production and monitoring bores will be consistent with the requirements of the Water Act, including the use of licenced drillers and the compliance with the minimum construction standards for water bores in Australia.
5. Liaise frequently with landholders and government in development of the strategy.
6. Innovate and adapt to come up with the best strategy for the life of the project.
7. Explore opportunities to collaborate with all neighbouring resource and agricultural enterprises.
8. Ensure all risks are planned for and controlled.
<table>
<thead>
<tr>
<th>Understand and minimise potential impacts to water resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure potential impacts of water extraction to groundwater and rivers are understood and documented in the water management strategy.</td>
</tr>
<tr>
<td>• Non–potable water will be sourced for fracking in preference to potable water.</td>
</tr>
<tr>
<td>• Minimise water take requirements through methods such as choosing water efficient technology and water re-use.</td>
</tr>
<tr>
<td>• Obtain water from the most sustainable source possible.</td>
</tr>
<tr>
<td>• Prioritise water management options that can reduce and mitigate impacts.</td>
</tr>
<tr>
<td>• Ensure landholders are not adversely impacted by reduced water supplies.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Re-use and recycle water wherever possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Re-use rather than dispose water wherever practicable.</td>
</tr>
<tr>
<td>• Uses could include: future fracturing operations, irrigation, stock watering, dust suppression, construction, mine processes, industrial processes (note that treatment may be required).</td>
</tr>
<tr>
<td>• Prioritise uses local to the operation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Avoid causing environmental harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure possible contaminants in the water are known and documented.</td>
</tr>
<tr>
<td>• Monitor water quality and condition of all aquifers utilised during the operation and report on these to the relevant regulatory authorities.</td>
</tr>
<tr>
<td>• Minimise use of chemical additives and substitute with greener alternatives where possible.</td>
</tr>
<tr>
<td>• Ensure storage dams and tanks are appropriately designed and constructed to avoid leaking or overtopping.</td>
</tr>
<tr>
<td>• Ensure water is of appropriate quality for intended use/disposal option.</td>
</tr>
<tr>
<td>• Plan for possible spills and process upsets.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manage waste by-products efficiently</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Examine options for the treatment of water for beneficial purposes. If water is to be treated, understand what waste products (e.g. brine) will be produced.</td>
</tr>
<tr>
<td>• Waste storage and disposal facilities are designed and managed to ensure they do not leak or fail in the future.</td>
</tr>
<tr>
<td>• Ensure no long term legacy impacts will arise (e.g. degradation of water supplies).</td>
</tr>
<tr>
<td>• Consider long-term costs such as maintenance, monitoring and government assurance when choosing waste management options.</td>
</tr>
</tbody>
</table>
Land access

Background

The Government does not support drilling in towns, and has a number of safeguards in place to ensure oil and gas activities can co-exist with other land uses.

Reserve blocks are in place over major towns and community consultation will be sought through the reform process to assess reserve boundaries.

Access to private land for the purposes of exploration and production of resources, and minimising the associated impacts on agricultural operations has taken a spotlight over the past years. Expansion of resource exploration and development has caused many stakeholders to become concerned regarding long-term impacts on farming practices and other land uses.

How resource companies approach these relationships with stakeholders is vitally important to ensuring a fair land access process which maintains confidence of landowners and regulators. Companies must be transparent in relation to their land access process and the long term operational plans. Landholders must be fairly compensated, often laying the platform for developing and maintaining long-term landholder relationships. This section deals with the specific interactions with affected parties. Broader community engagement is dealt with separately.

Operating principles

Liaise closely and in good faith

- Actively engage landholders early with full transparency.
- Visit and inspect possibly affected properties well in advance of planned activities.
- Allow time for detailed discussions.
- Ensure negotiators have good communication and interpersonal skills.
- Ensure negotiators have appropriate knowledge of the land and landholder’s operations and/or cultural requirements.
- Aim to avoid formal arbitration processes.
Understand and minimise potential impacts

- Minimise damage to land and vegetation.
- Seek advice from the landholder on special features or requirements of the land, including sites of cultural significance.
- Understand how on-farm or other on-land activities are conducted (including timing).
- Consider area-based or regional development planning process in consultation with all landholders in the area.
- Consider biosecurity issues (e.g. pest and weed species, organic certification).
- Minimise impacts on operation of landholder’s activities (including siting and timing of infrastructure and activities).
- Minimise nuisance impacts to residents (e.g. noise, dust).
- Minimise impacts on landholder’s privacy through activities.
- Understand the landholder’s regulatory responsibilities with regard to Biosecurity and Environmental Management with a view to joint accountability for areas of co-located activities.

