Environment Centre NT

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10 February 2026

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To Whom it may concern,

RE: Bonaparte Carbon Capture and Storage Project

1. The Environment Centre NT (ECNT) is the peak community sector environment organisation in the Northern Territory of Australia, raising awareness amongst community, government, business, and industry about environmental issues, assisting people to reduce their environmental impact, and supporting community members to participate in decision-making processes and action.

2. We refer to the Invitation for Public Comment published on 12 January 2026 with respect to the referral made by Inpex Operations Australia Pty Ltd (**Inpex**) for the "Bonaparte Carbon Capture and Storage Project" (**the Proposed Action**) including:

3. Referral form
    a. Referral report (including Appendix C)
    b. Appendix A - Protected matters search results
    c. Appendix B - Likelihood of occurrence assessment
    d. Appendix C - Preliminary assessment of potential impacts on Northern territory environmental factors or values (included in Referral Report)
    e. Appendix D - Bonaparte carbon capture and storage stakeholder engagement plan
    f. Appendix E - Bonaparte carbon capture and storage pre-referral consultation

    (together, the **Referral**).

Summary

4. In summary, ECNT submits that, pursuant to s 55(5)(b) of the *Northern Territory Environment Act 2019* (**the Act**), the NT EPA should determine that the proposed action is unacceptable because it is likely to have significant impacts that cannot be appropriately avoided, mitigated or managed.

5. In the alternative, ECNT recommends that the Proposed Action be assessed in the form of Public Inquiry. We set out below the unprecedented nature of the proposed action and the potential for significant impacts, which demonstrate the necessity of assessment at the highest possible level.

The proposed action

6. Inpex seeks to undertake the following activities:

    a. Construction and commissioning of an up to 22-inch carbon steel CO_2
        i. transport pipeline and SFPO cable extending ~90 km between the onshore inlet station and boundary of the Northern Territory waters;

    b. Activities supporting the construction and commissioning of the CO_2
        i. transport pipeline and SFPO cable(s) including geophysical and geotechnical surveys of the pipeline, subsea infrastructure and onshore infrastructure, shore crossing trenching, dredging within Darwin Harbour and spoil disposal in the Beagle Gulf ; and,

    c. Site establishment and construction of the onshore inlet station.

7. Inpex divides the project footprint into three components:

    a. Onshore development area (**ODA**) – the area encompasses the onshore inlet station footprint and the corridor of the onshore portion of the CO_2 transport pipeline (approximately 1.2 kilometres).

    b. Pipeline development area (**PDA**) – including the CO_2 pipeline and SFPO corridor commencing in Darwin Harbour and extending to the boundary of NT waters.

    c. Dredge spoil disposal ground (**DSDG**) – the area is located to the north of Darwin Harbour, within the Beagle Gulf, approximately 12 km north-west of Lee Point.

8. Elsewhere, the Proponent proposes that up to 300Mt of carbon dioxide may be transported and injected as part of the Bonaparte Carbon Capture and Storage project, of which the proposed action is a component. The project is larger than any offshore carbon capture and storage project currently in operation globally and entails significant risks and impacts that have not previously been the subject of a decision under the Act, or in any other jurisdiction.

Controlling provisions

9. Pursuant to s 55 of the Act, the NTEPA must determine whether an action referred for standard assessment has the potential to have a significant impact

on the environment with consideration of any applicable environmental objectives.

10. Where the NTEPA considers that the referred action has the potential to have a significant impact on the environment, the NT EPA must determine that an environmental impact assessment is required for the referred action.

11. Where the NT EPA considers that the referred action is unacceptable because it is likely to have significant impacts that cannot be appropriately avoided, mitigated or managed, it must recommend to the Minister that the Minister refuse to grant an environmental approval for the referred action.

12. The Act, at s 11, defines 'significant impact' as an impact of major consequence having regard to:
    (a) the context and intensity of the impact; and
    (b) the sensitivity, value and quality of the environment impacted on and
    ii. the duration, magnitude and geographic extent of the impact.

13. Relevantly, given the unprecedented nature of the broader project discussed at [8], s 19 of the Act establishes that "if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation."

