

Appendix 2: Register of all submissions received on the DPD Project referral

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Register of all Government Submissions and Key Issues

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This table provides a summary of the Government Submissions received for the referral. Each submission has been assigned a number from 1-9.

Department	Submission No.	Pg number	Government Submission / Key Issue	Topic category
Aboriginal Areas Protection Authority (AAPA / the Authority)	1	1	<p>The referral states that 'Santos will continue to engage with AAPA to ensure the requirements of the Aboriginal Sacred Sites Act are met'.</p> <p>The Authority confirms that Santos has engaged with us on this proposal and has lodged an appropriate application for an Authority Certificate (application 202203003). In the application, the pipeline corridor component of the Subject Land in the harbour/sea is about 2km wide, narrower than this part of the Project area as defined in the referral (~4 km wide).</p> <p>The Authority notes that the Authority Certificate will only apply to the land/sea within the Subject Land defined in the application.</p> <p>The Authority considers that if Santos obtains and complies with an Authority Certificate issued to Santos for all activities proposed to be undertaken, then the risk of potential impacts to cultural values associated with sacred sites will be appropriately minimised.</p>	Cultural heritage
Department of the Chief Minister and Cabinet (CM&C)	2	1	<p>The upcoming assessment by the Proponent and any approval conditions and management plans should carefully consider and address any potential economic impacts during the construction phase of the project. In particular, there should be no significant impact on existing commercial and recreational shipping in Darwin harbour, general harbour users and the offshore commercial fisheries in and adjoining the project area.</p> <p>This should be captured in the Terms of Reference.</p>	People and Community
Department of the Chief Minister and Cabinet (CM&C)	2	1	<p>Workforce composition and procurement has not been addressed in detail, likely, due to the preliminary stage of the project.</p> <p>CM&C recommends the upcoming assessment and any management conditions should detail workforce composition and how local employment and procurement opportunities will be maximised to satisfy the 'community and economy' environmental objectives.</p> <p>This should be captured in the Terms of Reference</p>	People and Community
Department of the Chief Minister and Cabinet (CM&C)	2	1	<p>The proponent intends to meet requirements of the requirements of the Aboriginal Sacred Sites 1989 Act.</p> <p>CM&C notes an AAPA certificate will be required.</p>	Cultural heritage
Department of the Chief Minister and Cabinet (CM&C)	2	1	<p>The stakeholder engagement plan provides a robust list of stakeholders and consultation format undertaken, however, lacks detail regarding the outcomes of the consultation process. The Referral contains minimal detail regarding stakeholder feedback and specifically if any concerns were raised including any mitigation strategies.</p> <p>A register of stakeholder feedback and strategies for addressing any concerns raised should be considered.</p>	Consultation

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Department	Submission No.	Pg number	Government Submission / Key Issue	Topic category
Department of Environment, Parks and Water Security (DEPWS)	3	2	<p>The referral makes use of INPEX monitoring results and then concludes that most activities (e.g. dredging, elevated turbidity, sediment disposal, sedimentation of suspended sediments) have had no impact on sensitive receptors or environmental values. However, this misrepresents INPEX's own assessment that more often than not their monitoring could not conclusively attribute changes to environmental conditions due to project impacts and/or other variables (e.g. cumulative impacts from other projects, natural variability). As such, most of the assumptions that the proponent has presented potentially bias the risk assessment in favour of the project, by reducing the likelihood that an impact may occur or reducing the severity of the impact.</p> <p>The proponent should at least rely on its own plume and sediment transport models to inform risk assessment of the project activities.</p> <p>The project has not considered indirect impacts and established the zone of influence of project activities. As such, the risk assessment provided in the referral is limited in its use.</p>	Sediment / plume modelling
Department of Environment, Parks and Water Security (DEPWS)	3	2	<p>Further, the referral provides many statements without evidence. For example, section 9.4.2: In support of this conclusion, there is no evidence that the existing Bayu Undan to Darwin pipeline (26 inch) or Ichthys (42 inch) have significantly impacted coastal processes. No evidence has been provided to demonstrate how this conclusion was reached. In the same section (9.4.2) the referral states that only seabed disturbance has the potential to impact on coastal process. This is not completely accurate as backfill of the trench and reinforcement of the pipeline (rock placement) can alter the seafloor topography and thus change seafloor currents. Changes in seafloor currents can cause significant changes in sediment transport, sediment deposition and erosion, and thus potential impacts on seafloor communities (infauna and epifauna). These flow on impacts. should be discussed and assessed.</p> <p>The referral notes that during trenching, spoil disposal and backfill activities, the increased turbidity and sediment levels in the water may result in a visible surface plume which is often associated with such activities. While such plumes may lead to a decline in aesthetics during these activities, they will be localised and temporary in nature.</p> <p>This is an unsubstantiated comment, as no plume modelling has been undertaken. Further, given that dredging will take close to two years the term "temporary" may not be appropriate.</p>	Comparison to ichthys
Department of Environment, Parks and Water Security (DEPWS)	3	3	<p>The Flora and Fauna Division agrees with the proponent's assessment that construction activities will occur within cleared and disturbed lands within the existing Darwin LNG facility disturbance envelope and therefore the construction and operation has a low risk to biodiversity and environmental values.</p>	Conservation areas

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Department of Environment, Parks and Water Security (DEPWS)	3	3	<p>Table 9.1 seems to infer that primary productivity and nutrient cycling are not impacted on by the project activities. Consequently, the referral has not assessed this potential impact for its significance.</p> <p>Primary production can be impacted by elevated suspended sediments in multiple ways; either by reduced light availability or suspended sediments trapping phytoplankton and zooplankton which are subsequently removed from the primary production cycle as the suspended sediments settle out on the seafloor.</p> <p>Further, dredge spoil disposal and seabed mining have a direct impact on infauna and the nutrient/trophic process within sediments. Changes to sediment composition from disposed sediment could also permanently change sediment chemical processes.</p> <p>As such, the primary productivity and nutrient cycling should be assessed as part of the risk assessment.</p>	Coastal processes
Department of Environment, Parks and Water Security (DEPWS)	3	3	<p>The referral has not established its zone of influence and therefore cannot determine whether the project will impact on significant conservation areas.</p> <p>For example, seagrass meadows occur within Shoal Bay. It is proposed that the dredge spoil disposal site is located next to that of INPEX. No modelling has been undertaken to determine if suspended sediments and light availability will impact on neighbouring seagrass meadows. Further, sediment chemistry around the INPEX dredge spoil site seems to indicate that sediment has moved from the dredge spoil ground into neighbouring areas. It is unclear how far the sediments have moved and to what extent this impacts on benthic fauna (infauna) and conservation significant areas, like seagrass meadows.</p>	Coastal processes
Department of Environment, Parks and Water Security (DEPWS)	3	3	<p>The referral notes that:</p> <p><i>Based on these monitoring observations for the significantly larger program of works, it would seem unlikely that with an appropriate management and monitoring framework that there is the potential for impacts from this Project to be any greater than those observed during Ichthys.</i></p> <p>The referral has not taken into account the cumulative impacts nor assessed the zone of influence to support this statement.</p>	cumulative impacts
Department of Environment, Parks and Water Security (DEPWS)	3	4	<p>The referral has not considered changes to sediment quality as a significant impact and therefore did not discuss.</p> <p>However, dredge disposal can have a significant impact on marine environmental quality. It has a direct impact on benthic fauna and flora and therefore has the potential to change ecosystem processes (nutrient pathways, water quality and trophic structures).</p>	Sediment / plume modelling

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Department	Submission No.	Pg number	Government Submission / Key Issue	Topic category
Department of Environment, Parks and Water Security (DEPWS)	3	4	<p>The referral notes that there will be impacts to water quality from pipeline trenching, dredge spoil disposal and seabed mining activities. These activities will impact on suspended sediment conditions, light availability at the seafloor in the Darwin Harbour and Shoal Bay and sediment transport characteristics.</p> <p>Although the proponent has committed to undertake further dispersion modelling, the referral solely relies on INPEX's assessment to inform their risk assessment on impacts to water quality.</p> <p>This is not considered acceptable. Dispersion modelling is critical for determining the zone of influence and identifying where direct and indirect impacts overlap with sensitive habitats. Without this, the proponent is unable to scope the full impact of its activities on water quality, other than areas of direct impact.</p> <p>There is the potential that environmental conditions are site specific and therefore INPEX's assessments are not directly applicable. In particular, it is noted that dredging will occur in the western part of Darwin Harbour which has more complex hydrodynamics than East Arm. This could result in inappropriate assumptions feeding into the risk assessments.</p> <p>The Flora and Fauna Division recommends that plume dispersal and sediment transport modelling is undertaken and risk assessment is undertaken considering modelling outputs and potential indirect impacts.</p> <p>Further, the Flora and Fauna Division recommends that the 'Dredging and Dredge Spoil Placement Management Plan' includes a monitoring program. The objective of this would be to validate the sediment transport and plume models. This has relevance to assessing the health of sensitive</p>	Sediment / plume modelling
Department of Environment, Parks and Water Security (DEPWS)	3	4	<p>The referral notes: During trenching, spoil disposal and backfill activities, the increased turbidity and sediment levels in the water may result in a visible surface plume which is often associated with such activities. While such plumes may lead to a decline in aesthetics during these activities, they will be localised and temporary in nature.</p> <p>This is an unsubstantiated comment, as no plume modelling has been undertaken. Further, given that dredging will take close to two years the term "temporary" may not be appropriate.</p>	General marine
Department of Environment, Parks and Water Security (DEPWS)	3	5	<p>The referral assesses the risk to biodiversity and environment values on the basis of direct impacts from project construction and operational activities. It has inferred potential indirect impacts, however has not established zone of influence and thus cannot adequately assess whether significant habitats or environmental values are impacted on.</p>	General marine

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Department of Environment, Parks and Water Security (DEPWS)	3	5	<p>The referral uses benthic habitat data from 2019 (Galaiduk et al. 2019 and Siwabessy et al. 2016).</p> <p>There is more recent benthic modelling undertaken by the Australian Institute of Marine Science (AIMS) (2021) which should be used to inform ecosystem values. The modelling takes into account a wider variety of environmental drivers and has adjusted its modelling approach to take into account the rarer benthic community types.</p> <p>The referral cannot solely rely on modelled habitat data. The proponent has undertaken some benthic surveys for the purpose of laying the pipeline. However this effort is inadequate for the purpose of verifying whether the modelled benthic habitat data represents which benthic communities actually occur within the pipeline corridor and the zone of influence. These surveys do not allow the accurate assessment of the extent, composition and characteristics of benthic habitats.</p> <p>The risk assessment also downplays the value of filter feeder habitat in channel and channel slope areas. Generally the filter feeder habitats that occur on rocky and mixed substrates (various compositions of rock and coarse sediments) are diverse and provide structure for fish and other invertebrate fauna. This habitat functions as refuge, feeding and reproductive areas. These habitats are relatively rare when compared to the extent of sand and mud dominated habitats and are present within the pipeline corridor.</p> <p>It is recommended that proponent undertakes a dedicated benthic survey for the pipeline corridor in Darwin Harbour and on knolls and rocky/mixed sedimentary environments within the zone of influence. The benthic survey design should be based on identifying physical environmental characteristics, as outlined for example in Nicholas et al. (2019); should follow benthic habitat modelling as undertaken by AI MS</p>	Benthic habitats

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Department	Submission No.	Pg number	Government Submission / Key Issue	Topic category
Department of Environment, Parks and Water Security (DEPWS)	3	6	<p>The referral notes that: ... <i>benthic communities (particularly corals and sponges) can be impacted by suspended sediment through three primary cause effect pathways: light reduction, increased suspended sediment concentrations, and sediment deposition (smothering).</i></p> <p>The referral cites work undertaken by WAMSI. This is most probably appropriate for the impact risk assessment, even though it is site specific. The referral further states that: Trenching for pipeline installation will result in pulses of increased turbidity, suspended solids and subsequent reduction in light availability.</p> <p>In order to understand the impact to trenching, and increased turbidity, the referral should clarify how "pulses of increased turbidity" is applicable in this case. If dredging/trenching is continuous, it would be assumed that the dredging plume is continuous. It is important to understand this, as the referral uses "pulses" as the reason for not exceeding the benthic primary producers' high impact (i.e. mortality) environmental trigger of a 3-fold decrease in light levels, and a combination of 10mg/L and 2.3mol photons/m'/day over a 42-day period (WAMSI 2019).</p> <p>No plume modelling has been undertaken and the proponent has not determined what suspended sediment concentrations are likely to be. Therefore, there is no data to compare against WAMSI triggers and thus, the risk assessment is limited to INPEX specific circumstances.</p> <p>As the proponent has committed to undertake plume and sediment modelling, it is recommended that the risk assessment is reviewed in context of project specific data, plume and sediment modelling outputs, and updated habitat layers.</p>	Sediment / plume modelling
Department of Environment, Parks and Water Security (DEPWS)	3	6	<p>The referral only considers seagrass meadows in Fannie Bay. Considering the hydrodynamic conditions of Darwin Harbour it is unlikely that turbidity and suspended sediments will play a significant role in determining impacts to these meadows. However, this assumption should be tested through plume modelling.</p> <p>The referral has failed to consider impacts to seagrass meadows in Shoal Bay and Casuarina Coastal Reserve. Again it is recommended that plume and sediment transport modelling for dredge spoil disposal is undertaken so that an appropriate risk assessment can be undertaken.</p>	Benthic habitats

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Department of Environment, Parks and Water Security (DEPWS)	3	6	<p>The referral states: <i>While there will be direct impact to the seabed in this area and subsequent localised and temporary decrease in water quality, this is only expected to result in temporary behaviour changes to fish during construction. There is not expected to be any significant impact to the RPA and the addition of the Project pipeline will add additional, artificial habitat for reef fish.</i></p> <p>No evidence has been provided to support the statement in relation to a localised and temporary decrease in water quality. Given the duration of the dredging campaign and failure to undertake plume and sediment transport modelling there is no understanding of the time duration and spatial extent in water quality decline.</p> <p>The referral also states: There is widespread habitat available in the immediate vicinity that marine fauna are able to access and consequently no significant change to these conservation significant areas is expected.</p> <p>This argument is not supported because the spatial extent of declined water quality has not been established and the proportion of impacted versus non-impacted areas has not been established. There is insufficient information to make this claim and subsequently indicates that the risk assessment requires further review.</p> <p>Further, the referral has not considered whether the available habitats are important for feeding or life stages of listed fish species (<i>Environment Protection and Biodiversity Conservation Act 1999</i> or <i>Territory Parks and Wildlife Conservation Act 1976</i>) and important commercial and/or recreational species.</p> <p>Consequently the referral's risk assessment requires revision to take into account the full suite of potential impacts.</p>	General marine

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Department	Submission No.	Pg number	Government Submission / Key Issue	Topic category
Department of Environment, Parks and Water Security (DEPWS)	3	7	<p>The referral has identified that marine megafauna and turtles occur in East Arm and Darwin Harbour. In particular, it identifies that there are three species of coastal dolphin (Australian Humpback, Snubfin and Bottlenose) that consistently use the area for foraging and social activities (Brooks et al 2017). Given their occurrence within the footprint and neighbouring areas, marine turtles are likely to use the filter feeder habitat for foraging</p> <p>There is potential for these species to be impacted on by the project. Potential impact pathways include vessel traffic, dredging operations, pile driving and associated underwater noise, and lighting. To reduce the risk to these species, mitigation of potential impacts is required. The referral notes that the project is committed to develop a number of environmental management plans (EMP) to mitigate potential impact and associated risks.</p> <p>The Flora and Fauna Division recommends that the project consider at least the following mitigation measures for incorporation into EMPs in relation to vessel traffic, dredging, pile driving and lighting:</p> <ul style="list-style-type: none"> • Implementation of vessel speed limits during the construction and operation phase. • Marine megafauna observation zones and exclusion zones; • That the observation period for marine megafauna prior to commencing dredging and pile driving is 20 minutes and that the observer is solely dedicated to the task of sighting and recording marine megafauna interactions prior to, and during, dredging and pile driving operations. • Lighting specifications follow national guidelines. 	Marine megafauna
Department of Environment, Parks and Water Security (DEPWS)	3	8	<p>A cumulative impact assessment was not undertaken. The proponent proposes to discuss with other proponents/dredge operators if dredging operations would coincide with another project. The Flora and Fauna Division does not consider that this adequate to inform an assessment of the risks to this factor.</p> <p>The Flora and Fauna Division recommends that plume modelling should at least include all the activities from the project could impact on suspended sediment. The proponent should also provide the Dredging and Dredge Spoil Placement Management Plan for review by appropriate experts before any dredging commences.</p>	cumulative impacts
Department of Environment, Parks and Water Security (DEPWS)	3	8	See comments for Coastal process - Project activities and significant impact	Coastal processes
Department of Infrastructure, Planning and Logistics - Lands and planning	4	1	The proponent has identified that part of the proposal is on zoned land (under the NT Planning Scheme) and may be able to utilise existing development permits in force. The proponent is encouraged to contact DIPL (Development Assessment Services) at its earliest opportunity to discuss planning requirements as further approvals may be required.	Legislation
Department of Infrastructure, Planning and Logistics - Lands and planning	4	1	The proponent should also contact DIPL (Land Development) prior to finalising the alignment of the pipeline in order to ensure it is optimally located in the context of other infrastructure within Darwin Harbour.	Project description

