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ECNT submission on the Middle Arm Industrial Development NTEPA Referral

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Dear Dr Vogel

Middle Arm Industrial Development Precinct – Referral for Strategic Environmental Assessment

1. The Environment Centre Northern Territory Inc (**ECNT**) is the peak body for conservation in the NT, with over 7000 supporters.

2. On 16 February 2022, the Hon. Minister Lawler, Minister for Infrastructure, Planning, Logistics; Minister for the Environment announced that the project known as the Middle Arm Sustainable Development Project **(Proposal)** had been referred to the Northern Territory Environment Protection Authority (**NT EPA**) for strategic assessment.[1]

3. We refer to the statutory notice published on 12 April 2022, pursuant to reg 52(1) of the *Environment Protection Regulations 2020* (**Regulations**) opening public comment with respect to the proponent-initiated EIS referral of a strategic proposal, submitted by the NT Department of Planning and Logistics for an industrial precinct on Middle Arm Peninsula, Darwin Harbour (**Referral**).[2]

4. The Referral comprises the following documents (collectively, the **Referral Documentation**):
    a. Referral Form;
    b. Referral Report;
    c. Draft Program;
    d. Draft Terms of Reference (**Draft TOR**);
    e. Draft Statement of Reasons.

[1] 'Middle Arm Sustainable Development Precinct Strategic Assessment', *Australian Government, Department of Agriculture, Water and the Environment* (Web Page, 14 April 2022) <https://www.awe.gov.au/environment/epbc/strategic-assessments/middle-arm>.
[2] Available at: Middle Arm Sustainable Development Precinct | NTEPA.

SUMMARY

5. The Proposal to construct a major industrial precinct, centred around petrochemicals manufacturing, in the middle of Darwin Harbour, is perhaps the single largest and most environmentally harmful development proposed in Darwin's 160-year settler history.

6. At a time when major cities around the world are shutting down heavy industry close to residential areas due to impacts on human health and the environment, it is extraordinary that the Northern Territory Government proposes to construct and operate a facility of this kind in the middle of the highly-valued Darwin Harbour, and within a few kilometres of the cities of Palmerston and Darwin.

7. ECNT is very concerned by the lack of detail in the Referral about the industries that are proposed to be constructed at Middle Arm. This has made meaningful engagement with the Referral and Draft TOR very difficult. Euphemisms are used throughout the Referral Documentation to describe the proposed precinct (eg "common user infrastructure", "sustainable", "low emissions") but no detail is given about the possible configurations of the industries proposed to operate here, or detailed consideration of their likely impacts. No development scenarios are given, beyond a laundry list of "classes of actions". A draft Development Plan has not been released. ECNT believes that the approach taken in the Referral Documentation gives a misleading picture of the Proposal, and inhibits meaningful public engagement with the Referral. It is unacceptable that the detail about what is proposed (including potential development scenarios) may not be available to the public until the environmental impact statement is lodged sometime in 2023. This undermines the transparency of the strategic environmental assessment, and will erode public confidence in the assessment process.

8. Despite the public branding of the Proposal as "sustainable", it is clear that the industries which are planned for this precinct are some of the most polluting and harmful in the world (see report of Dr Michael Petroni at Appendix 1). For example, people who work at or live near petrochemical plants are at risk of developing certain cancers,[3] and there are higher rates of asthma and respiratory conditions in the areas surrounding petrochemical plants, as well as impacts on pregnancy outcomes.[4] It is critical that the public is informed as early as possible about these impacts, including through the Referral Documentation.

9. Importantly, the Proposal would largely rely on gas as a feedstock for the creation of petrochemical products such as fertilisers and plastics. As the world moves away from fossil

[3] Domingo, José L., Montse Marquès, Martí Nadal, and Marta Schuhmacher. (2020). "Health risks for the population living near petrochemical industrial complexes. 1. Cancer risks: a review of the scientific literature." *Environmental research* 109495.
[4] Marquès, Montse, José L. Domingo, Martí Nadal, and Marta Schuhmacher. (2020). "Health risks for the population living near petrochemical industrial complexes. 2. Adverse health outcomes other than cancer." *Science of The Total Environment* 139122.

fuels as an energy source, plastic [5] production is being used to economically justify continued fossil fuel development. This is dangerous for the climate, as every stage of the lifecycle involves carbon emissions – not just the energy-intensive process of cracking gas into plastic feedstock (where renewable energy is proposed to be used for electricity instead of gas).

10. The development of the Middle Arm Industrial Precinct is intertwined with the development of new gas fields, including the hugely polluting Barossa gasfield which is proposed to "backfill" the Darwin LNG plant (and which will generate up to 350 million tonnes of lifecycle greenhouse gas emissions) and fracking in the Beetaloo Basin. ECNT notes that proceeding with the Beetaloo Basin could increase Australia's greenhouse gas emissions by 13%, and have an impact on the ability of Australia and the world to meet commitments under the UN Paris Agreement: emissions from the hoped-for amount of gas from the Beetaloo sub-basin would represent 196% of Australia's estimated remaining "carbon budget" (see affidavit of Dr Nerilie Abram filed in the Federal Court proceedings *ECNT v Minister for Resources and Water* NSD758/2021, at paragraphs [23] and [82], at Appendix 2 attached). The Proposal should thus properly be understood as a new fossil fuel project, which carries with it significant climate impacts. The direct, indirect and cumulative life cycle emissions of the Proposal (including from opening up the Beetaloo and Barossa gas fields as feedstock for the precinct) must be assessed as part of this strategic environmental assessment.

11. In addition, as the world moves rapidly away from fossil fuel developments, there is a very serious risk that the Middle Arm precinct will become a stranded asset because the gasfields proposed to supply it will never reach production. Further, climate projections show that the precinct may itself be under water by as early as 2050 (see report by Dr Michael Petroni at Appendix 1). The NTEPA must require a thorough cost-benefit analysis of the Proposal as part of the strategic environmental assessment, including an analysis of the economic risks associated with the development due to climate change.

12. ECNT is concerned by the developments that appear to have been "carved out" from the scope (or "strategic assessment area"). This would appear to include all existing operations at Middle Arm (including Darwin LNG and Ichthys LNG facility) and all projects that are proposed or foreseeable at Middle Arm including the Beetaloo Product Corridor and Channel Island Power Station Upgrades (see page 28 of the Draft Program, and page 6 of the Draft TOR). If these major industrial developments are excluded from scope, this would render the strategic environmental assessment largely nugatory. Further, it would exclude an assessment of the impacts of the very developments that will provide feedstock for the Middle Arm Industrial Precinct and contribute materially to its impacts (including, but not limited to, scope 1, 2 and 3 greenhouse gas emissions from the Barossa and Beetaloo gas fields). These significant existing and proposed developments must be included in the scope of the strategic environmental assessment, or it cannot properly be called a strategic proposal.

[5] https://e360.yale.edu/features/the-plastics-pipeline-a-surge-of-new-production-is-on-the-way

13. ECNT is concerned that there is next to no knowledge in the community about the proposed developments at Middle Arm or their impacts. The Proposal therefore lacks any social licence. This lack of knowledge is exacerbated by the absence of meaningful detail in the Referral of the industry scenarios that are proposed for Middle Arm, and their environmental and health impacts.

14. There are serious legal and environmental implications associated with the lack of detail in the Referral. The Proposal will be the subject of the first strategic environmental assessment conducted in the Northern Territory, and may provide a template for future similar assessments. If, after the strategic environmental assessment, a strategic approval is granted given for the Proposal under the *Environment Protection Act*, then individual (highly toxic) projects may be subject to a truncated and less rigorous/accountable assessment and approval process (perhaps as little as 60 days per individual project).

15. In the absence of this important information, and given the seriousness of the implications of a strategic approval being given for the Proposal, ECNT engaged Dr Michael Petroni to provide a report demonstrating the air pollution and industrial accident risks of one particular development scenario for Middle Arm which was provided at an industry briefing by the proponent (see attached report of Dr Michael Petroni, Appendix 1)**.** Dr Petroni's report demonstrates that the air pollution and industrial accident risks of the Proposal are very significant. In particular, the Proposal:
    a. may increase industrial fine particulate emissions by 513% in the region, resulting in $75 million of additional health impacts, equivalent to 15 premature deaths per year;
    b. may drive up greenhouse gas emissions in the Northern Territory by 75%, levelling an annual social cost of $310 million; and
    c. may increase the industrial cancer hazard in the region four-fold due to releases of formaldehyde, acetaldehyde, polycyclic aromatic compounds, and additional air toxins.

16. Given these risks, it is incumbent upon the NTEPA to ensure that the Proposal is subject to the highest possible standards of environmental and public scrutiny. The Referral Documentation as currently drafted give little hope this objective will be achieved. The Development Plan (including development scenarios and their potential environmental impacts) must be released publicly, a methodology for undertaking the Strategic Environmental Assessment must be developed by the NTEPA and peer-reviewed (based on the Development Plan), and the Referral Documentation (including the Draft Terms of Reference) must be rewritten. Finally, given the significant impacts of the Proposal, and the minimal knowledge base in the community about its impacts, it is crucial that the strategic environmental assessment take place at the highest possible level, a public inquiry, and that a rigorous consultation and engagement strategy is developed and implemented by the NTEPA with respect to the Proposal.