Significant impacts to relevant environmental factors and objectives

Pipeline construction

<u>Impacts to marine environments and ecosystems</u>

14. The project area contains habitat for a range of EPBC Act and TPWC Act-listed fauna, and intersects with ecosystems the sustain that overall health and biodiversity of Darwin harbour and the marine areas extending out to the end of NT waters.

15. Significantly, the proposed action location intersects with The Project Area intersects with Biologically Important Areas (**BIAs**) for three listed migratory dolphin species: the Australian Snubfin Dolphin (breeding and calving), the Australian Humpback Dolphin (breeding, calving, foraging), and the Spotted Bottlenose Dolphin (breeding and calving). In addition, the proposed action intersects with an interesting BIA for the flatback turtler (*Natador depressus)*, and constitutes habitat critical for the survival of the species.

16. Inpex acknowledges that proposed a range of proposed activities have the potential to impact marine environments and ecosystems via impacts pathways including seabed disturbance caused by anchoring, dredging and trenching; increases in turbidity and sedimentation resulting in reduced water quality and impacts to receptors such as coral and seagrass; sediment disturbance from

onshore construction activities, and reduced water quality due to waste and liquid discharges and site run-off.[1]

17. The National Recovery Plan for Marine Turtles lists the Hawksbill, Green, and Olive Ridley Turtles, as "stocks at highest risk" which should be a "priority for management action".[2] Each of these species has foraging habitat in Darwin Harbour. The Northern Territory contains habitat for "one of only two stocks of olive ridley turtles nesting in Australia."[3]

18. Disturbances to potential foraging areas could potentially impact the survival rates of these threatened species and should be considered a significant impact.

19. The Project Proponent's assertion that "Avoidance or displacement of individual turtles from areas utilised as internesting or foraging habitat is expected to be localised to the area of disturbance and short-term with no lasting impacts to marine turtles" in based on inadequate analysis of the interconnected, compounding, and cumulative risk factors associated with seabed disturbance and the impacts that may arise when disturbance occurs at the same time as other impacts such as light pollution, noise pollution, marine discharge, and increased vessel traffic.

20. Inpex provides insufficient information to determine whether there will be significant harm marine turtles due to changes to benthic communities; for example it does not specify how many hectares will be affected, which benthic species will be affected, the degree and duration of risk to impacted species, or the cumulative impacts from other activities in Darwin Harbour.

21. In relation to dolphin species, Inpex states that "activities would be occurring in a busy port environment and would be short-term in nature, progressing along the pipeline route, and are not expected to have any lasting effect on coastal dolphin behaviour or habitat utilisation."[4]

22. ECNT submits that the location of activities in "a busy port environment" magnifies the cumulative significance of impacts. In addition, we note that an impact can be significant, even where it is not long lasting, particularly where a project impacts BIAs for dolphin species.

23. In a submission to the NT Environmental Protection Authority on the Darwin Pipeline Duplication Project, which proposed similar infrastructure within Darwin Harbour, Prof Karen Edyvane noted that "the current water quality and

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[1] Referral Report, p167

[2] Australian Government, Department of the Environment and Energy (2017) Recovery Plan for Marine Turtles in Australia (2017), accessed via https://www.dcceew.gov.au/sites/default/files/documents/recovery-plan-marine-turtles 2017.pdf (**Recovery Plan for Marine Turtles**), p101.

[3] Recovery Plan for Marine Turtles, p96, p101.

[4] Referral Report, p173

environmental quality monitoring and assessment in Darwin Harbour (..) fails to provide an adequate and integrated framework to detect and assess anthropogenic impacts in Darwin Harbour." In light of the deficiency in baseline data, the precautionary principle should apply to risks related to seabed disturbance in Darwin Harbour.

24. The Pipeline will impact the Charles Point Reef Fish Protection Area (**RFPA**), may also intersect with Weed Reef, and is in close proximity to the Lorna Shoals RFPA. Although Inpex mentions the Charles Point and Lorna Shoals RFPAs in its identification of Northern Territory Protected Areas, and references seagrass patches at Weed Reef, the potential impacts on these environments as a result of dredging and pipeline construction do not appear to inform the risk assessment.

