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Northern Territory Maritime Academy Report

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ISACNT
INDUSTRY SKILLS ADVISORY COUNCIL NT

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Introduction

This report summarises findings from Deloitte's pre-feasibility study for a maritime training academy in the Northern Territory (NT) in 2019, and presents a scalable approach to the establishment of an academy in the NT. The academy offers a strategic approach to harness the Territory's unique advantages, and to capitalise on the Defence and global maritime industry.

Deloitte has worked with the Industry Skills Advisory Council Northern Territory (ISACNT), and engaged across the maritime industry, to establish an industry-led approach to advanced trade skilling and maritime development in the NT. Interest and commitment to development of the industry from a range of stakeholders has grown during the course of the engagement, commencing in mid-2019.

It is important to note that the work informing this report occurred prior to the COVID-19 pandemic. This event has had significant social and economic impacts across the globe, across Australia and in the NT.

Social policy and economic activity associated with the pandemic have directly and indirectly impacted trends in several industries including the maritime industry, which has experienced an immediate downturn globally nationally and locally. It is anticipated that medium term trends in maritime will also be impacted, noting that this is subject to change.

It is with this in mind that setting the stage for the future presents the most significant opportunity.

The Cape Class Patrol Boat (CCPB) run a 51-day availability, followed by 5 days maintenance recurring, with a single Annual Maintenance Availability period (subject to change). This is circa $8m pa in maintenance for 2 CCPB.

Armidale Class Patrol Boat (ACPB) has 26-week recurring maintenance cycle (subject to change). This is circa $60m p.a. in maintenance for 12 ACPB.

We are currently sourcing 16 staff from interstate for advanced welding services.

Patrol Boat Systems Programs Office is 25+ full time equivalent workers currently and ongoing.

Maritime skilling in the NT

The NT is investing in the Darwin Ship lift and is a beneficiary of significant Defence naval investment. This pipeline represents a unique opportunity for investment in maritime workforce skilling. There is an identified need for skilled grey collar workers, and limitations in the supply of these skilling and training needs in the NT.

A maritime training academy in the NT will provide **local, national and international workforce solutions** across maritime and Defence sectors, while offering in-demand advanced skills training solutions in the NT. Defence posturing, committed investment in marine infrastructure, geographical positioning and established supply relationships, means the NT has an opportunity to engage across sectors as well as across markets, particularly those in South East Asia, to address gaps in maritime training to help meet high demand for skills. A new approach to advanced trade skilling in the NT will address gaps in education pathways, enable the implementation of novel technologies and support flexible approaches to learning, to meet the evolving training needs of industry.

Strategic alignment

A maritime training academy in the NT closely aligns to key strategic activities to grow the NT economy, identified in the NT Economic Development Framework (EDF).

Targeting international education and training needs, a maritime academy will maximise the Territory's comparative economic advantages including proximity to Asian markets, cultural diversity, and space to grow.

The Territory's economic growth sectors: agribusiness, tourism, energy and minerals, international education and training, and Defence are enabled through strong maritime capabilities.

A training academy acts to enable private investment in the Territory, and grow the Territory's skilled population, both key principles driving the economic growth strategy for the NT.

The Maritime industry

The global maritime industry is comprised of multiple sectors in four key categories:

- deep-sea coastal and inland water transportation industry
- ship and boat building
- military shipbuilding and submarines
- marine and container terminal operations.

Industry value

The global maritime industry is significant in value and is an important contributor to Australia's economy.

Industry	Approximate value
Global Maritime	US $754.7 Billion in 2019[1]
Australian Maritime (Direct)	AU $9 Billion in 2013[2]
Australia's trade relationships	90% of Exports dependent on sea transport[3]

1 Global maritime industry, IBIS World

2 PwC, 2015, The economic contribution of the Australian maritime industry, Australian Shipowners Association.

3 Commonwealth of Australia, Inquiry into National Freight and Supply Chain Priorities, Supporting paper No. 2, Maritime freight, March 2018.

The global maritime industry is currently experiencing slow growth, largely due to vessel oversupply. This is expected to be counteracted over the next 5 years by projected growth of consumer spending in emergent economies and spending on global military ship building.

The Australian maritime industry delivers substantial value to the national economy. At 2013, the direct value of the maritime industry in Australia was recognised to contribute:

- AU $9 billion to GDP
- employment of almost 31,000 people; and
- over $900 million to taxation revenue.[1]

Further to this, indirect contributions included:

- AU $11.8 billion in GDP
- employment of 13,927 people; and
- AU $387 million in taxation revenue.

Australia's domestic maritime sector is forecast to expand over coming decades, with vessel activity at Australian ports forecast to grow by 34% between 2014 and 2030.[2]

In addition to the financial value of the sector, there is a significant strategic value delivered by the maritime sector in Australia, forming the essence of Australia's trade relationships, with 90% of Australia's exports dependent on sea transport.[3]

With Australia's significant raw commodities for export, reliance on imports by sea, significant coastline, and widely dispersed populations, Australia is the fifth largest shipping task in the world.[4]

Significant relationships in the maritime industry in Australia include:

- major offshore oil and gas industries
- ranking as the world's fastest growing cruise industry
- responsibility for part of the Antarctic region
- considerable Defence and border protection activity; and
- active ports requiring a range of on-water services.