PART I – INADEQUACY OF REFERRAL DOCUMENTATION

17. ECNT submits that the Referral Documentation is deficient in key respects, such that the Proposal cannot properly be described as a strategic proposal pursuant to the *Environment*

Protection Act. It is not possible to develop a robust and rigorous terms of reference for the proposed strategic environmental assessment of the Proposal on the basis of the Referral Documentation for the following reasons:

a. The Referral Documentation (including the Draft TOR) does not contain a clear description of the purpose of the strategic environmental assessment, including how it is "strategic". By way of illustration, the WA EPA's strategic assessment of the potential cumulative impacts of developments in Exmouth Gulf[6] contained a clear description of the purpose of that assessment, namely to advise on:
    i. The current state of key environmental, social and cultural values in Exmouth Gulf;
    ii. Potential impacts on those values posed by existing activities and developments;
    iii. Potential impacts on those values by proposed activities and developments;
    iv. Compatibility of future developments with the key envionrmental, social and cultural values in the Exmouth Gulf.

    A similar purpose should be included in the Draft TOR and Referral Documentation as a whole, including a description of how it is a strategic proposal.

b. The Referral Documentation does not include a draft Development Plan, which would describe in some details the industries/developments that are proposed for the Middle Arm Industrial Development Precinct, including development scenarios. It is extremely difficult (if not impossible) to develop terms of reference without more clarity around the industries that will operate at Middle Arm. At present, there is just a vague laundry list of potential industries or classes of actions (for example, see page 11 of the Draft TOR). All of these actions have wildly divergent characteristics and impacts. This differs from other strategic environmental assessments where the industry is named and the methodology for assessment designed around that industry and its foreseeable impacts (for example the bioregional assessments for impacts of coal seam gas and coal mining on water resources).[7] The Development Plan, including development scenarios, should be publicly released (or at the very least provided to the NTEPA) before the terms of reference are finalised. The strategic environmental assessment must assess the impacts of each of these (credible) scenarios.

c. The Referral Documentation contains numerous claims of the precinct being "low emissions" and "sustainable". As pointed out in Dr Petroni's report, these claims appear to rely upon the success of highly prospective and unproven projects, such as carbon capture and storage at Bayu Undan (or elsewhere offshore) being successfully developed by Santos, or Sun Cable's Australia-Asia Power Link project being viable. ECNT notes that carbon capture and storage is unproven and speculative,[8] and is unlikely

[6] https://www.epa.wa.gov.au/sites/default/files/Publications/EPA%20s.16e%20Report%20-Exmouth%20Gulf.pdf.
[7] https://www.bioregionalassessments.gov.au/methods/bioregional-assessment-methodology.
[8] https://www.climatecouncil.org.au/resources/what-is-carbon-capture-and-storage/.

to reduce direct, indirect and cumulative greenhouse gas emissions.[9] Questions have also been raised about the viability of Sun Cable's Australia-Asia Power Link,[10] and there is a possibility (if not probability) that renewable energy will not be available to power the Middle Arm site. It is thus essential that the terms of reference require the proponent to model scenarios that exclude carbon capture and storage and renewable energy being available for the precinct to reduce emissions.

d. The Referral Documentation (including the Draft TOR) does not contain a methodology for how the strategic environmental impact assessment will be undertaken, including how direct, indirect and cumulative impacts will be assessed. For example:
    i. there is no methodology for how cumulative impacts will be assessed, which is the most important component of any strategic assessment. Cumulative impacts should include past and future impacts (with carefully defined spatial and temporal boundaries, see further below) not only of the Proposal, but other regional industries/land and marine uses/impacts, as well as the impacts of climate change on water resources, biodiversity health and other parameters.
    ii. There is no definition of receptors, and how these are to be ascertained;
    iii. There is no methodology for how baselines should be collected and synthesised, or how any gaps/uncertainties will be addressed. It is noted that a key element to any strategic assessment is the development of baseline information so that impacts can be assessed against the current state of the region;
    iv. Spatial and temporal scopes or scales are poorly defined. The setting of spatial and temporal boundaries is critical for assessing the significance of cumulative impacts in the future and should include:
        1. Setting spatial boundaries for the assessment as a whole based on sound science, which are expansive and must include the Greater Darwin Region and Greater Darwin Harbour. There is no map showing the Strategic Assessment Area in the Draft TOR. ECNT notes that the map showing the Strategic Assessment Area in the Draft Program appears to exclude major existing industrial developments such as Darwin LNG and the Ichthys facility, and excludes much of Darwin and Palmerston. This is unacceptable for reasons given elsewhere in this submission.
        2. Setting temporal boundaries or scales for the assessment as a whole based on sound science, which include past temporal boundaries (which take into account past cumulative impacts from a defined point in time), and future temporal boundaries (which set the time frame for assessing activities that will in the future cumulatively impact a valued environment, and which may exceed the 50-year timeframe of the proposed strategic approval). All modelling time domains must be of sufficient duration that model dynamics have achieved quasi-

[9] https://ieefa.org/wp-content/uploads/2021/10/How-To-Save-the-Barossa-Project-From-Itself_October-2021_3.pdf.
[10] https://www.abc.net.au/news/2022-05-06/sun-cable-project-sparks-doubts-over-singapore-market-interest/101026162.

equilibrium. In addition, as the timescale of impacts increases, external factors such as climate change and population growth will interact with impacts from the Proposal. These interactions must be considered when assessing risk.

A methodology for undertaking the strategic environmental assessment should be developed by the NTEPA, and peer reviewed, prior to the terms of reference being finalised.

e. ECNT is concerned by the repeated focus of the Proposal on an "outcomes framework" rather than an approach that defines the "allowable impacts". "Outcomes" based approaches are currently in vogue and may be acceptable if sufficiently prescriptive and well-defined, but indications are that the outcomes will be vague and based on industry, rather than environmental, sustainability criteria. For example, the Draft TOR defines "sustainability" by referring to Infrastructure Australia's outcomes-focused understanding of sustainability, i.e. "meeting the needs of the present without compromising the ability of future generations to meet their own needs". It is hard to see how such an outcome could be measured against meaningfully. The frequent references to a proposed "Sustainability Outcomes Framework" cross referenced to Infrastructure Australia and Infrastructure Sustainability Council of Australia frameworks, are similarly lacking in necessary prescription. ECNT notes that this is an environmental impact assessment, and it does not appear appropriate to define the environmental outcomes to be achieved by reference to industry standards of "sustainability".

f. ECNT is concerned by the "excluded developments" listed in the Referral Documentation, which are said to include all existing operations at Middle Arm (including Darwin LNG and Ichthys LNG facility, and all projects that are proposed or foreseeable at Middle Arm including the Beetaloo Product Corridor and Channel Island Power Station Upgrades (see page 28 of the Draft Program, and page 6 of the Draft TOR). It is crucial that the strategic environmental assessment include an assessment of impacts of all existing industries and activities in Darwin Harbour (and certainly Middle Arm), or it cannot properly be described as a strategic assessment. Moreover, this would appear to exclude an assessment of the impacts of very developments that will provide feedstock for the Middle Arm Industrial Precinct and contribute materially to its impacts, including scope 1, 2 and 3 greenhouse gas emissions from the Barossa and Beetaloo gas fields. These significant existing and proposed developments must be assessed as part of the cumulative impacts assessment for the Proposal.

PART II – INADEQUACY OF TERMS OF REFERENCE

Likely harms of the Middle Arm Development

18. According to the Draft Program, the industry types being considered for the Middle Arm Development include[11]:

    - Liquefied Natural Gas (LNG)
    - Ammonia and derivatives
    - Urea and derivatives
    - Ethylene and derivatives
    - Methanol and derivatives
    - Gas to liquids (GTL)
    - Hydrogen
    - Carbon capture and storage
    - Minerals processing
    - Advanced manufacturing
    - Support service industries

19. Scientific research and the lived experiences of communities near similar complexes of industries around the world suggests that the Middle Arm Development would cause irreparable harm to the local environment and to those living in the Greater Darwin Region. The daily operations of the facilities would multiply toxic pollutants in the air residents breathe and the marine environmental which they fish in. The industries proposed for the complex could increase by some 75% the greenhouse gas emissions in the entire Northern Territory, which would undermine the government's climate goals and contribute to climate-related changes in sea levels and flooding that will endanger the Middle Arm itself, which is predicted to be regularly inundated by 2030 (see Figure 1).[12] The footprint of the precinct itself, over 1500 hectares,[13] is likely to not only destroy the soil on which it is built, but also degrade, through its toxic releases, the soils and mangrove "conservation areas" on the rest of the peninsula – the very mangroves that would protect the industries from the higher storm surges of the future.[14]