25. The potential impacts to Charles Point RFPA and Lorna Shoal RFPA need thorough assessment considering the importance of these zones for the recovery of overfished stocks of species including Golden Snapper and Northern Mulloway. Weed Reef is regarded as the primary location for Dugongs in Darwin Harbour

26. Noise impacts from this project will be generated by a range of Project activities including dredging, trenching and rock breaking. Inpex concludes that the significance of impacts to marine ecosystem via noise pollution are insignificant,[5] and, in relation to impacts on marine fauna, that "impairment to hearing is considered unlikely given the type of noise sources and management measures that will be in place."[6] ECNT notes that the only management measure identified by Inpex is compliance "with relevant requirements of the EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05) Interacting with cetaceans."[7]

27. Sound is the foundation for navigation, hunting, and communication among cetaceans. Noise disturbance can impact dolphin species by "limiting their ability to detect natural sounds; disrupting
normal behavioural patterns, including displacement and physical trauma causing death or temporary or permanent physical damage to sensory systems essential for survival."[13]

28. The National Recovery Plan for Marine turtles states that "(a)cute noise, or temporary exposure to loud noise, may result in avoidance of important habitats and in some situations physical damage to turtles,"[8] and exposure to chronic noise can lead to avoidance of important habitat.[9]

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[5] Referral Report, 182.
[6] Referral Report, p174
[7] Ibid.
[8] Recovery Plan for Marine Turtles
[9] Ibid

29. Inpex has not substantiated this conclusion with information about the intensity and duration of noise impacts in relation to thresholds for physiological harm or behavioural change in marine fauna species likely to occur in the project area. In addition, Inpex has not considered the potential for cumulative noise impacts within Darwin Harbour across different activities, and the consequences of cumulative harms at the individual and population level for affected species (including threatened and migratory species).

30. On the basis of the above, ECNT submits that Santos has not substantiated its conclusions that the consequences of residual risk are low or moderate.

Impacts to terrestrial environments and ecosystems

31. The Referral documents confirm the presence of a range of habitat used by TWPC Act EPBC Act-listed threatened and migratory shorebirds, including the critically endangered Curlew sandpiper (*Calidris ferruginea*) and Far Eastern curlew (N*umenius madagascariensis*).

32. The project proponent does not identify any critical habitat for avifauna in the Referral, however the onshore pipeline component will cross four key habitats including tidal flat, mangroves, saltpans and hinterland/woodlands. Inpex does not identify any critical habitat for avifauna in the Referral, however the onshore pipeline will cross four key habitats including tidal flat, mangroves, saltpans and hinterland/woodlands. The Referral notes that the "width of clearing along the construction corridor is expected to vary between 25 to 50 m, which may widen in areas to up to 200 m, dependent on-site conditions."[10]

33. Inpex has characterised the residual risk regarding terrestrial ecosystems as 'low', and considers the Impacts on terrestrial ecosystems from vegetation removal, habitat loss and fragmentation to be unlikely and of low significance. [11]

34. ECNT submits that this assessment is not substantiated by information contained in the Referral Report, and in fact is contradicted by data on the significance of the habitat and relevant Conservation Advice.

35. The saltpans likely impacted as part of the proposed action meet the definition of a nationally important habitat for the critically endangered Far Eastern Curlew, with records at the site meeting the threshold for this definition.[12]

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[10] Project Referral, 189

[11] Referral Report, p196

[12] Lilleyman, A. et al (2017) Distribution and abundance of migratory shorebirds in Darwin Harbour, Northern Territory, Australia, Northern Territory Naturalist 28. Accessed via https://pdfs.semanticscholar.org/92c4/c8b02698d7749c31831b0afada1da61817ef.pdf, p37

36. Conservation advice under the EPBC Act for the Far Eastern Curlew[13] notes that "All internationally or nationally important habitat that exceeds the above thresholds is considered habitat critical to the survival of the species. The degradation or loss of designated important habitat will have a disproportionately detrimental impact on the species' populations and must be avoided. Habitat critical to the survival of the species should not be destroyed or modified."

37. In relation to impacts on migratory shorebirds more generally, the habitat found within the area may be impacted in ways that are inconsistent with Industry Guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species,[14] due to habitat loss, habitat degradation, disturbance.

38. Relevant migratory shorebird species that may use habitat impacted by the proposal include the Curlew sandpiper (*Calidris ferruginea*), Lesser sand plover (*Charadrius mongolus*) Common greenshank (*Tringa nebularia*), Nunivak bar-tailed godwit (*Limosa lapponica baueri*), and Blacktailed godwit (*Limosa limosa*).