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Department of Infrastructure, Planning and Logistics – Transport and Civil Services Division	5	1	<p>Issue: Insufficient information has been provided to assess the risks to marine transport networks.</p> <p>Potentially significant impacts include but are not limited to:</p> <ul style="list-style-type: none"> * marine incident as a result of: <ul style="list-style-type: none"> - laying pipeline close to the shipping channel on fishing vessels, recreational vessels and shipping - if pipeline left on seafloor, how will impacts from marine incident resulting in pipeline leak be managed - damaging other pipeline (Bayu Udan and Ichyts) during construction * disturbance to corridor users from movement of the anchors * congestion to other port users <p>Recommended action: The proponent to submit a risk assessment and associated mitigation measures to ensure the Harbourmaster can measure the proponent's acknowledgement of the risks associated with the works impact to marine transport networks and associated port users.</p>	Shipping traffic
Department of Infrastructure, Planning and Logistics – Transport and Civil Services Division	5	1	<p>Issue: Insufficient information has been provided to assess the risks to land based transport networks.</p> <p>Traffic and transport regimes have changed considerably in this locality since the original establishment of Darwin LNG but are also expected to increase in the near future as a result of further industrial developments in this area. This will result in greater risks to road users and transport infrastructure along the routes to and from the proposal.</p> <p>Recommended Action: The proponent to submit a Traffic Impact Statement (TIS) to assess the road traffic impacts, to ensure the road authority can measure the proponent's acknowledgement of the risks associated with the works impact on NTG Roads, infrastructure and road safety.</p> <p>The assessment is to include, but is not limited to: details on what materials will be transported and their loads, traffic volumes and types of vehicles used for the transportation including the haulage routes and duration of the haulage operation specific to onshore movements including a risk assessment as part of the process to reflect how all roads and infrastructure on a local and regional level will be affected.</p>	Shipping traffic
Department of Industry, Tourism and Trade - Energy Division	9	1	The Energy Division have no formal comments at this stage. They have been in discussion with Santos regarding this project to ascertain the proposed route and appropriate licences as well as the requirement to submit pipeline management plans.	Not Applicable

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Department	Submission No.	Pg number	Government Submission / Key Issue	Topic category
Department of Industry, Tourism and Trade - Fisheries Division	6	2	<p>The proposal may have a detrimental impact on the jewfish population in the area.</p> <p>Fisheries have identified that the proposed pipeline passes through the Charles Point reef protection area in which there is a jewfish aggregation they wish to protect. The reef protection area contains an important subsea structure which was the primary reason for the placement of the zone.</p> <p>GPS co-ordinates of the zone are available on request.</p> <p>Fisheries note that they have been in direct discussion with Santos regarding this issue.</p>	Charles Point RPA
Department of Industry, Tourism and Trade - Tourism Division	8	3	<p>This project has potential to impact on tourism and tourism related recreational activities in Darwin harbour. Tourism NT recommends the proponent identify tour operators operating within the harbour who may be impacted by the project (large stakeholders in other sectors were identified in Appendix C, however tourism appears to have been overlooked). Tourism NT can assist with stakeholder identification.</p> <p>The proponent should engage with potentially impacted harbour tour operators in the initial discussion stage as well as during the construction stage (pipe laying) to mitigate and minimise the negative impacts on tourism.</p>	Consultation
Department of Territory Families, Housing and Communities - Heritage Branch	7	1	A typo, but a significant one. The Heritage Branch is the NT Heritage Branch, not the NT Heritage Commission	Legislation
Department of Territory Families, Housing and Communities - Heritage Branch	7	1	<p>7.8.1 Covers Maritime Cultural Heritage. The report states 'Engagement with the Heritage Branch is underway to confirm if additional heritage sites are present within the Project Area'. This is not incorrect, but does not accurately describe the current mitigation plan. The proponent is required to engage a maritime archaeologist to review remote sensing data of the project pipeline in order to locate targets that may indicate as yet unidentified Underwater Cultural Heritage. A scope of work for this consultancy was provided to Santos. While this work may be progressing in the background, this report does not describe the risk nor the consultancy recommended to mitigate it.</p> <p>Similarly the pre-referral tool located in the appendix does not appreciate potential impact to significant UCH sites not previously recorded.</p>	Cultural heritage
Department of Territory Families, Housing and Communities - Heritage Branch	7	1	The document makes reference to both the Historic Shipwrecks Act and the Underwater Cultural Heritage Act. The former was superseded by the later.	Legislation

Register of all Public Submissions and Key Issues

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This table provides a summary of the Public Submissions received for the referral. Each submission has been assigned a number from 1-311.

Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Environment Centre NT (ECNT)	9	1	1. The Environment Centre Northern Territory Inc (ECNT) is the peak body for conservation in the NT, with over 7000 supporters.	Not Applicable
Environment Centre NT (ECNT)	9	1	5. Methane gas would be extracted from the Barossa field and transported by pipeline to the Facility for processing into LNG for export	Project description
Environment Centre NT (ECNT)	9	2 - 3	7-9 under heading of Legislative Framework	Legislation
Environment Centre NT (ECNT)	9	2	10. While not an express element of the legislative regime, the NT EPA in exercising its powers under the EP Act should have due regard to potential climate impacts on young people in particular. The Federal Court of Australia recently recognised a duty to exercise reasonable care to avoid personal injury to children from climate change impacts (Sharma v Minister for the Environment [2021] FCA 560). There is significant potential for the duty of care to apply to decision-makers exercising power under NT legislation such as the EP Act and EP Regulations.	Legislation
Environment Centre NT (ECNT)	9	3	12, 13 and 15. We reiterate our request (in separate correspondence to the NT EPA on 8 September 2021) that the NT EPA call-in a referral under s 53(1) of the EP Act of the DLNG Extension and the broader Barossa Project.	Legislation
Environment Centre NT (ECNT)	9	3	14. The Referral Document expressly states (p 17) that processing gas from the Barossa field at the Facility is “excluded” from the referral and that the DLNG Extension was “approved by the NT EPA” under the previous Environmental Assessment Act 1982 (NT) (EA Act). This is incorrect. The NT EPA decided not to assess the DLNG Extension, which is not the same as a completed assessment under the EA Act.2	Project description
Environment Centre NT (ECNT)	9	3 - 4	16. In relation to the Pipeline, we submit that the NT EPA should have exercised its power in r 47(c) of the EP Regulations to refuse to accept the referral, on the basis that it only provides information about one element of a larger action (the Barossa Project) that needs to be considered more holistically. The referred action and the DLNG Extension are necessary components of the Barossa Project, which must be assessed from a cumulative perspective.	Broader project
Environment Centre NT (ECNT)	9	4	17. Now that the NT EPA has decided to accept the referral of the Pipeline, the only means by which the action can be sensibly assessed in the context of the broader Barossa Project is by way of an “inquiry” level of assessment.	Project Assessment
Environment Centre NT (ECNT)	9	4	19. It is not clear from the Referral Document what level of assessment Santos proposes should be applied to the Pipeline.	Project Assessment
Environment Centre NT (ECNT)	9	4	21. Further, should the Pipeline be assessed by way of environmental impact statement, this should be combined with an inquiry as contemplated in r 5(2) of the Environment Regulations.	Project Assessment
Environment Centre NT (ECNT)	9	5	25. ECNT is concerned that the environmental factor of “Culture and Heritage” is not addressed in the Referral Document.	Cultural heritage
Environment Centre NT (ECNT)	9	5	a. The Referral Document acknowledges (p 50) that the selected site for the Pipeline “has some significant ... heritage sensitivities”. While Santos may feel confident that the level of knowledge means that these can be managed, the high sensitivity of this environmental factor necessitates comprehensive assessment and management measures.	Cultural heritage
Environment Centre NT (ECNT)	9	5	b. The Referral Document also notes (p 49) that key stakeholders had a common concern as to the impacts of the Pipeline on “areas of cultural and indigenous heritage”.	Cultural heritage
Environment Centre NT (ECNT)	9	5	26. ECNT is concerned that the environmental factor of “Atmospheric Processes” is not addressed in the Referral Document.	GHG emissions / AQ

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Environment Centre NT (ECNT)	9	5	a. The Referral Document claims (p 120) that the greenhouse gas emissions of the Pipeline are limited to construction and that operations do not “alter” emissions beyond those already “approved”. As discussed above in Section A, we strongly submit that an additional 25+ years of operation of the Facility should be properly assessed and managed. Plainly, as the Pipeline is a necessary component of the Barossa Project, it facilitates significant greenhouse gas emissions and undermines the Paris Agreement goal of limiting warming to 1.5 degrees and reaching “net zero” emissions by 2050, as stipulated in the NT Government’s “Climate Change Response: Towards 2050” (July 2020).	GHG emissions / AQ
Environment Centre NT (ECNT)	9	5	b. The Referral Document includes numerous references to elements of the Barossa Project, including the Pipeline, which indicate that comprehensive assessment of this environmental factor is required, such as:	Project Assessment
Environment Centre NT (ECNT)	9	5	i. the statement on p 16 that annual rates of greenhouse gas emissions at the Facility will increase by approximately 5% when processing Barossa gas (in stark contrast to the previous finding that annual rates of emissions would be lower than current operations);	GHG emissions / AQ
Environment Centre NT (ECNT)	9	6	ii. references to the “Bayu-Undan CCS Opportunity” without providing any details of whether CCS is feasible or how Santos proposes to make this unproven technology work; and	Broader project
Environment Centre NT (ECNT)	9	6	iii. acknowledgement that, due to the extremely high content of carbon dioxide in the Barossa field, a significant but unspecified amount of greenhouse gas will simply be vented into the atmosphere in order to transport it through the Pipeline.	Broader project
Environment Centre NT (ECNT)	9	6	c. The Referral Document contains no figures or estimates for the greenhouse gas emissions associated with the Pipeline and broader Barossa Project, and does not make any reference to the indirect emissions associated with the combustion of produced LNG	GHG emissions / AQ
Environment Centre NT (ECNT)	9	6	29. It is crucial, given these values, that the Pipeline, and the broader Barossa project, is subject to a rigorous assessment at the highest level, including of the cumulative and indirect impacts of the Proposal.	Project Assessment
Environment Centre NT (ECNT)	9	7	30. The Pipeline will have very significant impacts on the three environmental factors identified by Santos in the Referral Document, namely Coastal Processes, Marine Environmental Quality and Marine Ecosystems	General marine
Environment Centre NT (ECNT)	9	7	Some of the information provided in the Referral Document is inaccurate and seems designed to de-emphasise important environmental values associated with the Harbour. For example:	Project Assessment
Environment Centre NT (ECNT)	9	7	(i) the Referral Document does not refer to the most recent research mapping benthic communities in Darwin, which predicts a very high probability of extensive hard coral habitat in Darwin Harbour, including in the areas to be traversed by the Pipeline. These areas are extremely significant for marine biodiversity, providing habitat and shelter for a vast diversity of species. None of the Darwin Harbour marine habitat maps (corals, seagrasses, mixed communities) from this report are used in the Referral Document;	Benthic habitats
Environment Centre NT (ECNT)	9	7	(ii) the Referral Document suggests instead that Darwin Harbour comprises largely sand-mud and soft sediment communities, which is contradicted by the above research;	Benthic habitats
Environment Centre NT (ECNT)	9	7	(iii) the baseline survey provided in the Referral Document (Appendix D) is restricted to the project area only, and does not refer to marine habitat studies of Darwin Harbour, or outer Darwin Harbour, which is the potential zone of influence of the Pipeline’s construction and operation;	Benthic habitats
Environment Centre NT (ECNT)	9	7	(iv) the Referral Document mentions the need to build a cofferdam but does not specify its size or even if it is required. The impacts of shoreline erosion associated with a cofferdam needs further assessment;	Coastal processes
Environment Centre NT (ECNT)	9	7	(v) the list of threatened species is inaccurate and is a significant underestimate. Only 7 marine threatened species are listed, and 2 migratory species;	Threatened species
Environment Centre NT (ECNT)	9	7	(vi) no detail is provided on the source of rock for infill of the trench or the quantity needed, or where the dredge spoil will be dumped. If the rock for the trench infill is coming from reef areas significant damage to habitat for already overfished fish stocks may occur.	Project description

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Environment Centre NT (ECNT)	9	7-8	b. The potential impacts from the proposed dredging and reclamation activities on bathymetry and coastal processes have not been adequately established in the Referral Document. The proponent must comprehensively investigate the potential impacts of the proposed dredging and trenching associated with the project as outlined in the NTEPA Guidelines for the Environmental Assessment of Marine Dredging in the Northern Territory to ensure that the environmental values of the coast are protected, taking into account the latest research regarding benthic habitats in Darwin Harbour	Coastal processes
Environment Centre NT (ECNT)	9	8	c. 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 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. Further studies (including modelling) are also required to establish the zone of influence and the scale of any likely sediment plumes. Further investigation into borrow grounds, spoil dumping grounds and dredge plumes are required. Dredge plume modelling should include hydrodynamic and ecological modelling and ascertain impact prediction to inform an impact management program.	Sediment / plume modelling
Environment Centre NT (ECNT)	9	8	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 harbor. There is potential for the Pipeline to contribute significantly to cumulative impacts. Full characterisation of the contamination of marine sediments in the Project Area 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	cumulative impacts
Environment Centre NT (ECNT)	9	8	d. The Referral Document lists various risks to water quality such as treated sea water release during a wet buckle event and unplanned marine diesel spills. The report does not refer to the hydrodynamic modelling studies which suggest the harbor is poorly flushed due to the lack of big river flows and the diurnal tidal cycle resulting in 20 day flushing times. Any chemical or petroleum release into the harbor is likely to remain in the Harbour for a considerable period of time as seen from the 2016 oil spill from the cargo vessel Antung that spread some 30 km. Considering up to 600 m3 of treated seawater containing Biocides and Oxygen Scavengers may be discharged into Darwin Harbour in the event of an accident, modelling of wet buckle release of treated seawater and hydrocarbon spills will be essential to understand impacts.	Spills
Environment Centre NT (ECNT)	9	9	e. The impacts of project activities on marine ecosystems provided in the Referral Document rely on key information and assumptions that are out of date and lacking in critical information. Santos repeatedly claim that this project is smaller than the Inpex Ichthys project therefore the environmental impacts will be acceptable. Very little evidence is available suggesting there was an acceptable level of impact from construction of Inpex Ichthys LNG.	Comparison to ichthys
Environment Centre NT (ECNT)	9	9	For example, key condition indicators for the Anson-Beagle bioregion for dredging impacts include seagrass extent and density, and combined regional pressures requires assessment of marine megafauna abundance. Limited surveys on marine megafauna populations suggest significant impacts did occur with almost half of the recorded Humpback Dolphin population leaving the harbor. The last marine Turtle survey was conducted in 2014. Without repeated surveys it is impossible to ascertain the level of impacts from developments. This project may push the remaining marine megafauna from the harbor considering the projects proximity to the relative safe haven of the undisturbed West Arm. Updated data on marine megafauna populations, coral extent and seagrass health are essential to understand the impact of this proposal.	Marine megafauna
Environment Centre NT (ECNT)	9	9	f. The Pipeline will impact significant marine conservation areas including the Charles Point Reef Fish Protection Area and Weed Reef, and this should be explicitly addressed. Construction of a gas pipeline through the Charles point reef fish protection area needs thorough investigation considering the importance of this zone to the overfished stocks of Golden Snapper and Northern Mulloway. Weed Reef is regarded by Traditional Owners and eco tour operators as the primary location for Dugongs in Darwin Harbour. Trenching activities will have a significant impact on dugong habitat.	

