Exercise Talisman
Sabre 2019

Environmental Report

Version 1
April 2019
Environmental Report

Exercise Talisman Sabre 2019

Version 1 - April 2019

Acknowledgement

Exercise TALISMAN SABRE is the largest bilateral military exercise undertaken by the ADF and US military. Exercise Talisman Sabre 2019 (TS19) is focused on enhancing the readiness and interoperability of ADF Defence elements and exposing participants to a wide spectrum of military capabilities and training experiences. This is the eighth iteration of the exercise. Defence appreciates the ongoing support, and value the shared history and relationship with the communities where TS19 is to occur, and into the future.
Executive Summary

Exercise TALISMAN SABRE is the largest bilateral military exercise undertaken by the Australian Defence Force (ADF) and United States (US) military.

Talisman Sabre 2019 (TS19) is the eighth iteration of the biennial TS series of exercises. TS19 will enhance the readiness and interoperability of the ADF and US forces, and expose participants to a wide spectrum of military capabilities and training experiences including force preparation (logistic) activities, urban, air and maritime operations, amphibious landings and land force manoeuvre.

Exercises such as TS19 are vital to the development and preparation of ready forces able to deploy in support of Australia's national interests.

Through the early and ongoing inclusion of environmental themes in the military planning process for TS19, the Exercise has been designed to have no significant impact to the environment while still meeting all training objectives. All reasonable measures to eliminate the potential for avoidable impacts have been incorporated.

Defence takes its land stewardship very seriously. Environmental assessment ensures potential risks to the environment are identified early and measures put in place to avoid or minimise impacts. This Environmental Report (ER) presents the outcomes of that process in accordance with Defence's obligations under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

The ER identifies the primary locations, equipment, timing and participants involved in TS19. It describes the Environmental Management Framework applied to Defence activities as standard practice as well as additional measures appropriate to TS19.

The approach to planning and assessment of environmental impacts adopted for TS19 is more flexible than previous approaches and is consistent with best-practice management of other environmental assessments by Defence.

Additionally, the ability to implement elements of adaptive management during the conduct of TS19 enables live and proactive monitoring of environmental risks, and appropriate response.

Drawing on lessons learned from previous exercises, the ER has assessed both the known and expected impacts from the exercise as well as considering unexpected events on a risk-based approach. This approach enables identification of both important issues and other minor issues which if not effectively managed could result in an adverse cumulative impact.

Extensive consultation activities have brought together specialists throughout Defence in addition to local, state and Commonwealth regulators and other agencies. Public participation opportunities have been introduced earlier in the process so that community issues can be identified and feed into the iterative exercise design planning. Defence will continue to communicate any developments via the TS19 website throughout the Exercise timeline.

The Report concludes that a significant impact to the environment is not likely as a result of TS19.
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Abbreviations and Definitions

Note: The following abbreviations and definitions are presented in the context of Australian activities, legislation and from the perspective of an Australian audience to this Environmental Report.

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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</thead>
<tbody>
<tr>
<td>2IC</td>
<td>Second-in-charge</td>
</tr>
<tr>
<td>AA EMP</td>
<td>Aircraft Activities Environmental Management Plan</td>
</tr>
<tr>
<td>ADES</td>
<td>Assistant Director, Environment and Sustainability</td>
</tr>
<tr>
<td>AFES</td>
<td>Australian Field Experimental Station – a heritage listed place to the south of Proserpine at Gunyarra, Queensland.</td>
</tr>
<tr>
<td>ALARP</td>
<td>As Low As Reasonably Practicable – the basis for mitigation of risks as part of the Environmental Risk Assessment. It incorporates understanding first what is possible considering the circumstances, then whether the solution is also reasonable considering the relationship between cost of implementation and benefit derived towards mitigation of the risk.</td>
</tr>
<tr>
<td>AMSA</td>
<td>Australian Maritime Safety Authority</td>
</tr>
<tr>
<td>APC</td>
<td>Armoured Personnel Carrier</td>
</tr>
<tr>
<td>ARG</td>
<td>Amphibious Ready Group</td>
</tr>
<tr>
<td>ARPANSA</td>
<td>Australian Radiation Protection and Nuclear Safety Authority</td>
</tr>
<tr>
<td>ASLAV</td>
<td>Australian Light Armoured Reconnaissance Vehicle</td>
</tr>
<tr>
<td>blackwater</td>
<td>A term synonymous with ‘sewage’ which is defined by Regulation 1 of Annex IV of MARPOL 73/78 (Regulations For The Prevention Of Pollution By Sewage From Ships) as follows:</td>
</tr>
<tr>
<td></td>
<td>‘Sewage’ means:</td>
</tr>
<tr>
<td></td>
<td>1. drainage and other wastes from any form of toilets and urinals;</td>
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<tr>
<td></td>
<td>2. drainage from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises;</td>
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<tr>
<td></td>
<td>3. drainage from spaces containing living animals; or</td>
</tr>
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<td></td>
<td>4. other waste waters when mixed with the drainages defined above.</td>
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<tr>
<td>capability</td>
<td>The coordinated effect of personnel, organisation, collective training, major systems, supplies, facilities and training areas, support, and command and management. Each class of platform participating in TS19 represents a unique capability that needs to be supported by an associated suite of processes which collectively contribute to the effectiveness of the capability.</td>
</tr>
<tr>
<td>CEI</td>
<td>Combined Exercise Instruction – This document effectively represents the orders from the Chief of Joint Operations (CJOPS) for the conduct of a combined exercise to all participants and must be followed.</td>
</tr>
<tr>
<td>CEMG</td>
<td>Combined Environment Management Group</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Environment Officer – the lead point of contact for the EMG in EXCON.</td>
</tr>
<tr>
<td>CITIES</td>
<td>Convention on the International Trade in Endangered Species of Wild Fauna</td>
</tr>
<tr>
<td>Term</td>
<td>Meaning</td>
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<tr>
<td></td>
<td>and Flora done at Washington on 3 March 1973, as amended and in force for Australia from time to time</td>
</tr>
<tr>
<td>combined</td>
<td>‘Combined’ activities are those where forces from one or more third party nations work together with Australian forces.</td>
</tr>
<tr>
<td>CROC03</td>
<td>Exercise Crocodile 2003</td>
</tr>
<tr>
<td>CSG</td>
<td>Carrier Strike Group</td>
</tr>
<tr>
<td>CSMP</td>
<td>Coral Sea Marine Park</td>
</tr>
<tr>
<td>Cth</td>
<td>Commonwealth</td>
</tr>
<tr>
<td>DAMCON</td>
<td>Damage Control</td>
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<tr>
<td>DCP</td>
<td>Development Control Plan</td>
</tr>
<tr>
<td>Defence</td>
<td>Department of Defence (Cth)</td>
</tr>
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</table>
| defence activities | As defined by Regulation 14 of the GBRMP Regulations:  
\[
\text{defence activities means activities for defence purposes:}
\]
\[
\text{a) conducted by the Defence Force; or}
\]
\[
\text{b) conducted by an arm of the defence forces of another country that is}
\text{in Australia with the approval of the Government of Australia; or}
\]
\[
\text{c) conducted or authorised by the Department of Defence.}
\] |
| DEPA     | Directorate of Environment Planning, Assessments and Compliance                                                                                                                                       |
| DEQMS    | Defence Estate Quality Management System                                                                                                                                                              |
| DFAT     | Department of Foreign Affairs and Trade                                                                                                                                                               |
| DIWA     | Directory of Important Wetlands in Australia. The Directory not only identifies nationally important wetlands, it provides a substantial knowledge base of what defines wetlands, their variety, and the many Flora and Fauna species that depend on them. In addition, it contains information about their social and cultural values and some of the ecosystem services and benefits they provide.  
| DNES     | Defence National Environmental Standard  
<p>| DoE      | Department of the Environment (now DoEE)                                                                                                                                                              |
| DoEE     | Department of the Environment and Energy (formerly DoE)                                                                                                                                                 |
| DTA      | Defence Training Area(s)                                                                                                                                                                               |
| DZ       | Drop Zone, identified for parachute activities                                                                                                                                                         |
| E&amp;IG     | Estate and Infrastructure Group (Defence)                                                                                                                                                              |
| EABO     | Expeditionary Advanced Base Operations                                                                                                                                                                |
| EAC      | Environment Advisory Committee                                                                                                                                                                          |</p>
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<tr>
<td>ECD</td>
<td>Ecological Character Description</td>
</tr>
<tr>
<td>EEZ</td>
<td>Exclusive Economic Zone</td>
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<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<tr>
<td>EIANZ</td>
<td>Environment Institute of Australia and New Zealand</td>
</tr>
<tr>
<td>EMF</td>
<td>Environment Management Framework: this comprises all the products generated to support the environmental governance function during planning and execution of TS19. Documents such as this ER, the environmental risk assessment and EMP comprise elements of the framework.</td>
</tr>
<tr>
<td>EMG</td>
<td>Environment Management Group: a group that delivers a governance function and is created to maintain oversight of the environmental aspects of an exercise</td>
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<tr>
<td>EMP</td>
<td>Environmental Management Plan</td>
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<tr>
<td>EMS</td>
<td>Environmental Management System</td>
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<tr>
<td>ER</td>
<td>Environmental Report</td>
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<tr>
<td>ERA</td>
<td>Environmental Risk Assessment</td>
</tr>
<tr>
<td>ESM</td>
<td>Environment and Sustainability Manager</td>
</tr>
<tr>
<td>EVDAWR</td>
<td>Evans Head Air Weapons Range</td>
</tr>
<tr>
<td>EXCON</td>
<td>Exercise Control, the component of personnel responsible for managing the exercise, also referred to as ‘white force’</td>
</tr>
<tr>
<td>FTX</td>
<td>Field Training Exercise</td>
</tr>
<tr>
<td>GBR</td>
<td>Great Barrier Reef</td>
</tr>
<tr>
<td>GBRMP</td>
<td>Great Barrier Reef Marine Park</td>
</tr>
<tr>
<td>GBRMPA</td>
<td>Great Barrier Reef Marine Park Authority</td>
</tr>
<tr>
<td>GPIB</td>
<td>General Purpose Inflatable Boat</td>
</tr>
<tr>
<td>HLNZ</td>
<td>Helicopter Landing Zone</td>
</tr>
<tr>
<td>HP</td>
<td>Horsepower</td>
</tr>
<tr>
<td>HQJOC</td>
<td>Headquarters Joint Operations Command (Defence)</td>
</tr>
<tr>
<td>HIOS</td>
<td>Indirect and direct fire weapons systems</td>
</tr>
<tr>
<td>IMO</td>
<td>International Maritime Organisation</td>
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<td>Term</td>
<td>Meaning</td>
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<tr>
<td>Is.</td>
<td>Island</td>
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<tr>
<td>joint</td>
<td>‘Joint’ activities are those where units from more than one service (Navy, Army or Air Force) of the armed forces are working together.</td>
</tr>
<tr>
<td>LA EMP</td>
<td>Land Activities Environmental Management Plan (draft)</td>
</tr>
<tr>
<td>LEP</td>
<td>Local Environmental Plan</td>
</tr>
<tr>
<td>LFX</td>
<td>Live Fire Exercise</td>
</tr>
<tr>
<td>LGA</td>
<td>Local Government Area</td>
</tr>
<tr>
<td>MA EMP</td>
<td>Maritime Activities Environmental Management Plan</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution from Ships of which Australia is a party, and implements through the <em>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</em> and the Navigation Act 2012.</td>
</tr>
<tr>
<td>MBT</td>
<td>Main Battle Tank</td>
</tr>
<tr>
<td>MNES</td>
<td>Matter(s) of National Environmental Significance (as defined by Part 3, Division 1 of the EPBC Act)</td>
</tr>
<tr>
<td>MPC</td>
<td>Mid-Planning Conference – mid point in the exercise planning process, associated with detailed planning for exercise locations, scheme of manoeuvre and development of governance systems.</td>
</tr>
<tr>
<td>Navy SERS</td>
<td>Navy Safety and Environment Reporting System</td>
</tr>
<tr>
<td>NDTA</td>
<td>Non-Defence Training Area(s). Note that the definition of NDTA is based on administrative aspects given each NDTA comprises multiple land tenures.</td>
</tr>
<tr>
<td>NOTAM</td>
<td>Notice(s) to Airmen (<a href="http://www.airservicesaustralia.com/flight-briefing/notam-originator/">http://www.airservicesaustralia.com/flight-briefing/notam-originator/</a>)</td>
</tr>
<tr>
<td>NOTMAR</td>
<td>Notice(s) to Mariners (<a href="http://www.hydro.gov.au/n2m/notices.htm">http://www.hydro.gov.au/n2m/notices.htm</a>)</td>
</tr>
<tr>
<td>NSW</td>
<td>New South Wales</td>
</tr>
<tr>
<td>OPFOR</td>
<td>Opposing Forces, exercise participants who provide an opposition force to the training audience, also referred to as ‘red force’.</td>
</tr>
<tr>
<td>OUV</td>
<td>Outstanding Universal Values – in the context of a listing by the United Nations World Heritage Committee</td>
</tr>
<tr>
<td>PD</td>
<td>Preliminary Documentation</td>
</tr>
<tr>
<td>PDCA cycle</td>
<td>‘Plan – Do – Check – Adjust’ cycle</td>
</tr>
<tr>
<td>PER</td>
<td>Public Environment Report</td>
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<tr>
<td>platform</td>
<td>Ships, aircraft and vehicles whether remotely controlled, automated or under direct command, upon which weapons, surveillance, and communications and other systems are deployed.</td>
</tr>
<tr>
<td>PMST</td>
<td>Protected Matters Search Tool – an online tool provided by the Department of the Environment and Energy to determine the potential presence of matters listed under the EPBC Act in any given Australian location.</td>
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<tr>
<td>Term</td>
<td>Meaning</td>
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<tr>
<td>PMV</td>
<td>Protected Mobility Vehicle</td>
</tr>
<tr>
<td>PSSA</td>
<td>Particularly Sensitive Sea Area (<a href="http://www.imo.org/en/OurWork/Environment/PSSAs/">http://www.imo.org/en/OurWork/Environment/PSSAs/</a>)</td>
</tr>
<tr>
<td>PXR</td>
<td>Post-exercise Report</td>
</tr>
<tr>
<td>Qld</td>
<td>Queensland</td>
</tr>
<tr>
<td>RESO</td>
<td>Regional Environment and Sustainability Officer(s)</td>
</tr>
<tr>
<td>RHIB</td>
<td>Rigid-hulled Inflatable Boat</td>
</tr>
<tr>
<td>RSO</td>
<td>Range Standing Orders</td>
</tr>
<tr>
<td>RSO&amp;I</td>
<td>‘Reception, Staging, Onward movement and Integration’: the process of unloading personnel and equipment from strategic or operational transport, marshalling local area transport (if required), and providing life support to the deploying personnel.</td>
</tr>
<tr>
<td>sewage</td>
<td>Refer above to definition for ‘blackwater’</td>
</tr>
</tbody>
</table>
| SIG        | Significant Impact Guidelines: publications prepared by the Department of the Environment to assist in the consideration of impacts to matters listed under the EPBC Act. Relevant SIG publications include:  
  • SIG 1.1 – Matters of National Environmental Significance and  
  • SIG 1.2 – Actions on, or impacting on Commonwealth Land, and actions by Commonwealth agencies |
<p>| SMART Principles | Specific, Measureable, Attainable, Relevant, Time-bound                                                                                                                                           |
| SO         | Standing Orders                                                                                                                                                                                           |
| SOP        | Standard Operating Procedure(s)                                                                                                                                                                          |
| STOVL      | Short Take Off and Vertical Landing: reference to a fixed-wing aircraft such as the F-35B Joint Strike Fighter attached to the 31st Marine Expeditionary Unit.                                                   |
| SWBTA      | Shoalwater Bay Training Area                                                                                                                                                                             |
| Task Force | A temporary grouping of units, under one commander, formed for the purpose of carrying out a specific task or mission.                                                                                 |
| TFTA       | Townsville Field Training Area                                                                                                                                                                          |
| Training Audience | Exercise participants for whom the exercise provides a certification or training objective(s), also referred to as ‘blue force’                                                              |
| TS         | Exercise Talisman Sabre – with reference to the exercise series as opposed to any individual exercise. Note: Also spelled ‘Tasman Saber’, the spelling alternating between primary leadership of the exercise – i.e. US led (Saber) and Australian led (Sabre). |
| TS05       | Exercise Talisman Saber 2005                                                                                                                                                                             |
| TS17       | Exercise Talisman Saber 2017                                                                                                                                                                             |
| TS19       | Exercise Talisman Sabre 2019 (also referred to as ‘the Exercise’)                                                                                                                                         |</p>
<table>
<thead>
<tr>
<th>Term</th>
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<tbody>
<tr>
<td>Uelo</td>
<td>Unit Environmental Liaison Officer</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>USV</td>
<td>Unmanned Surface Vessel</td>
</tr>
<tr>
<td>UUV</td>
<td>Unmanned Underwater Vessel</td>
</tr>
<tr>
<td>WHA</td>
<td>World Heritage Area</td>
</tr>
<tr>
<td>WONS</td>
<td>Weed(s) of National Significance (<a href="http://weeds.ala.org.au/WoNS/">http://weeds.ala.org.au/WoNS/</a>)</td>
</tr>
<tr>
<td>WWII</td>
<td>World War 2</td>
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### Legislation Cited