Australia's maritime and Defence industry relationship has been enhanced by the Australian Government's first commitment to a permanent naval shipbuilding industry in South Australia.

[1] PwC, 2015, The economic contribution of the Australian maritime industry, Australian Shipowners Association.
[2] Department of Infrastructure and Regional Development, 2016, 'Trends – Transport and Australia's development to 2040 and beyond', Commonwealth of Australia.
[3] Commonwealth of Australia, Inquiry into National Freight and Supply Chain Priorities, Supporting paper No. 2, Maritime freight, March 2018.
[4] Department of Infrastructure, Regional Development and Cities, 2018, 'Inquiry into national freight and supply chain priorities', Commonwealth of Australia

The NT maritime industry

Geographically Darwin Port hosts established maritime sustainment capability, including the Marine Industry Park and multi-modal transport hub.

NT maritime sustainment support includes established capability across a variety of vessels and clients.

Defence & Border Force vessels	Commercial vessels	Industry vessels
Armidale Class Patrol Boat	Fishing boats	Cruise ships
Cape Class Vessel	Pearling fleets	Cargo ships
International naval vessels	Recreational boats	Off-shore oil and gas

The port is both a strategically and economically advantageous location for servicing of the maritime industry in Australia and visiting international naval vessels. Being 2,349 nautical miles from Singapore, 2,258 nautical miles from Perth and 1,287 nautical miles from Cairns, providing an ideal option for the industry traversing between Australia and Asia.

Darwin's proximity advantage also presents opportunities in the future, with the potential to attract vessels currently being serviced out of Malaysia, Singapore, Perth and Cairns following growth and maturity of the local industry.

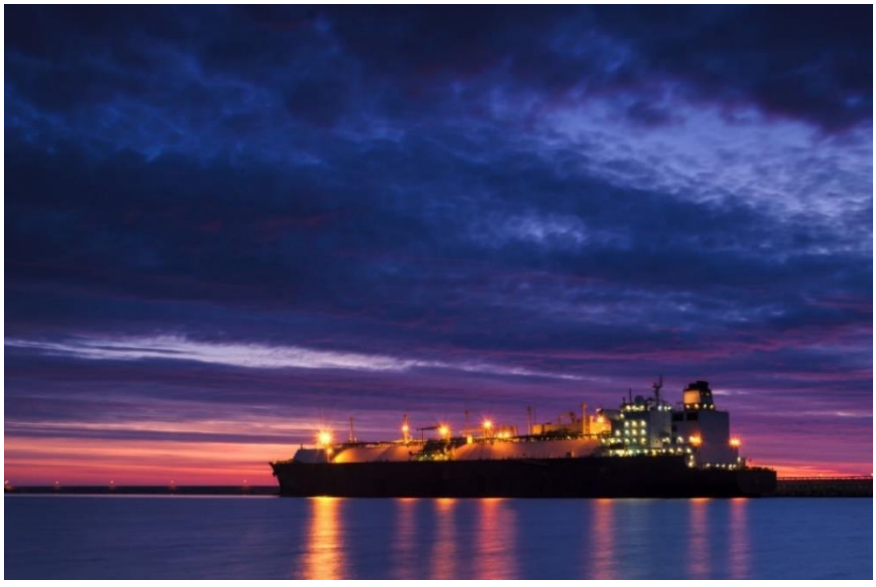
Darwin's existing maritime sustainment capability will be greatly enhanced with the commitment by Government to develop the Darwin Ship Lift and Marine Industry Project.

Growth prospects

The upcoming investment in and consequential growth from key industry activities will provide further demand and support scale for maritime training. This prospect comes from the following:

- **Defence investment** in platforms and capability
- NT Government investment in the **Darwin Ship Lift** and **Marine Industry Park**
- **International** maritime training
- **New technology** such as automated vessels
- **Skilled maritime workforce demand** from Australia's naval shipbuilding program
- Cruise **tourism** growth
- **Maritime support** need for the onshore and off-shore gas industries.
- **Demand and growth prospects** for agricultural trade by sea.

The diverse investment planned and existing marine facility locations in Darwin supports the need for development of an integrated master plan for maritime facilities.



Skilled workforce demand

In addition to established demand in the NT, the maritime industry is expected to have growing demand for skilled workers in the future. This demand is being driven by an ageing workforce, industry growth and a natural skill decline.

Predicted maritime industry employment growth in Australia 2019 to 2024

1.4%

Demand for skills will vary in the industry, with workforce decline expected for freight transport, while the passenger transport is expected to grow.[5]

In addition, the Australian Government investment in naval shipbuilding in South Australia, is also expected to drive demand for skilled workers, with the expectation that the program will result in over 15,000 personnel directly or indirectly employed in the naval shipbuilding enterprise.[6]

Workforce capability in Australia

A skilled and available workforce is a critical component for continued economic prosperity and is a key challenge in northern Australia where worker shortages, high wage costs and unique labour market conditions occur. This is further intensified by changing industry conditions such as the widespread adoption of technology and automation.