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Environment Centre NT (ECNT)	9	9	g. The Referral Document states that Fannie Bay is the closest seagrass to the pipeline route, however this information is based on the incomplete habitat mapping data from 2016 and is incorrect. Benthic habitat mapping surveys should be completed that include the nearshore areas and alternative pathway options need to be assessed.	Benthic habitats
Environment Centre NT (ECNT)	9	9 - 10	h. Marine megafauna data is poor and many assumptions provided in the referral report are incorrect. While Inpex provided funding for marine mammal research in 2016, that research has not been continued. The last available research suggested that almost 50% of Dolphins had left the harbor after the construction of Ichthys LNG and no recent data is available to verify these results. Snubfin Dolphins and Bottlenose Dolphins are well documented in Darwin Harbour and yet the referral only mentions the presence of Australian Humpback Dolphins. Other assertions about absence of whales from the project area are also incorrect with recent sightings of Humpback Whales recorded along the west coast of Bathurst Island and Van Diemen Gulf. Comprehensive marine megafauna population assessments and 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	Marine megafauna
Environment Centre NT (ECNT)	9	10	i. The Pipeline is part of the larger Barossa Project, which entails the development of a major new gas field with the highest carbon dioxide content of any Australian offshore field. Approximately 15 Mt/pa of life cycle greenhouse gas emissions will be released for a period of 25 years from this project, generating over 350 million tonnes of carbon dioxide equivalents. Darwin Harbour already experiences 8.3mm/pa sea level rise and research indicates the 20,000ha mangrove estate within the harbor is only just coping with this rapid change. Darwin mangroves play a key role in preserving water quality by intercepting catchment-derived pollutants and they substantially influence the movement of sediment through the estuary. The future health of Darwin Harbour depends substantially on the protection of the mangrove estate against further pressures from climate change. Increasing carbon dioxide and other greenhouse gas emissions from the Barossa Project, will increase sea level rise and amplify impacts on coastal processes. The indirect impacts of climate change of the Pipeline, and Barossa Project should also be assessed.	GHG emissions / AQ
Environment Centre NT (ECNT)	9	10	31. The Pipeline and broader Barossa Project will have a potentially significant impact on the "Cultural Heritage" environmental factor.	Cultural heritage
Environment Centre NT (ECNT)	9	10 - 11	32. There are numerous terrestrial and marine sacred sites in both Darwin Harbour, and on the Cox Peninsula. The area north of Charles Point is of particularly high cultural value to the Kenbi Traditional Owners and Larrakia and Belyuen residents and the Pipeline route may well traverse areas of cultural and spiritual significance. The zone of influence of the project may be far greater than the Pipeline footprint itself, due to sediment plumes, turbidity and altered light. This may have adverse impacts on sacred sites and culturally significant areas. The Referral Document stops short of stating that the proponent will obtain an authority certificate under the Northern Territory Aboriginal Sacred Sites Act. This should be a precondition of any environmental approval.	Cultural heritage
Environment Centre NT (ECNT)	9	11	33. In addition, there are also numerous cultural heritage sites in Darwin Harbour. Hiscock and Hughes relates that there are significant prehistoric shell mounds throughout Darwin Harbour. Further, recent research indicates that submerged cultural heritage is common in northern Australia, but under threat due to a lack of information about them. A regional assessment of submerged archaeological potential in the Northern Territory found that the submerged areas off the coast of the Northern Territory may contain a wealth of important archaeological material. Recently, research revealed archaeological material across terrestrial, coastal and submerged environments at Murujuga in north-west Australia. This research was funded by Woodside Petroleum. There is no reason why the proponent should not ensure a similar survey is undertaken as part of the environmental assessment of the Pipeline. An extensive cultural heritage survey of marine and submerged areas in the vicinity of the pipeline, preferably in partnership with Larrakia people, is required	Cultural heritage
Environment Centre NT (ECNT)	9	11	34. The Pipeline and broader Barossa Project will have a potentially significant impact on the "Atmospheric Emissions" environmental factor through large contributions to global greenhouse gas concentrations.	GHG emissions / AQ

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Environment Centre NT (ECNT)	9	11 - 12	a. There are extensive reputable scientific resources addressing the issue of climate change and the need to urgently reduce greenhouse gas emissions. i. The Intergovernmental Panel on Climate Change (IPCC) report "Climate Change 2021: The Physical Science Basis" (August 2021) found that human influence on the climate by way of anthropogenic greenhouse gas emissions was "unequivocal", already causing unprecedented changes to the climate system, and that the 1.5°C and 2°C warming levels will be exceeded during the 21st century unless deep reductions in greenhouse gas emissions occur in the coming decades. ii. The IPCC Special Report "Global Warming of 1.5°C" (October 2018) highlights the importance of emissions reductions beginning as soon as possible – by 25-45% from 2010 levels by 2030, with more rapid reductions producing better warming outcomes. iii. The International Energy Agency's report "Net Zero by 2050: A Roadmap for the Global Energy Sector" (May 2021) confirms that to achieve net zero emissions by 2050, fossil fuel use needs to decline drastically and no new oil and natural gas fields are required. iv. Extensive analysis of carbon budgets compatible with warming scenarios such as 1.5°C, for example the Climate Council document from April 2021 "Aim High, Go Fast: Why Emissions Must Plummet", which also highlights the need for rapid emissions reductions before 2050	GHG emissions / AQ
Environment Centre NT (ECNT)	9	12	b. The Barossa Project is a new fossil fuel development. The total greenhouse gas emissions that would be produced by the Pipeline and broader project have not been provided to the NT EPA. Plainly, any additional sources of greenhouse gas emissions in the current context would have a significant impact on the above goals. Given the urgency of action required and the catastrophic consequences of failure to reduce atmospheric concentrations of greenhouse gas emissions from current levels, we strongly submit that this environmental factor requires comprehensive assessment and management under the EP Act	Broader project
Environment Centre NT (ECNT)	9	12	35. The extent of community engagement that has occurred in relation to the Pipeline is minimal.	Consultation
Environment Centre NT (ECNT)	9	12	a. We do not consider ECNT was properly engaged as a key stakeholder and representative peak body organization ahead of the Referral Document. i. The Referral Document lists ECNT as a stakeholder included in Santos' "prereferral engagement". ii. Appendix C to the Referral Document states that Santos had a meeting with ECNT on 17 November 2021. At this meeting, Santos indicated its intention to refer the Pipeline for assessment to the NTEPA. ECNT stated at the meeting that it considered the referral of the Pipeline to be inadequate and misleading about the true extent of the Barossa Project's impacts. ECNT reiterated its position that the impacts of the Barossa Project, including its significant greenhouse gas emissions, should be referred for assessment to the NTEPA. iii. In the summary list on p 48-49 of the Referral Document our central concern as to climate impacts is not included	Consultation
Environment Centre NT (ECNT)	9	12 - 13	b. We are aware of significant public interest and community concern about the Pipeline and the Barossa Project which necessitates transparency and further opportunities for public participation in this assessment. This is evidenced by the high volume of individual submissions which ECNT understands have been provided to the NTEPA in relation to this referral.	Consultation
Environment Centre NT (ECNT)	9	13	c. Santos appears to rely on "opportunities for public comment as part of the referral process and subsequent assessment phases" for ongoing engagement (p 49, emphasis added). This supports the need for an assessment method which includes sufficient opportunities for public participation (e.g. an inquiry), as there are no other means by which Santos proposes to engage the community with respect to the Pipeline and the Barossa Project.	Consultation
Environment Centre NT (ECNT)	9	13	36. The capacity of communities and individuals likely to be affected by the Pipeline to access and understand information about the proposed action and its impacts is not adequately addressed by the Referral Document and Santos' engagement to date.	Consultation
Environment Centre NT (ECNT)	9	13	b. Potentially affected communities and individuals for this referral include those with limited technical expertise or education, limited time and resources to devote to reading complex project documents, limited access to the internet, and cultural or language barriers including living remotely	Consultation

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Environment Centre NT (ECNT)	9	13	c. These communities and individuals would be better able to understand information about the Pipeline and Barossa Project if the opportunities to participate in the assessment: i. included opportunities for oral engagement, which may include formal and/or informal settings (e.g. public hearings); ii. were transparent, independent and not conducted solely by Santos representatives; iii. were administered by appropriate persons (e.g. members of a panel with experience and/or suitable qualifications to engage with these affected communities); and iv. had been determined and programmed well in advance so that communities and individuals were able to make necessary arrangements to participate (e.g. subject to a terms of reference which included a schedule of how an inquiry would be conducted).	Consultation
Environment Centre NT (ECNT)	9	13	37. On the basis of these factors, we submit that the NT EPA must require an assessment by inquiry for this referral.	Project Assessment
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	2	Should be assessed as EIS based on the following;	Project Assessment
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	2	The capacity of communities and individuals to access and understand information about the project: -recreational fishing impacts in Darwin Harbour during construction - more consideration with how communication with recreational fishing community will be planned and achieved. -Medium-term social impacts that flow from the perception of damage done to fish habitat in the harbor. This is based on anecdotal evidence of some community sentiment/perception that the harbor has "not fully recovered from the Inpex dredging". -Further assessment into impacts within Charles Point RPA. Perhaps equally significant is the potential social impact that could be realised if the fishing community perceive that the broad community support for the RFA over the past five years is undermined by the approval of the construction of the pipeline through the area.	Recreational fishing
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	2	charles point -Damage to benthic environment in Darwin Harbour - he footprint of this corridor is expected to include areas of disturbance 50m wide, and this may be wider still, should the proposed method of "side casting" be used to keep dredge spoil adjacent to the trenching area for backfill purposes. -localised impacts from trenching will occur in the form of the removal of fish habitat that supports recreationally targeted species. Removal of hard rocky bottom substrate environment as shown in RPS sampling (sites HS61 and HS68). More information about how trenching will cover the pipeline in rocky substrate habitats could be more explicitly explained to determine whether the pipeline will provide suitable artificial habitat.	Benthic habitats
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	4	Mauna Loa - In meetings with SANTOS, AFANT provided a GPS database containing many popular fishing locations in and around Darwin Harbour. This was provided to assist SANTOS with planning a route that avoids know recreational fishing spots and valued natural features. While the proposed northern route avoids directly transecting these known locations, it passes close by (150m) the Mauna Loa WW2 shipwreck. The route proposes a disturbance with a footprint of up to 50m within the vicinity of this known heritage site, which is also known as a good fishing area/habitat for jewfish. More detail should be provided about the suitability of the proposed proximity to this site, with consideration given to improving the buffer zone, and assurances given that side-casting will not be allowed in this immediate area.	Cultural heritage

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Amateur Fisherman's Association of the Northern Territory (AFANT)	1	4	<p>Mud crab migration - This matter was not raised by AFANT in the meeting we had with SANTOS, owing to our internal capacity to prepare within the constraints of the timeline of our meetings/ the referral. We have since however, consulted informally with fishery experts and the Mud Crab Fishery Management Framework to inform the following concern.</p> <p>Mud Crab spawning in the Northern Territory typically occurs from September – November. Female mud crabs leave their usual habitat for spawning, and have been recorded moving large distances offshore to release their eggs. It is assumed that to maximise the survival rate of larvae, female mud crabs seek stable conditions with high salinity and temperature for hatching the larvae (Mud Crab Fishery Management Framework, 2017).</p> <p>The proponent has proposed that shallow water pipelay take place in the months of October, November and December. While the exact crab migration paths are unknown, and while it may be therefore not possible to say that these actions will have a direct/knowable impact on the migration of female mud crabs on their way to spawn in deeper/ offshore waters, these events will almost certainly occur at the same time, in overlapping locations. Further engagement with NT Fisheries should be required to better understand these factors, and if necessary, to mitigate the risk of interrupting the Darwin harbor mud crab spawning migration.</p>	Mud crab migration
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	4 - 5	<p>It is AFANT's position that at the next stage of assessment the proponent should give greater consideration to potential pathways for unacceptable/unintended cumulative impacts to be realised. It is not necessarily reasonable to suppose that because the impacts of previous projects were similar and efforts were made to mitigate issues, that this project, being smaller will automatically avoid contributing cumulative impacts. Indeed, this seems to skirt the point that multiple developments in proximity over a relatively short time can have a compounding effect. Indeed, the fact that a number of aggregated small impacts can together produce a larger consequence is the very heart of the matter. For example, Cuddington et al. (2013) provides that Cumulative impact management should be concerned with determining a desired future state of an ecosystem, and how this can be achieved through the management developments that may have direct, indirect or interactive impacts on the ecosystem. It is reasonable to consider that the environmental resilience in the area adjacent to previous pipeline developments in Darwin harbor may be further degraded with each new dredging / trenching operation. While such impacts may eventually be determined to be manageable/ tolerable, this approach to considering cumulative impacts nonetheless requires more explicit consideration and explanation by the proponent. Regard should be had to the condition of previously disturbed benthos and the overall dredging/disturbance planned for the harbor, as well as the process of industrialization occurring within Darwin harbor. The regulator should be concerned with fostering cooperation and information sharing by industry so that such an assessment can be reasonably made by the proponent.</p>	cumulative impacts
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	5-6	<p>Uncertainty over the need for the development, and therefore doubt over the beneficial trade-offs against the likely environmental, social and cultural impacts. Regulator must have regard to the likelihood of the CCS project actually proceeding. The EPA should expect that a solid commitment from the proponent and any partners to the CSS element of the project will be made clear at the next stage of assessment. Indeed, it does not seem unreasonable to suggest that a viable plan for CCS (or another solid and assured reason) should be a condition for any future approval to proceed with the pipeline.</p>	Broader project
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	6	<p>Other factors to consider in next stage of assessment:</p> <p>Cultural heritage - Concern around 'Potential for impacts on recreational fishers' perception of a healthy harbor will be a foreseeable consequence of the proposed project.' While the proponent may be able to effectively manage any risks, this issue should be explicitly acknowledged under the Maintain Cultural Heritage section.</p>	Recreational fishing
Amateur Fisherman's Association of the Northern Territory (AFANT)	1	6	<p>Spoil ground and potential recreational fishing offsets - AFANT is aware that the Inpex spoil ground has since become an area with appeal to recreational fishers. There is anecdotal evidence that reef fish, including snapper species are now caught in this area. It is reasonable to suppose that the proposed new spoil area, though smaller in scale may eventually hold value as a fishing location. The proponent may wish to engage with fishers and AFANT to learn more about fishing activities in the borrow and spoil areas proposed. Further plans to better understand project impacts and recovery may also be warranted. Additionally, the Inpex spoil area may be investigated to better understand fish communities and habitat that has been created following the disposal of spoil. Should potential material, social and cultural impacts to recreational fishing be acknowledged by the proponent, they may consider how augmenting the proposed spoil area (or another area) with additional purpose-built reef habitat structures may expedite potential offsets provided to recreational fishers in the form of improved fishing opportunities.</p>	Recreational fishing