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Legislation</th>
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<tbody>
<tr>
<td>Biosecurity Act</td>
<td>Biosecurity Act 2015</td>
</tr>
<tr>
<td>EPBC Act</td>
<td>Environment Protection and Biodiversity Conservation Act 1999</td>
</tr>
<tr>
<td>EPBC Regulations</td>
<td>Environment Protection and Biodiversity Conservation Regulations 2000</td>
</tr>
<tr>
<td>GBRMP Act</td>
<td>Great Barrier Reef Marine Park Act 1975</td>
</tr>
<tr>
<td>GBRMP Regulations</td>
<td>Great Barrier Reef Marine Park Regulations 1983</td>
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<tr>
<td>POTS Act</td>
<td>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</td>
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<td>ACH Act</td>
<td>Aboriginal Cultural Heritage Act 2003</td>
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<td>Biosecurity Act</td>
<td>Biosecurity Act 2014</td>
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<td>CPM Act</td>
<td>Coastal Protection and Management Act 1995</td>
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<td>EP Act</td>
<td>Environmental Protection Act 1994</td>
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<td>Fisheries Act</td>
<td>Fisheries Act 1994</td>
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<td>Marine Parks Act</td>
<td>Marine Parks Act 2004</td>
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<td>BC Act</td>
<td>Biodiversity Conservation Act 2016</td>
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<td>CM Act</td>
<td>Coastal Management Act 2016</td>
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<td>EP&amp;A Act</td>
<td>Environment Planning and Assessment Act 1979</td>
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<td>FM Act</td>
<td>Fisheries Management Act 1994</td>
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<tr>
<td>Heritage Act</td>
<td>Heritage Act 1977</td>
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<tr>
<td>NPW Act</td>
<td>National Parks and Wildlife Act 1974</td>
</tr>
</tbody>
</table>
1. Introduction

The Talisman Sabre (TS) series of exercises are major Australian Defence Force (ADF) and United States (US) Armed Forces combined and joint military training exercises focused on developing interoperability between forces, achieving critical proficiency qualifications and enabling high-end war fighting field training activities to take place under a fictional scenario. Talisman Sabre exercises historically have been conducted across northern and eastern Australian range complexes, and within the Australian Exclusive Economic Zone (EEZ).

An iteration of the Talisman Sabre (TS) series has been conducted biennially since 2005, and joint combined Australian and US exercises of similar scale have been carried out since the mid-1990’s. Talisman Sabre typically involves up to 30,000 Australian and US participants, with the majority of participants afloat or offshore. The exercise series is designed primarily to maximise collective training benefits within a Combined Task Force setting, and to expose participants to a wide spectrum of military capabilities and training experiences, including live fire opportunities.

The principal participants are Australian and US armed forces across all services undertaking maritime, land and air activities. Additional participants from third party nations may also take part or observe conduct of the exercise if invited. For TS19, participants from the defence forces of New Zealand, Canada, United Kingdom and Japan will also be involved.

1.1. Purpose of this Report

This Environmental Report (ER) has been prepared to document the exercise design process as it relates to environmental considerations for Exercise Talisman Sabre 2019 (TS19 or ‘the Exercise’). The objectives of this ER include:

- Address due diligence considerations in relation to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- Identify relevant permits, approvals or licences that may be required under State and local regulations;
- Describe the community and stakeholder consultation process, response to issues raised and how the consultation process has shaped environmental considerations for conduct of the Exercise;
- Describe the environmental risks and associated measures that will be implemented to address the contributing hazards and threats.

1.2. Background to Exercise Planning and Design Concept

Under the EPBC Act, if an action is considered likely to have a significant environmental impact on (i) a matter of national environmental significance (MNES); (ii) the environment on Commonwealth land; or (iii) the environment by a Commonwealth agency, a referral is required to assess the likely impacts and seek approval to conduct the action from the Minister for the Environment.

With introduction of the EPBC Act in June 2000, Defence submitted referrals for the first two exercises to be undertaken under the Act: Exercise Crocodile 2003 (CROC03) and the first iteration of Talisman Sabre in 2005 (TS05). In both instances when these major combined exercises were referred, additional assessments were required by the Minister for the Environment. While the
additional assessment method prescribed was through Preliminary Documentation (PD), Defence adopted the more rigorous and transparent Public Environment Report (PER) approach in order to present a holistic description of the action and response to environmental factors.

At the time these referrals were submitted, Defence’s environmental management framework was not at the same state of maturity as it is presently. However, as a result of the regularity of training, associated environmental impact assessment and approval processes, and ongoing development of environmental management tools and increased awareness, knowledge and community engagement, Defence is now in a far more informed position in relation to the potential impact of its activities.

In addition to widespread and ongoing development of standing orders (SO) and standard operating procedures (SOP), key environmental management tools developed since those early referrals include introduction of the:

- Maritime Activities Environmental Management Plan (MA EMP) (July 2005);
- Aircraft Activities Environmental Management Plan (AA EMP) (August 2007);

With increased maturity in the processes Defence applies to environmental impact assessment, environmental management and incident response, there is a greater appreciation of the interaction between military training and the environment. Learning from the experiences of past Talisman Sabre exercises, and in seeking to avoid uncertainty while maintaining training value, the philosophy taken into the exercise planning for TS19 from the outset is that there will be no significant impact to the environment and all reasonable measures to further reduce avoidable impacts will be incorporated.

This central tenet to planning for TS19 differs subtly from conventional planning and assessment for developments and other such actions, it is an important aspect which has been overtly applied to the planning process. Conventional developments where an environmental impact assessment process is applied generally follow a linear progression of planning, design, assessment and approval. Often, conventional developments will knowingly involve a substantial impact to the environment, with the impact assessment process implemented in the later stages of the design development when certainty of the action is clearer. While such developments may modify aspects of the design to accommodate environmental factors, there remain substantial environmental effect that need to be compensated for through various mechanisms with the commencement of the development adjusting to accommodate environmental approvals.

The limited and fixed timeframe for the conduct of TS exercises highlights the need to adopt a different approach than the typically linear progression of activities in conventional design development and environmental impact assessment. Building on the maturity of Defence’s environmental planning, assessment and management systems, the approach to TS19 has been to influence site selection, activity scope, intensity and duration overtly and from the earliest possible point in the exercise planning life cycle to ensure that no individual activity or the cumulative effect

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1 The LA EMP is in the final stages of development with implementation and refinement currently being worked through.
of all activities has the potential to result in a significant impact to the environment. Ongoing feedback to military planners through this process has provided boundaries which define what may be possible and ensure inclusion of measures into the exercise environmental management framework which are reflective of the particular sensitivities at each location.