Record agreements clearly, including:

- Detailed description of the agreed activities for the property.
- Timeframes for activities.
- Detailed mapping showing where activities will be carried out.
- Identify suitable access routes.
- Vehicles and machinery to be used.
- Agreed conduct arrangements (e.g. stock management, dust minimisation etc.).
- Disclosure of likely further works.

Offer fair compensation

- Impacts must be avoided and minimised.
- Any impacts that are necessary must be compensated fairly.
- Compensation offers must be based on an understanding of the property operations (including ongoing impacts and impacts on planned operations).
- Compensation details must be clear to all parties.
- Compensation must be paid promptly as per agreements.

Maintain relationships

- Stay in regular contact with affected parties throughout the project.
- Take responsibility for all contractors and employees actions.
- Ensure contact is made at least one week prior to activities being undertaken.
- Company land access representative accompany drilling contractors upon initial entry.
- All staff and contractors inducted for the property.
- Obtain regular feedback from the landholder regarding how the operator’s activities are being conducted.
Air and noise emissions

Background

Unmanaged air and noise emissions from oil and gas projects may present health, safety, environmental and commercial risks. Air emission sources associated with extraction of natural gas can include:

- fugitive emissions of methane
- fugitive emissions of other volatile organic compounds
- venting and flaring of wells
- combustion emissions from plant and machinery
- silica dust releases from the transfer of silica based sands to be used in hydraulic fracturing fluids.

The main sources of noise emissions include general construction noise, the operation of drilling rigs, hydraulic fracturing operations, flaring, venting and the operation of equipment. The potential for nuisance to be caused by noise emissions associated with natural gas extraction are often exacerbated by the low background noise levels in the predominantly rural and remote areas as well as the need to operate overnight.

It is important that these potential issues are addressed in a proactive way that instils confidence in the community and maintains environmental values.

Operating principles

1. Planning field operations in a manner that will avoid or significantly reduce emissions from flaring and venting as far as practical. This can include proximity to infrastructure and timing considerations.

2. Where flaring or venting cannot be avoided, ensure appropriate design and controls are put in place. Design and controls of sources must be developed giving consideration to:
   - Safety.
   - Health of nearby residents.
   - Environmental impacts of emissions.
   - Greenhouse gas considerations – particularly during venting.
3 Well design must limit or mitigate fugitive emissions. Example would include well casing design which eliminates routine venting to the surface, as well as ensuring isolation of the well throughout and beyond the lifetime of the gas field. Well designs chosen must be in line with relevant regulations.

4 Well heads must be regularly inspected for leaks and subject to a routine maintenance program. These must be in line with relevant regulations where applicable.

5 Plant and equipment which minimises emissions must be chosen where possible. Examples would include compressors run with electric motors rather than fuel burning engines, and natural gas engines rather than diesel engines.

6 Ensure acceptable buffer distances are placed between noise sources and the sensitive receptors such as homes.

7 Employ noise mitigation measures (such as shrouds and barriers) to noise sources where necessary.

8 Avoid operating noisy equipment overnight and on weekends.
Community and social impacts

Background

Maintaining and enhancing a social licence to operate is critical to the ongoing success of the Northern Territory’s onshore gas industry. The NT Government is implementing a robust framework to ensure the industry meets community expectations and performs at an acceptable level. However, it is particularly important that all operators understand the importance of ensuring a social licence is maintained and act accordingly.