39. Risk of significant impact to migratory bird species through habitat loss may occur through removing/disturbing saltpans and tidal flats. Inpex's characterisation of habitat for shorebirds being "well represented on Middle Arm and within the broader area"[15] does not adequately engage with the factors that contribute to foraging and roosting habitat suitability for shorebirds, and a failure to engage with relevant monitoring studies that demonstrate the unique significance of the habitat to be impacted by this project and the potential for this habitat to be of increasing importance in the context of growing human disturbance and development at other sites of key habitat.

40. Further, ECNT submits that Inpex's claim that "(m)ost of the Project footprint was previously cleared of vegetation during the construction of Ichthys GEP, which was approved as part of the Ichthys LNG Development Project"[16] should trigger assessment of cumulative impacts, rather than be used to imply that the impacts of the activities are of low significance.

41. Conservation Advice for the Far Eastern Curlew establishes as a conservation and management priority that "future development projects avoid any activities that disproportionately affect the upper tidal flats and/or areas providing major

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[13] Australian Government, Department of Climate Change, Energy, the Environment and Water (2023), Conservation Advice for Numenius madagascariensis (far eastern curlew) . Accessed via https://www.environment.gov.au/biodiversity/threatened/species/pubs/847-conservation-advice 18122023.pdf (**Far Eastern Curlew Guidelines**)

[14] Australian Government, Department of the Environment and Energy (2017) EPBC Act Policy Statement 3.21: Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species. Accessed via https://www.dcceew.gov.au/sites/default/files/documents/bio4190517-shorebirds-guidelines.pdf (Migratory Shorebird Guidelines)

[15] Referral Report, p255

[16] Referral Report, p254

foraging opportunities as identified by species experts, local studies, and site managers."[17]

42. Industry guidelines establish that "any activity that reduces the ability of shorebirds to use an area for roosting or foraging, or reduces the availability of food, degrades habitat and is highly likely to have a significant impact," including introduction of acid sulphate soils (ASS) into habitat.[18]

43. Exposure of acid sulphate soils can alter the chemical balance of the area, including reduced pH and the release of heavy metals.[19] The Project Proponent recognises that "ASS have the potential to occur within the shore crossing area and may become an environmental issue when the soil is exposed to oxygen for a prolonged period of time,"[20] but does not discuss risks associated with migratory shorebird habitat.

44. Noise and light impacts during construction may disrupt normal behavioural patterns, including displacement from preferred areas resulting in additional energy expenditure that may result in significant impacts for avifauna species that have completed a major migratory journey and arrive in Darwin Harbour needing to restore bodyweight.

45. ECNT submits that Inpex's conclusion that consequences of noise and light impacts are insignificant with reference to terrestrial ecosystems has not been adequately substantiated and is not based on an engagement with the significance of habitat for key species.

CO_2 release

46. In the Referral Report, Inpex describes the composition of the CO_2 stream without detail of other contaminants, stating that "(t)he exact composition of the gases to be sequestered will be dependent on the CO_2 sources and their respective processing facilities."[21]

47. Elsewhere in the Referral Report, Inpex notes that "the CO_2 stream exported to the storage formation would contain incidental associated substances (as managed by the Interim National Action List for Offshore CO_2 Sequestration). These incidental substances are expected to rapidly distribute and mix within the water column and fall below threshold concentrations very quickly in the event of a leak." [22]

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[17] Far Eastern Curlew Guidelines, p19
[18] Migratory Shorebird Guidelines, p19
[19] Australian Government, Department of Climate Change, Energy, the Environment and Water (n.d.) Acid Sulfate Soils, accessed via https://www.waterquality.gov.au/issues/acid-sulfate-soils
[20] Project Referral, p184
[21] Referral Report, p46
[22] Referral Report, p169

48. This characterization is inconsistent with information provided in the Referral for the associated Ichthys Carbon Capture and Storage project (**Ichthys CCS Referral**), which includes the terrestrial CO_2 pipeline from the Ichthys LNG facility to be connected to the pipeline constructed as part of the proposed action under consideration.

