

# SCIENTIFIC INQUIRY INTO HYDRAULIC FRACTURING IN THE NORTHERN TERRITORY



Department of Environment and Natural  
Resources combined Submission #492

Ms Joanne Townsend  
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By email: [REDACTED]

Dear Ms Townsend

**RE: HYDRAULIC FRACTURING INQUIRY – INFORMATION REQUEST  
REGARDING THE REGULATORY FRAMEWORK FOR THE MANAGEMENT  
OF SPILLS OF CHEMICALS AND WASTEWATER ASSOCIATED WITH  
HYDRUALIC FRACTURING**

I refer to the *Scientific Inquiry into Hydraulic Fracturing of Unconventional Reservoirs in the Northern Territory (the Inquiry)*, which was established by the Northern Territory Government under the *Inquiries Act 1945 (NT)* in late 2016 to investigate the impacts and risks of hydraulic fracturing of onshore shale gas reservoirs and associated activities on the environmental, social, economic and cultural conditions in the Northern Territory.

As noted in the [Background and Issues Paper](#) and [Interim Report](#), the Panel has identified that there is a risk that surface water and groundwater could be contaminated as a result of a surface spill of either fracking chemicals or wastewater. Surface spills could occur on, or off, the petroleum exploration permit area. The location of the spill is important because different laws apply and different agencies in the NT Government have jurisdiction depending on whether the spill is inside, or outside, the permit boundary.

This letter sets out my understanding of how the current regulatory framework in the Northern Territory seeks to avoid, or, if a spill occurs, manage, spills of fracking chemicals and wastewater both on and off the permit area. Please confirm that my understanding of the role that your organisation plays in the regulation of on-site and off-site spills is correct. Where I have identified an area where the regulatory framework may be strengthened, please comment on my observations.

The NT Government agencies that have jurisdiction over the management of spills inside and outside a petroleum permit, as well as the legislation they administer, are summarised in Table 1 and discussed in further detail below.

Agency	On the Permit <sup>1</sup>	Off the Permit (road, rail or pipeline)
DPIR	<ul style="list-style-type: none"> <li>Enforces the environmental offence provisions under the Petroleum Act if there is a spill.</li> <li>Assesses and approves environment management plans to manage the risks of spills</li> </ul>	<ul style="list-style-type: none"> <li>No role</li> </ul>
EPA	<ul style="list-style-type: none"> <li>Administers environmental assessment legislation where environmental impacts are “significant”.<sup>2</sup> Petroleum exploration activities are not currently assessed. An environment plan <i>may</i> be required as part of the assessment process.</li> <li>Comments on environment plans under the <i>Petroleum Act</i> only if the impact is “significant”.</li> </ul>	<ul style="list-style-type: none"> <li>Enforces and grants licences under the <i>Waste Management and Pollution Control Act</i>. An environment management plan is not always required.<sup>3</sup></li> <li>Issues waste transport certificates where waste crosses the NT border</li> </ul>
NT Worksafe	<ul style="list-style-type: none"> <li>Enforces work health and safety legislation</li> <li>Enforces dangerous goods legislation (incl transport of dangerous goods legislation)</li> </ul>	
DENR (Controller of Water)	<ul style="list-style-type: none"> <li>No role</li> </ul>	<ul style="list-style-type: none"> <li>Enforces and grants licences under the <i>Water Act 1992</i> (NT) for the drilling of bores, extraction of surface and groundwater, construction of dams, pollution of water etc</li> </ul>

The primary legislation that currently regulates the unconventional shale gas industry on and off the permit area as well as the decision-maker under that legislation and the agency that supports the decision-maker, is set out at **Attachment A**.

### 1. What might spill?

The Inquiry is concerned with spills of either (a) fracking chemicals or (b) wastewater.

<sup>1</sup> Reference to the “permit area” includes “access authorities” under s 57A of the Petroleum Act as well as roads constructed pursuant to section 65 of that Act.

<sup>2</sup> Note that the EPA’s current position is that petroleum exploration activities do not require assessment under the environmental assessment legislation.

<sup>3</sup> The *Guideline for the Preparation of an Environment Management Plan* on the EPA’s website provides that, for activities that require authorisation under the WMPCA, an EMP will “generally” be required. See [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0003/284880/draft\\_guideline\\_for\\_emp.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0003/284880/draft_guideline_for_emp.pdf) (last accessed 18 September 2017).

*i. Fracking chemicals*

Hydraulic fracturing requires the addition of various chemicals (**Fracking Chemicals**) and additives, such as sand, or proppant, to water before it is injected into a petroleum well at very high pressure. The purpose of hydraulic fracturing is to fracture very deep shale formations so that sand, or proppant, can be inserted into the fractures to hold them open so that gas can flow from the shale formation back up the well.