Operating principles

<table>
<thead>
<tr>
<th>Operating principle</th>
<th>Details</th>
</tr>
</thead>
</table>
| Engage early and frequently with stakeholders                                       | • Engagement must begin as early as possible (e.g. well before the release of an Environmental Impact Statement (EIS) or preparation of an Environment Plan).  
• Engagement must continue on a frequent basis throughout the development.  
• Where possible, engagement must include face to face communications.  
• Ensure all stakeholders are identified and consulted, and recognise that targeted engagement strategies may be required for individual stakeholders/groups. |
| Approach negotiations from a “coexistence” perspective                             | • Respect the local community’s existing businesses, lifestyle and amenity.  
• While a legal right to undertake activities is provided through the petroleum and gas tenure, this must be viewed as a last resort when gaining community and stakeholder acceptance. |
| Be open and transparent with local communities, stakeholders and particularly with individual landholders that may be impacted | • Non-commercial data and information must be disclosed voluntarily.  
• Consider mechanisms such as online portals to communicate this information in an easy to understand manner. |
<table>
<thead>
<tr>
<th></th>
<th>Uphold all commitments to the community and stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Where circumstances change necessitating changes to commitments, communicate these early and explain the rationale.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Constantly assess and examine ways that social impacts can be reduced throughout the life of a project</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Value-added ways to achieve outcomes that exceed infrastructure agreements and compensation, and actually weave into the fabric of local communities must be investigated.</td>
</tr>
<tr>
<td></td>
<td>This may include sourcing staff and suppliers locally, investing in local skills development and assisting the Indigenous community, regional businesses and agricultural operators to transition to access future opportunities generated by the project.</td>
</tr>
</tbody>
</table>
## General operations

### Background

Due to the possible overlap between the onshore oil and gas industry and communities, ground operations must be carefully managed. This includes all aspects of safety, community, economy and the environment.

### Operating principles

#### 1. Safety must be the first priority for all operations

- The numerous legislated requirements regarding safe operations under the *Work Health and Safety Act* and other legislation must be complied with.
- Constant innovation to be ahead of legislated standards must be sought in order to reach the goal of eliminating serious injuries and death.
- Collaboration between companies such as the Australian Petroleum Production and Exploration Association’s (APPEA) safety working group is an effective way to advance safety learnings and technological advancements.
- All safety incidents and near misses must be reported.

#### 2. Compliance with all statutory requirements is essential to retain community and regulator confidence

- The mandated legislative requirements for environmental controls under the *Petroleum Act* and Regulations must be complied with.
- Companies must ensure careful planning and prioritise compliance in undertaking development.
- Management systems, procedures and adequate staff training must be implemented.
- All notifiable environmental incidents must be reported to the DME.
- Monitoring data to be provided to regulators as mandated.

#### 3. The operational footprint and disturbance associated with facilities and infrastructure must be reduced as far as possible

- The siting of infrastructure must be undertaken in a way that reduces landholder, community, heritage and environmental impacts as far as possible.
### Potential cumulative impacts of operations on the community and the environment must be identified and managed

- These can include impacts associated with air quality, traffic, noise, regional water sources and biodiversity.

### Transport routes must be determined to minimise impacts on local communities and roads

- Consultation with the Department of Transport and the relevant local government must be undertaken, and relevant considerations include:
  - Safety.
  - Road surface.
  - Congestion.
  - Noise impacts.
Hydraulic fracturing

Background

Hydraulic fracturing, or “fracking” is a technique used to increase the permeability of oil and gas formations in order to maximise the amount of product that can be extracted. It essentially involves the pumping of a fluid mixture comprised mainly of water and proppant into oil and gas formations at high pressure. Recently there has been significant concern regarding potential environmental and health impacts associated with hydraulic fracturing activities. This has led to a range of studies and inquiries into the practice and implications, both nationally and internationally. In Australia, inquiries into hydraulic fracturing have been commissioned in the Northern Territory, South Australia and Western Australia.

Results of government and scientific inquiries released to date (including the recently concluded public Inquiry into Hydraulic Fracturing in the Northern Territory) have overwhelmingly found that when risks are identified and appropriate control measures are put in place, hydraulic fracturing is considered safe.

Operating principles

1. Understand the site specific risks associated with every proposed hydraulic fracturing activity

   • As with all activities, there are a range of potential risks which must be assessed and managed prior to commencement.
   • Assessment of risk and implementation of appropriate controls must be undertaken by suitably qualified professionals in accordance with mandated petroleum legislation.
   • All site specific risks are to be addressed in the environment plan which accompanies the activity application.

2. Fully understand the geological and hydrogeological setting of the area to be fractured, including stress regimes, pre-existing faults, formation fracture closure pressures and proximity to other formations