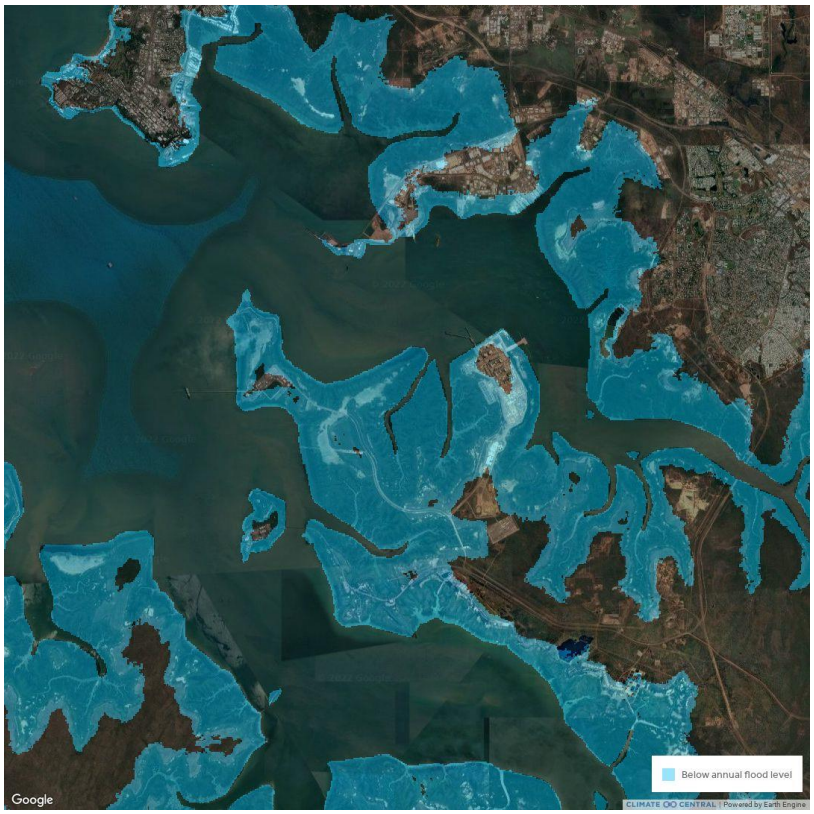
20. This complex would bring to Darwin the fear of the flammable and explosive materials inside that, if ignited through any number of pathways, could lead to deaths and injuries, or days of sheltering-in-place to avoid the risk of breathing too much of the air outside. As a result of these

[11] Draft Program, p. 26.
[12] See Appendix 1. P. 6.
[13] Invest NT, Middle Arm Sustainable Development Precinct, (2022), https://invest.nt.gov.au/investment-opportunities/middle-arm-sustainable-development-precinct.
[14] Barbara Gworek et al., "Ecological Risk Assessment for Land Contaminated by Petrochemical Industry," *PLOS ONE* 13, no. 10 (October 11, 2018): e0204852, https://doi.org/10.1371/journal.pone.0204852.

risks and the tall stacks and flares that would be part of the complex, these facilities would likely change the sense of place of those living in Darwin.[15]

21. While the government has rebranded the proposed precinct as "sustainable," the petrochemical and mineral refining industries slated for the Middle Arm are among the dirtiest in the world. There are few proven or commercially viable means of controlling the significant pollution from these facilities, and what technologies there are to address one form of pollution (e.g. air or water pollution) often create another kind of pollution (e.g. solid waste). No technology reduces emissions by 100%.

Figure 1. Mid-range sea level rise projection shows that by 2030, annual flooding will reach areas planned for industrial facilities within the Middle Arm Development.[16]



22. The sections that follow describe some of these likely impacts of the Middle Arm Development based upon the limited information the government has provided about the facilities. The summary is grounded in the analysis of Dr. Michael Petroni, whose expert report can be found in

[15] See, for example, the experiences of communities around the world living in the shadow of petrochemical facilities at toxictours.org.
[16] Climate Central, *Coastal risk screening tool: Land projected to be below annual flood level in 2030*, , https://coastal.climatecentral.org/map/12/130.9028/-12.5011/?theme=sea_level_rise&map_type=year&basemap=simple&contiguous=true&elevation_model=best_available&forecast_year=2030&pathway=rcp45&percentile=p50&refresh=false&return_level=return_level_1&rl_model=gtsr&slr_model=kopp_2014. Map is based upon mid-range legacy projections from Robert E. Kopp *et al.*, *Probabilistic 21st and 22nd century sea-level projections at a global network of tide-gauge sites*, 2, Earth's Future, 383–406 (2014), https://onlinelibrary.wiley.com/doi/abs/10.1002/2014EF000239.

Appendix 1. Dr. Petroni's analysis draws on the known emissions of facilities comparable to those in the Draft Program from around the world, resulting in a sense of the scale of impacts from these facilities. Note that this summary does not address the many upstream impacts of the facilities, including the diversion of millions of liters of freshwater resources from the Top End into the Middle Arm Development's industries, or the air, water, climate and larger ecological and social impacts of the hard rock mines, as well as gas wells, processing facilities, and pipelines that feed the complex. It also does not consider impacts from "advanced manufacturing" or production of "derivatives," named in the list above, as these are too vague to assess, but could generate significant additional air and water emissions. The section ends with a review of some of the key suggestions Dr. Petroni made in his report for improvement for the Terms of Reference (TOR) or the Strategic Environmental Assessment.

Air quality impacts

23. As Dr. Petroni's report shows, the Middle Arm Development will substantially increase criteria air pollutant emissions in the Greater Darwin Region. As shown in Table 1, drawn from the report's Executive Summary, the Middle Arm Development could multiply emissions of particulate matter, sulfur dioxide, and nitrogen oxides by factors of between two and five. Carbon monoxide emissions may increase eight-fold, while volatile organic compounds emissions (VOCs) from the facility would more than double those emitted today in the region – both are precursors to harmful ground-level ozone.

24. These emissions could have serious health consequences for local populations, beginning with those who are already vulnerable, such as those with asthma. The large quantities of fine particulate matter emissions alone that would result from the complex, which form through the combustion of fuels or through gaseous emissions reacting with the environment, would likely shorten the lives of the people breathing it over time, as it is closely associated with increased mortality from all causes, cardiovascular disease, respiratory disease, and lung cancer.[17] This fine particulate matter alone could lead to 15 premature deaths a year among affected communities in and around Darwin, resulting in some 75 million AUD of additional health costs. Dr. Petroni draws these conclusions from a health screening analysis grounded in the emissions data of comparable facility emissions from around the world, which were carefully selected based on data quality, facility age (seeking newer facilities to have more comparable technologies), and facility scale.[18]

Table 1. Summary of emissions changes that may occur due to the studied MASDP development scenario compared to the Greater Darwin Region3 or the Northern Territory.[19]

[17] World Health Organization, *WHO global air quality guidelines,* p. 246, (2021), https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1&isAllowed=y.
[18] The assumptions of the *scale* of the Middle Arm Development industries comes from the annual production values provided in a table of likely facilities shared by Jason Howe of the NT Gas Taskforce as part of a recent presentation. See Appendix 1, p. 29 for this table, and p. 14-17 for the methods and assumptions of Dr. Petroni's study.
[19] Appendix 1, p. 6.

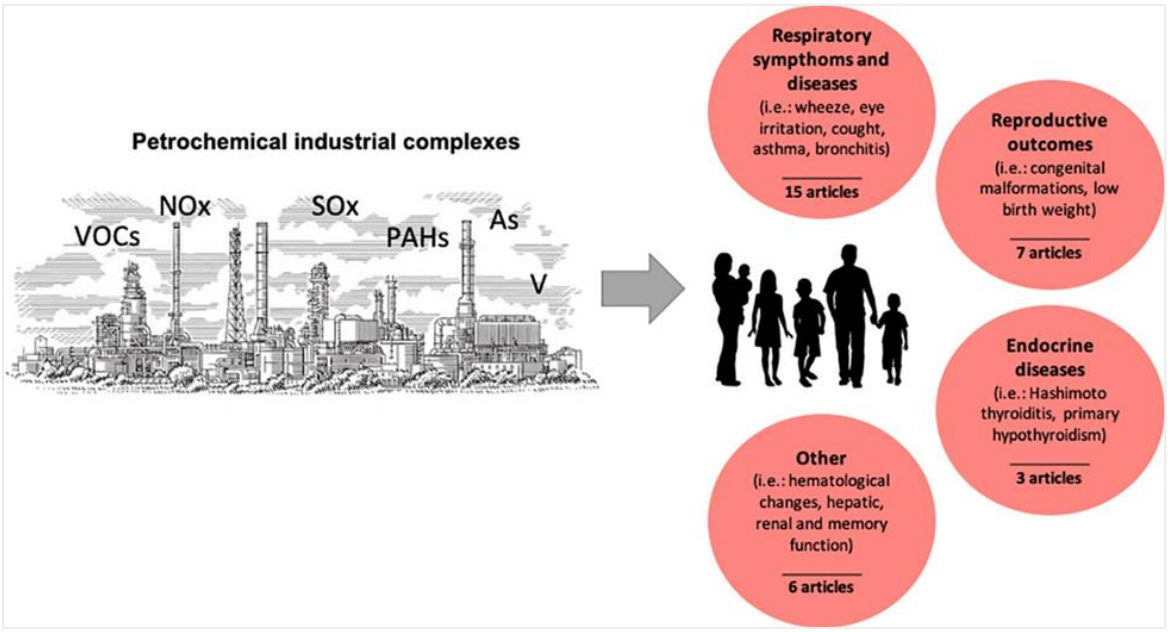
Pollutant	MASDP scenario estimated annual total	Increase in emissions vs region* or territory**
Carbon Monoxide	34770.97 (Tonnes)	805%*
PM2.5 Primary	633.05 (Tonnes)	513%*
PM10 Primary	501.83 (Tonnes)	391%*
Sulfur Dioxide	1278.82 (Tonnes)	245%*
Volatile Organic Compounds	4753.8 (Tonnes)	233%*
Nitrogen Oxides	4852.89 (Tonnes)	192%*
Greenhouse Gases (CO_2e)	15.52451 (Megatonnes)	75%**