Australia has a nationally recognised and accredited Vocational Educational Training (VET) system which broadly meets the workforce training needs of industries.[7] While it is a critical lever in workplace skilling, opportunities exist to enhance the flexibility of workforce training, to better meet the frequently adapting needs of industry. For example, accreditation timeframes for VET courses average six months[8], and reaccreditation is required with any significant change to an established course.

Approaches to workforce skilling that deliver ongoing education and training, work based training, innovative and flexibility training are recognised to enhance workforce productivity and should be the goal of future training systems.

Technology

The evolving nature of technology and its role in, and effect on, many industries including maritime means that training in those industries must also be adaptive and evolve.

The International Maritime Organization (IMO) recognises that the rapid technology development relating to autonomous shipping requires focused consideration and proactive leadership approaches. The IMO recently considered a regulatory study focusing on four degrees of autonomy on vessels:

- ships with automated processes and decision support
- remotely controlled ships with seafarers on-board
- remotely controlled ship without seafarers onboard, and
- fully autonomous ships.[9]

In addition to the technology changes specific to industry, new training methods, such as virtual reality (VR) and augmented reality (AR) technology, offer high potential to enhance training outcomes. Outcomes include providing safe, and immersive training experiences, thereby increasing trainee engagement, and assisting in knowledge retention through practically applying learning theory.

Integrated learning

Ensuring trainers teach new technologies through a continuing connection with industry is increasingly relevant as technological changes in industry accelerate.

Integration between training providers and industry provide a mechanism for industry to source capable and skilled labour while supporting students to develop workforce capabilities early in their career.

Examples of international integrated learning programs include the earn and learn programme (ELP) run in Singapore by Maritime Singapore Connect. The ELP offers work learning and clearly structured career pathways for new graduates from polytechnics and the Institute of Technical Education (ITE) in careers such as Port Operations Officer, Seafaring Deck Officer and Seafaring Marine Engineer.[10]

[5] Australian Industry Standards, Maritime skills forecast 2019, pp. 11-27
[6] Department of Defence, 2017, Naval shipbuilding plan, Commonwealth of Australia.
[7] Australian Skills Quality Authority, Accreditation with ASQA, Australian Government.
[8] Ibid.
[9] International maritime organization, Autonomous shipping, http://www.imo.org/en/MediaCentre/HotTopics/Pages/Autonomous-shipping.aspx
[10] Maritime Singapore Connect, https://www.maritimesgconnect.com/learn/skillsfuture/skillsfuture-earn-learn-programmes-maritime?page=1

Training in the NT

Maritime specific training in the NT is delivered through a number of institutions including:

- SMIT
- Darwin Maritime Academy
- Charles Darwin University
- Australian Maritime and Fisheries Academy
- Australian Maritime Security Authority
- DMS Maritime
- ERGT Australia
- Australian Volunteer Coast Guard Association;

ISACNT have identified a total of 46 NT based RTOs are currently delivering a wide range of accredited qualifications, skills set and non-accredited programs in the NT.

In 2018 a new fire training ground was established at the CDU campus in Casuarina[11] delivering the first accredited fire training facility in the Territory. The facility enables students to complete fire training in the Australian Maritime Safety Authority (AMSA) assessment.

Across a number of institutions, the maritime training offerings in the NT include:

- Cert I, and II in maritime operations – Coxswains
- Cert II and III in maritime operations – marine engine driver
- Cert III in maritime operations – Master
- Cert IV in maritime operations – Master
- Ship board safety skill set
- Marine radio
- Radar
- Aquaculture (Cert II)

In addition to targeted maritime training, an ISACNT study of maritime maintenance capability in the NT found that **training pathways in maritime sustainment services in Darwin is meeting entry level skill demand**, but investment and training offerings **beyond certificate III and IV qualifications** (advanced trade training) are **not sufficient to meet the skill demand for industry** as shown in Table 1.

Table 1: Maritime related technical/trade qualifications in the NT

Level	Cert III	Cert IV	Diploma	Advanced diploma	Higher education
Electronic instrument trades worker	✓	☒	☒	☒	☒
Electronics technician	✓	✓	☒	☒	✓
Heavy diesel mechanic	✓	☒	N/A	N/A	N/A
ICT hardware technician	✓	✓	☒	☒	✓
Motor mechanic	✓	☒	☒	N/A	✓
Fitter general	✓	✓	☒	N/A	N/A
Industrial/marine electrician	✓	✓	☒	☒	✓
Air conditioning and refrigeration mechanic	✓	☒	☒	N/A	N/A
Plumber	✓	✓	☒	N/A	N/A
Hydraulic fitter	✓	☒	N/A	N/A	N/A
Welder first class*	✓	✓	N/A	N/A	N/A
*WTIA coded welding and Specialised welder certification also available					

Source: ISACNT, 2018, Defence Maritime Maintenance, Department of Trade, Business and Innovation.