The chemicals used in hydraulic fracturing serve a variety of purposes.<sup>4</sup> Gelling agents are used to create a gel to suspend the sand, or proppant, so that it can be transported to the fracture in the shale formation; gel breakers such as ammonium persulfate reduce viscosity; bactericides and disinfectants such as sodium hypochlorite and sodium hydroxide control bacteria growth; and acids and alkalis such as sodium carbonate assist in the fracturing process.<sup>5</sup> Some fracking chemicals are hazardous to human health and the environment.

The Department of Primary Industry and Resources (**DPIR**) publishes the chemicals that have been used in hydraulic fracturing in the Northern Territory on its website at <https://dpiir.nt.gov.au/mining-and-energy/public-environmental-reports/chemical-disclosure-reports>. This appears to be a requirement of the *Schedule of Onshore Petroleum Exploration and Production Requirements 2016 (Schedule)*, which requires:

*“specific information regarding chemicals used [to be] release to the department and the general public.”*<sup>6</sup>

It is not clear to me exactly what information must be disclosed pursuant to this provision of the Schedule.

*ii. Wastewater*

Between 20 and 50 percent of the hydraulic fracturing fluid that is injected into the well returns to the surface. This water is called “flowback water”. The discharge of flowback water typically lasts for 4 to 6 weeks. Flowback water is quite saline, especially if the target formation is of marine origin. Flowback water also contains residuals of the chemicals used in the hydraulic fracturing fluid plus geogenic chemicals that originate from the shale formation itself. These geogenic chemicals include salts, metals and metalloids, organic hydrocarbons, including BTEX,<sup>7</sup> and naturally occurring radioactive materials (**NORMs**), depending on the geochemistry of the shale formation.

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<sup>4</sup> *Background and Issues Paper*, p 9; Origin submission 153, p 78.

<sup>5</sup> See *Background and Issues Paper*, 20 February 2017, p 9, <https://frackinginquiry.nt.gov.au/background-and-issues-paper>

<sup>6</sup> Item 342(4), *Schedule of Onshore Exploration and Production Requirements 2016*.

<sup>7</sup> Benzene, ethylbenzene, toluene and xylene.

Water from the shale formation itself, called “produced water” also comes to the surface over the lifetime of the well. Produced water is very saline with higher concentrations of geogenic chemicals than in flowback water but with very little of the chemical signature of the fracturing fluid that was originally injected. Produced water and flowback water are both referred to as **wastewater** in this letter.

In the United States approximately 600 discrete chemicals have been detected in flowback and produced water and of this number, only 77 were components of the hydraulic fracturing fluids originally injected.<sup>8</sup> As with fracking chemicals, wastewater includes chemicals that are hazardous to human health and the environment.

There is currently no statutory requirement to assess or disclose the composition of wastewater but I note that DPIR is supportive of this proposal.<sup>9</sup>

## **2. Spills on the permit area**

The likelihood that a spill of fracking chemicals or wastewater will occur on the well-pad during the hydraulic fracturing process is highest during the first three years of a wells life, which is when the well is drilled, hydraulically fractured and has the largest water production volume.<sup>10</sup> A significant amount of water is used to hydraulically fracture a petroleum well, which means that there are large amounts of water and chemicals being stored, transferred and handled on site. Each stage of hydraulic fracturing uses between 1 and 2 ML of fracturing fluid. For a well that requires to be hydraulically fractured 20 times, which the Panel deems reasonable in light of industry practice, at least 40 ML of storage will be needed per well for a fully developed production scenario, assuming that wells will be fractured sequentially.

The Inquiry has been told that DPIR “*has on site responsibility for regulating [spills], including protection of the environment from hydraulic fracturing stimulation activities and production.*”<sup>11</sup> It appears, however, that various other agencies have a role to play in the regulation of fracking chemicals and wastewater on petroleum permits. The roles of the various government agencies are set out below.

### **(a) DPIR**

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<sup>8</sup> United States Protection Agency, *Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report)*

<https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990>

<sup>9</sup> DPIR submission 424, p 5.

<sup>10</sup> *Interim Report*, p31.

<sup>11</sup> DENR submission 230.

DPIR administers the *Petroleum Act 1984* (NT) (**Petroleum Act**) and supporting regulations, the *Petroleum (Environment) Regulations 2016* (NT) (**Environment Regulations**) and the Schedule.