The concurrent and iterative approach to environmental impact assessment has also enabled early and frequent engagement of key stakeholders. The consultation and engagement is particularly focussed on non-Defence training areas (NDTA) and potential impacts to communities which may result from training activities or logistics support to the exercise.

The approach has supported provision of appropriate guidance to military planners regarding areas of environmental, social, cultural and economic sensitivity that may be influenced by training activities. This has enabled military planners to achieve the desired outcome for the TS19 training audience in a manner that respects the diversity of values and processes required under the EPBC Act. Ongoing feedback to military planners through this process has provided boundaries which define what may be possible and ensure inclusion of measures into the exercise environmental management framework which are reflective of the particular sensitivities at each location.

TS19 is the eighth iteration of the TS series of exercises. Defence has an excellent track record of avoiding and mitigating potential environmental impacts as a result of the exercise, and now has an advanced and comprehensive environmental management framework in place. This Environmental Report (ER) has been shaped by these past TS iterations and close ongoing engagement with and feedback from environmental regulators, the community, land owners, military planners and other key stakeholders.

The environmental impact assessment method being applied to TS19 is described in greater detail in Section 2.2 of this report.

1.3. Summary of Exercise Talisman Sabre 2019

The concept of training for TS19 is based on exercising a wide diversity of Australian capability in order to demonstrate interoperability between Australian and US Forces in addition to other partner nations. With an increased focus on amphibious capability, many of the activities comprising the exercise are comparable to those that would support Expeditionary Advanced Base Operations (EABO). This follows the intent of capability development of the Australian Amphibious Force. Figure 1-1 illustrates the broad concept for activities associated with TS19.

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Figure 1-1: Conceptual depiction of Exercise Talisman Sabre 2019

Reflecting this concept, TS19 will involve the conduct of integrated activities across the maritime, land and air domains and will rely on the use of gazetted Defence training areas (DTA) and NDTA. Conducted over a two week period, the exercise will involve concurrent and sequential activities that test and demonstrate the interoperability of participating forces. Following the conduct of Reception, Staging, Onward movement and Integration (RSO&I) of the exercising forces, TS19 will generally involve:

- amphibious landings involving small boats such as zodiac or rigid-hulled inflatable boats (RHIB), conventional landing craft and air-cushion landing craft;
- land activities including mounted and dismounted manoeuvre, urban operations, firing of blank ammunition and pyrotechnics in addition to special forces activities;
- air activities including parachute drops over land and water, air-to-air refuelling and manoeuvre by fast jets, helicopters and larger aircraft;
- electronic, cyber and information warfare; and
- maritime activities involving navigation and manoeuvre through littoral and open ocean areas, use of sonobuoys, replenishment at sea, Unmanned Surface Vessels (USVs), Unmanned Underwater Vessels (UUVs), simulated mine clearing, and anti-submarine warfare.

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5 The process of unloading personnel and equipment from strategic or operational transport, marshalling local area transport (if required), and providing life support to the deploying personnel.
6 May also be referred to as ‘General Purpose Inflatable Boat’ (GPIB)
TS19 is a short-term, transitionary activity that seeks to test Defence interoperability among a range of other training objectives. The exercise will result in no permanent structures or other notable enduring evidence to indicate its conduct. The investment in TS19 builds capability in the Australian and US militaries and those of other participating forces.

The nature of activities comprising TS19 and their potential for associated environmental effects is discussed further in following sections of this report.

1.3.1. Locality of TS19 Activities

Conduct of TS19 will include a diversity of locations in the east Australian range complex, marine areas within the EEZ and selected NDTA. These are introduced below and discussed in more detail with respect to the activities intended for each location in Section 1.3.4. In order to support the assessment of environmental values, the training locations have been arranged on the basis of broad environmental characteristics for marine, coastal and terrestrial locations (refer to Figure 1-2).

Marine locations:
- Great Barrier Reef;
- Coral Sea; Tasman Sea.

Great Barrier Reef (GBR) coastal locations:
- Shoalwater Bay Training Area (SWBTA);
- Stanage Bay NDTA (including the Duke Islands);
- Midge Point NDTA;
- Bowen NDTA.

Other coastal locations:
- Evans Head Air Weapons Range (EVDAWR);
- Evans Head NDTA.

Terrestrial locations:
- Townsville Field Training Area (TFTA);
- Proserpine NDTA;
- Mackay NDTA;
- Sarina NDTA;
- Bundaberg NDTA.
Further to the training locations highlighted in Figure 1-2, a number of Defence bases and other locations will be used to support the exercise. Primarily this will include RAAF Base Amberley and Woolcock Barracks, Staging & Support Base at Rockhampton (hereafter ‘Rockhampton depot’). Additional locations that will be used to support exercise control (EXCON) will be distributed relative to NDTA and will occupy either regional Defence facilities such as multi-user or single service training depots, or will use civilian facilities under license or lease as appropriate.
1.3.2. Time frame

TS19 will be conducted over a two week period from 11 to 24 July 2019. A range of activities will also be conducted in the lead up to and following conduct of the field training exercise (FTX). The majority of activities conducted on either side of the FTX will likely extend over two to three weeks prior and up to one week following. Principal components conducted outside the FTX will include:

- Deployment of participating elements to their respective training locations and back to home bases;
- Preparation of the training areas including establishment of defensive positions, exercise control and administration, logistic support; and
- Conduct of damage control (DAMCON) activities following conclusion of the FTX.

1.3.3. Equipment

Equipment employed during TS19 will cover a diversity of capabilities appropriate to the training objectives and environments across which activities will be conducted. As noted in Section 1.3, activities will occur in marine, coastal, land and air environments. A selection of equipment that will be employed across all environments is presented in Appendix A.

Maritime

Maritime activities outside the Great Barrier Reef will involve the United States carrier strike group (CSG) and selected assets from the naval and air capabilities of Australia, Canada, Japan and the United Kingdom. As the central element of the deep water maritime activities, Figure 1-3 below illustrates the indicative and minimum equipment that would be employed in the Coral Sea and Tasman Sea.

![Figure 1-3: United States Navy Carrier Strike Group](https://www.navy.mil/navydata/our_ships.asp)
For maritime activities conducted in locations closer to shore, including within the Great Barrier Reef lagoon, the central units will be based around two amphibious ready groups (ARG) comprised of vessels from all participating nations. An indicative depiction of the vessels, vehicles and personnel that comprise the US ARG is shown in Figure 1-4.

The Australian and US ARG configurations are generally comparable in terms of the number of vessels and overall capability. Notwithstanding this the Australian ARG will likely be comprised of two Landing Helicopter Dock (LHD) amphibious assault ships and two frigates. This will be supplemented by vessels from the Japan Maritime Self-Defence Force and the Royal Canadian Navy.

Figure 1-4: United States Navy Amphibious Ready Group

As indicated by Figure 1-4, a range of equipment is embarked on the ARG with a notional configuration shown for the US ARG. For the purpose of TS19 however, the US forces involved in the exercise will not include main battle tanks (MBT) and the number of other elements involved may also vary from the depiction in Figure 1-4. For comparison, the embarked forces on the Australian LHD are generally depicted in Figure 1-5.

8 https://www.navy.mil/navydata/our_ships.asp
For the purposes of TS19, embarked forces and platforms on the LHD will generally include those depicted with the primary components including zodiac inflatable boats, rigid-hull inflatable boats (RHIB), LHD landing craft (LLC), MRH-90 helicopters, Bushmaster protected mobility vehicles (PMV), other support vehicles with their associated crew and support personnel. Embarked equipment may also include M113AS4 armoured personnel carriers (APC) and Australian light armoured reconnaissance vehicles (ASLAV) and their respective crews.

**Land**

A large number of the land platforms will arrive in TS19 through amphibious landings and are indicated in Figure 1-4 and Figure 1-5. A range of other equipment will be employed during the exercise independently of any amphibious activity, and will include heavy vehicles and artillery pieces in addition to plant and equipment that will be employed in preparation of the training areas for TS19 and DAMCON at the conclusion of activities (refer to Appendix A).

Exercise participants will deploy with personal weapons and field equipment in addition to the organic resources of logistic and headquarters units. This will include light vehicles, fuel supply and distribution equipment, tents, transportable buildings, generators, communications equipment, deployable kitchens and associated gear.

In addition to the equipment deployed to the training areas there will also be a variety of assets used at Defence bases and EXCON locations in support of the exercise. Contracted equipment will be sourced to support the exercise will include such items as portable toilets and 4WD vehicles and sedans to provide mobility to the EXCON personnel.

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Air

In addition to helicopter assets deployed to maritime platforms, a number of other airframes will be used throughout the exercise. These will include platforms identified in Appendix A involving a range of helicopters, fast jets and other support and logistics aircraft in addition to the MV-22 Osprey tilt-rotor aircraft employed by the US Marines.

1.3.4. Activities

As described in Section 1.3, TS19 will be comprised of a diversity of activities over the course of the exercise. An important aspect to understanding the overall potential for an environmental impact from TS19 is the absence of any live fire activities. This will result in the use only of dummy or blank ammunition and certain pyrotechnics in order to generate the necessary effects. Consequently, there will be no underwater demolitions/detonations, naval gunnery, aerial bombardment or live fire from indirect and direct fire weapons systems.

A number of activities will occur in advance of and following execution of the FTX. These will be generally in accordance with the following sections of this ER. An overview of the activities to be conducted at each location is presented in Table 1-1. Where reference is made to specific pieces of equipment that will be employed at each location, reference should be made to Section 1.3.3 and Appendix A.
Table 1-1: Overview of localities to be used during TS19

<table>
<thead>
<tr>
<th>Name</th>
<th>Indicative Date Range*</th>
<th>General Description</th>
<th>Overview of Execution Phase Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Training Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Barrier Reef</td>
<td>11-24 July</td>
<td>Great Barrier Reef Marine Park (GBRMP) and World Heritage Area (WHA) within the GBR lagoon.</td>
<td>Maritime activities associated with amphibious operations by the Expeditionary Strike Group (ESG) and Amphibious Ready Group (ARG).</td>
</tr>
<tr>
<td>Coral Sea</td>
<td>11-24 July</td>
<td>East of the GBR lagoon and comprised of the outer GBRMP and extent of the Coral Sea Marine Park within the Australian Exclusive Economic Zone (EEZ).</td>
<td>Maritime activities by the Carrier Strike Group (CSG) in support of other maritime and littoral activities.</td>
</tr>
<tr>
<td>Tasman Sea</td>
<td>11-24 July</td>
<td>Open water areas south of the Coral Sea inclusive of parts of the Central Eastern Marine Park. Avoids the NSW Solitary Islands Marine Park.</td>
<td>Transit and maritime activities in support of activities at Evans Head and Bundaberg NDTA.</td>
</tr>
<tr>
<td>GBR Coastal Training Areas</td>
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<tr>
<td>SWBTA</td>
<td>1-31 July</td>
<td>Australia’s premier DTA comprising approximately 453,700 hectares over land and water enabling brigade level joint and combined training located approximately 47km north of Rockhampton in Queensland. SWBTA is recognised for its natural values through its listing on the Commonwealth Heritage List and also is situated within and adjacent to the GBRMP.</td>
<td>Division(-)^10 level combined and joint manoeuvre across maritime, amphibious, land and air environments. To the greatest extent possible, this will involve all of the various platforms participating in TS19.</td>
</tr>
<tr>
<td>Stanage Bay NDTA</td>
<td>1-31 July</td>
<td>North of SWBTA on the Torilla Peninsula and comprising a combination of freehold and leasehold lands, the Stanage Bay NDTA was used for amphibious landings during TS17. The area comprising the NDTA for TS17 will also comprise the NDTA for TS19.</td>
<td>Amphibious landings and combat manoeuvre in support of activities in SWBTA inclusive of airmobile platforms such as Osprey MV-22 and other rotary wing aircraft. It is also likely that the US Short Take Off and Vertical Landing (STOVL) variety of the Joint</td>
</tr>
</tbody>
</table>