[11] Charles Darwin University, E-news, Issue 6, 07 August 2018, https://www.cdu.edu.au/enews/stories/fire-training

NT market demand

Deloitte has consulted broadly across the maritime, Defence, and associated sustainment industries in Darwin to establish a comprehensive picture of the current state of workforce capability, and expected future workforce demands, as perceived by business operators.

In collaboration with ISACNT, Deloitte engaged with key industry contacts in the maritime industry in Darwin. ISACNT brought a developed knowledge of industry through their deep experience in workforce development research. Planning for engagement with industry was supported by the insights, connections and input of industry leaders in the Royal Australian Navy, Registered Training Organisations (RTOs) in maritime, the Strategic Defence Advisory Board and the Defence Advocate for the NT.

In addition to early engagement with industry in the NT, market research at the Osborne Naval Shipyard in South Australia and Australian Marine Complex in Henderson Western Australia provided national context to the study. Including offering insights into the significant scale of workforce demand, and the extent of the impact of Defence maritime investment on the national maritime industry.

In addition to broad support for investment in workforce capability development, prominent feedback from industry highlighted the importance of a 'grey collar' workforce, a term used to describe trades and technicians with advanced qualifications. The importance of the establishment of the grey collar workforce was reiterated by industry stakeholders in Osborne, SA, where a substantive demand for grey collar workers has been established.

Industry capability mapping and gap analysis of the marine services industry in the NT, completed by the Industry Capability Network NT (ICNNT), found that of the 505 businesses in the Greater Darwin Region servicing the marine industry:

- 120 demonstrated proven experience and full capability
- 207 were capable but lacked experience or relevant accreditation; and
- 178 had capability to provide supplies directly to the marine industry or businesses serving it.[12]

In addition to the existing demand for capabilities in marine services in the NT, growth in demand is anticipated, in association with the:

- needs of platform supply vessels servicing the INPEX Ichthys liquefied natural gas (LNG) and Shell Prelude floating LNG (FLNG) projects
- projected growth of the cruise ship industry and water passenger transport in Australia (including the NT)
- possible refurbishment of the Royal Australian Navy (RAN) fleet of Armidale Class Patrol Boats (ACPBs)
- introduction of 8 offshore patrol vessels (OPVs)[13];
- commercial opportunities arising from the planned Darwin Ship Lift and Marine Industry Project; and
- additional Cape-class boats for RAN, likely to replace some ACPBs in Darwin.

The identified key gaps and opportunities are directly related to maritime industry, but it should be noted that there will be a compound effect by the indirect support of other sectors. The strength and viability of the academy is built on this cross-sector opportunity.

Maritime skilling needs in the NT

A substantive demand for investment in maritime skilling in the NT and anticipated return from investment was established through industry engagement. The market confirmed:

[12] ICN and NT Government, 2017, Statement of Capacity – Marine Services Industry in the NT, Department of Trade, Business and Innovation.

[13] Reference of minutes of meeting with Chris Eggleton

Workforce skill demand is currently most acute regarding:

- Engineering (Mechanical)
- Advanced Welding
- Electronics Technicians
- Integrated Logistics Systems Technicians
- Trades persons (fitter, mechanic, electrician).

Training pathways for the in-demand skills

Training pathways for in demand skills include:

Engineering (Mechanical)

Mechanical engineers design power-producing machines, such as electrical generators, internal combustion engines and steam and gas turbines. Pathways include:

- Bachelor of science, mechanical engineering

Currently all pathways are offered in the NT.

Advanced Welding Skills

Advanced welders fabricate and repair metal products using various welding techniques. Pathways include:

1. Certificate III in Engineering – Fabrication trade
2. Certificate IV in Engineering
3. WTIA Coded Welding course (industry qualification)
4. Specialised Welder certification i.e. DNV certificate.

Currently some pathways are offered in the NT.

Electronics technicians

Electronic technicians install, modify, maintain and repair electronic instruments and control systems. Pathways include:

1. Certificate III in Electronics and Communication or Electrotechnology Electrician
2. Certificate IV in Electrical Instrumentation or Electronics and Communication.
3. Diploma of Electronics and Communications Engineering.
4. Advanced Diploma of Electronics and Communications Engineering.
5. Higher education such as a Bachelor Engineering Electronics.

Currently no diploma or advanced diploma is offered on campus in the NT.

Integrated Logistics Systems Technicians

Assist in maintaining a smooth running and sustainable supply chain by ensuring product management, employees and associated support resources are in place and functioning. Pathways include:

1. Certificate IV in Material Logistics
2. Diploma of Material Logistics
3. Diploma of Logistics
4. Advanced Diploma of Material Logistics

Currently no offerings are available in person in the NT.