*i. Petroleum Act*

There are environmental offence provisions of the Petroleum Act that operate as a “stick” to punish interest holders for polluting acts, like spills. The Petroleum Act makes it an offence to cause the release of a contaminant or waste material if it has an environmental impact that is greater than a “nuisance”.<sup>12</sup> There are different penalties depending on the level of harm caused: for an unintentional spill that causes material environmental harm the amount an interest holder would have to pay is between \$11,858 and \$118,580.<sup>13</sup> In addition to the environmental offence provisions there is also a statutory condition placed on all permit holders that they must “cause as little disturbance as practicable to the environment”.<sup>14</sup> Non-compliance with a condition of a permit is grounds for cancelling a permit.<sup>15</sup>

The Petroleum Act does not expressly require any environmental management systems to be in place to ensure that the risk of spills are managed. The Petroleum Act was, however, amended in 2016 to permit the Minister to make regulations to allow the Administrator to make regulation “for the protection of the environment”<sup>16</sup> and new environment regulations were introduced in 2016 for that purpose.

*ii. Petroleum (Environment) Regulations*

It is important to note that the Environment Regulations were introduced in July 2016, only a few months prior to the current moratorium on hydraulic fracturing. To my knowledge there has been no application to the Minister for Resources to approve an environment plan for hydraulic fracturing under the Environment Regulations and in that regard the Environment Regulations are largely untested (as least with regard to hydraulic fracturing).<sup>17</sup>

With regard to the hydraulic fracturing of the Amungee-NW-1h well, the environment plan was assessed under a prior version of the Schedule<sup>18</sup> and approved using a Ministerial direction under section 71 of the Petroleum Act.

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<sup>12</sup> See Division 2, Part V of the Petroleum Act.

<sup>13</sup> This assumes an offence under s 117AAC(7), which is an environmental offence level 3. The amount payable for this offence is set out in s 6 of the *Environmental Offences and Penalties Act 1996* (NT).

<sup>14</sup> s 58(c) Petroleum Act.

<sup>15</sup> s 74 Petroleum Act.

<sup>16</sup> s 118(3) Petroleum Act.

<sup>17</sup> I note, however, that regulations of this kind have been used for some time now in Western Australia and by the offshore petroleum regulator.

<sup>18</sup> I understand that a new version of the Schedule was introduced at the same time the Environment Regulations were introduced.

While it undoubtedly compromised the community's trust in the assessment and approval process,<sup>19</sup> the approval of Origin's environment plan was lawful because the Petroleum Act gives the Minister power to effectively bypass any regulation, including the Environment Regulations.<sup>20</sup> Some stakeholders think that this is a major weakness of the current regulatory framework, which could potentially be overcome by amendments to the Petroleum Act.<sup>21</sup> I note that the Minister's ability to grant a direction under the Petroleum Act could be considered both a strength and a weakness of the Act: a weakness for the reasons set out above, and a strength because it may allow the Minister to impose prescriptive minimum standards on interest holders (something the Inquiry has been considering) notwithstanding the objective-based nature of the regulations.

The Environment Regulations do not include an express, or prescriptive, requirement for a spill contingency plan to be in place. In my view they do not need to. The storage, transfer and use of fracking chemicals on the permit area represents an unequivocal risk to surface and groundwater quality and in that regard constitutes a "regulated activity" requiring an EMP to be in place before such activities can occur. If a gas company does this activity without a plan in place they will be guilty of an offence.<sup>22</sup>

The storage and treatment of wastewater on a permit area also represents an environmental risk. DPIR submitted that waste must be treated in accordance with a waste management plan, which I understand would form part of the environment management plan under the Environment Regulations.<sup>23</sup> To dispose of waste other than in accordance with an EMP will contravene both the Environment Regulations and *may* contravene the environmental offence provisions of the Petroleum Act.<sup>24</sup> I note that "chemical spills" are listed as a potential risk in DPIR's EMP checklist but spills of wastewater are not.<sup>25</sup> I assume that this is because spills of wastewater are dealt with in waste management plans.

The Inquiry has identified a risk of fracking chemicals and waste water spilling during transportation via road and I note that DPIR has jurisdiction to regulate environmental impacts and risks within "petroleum interests", which include access authorities and roads inside exploration and production permits. I note that the transportation of fracking chemicals and wastes on these roads would

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<sup>19</sup> EDO submissions 213 and 456.

<sup>20</sup> s 71(2) Petroleum Act.

<sup>21</sup> For example, the approval of an environment plan could be done under primary legislation.

<sup>22</sup> r 30, Environment Regulations.

<sup>23</sup> DPIR Submission 424, p 10.

<sup>24</sup> See 117AAC(1) of the Act and DPIR Submission, 424, p 10.