   • Ensure that there is no interconnection of the target formation with aquifers.
   • Consider the risk of induced seismicity based on historical seismicity, pre-existing faults and local risk factors (e.g. population, buildings and infrastructure and areas of environmental significance).
   • Ensure there is sufficient safe separation distance between expected maximum fracture propagation height and aquifers.
   • Identification of any impermeable layers between target zones and aquifers.
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td><strong>Choose fluid additives which do not pose an unacceptable risk to health, safety and the environment</strong>&lt;br&gt;• Consider risks to nearby groundwater resources.&lt;br&gt;• Ensure surface management of chemicals (including possibility of spills) minimises risk of environmental harm as well as the possibility of exposure of workers and landholders to the chemicals.&lt;br&gt;• BTEX compounds must not be used in hydraulic fracturing fluids.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Disclose chemicals used</strong>&lt;br&gt;• Specific information regarding chemicals used must be released to the DME and the general public.&lt;br&gt;• Identification of chemicals must be clear and include the Chemical Abstracts Service (CAS) number.&lt;br&gt;• Concentrations must represent worst case in the final fluid mix.&lt;br&gt;• The DME will develop a mandatory standard form for chemical disclosure from companies and work with them on appropriate public disclosure.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Thorough risk-focused monitoring must be undertaken in order to demonstrate that there have been no detrimental impacts caused by the hydraulic fracturing</strong>&lt;br&gt;• Monitoring must be undertaken to understand the pre-existing conditions and avoid uncertainty around perceived impacts. Monitoring must include at least water quality monitoring of nearby water bores as well as supply capacity and gas content.&lt;br&gt;• Monitoring of chemical concentrations in the hydraulic fracturing fluids.&lt;br&gt;• Monitoring to understand the propagation of fractures, such as micro-seismic monitoring and review of fracture propagation simulation model.&lt;br&gt;• Monitoring to detect any induced seismicity in the region.&lt;br&gt;• Flowback monitoring to determine whether naturally occurring toxic compounds or radioactive material have been released and to ensure no interconnections with aquifers has been caused where aquifers are in proximity.&lt;br&gt;• Post fracturing ground water monitoring to consider down gradient water quality</td>
</tr>
</tbody>
</table>
| 6       | **Environmental plans must include contingencies to address (at a minimum):**<br>• chemical and fuel spills<br>• loss of well integrity<br>• lack of surface containment of flowback (e.g. spills, overtopping or seepage)<br>• management of contaminants (e.g. naturally occurring radioactive materials)<br>• interconnection with overlying or underlying aquifers<br>• induced seismicity.
Chemical and waste handling and management

Background

The management of chemicals and wastes are a necessary element of the onshore oil and gas industry. The associated environmental and health risks associated with these issues means careful planning and high standards must be applied to avoid potential incidents.

Operating principles

1. A full risk assessment of all chemical and waste handling and management must be undertaken
   - This must form part of an accredited Environmental Management System including an approved environmental management plan.
   - Community, landholder and staff safety must be paramount in all chemical and waste decisions.
   - Activities must be undertaken in a way that ensures no unlawful environmental harm is caused.

2. Ensure chemicals and fuel are handled and stored appropriately:
   - In accordance with relevant Australian Standards where relevant.
   - In a manner that will contain spillages and leakages (e.g. impermeable bunding).
   - Away from environmentally sensitive areas.
   - Away from areas important to the landholder.

3. Ensure waste storage facilities (e.g. ponds, dams and tanks) are appropriately designed for the waste contained
   - Appropriately lined (e.g. HDPE).
   - Designed to account for appropriate average recurrence interval rainfalls.
   - Designed to minimise chance of fauna exposure.
   - Located away from sensitive areas and watercourses.
### Re-use wastes wherever possible

4

- Examine whether flowback can be re-used for future hydraulic fracturing activities.
- Consider other re-use options (e.g. dust suppression, construction water etc.).
- Examine whether waste fluids can be treated to be used for a beneficial use.
- Ensure any waste re-use does not have adverse environmental impacts.
- Gas must be separated from liquid wastes as far as practical.

### Where wastes are to be disposed of, ensure appropriate facilities are used

5

- No wastes are to be discharged to waterways.
- Ensure chosen waste disposal facilities are appropriately licenced under the *Waste Management and Pollution Control Act*.
- Ensure long term environmental risks are managed.
- On-site disposal of wastes will require detailed environmental studies and control measures.
- All waste endpoints to be stated in an approved environment management plan.

### Ensure chemicals and wastes are transported appropriately

6

- On routes developed in consultation with the Department of Transport, NT WorkSafe, relevant local government and landholders.
- By appropriately licenced transporters.
- In compliance with any relevant Australian dangerous goods requirements.
- In compliance with transport tracking requirements (e.g. Waste Transport Certificates).
- Where pipelines are to be used, ensure relevant regulations are complied with (e.g. appropriate leak detection and management systems are in place).
Rehabilitation and decommissioning

Background

The rehabilitation and decommissioning of onshore gas projects is critical in ensuring a positive legacy is left behind. Following appropriate standards is critical in maintaining community confidence in the industry and avoiding potential future harm and liabilities. Planning and resourcing for rehabilitation and decommissioning must be undertaken up front and maintained.