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Australian Parents for Climate Action Darwin and NT - volunteer group	2	9	Specifically, we wish to see the NTEPA: (a) call in a referral under s53(1) of the Environment Protection Act of the broader Barossa Project as a whole; (b) if, the NTEPA does not call in the proposal, the Darwin Pipeline Duplication Project and the broader Barossa Project must be assessed at the highest level – a public inquiry.	Broader project
Australian Parents for Climate Action Darwin and NT - volunteer group	2	10	<u>1. Greenhouse gas emissions will rise</u> Santos has not addressed how they will monitor for fugitive emissions along the pipeline and at each state of processing the gas from beneath the sea floor to the ships to the harbour. In the DPDP this chain of production is well over 100km long through sensitive marine environments and Endangered marine mammal and turtle breeding grounds. Santos' referral report has no information to reassure us of these huge climate risks due to fugitive methane emissions and massive amounts of CO2 produced once the pipeline is in use.	GHG emissions / AQ
Australian Parents for Climate Action Darwin and NT - volunteer group	2	10-11	<u>2. The NT may become unliveable</u> The project will increase global warming which will result in further heating of the NT making it too hot for people to live	GHG emissions / AQ
Australian Parents for Climate Action Darwin and NT - volunteer group	2	11	<u>3. Minimal long-term jobs</u> No supporting evidence in the referral for how the project will create more jobs i.e. how many jobs, for how long etc. Further social impact assessment is required to determine potential impacts on the Darwin community. When construction of Inpex was completed, house prices plummeted, people left the NT in droves, the Darwin CBD was left virtually deserted and many small businesses had to close up. In 2022, the next bust will be permanent as the entire world moves away from fossil fuels – including gas.	Social impacts
Australian Parents for Climate Action Darwin and NT - volunteer group	2	Dec-13	<u>4. Gas is a bad investment and risks becoming a stranded asset - future carbon capture and storage does not justify the DPDP</u> Furthermore, CCSU is not a justification for pursuing more dirty fossil fuels. Carbon capture and storage will lock us into decades more of fossil fuels and is not feasible at any scale close to what will be required to sequester the emissions generated from the project, let alone reduce current emissions. More detail is required from Santos on CCS project and how this will help reduce CO2 emissions.	GHG emissions / AQ
Australian Parents for Climate Action Darwin and NT - volunteer group	2	13	<u>5. Poor consultation with Traditional Owners</u> We understand that Tiwi Islander Traditional Owners are seriously concerned about the DPDP and do not believe that Santos has consulted adequately with them about this proposal. The Larrakia People are the Traditional Owners of the Darwin Harbour and must also be genuinely consulted in this way. This will be the third pipeline laid in Darwin Harbour, which has significant biocultural values for Larrakia, and previous consultation with Larrakia Traditional Owners does not "cover off" on new developments.	Consultation
Australian Parents for Climate Action Darwin and NT - volunteer group	2	14	<u>6. Habitat destruction</u> The NTEPA must consider how the DPDP will impact the Territory's precious mangrove forest ecosystems, and how the project will have far reaching impacts on these important cultural resources, well beyond the site of their photo monitoring points. Santos asserts that the DPDP will be 'smaller' than other pipelines already in use in the harbour. But the fact is this will be the third major pipeline construction. The cumulative impacts of increasing infrastructure in this already highly developed area cannot be dismissed. Up to date research and surveys must be undertaken by an independent expert in order to determine what the anticipated impacts will be on the animals themselves and their critical habitat areas.	cumulative impacts

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Australian Conservation Foundation - Elizabeth Sullivan	3	16	Emissions profile of the project We therefore believe it would be remiss for the overall emissions profile of the Barossa project not to be publicly assessed by the NTEPA under the current relevant Act. Whether the proposed Project will lead to an increase in emissions that exceeds the threshold established by previous approvals needs to be investigated, and the most appropriate method for this investigation is a public inquiry. Expert evidence suggests that emissions from the Barossa project will be significant and detrimental to Australia's carbon budget.	GHG emissions / AQ
Australian Conservation Foundation - Elizabeth Sullivan	3	16	Carbon Capture and Storage (CCS) Any decision concerning whether to undertake an assessment of the Project must consider the purpose for which the Project is being carried out, which is explicitly referred to by the proponent as making available the existing pipeline for CCS. Consequently, the claims made by the Proponent in the referral documents concerning the ability for CCS to allow net zero emissions targets to be reached must be appropriately scrutinised. The feasibility of CCS is not established, and in fact there is no successful example of an offshore gas field being used to reach emissions capture targets. We submit that a public inquiry, broad enough in its scope to investigate the feasibility and potential impacts of CCS, must therefore be undertaken.	Broader project
Karen Edyvane - Australian National University	311	2	With a primary focus of assessing the DPD potential environmental impacts on the ecosystem condition and health of the harbour - including significantly, a comprehensive and independent assessment of the status, adequacy and effectiveness of the current Darwin Harbour integrated monitoring and assessment framework to detect and assess medium and longterm anthropogenic impacts.	IMMRP
Karen Edyvane - Australian National University	311	3	I also recommend this highest level of assessment based on my expert opinion that the current water quality and environmental quality monitoring and assessment in Darwin Harbour – particularly the Integrated Marine Monitoring and Research Program (IMMRP) – fails to provide an adequate and integrated framework to detect and assess anthropogenic impacts in Darwin Harbour	IMMRP
Karen Edyvane - Australian National University	311	3	1. Lack of an Adequate & Integrated Marine Monitoring & Assessment Program for Darwin Harbour Throughout the Referral Report, the Proponent emphasizes the critical value and contribution of the monitoring undertaken under the NT Government's Darwin Harbour Integrated Marine Monitoring and Research Program (IMMRP) - both, in assessing the medium and long-term impacts of the INPEX Icthyus Project and also, assessing the potential impacts of the current DPD Project. In 2016, the IMMRP was seen as holding great potential in developing an integrated marine monitoring program for Darwin Harbour: <i>An Integrated Monitoring and Research Program (IMRP) has thus been proposed for the Darwin region to help address many of these issues and to develop and integrate more ecologically relevant measures of ecosystem condition across marine, estuarine and freshwater habitats (DHAC, 2005; Fox, 2011). As with all such endeavours, the success of the IMRP will depend on its ability to overcome the challenges of coordinating numerous stakeholders with divergent interests and ensure funding streams and continuity of management. To this end, the recent securing of \$20 million of funding for the IMRP over 40 years, as part of an offset agreement between INPEX Corporation and the NT Government, represents a significant step forward."</i> [From Hallett et al (2016)] While the NT has made significant progress towards an integrated marine and estuarine monitoring program in Darwin Harbour through WQPP for the Darwin Harbour – it is important to note that the establishment of the \$20 million, 40-year IMMRP has primarily remained a 'long-term offsets program' for the INPEX Icthyus project. And significantly, was never specifically designed as a holistic and integrated marine assessment, monitoring program to assess the ecosystem condition and ecosystem health of Darwin Harbour. As such, the current IMMRP falls far short of both, an adequate and integrated marine monitoring program to assess potential marine anthropogenic impacts in Darwin Harbour - for the following specific reasons:	IMMRP

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Karen Edyvane - Australian National University	311	3	<p>a) The NT remains the only jurisdiction in Australia not to have an integrated monitoring and assessment system underpinned by an understanding of drivers, activities, threats, condition/impacts and responses (see Hallett et al. 2016). Hallett et al (2016) (including NTG co-authors) review of national, jurisdictional approaches to monitoring/assessing and reporting on estuarine condition, highlights the Northern Territory's lack of integrated monitoring and assessment:</p> <p><i>"To date, however, there has been no integration of the outputs from the above biophysical and ecological monitoring programs with the report cards for Darwin Harbour, which remain strongly focused on water quality. Moreover, many of the logistical and administrative barriers identified by DHAC (2005) are still relevant today, including the inaccessibility of monitoring data, fragmented and overly-technical reporting of outputs, and the lack of accountability of monitoring agencies to the community. There also remains little coordination of monitoring activities among the government departments, industry groups and other relevant agencies (DHAC, 2005; Fox, 2011). Current reporting uses just 2 indicators to assess "Healthy ecosystems and landscapes in the catchment and harbour – catchment disturbance index and mangrove area change."</i></p> <p>While there has clearly been recent progress by DENR in identifying proposing a suite of pressure indicators for the harbour (see Radke et al 2018) – in an integrated approach, additional stress and response indicators also need to be evaluated and identified for the harbour.</p>	IMMRP
Karen Edyvane - Australian National University	311	4	<p>b) The current IMMRP in Darwin Harbour is very focused on water quality monitoring programs – with very little biological and biodiversity monitoring to assess 'ecosystem condition'. The lack of ecologically-relevant indicators and monitoring has been highlighted in major national reviews of WQ monitoring programs (eg. Hallett et al. 2016). And also, repeatedly, in the multiple reviews of the Darwin Harbour WQ monitoring program – both by DENR and also, DHAC (ERG and EMG). Further, the latest Darwin Harbour Integrated Report Card 2021 also highlights this major monitoring gap and has recommended the following urgent action:</p> <p><i>"Urgent need for systematic and ongoing biodiversity monitoring programs in the harbour and catchment. Opportunities were identified through this project to partner in the future with Indigenous rangers, biosecurity departments and volunteer groups to assist in collecting this information."</i></p>	IMMRP
Karen Edyvane - Australian National University	311	4	<p>c) Lack of an effective long-term WQ monitoring program for Darwin Harbour - The current water quality monitoring under the IMMRP is inadequate and fails to address non-anthropogenic, seasonal and climatic factors on water quality variability (see Makarynska 2019). Throughout the Referral Report, the Proponent emphasizes the critical value and contribution of the IMMRP WQ monitoring - both, in assessing the medium and long-term WQ impacts of the INPEX Ichthys Project and also, the impacts of the current DPD Project. However, DENR latest report for the IMMRP WQ program (Makarynska 2019) – clearly highlights the inadequacies of the current DENR WQ monitoring, due to its failure to account for seasonal WQ variability and the NT's significant climatic and seasonal factors (ie. monsoonal climate). The report highlights that for the past 2 decades, WQ monitoring has only been conducted in May (two 3-hr neap tide samplings) and October (two 3-hr neap tide sampling). DENR then go on to make the following 'recommendation':</p> <p><i>"The results indicated that the existing DENR WQMP protocol based on monitoring in May and October over a 3-hour window centred on high neap tide provides an adequate operational approach for collecting data with acceptable level of variability. However, in order to make consistent comparisons between different years to detect long-term changes in water quality in the Harbour it is recommended to collect data on seasonal basis: (1) in July and/or August (dry season) coinciding with lowest variability in natural conditions and (2) in the wet season (December to March) with highest variability and potentially highest pollutant loads to the Harbour."</i> (page 251)</p> <p>DENR also notes the need to link WQ field monitoring with other important data sources/tools (eg. satellites). The use of remote sensed data for WQ monitoring</p> <p><i>"Linking water quality data from field campaigns and other sources (e.g. satellites) with metocean and hydrological data, with focus on discerning seasonal differences, would provide a better framework to differentiate between natural variability and anthropogenic impacts. Therefore, gaining sufficient knowledge of water quality driving forces in Darwin Harbour is paramount for a successful long-term monitoring campaign."</i> (page 251)</p> <p><i>"To help with anthropogenic change detection, it is recommended to analyse data by season in conjunction with metocean and hydrological data and water quality data from other sources (if available)."</i></p>	IMMRP

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Karen Edyvane - Australian National University	311	5	<p>2. Lack of Baseline, Ecosystem Understanding of Darwin Harbour</p> <p>While over the past 10 years, DENR has clearly embraced the concept of 'integrated management' and 'integrated report cards' for DH - https://dhir.org.au/ - baseline ecosystem understanding of Darwin Harbour required to assess human impacts, remains lacking:</p> <p>a) Lack of ecosystem understanding constrains marine assessments and monitoring in Darwin Harbour. While many scientific and technical studies have been conducted in Darwin Harbour over the past 2 decades – there has been a strong focus on water quality, toxicants and habitat mapping</p> <p>– leaving major gaps in understanding of the potential biological and biodiversity impacts of development. Including:</p> <ul style="list-style-type: none"> – estuarine (and land-sea) ecosystem processes and function – soft sediment communities, sessile epifauna – coral reef & seagrass communities – fish nursery and feeding areas (particularly for commercial, recreational species) – movements and critical habitat (ie. feeding, nursery, calving, breeding areas) of key marine megafauna (sharks/rays, sea snakes, turtles, saltwater crocodiles, dugongs, cetaceans) 	Darwin Harbour baseline
Karen Edyvane - Australian National University	311	5	<p>b) Lack of conceptual models, collation/integration of datasets and 'ecosystem modeling' in Darwin Harbour – these critical activities underpin ecosystem monitoring/management:</p> <ul style="list-style-type: none"> – development and integration of hydrodynamic, contaminant and trophic models (eg EcoPath) – lack of conceptual models – lack of a decision-support system to support monitoring, assessment and reporting <p>DEPWS and the IMMRP have recently highlighted the importance of conceptual models to identify individual stressors and target indicators, and also, software to link monitoring results with report carding (Radke et al 2018). And further, identify the VPSIRR model (developed by the Queensland EPA) as 'best practice'. But fail to recognize that a VPSIRR model has already been developed for the NT which would be suitable for Darwin Harbour (Edyvane & Whiting 2009), or that comprehensive, trophic modelling has already been undertaken in the harbour (Martin 2005) – but has not been incorporated or integrated into current models or monitoring [see c) below].</p>	Darwin Harbour baseline
Karen Edyvane - Australian National University	311	5	<p>c) Failure to incorporate and integrate critical and major past studies which would greatly assist with ecosystem understanding and assessments – particularly the extensive infaunal and epifaunal surveys and decades-long research of the Darwin Harbour undertaken by the NT Museum and international researchers (Hanley et al. 1996), trophic modelling of Darwin Harbour, using 'EcoPath' (Martin 2005), and the development of water quality and environmental quality indicators for coastal and estuarine and marine environments in the NT (Edyvane & Whiting 2009).</p> <p>In 2006, DEPWS (DENR) received \$600k in 2006 from the Commonwealth to specifically to develop a coastal, estuarine and marine (CEM) monitoring framework for the NT, supported by an NT indicators framework and also, a spatial database of marine datasets (NT Marine Atlas). Between 2006-2009, a CEM monitoring framework was developed for the NT (Edyvane & Whiting 2009) – incorporating nationally-agreed WQ and EQ indicators, following workshops and consultation with key NT government and non-government stakeholders. Significantly, indicators were developed based on a NT and also, bioregion-based, threat and conservation analysis (undertaken with key stakeholders).</p>	Darwin Harbour baseline

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Karen Edyvane - Australian National University	311	5	<p>Under this same project DENR also engaged the Queensland EPA in 2009, to developed a NTversion of VPSIRR model for the NT coastal, marine and estuarine ecosystems – the NT Marine Assessment and Reporting tool. This indicator framework and monitoring/reporting software was shown to the NT stakeholders, including DHAC and the NT EPA (2009) – specifically with a view to trialing and implementing this new framework and software for integrated marine monitoring and reporting in Darwin Harbour.</p> <p>“NT MARS (Fig 1.), the NT name for the VPSIRR (Vulnerability – Pressure – State–Impact – Risk - Response) software was developed by Rissik et al 2009 and the Queensland EPA and Australian National University. The software is designed to enable consistent monitoring, evaluation and reporting of estuarine vulnerability, risk and condition. At present, this software has been developed for estuaries, but it can easily be converted to enable the assessment of other ecological systems. In other parts of Australia this software is being altered to enable similar assessment of freshwater and terrestrial systems. It is envisaged that in the near future marine and coastal will be incorporated into this software for the Northern Territory.” (Edyvane & Whiting 2009)</p> <p>Neither the NT CEM indicators, monitoring and report framework (Edyvane & Whiting 2009) nor NTMARS software, has ever been publicly released by the NTG or utilized by DENR or DHAC.</p> <p>While undoubtedly many marine studies, technical reports have been undertaken in Darwin Harbour, particularly over the past decade – integrated reviews by industry or government are rare. Unlike other areas of major oil/gas development in northern Australia (ie. the Bonaparte Basin, Browse Basin, Exmouth Gulf, Gladstone Harbour) – there are no detailed technical reports of Darwin Harbour which collate, review existing technical studies, and provide a critical and holistic overview of values, pressures, impacts, monitoring activities and overall ecosystem status.</p>	
Karen Edyvane - Australian National University	311	6	<p>d) Lack of investment in baseline ecosystem understanding of Darwin Harbour. In understanding the major knowledge and monitoring gaps in the Darwin Harbour IMMRP it is also important to consider the current very low level of public and private investment in understanding the ecosystems and monitoring the ecosystem ‘health’ of Darwin Harbour.</p> <p>In other jurisdictions where there has been large-scale, oil-gas infrastructure development and activities have been undertaken ie. Western Australia (Pilbara), Queensland (Gladstone Harbour), there have been major public and private industry investment in baseline marine ecosystem understanding, ecosystem modelling and assessment studies – to enable the robust environmental impact assessments and the development of monitoring protocols, to ensure the protection of environmental values.</p> <p>However in the NT, with the securing of \$20 million of funding for the IMMRP over 40 years, as part of an offset agreement between INPEX Corporation and the NT Government – the IMMRP has evolved to become the NT Government’s ‘de facto’ long-term marine monitoring program for Darwin Harbour. With very minimal investment in critical research, knowledge, modelling and monitoring gaps to underpin an integrated monitoring program.</p> <p>The NT Government’s low level of investment and commitment to supporting integrated marine monitoring in Darwin Harbour is clearly highlighted by inspection of the INPEX website for IMMRP and comparing it with the DEPWS website for the IMMRP (which was last updated in March 2016):</p> <ul style="list-style-type: none"> • INPEX - https://www.inpex.com.au/projects/ichthys-Ing/our-commitments/darwin-harbourintegrated-marine-monitoring-and-research-program/ • DEPWS - https://depws.nt.gov.au/water/water-management/darwin-harbour/darwin-harbourintegrated-marine-monitoring-and-research-program 	Darwin Harbour baseline
Karen Edyvane - Australian National University	311	6	<p>3. The Darwin Harbour IMMRP does not meet international, national or industry ‘best practice’ As highlighted in the national review by Hallett et al (2016), the Territory’s monitoring encompass a range of limitations, including:</p> <p><i>“a continuing lack of ecologically-relevant indicators of habitat, floral and faunal condition, and a failure to ensure that declining estuarine condition triggers practical management interventions. Common limitations include (i) over-reliance on physico-chemical elements of estuarine condition, and primarily water quality, (ii) failure to quantify pressures across varied and appropriate spatial scales, and (iii) dramatic inconsistencies in the spatio-temporal coverage of monitoring.”</i></p> <p>Significantly, the IMMRP and Northern Territory fail to incorporate or adopt nationally-agreed standards for assessing and monitoring coastal, estuarine and marine conditions eg. ECAF (Arundal and Mount 2008), as developed under the NLWRA and CRC Coasts or the MACC R&D Working Group (2010). And more recently, specific WQ guidelines and monitoring under ANZG (2018), developed for the North Marine Region - https://www.waterquality.gov.au/anz-guidelines/your-location/australia-marinerregions/north-marine-region</p>	IMMRP