25. In addition to criteria pollutants, petrochemical facilities emit significant quantities of hazardous air pollutants, or HAPs. HAPs are those pollutants with clearly quantified cancer or other health risks, though there are many similar pollutants produced by petrochemical facilities that may also be hazardous but have not been sufficiently studied to have been properly assessed. Dr. Petroni estimates that the emissions from these facilities could increase the industrial cancer hazard in the region four-fold, including from formaldehyde releases, acetaldehyde, and polycyclic aromatic hydrocarbons (PAHs), among other HAPs.[20] The carcinogenic HAPs that petrochemical and mineral processing facilities emit also include dioxins and heavy metals, which further contaminate the surrounding environment by their deposition onto local soils and waterways.[21] Some of these toxins, including PAHs, dioxins, and heavy metals, are taken up by plants and bioaccumulate through the animal food chain, contributing to elevating cancer risks for local populations.[22]

[20] Appendix 1, p. 6.
[21] Naef A. A. Qasem *et al.*, *Removal of heavy metal ions from wastewater: a comprehensive and critical review*, 4, npj Clean Water, 1–15 (2021), https://www.nature.com/articles/s41545-021-00127-0; Jaime Tapia-Gatica *et al.*, *Advanced determination of the spatial gradient of human health risk and ecological risk from exposure to As, Cu, Pb, and Zn in soils near the Ventanas Industrial Complex (Puchuncaví, Chile)*, , Environmental Pollution, 113488 (2019), https://linkinghub.elsevier.com/retrieve/pii/S0269749119338606.
[22] Erik Rifkin & Judy LaKind, *Dioxin bioaccumulation: Key to a sound risk assessment methodology*, , Journal of Toxicology and Environmental Health (2009), https://www.tandfonline.com/doi/abs/10.1080/15287399109531509.

26. The health harms from air pollution of these kinds of facilities around the world are well-documented. As Dr. Petroni notes, a 2020 review of 16 epidemiological studies published in the journal of environmental science found that communities living within five kilometers of petrochemical facilities had a 30% higher chance of developing leukemia than communities without petrochemical activity.[23] A different 2020 meta-analysis assessing cancer risks specifically associated with petrochemical facilities concludes that "leukemia and other hematological malignancies were reported as the main types of cancer for populations living in the neighborhood of petrochemical industries, based on studies performed in Taiwan, Spain, United Kingdom, Italy and Nigeria," and that, "scientific studies reported a high incidence of lung and bladder cancer in Taiwan, Italy and USA, as well as an excess mortality of bone, brain, liver, pleural, larynx and pancreas cancers in individuals living near petrochemical complexes from Taiwan, Spain, Italy, United Kingdom and USA."[24] A third 2020 meta-analysis looking at the links between petrochemical facilities and non-cancerous health impacts found a range of other health effects from these facilities, including asthma and reproductive harms (see Figure 2).[25]

Figure 2. Air emissions and associated health outcomes from petrochemical facilities.[26] In addition to high particulate matter emissions, harmful petrochemical complex emissions include nitrogen oxides (NOx), sulfur oxides (SOx), hazardous air pollutants like polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and heavy metals like arsenic (As) and vanadium (V).



[23] Calvin Jephcote *et al.*, *A systematic review and meta-analysis of haematological malignancies in residents living near petrochemical facilities*, 19, Environ Health, 53 (2020), https://ehjournal.biomedcentral.com/articles/10.1186/s12940-020-00582-1.
[24] José L. Domingo *et al.*, *Health risks for the population living near petrochemical industrial complexes. 1. Cancer risks: A review of the scientific literature*, 186, Environmental Research, 109495 (2020), https://www.sciencedirect.com/science/article/pii/S0013935120303881.
[25] Montse Marquès *et al.*, *Health risks for the population living near petrochemical industrial complexes. 2. Adverse health outcomes other than cancer*, 730, Science of The Total Environment, 139122 (2020), https://www.sciencedirect.com/science/article/pii/S0048969720326395.
[26] Figure from Marquès *et al.* 2020.

27. Predicting the precise harms from the air emissions of Middle Arm Development to individuals in Darwin would require not only a complete documentation of each facility to be developed, including its products and production levels, particular technologies and predicted emissions from each process and the exact way the emissions are emitted, but a rigorous dispersion model study with several years of data that are not yet collected in the Darwin region. These dispersion model needs are further detailed below.

28. It is important to remember that a model is only as good as the data upon which it is built. There is still much that science has yet to learn about the health effects of some of the dozens of chemicals likely to be emitted by these facilities. Moreover, there is much that is still poorly understood about to be learned about both the cumulative and synergistic effects of the chemicals emitted, and how they interact to affect the health of local populations with different kinds of underlying conditions. A rigorous dispersion model may still underpredict harms as from a complex like the Middle Arm Development as a result.

Impacts on coastal processes, Marine Environmental Quality and Marine Ecosystems

29. Darwin Harbour is of very high environmental, recreational and cultural value for Territorians.[27] The 2021 Integrated Darwin Harbour Report Card identified 12 values that are integral to the Harbour, including resilience and climate change, clean water, healthy ecosystems and landscapes, biodiversity, Indigenous values, management, lifestyles and recreation, sustainability and tourism. Darwin Harbour is home to very many diverse ecosystems, including intact mangrove systems, coral reefs, mudflast and seagrass beds. It supports high biodiversity and provides habitat for nesting turtles, dolphins, dugongs, migratory shorebirds and fish. It also is important as a recreational fishing ground for many Darwin people. The health of Darwin Harbour is also vital for important Northern Territory industries, such as pearling, tourism and barramundi.

30. Darwin Harbour has been subject to considerable industrial development in recent years, including from the construction and operation of the Darwin LNG facility, the construction and operation of the Inpex processing plant, the construction and operation of the Darwin LNG facility, the development of heavy industry at East Arm, and the redevelopment of Larrakeyah Barracks. Moreover, Darwin Harbour's unique values are threatened by climate change, which will lead to sea level rise, high terrestrial and sea surface temperatures, mangrove die-back, coastal inundation and tidal loss, and biodiversity loss. The Middle Arm Industrial Precinct will further impact Darwin Harbour's precious and at-risk ecosystems, disrupt recreational activity in the Harbour, and potentially adversely impact a number of iconic Northern Territory industries. It is crucial that all marine uses (existing and forecasted) are assessed as part of the strategic environmental assessment, particularly for conservation, fisheries, aquaculture, defence, tourism, shipping, cultural values and recreation.

[27] Darwin Harbour: 2021 Integrated Report Card at https://nt.gov.au/__data/assets/pdf_file/0003/1059330/darwin-harbour-2021-integrated-report-card.pdf.

31. There are serious deficiencies in baseline information about Darwin Harbour by which to rigorously assess the marine impacts of the Proposal. In particular, there are major gaps in understanding around the potential impacts of development including:
    a. Toxicants, contaminants;
    b. Biological impacts and ecological health indicators;
    c. Estuarine and land-sea ecosystem processes and function;
    d. Soft sediment communities;
    e. Coral reed and seagrass communities;
    f. Fish nursery and feeding areas;
    g. Movements and critical habitat of key marine megafuana.

32. It is critical that baseline ecosystem data about Darwin Harbour is obtained as part of the strategic environmental assessment, including in the above areas. ECNT is concerned that much of the marine research undertaken in Darwin Harbour has been funded and controlled by the gas industry. For example, the Darwin Harbour Integrated Monitoring and Research Program (funded by Inpex) has become the default long-term marine monitoring program for Darwin Harbour, and Inpex retains a veto over the public release of this data.

33. Existing pressures on Darwin Harbour include industrial activities, urban runoff and discharges, maintenance dredging and clearing of mangroves. The most recent Darwin Harbour report card demonstrated degraded sediment quality and elevated metal concentrations at nearby East Arm. Construction and operation activities at Middle Arm have the potential to disturb marine sediments, with a great deal of uncertainty regarding the characteristics of the material to be dredged. It is crucial that detailed geotechnical investigations occur to address uncertainties in the sediment characteristics. Studies (including modelling) are also required to establish the zone of influence and the scale of any likely sediment plumes. Dredge plume modelling should include hydrodynamic and ecological modelling and ascertain impact prediction to inform an impact management program. Without these studies, it is not possible to assess potential environmental impacts including potential impacts on habitats supporting threatened species. ECNT notes that there are numerous other dredging projects currently occurring and proposed by other proponents. For example, the Darwin Ship lift project requires another 500,000m3 of dredging, and Santos' proposed "Pipeline Duplication Project" will also entail significant dredging. Cumulative impacts of underwater noise, air quality and water quality also need to be assessed in the context of the plans to further industrialise the harbour. Full characterisation of the contamination of marine sediments is required to obtain a greater understanding of recently accumulated sediments and to assess the impact of proposed dredging and trenching on marine environmental quality.

34. ECNT notes that it is critical to understand the impacts of existing developments (including the Inpex development) on marine megafauna as part of the strategic environmental assessment. Limited surveys on marine megafauna populations suggest significant impacts did occur as a consequence of the Inpex development, with almost half of the recorded Humpback Dolphin

population leaving the Harbour.[28] The last marine Turtle survey was conducted in 2014.[29] Without repeated surveys it is difficult to ascertain cumulative impacts of existing developments, and to project the impacts of future developments. The Proposal may push the remaining marine megafauna from the Harbour considering its proximity to the relative safe haven of the undisturbed West Arm. Comprehensive data on marine megafauna populations, coral extent and seagrass health are essential to understand the impact of the Proposal. Applied research into the causes of population decline are required along with ongoing biodiversity monitoring. Targeted marine benthic habitat surveys of the areas to be disturbed during construction, and assessment of underwater noise impacts during construction and operation are required.

