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Senate Standing Committees on Environment
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Dear Committee Secretary

Re: Middle Arm Industrial Precinct–Senate Parliamentary Inquiry

The Australian Marine Sciences Association (AMSA) welcomes the opportunity to provide comments to Senate Environment and Communications References Committee on inquiry into the Middle Arm Industrial Precinct.

The Australian Marine Sciences Association Inc. (AMSA) is Australia's peak professional body for marine scientists from all disciplines and for over 50 years has promoted all aspects of marine science in Australia. Including “dissemination of knowledge about the marine environment to the wider public.”¹ It also has a long history of providing expert scientific advice to Federal and State/Territory governments, industry and other key marine environmental stakeholders, on a wide range of scientific and environmental issues and activities in the marine environment (including environmental impact assessments, marine pollution, Marine Parks, marine threatened species, marine biodiversity and climate change). All of our Submissions and Position Statements are publicly available at: <https://www.amsa.asn.au/submissions> and <https://www.amsa.asn.au/position-statements>.

The AMSA Northern Territory Branch is based in Darwin and in recent years has been active in providing technical input to the management of the North Marine Parks Network in northern Australia, as well as providing formal submissions on a range of marine science, marine environmental, Indigenous Sea Country and marine industry-related issues.

We confirm that the following formal comments and recommendations are provided on behalf of both AMSA (national) and the AMSA-NT Branch – in response to Senate Environment and Communications References Committee on inquiry into the Middle Arm Industrial Precinct. In particular, under the following Terms of Reference:

- (c) any climate, environmental, health or cultural heritage impacts as a result of developing the harbour and the industries seeking to establish themselves at Middle Arm;
- (d) the conduct, process and implications of the proposed strategic environmental assessment for Middle Arm; and
- (f) any other related matters.

In providing these comments, AMSA notes that it provided a very detailed 32-page submission to the NT EPA on 10 June 2022 – in relation to the development of a Strategic Environment Assessment and EIS framework for the Middle Arm Sustainable Development Precinct (MASDP).

¹<https://www.amsa.asn.au/mission-objectives-and-values>

As the relevant climate, environmental and assessment/monitoring issues and SEA and EIS considerations have largely not changed since June last year – we provide a copy of our 4-page Executive Summary (below) and attach a full copy of our 32-page NT EPA submission as an Attachment to our formal submission to the Senate Environment and Communications References Committee.

Executive Summary

AMSA greatly appreciates the opportunity to provide a detailed formal public submission on the MASDP EIS and SEA framework (Terms of Reference) for consideration by the NT EPA and Federal Government.

AMSA fully supports the proposed development of a Strategic Environmental Assessment for Darwin Harbour, in light of the recognized major environmental concerns regarding the proposed 1500 ha Middle Arm Sustainable Development Precinct (MASDP). Including the need to assess regional and also, cumulative impacts.

AMSA remains concerned at the major potential marine environmental impacts associated with the proposed MASDP – including impacts on marine megafauna (including dolphins, turtles, dugongs and sharks); fisheries (commercial and recreational); the cumulative impacts of dredging; acid sulfate soils; and the impacts of heavy metals on the food chain, food safety, public health, Indigenous harvest and Traditional Owners. In addition, the potential major climate change risks and impacts on the MASDP (particularly sea-level rise, flooding) and emissions profile of the MASDP, particularly its gas-related activities.

In relation to the specific proposed MASDP referral, AMSA reaffirms its national position statement on climate change and its strong support for urgent, immediate and drastic climate action. We note and endorse the recent International Energy Agency's global call (18 May 2021) for no new fossil fuel supply projects².

To this end, AMSA strongly supports low emissions and renewable energy technology, such as green or renewable hydrogen development in the MASDP (and Northern Territory) – as currently being developed in other parts of Australia. However, as an unproven and expensive technology, AMSA strongly recommends against the establishment or public investment in any carbon capture and storage infrastructure.

Similarly, AMSA has serious concerns relating to the development of any industries in the MASDP involving petrochemicals processing (e.g. plastics production), due to their reliance and ongoing demand for oil/gas (as the primary feedstock) – and also, the ongoing and recognized threats to public health and also the major threats posed by current (and increasing) production of plastics to the world's oceans. Significantly, AMSA strongly asserts that this type of industrial activity does not align (either in spirit or intent) with the 'environmental sustainability' principles outlined in the MASDP Program.