<sup>25</sup> DPRI Submission 226, p 211.

constitute a risk that would need to be addressed in an approved environment plan prior to that type of activity occurring.<sup>26</sup>

*iii. Schedule of Onshore Exploration and Production Requirements 2016*

The Schedule requires that, where there has been a spill, action must be taken “in accordance with an approved spill contingency plan”.<sup>27</sup> I query whether or not this requirement is necessary in light of the Environment Regulations. For the reasons set out in the Interim Report,<sup>28</sup> my view is that the Schedule needs to be repealed and replaced with enforceable regulations as a matter of priority. I note that this forms part of DPIR’s regulatory reform agenda.<sup>29</sup> I do, however, think there is value in keeping spill contingency plans on DPIR’s checklists to ensure that, where chemicals and wastewater are used, stored or recycled on the permit, the risk is fully addressed. I note that the Guideline for *Well Drilling, Workover or Stimulation Application Assessment Process* currently includes an oil spill contingency plan but not a wastewater or chemical spill contingency plan.<sup>30</sup> Why is this?

**(b) EPA**

The EPA’s statutory role in managing spill-related risks and impacts inside the permit area is currently limited to providing input into environment plans under the Environment Regulations. The EPA does not currently assess petroleum exploration activities under the Northern Territory’s environmental assessment legislation because the impacts are not deemed “significant”. Origin, however, made the following submission to the Inquiry:

*“As part of Origin’s application for an authority to HFS, Origin provided the details of the two proposed fluids systems to the Department of Primary Industries and Resources (DPIR) and the Northern Territory Environmental Protection Authority (NTEPA). This is a requirement in the NT under the current regulations.”<sup>31</sup>*

Please indicate where the current regulatory framework requires gas companies to submit information about fracking fluids *directly* to the EPA.

*i. The EPA provides input into environment plans*

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<sup>26</sup> I note that the exemption in r 5(3)(c) of the Environment Regulations does not exclude driving on roads with fracking chemicals or wastewater on permits from the need to have an approved environment plan in place.

<sup>27</sup> Item 214, *Schedule of Onshore Petroleum Exploration and Production Requirements 2016*.

<sup>28</sup> Interim Report, p 105.

<sup>29</sup> DPIR Submission, 424, p 15; see also Recommendation 8 of Dr Tina Hunter’s *Review of the Draft Petroleum (Environment) Regulations*.

<sup>30</sup> DPRI Submission 226, p 188.

<sup>31</sup> Origin submission 153, p 80.

Under the current Environment Regulations, the Minister *must* take into account any recommendations made by the EPA on an environment plan, but *only* if an assessment is also required under the *Environmental Assessment Act*, that is, if a Public Environmental Report or an Environmental Impact Statement is required.<sup>32</sup> In other words, where the impacts of an activity or project are not deemed “significant”, which is the EPA’s current position (see below), the EPA’s comments are not *required* to be considered by the Minister when s/he decides whether or not to approve an environment plan.

I understand that there is currently an informal process whereby all environment plans received by DPIR are provided to the EPA for comment regardless of whether or not the activity or project is deemed to be “significant”. DPIR has an internal policy that:

*“all NT EPA comments must be addressed by the operator as a condition of activity approval”.*<sup>33</sup>

My view is that this informal process must be formalised. Environmental experts, including the EPA and other relevant agencies such as the Weeds, Land Resource, and Water Branches in DENR must be given an opportunity to comment on all environment plans, regardless of the apparent significance of the activity or project.<sup>34</sup> Further, comments received by these bodies must be fully disclosed along with the environment plan and the Minister for Resources’ statement of reasons,<sup>35</sup> which must also include commentary on how the Minister dealt with the bodies’ feedback.

*ii. The EPA does not currently assess hydraulic fracturing or the possibility of on-site spills under environmental assessment legislation*

The EPA administers the Northern Territory’s environmental assessment legislation.<sup>36</sup> The trigger for whether a project will be assessed by the EPA is whether the activity or a project will have a “significant effect on the environment”.<sup>37</sup>

The EPA’s current position is that hydraulic fracturing and other activities associated with petroleum exploration do not require assessment under the environmental assessment legislation:<sup>38</sup>

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<sup>32</sup> r 9(2)(b) Environment Regulations.

<sup>33</sup> DPIR submission 226, p31.

<sup>34</sup> See, by way of example, the approach adopted by South Australia in the development of the statement of environmental objectives as set out in s 101(2) of the *Petroleum and Geothermal Energy Act 2000 (SA)* and r 12(4) of the *Petroleum and Geothermal Energy Regulations 2013 (SA)*.

<sup>35</sup> r 24 Environment Regulations

<sup>36</sup> For a full list of the legislation that the EPA administers see: <https://ntepa.nt.gov.au/about-ntepa/legislation> (last accessed 12 September 2017).