49. In the Ichthys CCS Referral, Inpex confirms that the benzene, toluene, ethylbenzene, and xylene (BTEX) and H_2S produced at the Ichthys LNG facility will be combined with the CO_2 stream, and that the "CO_2 stream (including all contaminants) would be diverted to the CCES and transported via pipeline to an offshore storage site for sequestration."[23]

50. Although Inpex has failed to describe the anticipated volume of BTEX and H2S in both planned and unplanned emissions scenarios and the potential risks and significant impacts, we know from other sources that the BTEX compounds and H_2S component of the CO_2 source gas is likely to be significant. In its 2024-5 Environmental Monitoring report, Inpex reported benzene levels in feed gas to the AGRU Hot Vent up to 380ppmv, toluene at up to 300ppmv, and H_2S at up to 150ppmv.[24]

51. ECNT is deeply concerned that Inpex has mischaractised the nature of the risks associated with CO_2 release, by failing to properly describe the planned composition of the CO_2 stream. In doing so, Inpex has not adequately assessed the impact and likelihood of risks to marine environments, marine ecosystems, terrestrial environments, terrestrial ecosystems, air quality, atmospheric processes, and human health in the event of planned and unplanned discharge of the CO_2 stream, including the impacts of BTEX compounds and H_2S.

52. ECNT are further concerned about the assumptions about likelihood of pipeline leak or rupture that have informed risk assessments in the Referral Report. Offshore natural gas pipelines have had higher failure rates than onshore pipelines. An analysis of the USA Pipeline and Hazardous Materials Safety Administration (**PHMSA**) database for offshore methane gas transmission and gathering pipelines showed that there were 346 significant incidents during the period from 1990 to 2009. Of these incidents, 59% were leakage incidents and 17% were ruptures.[25]

53. Although the PHMSA dataset relates to pipelines for methane gas not CO_2, there is considerable transferability owing to similar construction materials and external stressors. Transport of CO_2 in a supercritical or dense phase for CO_2 transport is considered to be most comparable to transmission

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[23] Inpex (2025), Referral Report for the Ichthys CCS Project, p56

[24] Inpex (2025), EPL228 Annual Environmental Monitoring Report 2024-2025, accessed via https://ntepa.nt.gov.au/__data/assets/pdf_file/0009/1567278/epl228-annual-environmental-monitoring-report 2024-25.PDF

[25] Duncan, I., Wang, H (2014) Evaluating the Likelihood of Pipeline Failures for Future Offshore CO2 Sequestration Projects. *International Journal of Greenhouse Gas Control* 24: 124–38.

pipelines for methane gas, which had an average failure rate of 1.15 x 10-23[26] incidents/km/year in the 19-year PHMSA dataset. Applying this incident rate to the length of pipeline required for the entire Bonaparte CCS project (including the component in Commonwealth waters), at approximately 250km, this translates to an average incident rate of 0.3/year, or an incident every 3.3 years.

54. For offshore pipelines, a series of additional and compounded risks should also be considered. Storms and cyclones can cause physical damage from storm generated waves, debris, seabed scouring caused by strong currents, and turbidity currents caused by cyclones,[27] and the likelihood of extreme weather events increasing over the life of the project should be considered. Australia's National Climate Risk Assessment finds that in the future, "a greater proportion of tropical cyclones will be of high intensity, with greater rainfall and higher storm surges due to rising sea levels."[28]

55. Additional factors that need to be considered in a risk assessment include corrosion of pipeline materials due to the saline underwater environment, corrosion of pipelines due to acidic compounds forming in the gas, axial walking, and impacts from trawling over pipelines.[29]

<u>Marine environments and ecosystems</u>

56. Notwithstanding the above gaps in information provided in the EMP, ECNT submits that Inpex has not adequately described the risks and impacts of CO_2 release on marine environments and ecosystems.

57. The majority of biological impacts in Darwin Harbour from CO_2 leakage are likely to occur in shallow benthic or epibenthic communities.[30] Where the leak is greatest, changes in carbonate chemistry can occur within the sediment, whilst plumes of dense CO_2 enriched water can wash over the sediment further from the source of the leak.[31]

58. Studies have found that in addition to changes to biochemical processes, CO_2 leaks can also lead to changes in microbial communities, aquatic vegetation,