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Karen Edyvane - Australian National University	311	7	<p>4. Sedimentation impacts and the lack of a Dredging Strategy and Plan for Darwin Harbour</p> <p>Of major concern in the Santos Referral Report is the failure of the DPD and IMMRP WQ to tackle the high-priority and potential major sediment impacts in the harbour. This includes the failure to incorporate any 'predictive sediment impact modelling' (an industry standard for major coastal projects in other States). Further the new Australia & NZ WQ Framework (ANZG 2018) provides national recommended protocols/approaches to sediment assessment/monitoring - https://www.waterquality.gov.au/anzguidelines/resources/guidance/biological-assessment - which should as a priority be considered for Darwin Harbour. Particularly the recommended monitoring protocols and assessing sedimentation impacts, particularly 'multiple lines of evidence' (Simon & Batley 2016). None of this included in the DPD Referral Report or the IMMRP WQ.</p> <p>Significantly, Darwin Harbour Integrated Report Card 2021 also highlight the <i>"need for Dredging Strategy and Plan as a key priority item for water quality in Darwin Harbour in accordance with work currently being conducted by NT Department of Infrastructure, Planning and Logistics"</i>. Aswell as the <i>"need to adjust sampling locations for sediment metals to include more sites in Buffalo and Myrmidon Creeks. Investigate source of elevated metals identified at sites in East Arm."</i></p>	Sediment / plume modelling
Karen Edyvane - Australian National University	311	7	<p>5. Significant Impacts on Marine Megafauna</p> <p>The Barossa Offshore Gas Project is in close proximity to the Timor Trough, one of the three major outflow channels of the Indonesian Throughflow, and one of the most important 'marine megafauna migration corridors' in the Western Indo-Pacific. Within the project area, an EPBC Protected Matters search has identified 18 listed threatened fauna species and 29 listed migratory species (17 of which are also listed as threatened species) that may occur or have habitat in the area. This includes four threatened and 12 migratory cetaceans. Appendix H – the 'likelihood of occurrence assessment' - is used to discount species from the PMST (protected matters search tool) list and reduce assessment of listed marine threatened species (just 7 species) and listed migratory species (just 2, ie. turtles). Significantly, the omission of listed migratory and threatened species is primarily based on the lack of site records and relies heavily on government data which often is dated ie. NT List of Marine Protected Species (2006). Importantly there has no attempt to access data/information/advice from non-government sources, marine species experts or data from major NESP Hub activities (eg. sawfishes, sharks). Importantly, the lack of studies and therefore information/records specifically for Darwin Harbour should not be the reason to discount critical marine species and potential marine impacts - particularly formally listed threatened and migratory species which are known to occur in the broader region. The precautionary principle should apply in all 'data-poor' assessments, with biological surveys undertaken to ensure that listed species do not occur or have habitat in the area.</p>	Marine megafauna

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Karen Edyvane - Australian National University	311	7	<p>6. Reliance on INPEX Ichthys Project and the IMMRRP</p> <p>As mentioned previously, the DPD and Referral Report relies very heavily on the INPEX Ichthys Project and the NT Government Darwin Harbour Integrated Marine Monitoring and Research Program (IMMRRP).</p> <p><i>“When evaluating the potential Project impacts, consideration was given to the extensive studies and monitoring conducted for similar projects in Darwin Harbour. These include the original Bayu-Undan to Darwin pipeline and DLNG Facility, and the more recent INPEX Ichthys project. In particular, the INPEX Ichthys project has been utilised as a proxy to assess impacts on the basis that it undertook similar work activities within a similar area (including spoil disposal) but on a greater spatial and temporal extent.” (pp 122)</i></p> <p><i>“INPEX’s Ichthys nearshore environmental monitoring program was extensive and continues to be undertaken as part of the NT Government Darwin Harbour Integrated Marine Monitoring and Research Program (IMMRRP). The monitoring data provide valuable insight into ‘if’ and ‘how’ observations in the natural environmental variability within Darwin Harbour changed as a result of its activities.” (pp 123)</i></p> <p><i>“The key findings from the Ichthys monitoring program (as reported by INPEX Browse, Ltd, 2014) were: — Upon completion of dredging activities, the turbidity concentrations at the monitoring sites closest to the dredging (i.e. Northeast Wickham Point and South Shell Island) had returned to natural conditions within a single spring-neap cycle following the completion of dredging;</i></p> <ul style="list-style-type: none"> — <i>No detectable dredging-related impacts to corals were observed at monitoring sites outside of East Arm;</i> — <i>No dredging-related impacts to seagrass habitats were observed and turbidity measured at seagrass monitoring sites were within the general range of natural variation;</i> — <i>Measurements of sedimentation levels in mangrove assemblages were below the level considered to potentially impact mangrove health;</i> — <i>No evidence of dredging-related impacts to fish health and catches;</i> — <i>No noticeable changes to the distribution of turtles and dugongs within Darwin Harbour that would indicate a potential influence of dredging; and</i> 	IMMRRP
Karen Edyvane - Australian National University	311		<p>7. Lack of a Strategic Environmental Assessment of Darwin Harbour</p> <p>Darwin Harbour is currently facing major and rapid industrialization – particularly for the developing and growing oil/gas industry. However, unlike the Bonaparte Basin, Browse Basin, Exmouth Gulf, Gladstone Harbour – Darwin Harbour has NEVER been subject to a detailed formal ‘strategic environmental assessment’ (by the EPA) to consider cumulative impacts, and protect the key values and uses of the harbour - only ‘activity-based’ environmental assessments.</p> <p>In this regard, the recent strategic environmental assessment of Exmouth Gulf by the WA EPA (2021) – ‘Potential cumulative impacts of proposed activities and developments on the environmental, social and cultural values of Exmouth Gulf in accordance with section 16(e) of the Environmental Protection Act 1986’ - EPA s.16e Report -Exmouth Gulf.pdf – provides an invaluable case study and useful template for a regulator to design an impact assessment framework to protect the environmental, social and cultural values of Darwin Harbour.</p> <p>Significantly, any strategic environmental assess must be based on knowledge of both ecosystems and human impacts and also, current and future uses. For Exmouth Gulf, for delivery of this strategic advice, the EPA and the Department of Water and Environmental Regulation partnered with the Western Australian Marine Science Institution (WAMSI), who contributed technical and expert support on the values and pressures associated with Exmouth Gulf. The WAMSI report provides information on:</p> <ul style="list-style-type: none"> • The key values (environmental, social and cultural) of Exmouth Gulf – including current state of the values, and level of confidence pertaining to the values – in the form of a literature review aligned with the EPA’s environmental themes of sea, land, water, air and people. • The current and forecasted uses of Exmouth Gulf. • A qualitative risk assessment using a consequence versus likelihood approach to evaluate the impact or risk of a pressure against a key value. A detailed list of key values was consolidated at a high-level, prior to consideration in the qualitative risk assessment. • The relationship between key values and environmental pressures of Exmouth Gulf, derived from the qualitative risk assessment process. • Knowledge gaps that require further consideration to improve our understanding of Exmouth Gulf, identified against each EPA theme. The WAMSI report forms the 	Project Assessment

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Karen Edyvane - Australian National University	311	9	<p>8. Poor Data Access & Selective Use of Supporting Technical Information</p> <p>In assessing the Referral Report, it is essential that critical and relevant DENR and IMMRRP-related and INPEX Ichthys and Barossa technical and baseline reports for Darwin Harbour (and offshore) are made easily accessible and available to the public, relevant organisations, and key stakeholders. This is currently NOT the case – with many of the Barossa, INPEX Ichthys, IMMRRP and Darwin Harbour survey, monitoring and assessment reports currently not available or scattered across many organizational websites or scientific journals and difficult to access or find.</p> <p>For some key long-term DENR monitoring activities of the IMMRRP – particularly marine biodiversity monitoring - some monitoring has been extensive and well-reported, such as the coastal dolphin and dugong monitoring - https://www.inpex.com.au/projects/ichthys-Ing/our-commitments/long-termmonitoring-of-coastal-dolphins-in-darwin-harbour-and-the-abundance-and-distribution-of-dugongs-in-the-northern-territory/. How for other monitoring activities, publications could not be found at all. For example, for seagrass surveys and seagrass monitoring of Darwin Harbour since 2011 using the SeagrassWatch global monitoring protocol - https://depws.nt.gov.au/news/2016/darwin-harbourseagrass-surveys. Further, when the SeagrassWatch site is examined - https://www.seagrasswatch.org/northernterritory/ - its very clear that the program only ran for 3 years, and was suspended in 2013.</p> <p>Further, the Referral Report, has also engaged in the selective use of supporting technical information – while omitting key information. For instance, the marine habitat map in the Referral Report (Figure 7.3, page 77) gives a significant under-estimate of the level of coral habitat and hard substrata in Darwin Harbour. And while it cites AIMS (2016) it is not clear where this figure has come from. Further, while the Referral Report cites the latest habitat mapping report by AIMS (Galaduk et al (2019) - it does not use the latest maps, figures and best estimates for the extent of coral reef in the Darwin Harbour (contained in Galaduk et al (2019). For a comparison of coral habitat map in the Referral Report (Figure 7.3) and Galaduk et al (2019 – see Annex 1.</p> <p>Indeed, none of the excellent marine habitat maps (corals, seagrasses, mixed communities) for Darwin Harbour from the AIMS 2019 report are used in the Referral Report. Even the maps from 2015 GeoScience Australia report – which clearly defined the ‘hard substrata’ in Darwin Harbour using acoustic mapping - are not included.</p>	IMMRRP
Karen Edyvane - Australian National University	311	9	<p>9. Other Considerations</p> <ul style="list-style-type: none"> 7.8.1 - maritime heritage – there are many shipwrecks in Darwin Harbour – many of which have both, significant cultural and marine biodiversity and fisheries values. 	Cultural heritage
Karen Edyvane - Australian National University	311	9	7.8.3 – Indigenous values - no mention of the significant Indigenous shell mounds in Darwin Harbour (Hiscock & Hughes 2001)	Cultural heritage
Karen Edyvane - Australian National University	311	9	Appendix D – the baseline survey is completed restricted to the pipeline only (Project Area) – no references at all to the excellent marine habitat studies of Darwin Harbour or Outer Darwin Harbour.	General marine
Karen Edyvane - Australian National University	311	10	<p>Recommendations for the NT EPA</p> <p>In considering the DPD Project for an environmental assessment – I strongly recommend that the NT EPA give this activity the highest level of assessment – an Inquiry. Specifically, that the NT EPA should undertake a formal, detailed, ‘strategic environment assessment’ prior to any consideration of the DPD activity - or indeed, any other major infrastructure development activity within the harbour. The primary objective of the strategic assessment should be the design of an environmental assessment impact framework for Darwin Harbour to:</p> <ol style="list-style-type: none"> identify the key environmental, social and cultural values of Darwin Harbour, identify and assess the current and projected threats and pressures consider the cumulative impacts of current and proposed projects within the harbour, and provide advice/recommendations on conservation of values, compatibility of uses/activities and the integration of land-sea management. <p>In undertaking this strategic environmental assessment - critical reviews/analyses, additional field research/studies, modelling and major risk assessments will likely need to be undertaken, in addition to the review, collection and collation of all relevant existing technical information. As with other strategic assessments (conducted in other jurisdictions), this information and technical advice should be provided to the EPA, to inform the design of a robust monitoring and environmental impact assessment framework that will protect significant ecosystems and values of Darwin Harbour. The reviews and assessments should also take account of the following specific issues and challenges relevant to Darwin Harbour:</p>	Project Assessment

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Karen Edyvane - Australian National University	311	10	<ol style="list-style-type: none"> 1. Need for independent expert-based review of coastal, estuarine and marine conservation, monitoring and management in Darwin Harbour – particularly in light of the NT Government’s inadequate IMMRRP program and proposed major infrastructure developments (ie. DPD Project, Middle Arm Industrial Precinct) – including identifying indicators and monitoring protocols that meet current recommended national and industry ‘best practice’ standards. 2. The potential to learn major lessons from the WA and Queensland – regulating, assessing, monitoring impacts of major oil/gas industry, including the best practice monitoring and assessment protocols. 3. The critical need to identify the critical and essential science and knowledge/information requirements for ensuring a robust environmental monitoring and assessment program in Darwin Harbour, including exploring financing and governance options to promote greater public and industry partnerships and investment in monitoring and critical baseline research (eg. Exmouth Gulf - WAMSI model, Gladstone Healthy Harbour Partnership). 4. The major value and benefit of the collation/integration of all relevant Darwin Harbour technical studies. Including publicly releasing relevant past industry and government studies on Darwin Harbour - and also, relevant NT and Commonwealth-funded, coastal, estuarine and marine assessment, monitoring/reporting studies. 5. The urgent need to improve the IMMRRP, particularly the lack of ecological monitoring and integrated ecosystem modelling to enable the assessment of ecosystem condition and health. 6. The urgent need to finalize and implement a Dredging Strategy and Plan for Darwin Harbour, undertake predictive sediment impact modelling – and adopt provides national recommended protocols/approaches to sediment assessment/monitoring (ANZG 2018, Simon & Batley 2016). 	
Dina Rui - Jubilee Australia Research Centre	4		First, Jubilee Australia is concerned about the greenhouse gas emissions associated with this project. Although Santos claims that such emissions are irrelevant for the purposes of this referral, we strongly disagree. The Project is part of Santos' proposed Barossa gas project, which could be the most carbon-intensive gas project in the world.	GHG emissions / AQ
Dina Rui - Jubilee Australia Research Centre	4		Second, despite Santos’ claiming that Carbon Capture and Storage (CCs) will reduce this project’s carbon footprint, Santos has no comprehensive plan in place to capture the very high CO2 content of the gas. Even if the CCS project was successful, it would fail to offset the Barossa project’s emissions. In no scenario is the Barossa project compatible with keeping global warming below 1.5 degrees and avoiding the worst impacts of the ongoing climate crisis.	Broader project
Dina Rui - Jubilee Australia Research Centre	4		Third, we are worried about the local social and environmental risks that the Project could have on Darwin Harbour and the local communities. The marine environment outside of Darwin is already under pressure due to the ongoing industrialisation of Darwin Harbour (e.g. the Inpex LNG plant), and the Darwin Pipeline Duplication Project would add to this.	General marine
Dina Rui - Jubilee Australia Research Centre	4		Fourth, the Barossa project as a whole could have severe environmental and social impacts, beyond that of the Project. It could put local livelihoods and Australia’s fish supply at risk and the pipeline could destroy the habitats of dozens of threatened species including whales, dugongs and turtles. Of particular concern is that the pipeline will run for 70km along the Tiwi Islands’ coastal lines and come within 6km of the southwestern corner of Bathurst Island (Cape Fourcroy), which is a crucial interesting area for the threatened Olive Ridley Turtle.	Threatened species
Dina Rui - Jubilee Australia Research Centre	4		Fifth, the planned pipeline clearly violates Tiwi interests and rights. The pipeline’s closeness to the Tiwi Islands contradicts the national recovery plan for marine turtles in Australia for Olive Ridley turtles, which defines an interesting buffer zone around the Tiwi Islands as being 20km. ¹ Further, the Tiwi people are planning for a sea country Indigenous Protected Area (IPA), which will be formally recognised as part of Australia's network of protected areas and is partially funded by the Australian government. The Barossa gas pipeline will traverse this IPA, making it impossible to manage this sea country for conservation under International Union for Conservation of Nature (IUCN) category VI. Despite these risks, the consultation process with the impacted communities – the Tiwi people and the wider Northern Territory community – appears to be lacking.	Consultation