^10 A division is a top-level military organisation normally commanded by a 2-star general and would be comprised of a number of brigades. A division-minus [division(-)] is the division command structure but without the full complement of capability that would ordinarily sit beneath it.
<table>
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<tr>
<th>Name</th>
<th>Indicative Date Range*</th>
<th>General Description</th>
<th>Overview of Execution Phase Activities</th>
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<tbody>
<tr>
<td>Duke Islands</td>
<td>11-27 July</td>
<td>Approximately 20km north east of Stanage Bay within the GBRMP, the Duke Islands group includes a number of islands, the three largest being Marble Is., Tynemouth Is. and Hunter Is. which are all pastoral leasehold properties. Activities would be limited to Marble Island.</td>
<td>Strike Fighter (F-35B) will operate between Stanage and SWBTA during this activity. Amphibious platforms landing at Stanage Bay will likely include LHD Landing Craft (LLC) and Amphibious Assault Vehicles (AAV) with platforms to be landing including Bushmaster Protected Mobility Vehicles (PMV), Armoured Personnel Carriers (M113-AS4 APC), G-Wagons, Australian Light Armoured Vehicles (ASLAV) in addition to a range of support vehicles to enable safe and effective conduct of the beach landings and subsequent combat manoeuvre.</td>
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<tr>
<td>(part of Stanage Bay NDTA)</td>
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<tr>
<td>Midge Point NDTA</td>
<td>11-27 July</td>
<td>A small Queensland coastal community with a population in the order of 470 people approximately 35km south east of Proserpine.</td>
<td>Minor amphibious, land and air activities involving small boat landings (eg. zodiac or RHIB) with subsequent land-based activities. Air support may also be provided by helicopters (eg. MRH-90) or Osprey tilt-rotor aircraft (MV-22).</td>
</tr>
<tr>
<td>Bowen township NDTA</td>
<td>20-31 July</td>
<td>A Queensland coastal township of approximately 10,380 people near the mouth of the Don River. Bowen has been used as an NDTA by recent training exercises in 2017 and 2018 involving amphibious landings on Kings Beach and associated activities through the town. The NDTA would be comprised of several locations in and around the township of Bowen on government-owned land. The NDTA would be comprised of multiple sites principally including the airport, Kings Beach, Queens Beach, Flagstaff</td>
<td>Amphibious landings and assault of selected local targets, staging point for movement to Proserpine. Amphibious, air and land activities throughout the Bowen township.</td>
</tr>
<tr>
<td>Name</td>
<td>Indicative Date Range*</td>
<td>General Description</td>
<td>Overview of Execution Phase Activities</td>
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<td>Hill, Stone Island, former coking plant, showgrounds, racecourse and other localities for minor activities.</td>
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<td><strong>Other Coastal Training Areas</strong></td>
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<tr>
<td>Evans Head Air Weapons Range</td>
<td>1-31 July</td>
<td>Evans Head Air Weapons Range (EVDAWR) is a small coastal DTA of approximately 2600 hectares adjacent to Bundjalung National Park on the NSW north coast. EVDAWR enables live firing of a range of munitions, principally for bombing practice despite this not forming part of the TS19 design for training.</td>
<td>Air and maritime activities involving the targeting of ground based Joint Threat Emitters (JTE).</td>
</tr>
<tr>
<td>Evans Head NDTA</td>
<td>1-31 July</td>
<td>The small coastal village of Evans Head is located just north of EVDAWR on the Evans River. It is adjacent to Broadwater National Park, in an area surrounded by native vegetation between the Pacific Highway and the Tasman Sea. It is a popular holiday location.</td>
<td>Air and ground activities in support of other activities being conducted at EVDAWR.</td>
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<tr>
<td><strong>Terrestrial Training Areas</strong></td>
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<tr>
<td>TFTA</td>
<td>1-31 July</td>
<td>TFTA is located approximately 60 kilometres southwest of Townsville on over 200,000 hectares of land. It is largely undeveloped, but has historically been used for mining and agriculture prior to coming into Commonwealth ownership in 1967. The north eastern corner coincides with the Paluma Range and is adjacent to the southern-most portion of the Wet Tropics of Queensland (Wet Tropics) WHA.</td>
<td>Low level dismounted surveillance and minor infantry tactical manoeuvres.</td>
</tr>
<tr>
<td>Proserpine NDTA</td>
<td>11-24 July</td>
<td>Proserpine is a central Queensland rural town of approximately 3,500 people in an area supporting principally cattle grazing and sugar cane in addition to acting as one of the primary gateways to the Whitsunday region of the GBR. Proserpine airport provides regular public transport flights.</td>
<td>Land and air activities involving airport security, surveillance and simulated fire support using High Mobility Artillery Rocket System (HIMARS) and associated support vehicles such as HMMVW. Aircraft movements through Proserpine Airport will</td>
</tr>
<tr>
<td>Name</td>
<td>Indicative Date Range*</td>
<td>General Description</td>
<td>Overview of Execution Phase Activities</td>
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<td>to major Australian centres in Queensland, New South Wales and Victoria.</td>
<td>likely include C130 Hercules, C27J Spartan, MV-22 Osprey tilt-rotor aircraft in addition to a range of rotary wing platforms.</td>
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<tr>
<td></td>
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<td>A number of private properties in addition to the airport, Proserpine State Forest and Andromache Conservation Park would comprise the NDTA.</td>
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<tr>
<td>Mackay NDTA</td>
<td>1-31 July</td>
<td>Mackay is a central Queensland coastal city of approximately 79,000 people and is the main urban centre of the Whitsunday region. Along with tourism associated with the GBR, Mackay is a major sugar cane growing area and is also associated with coal mining to the west in the Bowen Basin.</td>
<td>Low level ground activities within the urban and rural environments.</td>
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<tr>
<td></td>
<td></td>
<td>Low level ground activities within the urban and rural environments.</td>
<td></td>
</tr>
<tr>
<td>Sarina NDTA</td>
<td>1-31 July</td>
<td>Sarina is a rural township approximately 36km south of Mackay within a sugar and cattle grazing area. The locality inclusive of the township has a population of over 5,500 people which is focussed on the Bruce Highway some 10km inland.</td>
<td>Low level ground activities within the urban and rural environments.</td>
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<tr>
<td>Bundaberg NDTA</td>
<td>1-31 July</td>
<td>Bundaberg is a south eastern Queensland city of approximately 70,000 people established on the lower reaches of the Burnett River. The primary industry of the area is based on the growing of sugar cane with a number of associated industries including the milling, refining and export of sugar. A range of other commercial crops are also grown in addition to cattle grazing in areas where cropping is not feasible.</td>
<td>Land and air activities involving airport security, surveillance and simulated fire support using HIMARS. Aircraft movements through Bundaberg Airport will likely include C130 Hercules, C27J Spartan, MV-22 Osprey tilt-rotor aircraft in addition to a range of rotary wing platforms.</td>
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<td>A number of private properties, government-owned land and the airport would comprise the NDTA.</td>
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* indicative date range includes pre and post activity administration and may be subject to variation subject to the tactical scenario
Pre-execution Phase

Early works and preparatory activities that will be undertaken in the lead up to the TS19 FTX include actions on both DTA and NDTA. Common to all locations where FTX, EXCON and associated activities will be conducted, pre-commencement tasks will include:

1. *Baseline surveys of pre-exercise conditions.* Targeting the characteristics of locations that will be used during the Exercise appropriate to the location, conduct of baseline surveys of pre-exercise conditions will employ a mobile digital data collection application on hardened tablet computers and will include the collection of baseline data, photographs and descriptions of existing conditions in order to record and measure the effect of subsequent Defence activities. These surveys will be conducted to a consistent methodology that is described by standard guidance material provided to Environment Management Group (EMG) field teams. The data is synchronised to a centralised server and available to the Chief Environmental Officer (CEO) for the purpose of monitoring and analysing environmental performance whether in a natural setting or urban locations, on DTA or NDTA where the Exercise will be conducted.

2. *Training area preparation.* In particular with reference to SWBTA, it will be necessary to prepare parts of the training area for the activities that will be conducted during the exercise. This will include the construction of temporary defensive positions and associated structures as well as headquarters and logistics nodes. In some NDTA locations, temporary defensive positions may also be established. Defensive positions constructed during the pre-commencement phase will be designed to create the training effect that the exercise scenario is working to.

   For NDTA, defensive positions will be subject to site selection, engagement with Traditional Owners and a due diligence process that considers Queensland (Qld) and New South Wales (NSW) state environmental planning requirements. Typically, as has been the case in previous TS exercises, positions will be sited in locations where no environmental values of state or local significance are recognised and will be fully remediated upon conclusion of the exercise as part of the DAMCON process.

   For preparation tasks on DTA, sites will be selected in accordance with Range Standing Orders (RSO) and involve consideration of environmental sensitivity of the receiving environment. All works will be undertaken in accordance with Defence doctrine in addition to the exercise-specific TS19 Environment Management Plan (EMP) (refer to Section 0) which provides guidance for exercise participants for the conduct of exercise specific activities that have the potential to adversely impact the environment.

   Direction to proceed with works on DTA and all NDTA will be subject to approval through the Environmental Assessment Report (EAR), and where appropriate an Environmental Clearance Certificate (ECC) which provides additional controls specific to each site.

3. *Deployment of participating personnel and equipment.* Participants in TS19 will deploy to their respective training location from diverse locations. This will involve civilian or military
travel by air, land and sea. Particularly of relevance to land-based platforms, personnel may deploy with their vehicles. This could involve the movement of military convoys along public roads, likely originating from Defence bases in Queensland, however it is probable that participants will also drive from locations in other states and territories.

Route selection for deploying personnel is routinely undertaken by Defence and will be subject to consideration of road regulations appropriate to each jurisdiction in addition to a wide range of other factors including but not limited to safety and biosecurity. Convoy orders will guide timing, routes, convoy packet spacing and identify the requirement to ensure no weeds or pathogens are transported on military equipment and vehicles.

**Execution Phase**

Activities relevant to the execution phase are summarised by Table 1-1. For most of these, consequential effects to the environment are benign or conducted in a manner that is consistent with state and Commonwealth regulatory requirements. The exceptions to this are:

1. blackwater disposal (discharge) and the need to operate within the GBR while maintaining consistency with the International Convention on the Prevention of Pollution from Ships (MARPOL) and the MA EMP; and
2. jettison of stores and munitions where they present a risk to safety (primarily related to aircraft, but also relevant for land and sea based activities).

The management approach to these activities are discussed in the following sections.

**Blackwater Discharge**

Annex IV of MARPOL 73/78 provides for the regulation of pollution by sewage from ships. MARPOL is given effect in Australia through the Protection of the Seas (Prevention of Pollution from Ships) Act 1983 (POTS Act) and the Navigation Act 2012. The POTS Act is administered by the Australian Maritime Safety Authority (AMSA) with guidance summarised in AMSA publications and website.

Among the diversity of matters regulated by the POTS Act is the nature of ship-borne discharges that may be released in Australian marine jurisdictions. All vessels participating in TS19 will manage ship borne wastes in a manner consistent with the objectives of the POTS Act, however the issue of blackwater is not as readily addressed. The following is a synopsis of the regulatory situation concerning blackwater and naval vessels:

- MARPOL contains a general exemption for naval vessels to comply with the Convention;
- Defence (Navy) has adopted most aspects of MARPOL and is further committed to updating and improving shipborne systems to manage waste streams as new technologies emerge;
- There is no explicit exemption in the POTS Act for naval vessels;

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Discharge of blackwater in the GBRMP is regulated by Part 3A of the Great Barrier Reef Marine Park Regulations 1983 (GBRMP Regulations) which also seek to implement measures consistent with MARPOL; and

Part 5.2 of the GBRMP Zoning Plan 2003 identifies that Defence does not require a permit to conduct defence activities however it does oblige Defence to notify GBRMPA prior to entry into the marine park. The Authority may subsequently impose directions upon Defence which must be followed. Defence provides notification to the Authority through various means including in preparation and review of this ER for a high-level description of the Exercise and more specifically for activities through the ECC process.