Trades persons (fitters, mechanic, electrician)

Tradespersons specialise in an occupation through work experience, on the job training and vocational education pathways. For mechanics, hydraulic fitters and electricians, these include:

1. Certificate III in Engineering Mechanical Trade, Light Vehicle Mechanical Technology or Heavy Commercial Vehicle Mechanical Technology, Electrotechnology Electrician, Heavy Commercial Vehicle Mechanical Technology
2. Certificate IV in Engineering (Maintenance), Electrical – Instrumentation, Electrotechnology Systems Electrician, Engineering (Electrician – Electrical Maintenance), Automotive Mechanical Overhauling or Automotive Mechanical Diagnosis.
3. Diploma in Electrical Equipment and Systems Engineering or Electrical Engineering, Automotive Technology

A number of options are not available in the NT including:

1. Certificate IV in Engineering (Maintenance) – required for Hydraulic Fitter pathway.
2. Certificate IV in Automotive Mechanical Overhauling or Diagnostics required for Heavy Diesel Mechanical trades.
3. Diploma or Advanced Diploma options for industrial/marine Electricians
4. Certificate IV Automotive Mechanical Diagnosis or Diploma of Automotive Technology required for Motor Mechanics.

Maritime skilling opportunities

In addition to established demand to enhance training capability to improve skilled workforce outcomes in the NT, broader opportunities above addressing this demand were identified, including:

- skill sets and specialisations are in high demand but not accessible in the NT
- enabling business growth
- addressing local workforce attraction and retention challenges
- supporting national skills demand; and
- engaging with broader markets including the Territory's South East Asian neighbours.

Multiple stakeholders consulted through the market demand analysis identified that they foresee opportunities in the maritime industry in Darwin,

however capitalising on these opportunities is contingent on the development of workforce capability in the NT.

From the NT Designated Area Migration Agreement listing, a number of occupations align with the demand for skills in the maritime industry:

- air-conditioning and refrigeration mechanic
- deckhand
- diesel motor mechanic
- electronic instrument trades worker – general
- fitter – general
- fitter and turner
- fitter – welder
- metal fabricator
- sheet metal trades worker
- ship's engineer
- telecommunications technician
- welder – first class.

NT businesses highlighted the serious challenge they face in attracting workers to their businesses following the Australian Government investment in the Defence shipbuilding program, which has a significant requirement for skilled maritime workers.

"By 2026, the industry will require over 5,200 staff employed in construction activities, and more than double that number employed in sustainment activities and in supply chain and related institutions and industries that directly and indirectly support the enterprise, on both the customer (Government) and supplier (industry) sides of the activity. Over 15,000 personnel will ultimately be directly or indirectly employed in the naval shipbuilding enterprise".[14]

In addition to substantive demand for skilled workforce training in the NT, stakeholders highlighted the opportunities that enhanced training capability in the NT offers, to engage and deliver training to students from South East Asia, while also leveraging the NT's proximity and quality education and training reputation advantages.

Infrastructure needs for maritime skilling

In addition to the demand for training, industry identified that broader infrastructure investment is necessary to ensure that the NT maritime industry remains competitive and can grow to support the workforce being trained with employment opportunities. Such infrastructure development identified included:

- the Darwin Ship Lift
- additional wharfage at East Arm
- tent covers at East Arm wharf
- specialist maritime training facilities (diving pools)
- environmental waste management facilities on site.

With a commitment from Government for the development of the Darwin Ship Lift and Marine Industry Park project, supporting capability, such as industry training becomes increasingly relevant. This is viewed as a necessary endeavour to ensure a cohesive approach to industry development which maximises the benefits arising from such investment, including ensuring workforce skilling capabilities in the NT.

With advancements of technology in the marine industry, infrastructure needs for the industry are likely to look different in the future, such as capability for automated shipping. Accordingly, investment in maritime training in the NT should consider the integration of digital solutions as well as on-the-job and integrated training approaches to workforce development e.g. preventive and predictive maintenance requires data management and digital shipyard solutions.

NT market supply

ISACNT have engaged with the supply market to test the opportunity to deliver the solutions identified in the maritime training gaps in the NT. As the key gaps in the NT maritime training market relate to sustainment services and trade training, the focus of opportunities to address these gaps is to:

1. Build demand across the NT VET market to enable RTO's to sustainably deliver training that meets the needs of industry; and
2. Enhance the range of VET options available in the NT.

In addition to the supply of VET options in the NT, opportunities to enhance the quality of training through approaches to skilling which enable greater flexibility, utilise technology and integrate with industry are apparent in the NT.

Industry has also highlighted the need to facilitate training programs that better meet the needs of Aboriginal and Torres Strait Islander students.

The importance of prime contractors and the Department of Defence as a stakeholder that support development of the industry is notable from the

[14] Department of Defence, 2017, Naval Shipbuilding Plan, p. 18.

experience in SA. Defence and prime contractors help to establish scale and provide certainty for smaller businesses and investors, and should be a key consideration for the development of training offerings.

Early framework for maritime skilling in the NT

The study of the feasibility of a maritime academy in the NT has confirmed industry have a need for local workforce skilling capability. Facilitation of several enabling elements would be required to effectively meet these needs, such as infrastructure development, enhance RTO offerings, and strategic action to scale the market to increase sustainability. A summary of the known elements in the industry in the NT are highlighted below.