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Dina Rui - Jubilee Australia Research Centre	4		Sixth, we have assessed the Offshore Project Proposal and are concerned that the project proponents have underestimated the potential environmental damages from oil and gas spills and leakage. We have identified gaps in three areas: the potential underestimation of stochastic modelling scenarios, the lack of evidence regarding the environmental impacts of condensate and other pollutants and that the transboundary damage could be significant.	Spills
Bruce Robertson - Institute for Energy Economics and Financial Analysis	5	2	The project does not dimension its purpose. On page 3 of Santos's Referral Report ¹ , the proponent states: "Importantly, executing the DPD Project in a timely manner preserves the existing Santos Bayu-Undan to Darwin pipeline for re-purposing opportunities into the future, including carrying carbon dioxide for offshore carbon capture and storage (CCS). This opportunity will help Santos meet its emission reduction targets and achieve net-zero Scope 1 and 2 absolute emissions by 2040." The NT EPA is being asked to approve a pipeline that facilitates a project (CCS at Bayu-Undan) that is not dimensioned in any way.	Broader project
Bruce Robertson - Institute for Energy Economics and Financial Analysis	5	2	Ill-defined Carbon Capture and Storage project may not lower emissions John Robert, a guest contributor with IEEFA, has attempted to interpret Santos' incomplete plans for a CCS project in a recent report. ² Robert concludes that the CCS project may not significantly lower emissions: "Santos now has an application for approval for a new Darwin Harbour pipeline for its Barossa gas – potentially enabling a carbon capture and storage (CCS) scheme in an attempt to reduce the very high emissions from the development. But uniquely, despite the new application, Santos' project would still actually produce more carbon dioxide emissions offshore and onshore than its production of liquefied natural gas (LNG) – even with CCS implemented successfully – making it one of the more expensive and dirtiest gas projects in the world." ³ IEEFA acknowledges that the NT EPA does not approve offshore projects. The Darwin Pipeline Duplication Project facilitates CCS offshore at Bayu-Undan, and that will substantially increase the Northern Territory's onshore emissions – at the Darwin LNG plant (DLNG). The carbon dioxide (CO ₂) removal facilities at DLNG will have to be trebled, producing more vented CO ₂ and more emissions from combustion of (then 18%CO ₂) fuel gas at greater rates. Also, the separated CO ₂ will have to be compressed onshore to send it 500km down the pipe to Bayu-Undan, producing significant emissions (of both greenhouse gases and other pollutants) onshore that have not been specified by the proponent or assessed by the NT EPA.	Broader project
Bruce Robertson - Institute for Energy Economics and Financial Analysis	5	3	The Project is not consistent with Northern Territory Government Policy The Darwin Pipeline Duplication Project facilitates the Barossa gas project. The Barossa project runs contrary to the stated Northern Territory policy target of net zero by 2050. ⁴ The International Energy Agency (IEA) has clearly stated that no new natural gas fields are needed globally in the Net Zero Emissions by 2050 Roadmap, beyond those already under development. Many of the LNG liquefaction facilities currently under construction or at the planning stage are not needed. ⁶	GHG emissions / AQ
Bruce Robertson - Institute for Energy Economics and Financial Analysis	5	3	There appears to be no firm decommissioning plan or bond Given the uncertain future for gas in a net-zero world (see point 5), the NT EPA needs to ensure a robust decommissioning plan for the pipeline with a bond paid up front to cover the decommissioning costs. Without such a regime, it is likely that the Northern Territory taxpayer will have to pick up the bill for decommissioning costs.	Project description

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Bruce Robertson - Institute for Energy Economics and Financial Analysis	5	3	<p>Santos dramatically overstates the role of gas in a low emissions future</p> <p>Santos is attempting to downplay the role of gas in global warming by consistently quoting figures that do not apply to the Barossa gas/Darwin LNG project. Santos have stated that its "role in low-carbon future is built around natural gas, which produces half the greenhouse gas emissions of coal when used to generate electricity. It is the perfect partner for renewable energy sources and can be made even cleaner with carbon capture and storage (CCS)."21</p> <p>This statement is simply not true in the case of the Barossa LNG project that the Darwin Pipeline Duplication Project facilitates. Santos quotes the wrong figure for renewable-rich grids. Barossa is not an average gas field, but rather one high in CO2.</p> <p>The Barossa gas and LNG project is an export operation and uses gas in both the energy intensive LNG process and the shipping process. The Santos referral tatement excludes the effect of fugitive emissions and venting/flaring that occur with all gas projects to a greater or lesser degree. The CCS project will not significantly lower emissions.</p> <p>In summary, it is likely that the Barossa gas/LNG project produces marginal benefits over coal in the generation of greenhouse gases when burned for power in a gas peaking plant.</p> <p>The Barossa gas/Darwin LNG project is inconsistent with the Net Zero by 2050 stated target of the Northern Territory government.</p> <p>A full lifecycle analysis of the greenhouse gas emissions from the Barossa gas/Darwin LNG export project needs to be independently undertaken prior to approval of the Darwin Pipeline Duplication Project.</p> <p>Santos has not been truthful about the greenhouse gas effects of the project in the Darwin Pipeline Duplication Project NT EPA Referral paper.</p>	GHG emissions / AQ
Bruce Robertson - Institute for Energy Economics and Financial Analysis	5	1	<p>IEEFA calls for:</p> <ol style="list-style-type: none"> 1.An independent review of the lifecycle emissions of the Barossa/Darwin LNG project. 2.A full environmental impact statement (EIS) for the Darwin Pipeline Duplication Project. 3.A full EIS for the Bayu-Undan CCS project that the Darwin Pipeline Duplication Project so clearly facilitate <p>S.</p>	Project Assessment
Charles Scheiner - La'o Hamutuk - Timor-Leste Institute for Development Monitoring and Analysis	6	1	<p>Relationships across the Timor Sea</p> <p>As you know, Timor-Leste and Australia have had a troubled history for most of the last half-century. We believe that the Maritime Boundary Treaty signed in 2018 marks a change to a more respectful and considerate relationship, which we are confident that your oversight of this DPD project will exemplify.</p> <p>Like the Northern Territory and the entire Commonwealth, Timor-Leste has received substantial benefits from the Bayu-Undan oil and gas field and the Wickham Point LNG plant, which we appreciate. Nevertheless, we cannot forget that Australia took about \$6 billion worth of revenues from oil and gas fields that your government now agrees are in Timor-Leste's territory, and that Australia continues to persecute 'Witness K' and Bernard Collaery for trying to make the negotiations between our countries less unfair. However, we would like to move forward.</p>	Social impacts
Charles Scheiner - La'o Hamutuk - Timor-Leste Institute for Development Monitoring and Analysis	6	2	<p>This project will impact yourselves, your neighbours and the world</p> <p>Our submission is written from a Timor-Leste perspective, and we don't presume to speak for the people of the Northern Territory. We encourage you to carefully consider issues raised by people there, including by Aboriginal and environmental organizations.</p> <p>The NTEPA should not look at the part of this project that falls within the Northern Territory in isolation, as it affects your neighbours and the global climate. Environmental risks don't stop at the three-mile limit; they are not constrained by the 200-mile EEZ. Gas extraction from Barossa and carbon storage at Bayu-Undan may be outside your territorial jurisdiction, but they are intrinsic elements of the proposed DPD project. Please consider effects outside the Northern Territory, some of which could endure for centuries, while you look into the local impacts of this project.</p> <p>A piecemeal approach to a project which straddles multiple jurisdictions may not adequately protect our common welfare. Overarching issues might fall outside of each authority's localized mandate and be overlooked – there is more to this project than the pipelines currently before you. Furthermore, if some regulators are less experienced or are overly influenced by corporate pressure, others, including yourselves, need to step up and exercise their responsibilities effectively.</p> <p>It is unfortunate that the NTEPA did not assess the nearly two-decade-old Darwin LNG plant before authorizing extending its use with a different operator for a different gas field. However, the proposed DPD project provides another opportunity to review this project. Please assess it at the highest level by holding a public inquiry.</p>	Project Assessment

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Charles Scheiner - La'o Hamutuk - Timor-Leste Institute for Development Monitoring and Analysis	6	2	Carbon Capture and Storage is not a solution Santos disingenuously wrote that its September 2021 MOU with Timor-Leste's National Petroleum and Minerals Authority (ANPM) is "to pursue Carbon Capture and Storage (CCS) by the Bayu-Undan Joint Venture." ¹ However, people in ANPM and elsewhere in TL understand that this MOU is only the beginning of a conversation, not a decision to go ahead with the project. In fact, the MOU itself states that the Bayu-Undan joint venture and ANPM "agree to cooperate in good faith to assess the feasibility of pursuing this opportunity," and the matters listed in the MOU involve "assessing" various items and "establishing a clear and reasonable timeline for decisions on whether to pursue this CCS project." Santos floated the idea of Carbon Capture and Storage (CCS) at Bayu-Undan to enable them to develop the carbon-intensive Barossa gas field, a greenwashing strategy to confuse the public about the damage they will inflict on the global climate. CCS is not a proven technology. Santos' statement that "CCS is recognised as a safe, well established solution for permanent, large-scale emissions reduction and clean energy production, being the keys to economy-wide decarbonisation ² " may be true for oil companies such as themselves who have a vested interest, but it is far from universally recognised, and nearly all CCS projects have sequestered far less carbon than their proponents promised. ³ Please do not be taken in by Santos' assertions, and do your own objective, environmentally-focussed research. NTEPA's mandate is to protect the environment, not to facilitate public relations efforts intended to prolong the operations (and profits) of the globally-environmentally-destructive fossil fuel industry. "Net Zero" is a misleading concept. Even if the CCS project at Bayu-Undan works as Santos hopes, it may not reduce the overall carbon dioxide emissions from extracting and liquefying the natural gas from Barossa, which is one of the dirtiest gas fields in the world. ⁴ Furthermore, inevitable leaks of methane from the wells, pipelines and LNG and regasification facilities, as well as the CO ₂ released by burning Barossa-sourced gas elsewhere on our planet, will significantly exacerbate the risk of serious consequences of global climate change.	GHG emissions / AQ
Charles Scheiner - La'o Hamutuk - Timor-Leste Institute for Development Monitoring and Analysis	6	3	Climate Change is real Please do not contribute to the destruction of human life on earth to enable short-term financial gains by Santos and their partners. Although we are not knowledgeable about the impacts of climate change on the Northern Territory, we know only too well the calamities it has already brought to Timor-Leste, including last April's floods which killed more than 40 people and displaced 15,000. The future will be far worse if environmental regulators like yourselves lack the courage to take serious action. Each person in Timor-Leste is responsible for about 0.5 tons of CO ₂ emissions per year. Each Australian is responsible for 30 times that much, not counting the emissions where each of our fuel exports are burned. Why should Timor-Leste be saddled with the responsibility, and the risks, of Barossa's CO ₂ so that Australian companies can extract and export more fossil fuels from deposits in Australia?	GHG emissions / AQ
Jorgen Doyle - Central Australian Frack Free Alliance	7	1	The Project is a new component of Santos' proposed Barossa gas project. The Barossa gas project, if it goes ahead, will be the dirtiest gas project in the world. The Barossa gas field has the highest carbon dioxide (CO ₂) content of any gas field, and this CO ₂ will be vented into the atmosphere before the gas is transported to Darwin. The life cycle greenhouse gas emissions of the Barossa project will be 15mtpa, producing more CO ₂ than LNG. The proponent's claim that GHG emissions are not a key factor for this referral should be rejected; it would be unacceptable if emissions from the world's most carbon-intensive gas field escaped assessment by the NTEPA under the Environment Protection Act 2019 (NT). I therefore urge the NTEPA to consider the significant emissions that would result from this project when making their decision.	GHG emissions / AQ
Jorgen Doyle - Central Australian Frack Free Alliance	7	1	The proponent has stated in the referral document that undertaking the Project will allow the existing Bayu-Undan to Darwin pipeline to be used for Carbon Capture and Storage (CCS). The proponent makes a number of misleading claims about CCS in the referral document. CCS is an unproven technology that has a track record of failure. It is untested in an offshore gas reservoir such as Bayu-Undan. Any risk mitigation strategy that is premised on the viable functioning of CCS is inadequate. As such, the emissions profile of the project constitutes a significant impact that requires assessment at the highest possible level.	Broader project
Jorgen Doyle - Central Australian Frack Free Alliance	7	1	The Barossa project as a whole should be called in for a referral under s53 (1) of the Environment Protection Act. At the very minimum, this Darwin Pipeline Duplication Project must be assessed by the NTEPA and must be assessed at the highest possible level. I would like to see a public inquiry.	Project Assessment

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Julie Fraser - Australian Services Union	8	1	The Australian Services Union SA+NT Branch submit that the NTEPA should proceed with an assessment of the Darwin Pipeline Duplication Project through a public inquiry. We are concerned about a number of significant impacts that could result from the proposed Project and believe that these impacts constitute a considerable environmental risk that warrants stringent assessment.	Project Assessment
Julie Fraser - Australian Services Union	8	1	Emissions from the project will have a substantial impact on the Territory's ability to meet its emissions reductions targets. We note that the current Darwin LNG facility has approvals to emit up to 10mtpa of greenhouse gasses (GHG), but IEEFA modeling shows that when the Barossa project lifecycle emissions are added to current Darwin LNG emissions, this 10mtpa threshold will be exceeded. This discrepancy alone justifies a full and transparent assessment of the emissions profile of the Barossa project. The risk to workers' livelihoods due to increased temperatures and wild weather events is extreme and will only be worsened by the development of new gas fields and their associated emissions. Both the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC) have stated that new gas projects must not go ahead if catastrophic global warming is to be avoided. Increased temperatures at work are emerging as one of the major occupational health and safety hazards for workers, particularly in tropical locations such as the Northern Territory.	GHG emissions / AQ
Julie Fraser - Australian Services Union	8	1	We are also concerned about this Project being used to facilitate Carbon Capture and Storage (CCS) in the Bayu-Undan gas field. CCS is unproven, unreliable, and has a track record of failing to meet targets. There are specific problems with the Bayu-Undan CCS proposal, not the least of which is the injustice of saddling Timor-Leste with carbon pollution and the uncertainty of how this carbon will be stored and regulated into the future. The high CO2 content of gas from the Barossa field (18%) adds a range of complications to the CCS process. The impacts of this project must be assessed in a full public inquiry so the risks can be examined.	Broader project
Julie Fraser - Australian Services Union	8	2	Workers in a range of industries stand to lose from the further industrialisation of Darwin Harbour. The impacts will be directly and obviously felt on the tourism industry, but reduced air quality, increased pollution, warmer temperatures, and petrochemical development will heavily impact the entire Darwin and Palmerston region and surrounds. Workers deserve long-term, sustainable jobs in industries that are socially beneficial, not in polluting industries that create little jobs and contribute to the risk of climate change.	Social impacts
Brooke Ah Shay - Doctors for the Environment Australia	10	1	Fossil fuel use is the primary cause of anthropogenic climate change The evidence is clear that the main cause of climate change is the burning of fossil fuels, such as gas, oil, and coal. The Barossa project will produce significant global greenhouse gas (GHG) emissions at a time when significant reduction in emissions is imperative for the adequate mitigation of global warming and climate change. ¹ The project could produce the most carbon intensive LNG in Australia, being potentially among the most polluting LNG projects in the world. ² In addition to GHG emissions from burning methane, and fugitive methane emissions which are increasing world-wide and are usually underestimated, ³ the Barossa gas field has very high levels of CO2 (16-20%), which would be vented into the atmosphere. Life cycle emissions could be in the vicinity of 15 million tonnes per annum. ⁴ Carbon capture and storage has been proposed to capture these emissions but an economic process at scale has defied development. ⁵ Moreover, the referral document contains no figures or estimates for GHG emissions associated with the pipeline and broader Barossa project and does not make any reference to the emissions from combustion of produced LNG. This is unacceptable and must be part of any assessment of the project. ⁶	GHG emissions / AQ
Brooke Ah Shay - Doctors for the Environment Australia	10	2	Climate change is a public health emergency There is global scientific consensus that climate change is an emergency and has many known serious health risks. Climate change will cause, for instance, higher mortality and morbidity from heat stress, increasingly severe weather events, the increased transmission of vector-borne diseases, food production and livelihood (already edited), and a higher incidence of mental ill health. ⁷ The health of Australians is already negatively impacted by climate change – impacts that will become more severe and create a greater health burden over the coming years. One cannot overemphasise the enormity of health, economic, security and environmental costs of an inadequate response to climate change. ⁸	GHG emissions / AQ