Rather AMSA encourages the MASDP to consider investment and development of innovative, low-emissions, petroleum recycling technologies. Particularly the potential for a plastics recycling plant, using the Cat-HDR technology, which uses 'state-of-the-art' processing technology to breakdown plastic back into oil. Significantly, the Australian company, Mura have already built a plant in NSW and importantly, are now exporting this technology around the world (South Korea, UK), including major partnerships with LG Chem and Chevron Phillips³.

AMSA is concerned that the current proposed proponent-driven, SEA approach for the MASDP places great emphasis on economic development and incentives for investors (fast environmental approvals, low regulatory burden, no requirement for EIS) – but does not sufficiently prioritize the protection of Darwin Harbour's wide range of environmental, social, cultural values, uses and users. And particularly the commitments under the Darwin Harbour Strategy 2020-2025 to *"protect and enhance the natural*

² 'Net Zero by 2050 - <https://www.iea.org/news/pathway-to-critical-and-formidable-goal-of-net-zero-emissions-by-2050-is-narrow-but-brings-huge-benefits>

³ <https://www.licella.com/news/mura-technology-cat-htr-licensee-announces-lg-chem-chevron-phillips-partnerships/>

environment of Darwin Harbour” (DHAC 2020) ⁴.

Specifically, this includes the MASDP SEA’s limited consideration of the region’s diverse and significant values and ‘other marine uses’, and also, the specific assessment and detection of ‘cumulative impacts’. Including consideration of the current major gaps in marine ecosystem knowledge and also, gaps in marine assessment, monitoring and reporting efforts in Darwin Harbour.

AMSA notes that while there has been investment and considerable work undertaken (particularly over the past decade) in developing and establishing some important marine environmental baselines for Darwin Harbour, ie. water quality, sediment quality, mangroves, coastal dolphins (see Munksgaard et al. 2019), major gaps in marine ecosystem knowledge and understanding remain, which constrain and limit monitoring, risk and impact assessment – and impact detection in the harbour.

To this end, AMSA remains particularly concerned at the current MASDP SEA’s adequacy and capability to detect significant anthropogenic impacts on Darwin Harbour’s key values and other uses.

AMSA recommends the following major issues, concerns and key knowledge gaps/needs for Darwin Harbour, that need to be specifically addressed in the proposed MASDP ‘strategic environmental assessment’ (SEA) framework and EIS:

- a) Need to build upon the limited marine baseline surveys and studies to address existing major knowledge gaps and inform the environmental assessment of potential impacts on marine ecosystem values – particularly on critical habitats, key marine species and formally-listed threatened and migratory species, and also, ecosystem services.
- b) Including the need for baseline research that informs subsequent monitoring and risk assessment of potential MASDP impacts on major marine megafauna populations in the harbour and their ‘critical habitat’ – including fish, sharks/rays, marine turtles, seabirds/shorebirds and marine mammals.
- c) Due to the major methodological challenges with impact detection and monitoring of marine megafauna populations, the need for a ‘multiple lines of evidence’ approach to monitoring and impact assessment. Including conducting direct megafauna observations whilst monitoring noise, prey abundance, water quality, habitat health and vessel traffic - to understand cumulative impacts and identify causes or source of impacts.
- d) Need for assessment of ‘other marine uses’ (existing and forecasted) in Darwin Harbour, including trends, and potential environmental and socio-economic impacts – particularly for conservation, fisheries, aquaculture, defence, tourism, shipping, cultural values and recreation.
- e) Need for research, monitoring and assess of the potential MASDP impacts on recreational and commercial fisheries, particularly given that 30% of the Northern Territory’s recreational catch is from Darwin Harbour region.
- f) The focus on site-based and activity-based monitoring and assessment (and triggers) and failure to account for ecosystem-wide and ‘cumulative impacts’ on the marine ecosystem and ecosystem services of the harbour.
- g) Need for integrated, harbour-wide, marine ecosystem modelling and bioeconomic studies.
- h) Need for a detailed climate risk assessment - particularly given the location of the MASDP on low-lying, coastal land, and the pronounced vulnerability of the coast to climate change impacts
- i) Including the need for updated down-scaled climate projections for the region. Particularly given recent major climatic events in Australia (flooding, storms), which have underscored the need for updated coastal risk assessments.
- j) Need for baseline information on heavy metals, bioavailability and bioaccumulation in the marine food chain in Darwin Harbour and also, its potential public health and socio-economic impacts (fisheries, Indigenous cultural harvest).
- k) Need for research and monitoring of the ecological impacts of dredging and the current lack of an overall dredging strategy and management plan for Darwin Harbour to guide and manage dredging activities and their impacts.
- l) Need for an adequate and integrated marine monitoring, assessment and reporting framework for Darwin Harbour.