35. ECNT notes that hydrodynamic modelling studies suggest the Harbour is poorly flushed due to the lack of big river flows and the diurnal tidal cycle resulting in 20 day flushing times.[30] Any chemical or petroleum release into the Harbour is likely to remain there for a considerable period of time as seen from the 2016 oil spill from the cargo vessel Antung that spread some 30 kilometres.

36. Wastewater emitted, after treatment, from the facilities into Darwin Harbour are likely to include a variety of hydrocarbons, eutrophication-causing nitrogen, heavy metals, and various sulphur-containing compounds.[31] These can have a variety of harmful effects on the receiving marine environment, with bivalves being particularly affected, and heavy metals bioaccumulating up the food chain.[32]

37. Effluent emissions from "derivative" and "advanced manufacturing facilities would extend beyond these emissions. There are regular spills at plastics manufacturing facilities, for example, of tiny plastic spheres called "nurdles." These nurdles notoriously coat the beaches and waterways of the Gulf Coast of the US, where they are produced as ethylene derivatives, and accumulate in the bodies of local sea life.[33]

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[28] https://www.abc.net.au/news/2018-11-30/darwin-harbour-dolphin-population-decline-worriesscientist/10157960#:~:text=Her%20research%20shows%20the%20humpback,2011%20to%2050%20in%202017.
[29] 9 https://ntepa.nt.gov.au/__data/assets/pdf_file/0006/761496/draft_eis_darwin_processing_facility_appendixT_technical_report_marine_fauna.pdf.
[30] 7 https://ntepa.nt.gov.au/__data/assets/pdf_file/0004/287311/Appendix-B-Hydrodynamic-and-Water-QualityModelling.pdf.
[31] Madhav Ghanta *et al.*, *Environmental impacts of ethylene production from diverse feedstocks and energy sources*, 4, Appl Petrochem Res, 167–179 (2014), https://doi.org/10.1007/s13203-013-0029-7; Oxana Botalova *et al.*, *Identification and chemical characterization of specific organic constituents of petrochemical effluents*, 43, Water Research, 3797–3812 (2009), https://linkinghub.elsevier.com/retrieve/pii/S0043135409003820; Qasem, Mohammed, and Lawal, *supra* note 10; Natascha Wosnick *et al.*, *Negative metal bioaccumulation impacts on systemic shark health and homeostatic balance*, 168, Marine Pollution Bulletin, 112398 (2021), https://www.sciencedirect.com/science/article/pii/S0025326X2100432X.
[32] Thomas H. Suchanek, *Oil Impacts on Marine Invertebrate Populations and Communities*, 33, Am Zool, 510–523 (1993), https://academic.oup.com/icb/article-lookup/doi/10.1093/icb/33.6.510; Dean W. Boening, *An Evaluation of Bivalves as Biomonitors of Heavy Metals Pollution in Marine Waters*, 55, Environ Monit Assess, 459–470 (1999), https://doi.org/10.1023/A:1005995217901.
[33] Neel Dhanesha, *The massive, unregulated source of plastic pollution you've probably never heard of*, Vox, 2022, https://www.vox.com/recode/23056251/nurdles-plastic-pollution-ocean-microplastics; Karen McVeigh, *Nurdles: the worst toxic waste you've probably never heard of*, The Guardian, November 29, 2021, https://www.theguardian.com/environment/2021/nov/29/nurdles-plastic-pellets-environmental-ocean-spills-toxic-waste-not-classified-hazardous.

38. Modelling of potential wastewater discharges associated with each of the development scenarios will be essential to understand impacts.

Climate change impacts

39. One of the "sustainable development principles," listed in Section 5.1 of the Draft Program is, "Targeting a low emissions Precinct, including initiatives that support decarbonisation and contribute to achieving net zero emissions."[34] The phrase "low emissions" in this principle seems to refer only to greenhouse gas (GHG) emissions, as it is clear from Dr. Petroni's assessment that the complex will certainly not have low emissions of other air pollutants. Yet it seems unlikely that the complex could be low in GHG emissions either: Dr. Petroni found that the facilities proposed in the Draft Program would *increase* the GHGs for the *entire Territory* by some 75%.[35] Dr. Petroni concludes that these emissions would lead to an additional 310 million AUD in social costs.[36]

40. The one plan that seems to be under consideration for the Middle Arm Development to address some portion of these GHG emissions is the "Highly prospective geological storage to sequester carbon dioxide emissions" mentioned at the start of the Draft Program.[37] As Dr. Petroni notes, this "highly prospective" facility would not just have to work to capture the quantity of GHGs emitted by the precinct; it would have to work better, and capture more CO2, than any prior carbon capture and storage project has in history, by some orders of magnitude.[38] The delays, massive cost overruns, and subsequent disappointments of the Gorgon project, studied for many years in advance of the project even beginning development in 2009, are a cautionary tale about showing the pitfalls of depending on carbon sequestration to make an industrial facility "low-emissions."[39]

41. As Dr. Petroni notes, importantly, the process to simply capture CO2 out of the flue gases of the industrial facilities is not without its own costs and emissions. Carbon capture reduces the efficiency of plants, leading to increased emissions of co-pollutants for the same end product, and rarely in fact capturing all the emissions.[40] This is true for "blue hydrogen," for example, which is proposed for the facility: several researchers have found that blue hydrogen, which is

[34] Draft Program, p. 25.
[35] Appendix 1, p. 6.
[36] Appendix 1, p. 6.
[37] Draft Program, p. 1
[38] Appendix 1, p. 64
[39] Sonali Paul, *Chevron says world's largest carbon capture project has "a ways to go" to meet goals*, Hydrocarbon Processing, May 16, 2022, https://www.hydrocarbonprocessing.com/news/2022/05/chevron-says-worlds-largest-carbon-capture-project-has-a-ways-to-go-to-meet-goals; Bruce Robertson, *IEEFA: If Chevron, Exxon and Shell can't get Gorgon's carbon capture and storage to work, who can?*, Institute for Energy Economics & Financial Analysis (2022), http://ieefa.org/ieefa-if-chevron-exxon-and-shell-cant-get-gorgons-carbon-capture-and-storage-who-can/.
[40] Appendix 1, p. 64

hydrogen made from fossil gas, with some of the CO2 emissions captured, has greater lifecycle GHG emissions than simply using the fossil gas for the end use.[41]

Accidents

42. As Dr. Petroni notes in his report, many of the types of facilities proposed for the Middle Arm Development are accident prone, as they are filled with explosive and flammable substances, and have led to deaths, injuries, and physical damage to surrounding areas, in addition to forcing residents to shelter in place for days to avoid toxic air when fires are difficult to put out. These include methanol production facilities,[42] ammonia and urea production facilities,[43] LNG terminals,[44] and ethane crackers.[45] These facilities are also at risk of spilling toxic liquid materials into the local environment.[46]

43. As has been shown through anthropological work in communities living near petrochemical facilities in the United States, the specter of living near facilities with these risks, piled onto the toxic emissions they release into the local environment each day, will meaningfully change the daily existence of the people of the region, including their sense of place.[47]

Recommendations for strengthening the Terms of Reference

44. As the potential harms of the facilities indicate, the assessment of the Middle Arm Development and every facility within it must be rigorous and include all relevant information to generate a clear understanding of the impacts of the complex on the people and ecosystems of the Greater Darwin Region. This plan to generate this information, the data collected, and the resultant impacts shown by these analyses must be communicated clearly with the surrounding communities, and community members must have a chance to ask questions about and give input at each stage of the assessment and on each of its components.

[41] Thomas Longden *et al.*, *'Clean' hydrogen? – Comparing the emissions and costs of fossil fuel versus renewable electricity based hydrogen*, 306, Applied Energy, 118145 (2022), https://linkinghub.elsevier.com/retrieve/pii/S0306261921014215; Robert W. Howarth & Mark Z. Jacobson, *How green is blue hydrogen?*, , Energy Science & Engineering (2021), https://onlinelibrary.wiley.com/doi/abs/10.1002/ese3.956.
[42] Shelter In Place Lifted Following Chemical Plant Explosion In West Virginia - CBS Pittsburgh, (2020), https://www.cbsnews.com/pittsburgh/news/west-virginia-chemical-plant-explosion/; Equinor fire shuts Europe's biggest methanol plant, Reuters, December 2, 2020, https://www.reuters.com/article/us-equinor-fire-idUKKBN28C288.
[43] West Fertilizer Explosion and Fire | CSB, , https://www.csb.gov/west-fertilizer-explosion-and-fire-/; Aliya Uteuova, *Thousands evacuated after US fertilizer plant fire sparked fears of explosion*, The Guardian, February 4, 2022, https://www.theguardian.com/us-news/2022/feb/04/north-carolina-fertilizer-plant-fire-explosion-evacuation.
[44] USDOE, NEPA Policy and Compliance, *Draft Environmental Impact Statement for the Port Delfin LNG Project Deepwater Port Application - Appendix R: Major LNG Incidents Involving LNG Release*, Washington, DC (2016), https://www.energy.gov/sites/prod/files/2018/11/f57/draft-eis-0531-port-delfin-lng-app-r-2016-07.pdf.
[45] Alexander Tullo, *One Death, Scores Of Injuries Caused By Explosion At Ethylene Plant*, Chemical & Engineering News, 2013, https://cen.acs.org/articles/91/web/2013/06/One-Death-Scores-Injuries-Caused.html.
[46] Reid Frazier, *Sulfuric acid spills from storage tank at Shell ethane cracker plant*, The Allegheny Front, March 25, 2022, https://www.alleghenyfront.org/sulfuric-acid-spills-from-storage-tank-at-shell-ethane-cracker-plant/.
[47] Thom Davies, *Toxic Space and Time: Slow Violence, Necropolitics, and Petrochemical Pollution*, 108, Annals of the American Association of Geographers, 1537–1553 (2018), https://doi.org/10.1080/24694452.2018.1470924.