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[26] Seevam, P.N. et al. (2008) Transporting the Next Generation of CO2 for Carbon, Capture and Storage: The Impact of Impurities on Supercritical CO2 Pipelines. *Seventh International Pipeline Conference*, 29 September – 3 October, 1: 39–51.
[27] Draper, S. et al. (2015) Stability of Subsea Pipelines during Large Storms. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 373: 20140106
[28] Australian Government, Australian Climate Service (2025) *National Climate Risk Assessment*, p213
[29] Amdal, L.W. et al. (2011) Optimised Design of Pipelines Exposed to Trawl Pull-Over. *Proceedings of the Twenty-first International Offshore and Polar Engineering Conference Maui, Hawaii*, USA, 19–24 June.
[30] Queirós, A.M. et al. (n.d.) Potential impact of CCS leakage on marine communities. Deliverable 4.1: Potential impact of CCS leakage on marine communities WP4; lead beneficiary: Plymouth Marine Laboratory, ECO2 project number: 265847. D4.1_AQ_final.pdf (accessed 22.10.2025).
[31] Ibid.

and fauna and their behaviour.[32] The extent of impact depends on the scale and duration of the leak, as well as hydrodynamics and seasonality.[33]

59. A leak on the marine pipeline would result in an increase in dissolved CO_2, and a proportion of this would dissolve into the water column.[34] While much of this is likely to be converted into bicarbonate ions, a reduction in pH (i.e., an increase in acidity) would also occur. An indirect effect of CO_2 release involves removal of oxygen (and nitrogen) by carbon dioxide bubble clouds, which would impact biota.[35]

60. In addition to misrepresenting the significance of potential impacts of CO_2 release, Inpex has failed to adequately substantiate its claim that impacts of accidental release of CO_2 is highly unlikely to occur in relation to marine ecosystems, marine environments and terrestrial ecosystems are unlikely or remote.[36] No modelling information has been presented in the Referral, and assessments about the 'highly unlikely' nature of a release appears to contradict historical data on pipeline leaks, discussed above.

61. As a result, ECNT submits that Inpex has not demonstrated that impacts to marine environments and marine ecosystems – including the dolphin and turtle BIAs discussed above – will be appropriately managed, mitigated or avoided.

<u>Terrestrial environments and ecosystems</u>

62. If a leak or loss of containment occurs along the project's 1.2km onshore pipeline or connective infrastructure, CO_2 would escape either gradually or abruptly, and the potential health effects from CO_2 and co-contaminants would be dependent on the concentration and length of exposure.[37]

63. Co-contaminants are other chemicals such as ammonia and volatile organic compounds that can be produced as part of the carbon capture process,[38] or, in the case of the Proposed Action, are combined with the CO_2 stream as part of project design.

64. Excess amounts of CO_2 are particularly hazardous because CO_2 is colourless and odourless. As it is denser than oxygen, if it accumulates in low-lying areas,

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[32] Basallote, M.D. et al. (2012) Lethal Effects on Different Marine Organisms, Associated with Sediment-Seawater Acidification Deriving from CO2 Leakage. Environmental Science and Pollution Research 19: 2550–2551.
[33] Queirós, A.M. et al. (n.d.) Potential impact of CCS leakage on marine communities. Deliverable 4.1: Potential impact of CCS leakage on marine communities WP4; lead beneficiary: Plymouth Marine Laboratory, ECO2 project number: 265847. D4.1_AQ_final.pdf (accessed 22.10.2025).
[34] Turley, C. M. et al. (2004) Literature review: Environmental impacts of a gradual or catastrophic release of CO2 into the marine environment following carbon dioxide capture and storage. Plymouth Marine Laboratory. https://sciencesearch.defra.gov.uk/ProjectDetails?ProjectID=12484.
[35] Ibid.
[36] Referral Report, p182
[37] AEP Mountaineer CCS II Project (2011) Appendix G: Human Health and Safety Impacts from Potential CO2 Releases.
[38] Bennett, J. et al. (2024) Estimating the health co-benefits of carbon capture for power plants and industrial facilities. Proceedings of the 17th Greenhouse Gas Control Technologies Conference, 20-24 October.

as can occur with either an abrupt or gradual leak, it can be harmful to fauna as CO_2 can act as an asphyxiant.[39]

65. While inadequate data exists on the precise impacts of such a rupture on migratory shorebirds, the Referral errs in failing to consider the impacts of a loss of containment in the vicinity of critical habitat for the Far Eastern Curlew, other shorebirds, and other fauna likely to occur in the vicinity. Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species state that actions that introduce risk of mortality in important habitat may result in a significant impact.[40] This should inform the risk assessment.