	Maritime specific and maritime sustainment	
Known training capabilities in the NT	Cert I, and II in maritime operations – Coxswains Cert II and III in maritime operations – marine engine driver Cert III in maritime operations – Master Cert IV in maritime operations – Master Ship board safety skill set Marine radio Radar Aquaculture (Cert II) Certificate IV qualifications for: • Electronics technician • ICT hardware technician • Fitter general • Industrial/marine electrician • Welder first class • Plumber	Certificate III qualifications for: • Electronic instrument trades worker • Electronics technician • Heavy diesel mechanic • ICT hardware technician • Motor mechanic • Fitter general • Industrial/marine electrician • Air conditioning and refrigeration mechanic • Plumber • Hydraulic fitter • Welder first class
RTOs currently providing training in the NT	Seafood and Maritime Industry Training (SMIT) Darwin Maritime Academy Charles Darwin University Australian Maritime Fisheries Academy (AMFA) Australian Maritime and Safety Authority (AMSA) DMS Maritime ERGT Australian Volunteer Coast Guard Association A total of 46 NT based RTOs are currently delivering a wide range of accredited qualifications, skills sets and non-accredited programs	
Early partner interstate RTOs providing maritime training	• Australian Maritime College • Great Barrier Reef International Marine College • TAFE Queensland – Maritime and Logistics Studies • Sydney Maritime Institute • TAFE SA • South Metropolitan TAFE Fremantle	
Current industry workforce skilling demands	• Engineering (Mechanical) • Advanced Welding • Electronics Technicians • Trades persons (fitter, mechanic, electrician) • Integrated Logistics Systems Technicians • Environmental management of abrasive blasting materials and containment skilling • Heating Ventilation Air Conditioning (HVAC)	
Scaling opportunities	Interstate and international student markets Cross sector and industry engagement (e.g. Aviation, manufacturing and Defence) Interstate markets	
Enablers	Dedicated training facilities Enhanced infrastructure Advanced training technologies	

Feasibility of maritime training in the NT

Financial analysis to determine the financial feasibility of a combined maritime and aviation training precinct in Darwin has been completed. The analysis has considered cross industry participation in a training academy, recognising that insufficient scale exists to establish a training facility for a singular industry in the NT.

The analysis established that the minimum standard needed to achieve a positive cash flow, involves **215 students in year one, with continued growth.**

Deloitte's market analysis indicates **that demand currently exists for 200 student training positions** across the aviation and marine industries.

Why have a maritime training academy in Darwin?

The case for a maritime training academy is centred on:

- Supporting the future growth and sustainability of the maritime industry in the NT
- Building stronger regional capability and ability to retain population for the NT
- Drive economic growth that supports further training and education
- Preparing the NT for the emerging opportunities that arise from the Ship Lift and Defence investment in the NT
- Showcase Darwin as an industry training hub for the region and Asia
- Reduce costs to business of upskilling and provide pathways for advanced training
- Harness collaboration and cross-skilling opportunities
- Opportunities to enhance the quality of training through approaches to skilling which enable greater flexibility, utilise technology and integrate with industry

The case for change

Time imperative	Defence force posturing in Northern Australia, upgrading of naval service capability in Australia, and a substantial investment in maritime infrastructure capability in Darwin has created ***a unique opportunity to be harnessed and maximised*** to its full potential.
Strategic growth	Future industry development and economic growth in the NT is challenged by the Territory's finite population. This challenge generates limitations in the size of the workforce and ***capacity of businesses to access skilled labour***.
Global demand	Along with business demand for skilled workers in the Territory, a ***global demand for skilled workers*** exists in the maritime industry, creating a unique opportunity for the NT to capitalise on an investment in workforce skilling.
Enabling technology	The impetus for investment in workforce skilling is further exacerbated by the ***changing demand for skilled labour***, driven by technology and automation. This change has created a need for continuous upskilling to meet industry requirements, and is also ***driving change in learning approaches***, creating opportunities for the Territory to lead the curve in approaches to flexible and integrated learning.

A maritime training academy in the NT is an enabler

Seize opportunities in Defence maritime in the NT

The Defence sector has identified a critical need for maritime services in the NT to guarantee and enable Defence capability in Northern Australia, the Pacific and surrounding regions. The Territory's relationship with Defence industry is well embedded due to its strategic location.

The sector also presents opportunities for the continued growth of the maritime industry in the NT through:

- increasing sustainment service capability requirements
- establishment of Regional Maintenance Centres
- direct investment in infrastructure in the NT
- strategic and policy decisions important to the NT and Northern Australia; and
- attraction and direct support for Defence families of personnel based in Darwin.

In addition to the current Defence investment in the Territory, the 2016 Defence White Paper outlined that AU $20 billion will be spent on Defence infrastructure in the NT over a 20-year forecast, including $8 billion by 2026. Early investment in the naval sector has been seen at HMAS Coonawarra, including the redevelopment and upgrade of critical infrastructure and establishment of a new outer wharf to support re-supply and re-store.

Support Defence industries maritime services in the NT

Linked with the Australian Defence Force (ADF) presence in the NT are defence industries, which deliver significant maritime services capabilities to Defence. A study by ISACNT on the capability of the maritime services sector in the NT, found that 114 business in the NT have identified as Defence capable, experienced, and engaged in maritime maintenance activity. An additional 187 businesses may have transferable skills, accreditations or certifications or have relationships to collaborate with businesses that do have capability, experience or engagement in maritime maintenance activities.