Naval vessels participating in TS19 are principally from the Australian and US fleets with specific platforms varying in age and operational capabilities. While the majority of modern vessels are fitted with sewage treatment systems which meet MARPOL requirements, older vessels may not necessarily have that capacity. While details on the specific configuration of each vessel is not available, it is estimated these vessels will collectively support a crew compliment in the order of an estimated 8,000 personnel inclusive of embarked forces within both ARGs during TS19. Not all of these personnel will remain on-board for the duration of the exercise with approximately 25% to 30% disembarking as part of amphibious landings.

During the conduct of normal Defence activities in the GBRMP it is possible to avoid the discharge of blackwater as vessels transit from one port to another, or into other marine areas where discharge is permitted. However, for the conduct of training activities which require vessels to occupy a given area for a period of time, the capacity of holding tanks may be exceeded, and for vessels without on-board treatment systems that comply with treatment standards specified by Regulation 93B of the GBRMP Regulations, the ability to discharge may be required.

All vessels that generate blackwater include the capacity for maceration, such that all solids are dispersed into a fine slurry. For those without MARPOL compliant treatment systems, this enables discharge in a manner that does not produce visible floating solids nor cause discolouration of the surrounding water in the vessel’s wake.

There are a range of options available for the management of blackwater for military vessels without MARPOL compliant sewage treatment systems. These are discussed in the following Table 1-2 with associated considerations which are relevant to the conduct of TS19.
Table 1-2: Blackwater disposal options for non-MARPOL compliant military vessels

<table>
<thead>
<tr>
<th>Disposal Option</th>
<th>Practical Implications</th>
<th>Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contain blackwater on-board at all times during activities with the GBRMPA.</td>
<td>Vessels participating in TS19 have varying capacities to store blackwater, ranging from equivalent to the amount generated by the ship’s crew for between 8 and 72 hours.</td>
<td>TS19 activities will be conducted over a longer period of time than the storage capacity of vessels would support. It is therefore not feasible to require all vessels to contain all blackwater over the period of conducting TS19 activities in the GBRMP. Consequently, activity planners require the ability to discharge as considered further in Disposal Options 2-5 below.</td>
</tr>
<tr>
<td>2. Discharge at approved shore-based facilities.</td>
<td>Maritime activities in the GBRMP will be conducted generally in the area between Yeppoon and Townsville with the majority of activity occurring off Bowen and Stanage Bay. Most Queensland ports have the capacity to receive blackwater or enable collection of ship borne wastes through contracted services. Transit times for vessels in addition to the time required to dock and effect the transfer of blackwater would eliminate the potential for training objectives to be met. This solution is not feasible for any vessels, regardless of blackwater storage capacity while also enabling the achievement of training outcomes over the period comprising TS19.</td>
<td></td>
</tr>
<tr>
<td>3. Discharge to an intermediate handling capability, e.g. contracted barge to collect blackwater at sea from exercise vessels for subsequent disposal at a shore-based facility.</td>
<td>In order to support training activities, contracted services would need to transit from between the vessel(s) requiring servicing and port on a daily basis to enable transfer of waste. This will require a planned rendezvous with each vessel requiring discharge at a time that is governed by the availability of the barge and its movements as opposed to being a time that is convenient to the conduct of training activities. In order to support maritime activities across the two ARGs that will be participating in TS19, a minimum of two barges would be required. These barges would need to transit each day between port and the ARG they are servicing in addition to conducting an at-sea transfer of black-water. Time required to break with training activities to rendezvous and effect the transfer would indicate this option is not feasible and would lead to training objectives for TS19 not being met. Additional to the impact on training, significant costs would be incurred to secure the contracted barges and would also result in increased vessel movements between the exercise areas and ports where disposal is being undertaken. This further limits feasibility of this option.</td>
<td></td>
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<tr>
<td>4. Discharge at sea in a location no less than 12 nautical miles seaward</td>
<td>Discharge at sea in locations that are not in the GBRMP and in a manner consistent with MARPOL would require vessels transit to For activities being conducted in the Stanage Bay area, transit time in one direction to 12 nautical miles seaward of the GBRMP is approximately 12 hours (via Hydrographers Passage) while the same transit from the Bowen</td>
<td></td>
</tr>
<tr>
<td>Disposal Option</td>
<td>Practical Implications</td>
<td>Feasibility</td>
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<tr>
<td>of the outer edge of the GBRMP (also in consideration of other provisions pertaining to blackwater discharge under MARPOL as appropriate to naval vessels).</td>
<td>conforming locations in the Coral Sea or Tasman Sea. Transit to the Coral Sea would be effected through one of the various navigable channels through the outer reef with the number of transits per vessel varying according to the storage capacity of each vessel respectively.</td>
<td>area is approximately 8.5 hours (via Flinders Passage). These represent the shortest transit time for either of the locations and most likely routes that would be taken given the scenarios comprising TS19. Given that the storage capacity ranges from between 8 and 72 hours, for those vessels with a storage capacity of less than 24 hours, this option is not feasible as the storage capacity would be exceeded during the transit time alone, especially for those with the least capacity. Subject to the tactical scenario and activity being conducted, this option may form one of the options that could be employed where achievement of training objectives is not a risk and for vessels with larger storage capacity.</td>
</tr>
<tr>
<td>5. Discharge at sea within the GBRMP in locations subject to concurrence by the GBRMPA.</td>
<td>Discharge at sea in the GBRMP would require consultation with the GBRMPA in order to meet obligations under the GBRMP Zoning Plan 2003 in conjunction with Section 38DD of the GBRMP Act and Part 3A of the GBRMP Regulations. For previous iterations of TS exercises, discharge areas were defined, mapped and agreed prior to being disseminated to exercise participants through the Combined Exercise Instruction (CEI).</td>
<td>Delineation of areas within the GBRMP where the discharge of macerated blackwater can occur would result in a reduced transit time when compared to Disposal Option 4 as discussed above. Notwithstanding, vessels are still required to break from scheduled activities to enable transit to the discharge areas or incorporate the transit into the tactical scenario. While this potentially still impacts the achievement of training objectives this option enables the most efficient use of time for the period when fleet units are assembled for the Exercise. Together with Disposal Option 4 for vessels with the capacity to do so, this would be the most preferred solution subject to any requirements to be met as directed by GBRMPA.</td>
</tr>
</tbody>
</table>
Previous iterations of TS have established discharge areas through consultation with and concurrence by GBRMPA. The original proposal as described by the EPBC Act referral for TS05\(^\text{13}\) included the following prescription:

*Discharge of untreated sewage in GBRMP restricted within 12nm of the 20 meter isobath.*

Following further assessment and consultation with GBRMPA, ‘discharge boxes’ were established for the exercise in the vicinity of SWBTA to enable amphibious and other maritime activities in the GBRMP in support of the 2005 exercise. As a result of different scenarios being tested through the training objectives of subsequent iterations of TS exercises, in addition to the increasing use of NDTA, alternative ‘boxes’ have been determined through consultation with GBRMPA. In addition to discharge boxes off SWBTA, more recently defined ‘discharge boxes’ generally follow the selection criteria below:

- 10nm setback from any land;
- 5nm setback from identified reefs;
- constrained to the general use zone;
- 1nm setback from any other GBRMP zone; and
- constrained to the shipping lane.

Prescriptions relating to this have included discharge occurring while underway at not less than 6 knots in order to increase the potential for dilution above the minimum 4 knot requirement under MARPOL.

The consequence of this process being implemented will result in a greater capacity for dilution of blackwater discharged in areas away from sensitive receptors and with least likelihood of adversely affecting the Outstanding Universal Values (OUV) of the GBRMP.

**Jettison of Ordnance and Stores**

Emergency procedures for aircraft includes the provision for the jettison of stores and munitions where they present a risk to safety. While principally associated with aircraft operations, this provision may also apply to other forms of transport and can occur over land or water.

At the time of preparing this report, the most recent incident involving the jettison of objects from an aircraft occurred during Exercise Pitch Black 2018 in Darwin. The incident involving the jettison of an external fuel tank was reported by local\(^\text{14}\) and national\(^\text{15}\) news outlets. Factors reported as leading to the incident included an emergency during take-off that required the pilot to jettison the fuel as a result of safety factors.

Prior to the 2018 incident during Exercise Pitch Black, a widely reported incident that occurred prior to the commencement of Exercise Talisman Sabre 2013 resulted in the jettison of ordnance in the GBRMP. The jettisoning of two inert and two live 500 pound bombs during lead-up activities to TS13 was a high profile incident reported through numerous global media outlets in addition to a Defence media release\textsuperscript{16}. While the environmental consequences of the incident were negligible, review of the circumstances that led to it occurring and lessons learned through the retrieval operation have shaped planning in subsequent TS exercises.

Although the potential for ordnance or stores to be jettisoned cannot be eliminated, planning that anticipates this eventuality enables a more effective solution. Similar to the approach to managing blackwater discharge, emergency jettison ‘boxes’ were identified for TS17 with the concurrence of GBRMPA. Criteria considered in guiding the selection of emergency jettison boxes included identifying locations that are:

- free of coral and if in proximity to any known coral habitat or other sensitive habitats, included a buffer area;
- not within areas subject to high usage from recreational or commercial users;
- in water depth of between 30m and 50m;
- in an area with gentle underwater currents;
- in relative proximity to targets on Defence training areas where bombing may be conducted (e.g. SWBTA and Townsville Field Training Area);
- within the lowest possible marine park zoning, but not within areas where trawling may occur; and
- not in the Designated Shipping Area.

Identification of these locations was also accompanied by a review of the various aspects of risk associated with ordnance jettison and included consideration of the fate of inert and live ordnances should they be jettisoned in areas where retrieval was deemed to be impractical. A decision tree was prepared that prescribed the steps that need to be followed prior to the jettison of any stores or ordnance. This was subsequently issued to exercise participants in the environmental annex to the CEI.

Provided safety factors do not mandate a jettison to occur in a different location, the consequence of this process being implemented, together with the agreed emergency jettison boxes is:

- Jettison over water is the last option;
- Should jettison over water occur it would most likely be in areas agreed in advance through consultation with GBRMPA; and
- Risks associated with retrieval of the jettisoned objects are reduced both from the perspectives of safety to personnel and environmental values of the jettison site.

These considerations were also applied to areas outside the GBRMP, within the Coral Sea for aircraft transiting greater distances that also required a capacity for emergency jettison of ordnance. Liaison with Parks Australia ensured that the location of these boxes in the deeper waters of the Coral Sea

\textsuperscript{16} \url{https://news.defence.gov.au/media/media-releases/joint-australian-and-us-search-locates-ordnance}
Marine Park were located in areas that do not present the potential for conflict with other approved uses such as deep water trawling.

These emergency jettison boxes will be reviewed and the jettison procedure confirmed and implemented for TS19. This will include liaison with GBRMPA and Parks Australia to ensure the approach to both the GBR and Coral Sea marine parks is consistent and appropriate.

**Post-execution Phase**

Following conclusion of the FTX component of TS19, there will be two key activities. These are completion of DAMCON tasks in all locations where remediation works are required and re-deployment or return to base for exercise participants and their equipment. The re-deployment will be planned and executed in a similar manner to the initial deployment.