<sup>37</sup> s 4 *Environmental Assessment Act 1982 (NT)*.

<sup>38</sup> DPIR submission 226, p 9; DENR submission 449, p 2.

*“to date, the NT EPA has determined that exploratory processes associated with the development of unconventional gas resources have not posed a significant risk to the environment and have not required impact assessment.”*<sup>39</sup>

While I appreciate that an environmental assessment *may* be required at the production phase, it is still concerning to me that exploration petroleum activities, and in particular hydraulic fracturing, are not currently deemed to have a significant impact on the environment. Given the scientific uncertainty associated with water quantity in the Beetaloo sub-basin as well as the uncertainties associated with long term well-integrity, the precautionary principle mandates that hydraulic fracturing be assessed and managed as though the impacts of the activity are significant and bound to occur. The effect of the EPA’s current position is that (a) hydraulic fracturing and its associated activities are not assessed in the form of a public environment report (**PER**) or an environmental impact statement (**EIS**) and, (b) as discussed above, that the Minister for Resources is not required to consider the views of the EPA when deciding to approve a plan under the Environment Regulations.

I note that, where a project is assessed under the environmental assessment legislation, the EPA *may* require a draft environment management plan to be provided as part of a PER or an EIS. The EPA has guideline (which is unenforceable) on its website providing information about what should be included in an EMP in the event one is deemed by the EPA to be required.<sup>40</sup> I am concerned that, as a result, there could be *two* potentially inconsistent environment plans (each with their own conditions) in existence in respect of one activity or project: one under the Environment Regulations and one under the environmental assessment legislation. How is this potential duplication resolved?

*iii. It is not clear whether the EPA will assess an unconventional shale gas production project under the new environmental assessment legislation*

The NT Government is part way through an extensive environmental reform agenda. I have written to DENR, which is the agency leading the reforms, asking whether or not the development of unconventional gas resources, including hydraulic fracturing, will require an environmental impact assessment under the new environmental impact legislation. DENR responded that:

*“it is not possible to definitively state whether or not the development of unconventional gas resources, including individual activities associated with*

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<sup>39</sup> DENR submission 449, p 2.

<sup>40</sup> *Guideline for the Preparation of an Environmental Management Plan* available at [https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0006/284883/guideline\\_prep\\_emp.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0006/284883/guideline_prep_emp.pdf) (last accessed 11 September 2017).

*exploration and production, would be subject to environmental impact assessment without reference to a specific proposal”.*<sup>41</sup>

I also understand that Government has not reached a position on whether or not shale gas development and its associated activities such as hydraulic fracturing will be a “hard trigger” under the new environmental assessment legislation.<sup>42</sup> My current view is that, given the uncertainties associated with the development of the industry in the Northern Territory and its potential impact on water resources, it should. This will help engender confidence in the regulatory framework as it evolves.

- iv. *The Waste Management and Pollution Control Act does not apply inside petroleum permits*

The EPA also administer the WMPCA,<sup>43</sup> however the WMPCA does not apply to spills that occur on petroleum permits.<sup>44</sup>

### (c) **NT Worksafe**

- i. *NT Worksafe administers work health and safety legislation, which includes a requirement to have a spill containment system in place*

The Work Health Authority,<sup>45</sup> supported by NT Worksafe, administers the *Work Health and Safety (National Uniform Legislation) Regulations (Work Health and Safety Regulations)*.<sup>46</sup> DPIR advised the Inquiry that:

*“In 2008 the NT Work Health and Safety legislation took over responsibility of Work Health and Safety of petroleum activities and the Schedule was amended in 2010 to clearly indicate the aspects of petroleum activities, the then Department of Resources was not responsible for and were transferred to NT WorkSafe [sic].”*<sup>47</sup>

Chapter 7 of the Work Health and Safety Regulations relates to the use, handling, and storage of hazardous chemicals in the workplace, which includes a well pad. Hazardous chemicals are chemicals listed on the Globally Harmonised System of Classification and Labelling of Chemicals (**GHS**).<sup>48</sup>

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<sup>41</sup> DENR submission 449, p 2.

<sup>42</sup> DENR submission 449, p 2.

<sup>43</sup> DPIR submission 226, p 10.

<sup>44</sup> s 6(2) *Waste Management and Pollution Control Act (NT)*.

<sup>45</sup> The Work Health Authority is established under s4 of the *Work Health Administration Act 2011 (NT)*.

<sup>46</sup> s 5(1) *Work Health Administration Act 2011 (NT)*.

<sup>47</sup> DPIR submission 226, p 37.

<sup>48</sup> s 5 *Work Health and Safety (National Uniform Legislation) Regulations*. The GHS is here: [http://www.unece.org/trans/danger/publi/ghs/ghs\\_rev03/03files\\_e.html](http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html) (last accessed 11 September 2017).