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Brooke Ah Shay - Doctors for the Environment Australia	10	2	Natural gas processing poses health risks The extraction and processing of natural gas is known to have adverse public health consequences. For instance, in 2016-17, the LNG plants Woodside proposed to use for the Burrup Hub project were among the highest industrial point source polluters of harmful air pollutants in Western Australia. Those LNG facilities released 8,000 tonnes of nitrogen dioxide, 97 tonnes of sulphur dioxide and 16,000 tonnes of volatile organic compounds, in addition to other heavy metals, into the atmosphere. ⁹ These pollutants are similar to those from burning other fossil fuels and can contribute to a range of health issues, including exacerbation of asthma, respiratory and cardiac disease, lung cancer and stroke. ¹⁰ Natural gas operations may have long-term health effects that are not immediately expressed. ¹¹	Social impacts
Brooke Ah Shay - Doctors for the Environment Australia	10	2	Biodiversity loss ultimately affects human health Biodiversity helps to regulate climate, filters air and water, enables soil formation and mitigates the impact of natural disasters. It also provides timber, fish, crops, pollination, ecotourism, medicines, and physical and mental health benefits (UN 2019) ¹² The Darwin Pipeline Duplication Project will establish a third significant pipeline in Darwin Harbour, which will have many impacts on marine ecosystems that are already under pressure from existing gas developments. The number of resident dolphins in Darwin Harbour, for instance, has almost halved since construction of the Inpex gas plant and shipping channel in 2011. ¹³ The dredging operation requires 750,000m ³ of the seafloor in Darwin Harbour to be removed and dumped off Lee Point in an operation which will further damage delicate marine plants and creatures and interfere with feeding and breeding grounds.	General marine
Brooke Ah Shay - Doctors for the Environment Australia	10	3	This project contravenes the NT government's commitment to net zero emissions The NT government has acknowledged that climate change is an issue of critical significance. This proposal is in direct contravention to the government's stated goals of working towards net zero emissions. ^{14,15}	GHG emissions / AQ
Brooke Ah Shay - Doctors for the Environment Australia	10	3	DEA therefore opposes the development of this pipeline and the Darwin LNG plant. DEA suggests that the NTEPA call in a referral under s53(1) of the Environment Protection Act of the broader Barossa Project as a whole. If, however, the NTEPA does not call in the proposal, DEA urges that the Project be assessed at the highest level, in the form of a public Inquiry.	Project Assessment
The Australian Institute	11		This consultation is calling for feedback into the new proposed pipeline by Santos and whether the proposal requires environmental impact assessment. We urge the NTEPA to require a full assessment.	Project Assessment
The Australian Institute	11	1	The presentation of the project as a duplication aimed at facilitating carbon capture and storage (CCS) is misleading. When seen in wider context, the aims of the project appear to be to increase gas exports through the Barossa Project and to delay the \$1.1 billion decommissioning costs estimated for the Bayu Undan field. ¹	Project description
The Australian Institute	11	1	Santos' describes Bayu Undan CCS as an "opportunity". This is unusual. Santos do not refer to it as a project, or even a proposal, but simply as a potential future opportunity. There is no public documentation around how this non-project would work, what its environmental impacts might be, or how much it might cost.	Project description

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The Australian Institute	11	1	<p>Even if Santos were to progress CCS in Bayu Undan, there is little evidence it would succeed. CCS has failed to date, despite decades of effort and billions in public funding. The global capacity of genuine CCS projects (projects that are not aimed at enhancing oil recovery) is just 10 million tonnes per year.² The largest by far of these is Chevron's Gorgon project in Western Australia, which has been beset by delay and technical failure.³ It injected only 30 percent of promised emissions in its first 5-year reporting period,⁴ and only 50 percent last year.⁵</p> <p>Analysis shows that even if carbon dioxide could be successfully permanently stored in the Bayu Undan fields, the emissions required for processing, compression and transport of the CO₂ would be approximately equivalent to the amount injected, meaning that there would be no net reduction in the projects very high emissions.⁶ Regardless of its lack of substance or low prospects of success, the promotion of CCS at Bayu Undan facilitates the greenwashing of the Barossa LNG Project.</p> <p>If it proceeds, Barossa would be, by far, the most emissions intensive LNG project in Australia.⁷ It would extend the life of Darwin LNG by at least 20 years. The gas from the Barossa fields will result in around 3.4 million tonnes of emissions within Australia annually,⁸ and a further 10.5 million tonnes of emissions when the gas is burned overseas.⁹</p> <p>Worse still, Santos proposes a tie in point to the pipeline that will allow gas from other fields around Barossa to be developed. Some of these fields have an even higher CO₂ content than Barossa, notably the enormous Evans Shoal field which reportedly has a 30 percent CO₂ content.¹⁰</p> <p>This is unacceptable from a climate perspective, particularly in the light of the IEA's recent statement that in order to achieve net zero by 2050, no new coal and gas projects should be approved,¹¹ and the IPCC issuing a "code red for humanity".¹² Santos has virtually ignored the emissions impact of the full Barossa project in its proposal to the NTEPA. Instead, the proposal considers the "duplicate" pipeline within NT waters in isolation from the overall project, with vague assertions that some of the emissions will be sequestered.</p>	GHG emissions / AQ
The Australian Institute	11	2	<p>The Australia Institute strongly recommends that Santos' DPD Referral undergo environmental assessment in the form of an inquiry, as set out in the Environmental Protection Regulations 2020 (NT) which considers the full climate implications of Santos's related Barossa project.</p>	Project Assessment
Grusha Leeman	12		<p>Carbon "storage" is a downright dangerous pipedream</p> <p>Carbon capture and storage (CCS) is simply a licence to pollute and is an excuse to ramp up emissions. Santos is pushing to duplicate this pipeline and is spinning the line it has plans to produce clean energy so it has a licence to keep its polluting projects going, not because it wants to cut emissions. Don't be duped. CCS is a temporary dump, at best.</p> <p>Yet to be proven, the most advanced Aussie project is Gorgon. As of July 2021, the Gorgon experiment has reached a milestone with five years of failure¹⁰, falling millions of tonnes short of its emissions capture promises. If Chevron is required to make good on its failed promises using carbon credits, this will cost the company nearly \$100 million¹¹.</p> <p>CCS is incapable of tackling the pollution needed to diminish our climate crisis. When attached to fossil fuel developments, especially like those of the really dirty Barossa field, carbon storage is not a climate solution, as digging up and burning fossil fuels only adds to the problem. Global temperatures do not stop increasing until emissions reach or go beyond net zero¹². To achieve that we must stop digging up and burning fossil fuels. CCS is extremely expensive and cannot deliver zero emissions. The only solution is to stop mining and burning fossil fuels.</p> <p>Pumping dangerous concentrations of carbon dioxide into crevices under the sea as in this project's associated projected plan, has no guarantee it will stay there. Any crack may see it seep out: we've all seen the CO₂ bubbles. But also there are such things as earthquakes that will render such deposits free to rise and pollute our planet's precious climate.</p> <p>Recommendation: It is far better and cheaper to avoid carbon emissions in the first place, rather than try to capture them after they've been released. Rather than wasting money on something that's expensive, ineffective, and likely downright dangerous, Australia should be investing in the things we know can cut emissions quickly and bring down power prices, like renewables backed by storage.</p>	GHG emissions / AQ

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Grusha Leeman	12		<p>Smashing another pipeline through our Harbour and sea Darwin was once, not long ago, the envy of the world, a happy city with a LIVING HARBOUR. Since then it has been smashed and dredged by fossil fools. We want our dolphins whales back. Plans for sonar to identify seafloor debris and seabed profile with pulses at high frequencies are an anathema to our saltwater friends who depend on their senses.</p> <p>In shallower waters, the Project pipeline may require stabilisation due to exposure to waves, currents and tidal movement. Surely anchoring devices will suffice and trenching along with the associated blasting and dredging can be abandoned. These activities are severely detrimental to the environs under the sea and should never be condoned. Dumping sludge in a six kilometre area back of Lee Point is a huge ruination of seagrass and other vital seabed biodiversity.</p> <p>The project's proximity to the near pristine Tiwi Islands and the Oceanic Shoals Marine Park is a concern as if this project is given the go ahead, it will have devastating impacts on biodiversity in the region, including on critical habitat for the threatened Flatback and Olive Ridley turtles¹³.</p> <p>Recommendation: Adding yet another destructive development to the seafloor is unnecessary and detrimental to the environment so reject the plan. It's a duplication, if they must, use the pipeline that is there.</p>	General marine
Grusha Leeman	12		<p>Gas is not even safe to use in our kitchens Although Santos likes to inform us all that gas is safe it is not.</p> <p>Beyond contributing to global warming, gas stoves emit unhealthy levels of nitrogen oxide¹⁴, which can trigger breathing problems for people with asthma or chronic obstructive pulmonary disease, even in low concentrations.</p> <p>Recommendation: As the gases from Barossa are not safe, not in the kitchen, not in production and not in our atmosphere, ensure the wells are plugged and the gases left in situ.</p>	Social impacts
Grusha Leeman	12		<p>Accepted Accepted Accepted Accepted Accepted...</p> <p>Wonder if any proposals¹⁵ are ever rejected or is the Government just a rubber stamper?</p> <p>Does the \$1.8 million in donations that Santos has handed over to the Coalition in the last 20 years make a difference?¹⁶</p> <p>As we do not seem to have a mechanism to deny outrageous proposals like this one from the outset, it is vital that the NT EPA decides the proposed action requires the maximum environmental impact assessment.</p> <p>Recommendation: Reject this plan.</p>	Project Assessment
Julie Fraser	13		<p>Firstly, emissions from the project will have a substantial impact on the Territory's ability to meet its emissions reductions targets. I note that the current Darwin LNG facility has approvals to emit up to 10mtpa of greenhouse gasses (GHG), but IEEFA modeling shows that when the Barossa project lifecycle emissions are added to current Darwin LNG emissions, this 10mtpa threshold will be exceeded. This discrepancy alone justifies a full and transparent assessment of the emissions profile of the Barossa project. The risk to workers' livelihoods due to increased temperatures and wild weather events is extreme and will only be worsened by the development of new gas fields and their associated emissions. Both the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change (IPCC) have stated that new gas projects must not go ahead if catastrophic global warming is to be avoided. Increased temperatures at work are emerging as one of the major occupational health and safety hazards for workers, particularly in tropical locations such as the Northern Territory.</p>	GHG emissions / AQ
Julie Fraser	13		<p>I am also concerned about this Project being used to facilitate Carbon Capture and Storage (CCS) in the Bayu-Undan gas field. CCS is unproven, unreliable, and has a record of failing to meet targets. There are specific problems with the Bayu-Undan CCS proposal, not the least of which is the injustice of saddling Timor-Leste with carbon pollution and the uncertainty of how this carbon will be stored and regulated. The high CO₂ content of gas from the Barossa field (18%) adds a range of complications to the CCS process- which has failed, as in the case of the Gorgon CCS project, in less complex circumstances. The DPDP facilitates the development of this CCS project and as such the impacts must be assessed in a full public inquiry so the risks can be examined.</p>	Broader project

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Stakeholder	Submission No.	Pg number	Public Submission / Key Issues	Topic category
Julie Fraser	13		Workers in a range of industries stand to lose from the further industrialisation of Darwin Harbour. The impacts will be directly and obviously felt on the tourism industry, but reduced air quality, increased pollution, warmer temperatures, and petrochemical development will heavily impact the entire Darwin and Palmerston region and surrounds. Workers deserve long-term, sustainable jobs in industries that are socially beneficial, not in polluting industries that create limited jobs and contribute to the risk of climate catastrophe.	Social impacts
Identity removed	14		I believe the Darwin Pipeline Duplication Project (DPDP) should be assessed at the highest level of environmental assessment - an inquiry. As recreational fisher in Darwin who regularly fishes Darwin harbour, and as someone who cares about the greenhouse emissions of fossil fuel projects, the DPDP concerns me greatly.	Project Assessment
Identity removed	14		The dredging required to facilitate this new proposed pipeline is immense, and it upsets me greatly that it would go straight through the Charles Point reef protection zone - a zone that Darwin fishers have (for six-odd years now) been prohibited from fishing explicitly for the protection of marine ecosystems, namely key fish species (golden snapper and black jewfish). This project would have an effect on a key habitat of these species (both of which are crucial to rec fishing in the Territory). Also, anecdotally - from seasoned Darwin fishers - it's not only the dolphin population that suffered after the dredging for the Inpex shipping channel. The threadfin salmon population inside the harbour has also taken a hit.	Charles Point RPA
Identity removed	14		The proposed dumping of the dredged seafloor at Lee Point is unacceptable - this being an area that has substantial areas of bottom structure where reef and pelagic species dwell.	Spoil disposal ground
Identity removed	14		This mass dredging over 15 months and its attendant potential consequences for fish populations and marine habitats need to be scrutinised extremely highly - especially so given fishing is such an important part of Darwin's identity and economy. There is much at stake when it comes to the impacts of this project on recreational fishing.	General marine
Identity removed	14		But it's not just these significant direct and indirect effects on local marine environments. The Barossa project as a whole is expected to be up to 15 million tonnes per annum of greenhouse gases over its lifetime. Given the juncture the world is at regarding the recognised need to mitigate the impacts of climate change, and the effect climate change is already having on ecosystems in the NT (mangrove dieback in Darwin harbour being just one example) these emissions need to be considered, whether the gas is extracted in NT waters or not. The pipeline will run through NT waters, and the gas processed in the NT. It is wilful blindness to not take these and the project's indirect emissions into account.	GHG emissions / AQ

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Identity removed	15		<p>Emissions from the project with CCS and without - not much difference</p> <p>Based on the NOPSEMA-approved Offshore Project Proposal by ConocoPhillips of March 2018, and adding the emissions at Darwin LNG plant produces total emissions of 5.4million tonnes of CO2 per year to produce 3.7Mt/year of LNG. That represents an emissions intensity of 1.47 tCO2/tLNG - twice the Australian LNG industry average, based on EIS data.</p> <p>Now it seems that the Barossa to Darwin LNG project, even with a CCS element, would still produce more carbon dioxide emissions offshore and onshore than it will produce LNG.</p> <p>I base this on the research I have done recently on data contained in project EISs, OPPs and similar documents that has led me to write several papers which have been published and quoted in the media.</p> <p>The table (refer Attachment 3) shows the basis of the above statements, based on the Barossa OPP and Darwin LNG information (Case A) and as deduced for the case with CCS added (Case B). The emissions figures are not calculated in detail but directionally correct.</p> <p>I have done this work in the public interest because I am concerned that emissions from the Australian LNG industry have grown disproportionately higher than the growth in L NG capacity. as inferior quality gas reserves have ben developed. Barossa is a leading example of this alarming trend.</p>	GHG emissions / AQ
Alice Nagy	16		<p>My two key concerns relating to this project are the huge Green House Gas (GHG) emissions it will generate, and the impact it will have on sensitive marine ecosystems and vulnerable species such as Olive Ridley turtles.</p> <p>As I understand, the Gas extraction site for this project lies outside the NTs jurisdiction and so will not be subject to any Environmental Assessment Scrutiny. However, I strongly believe the NTG has a responsibility to consider the emissions that will be generated as a result of the project as a whole given the gas will be transported and processed in the NT. This is the responsible and reasonable approach to take.</p> <p>Furthermore, it has been well established that there are significant fugitive emissions released through the transportation of gas and there is a potential for leakages along the pipeline. Therefore, I urge the NTEPA to closely consider the predicted GHG emissions from the entire project - which could be as much as 15million tonnes annually. This is a huge emission load to add to the atmosphere when we are already seeing the devastating impacts of global warming on our ecosystems and communities.</p>	GHG emissions / AQ
Alice Nagy	16		<p>In the NT we have been seeing dieback of mangrove forests caused by marine heat waves. These kinds of dieback events are environmental disasters as well as social, cultural and economic disasters, and they are caused by global warming which is caused by the perpetuation of fossil fuel extraction and consumption like the Santos' Barossa project.</p>	General marine
Alice Nagy	16		<p>Given the likely impacts from this project - both the direct and tangible threat that the pipeline will pose to NT marine habitats during construction and the threat to our climate by increasing GHG emissions - are so great, I strongly urge the EPA to apply the most rigorous and highest standard of assessment to this proposal.</p>	Project Assessment
Identity removed	17		<p>The Barossa Gas Project which is the reason for needing this new pipeline, is potentially the dirtiest most carbon polluting gas project in the world. Santos have not consulted with the NT people, nor the Aboriginal communities who will be most affected by the impact of this project. They have a record of riding roughshod over people's rights and regard for environmental regulation as evidenced by the recent Rallen vs Santos case.</p> <p>Should this pipeline project be assessed?</p> <p>The NTEPA exists to protect the environment, it is our agent to protect us from the damaging effects of development. In this case, nothing less than a full inquiry will suffice – for both the pipeline project and the whole Barossa gas project that it will support. I understand that this is enabled by s53(1) of the Environment Protection Act. The Darwin Pipeline Duplication Project and the broader Barossa Project must be assessed at the highest level – a public inquiry. The impact on carbon emissions by the pipeline and Barossa Gas proposal will threaten achievement of the Northern Territory's carbon emission targets and obviously contribute significantly to climate change. The carbon emissions for the pipeline must be assessed as part of the whole Barossa Gas project to obtain the real impact and must not be assessed in a piecemeal manner.</p>	Project Assessment