DAMCON tasks will be comprised of two principal components:

- **ADF works.** Throughout execution of TS19, DAMCON activities will be undertaken progressively where the works do not interfere with conduct of the training activities. Identification and tasking of DAMCON activities will be guided and recorded by the mobile data collection tool overseen by the CEO. This work will be conducted by ADF personnel using ADF equipment.

  This initial phase of the DAMCON process will commence during execution of the FTX and for up to one week following conclusion of FTX activities. At the conclusion of this period, the training areas will be handed over to the Defence Estate & Infrastructure Group (E&IG) for ongoing management and if necessary, finalisation of outstanding DAMCON works.

- **Contracted works.** For any DAMCON requirements that persist beyond conclusion of the ADF managed works, E&IG will engage a civilian contractor to finalise remediation works that were not practical for completion by the ADF units.

**1.4. Alternatives to Conducting TS19**

The TS series provides a critical biennial opportunity to improve combat training, readiness and interoperability in a real-life setting as opposed to virtual, simulated training. The exercise is an essential activity for the ADF and US forces involved to meet a range of training and interoperability objectives in addition to certification of selected forces and commanders. As the certification process requires certain conditions such as those created during the conduct of a Talisman Sabre exercise, achievement of the training objectives cannot be met in any other way. Accordingly, the ‘do nothing’ alternative is neither feasible nor prudent.

The following sections consider other aspects of the conduct of TS19 for which alternative configurations may apply and highlight the factors that have influenced the timing and location of activities comprising the Exercise.
1.4.1. Timing

Timing for TS19 follows that which has historically been planned for the Talisman Sabre series of exercises and is primarily subject to the availability of major Australian and United States units participating. Accordingly, alternative timing for the activity is not likely to be feasible from this perspective alone. In addition to this, conduct of the exercise during July enables use of the eastern Australian range complex and associated areas during the time of year when extreme weather events (e.g. cyclones) are less likely.

1.4.2. Location

The location for conduct of TS exercises is selected on the basis of training objectives to be achieved and built around the capability presented by the network of gazetted DTAs. Historically, SWBTA has been the primary location for land-based training activities in the majority of previous TS exercises.

TS19 is also structured around SWBTA with the training area enabling the joint and combined effects that are the objective for TS exercises. Together with the geographic characteristics of the east coast of Qld, the combination of training areas on the Defence estate, within the Coral Sea, GBR and NDTAs provides a unique training opportunity that cannot be replicated elsewhere. While in previous TS iterations, training areas in the Northern Territory (NT), Arafura Sea and Timor Sea have been used, the training objectives for TS19 are such that these locations are unsuitable. Accordingly, in its broadest sense, there is no alternative location to conduct TS19 other than the localities identified along northern NSW and Qld coast and adjacent marine areas.

Selection of NDTAs for TS19 followed a number of initial criteria designed to support the training objectives and exercise concept. Broadly, this included investigating sites that were characterised by being:

- an island or property with one or more beaches that could support a range of amphibious landings with either small boats, conventional landing draft or air-cushion landing craft;
- a property that provided air opportunities such as for parachute drop zones (DZ), helicopter landing zones (HLZ), fixed wing landing ground;
- a property that enables land manoeuvre comprising either or both mounted and dismounted activities;
- a property with a diversity of infrastructure that provides a unique training opportunity; and/or
- a property that provides connectivity between locations that enable other activities.

In addition to consideration of training objectives, logistic, operational, safety, finance and force protection aspects and a number of technical factors relevant to the planning and execution of military activities, the site selection and location of NDTAs included an appreciation of environmental factors. Through this process alternative locations were considered, assessed and eliminated on the basis of these combined criteria.

Throughout this process of site assessment, consultation was also undertaken with key stakeholders including Commonwealth, state and local regulators, property owners and Traditional Owners in order to understand all potential implications of any given site’s use.
Accordingly, the locations where TS19 will be conducted have been subject to a comprehensive selection process reflective of the approach to environmental impact assessment of TS19 described by Section 1.2. This has resulted in sites being selected which will enable effective conduct of training activities with the least impact possible on the environment and community, while ensuring training objectives are achieved. The process has ensured that the locations where TS19 is to be conducted are appropriate and feasible and will minimise the potential for adverse environmental impacts.

1.5. Related Activities

The TS exercise series is one of a large number of training activities undertaken by the ADF. While only conducted on a biennial basis, TS19 will be synchronised with the regular force generation and capability development cycle that is constantly being implemented. As such, TS19 will be preceded and followed by a number of other training exercises occurring in Qld and beyond.

Given the specific objectives and basis for conducting the TS series of exercises, it is not considered to be part of a larger action, however is related to the development of overall ADF preparedness. This is discussed more broadly in the 2016 Defence White Paper[17].

While there is no direct relationship between TS19 and the other activities that will occur before and after execution, it is acknowledged there remains the potential for cumulative impacts to the environment. This potential principally exists where areas are used repeatedly and residual effects from an earlier activity remain unmitigated or where remediation is incomplete. As a result, the planning for TS19 has considered in the design of environmental controls, measures to avoid and minimise the potential for the combined effect of consecutive activities adversely affecting the environment. These measures are discussed in more detail in Section 5 of this ER and include approaches to exercise design that do not result in a concentration of activities in sensitive areas, repair of any damage and monitoring to enable a timely response in the event of unanticipated events.

1.5.1. Preceding activities

Preceding the conduct of TS19, the ADF will be conducting a series of unilateral training exercises in northern Qld. These have traditionally been referred to as the Sea-Series of exercises and involve activities not dissimilar to what is conducted during a TS exercise from a maritime and amphibious perspective.

The Sea-Series exercises for 2019 will involve the use of NDTA and DTA and be conducted to the north of locations that will be used by TS19. None of the locations likely to be used for TS19 will be used during the Sea-Series exercises.

Concurrent with conduct of the Sea-Series of exercises, other unilateral training is also likely to be conducted in gazetted military exercise areas both on land and in marine locations. These activities may involve not only Australian but also forces from other nations. If conducted, these activities will be planned and executed in accordance with standard practice and be subject to existing environmental management controls such as the Defence EMPs (e.g. maritime, land and air

activities) and RSO for the training areas on which they will occur. Unilateral training activities on SWBTA occurring prior to TS19 will involve live fire exercises (LFX). Any such activities will be subject to the requirement to implement a DAMCON response where required to minimise the potential for cumulative impacts to the environment. Any such DAMCON requirements will be effected prior to the execution of the TS19 FTX.

1.5.2. Following activities

After the conclusion of TS19, it is probable that further unilateral training on SWBTA will be undertaken. As described for activities that precede TS19, these will be subject to the requirement to manage their own environmental footprint in accordance with RSO and remediate any damage that occurs. Conduct of these activities, as with any activity conducted by Defence, will be subject to their own approvals, generally as managed through RSO with the preparation of an ECC.
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2. Methods

The approach to preparing this ER generally follows the Defence ER Guidance which provides a minimum standard for environmental assessments of activities, infrastructure and capability in a way that meets Commonwealth requirements under the EPBC Act. The ER Guidance is based on the information requirements under the EPBC Regulations that need to accompany a formal referral to the Minister for the Environment.

Also guiding the preparation of this ER are industry association materials, in particular:

- Environment Institute of Australia and New Zealand (EIANZ): ‘Environmental and Social Impact Assessment; Good Practice Statements’\(^\text{18}\);
- International Association of Public Participation (IAP2) \(^\text{19}\) ‘Public Participation Spectrum’.

The following sections addresses the methods for the environmental risk assessment and impact assessment in more detail.

2.1. Environmental Risk Assessment

The 2015 Joint Directive on the Management of Risk in Defence\(^\text{20}\) highlights the importance Defence places on ensuring that risk management is incorporated into all planning, approval review and implementation processes at all levels to ensure that risk is one of the major considerations in decision-making. Reflecting this directive, the environmental impact assessment process followed for consideration of TS19 integrates the approach to environmental risk assessment (ERA) described by Defence’s guidance on the preparation of an Environmental Report\(^\text{21}\) (ER Guidance).

As described by the ER Guidance risk method, the purpose of the ERA is two-fold in that it identifies aspects of the action for consideration:

1. against the provisions of the EPBC Act in order to subsequently determine whether a potentially significant impact is likely; and
2. mitigation measures that reduce the environmental footprint, regardless of the action’s significance under the EPBC Act.

The focus of the ERA is on environmental values and adopts the definition of environment under section 528 of the EPBC Act as:

'environment' includes:

a. ecosystems and their constituent parts, including people and communities; and
b. natural and physical resources; and
c. the qualities and characteristics of locations, places and areas; and
d. heritage values of places; and

\(^\text{18}\) https://www.eianz.org/document/item/2754
\(^\text{19}\) https://www.iap2.org.au/About-Us/About-IAP2-Australasia-/Spectrum
Risk assessment is the binding factor in the environmental impact identification, avoidance, mitigation, monitoring and review continuum. Through considering the concept of risk (i.e. the combination of likelihood and consequence of a given action) the identification of hazards and threats is possible. This represents the start-point and reset-point for the exercise planning cycle which is comparable to the ‘Plan – Do – Check – Adjust’ (PDCA) cycle that is inherent in many quality assurance systems.

Figure 2-1 highlights the key elements of the PDCA cycle identifying the role of ERA and relationship with impact assessment under the EPBC Act. This also reflects the cycle of continuous improvement reflected by the ISO 9001 certified Defence Estate Quality Management System (DEQMS)22. What is also apparent in Figure 2-1 is the proportion of the cycle dedicated to the planning process.

Figure 2-1: The continuous improvement cycle in Exercise planning for environmental matters

Hazards and threats identified through the ERA process are subsequently the focus of planning to determine the practicality of activities in addition to the feasibility and effectiveness of avoidance and mitigation measures. In a parallel process, the hazards and threats are also considered in relation to the potential to result in a significant impact to matters protected by the EPBC Act.

Risk assessment following the ER Guidance is consistent with established process whereby risk of a certain impact is considered in terms of the likelihood it could occur and the consequences if it does. It is considered as an initial risk and a residual risk following the inclusion of mitigation measures into

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the planned activity. For TS19, the planned activity for which initial risk is assessed, includes not only the action comprised of military training but also all measures that comprise the Defence Environmental Management Framework (EMF) for TS19 (refer to Section 5), in particular those measures conveyed as requirements under SOP and Defence EMPs (e.g. maritime, land and air activities).

Any additional measures beyond standard controls that are applied as standard practice are considered in the assessment of residual risk. These additional measures comprise the specific provisions that will be mandated through the CEI and operationalised by the TS19 EMP.

The ERA methodology described by the ER Guidance supports a transparent process of identifying threats and associated mitigation measures, and enables feedback through the data collection capability employed during the FTX. It also reinforces the need for mitigation measures to be based on the SMART principles. By following the SMART principles, mitigation measures can be assessed for effectiveness in responding to a specific environmental hazard or threat and the appropriate adjustments made in subsequent planning cycles.

The SMART principles are described by the ER Guidance as follows:

- **Specific** - targeted to an identified threat and address the hazard, vulnerability, likelihood, and/or consequence.
- **Measureable** - able to be assessed for their effectiveness with associated KPIs that would indicate success.
- **Attainable** - can be implemented practicably with accountability.
- **Relevant** - relates to the project being assessed and not seek to address broader strategic issues that are not part of the scope of the assessment.
- **Time-bound** - accompanied by an objective timeframe for implementation or completion.

Additional mitigation measures are incorporated into the ERA on the basis of reducing risk to being ‘as low as reasonably practicable’ (ALARP). The mitigation measures therefore in combination with the SMART principles incorporate an appreciation of what is possible to implement, its likely effectiveness and appropriateness given financial considerations. Risks that have been reduced through this process to being assessed as ‘low’ inherently meet the ALARP objective. These risks are not mitigated further unless new information becomes available that either changes the nature of the risk or the practicality of an alternative mitigation measure.