Many chemicals used in hydraulic fracturing and that are in wastewater are hazardous.

The Work Health and Safety Regulations impose prescriptive obligations on petroleum operators<sup>49</sup> to, among other things, label chemicals correctly,<sup>50</sup> obtain safety data sheets (**SDS**) (the SDS for Origin's Amungee frack are attached),<sup>51</sup> keep a register of chemicals used on site,<sup>52</sup> and display placards and signs. Gas companies must also ensure that, where there is a risk of a spill of a hazardous chemical on site, a spill containment system is in place.<sup>53</sup> The spill containment system must provide for the clean-up and disposal of hazardous chemicals that spill.<sup>54</sup> The operator must also have a system for the use, handling and storage of hazardous chemicals.<sup>55</sup>

There is, in my view, a great deal of overlap between the measures that can be taken to mitigate risks on human health and safety and measures that mitigate risks on the environment. This is clear to me from the Safety Data Sheets provided to the Inquiry by Origin Energy, which clearly show that a chemical that is a risk to human health and safety is invariably a risk to the environment. My view is that consideration should be given to the oversight of environmental and safety matters on petroleum permits in a single regulator given the significant overlap between the goals of the legislation that NT Worksafe and DPRI administer. In that regard I note the follow quotation:

*“Safety and pollution prevention programs are more effective if a single agency is responsible and accountable for the regulation of operations. Unfortunately, legislative bodies do not always comprehend the safety and environmental risks associated with fragmented or compartmentalised regulatory regimes. These risks include regulatory gaps, overlap, confusion, inconsistencies, and conflicting standards. Also, a sufficient number of competent regulatory personnel may not be available to staff multiple agencies. Ideally, one agency would be responsible for all regulatory aspects of drilling and production operations. Safety and pollution prevention are inextricably linked.”*<sup>56</sup>

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<sup>49</sup> See Part 7.1, Division 2, Subdivision 3 of the Work Health and Safety Regulations.

<sup>50</sup> r 341, 342, 343 Work Health and Safety Regulations.

<sup>51</sup> r 344, Work Health and Safety Regulations.

<sup>52</sup> r 346, Work Health and Safety Regulations.

<sup>53</sup> r 357, Work Health and Safety Regulations. I note that Origin, Santos and Pangaea did not mention any requirement for a spill containment system in their submissions.

<sup>54</sup> r 357(3), Work Health and Safety Regulations.

<sup>55</sup> r 363, Work Health and Safety Regulations.

<sup>56</sup> Elmer P. Danenberger submission to the Montara Inquiry, available at <https://industry.gov.au/resource/UpstreamPetroleum/MontaraInquiryResponse/Submissions/31-Elmer%20P.%20Danenberger%20-%20submission.pdf> Danenberger was the former Chief of the Technical Advisory Section at the headquarters office of the U. S. Geological Survey, District Supervisor for Minerals Management Service (MMS) with 38 years' experience in the regulation of the oil and gas industry in the Gulf of Mexico; DPIP submission 424, p19.

I note that in Australia’s offshore context, a single regulator, the National Offshore Petroleum Safety and Environmental Management Authority (**NOPSEMA**), has jurisdiction over both environmental and safety matters.<sup>57</sup> Similarly, the Alberta Energy Regulator (**AER**),<sup>58</sup> which is widely considered to be a best-in-class regulator,<sup>59</sup> also has jurisdiction over public safety and environmental matters, including water allocation licences.<sup>60</sup>

- ii. *NT Worksafe administers the Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act (TDGA) and supporting regulations*

The Work Health Authority,<sup>61</sup> supported by NT Worksafe, administers the TGA, which is uniform legislation across Australia. The objective of the Transport of Dangerous Goods Act is to “*regulate the transport of dangerous goods on land in order to promote public safety and protect property and the environment.*”<sup>62</sup> The Act operationalises the Australian Code of the Transport of Dangerous Goods by Road and Rail.<sup>63</sup> Again, my view is that the regulatory framework would be strengthened and clarified if a single regulator had oversight of the transport of fracking chemicals and waste water on the permit (including on roads on the permit) and on public roads.

(d) **DENR**

DENR administers the *Water Act 1992 (NT) (Water Act)* but that Act does not currently apply to any petroleum activities.<sup>64</sup> The types of activities that are authorised by the Water Act and the extent to which the Water Act and Petroleum Act apply to those types of activities on petroleum permits is shown below.