The study by ISACNT also found that there is a thin market of skills to service Defence and defence support, energy (renewables and gas), and maritime industries. Further exacerbating the already thin market, there are limitations in workforce development in the NT, with significant gaps in the provision for diploma, and advanced diploma training to meet the needs of industry in the NT.

Prepare for the growth of the extractive industries in the NT

The extractive industries sector in the NT has a close relationship to the maritime industry and capability needs. The extractive industries in the NT

The importance of the mining and manufacturing industry to the NT is demonstrated through the contribution to GSP in 2016-17 which was 16.8%.[15]

In addition to current supply, the economic contribution of the sector is expected to continue to grow, with estimates that the NT has access to more than 30 trillion cubic feet of gas reserves in offshore waters, as well as on-shore opportunities through the development of the Beetaloo Sub-basin.

[15] Department of Treasury and Finance, Northern Territory Economic Overview, 2018-19 Budget, NT Government.

Support Trade, Agricultural and logistics maritime services in the NT

The NT is an open economy and has capitalised on global trade opportunities as a major producer of LNG, maritime capability is a critical enabler of the Territory's trade relationships.

The NT has recorded a trade surplus for over a decade primarily due to energy and mineral exports.[16] In addition to existing trade activities, emergent opportunities in global markets include:

- agribusiness in the NT for: soya beans, barramundi, donkey, and prawns, and
- oil and gas, following the recent decision by the NTG to lift the moratorium on hydraulic fracturing, which is expected to generate further exploration in coming years.

The potential for growth of the Territory's export market is substantial, with Darwin being the most significant import and export port terminal in Northern Australia after Townsville. Darwin provides access to multi-modal transport services and integration with the national road and rail networks[17]. Furthermore, the recent construction of a cold storage facility and export hub at the Darwin International Airport has received NAIF loan approval, which has increased export capability in the NT.

Enable tourism in the NT

Tourism is another key industry in the Territory with a reliance on maritime capability. Addressing this need is important as tourism delivers significant value to the Northern Territory economy. In 2017-18 visitors spent a total of $2.1 billion across the Territory, and in 2016-17 tourism accounted for 9% of the Territory's economy, at a value of $2.3 billion.

Projected growth in tourism in the NT including forecast growth in the cruise industry adds further impetus to enhancing the relationship between both industries.

In 2017-18 Darwin Port welcomed 66 cruise vessels (145,389 passengers and crew). Deloitte Access Economics forecasts the NT cruise tourism and water passenger transport industry output to increase by about 10% annually over the decade from 2018 to 2028.[18]

Broaden training capabilities in the NT

In addition to sector specific opportunities, investment in workforce training and skilling provides the opportunity to:

- Access international training partners
- Establish marine search and rescue hub/ operations
- Deliver accredited programs to global companies (growing the market)
- enhance the quality of training through approaches to skilling which enable greater flexibility, utilise technology and integrate with industry are apparent in the NT
- facilitate training programs that better meet the needs of Aboriginal and Torres Strait Islander students
- collaborate with prime contractors and the Department of Defence as a stakeholder that support development of the industry.

An approach to scaled investment in advanced trade skilling in the NT

Key principles to guide future investment in maritime advanced trade skilling in the NT, based on industry best practice and market feedback, include:

- ✓ Industry led solutions
- ✓ Engagement with Asian markets
- ✓ Innovative, technology enabled approaches
- ✓ Industry collaboration
- ✓ Holistic industry development

Vision

Early concepts of a future vision for the maritime industry in the NT includes:


Sustained growth across all sectors


Leveraging the Territory's comparative advantages


Aspirations to contribute to local, national and global workforce demand.

Further testing and exploration with industry on a future vision is needed to establish clarity.

Scaling industry growth

Deloitte's analysis of the maritime industry development in Norway, Singapore, Henderson,

[16] Department of Treasury and Finance, Northern Territory Economy, International Trade, NT Government.

[17] Deloitte, 2018, NT Ports infrastructure and future industry growth', DTBI.

[18] Ibid

Osborne and Cairns identified several patterns in growth, including:

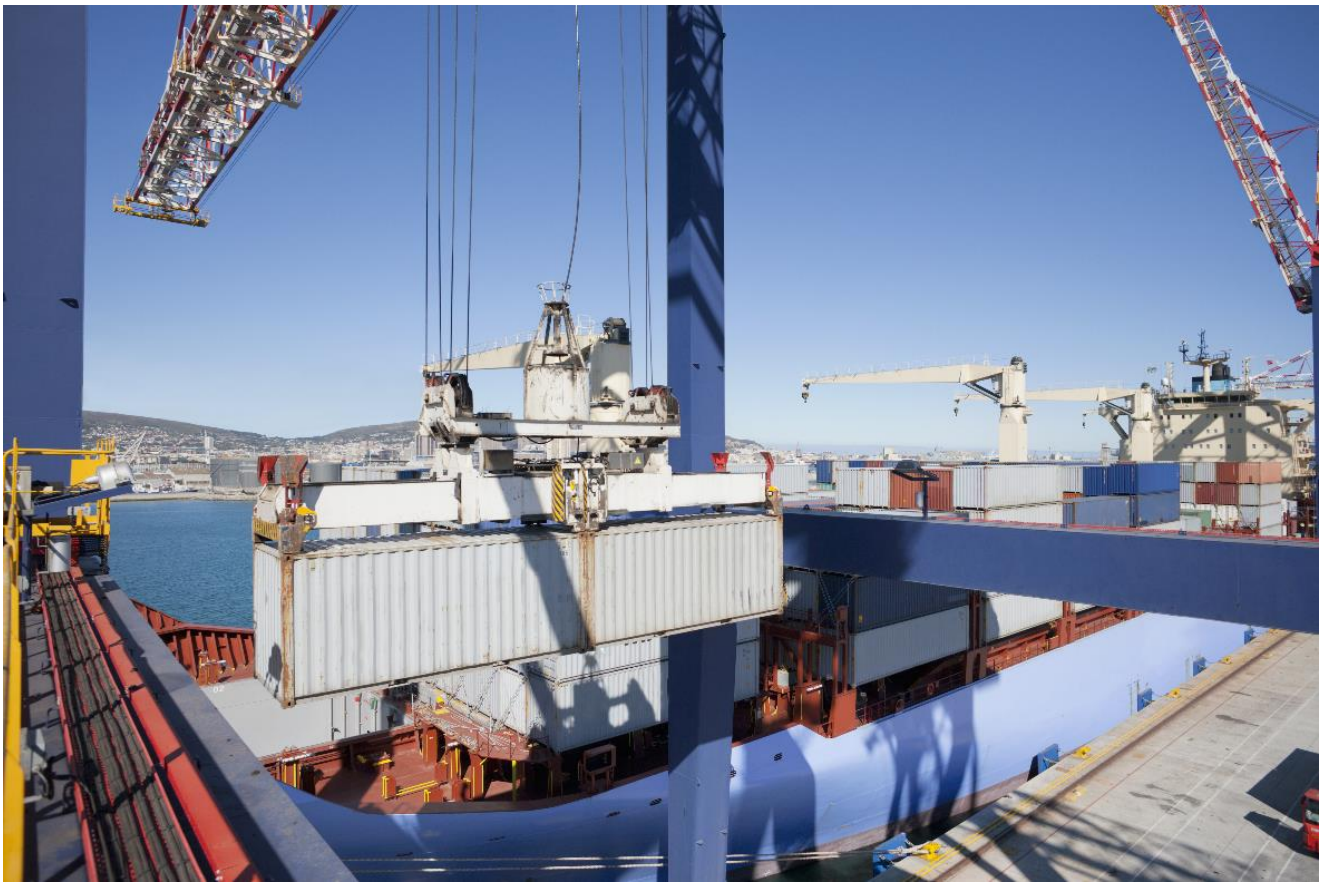
- Leadership commitment to industry growth
- Industry coordination and collaboration
- Incentives for business investment and collaboration (e.g. research and development)
- Leveraging of competitive strengths
- The presence of growth enablers (supply proximity, Defence activity, infrastructure, investment, government support).

Scaling the maritime industry in the NT

The NT maritime industry offers broad capability in maritime sustainment support in Defence, and commercial operations supporting trade, tourism and mining and exploration outcomes, however the industry remains challenged by barriers to growth including:

- Weaknesses in labour supply and education
- Limitation in infrastructure capabilities
- Potential of rival markets.

With committed investment in the Darwin Ship Lift and Marine Industry Park project, and Defence posturing activities in northern Australia, the NT is on the precipice of a unique opportunity to grow the industry through an investment in training and workforce skilling.



The opportunity to grow capability in the NT is further supported by the Territory's proximity to Asia and the potential to leverage Australia's reputation for delivering quality international training and education.

A key challenge to overcome in delivering advanced trade training in the NT is the establishment of sufficient scale in training demand to ensure financial viability of an investment in an academy. In the early stages of industry development activities this will only be achieved through industry collaboration. Coordination with the aviation, manufacturing, Defence and mining industries present realistic opportunities to build such demand in the NT.

Activating the maritime training academy

The concept of the training academy has been widely accepted with a large range of RTO's expressing their interest in being involved. Taking the maritime academy to fruition will require the following:

An approach to scaling workforce skilling in the maritime industry in the NT based on best practice approaches and local needs would practically include:

Immediate to short-term	Medium to long term
Formation of an industry advisory committee.	Negotiation of agreements with anchor tenants for use of skilling infrastructure (including RTOs).
Articulation of an industry growth strategy.	Continued engagement across key supply and demand markets to articulate competitive strengths and build support.
Incentives for industry collaboration to create scale and build industry viability.	Investment in complimentary maritime industry infrastructure across the NT.
Formation of governance arrangements for collaborative approaches to workforce skilling.	Attracting international students to VET skilling to increase pipeline.
Establishment of maritime skilling infrastructure including an integrated master plan for maritime facilities.	

Deloitte.