Air Quality and human health

66. Exposure to high concentrations of CO_2 can have significant implications for air quality, atmospheric processes, and human health. For example, when a CO_2 pipeline ruptured in Mississippi, USA, in 2020, dozens of people nearby became unconscious and at least 45 were admitted to hospital.[41]

67. Airborne BTEX, which will be present in the CO_2 stream in unknown concentrations, is linked to a range of negative health outcomes, including as "hemato-toxicity for benzene, hematological effects and chromosomal aberrations for ethylbenzene, renal toxicity for toluene, and respiratory symptoms for xylene exposure."[42] Acute exposure to H_2S can lead to collapse, coma and death from respiratory failure within a few seconds after one or two inspirations, at high levels.[43]

68. Aside from the risks that would result from pipeline risk or rupture, Inpex acknowledges in reference to air quality impacts that "operational venting of CO_2 from the onshore inlet station during either maintenance activities, launch and receipt of PIGs (for inspection purposes) or during the connection of future booster pumping facilities or onshore pipelines. The volume to be vented would be equivalent to the volume of the PIG trap, or that of local piping/equipment."[44]

69. As discussed above at [46]-[49], Inpex has not disclosed information about the likely composition of the CO_2 stream, the volume of gas to be vented, or the

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[39] Parliament of Australia, House of Representatives Committees (n.d.) Chapter 5: The environmental benefits and risks of CCS and public perception, p. 55–68. Accessed via https://www.aph.gov.au/parliamentary_business/committees/house_of_representatives_committees?url=scin/geoseq uestration/chapter5.htm.; CIEL (2024) Deep Trouble – The Risks of Offshore Carbon Capture and Storage. Centre for International Environmental Law. Deep-Trouble-The-Risks-of-Offshore Carbon-Capture-and-Storage.pdf.

[40] Migratory Shorebird Guidelines, p18

[41] Simon, J. (2023) The U.S. Is Expanding CO_2 Pipelines. One Poisoned Town Wants You to Know Its Story. National Public Radio (NPR), 21 May 2023. Accessed via https://www.npr.org/2023/05/21/1172679786/carbon capture-carbon-dioxide-pipeline

[42] Saeedi, M et al (2024) Interaction of benzene, toluene, ethylbenzene, and xylene with human's body: Insights into characteristics, sources and health risks Journal of Hazardous Materials Advances, Vol 16

[43] DCCEW (n.d.) Hydrogen sulfide Substance Fact Sheets. Accessed via https://www.dcceew.gov.au/environment/protection/npi/substances/fact-sheets/hydrogen-sulfide

[44] Referral Report, p197

cumulative impacts in the context of nearby hydrocarbon processing facilities. Further, Inpex has not considered the impact of BTEX and H_2S on air quality and human health.

70. Concerningly, Inpex does not include operational venting in its assessment of impacts on human health.[45] This is an oversight; as discussed above, CO_2 and planned contaminants can have a range of significant impacts on human health, and it is not possible, given the absence of information on venting volumes, to draw meaningful conclusions about the impacts on human health.

71. In the absence of this information, Inpex has not substantiated its claim that residual impacts on human health are moderate, or that residual impacts on air quality are low.

Conclusion

72. The Proposed Action is part of the broader Bonaparte CCS Project, which is an unprecedented carbon capture and storage project on a world scale, the risks and impacts of which have never been assessed in the Northern Territory.

73. In this submission, we have submitted that Inpex has not demonstrated that numerous significant impacts can be appropriately avoided, mitigated or managed. As such, we submit that, pursuant to s 55(5)(b) of the *Northern Territory Environment Act 2019* (**the Act**), the NT EPA should determine that the proposed action is unacceptable because it is likely to have significant impacts that cannot be appropriately avoided, mitigated or managed.

74. In the alternative, ECNT recommends that the Proposed Action be assessed in the form of Public Inquiry to ensure the highest level of scrutiny is applied to the proposed action.

Please contact bree.ahrens@ecnt.org to discuss further the content of this submission.

Yours sincerely.

Bree Ahrens
Senior Climate Campaigner
Environment Centre NT

[45] Referral Report, p205-206