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Identity removed	17		Darwin harbour is a pristine environment which supports extensive breeding grounds for survival of many varieties of fish and other sea creatures that underpin our lifestyle, tourism and amenity. Dugongs feed on the sea grass. Hard corals, where golden snapper and jewfish breed, are not clearly identified in the mapping of the Santos proposal. These will all suffer from dumping of tons of dredged harbour mud. These species must be protected from months of dredging that will risk their destruction. Monitoring but not protecting the dolphin population in Darwin Harbour has seen it nearly halve since the Inpex development.	General marine
Identity removed	17		But not just Darwin harbour is at risk. The pipeline will pass through the Oceanic Shoals Marine Park, through the Charles point reef fish protection zone and within 6 km of the Tiwi Islands' western coast. It will pass through Tiwi country, which is subject to native title rights and interests, but the Tiwi have not given their free, prior and informed consent to the Project. The Tiwi Islands's western coastline is a biologically significant area for Olive Ridley turtles and green turtles.	Charles Point RPA
Identity removed	17		The proposed pipeline will also facilitate transport of gas that poses a risk for explosion if leaked into the Harbour. The NTEPA needs to protect Darwin against this risk. The last environmental impact assessment for the existing Darwin LNG (and hence ongoing regulation requirements for) occurred in 2002. Times have changed, scientific knowledge has advanced and our climate has changed. This previous assessment is now irrelevant. A now and thorough NTEPA assessment is required. Only a 100 km section of the proposed 260 km pipeline is being assessed which does not include the Darwin LNG facility at Wickham point. This is also an oversight that needs to be addressed.	Project Assessment
Identity removed	17		Carbon emissions both direct and indirect related to the pipeline must be taken into account. Barossa gas contains high levels of CO2 (16-20%) which will result in release of world leading levels of CO2 by this project and the pipeline. These emissions must be assessed as part of the pipeline project for Barossa Gas and not separated out to minimise the apparent impact. Carbon capture and Storage (CCS) is proposed to be facilitated. It is proposed to use this pipeline project to facilitate CCS at Bayu-Undan in the Timor Sea. This requires capturing the CO2, drying it, cleaning it and then piping it 100 km out to Bayu-Undan through the aging existing infrastructure and burying it 3.5 km under the sea. This alone is a massively energy intensive project, but unfortunately CCS has not been proven to be effective. This technology is a smokescreen to reduce public concerns about carbon dioxide emissions. The technology has not been proven to work at scale anywhere in the world. Despite millions of taxpayer funded dollars invested in the Gorgon state-of-the-art CCS project, it has achieved appallingly low rates of carbon capture. The Australasian Centre for Corporate Responsibility recently pointed out that "the rate of CCS project is striking: a recent study of all CCS developments in the United States of America (home to a significant majority of the world's CCS capacity) found that more than 80 % had ended in failure".	GHG emissions / AQ
Identity removed	302	1	Santos has prepared a case for the DPDP which it describes as a 'robust self-assessment' and concluded that 'most impacts during the construction phase would be temporary and localised and can be readily managed with little to no environmental impact' (Darwin Pipeline Duplication (DPD) Project NT EPA Referral, page 190). Santos' DPDP is an integral part of a much larger project, the development of the Barossa gas field. My strong view is that large projects such as this should be considered as a whole. They should not be assessed in small segments as presented by this proponent, under some misapprehension that the environment is made up of discrete, unrelated elements and with cumulative effects that have minimal impact on the environment. A terrestrial example of this principle is the loss of habitat. Recent news that koalas are officially endangered is not because of a single land-clearing event. Instead, it is due to many land-clearing events, fire, water mismanagement, and degradation of habitat along with many other factors that result in poor health or death of animals. The stark outcome is the status of the koala today. Similarly, marine and coastal environments are being assaulted by piecemeal development approvals and the water quality of our seas and rivers is at risk.	Broader project
Identity removed	302		Darwin Harbour is a Northern Territory Site of Conservation Significance and home to a number of endangered species of marine life. Santos contends that with good management, the proposed DPDP will not adversely impact on these values or species. While the risks associated with marine-related hydrocarbon spills, high levels of underwater noise and acid sulphate soils may be low, if the Barossa gas field does not go ahead then there is no risk at all.	Conservation areas

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Identity removed	302	1	The project proposal refers to the possibility of re-purposing the existing Santos Bayu-Undan pipeline for offshore Carbon Capture and Storage (CCS) (page 3); however, the technology for such a strategy is still in the early stages. As CCS is part of the reason for the DPDP, the whole project should be carefully examined considering the environmental values that are at stake.	Broader project
Identity removed	302	2	The estimates of carbon dioxide emissions from the proposed Barossa gas field are very high. As the DPDP is part of the Barossa gas field the emissions need to be considered in line with principles of ecologically sustainable development. New industry should enhance rather than undermine the Northern Territory's ability to meet its commitments to reduce greenhouse gas emissions.	GHG emissions / AQ
Identity removed	302	2	It is in the long-term interests of the Territory's economy and environment that Santos' Barossa gas field, including its DPDP be considered at a public inquiry. The community should be satisfied that a major project such as this will proceed only on the basis that there is minimal environmental impact and risk and that it is ecologically sustainable.	Project Assessment
Robin Knox	303		Darwin's healthy environment supports enormous numbers of jobs in tourism, fishing, life style activities and food production and all this could be lost if more destruction of our harbour occurs. The Barossa Gas Field is a small, poor quality project on the world scale and will create long term destruction for a very short term project. It will leave damage for many future generations that may never repair and leave toxins in our environment.	Social impacts
Robin Knox	303		The construction of the pipeline in Darwin Harbour will be highly destructive to the sea bed and the animals and creatures that are living in and on our harbour floor. The works will be highly disturbing to marine life such as migrating crayfish, fish, shell life, dolphins, turtles and dugongs. The movement and breeding patterns of these creatures in the harbour is little known so the consequences of the disturbances cannot be foreseen. The potential for accidents is high and the consequences can last for hundreds of years.	General marine
Robin Knox	303		The inquiry should also look at the proposal for carbon sequestration and storage (CCS), a process that is costly and unproven. Another justification for the pipeline is the remove emissions for possible sequestration so this proposal needs to be publicly scrutinised too. The CCS proposal is just a distraction to make the gas industry sound like it can manage its emissions. Gas industry evidence shows that it is releasing large amounts of emissions into the environment in the extraction and production of gas, even before burning the gas.	Broader project
Robin Knox	303		The NTEPA needs to hold a public enquiry at the highest level so the effected population can hear the details of the project proposal.	Project Assessment
Identity removed	304		<p>The fossil fuel industry is trying to con governments, and the public, in many countries into accepting CCS technology as a viable means of addressing climate change - though research has indicated it is not. However it does help investors in the fossil fuel industries to continue with business as usual. Please be guided by credible science! Please don't be a bad example for the World by lending credibility to this deceitful process, as the Liberal govt. in Canada recently did. I wrote the following 3 paragraphs for a citizen's campaign in Canada to protest this deceitful pro-fossil fuel CCS scam here, but they are applicable to your situation as well:</p> <p>Its disgusting that our government plans a tax credit in the upcoming federal budget to support Big Oil investments in Carbon Capture and Storage (CCS). We need a well-funded just transition to renewable energy, not more green-washed bailouts for the fossil fuel profiteers that have already done so very much harm to life on Earth in a multitude of ways.</p> <p>Analysts have long warned that CCS would be a false, ineffective, and risky 'solution.' Rather than moving us away from fossil fuels, it would drive up greenhouse gas emissions - as demonstrated by Shell's CCS facility in Alberta, which is currently emitting more than it captures.</p> <p>Recently, more than 400 scientists, academics, and energy experts wrote an open letter to the federal government warning against a CCS tax credit, which they said would constitute "a substantial new fossil fuel subsidy."</p>	Broader project

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Identity removed	304		PLEASE conduct a sincere holistic environmental assessment of Darwin Pipeline Duplication Project, and ensure it is undertaken at the highest level - public inquiry.	Broader project
Identity removed	304		The Project not only poses significant environmental, economic, cultural, and health risks for Darwin and surrounding areas, but will also greatly increase the release of greenhouse gases into the atmosphere - and hence would accelerate climate change around the planet, and violate Australian claims to be legitimately trying to diminish its climate-related toxic output.	GHG emissions / AQ
Identity removed	305	1	As a component of Santos' proposed Barossa gas project it is part of what will be the dirtiest gas project in the world, should it be allowed to go ahead. The Barossa gas field has the highest carbon dioxide (CO2) content of any gas field, and this CO2 will be vented into the atmosphere before the gas is transported to Darwin. The life cycle greenhouse gas emissions of the Barossa project will be 15mtpa, producing more CO2 than LNG. The proponent's claim that GHG emissions are not a key factor for this referral should be rejected; it would be unacceptable if emissions from the world's most carbon-intensive gas field escaped assessment by the NTEPA under the Environment Protection Act 2019 (NT). I therefore urge the NTEPA to please consider the significant emissions that would result from this project when making their decision.	GHG emissions / AQ
Identity removed	305	1	The proponent has stated in the referral document that undertaking the Project will allow the existing Bayu-Undan to Darwin pipeline to be used for Carbon Capture and Storage (CCS). The proponent makes a number of misleading claims about CCS in the referral document. CCS is an unproven technology that has a track record of failure. It is untested in an offshore gas reservoir such as Bayu-Undan. Any risk mitigation strategy that is premised on the viable functioning of CCS is inadequate. As such, the emissions profile of the project constitutes a significant impact that requires assessment at the highest possible level.	GHG emissions / AQ
Identity removed	305	1	The Project is part of the intensified industrialisation of Darwin Harbour, with the transported gas to be used as a feedstock for petrochemical industries in the Harbour. This poses immense environmental, economic, cultural, and health risks for Darwin and surrounding areas and must be considered relevant to any assessment of the Project's impacts.	cumulative impacts
Identity removed	305	1	The Barossa project as a whole should be called in for a referral under s53 (1) of the Environment Protection Act. At the very minimum, this Darwin Pipeline Duplication Project must be assessed by the NTEPA and must be assessed at the highest possible level. I would like to see a public Inquiry.	Project Assessment
Peta Baillie	306	1	The Santos Darwin Pipeline Duplication Project requires an environmental impact assessment, and this assessment must be undertaken at the level of a public inquiry. The scope of inquiry should include the entire Barossa Gas Project and proposed Carbon Capture and Storage development.	Project Assessment
Peta Baillie	306	1	The proposed project will generate significant global greenhouse gas emissions at a point in history where all fronts are demanding that we cease greenhouse gas production. Carbon Capture and Storage is an unproven technology and hitherto has failed to perform effectively at scale. A project of this scale and level of risk must be assessed at the greatest level of rigour	GHG emissions / AQ
Identity removed	307	1	I urge the NTEPA to conduct a detailed environmental assessment of the Darwin Pipeline Duplication Project at the highest level possible, for the following reasons: *A stated in the referral document itself the project has been considered against the principles of ecologically sustainable development.	Project Assessment
Identity removed	307	1	* The indicated carbon capture and storage function of The pipeline contradicts (rather than ameliorates) The anticipated emissions profile of broader Barossa gas project.G164	GHG emissions / AQ

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Identity removed	307	1	*Numerous threats to threatened marine fauna are acknowledged but merely dismissed with little to no supporting documentation. * Indication of intention to carry out marine fauna management actions is not corroborated with any indicated intention for active protection of fauna which does fall under threat.	General marine
Identity removed	307	1	* The project is part of the intensified industrialisation of Darwin Harbour, which in turn poses environmental, economic, cultural, and health risks for Darwin and surrounding areas and must be considered relevant to any assessment of the Project's impact	cumulative impacts
Identity removed	308	1	Thank you for the opportunity to make a submission on the Darwin Duplication Pipeline Project. This project should be assessed at the highest level of assessment (an Inquiry) for the following reasons: This project will generate significant global greenhouse gas emissions at a time when the IPCC report has issued Code Red for humanity and the International Energy Agency has said no new fossil fuel projects; CCS is unproven technology to reduce greenhouse gas emissions and the feasibility of the project should be further investigated; The project will have significant environmental impacts on Darwin Harbour which is unlikely to be supported by the community and must be subjected to the most rigorous assessment.	Project Assessment
Kelly Lee Hickey	309	1	I am deeply concerned about the impacts of dredging on the harbour. We've already seen the significant negative impacts of dredging on marine flora and fauna and I can't bear the thought of our ocean floor being ripped up further. I am deeply concerned that the maps provided by Santos don't show areas of hard coral, such as those in the reserve in East Point that can clearly be seen from a boat and that the pipeline will cut through important marine protected areas.	Benthic habitats
Kelly Lee Hickey	309	1	Furthermore the dredging of the harbour will visually pollute our beautiful harbour with ugly ships on the horizon of Mindil Beach markets.	Social impacts
Kelly Lee Hickey	309	1	The Barossa gas project, if it goes ahead, may be the dirtiest gas project in the world. The offshore Barossa gas field in the Timor Sea, north of the Tiwi Islands, has the highest carbon dioxide (CO2) content of any gas field. The life cycle greenhouse gas emissions of the Barossa project will be 15mtpa, producing more CO2 than LNG. We are already experiencing the extreme impacts of climate change in the Northern Territory, and this will blow the governments 2030 decarbonisation plans. Economist John Robert has called the project a "carbon dioxide factory with an LNG by product".	GHG emissions / AQ
Kelly Lee Hickey	309	1	The Barossa is thus a significant, controversial and high risk project, and ECNT believes its impacts should be rigorously assessed and reviewed by the NTEPA. Our harbour is a vital source of life and a national asset. We desperately need a proper review of this project to protect the livelihoods of our tourism and fisheries industries, as well as our precious Territorian lifestyle. I believe that the NTEPA should: (a)call in a referral under s53(1) of the Environment Protection Act of the broader Barossa Project as a whole; (b)if, the NTEPA does not call in the proposal, the Darwin Pipeline Duplication Project and the broader Barossa Project must be assessed at the highest level - a public inquiry	Project Assessment
Identity removed	310	1	I have no objection to this project	Not Applicable
Naish Gawen (on behalf of many)	18-301		The proponent's claim that GHG emissions are not a key factor for this referral should be rejected; it would be unacceptable if emissions from the world's most carbon-intensive gas field escaped assessment by the NTEPA under the Environment Protection Act 2019 (NT). I therefore urge the NTEPA to consider the significant emissions that would result from this project when making their decision.	GHG emissions / AQ

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Naish Gawen (on behalf of many)	18-301		The Project is part of the intensified industrialisation of Darwin Harbour, with the transported gas to be used as a feedstock for petrochemical industries in the Harbour. This poses immense environmental, economic, cultural, and health risks for Darwin and surrounding areas and must be considered relevant to any assessment of the Project's impacts.	cumulative impacts
Naish Gawen (on behalf of many)	18-301		The Barossa project as a whole should be called in for a referral under s53 (1) of the Environment Protection Act. At the very minimum, this Darwin Pipeline Duplication Project must be assessed by the NTEPA and must be assessed at the highest possible level. I would like to see a public inquiry.	Project Assessment