⁴ <https://nt.gov.au/darwinharbour/key-deliverables>

- m) Consideration of the current limited marine monitoring and regulatory framework within the Northern Territory, to adequately assess and manage environmental impacts within the harbour.
- n) Including the lack of an independent, adequate and integrated marine monitoring program for the harbour, ie. the current INPEX-funded \$20M, 40-year Darwin Harbour Integrated Marine Monitoring and Research Program (IMMRP).

In recognition of the goals and objectives of the Darwin Harbour Strategy 2020-2025, AMSA strongly recommends major investment in an adequate and integrated marine environmental baseline and monitoring/assessment (and reporting) program in Darwin Harbour, to ensure the protection of the wide range of environmental values in the harbour - through the detection of potential medium and long-term significant anthropogenic, regional and cumulative impacts.

AMSA notes that the SREBA Framework for the NT provides good guidance on undertaking pre-development, baseline regional strategic assessments. And the recent assessment of Exmouth Gulf undertaken by the WA EPA provides a comprehensive approach to assessing regional and cumulative impacts (from current and projected uses and threats). AMSA strongly recommends that the key elements of these approaches be incorporated into the SEA for the MASDP and Darwin Harbour.

Specifically, AMSA recommends that the NT EPA should ensure the following objectives and elements are incorporated into the design of 'strategic environmental assessment' for Darwin Harbour to:

- identify the key environmental, social and cultural values of Darwin Harbour,
- identify and assess the current and projected uses, threats and pressures within the harbour
- consider the regional and cumulative impacts of current and proposed uses/projects within the harbour, and
- provide specific advice/recommendations on conservation of values, compatibility of uses/activities and the integration of land-sea management.

In undertaking a comprehensive strategic environmental assessment for Darwin Harbour – AMSA recognizes that critical reviews/analyses, additional field research/studies, modelling and major risk assessments will 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 NT EPA, to inform the design of a robust monitoring and environmental impact assessment, risk and monitoring framework that will protect significant ecosystems and values of Darwin Harbour.

In developing the SEA for the MASDP, AMSA also strongly encourages the NT EPA and the Proponent to consider the following specific issues and challenges relevant to Darwin Harbour

- a) Need for independent expert-based review of coastal, estuarine and marine conservation, research, monitoring, ecosystem status and integrated management in Darwin Harbour – including identifying research and monitoring priorities, and potential indicators and monitoring protocols that meet current recommended national and industry 'best practice' standards.
- b) The potential to learn major lessons from WA and Queensland – regulating, assessing, monitoring impacts of major oil/gas industry, including the best practice monitoring and assessment protocols.
- c) The need to identify the critical and essential science and knowledge/information requirements for ensuring a robust baseline environmental monitoring and risk assessment program in Darwin Harbour, particularly for marine megafauna
- d) The major potential to promote significantly greater investment in monitoring and critical baseline research and monitoring in Darwin Harbour, through a formal government-industry-academic collaboration and partnership (e.g. Exmouth Gulf - WAMSI model, Gladstone Healthy Harbour Partnership).
- e) 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.

- f) The urgent need to invest and improve marine monitoring in Darwin Harbour (including the IMMRP), particularly the lack of biological and ecological monitoring and integrated ecosystem modelling to enable the assessment of ecosystem condition and health.
- g) The urgent need to finalize and implement a Dredging Strategy and Plan for Darwin Harbour, undertake predictive sediment impact modelling – and adopt national recommended protocols/approaches to sediment assessment/monitoring (ANZG 2018, Simon & Batley 2016).
- h) Establishment of a research and data hub – for all Darwin Harbour-related studies, consultants' reports, and research and monitoring activities.

Detailed information to support these above views are provided in the Attachment to this submission (formal submission by AMSA to the NT EPA, 10 June 2022).

The Australian Marine Science Association (AMSA), and its Northern Territory members – hope the above technical advice and information assists the Senate Environment and Communications References Committee in its inquiry into the Middle Arm Industrial Precinct.

AMSA is happy to provide further technical review, clarification and comments on the important climatic, environmental, assessment and monitoring and SEA/EIS issues relevant to the development of the Middle Arm Industrial Precinct.

Yours Sincerely

Karen Edyvane, PhD

On behalf of Australian Marine Sciences Association

cc. Professor Cris Frid (President, Australian Marine Sciences Association)

Attachment 1 –Middle Arm Sustainable Development Precinct–Strategic Environmental Assessment and EIS. [Formal submission by AMSA to NT EPA (32-pages, 10 June 2022)]