45. Dr. Petroni makes a range of recommendations in his report about ways to improve the draft Terms of Reference (TOR) for the strategic assessment to ensure it can provide such a rigorous and transparent review.[48] Among others, these include:

<u>The proponent must conduct a more refined health impact assessment</u>[49]

46. The health impact assessment (HIA) must specify the geographic boundaries of the analysis more precisely. This boundary should be based upon the areas and individuals predicted to be affected by the complex, using a precautionary, and more inclusive, approach in this definition. As Dr. Petroni notes, the health impacts from these studies are involuntary, and people who may be affected by them must be defined and integrated into the health impact assessment as soon as possible.

47. A health baseline study must be conducted, including identification of pre-existing conditions among those populations that would be affected by the facility. A rigorous health monitoring plan must also be developed and implemented to assess changes in the health of affected populations. Ideally this long- term monitoring study would include a control community that is not affected by the Middle Arm Development so as to assess how their health changes relatively over time. The specifics of this study must be provided in the SEA, and the study should be set up as soon as possible to ensure the best possible data and understanding of the Middle Arm Development's impacts.

48. In addition, the government must develop a risk communication plan that would ensure that all affected populations know the risks of the facilities and are prepared to react in case of accidents.

49. Finally, a survey of affected populations to assess the psychological impacts that the facilities might have on them must be undertaken to feed into a risk and harm mitigation strategy.

<u>The proponent must define the specific information required to develop an airshed model. For example, what sources are being considered? What airborne contaminants are being evaluated? How will the airshed model treat gaps in available data using the precautionary principle?</u>[50]

50. This airshed model would be a key analysis for predicting the impacts of the Middle Arm Development on the communities. These models require excellent input data to provide a meaningful picture of the likely impacts of new facilities. As Dr. Petroni notes, this model would need to include at minimum several years of high-quality emissions data from all anthropogenic and biogenic sources in the Region, as well as a baseline history of meteorological and air quality data from more stations than currently exist in Darwin, with monitoring for pollutants not currently being monitored at these stations in Darwin, including for a range of hazardous air pollutants. These data would also need to be combined with data from community surveys to identify at-risk populations and gather other relevant information for the assessment. The

[48] Appendix 1, p. 68.
[49] Appendix 1, p. 69-70.
[50] Appendix 1, p. 68.

Northern Territory government would need to set up these new air quality monitoring stations and emissions monitoring regimes several years in advance of this model being developed.

51. To date, the government has asked only that the industry in the region voluntarily fill out a one-time survey about their emissions, "which will be combined to form a model showing the distribution of emissions."[51] A model based solely on voluntarily reported anthropogenic emissions would result in an inaccurate representation of the baseline landscape of emissions, and thus an underestimation of the overall harms that adding the Middle Arm Development emissions to the region would cause to local populations.

The proponent must assess all pollution control technology options and provide proof that proposed technologies are viable at the proposed scale for the entire life of the facility[52]

52. While there are various references in the Draft Program to the complex being "low emissions," there is no discussion of the technologies that would be used to clean up some of the most polluting industries in the world. The SEA process would need to assess the technologies that the complex would use to realize this unprecedented feat, providing a realistic sense of the levels of pollution control these technologies could accomplish and the technological and economic viability of each. Stakeholders must have a chance to provide input into these technology types.

53. As noted above, the CCS technology that is referenced many times in documents relating to the complex, including the Draft Program, is highly prospective. This aspect of the complex in particular would need to be much more developed for the government to provide accurate information to stakeholders about the probabilities for the CCS to function as suggested it could.

54. If the Government is considering purchasing offsets as part of meeting the Middle Arm Development's "Net Zero" claims, the SEA would need to assess rigorously whether this quantity of real, additional, permanent, and non-double counted offsets could be procured in the Territory (preferably) or Australia, appreciating the rise in demand for offsets now and into the future. The SEA would need to provide a defensible procedure for procuring those offsets, and in so doing, include a conservative estimate of the number of offsets needed, recognizing that, as was learned far too well in the case of Gorgon, some of the emissions control technology may not function properly.

The proponent must evaluate the costs of the facilities' health impacts and clearly communicate these to all stakeholders.[53]

55. Health impacts from the facilities will engender economic costs as well. These costs include those to people and companies of workers missing work because they are sick or to care for sick children and parents, the costs to the health care system and all those who pay for it of caring

[51] Northern Territory Government. *Ensuring Environmental Sustainability for the Middle Arm Sustainable Development Precinct*, (11 May 2022), https://ntrebound.nt.gov.au/news/2022/ensuring-environmental-sustainability-for-the-middle-arm-sustainable-development-precinct.
[52] Appendix 1, p. 69.
[53] Appendix 1, p. 69.

for sick people, and many more. Dr. Petroni estimates that the annual costs of health impacts to the Greater Darwin Region would be 75 million AUD. Health harms and their associated costs could increase over time as toxins accumulate in the local environment. These costs must be explicitly evaluated in the SEA using defensible and transparent methods and made clear to all stakeholders that would be affected by the Middle Arm Development, and to the lawmakers making decisions about state budgets for the Middle Arm Development.

PART III – PROCESS AND CONSULTATION

Public Inquiry on Petrochemical Industry

56. Reg 5 of the *Environment Protection Regulations 2020* (NT) (**Regulations**) sets out the methods of environmental impact assessment. There are four potential methods of environmental impact assessment:
    a. Assessment by referral information;
    b. Assessment by supplementary environmental report
    c. Assessment by environmental impact statement
    d. Assessment by inquiry

57. The method proposed for the purposes of the Middle Arm Development is environmental impact statement (**EIS**).

58. Importantly, reg 5(2) states that an assessment by inquiry may be carried out separately **or with any other method** of environmental impact assessment. Reg 5(3) states that 'an assessment by inquiry that is carried out with another method of assessment must not duplicate any matters being assessed by that other method.' The inquiry method of assessment has not previously been utilised under the Regulations.

59. The NT EPA Guidance for proponents on referring a proposal to the NT EPA states at 6.8 that:

> 'an assessment by inquiry can be used where it is considered more appropriate for the stakeholder audience than a regular environmental assessment approach. For example, cultural or language issues may prohibit potentially impacted communities from easily engaging in a paper-based environmental impact assessment approach. For some proposals the NT EPA may decide that an assessment by inquiry methodology is used for just one element of the proposal coupled with another assessment methodology for the remainder of the proposal.'[54] [our emphasis]

60. Although considered in the Federal context, the Hawke Review of the *Environment Protection and Biodiversity Conservation Act* found that assessment by public inquiry was an underused method of assessment. The Hawke Review highlighted the benefits of assessment by inquiry, including:

[54] Referring a proposal to the NT EPA

- Greater public confidence in processes, including reduction in potential for perceived bias;
- …a means of providing independent input and dealing with controversial issues;
- Greater capacity for public input and interaction with the commissioners of the inquiry – including face-to-face interaction; and
- a more transparent process of environmental scrutiny.[55]

61. It is clear that the purpose of the inquiry level of assessment is to create a mechanism for complex or contentious proposals to be assessed in a more intensive manner with a high level of public participation and accountability.

62. Part X, Division 7 details the process for the conduct of an inquiry and applies 'if a method of assessment that is, or includes, an assessment by inquiry is required under Part 4 or 7.'

63. Pursuant to reg 148, the NT EPA is to conduct the inquiry. An inquiry requires terms of reference,[56] the appointment of an inquiry panel,[57] and procedures for the holding of hearings in public.[58] The inquiry pane must prepare and the NT EPA public the report.[59] The proponent must have regard to the report.[60]

64. It is difficult to imagine an issue more contentious and more suited to the inquiry level of assessment than petrochemical industry on the doorstep of a residential area. [61]

Consultation for EIS process

65. Whilst ECNT's primary position is that the public inquiry method should be utilised for assessment of the petrochemical industry, pursuant to the relevant legislative and policy frameworks, the remainder of the consultation process for the EIS must be robust, culturally appropriate and ensure appropriate opportunities for public participation and engagement.

<u>EP Act</u>

66. The objects of the *Environment Protection Act* must inform the consultation process for the Middle Arm development. Relevantly, they include that the NT EPA seek broad community involvement during the process of environmental impact assessment and approval.[62]

[55] As noted in the Australian Law Reform Commission, Discussion Paper 75 (DP 75) – Royal Commissions and Official Inquiries (2009), Chapter 2. 29 Mar 2013 - The Australian Environment Act: Report of the Independent review of the Environment Protection and Biodiversity Conservation Act 1999 - Final report - Trove (nla.gov.au)
[56] Reg 149
[57] Reg 150
[58] Reg 152
[59] Regs 153 and 154
[60] Reg 155

[62] Section 3(d)

67. Further, pursuant to section 42, the purpose of environmental impact assessment includes insuring that the 'community is provided with an opportunity to participate, and have its views considered, in decisions on proposed actions.