Operating principles

1. Wells must be decommissioned appropriately in accordance with good engineering practice in consideration of the local geology, hydrogeology and environmental values. As a minimum, the following must be achieved:
   - Compliance with all regulatory requirements.
   - Isolation of groundwater aquifers within the well from each other and hydrocarbon zones.
   - Isolation of hydrocarbon zones within the well from each other, from groundwater aquifers or from zones of different pressure.
   - Isolation of the surface casing and production casing from open hole.
   - Placement of a surface cement plug in the top of the casing.
   - Recovery or removal of the wellhead.

2. Details of well decommissioning must be provided to the DME
   - These details must give sufficient information to demonstrate that the well has been decommissioned successfully and all regulatory requirements have been met.
   - Records of procedures conducted will be kept by the DME.
### Rehabilitation of surface disturbance must be undertaken to a high standard

- Rehabilitation planning must be undertaken prior to the disturbance occurring and included in environment plans.
- Rehabilitation standards must be developed in consultation with the landholder where the land is to be returned to a grazing or cropping use.
- Rehabilitation must commence as soon as practical after the area is no longer required for ongoing operations.
- Rehabilitation must strive to return areas to their pre-disturbance condition.
- Native and endemic species must be used wherever possible.
- Weeds and pests must be managed in rehabilitated areas.
- Erosion must be minimised in rehabilitated areas.
- Transfer of infrastructure (e.g. tracks and dams) to landowners is encouraged with their consent.
- Where areas disturbed are environmentally sensitive, higher standards of rehabilitation will be imposed.

### Any contamination must be remediated

- Contaminated land surveys of high risk areas (e.g. waste transfer facilities, flowback storage areas etc.) must be undertaken prior to relinquishment in accordance standards set by the DME.

### If wastes have been disposed of on-site, future monitoring and management requirements must be agreed with the NT Government

- Plans for leak detection and monitoring must be comprehensive and endorsed by the relevant regulators.
- Where a residual risk may be inherited by the NT Government, operators are required to provide sufficient security in relation to the risk.

### Success of rehabilitation must be demonstrated

- Success of rehabilitation must be verified by a suitably qualified person.
- Success of rehabilitation of vegetation must have been monitored for sufficient time to demonstrate it will continue to be successful (e.g. taking into account annual and seasonal variation, ground cover establishment and natural variability).

### Financial security is held until rehabilitation success has been demonstrated

- The regulator will hold security to ensure that it is not liable for any uncompleted rehabilitation or legacy issues associated with the onshore oil and gas industry.
- This security is in the form of cash or bank guarantees for individual projects.
- The amount required to be paid/held is proportionate to the disturbance and risk associated with the project and the amount of rehabilitation and decommissioning already undertaken.
Local content

Background

Over time, the Northern Territory’s onshore oil and gas resources have the potential to deliver significant economic development and employment opportunities, particularly in regional areas.

A strong local supply chain will be important if the Northern Territory’s oil and gas industry is to remain globally competitive, in particular through allowing local business to build and develop local sector skills.

Ensuring the maximisation of the use of local content in the development of the Northern Territory’s onshore oil and gas industry will ensure that the best value is obtained for the Northern Territory in terms of economic growth.

Operating principles

1. Prioritise local employment
   - Identify and source Territorian workers as a priority.

2. Facilitate participation of Territory businesses in the chain of development for the onshore oil and gas industry.
   - Use NT-based contractors and service providers such as civil contractors, materials suppliers and laboratories where possible.
   - Utilise the Industry Capability Network to support the identification of Territory based capability.
   - Work with the NT Government and the service and supply industry to identify industry capability gaps and opportunities for local content development.
   - Conduct supplier briefings when and where appropriate.

3. Recognise and accommodate measures that will raise the skills and qualifications for Territorians
   - Work with the NT government to encourage the development of a workforce that is skilled and capable in the Northern Territory including highlighting during planning the skills required over the project to enable longer term workforce development.

4. Recognise and support the NT Government’s strategic objectives of Aboriginal job creation and economic development.
   - Develop plans to engage and facilitate Aboriginal employment and business participation.