Although not publically available, it should be noted that development of the ERA has involved extensive and ongoing internal and external consultation and engagement, including with regulator and other key stakeholders. This has been further supported by an ERA workshop that included participants from:

- Great Barrier Reef Marine Park Authority;
- Department of the Environment and Energy;
- Parks Australia Division;
- Australian Maritime Safety Authority;
• Queensland Department of Environment and Science;
• Queensland Parks and Wildlife Service;
• Queensland Department of Agriculture and Fisheries;
• Internal Defence stakeholders holding the following positions:
  o Regional Environment and Sustainability Officer (RESO);
  o Environment and Sustainability Manager (ESM); and
  o Assistant Director, Environment and Sustainability (ADES).
• Defence Directorate of Environmental Planning, Assessment and Compliance (DEPAC).

With each adjustment to the exercise design, the ERA has been reviewed and updated to reflect the nature and location of activities. Where substantive changes to the ERA have resulted from the exercise design process, these been communicated to key stakeholders and ERA workshop participants throughout the exercise planning life cycle. It has also been reviewed in the context of major exercises conducted in 2017 including exercises Sea Explorer, Sea Raider and Hamel to incorporate new risks and lessons learned where necessary.

2.2. Environmental Impact Assessment

As indicated in Section 1.2 the environmental impact assessment (EIA) method for TS19 differs from preceding Talisman Sabre exercises in three notable ways, these are summarised below:

1. The name of the report has changed from a Public Environment Report (PER) to an Environmental Report (ER). This change reflects the fact that the assessment is not being conducted under a regulated process under either State or Commonwealth legislation and avoids associated confusion created during consultation. The production of an ER also mirrors the environmental impact assessment process employed for other Defence activities and addresses all requirements of the EPBC Act.

2. Production of the PER for all previous Talisman Sabre exercises was conducted by specialist consultants, contracted to produce an assessment of the exercise for public exhibition about halfway through the planning cycle. The difference for TS19 is:
   a. Environmental baseline reports have been prepared by a contracted environmental specialist for locations where Defence has not trained recently;
   b. Defence EIA specialists have prepared this ER;
   c. In order to retain objectivity, transparency and legitimacy, an earlier draft of this ER has also been subject to an independent technical review by a separately contracted EIA specialist.

3. Community engagement and public participation opportunities are being introduced much earlier in the exercise planning cycle. This change reflects the philosophy taken into the exercise planning for TS19 from the outset in that there will be no significant impact to the environment and all reasonable measures to further reduce avoidable impacts will be incorporated. By engaging earlier and more often it is expected that matters of environmental importance to local communities, whether regulated or otherwise will be identified early enough to influence the exercise design process.

As a consequence of the key changes to the EIA reporting process, this ER presents an overview of the impact assessments undertaken throughout the design process and demonstrates the changes
made to the design in response to environmental, community, heritage and other matters. By comparison to the former PER process, it demonstrates a transparent, inclusive and responsive approach to EIA which has made the consideration of environmental factors an integral and integrated component of the exercise planning process.

2.3. Consultation and Engagement

One of the key components of the exercise planning cycle from an environmental perspective is the approach to community consultation and stakeholder engagement. This is enhanced in its importance as a result of the number and diversity of NDTA that comprise the areas where TS19 will be conducted. In order to ensure all relevant aspects of the environment are considered, this ER has been prepared on the basis of the following approaches to consultation:

1. As with previous TS exercises, the Defence website\(^{23}\) is being used to provide a resource for information about the exercise. However in comparison to previous years this site hosts all exercise related information and is the primary channel and ‘sole source of truth’ of public information concerning TS19. Printed versions of selected material on the website, has also been provided in community engagement. Information hosted on the Defence website (refer to Figure 2-2) includes or will include:
   a. Fact sheets, prepared for printing or viewing electronically, to provide an overall summary of the exercise, its locations and timings;
   b. Frequently asked questions (FAQs);
   c. This environmental report and all attachments including specialist consultant baseline environmental reports;
   d. Links to environmental awareness material including videos used to provide training to exercise participants;
   e. Links to the Defence photo and video galleries which hosts material from previous Talisman Sabre exercises and will also be updated with media generated during TS19; and
   f. Links to other Defence social media channels such as Facebook and Twitter.

2. Defence has engaged with the local government organisations that are relevant to the conduct of TS19, and provided details of links to information about the exercise and to provide a point of entry for the community into the Defence website.

3. Social media has been used through the consultation period that has contributed to the ER with Facebook and Twitter being the principle platforms.

4. In addition to the online methods of engagement, the consultation program has also employed the following approaches to stakeholder and community consultation:
   a. Face to face meetings with key stakeholders including landholders, elected local representatives, Traditional Owners, representative industry organisations and state and local government officers;
   b. Attendance at community events such to provide an opportunity for questions and answers;
   c. Attendance at community meetings;

---

d. Provision of information for community noticeboards in both hard copy and digital formats;

e. Conduct of workshops with key stakeholders including regulators and subject matter experts;

f. Response to submissions made to the Defence website; and
g. Other contact through email and telephone conversations as appropriate.

5. Provision of information in the lead up to and during execution of the Exercise through measures such as:

a. hard copy updates on key issues relevant to local communities such as for posting on community notice boards; and

b. appointment of dedicated liaison officers to maintain engagement with communities.

---

**Figure 2-2: Exercise Talisman Sabre 2019 website**

The engagement and consultation strategy has been matched to the exercise planning cycle in order to optimise the quality of information being provided and opportunities for stakeholders and interested members of the public to comment. To this effect, the objective of the four key phases of the exercise planning cycle and associated engagement is as described by **Table 2-1**.

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The strategy for consultation and engagement has been based on the International Association for Public Participation’s (IAP2) public participation spectrum. Notwithstanding the specific approaches to engagement described in Table 2-1, the overall strategy includes regular provision of updates to the Defence website with a standing invitation to comment or enquire. Any updates to the exercise design arising from submissions will be identified where appropriate in the consultation report to follow exhibition of this ER.

Table 2-1: Consultation and Engagement

<table>
<thead>
<tr>
<th>Planning Phase</th>
<th>Broad Goal of Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept Development</td>
<td>a. <strong>Consult</strong>: At the concept phase, initial suggestions for potential NDTA are raised. At this point Defence has asked for feedback about what issues need to be considered during the EIA process and to generally gauge the likely acceptability of certain activities prior to engaging in more detailed assessments.</td>
</tr>
</tbody>
</table>
| Detailed Planning     | a. **Collaborate**: The early stages of the detailed planning phase involve the conduct of workshops and face to face meetings with regulators, key stakeholders and subject matter experts (SME) in Defence activities, training areas and certain platforms. The objective is to test the sensitivity of different locations given the likely range of activities. This also sets the scene for understanding the likely range of licenses, approvals and permits that may be required.  
                        | b. **Involve**: Following the detailed consultation with regulators and subject matter experts, Defence has provided regular information updates through the website and maintained a standing invitation to comment, seek feedback and raise issues the EIA process needs to address. This engagement seeks feedback from the general public, stakeholders and local communities through not only the website but also face to face meetings with stakeholders. |
| Execution             | a. **Consult**: During the execution phase there is limited ability to shape the nature of activities further however the standing invitation to comment will remain open to ensure any relevant issues raised are addressed. |
| Post-Exercise         | a. **Inform**: Following conclusion of the exercise, Defence will publish a report that summarises the environmental performance of TS19 and comments on any observations that will lead to design considerations for the next iteration of the Talisman Sabre series of exercises. |

The details of consultation activities, locations and participants is presented in Section 3.3 for the Concept Development and Detailed Planning phases.
2.3.1. **Supporting Information to this ER**

As indicated in Section 2.2, in the process of preparing this ER, Defence engaged the services of specialist contractors to prepare baseline reporting on NDTA and to undertake a technical review of the ER. The products created by these contractors have been incorporated into this ER with the baseline reports also having been provided on the TS19 website.²⁵

The baseline reports (GHD 2018a & 2018b) were made publicly available on the TS19 website following their finalisation ahead of the ER. They have been posted with a standing invitation for any comments for additional matters for consideration. As at the time this report has been published, there have been no comments received on further matters relating to the NDTA described in the baseline reports.

3. Context


The EPBC Act is the principal environmental legislation to which this ER has been prepared, however as TS19 will be conducted on a range of NDTA, State and local laws also need to be addressed. A summary of relevant legislation is presented in Section 9.2.1 with a cross reference to locations that are anticipated forming part of the overall scope of TS19.

The Defence environmental vision is described by the Defence Environmental Policy\(^{26}\). It states:

\[
\text{Defence will be a leader in sustainable environmental management to support the ADF capability to defend Australia and its national interests.}
\]

This vision is underpinned by four pillars: Compliance, Efficiency, Trust and Accountability; all of which are embodied in the philosophy that has guided this ER and the EIA process for TS19.

3.1.1. Commonwealth Environmental Legislation

The EPBC Act is the Australian Government’s key piece of environmental legislation. Defence is subject to the provisions of the EPBC Act for ‘matters of national environmental significance’ (MNES) and, as a Commonwealth agency, is also captured by the requirements under Section 28 of the Act to consider the impact of its activities on the broader environment.

Significant Impact Guidelines (SIG) 1.1\(^{27}\) and SIG 1.2\(^{28}\) published by the regulator under the EPBC Act (the Department of the Environment and Energy [DoEE]) provide overarching guidance on determining whether an action is likely to have a significant impact on a NMES or the environment generally. These have been applied in the environmental impact assessment process.

As a Commonwealth agency, where Defence proposes to undertake an action a permit under the EPBC Act may be required from the Minister for the Environment where that action that is not a controlled action (or is not already subject to an existing approval) directly impacts:

- threatened species and communities;
- migratory species
- whales and cetaceans; or
- listed marine species.

Providing further guidance on selected aspects of the EPBC Act, the EPBC Regulations address a number of matters that are relevant to the conduct of TS19. The PER assessment process of earlier TS exercises also referred to the Regulations for guidance on the nature of information the reporting should generate and the minimum requirements for consultation. While the TS19 ER does not explicitly reference the EPBC Regulations for the purpose of reporting standards that would apply to


\(^{27}\) Significant Impact Guidelines 1.1 – Matters of National Environmental Significance

\(^{28}\) Significant Impact Guidelines 1.2 – Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies
a PER, it still fulfils the information requirements of SIG 1.1 and 1.2 in addition to enhancing the public consultation process to exceed the minimum standard prescribed by the Regulations.

Notwithstanding this, prescriptions in the Regulations are reflected through Defence environmental guidance such as the MA EMP and RSO as appropriate. This is apparent in measures relating to managing defence activities that may interact with cetaceans, species covered by the CITES\textsuperscript{29} convention, protected areas, World Heritage and wetlands of international importance.

### 3.1.2. State and Local Laws

TS19 will be conducted within Qld and NSW. In addition to the State environmental legislation of Qld and NSW, a number of local government areas (LGAs) will be involved with TS19 related activities where NDTA will be used. Table 3-1 provides an overview of which local government areas will be involved and the general localities being used.

Also shown in Table 3-1 are locations that provide indirect support to the Exercise. These are locations that Defence will utilise for logistical purposes however will not be involved in training scenarios. They are included in the overall consideration of TS19 given the need to coordinate around other civilian and commercial activities.