68. The duties of proponents are set out in section 43. Relevantly, they include to:

    e. 'to provide communities that may be affected by a proposed action with information and opportunities for consultation to assist each community's understanding of the proposed action and its potential impacts and benefits;
    f. to consult with affected communities, including Aboriginal communities, in a **culturally appropriate** manner;
    g. to seek and document community knowledge and understanding (including scientific and traditional knowledge and understanding) of the natural and cultural values of areas that may be impacted by the proposed action;
    h. to address **Aboriginal values and the rights and interests** of Aboriginal communities in relation to areas that may be impacted by the proposed action…; [our emphasis]

69. Ultimately, pursuant to section 73(2) of the EP Act, in deciding whether to grant or refuse an environmental approach for an action, before granting an approval, the Minister **must be satisfied** that (a) the community has been consulted on the potential environmental impacts and environmental benefits of the proposed action.

EPBC Act

70. The relevant provisions of the EPBC Act in relation to the requirement for public comment are s 74(3), which provides that, as soon as practicable after receiving a referral of a proposal to take an action, the Commonwealth Environment Minister must publish on the internet an invitation for anyone to give the Minister comments within 10 business days, and s 75(1A), which provides that, in deciding whether or not an action should be approved, the Minister must consider the comments received.

71. Additionally, s 146 of the EPBC Act, which relates to the Minister's power to agree on strategic assessments, provides that an agreement on strategic assessment must provide for the publication of the draft TOR and draft report for public comment for a period of at least 28 days that is specified by the Minister (ss 146(1B)(b)(ii), 146(2)(b)). Further, the finalisation of the TOR and the report, to the Minister's satisfaction, must take into account the comments received after the publication of the draft documents (ss 146(1B)(b)(iii), s 146(2)(c)).

NT EPA Guidance on stakeholder engagement and consultation

72. There is very useful information in the NT EPA guidance of Stakeholder Engagement and Consultation (**Guidance**). The Guidance sets out the expectations of the NT EPA for consultation processes. This includes that the 'engagement methods need to be fit for purpose and appropriate to relevant stakeholders, **including consideration of literacy, culture, gender, age and language.**

This is critical in the NT when engaging with remote and Aboriginal communities…'[63] [our emphasis]

73. The Guidance includes comprehensive suggested steps that a proponent should follow for effective engagement with Aboriginal stakeholders. The process is very thorough and encompasses a broad range of important steps, including:
    - extensive planning, including seeking anthropological and cultural advice, considering language and cultural requirements and meeting structure and size;
    - allowing plenty of time for discussions and negotiating agreements with key stakeholders on key dates and deadlines for consideration, but recognising the need to build in flexibility
    - being aware of international standards and responsibilities on Indigenous rights and identifying **all** relevant Aboriginal stakeholders;
    - presenting information in a readily accessible format, including orally and visually;
    - giving Aboriginal stakeholders the opportunity to visit similar operations to obtain understanding of the proposal. [our emphasis]

74. It is clear in the suggested steps that early engagement should have commenced before the submission of the Referral.

75. According to the statement of reasons accompanying the proposed terms of reference, 'early stakeholder engagement has commenced' and has 'largely focused on the introduction of the MASPD to interested and affected stakeholders.' It is not clear who these stakeholders are or the manner of their engagements.

76. ECNT advocates for the steps set out in the Guidance to be faithfully and fully followed in relation to all Aboriginal stakeholders. This is particularly critical given the proponent is a Government Department and must set the best practice standard for engagement with Aboriginal people and communities.

77. The Guidance also provides for the possibility of the proponent engaging an independent and suitably qualified professional trained in undertaking best practice stakeholder engagement standards (p. 12).

78. We note that the statement of reasons accompanying the proposed TOR indicates that a 'specialist engagement and communication consultant has been engaged to assist DIPL in developing a social impact assessment (SIA).'[64]

International Association for Public Participation (**IAP2**)

[63] Stakeholder Engagement and Consultation p.8.
[64] SoR at 7

79. According to the Middle Arm Development Referral Report, the stakeholder engagement strategy in relation to this development aligns with the IAP2.[65]

80. The Report states that 'stakeholders will be engaged according to level of interests and potential impacts. The highest level of engagement will be to 'involve' the community throughout the SEA process so that specific stakeholder groups' concerns and aspirations are consistently understood and considered.' The Report also lists other stakeholder engagement frameworks that will inform stakeholder engagement.

81. ECNT does not consider that the 'involve' level of participation should be the highest level of stakeholder engagement. For example, the 'collaborate' level of participation is focused on partnering with the public about decisions and the development of alternatives. The commitment to the public is to look to the public for advice and innovation in formulating solutions and recommendations into the decision-making process. Given the risks to community inherent in this development, ECNT's view is that it would be more appropriate to adopt the 'collaborate' level of participation.[66]

International standards and norms

A. The duty under international law to facilitate public participation in environmental decision-making

82. International human rights law imposes procedural obligations on States in relation to environmental protection, including to facilitate public participation in environmental decision-making, assess environmental impacts, make information public, and provide access to legal remedies for harms.[67] These procedural obligations are vital to the protection of the human right to a clean, healthy and sustainable environment.[68] Compliance with these obligations enhances the quality and implementation of decisions and increases the public perception of the legitimacy of the process and outcome.[69]

[65] At page 13
[66] Spectrum_8.5x11_Print (iap2.org.au)
[67] These procedural obligations flow from, among other things, the obligation to respect the right to participate in public affairs and the right to freedom of expression, which includes the right to seek, receive, and impart information, recognised in the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights, to which both Australia is a signatory. *See, for example*, UN Human Rights Council, "Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, health and sustainable environment - Mapping report" (A/HRC/25/53, (30.12.2013)), paras. 29-43; UN Human Rights Council, "Report of the Independent Expert on the issue of human rights obligations relating to the enjoyment of a safe, clean, health and sustainable environment - Compilation of good practices" (A/HRC/28/61, (03.02.2015)), paras. 25-71.
[68] UN Human Rights Council, "The human right to a clean, healthy and sustainable environment," (A/HRC/RES/48/13, (18.10.2021)).
[69] See, for example, UN Office of the High Commissioner of Human Rights (OHCHR), "Guidelines for States on the effective implementation of the right to participate in public affairs" (2018) pp. 3-4; Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention), 25.06.1998, 2161 U.N.T.S. 447, preamble.

83. Genuine public participation is a process, not a single event. It should begin as early as possible in the formulation of the proposal at issue.[70] Engaging in consultation early requires decision-makers to refrain from taking any formal, irreversible decisions prior to the commencement of consultation, such as making large investments in the direction of one option or committing to a certain outcome, including those agreed with another organ of the State.[71] Consultation also requires decision-makers to seek meaningful input at key points throughout the lifecycle of the decision-making process, and potentially after a decision has been made and is being implemented.[72]

84. Projects that generate certain hazardous chemicals may be subject to additional consultation and environmental assessment requirements under international law. For example, the Stockholm Convention on Persistent Organic Pollutants (the Stockholm Convention) is a global treaty to protect human health and the environment from persistent organic pollutants.[73] Under the Stockholm Convention, States are obligated to share information relating to the risks of these pollutants as well as to their economic and social costs,[74] and must facilitate "[p]ublic participation in addressing persistent organic pollutants and their health and environmental effects."[75] Petrochemical facilities may generate, through their waste streams, pollutants covered by the Stockholm Convention,[76] such as hexachlorobenzene, which is one of the most persistent environmental pollutants both on land and in water.[77] When a project generates these substances in a manner covered by the Stockholm Convention, the State has the obligation to comply with the Convention's terms and any implementing domestic legislation.

B. Consultation with affected Indigenous communities

<u>Duty under international law to consult affected Indigenous communities</u>

85. Under international law, Australia has a duty to consult with Indigenous peoples and communities in good faith about matters that affect them, their traditional lands and culture,

[70] UN Human Rights Council, "Free, prior and informed consent: a human rights-based approach – Study of the Expert Mechanism on the Rights of Indigenous Peoples" (A/HRC/39/62, (10.08.2018)), para. 21.
[71] OHCHR, "Guidelines for States on the effective implementation of the right to participate in public affairs," above, para. 70.
[72] *See,* A/HRC/39/62, above, para. 15.
[73] Stockholm Convention on Persistent Organic Pollutants, 22.05.2001, 2256 U.N.T.S. 119 (ratified by Australia, 20.05.2004). *See id*. at Annex A-C (listing the pollutants covered, which include chemicals that can appear in the waste streams of petrochemical facilities such as hexachlorobenzene, dioxins, and polychlorinated biphenyls).
[74] Stockholm Convention at art. 9.
[75] *Id.* at art. 10.
[76] *280 Environmental, Public Health, Indigenous, And Community Nongovernmental Organizations, Petitioners, vs. Andrew Wheeler, Administrator, United States Environmental Protection Agency,* "Petition To Revise The Clean Water Act Effluent Limitations Guidelines And Standards For The Petro-Plastics Industry Under The 40 C.F.R. Part 419 Petroleum Refining Industrial Category (Cracking And Petrochemicals Subparts) And Part 414 Organic Chemicals, Plastics, And Synthetic Fibers Industrial Category,"(23.07.2019), p. 8 ("Among EPA's long list of pollutants of concern from these [petrochemical] facilities are … hexachlorobenzene"); *Id*. at p. 12 (noting petrochemical facilities that list hexachlorobenzene as a pollutant covered by their waste disposal permits); *Id.* at p. 11 (listing polychlorinated biphenyls, another chemical covered by the Stockholm Convention, as a part of the waste stream from facilities producing PVC plastics). *See also*, Australian Government, Department of the Environment and Heritage, "National Dioxins Program, Technical Report No. 3 Inventory of Dioxin Emissions in Australia, 2004" (05.2004), p. 65 (noting polychlorinated dibenzo-p-dioxins, also covered by the Stockholm Convention, are part of the waste stream of petrochemical facilities that produce plastics known as PVC).
[77] *Id*. at p. 23-24.