**Application of the Water Act and Petroleum Act to various water-related activities on petroleum permits**

Activity	Water Act	Petroleum Act
Drilling holes (including bores)	x	✓
Interfering with waterways	x	✓
Polluting water	x	✓
Building dams and other structures	x	✓

<sup>57</sup> See NOPSEMA’s website at <https://www.nopsema.gov.au/>

<sup>58</sup> See AER’s website at <http://www.aer.ca/>

<sup>59</sup> See the Best-In-Class Regulatory Initiative at <https://www.law.upenn.edu/institutes/ppr/bestinclassregulator/about-aer.php>

<sup>60</sup> DPIR submission 424, p 19.

<sup>61</sup> s 22(1) *Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act 2010 (NT)*.

<sup>62</sup> s 3(1) *Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act*

<sup>63</sup> The ADG Code is available at <http://www.ntc.gov.au/heavy-vehicles/safety/australian-dangerous-goods-code/> (last accessed 12 September 17).

<sup>64</sup> s 7, Water Act; DPIR submission 226, p 10.

Recharging aquifers	x	✓
Disposing of waste underground by means of a bore	x	✓
Extracting water	x	✓

It is important to note the activities listed above are currently regulated under the Petroleum Act and its supporting regulations because they are “regulated activities”, that is, they have an impact on the environment and do not fall into any of the exceptions.<sup>65</sup>

The Government has committed to removing the exemption under the Water Act,<sup>66</sup> which will mean that each of the activities listed in the table above will be prohibited *unless* a gas company has a licence or permit under the Water Act. In the context of a surface spill, the removal of the exemption will mean that a gas company will commit an offence under the Water Act if it causes, “*either directly or indirectly, (a) waste to come into contact with water or (b) water to be polluted*”<sup>67</sup> unless the company has a waste discharge licence under s 74 of the Water Act. The same act may trigger an environmental offence under the Petroleum Act.

Subject to the comments below, I agree that gas companies should require a separate approval under the Water Act for the above water-related activities. This will ensure that water-related activities by the shale gas industry, like water extraction and aquifer recharge (to the extent permitted),<sup>68</sup> are included in regional planning and allocation plans and that the regional, basin-wide impacts of the gas industry can be anticipated and managed.

If s 7 is removed, however, regulatory reforms will be required to ensure that assessment and approvals are not required under *both* the Water Act and Petroleum Act. This is unnecessary duplication. Further, the Water Act could be strengthened by ensuring that the decision-maker must:

- consider principles of ESD when granting a licence;
- publish environment plans and statement of reasons; and
- consult with stakeholders.

This process should apply to all types of licences granted under the Water Act.

<sup>65</sup> r 5, *Petroleum (Environment) Regulations 2016* (NT).

<sup>66</sup> DENR submission 230, p7; see also Hansard Transcript at p 145:

[https://parliament.nt.gov.au/\\_data/assets/pdf\\_file/0003/394086/DEBATES-DAY-3-20-OCTOBER-2016.pdf](https://parliament.nt.gov.au/_data/assets/pdf_file/0003/394086/DEBATES-DAY-3-20-OCTOBER-2016.pdf)

<sup>67</sup> s 16, *Water Act*.

<sup>68</sup> Incidentally, I note that the Northern Territory is the only Australian jurisdiction that does not charge for water extraction licences. Assuming that the industry will use around 2,500 ML/y in peak years it would cost a gas company around \$5 million to purchase this volume of permanent entitlements for the same project in Victoria.

The regulatory framework must also ensure that risk management systems are in place to manage impacts to water, including the risk of a spill (this can be achieved under petroleum legislation).

### **3. Spills outside the permit area**

DENR stated that “DENR carries off-site regulatory responsibility for [spills] and associated waste management.”<sup>69</sup> Again, it appears as though various agencies have responsibility for enforcing various pieces of legislation associated with the petroleum industry off the permit area.

#### **(a) EPA**

- i. *The EPA administer the EAA legislation outside of petroleum permits but it is not clear whether transportation of fracking chemicals and wastewater via road or rail is deemed “significant” and therefore assessed under environmental assessment legislation*
- ii. *The EPA issue approvals and licences for the transportation of listed wastes under the WMPCA outside of petroleum permits*

The EPA administers the WMPCA,<sup>70</sup> which applies outside petroleum permits. The collection, transport, storage, treatment or disposal of “listed wastes” is an offence unless a person has been granted an environmental protection licence.<sup>71</sup> “Listed wastes” are listed at Schedule 2 of the *Waste Management and Pollution Control (Administration) Regulations 1999* (NT) and include an extensive list of chemicals, many of which are fracking chemicals or included in wastewater.

Where an activity is licenced under the WMPCA an environment plan may be, but is not necessarily, required.<sup>72</sup> Before the EPA can grant an environmental protection licence it must consider a variety of matters, including the principles of ESD as well as any comments from other agencies.<sup>73</sup> The process is similar, but not identical, to the assessment process set out in the Environment Regulations under the Petroleum Act.