and relationship with those lands.[78] This duty arises under core United Nations human rights treaties,[79] which Australia has ratified,[80] and is central to realising and protecting the full spectrum of substantive Indigenous rights, including rights to self-determination, cultural integrity, property, and equality.[81]

86. Notably, the duty to consult finds prominent expression in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).[82] For example:

> Art. 32(2): States shall consult and cooperate in good faith with the [I]ndigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories[[83]] and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.[84]

87. The federal government supported UNDRIP in 2009.[85] Since then, it has continued to "recognise[ ]the importance of consulting with Indigenous peoples on decisions affecting them and that respect for Indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment."[86]

Scope of the duty to consult affected Indigenous communities

88. The duty to consult is not limited to specific or proprietary interests in land. Rather, the duty applies to "any project affecting" Indigenous lands, territories, and other resources, whether or

[78] UN Special Rapporteur James Anaya, "Promotion and Protection of All Human Rights, Civil, Political, Economic, Social and Cultural Rights Including the Right to Development: Report of the Special Rapporteur on the Situation of Human Rights and Fundamental Freedoms of Indigenous People" (A/HRC/12/34, (15.07.2009)), paras. 38-42; Australian Human Rights Commission (AHRC), "The Declaration Dialogue Series: Paper No. 3 – We have a right to participate in decisions that affect us" (07.2013), pp. 5-8.
[79] A/HRC/12/34, above, paras. 38, 40 (noting the "duty of States to effectively consult with indigenous peoples is also grounded in the core human rights treaties of the United Nations, including the International Convention on the Elimination of All Forms of Racial Discrimination and the International Covenant on Civil and Political Rights"). *See also*, A/HRC/39/62, above, para. 3.
[80] International Convention on the Elimination of All Forms of Racial Discrimination, 07.03.1966, 660 U.N.T.S. 195 (ratified by Australia 30.09.1975); International Covenant on Civil and Political Rights, 16.12.1966, 999 U.N.T.S. 171 (ratified by Australia 13.08.1980).
[81] A/HRC/39/62, paras. 3, 6-8, 11, A/HRC/12/34, above, paras. 41, 42, 62.
[82] United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) is grounded in fundamental human rights principles and reflects international law enshrined in binding international agreements, although it is not a legally binding agreement. UN Human Rights Council, "Situation of human rights and fundamental freedoms of indigenous peoples" (A/65/264, (09.08.2010)), paras. 62-63; *See also,* A/HRC/12/34, above, para. 38.
[83] "Indigenous peoples' territories include lands that are in some form titled or reserved to them by the State, lands that they traditionally own or possess under customary tenure (whether officially titled or not), or other areas that are of cultural or religious significance to them or in which they traditionally have access to resources that are important to their physical well-being or cultural practices." UN Special Rapporteur James Anaya, "Extractive industries and indigenous peoples" (A/HRC/24/41, 01.07.2013), para. 27.
[84] UNDRIP, Art. 32(2).
[85] *See,* Australian Government, Minister for Families, Housing, Community Services and Indigenous Affairs, "Statement on the United Nations Declaration on the Rights of Indigenous Peoples" (03.04.2009).
[86] Australian Government, Department of the Environment, "Engage early: Guidance for proponents on best practice Indigenous engagement for environmental assessments under the *Environmental Protection and Biodiversity Conservation Act 1999*" (Engage early) (02.2016), p. 3.

not Indigenous peoples hold official title to those matters under domestic law.[87] The duty to consult is thus "not limited to circumstances in which a proposed measure will or may affect an already recognized right or legal entitlement."[88] Similarly, consultation cannot be limited only to activities taking place *on* traditional lands because a project, including one located outside Indigenous lands, may affect lands, waters, and resources (including their use and cultural value) beyond the project footprint.[89] This broad application of the duty is central to protecting substantive Indigenous rights, including the right to self-determination.[90]

89. Consultation must always be conducted in good faith and directed "towards mutually acceptable arrangements prior to" the decision being made.[91] Good faith consultation should have as its objective the obtainment of consent in order to reverse historical patterns of imposed decisions.[92]

90. Importantly, as noted above, good faith consultation is not a single event, but an ongoing process by which decision-makers seek input through the decision-making process and Indigenous communities can engage "to influence the outcome of decision-making processes affecting them."[93]

ECNT consultation proposal

91. Viewed together, it is clear that the Proposal requires a high level of public consultation and engagement. It is also clear that in order to meet the objectives of the EP Act and the duties of proponents, it will be patently inadequate to have a consultation process that does not create significant opportunities for in-person opportunities for communities to raise their concerns and have input about the proposal.

92. In particular, Aboriginal people and communities must be consulted in a culturally appropriate and meaningful way, which is consistent with the principles outlined above.

93. ECNT notes that the general consultation processes that many governments have developed – such as statutory notice and comment processes – often fail to accommodate the realities of Indigenous peoples' lives and decision-making processes, the distinctive characteristics of their

[87] *See* UNDRIP, Art. 32(2). See also, A/HRC/24/41, para. 27 (defining "territories"), above.
[88] A/HRC/12/34, above, para. 44.
[89] A/HRC/39/62, above, para. 32 (noting, in the context of extractive activities, that consent may be required for a project "outside their territories" depending on the project's impacts); *See also,* Australian Heritage Commission, "Ask first: A guide to respecting Indigenous heritage places and values (2002), p. 8 ("Investigate whether the interests of Indigenous people from surrounding areas may also be affected by a project or activity. For example activities that affect water flows will require consultation with communities downstream of the project or activity").
[90] A/HRC/39/62, paras. 3, 6-8.
[91] A/HRC/12/34, above, para. 46.
[92] *Id*. at paras. 41, 46-49.
[93] A/HRC/39/62, above, para. 15.

culture and history, and their historic and current political marginalisation.[94] As a result, these processes may not be effective or appropriate methods of information-sharing and -gathering.[95]

94. ECNT recommends that, the NTEPA develop a consultation model with Indigenous communities for the strategic environmental assessment that is consistent with the following key principles:[96]
    a. Identify *all* potentially affected Indigenous stakeholders and communities. This should not be limited only to Indigenous groups with title recognised under Australian law, and may include other Indigenous communities with cultural or traditional connections to the impacted lands/resources and/or communities whose traditional use or cultural value of other lands/resources may be affected by the project (such as downstream communities).
    b. Establish the method and process for consultation in consensus with potentially affected Indigenous peoples and communities.
    c. Give all stakeholders a real opportunity to have input into and influence the decision, with the objective of achieving consensus.
    d. Respect and work through traditional and contemporary forms of Indigenous peoples' governance. This includes conducting consultations through the affected communities' own representative organisations and/or processes where possible. Consultations should encourage and incorporate the views of all community members, including women, young people, and persons with disabilities.
    e. Establish and respect culturally appropriate timeframes early in the process to ensure full and effective participation. Conduct consultations early in the planning process to allow communities to engage according to their own social and cultural practices.
    f. Provide affected communities full information on the nature of the proposed development and its projected impacts, especially regarding hazardous pollutants or persistent organic pollutants, with sufficient time for consideration and in a form accessible to the community.
    g. Provide affected communities adequate resources and support – including expert or technical support – to participate in a full, informed, and effective manner. While consultations should generally be conducted on the community's land, if it is agreed that consultations should be conducted elsewhere then the community should be provided with financial support to enable its participation.

95. With respect to the wider community, and whether the assessment occurs by way of environmental impact statement, public inquiry, or a combination of these two assessment

[94] A/HRC/12/34, above para. 42.

[95] *See*, Australian Government, "Engage early," above n, p. 4 ("There are some situations where the [government] expects that consultation with Indigenous peoples will occur in addition to the statutory public comment periods" including when a project "is likely to significantly impact on a protected matter that has Indigenous heritage values").

[96] These key principles are drawn from international standards, federal government guidance, Australian Human Rights Commission recommendations, and submissions from NT Indigenous groups. *See, for example*, UNDRIP; A/HRC/39/62, above, A/HRC/12/34, above; Australian Government, "Engage early," above; Australian Heritage Commission, "Ask first," above; AHRC, "The Declaration Dialogue Series," above; Joint Northern and Central Land Council, "Submission to the Northern Territory Department of Environment and Natural Resources: Environmental Regulatory Reform Discussion Paper" (Jun. 2017).

methods, the NTEPA should commit to holding public meetings and hearings about the Proposal throughout the assessment process, and commit to regular communications about the Proposal with the public (including via emails and communiques). ECNT notes that the Scientific Inquiry into Hydraulic Fracturing implemented a rigorous and iterative public engagement process, which would provide a good template for public engagement on the Proposal. The NSW Independent Planning Commission also contains useful guidance regarding the process and requirements for public hearings and public meetings.[97]

Yours faithfully,

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[97] https://www.ipcn.nsw.gov.au/about-us/policies-guidelines.