I am concerned, nonetheless, about the demarcation between the regulatory framework that exists on, and off, petroleum permits. My view is that the regulatory framework for the management of fracking chemicals and

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<sup>69</sup> DENR submission 230, p 8.

<sup>70</sup> DPIR submission 226, p 10; NT EPA website:

<sup>71</sup> s 30(3) *Waste Management and Pollution Control Act 1998* (NT).

<sup>72</sup> *Guideline for the Preparation of an Environment Management Plan*, p 3.

[https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0006/284883/guideline\\_prep\\_emp.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0006/284883/guideline_prep_emp.pdf) (last accessed 11 September 2019).

<sup>73</sup> s 32 *Waste Management and Pollution Control Act 1998* (NT).

wastewater produced by the shale gas industry should be the same on and off the permit area to avoid regulatory loopholes and duplication.

The regulator should also be the same to ensure accountability of the regulator, consistency of oversight and enforcement of the law, and to ensure that nothing falls through the gaps. DENR submitted that:

*“Under the Government’s environmental reform commitments, as articulated in its Healthy Environment, Strong Economy policy, the current demarcation between the environmental regulations of activities occurring on and off-site will be removed.”<sup>74</sup>*

I understand that the provisions in the WMPCA and the Environment Regulations will be consolidated into a new Environmental Protection Act. My view is that one regulator should administer that Act for all unconventional shale gas activities, regardless of whether they occur on and off the permit area.

- iii. *Where the waste crosses the NT border, the EPA issues waste transport certificates*

The National Environment Protection Council is established under the *National Environment Protection Council Act 1994* and there is mirror legislation in other jurisdictions. In the Northern Territory it is the *National Environment Protection Council (Northern Territory) Act 1994* (NT). The Council has power to make national environment protection measures and has made the *National Environment Protection (Movement of Controlled Waste) between States and Territories) Measure 1998*. The purpose of the measure is to:

*“provide a national framework for developing and integrating State and Territory systems for the management of the movement of controlled wastes between States and Territories originating from commercial, trade, industrial or business activities.”<sup>75</sup>*

In practice, the EPA issues a Waste Transport Certificate (**WTC**) wherever waste crosses the border. The guide for completing the certificate is found on the EPA’s website.<sup>76</sup> Origin had to complete a WTC when they transported fracking fluids and wastewater to Queensland in connection with the fracking of the Amungee well.<sup>77</sup> The WTC requires an emergency contact number to be

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<sup>74</sup> DENR submission 230, p 8.

<sup>75</sup> s 5 *National Environment Protection (Movement of Controlled Waste) between States and Territories) Measure 1998*

<sup>76</sup> *Guide for completing Waste Transport Certificate*

[https://ntepa.nt.gov.au/\\_data/assets/pdf\\_file/0007/284677/completing\\_waste\\_transport\\_certificate\\_s.pdf](https://ntepa.nt.gov.au/_data/assets/pdf_file/0007/284677/completing_waste_transport_certificate_s.pdf) (last accessed 11 September 2017).

<sup>77</sup> DPIR submission 289.

listed in the event there is an accident or spill.<sup>78</sup> No spill management plan was included.

(b) **DENR**

DENR administer the Water Act outside petroleum permits. As discussed above, the Water Act does not require any type of management system be in place to manage the risk of water pollution from spills off-site. The Water Act, however, makes it an offence to:

*“cause, either directly or indirectly, (a) waste to come into contact with water or (b) water to be polluted”.*<sup>79</sup>

The Water Act also prohibits activities of the kind listed in the table on page 12-13 unless the person has a licence from the Water Controller.

In order to meet current reporting timeframes, could I please have your response no later than **27 September 2017**. Please also note that your response will be published on the Inquiry’s submission library. To the extent your submission includes confidential information that should not be publicly disclosed, please identify that information and explain why it is confidential.

Yours sincerely



THE HON JUSTICE RACHEL PEPPER  
Chair

20 September 2017

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<sup>78</sup> Schedule B, *National Environment Protection (Movement of Controlled Waste) between States and Territories) Measure 1998*.

<sup>79</sup> s 16, *Water Act*.

# Attachment A

	Permit only	On and off the permit area		Off the permit only	
Legislation	Petroleum Act	Environmental Assessment Act	Work Health and Safety Legislation	Water Act	Waste Management and Pollution Control
Decision-maker	Minister for Resources	EPA	Work Health Authority	Controller of Water	EPA
Agency Support	DPIR	DENR	NT Worksafe	DENR	DENR