Table 3-1: Local Government Areas Comprising TS19

<table>
<thead>
<tr>
<th>LGA</th>
<th>State</th>
<th>Defence Areas</th>
<th>NDTA</th>
<th>Indirect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richmond Valley</td>
<td>NSW</td>
<td>EVDAWR</td>
<td>Evans Head</td>
<td></td>
</tr>
<tr>
<td>Bundaberg</td>
<td>Qld</td>
<td>-</td>
<td>Bundaberg</td>
<td></td>
</tr>
<tr>
<td>Livingstone Shire</td>
<td>Qld</td>
<td>SWBTA</td>
<td>Stanage Bay, Duke Is.</td>
<td></td>
</tr>
<tr>
<td>Rockhampton</td>
<td>Qld</td>
<td>Rockhampton Depot</td>
<td>-</td>
<td>Rockhampton Airport</td>
</tr>
<tr>
<td>Mackay</td>
<td>Qld</td>
<td>-</td>
<td>Midge Point, Mackay, Sarina</td>
<td></td>
</tr>
<tr>
<td>Whitsunday</td>
<td>Qld</td>
<td>-</td>
<td>Bowen, Proserpine</td>
<td></td>
</tr>
<tr>
<td>Townsville City</td>
<td>Qld</td>
<td>TFTA, RAAF Townsville</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Considerations relevant to the State and local laws are considered in more detail in Section 9.2.1.

### 3.2. Environmental Profile of a Talisman Sabre Exercise

An important element to the ER is an understanding of the performance of previous TS exercises in order to reliably predict the environmental issues that may be realised during TS19. Accordingly, the following sections present an overview of the assessments conducted for previous TS exercises in addition to a summary of the actual environmental incidents experienced in the four most recent iterations of the TS series of exercises.

\textsuperscript{29} Convention on the International Trade in Endangered Species of Wild Fauna and Flora
3.2.1. Previous Environmental Impact Assessment

As the largest military exercise conducted by Australia, the TS series of exercises has been subject to the preparation of a formal environmental impact assessment for each of seven previous TS exercises. The 2005 TS exercise was referred to the Minister for the Environment under the EPBC Act (EPBC Ref. No. 2004/1819). This followed the referral for the previous major exercise ‘CROC03’ two years prior (EPBC Ref. No. 2002/888).

The referral for TS05 was determined to be a controlled action requiring assessment by preliminary documentation with the controlling provisions being:

- Matters of National Environmental Significance (MNES):
  - World Heritage;
  - wetlands of international importance;
  - listed threatened species and communities; and
  - listed migratory species.
- the whole of the environment, protection of the environment form Commonwealth actions.

Notwithstanding the requirements for preliminary documentation, Defence undertook to prepare a Public Environment Report (PER) as discussed previously in Section 1.2. Conditions imposed by the Minister for the Environment were implemented by Defence for TS05 and continue to influence the design and execution of subsequent TS exercises directly through measures that are now part of systems of control such as the MA EMP.

For each subsequent iteration of the exercise a PER was prepared, however without referral to the Minister to the Environment as environmental performance during the conduct of preceding TS exercises had been demonstrated as not resulting in significant impacts to the environment. Evolution and maturing of the environmental planning, assessment and management systems within Defence further supported this approach.

The most recent PER was prepared for TS17 and retains a presence on the Defence website\(^\text{30}\). That report, similar to the preceding PERs concluded that a significant impact to the environment or MNES was not likely to result from conduct of the exercise. This conclusion was based on an approach to the assessment mirrored by the current assessment for TS19 and which was also applied in preceding TS iterations. Highlighted through the progression of assessments for the TS series is the evolution of Defence policy and exercise environmental management framework overall. For each iteration of TS, the associated PER has identified additional recommendations, complementary to the standard procedures to ensure the context and location are appropriately considered in the exercise design and execution to avoid the potential for a significant impact.

The controlling provisions relevant to the referral of TS05 have remained the principle considerations in each of the PERs produced, reflecting the generally consistent nature and scale of activities comprising the Exercise. However, over the course of conducting TS exercises since 2005, there have been no instances where a significant impact to the environment has occurred. The planned activities that comprise the Exercise are designed such that their footprint is known, the governance framework is comprehensive and they avoid areas of potential importance.

Notwithstanding, uncertainty still factors into the consideration of environmental impact and the potential for unplanned events to adversely affect the environment is also considered.

### 3.2.2. Analysis of Past Exercises

For the four most recent iteration of the TS series of exercises, an analysis was conducted using the data collected during each exercise in order to characterise the actual impact of a TS exercise. This process enabled an appreciation of the efficacy of environmental mitigation measures that had previously been implemented in addition to the efficacy of the environmental impact assessment presented by the corresponding PER.

The analysis included data collected in TS11, TS13, TS15 and TS17. Data from earlier exercises was not available for the purpose of this analysis and could not be included. Following a process of validation and standardisation to ensure data could be compared across the exercises the following became apparent:

1. In accordance with the Defence National Environmental Standards (DNES)\(^{31}\) for classification of incident severity, there was a consistent pattern of incident severity across all exercises comprising:
   a. 75% of incidents being classified as Minor;
   b. 12% classified as Moderate; and
   c. 3% classified as Major.
   d. The remaining 11% relate to observed non-compliances which had not resulted in an incident at the time they had been reported.

2. Incidents fall into one of the following broad categories with the proportion of incidents across all exercises being very closely comparable:
   a. General (40%), includes but not limited to:
      i. wheel rutting;
      ii. vegetation damage;
      iii. biosecurity (weeds); and
      iv. social.
   b. Inappropriate waste disposal (22%), includes:
      i. co-mingling of wastes;
      ii. failure by participants to dispose of waste and other material, left on training area.
   c. Spill, hydrocarbon (11%), comprising:
      i. Minor spills (8%);
      ii. Moderate spills (2%);
      iii. Major spills (1%).
   d. Spill, non-hydrocarbon (<1%)
   e. Facilities damage (5% of total), includes:

---

\(^{31}\) The DNES classifies a range of environmental incidents in a manner that enables comparison at a course level however also includes the provision that an incident which results from a non-compliance is automatically uplifted to the next order of severity. This introduces a bias which inflates the number of moderate and major incidents irrespective of the actual environmental implications. This must be appreciated when interpreting data presented in relation to historical incidents.
i. damage to road furniture (guide posts and signs);
ii. incidental damage to training area facilities.

f. Near miss (11%), not an actual incident but a predictor for future potential incidents if the identified non-compliance is not rectified.

In these previous exercises, the near-miss reports, or reports of non-compliances which had not yet resulted in an environmental impact, comprised an average of 11% of all reports. A further 11% of incidents were able to also be correlated to a non-compliance that was material in the incident being the result. From this it was apparent that if greater focus was placed on the identification and reporting of non-compliances, a corresponding reduction in the overall number of incidents was probable.

One of the primary areas where increased near-miss reporting would have a positive impact would be in the management of hydrocarbons. Appropriate and effective bunding of stored hydrocarbons is known to reduce the incidence and severity of soil contamination by fuel spill. Even though the bulk of hydrocarbon incidents involving a non-conformance were of a minor severity according to DNES, an increase in the effectiveness of implementing environmental controls should have the effect of reducing the cumulative impact of the Exercise on the environment.

General trends observed in the data indicated that the rate of reporting across the exercises has increased such that despite the number of environmental personnel not varying notably, the rate of effort has increased. This is evidenced through the total number of reports generated over the course of the exercises increasing between TS11 and TS17.

The rate of reporting per 1,000 exercise participants has increased over the course of the series increasing from approximately 5.51 in TS11 to approximately 8.3 in TS17. Over this period the number of participants had increased but the actual number of incidents (as opposed to reports) remained relatively stable with the difference being comprised predominantly of other report types such as:

- pre and post exercise baseline condition reports, including photo monitoring;
- interim site condition inspections during exercise conduct;
- follow-up, incremental reporting on incident management; and
- observations unrelated to environmental impacts, provided for the situational awareness of the Combined Environmental Management Group (CEMG).

While none of the incidents experienced on the TS exercises considered in the analysis resulted in a significant impact to the environment, the most notable incidents where environmental damage resulted have included:

- Fuel spill (>50L diesel) resulting from vehicle crash (TS11, SWBTA).
- Unapproved removal of trees (TS13, SWBTA).
- Fuel spill (>50L diesel) resulting from vehicle roll-over (TS15, Mt Bundy Training Area NT).
- Irregular discharge of waste fuel (>50L) from a landing craft (TS15, Lee Point NT).
- Ruptured jerry-can (<20L diesel) lost from an armoured vehicle (TS17 SWBTA).
- Inappropriate disposal of materials (TS17, SWBTA).
- Removal of trees without prior approval (TS17 SWBTA).
From the analysis, a clear understanding of the nature of incidents that characterise a TS exercise has been gained. This knowledge has been used to ensure the approach for TS19 is appropriate, targeted and proportionate to aspects of exercise conduct that are known to result in environmental effects. To support this process, the risk assessment for TS17 was reviewed following this analysis to determine the extent to which existing controls and measures had anticipated the incidents and their severity.

This review identified that incidents fell into one of three categories:

1. Anticipated incidents that occurred at the expected severity;
2. Anticipated incidents that occurred at severities that were not expected; and
3. Incidents that were not anticipated.

The bulk of incidents fell into the first two criteria however some unanticipated incidents resulted that were not foreseen in the terms applied in the ERA for TS17. This finding influenced the redesign of the approach to risk assessment to consider the planned and unplanned activities as described further in Section 5.1. This adaptation to the approach was a direct response to lessons learned through appreciating the analysis of what comprises a TS exercise. It also enabled the targeted treatment of activities and expected incidents in addition to the planning necessary to identify gaps and limitations in the Defence EMF in order to more effectively predict and respond to incidents where there is no history of such incidents having previously occurred or no corporate experience in responding to such incidents.

3.3. Consultation

The community and stakeholder consultation and engagement activities conducted up to publication of this ER have included frequent and regular contact with identified stakeholders. This has enabled design development of TS19 to reflect the intent of the IAP2 public participation spectrum.

Engagement on TS19 commenced in early 2018 and includes a program of activities extending up to and beyond execution of the exercise. Planned activities are summarised in Section 9.1 while those activities conducted to-date are outlined by Table 3-2 below. For all activities listed below, feedback was sought and an opportunity for comment on the evolving exercise design extended to participating stakeholders in addition to the standing invitation to visitors on the TS19 website to submit queries or comments. Feedback, comments, concerns and advice provide by stakeholders has been taken into account in the preparation of this ER as well as TS19 planning generally.

**Table 3-2: Engagement activities completed to-date**

<table>
<thead>
<tr>
<th>Date</th>
<th>Stakeholder(s)</th>
<th>Summary of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan-Feb 2018</td>
<td>Defence internal</td>
<td>Confirmation of the approach to environmental impact assessment (EIA) and approval for TS19.</td>
</tr>
<tr>
<td>Feb 2018</td>
<td>DoEE</td>
<td>Briefing on initial exercise design and informed of the approach Defence was adopting to undertaking EIA for TS19.</td>
</tr>
<tr>
<td>Date</td>
<td>Stakeholder(s)</td>
<td>Summary of activity</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mar 2018</td>
<td>GBRMPA</td>
<td>Briefing on initial exercise design and informed of the approach Defence was adopting to undertaking EIA for TS19.</td>
</tr>
<tr>
<td></td>
<td>SWBTA Environment Advisory Committee (EAC); Rockhampton Shire Council; Livingstone Shire Council; AgForce; United Graziers.</td>
<td>Briefing on initial exercise design.</td>
</tr>
<tr>
<td>Apr 2018</td>
<td>Stanage Bay community; Marlborough community; Livingstone Shire Council</td>
<td>Briefing on initial exercise design.</td>
</tr>
<tr>
<td></td>
<td>SWBTA Environment Advisory Committee (EAC); Rockhampton Shire Council; Livingstone Shire Council; AgForce; United Graziers; Rockhampton Airport; Gladstone Harbour Master; Darumbal Enterprises</td>
<td>Update on exercise design, introduction to key personnel in Defence for ongoing engagement.</td>
</tr>
<tr>
<td>Jun 2018</td>
<td>Department of Foreign Affairs and Trade (DFAT)</td>
<td>Introduction to TS19 exercise design and relationship to World Heritage.</td>
</tr>
<tr>
<td></td>
<td>GBRMPA; DoEE; Parks Australia; Australian Maritime Safety Authority (AMSA); Qld Parks and Wildlife Service (QPWS); Qld Department of Agriculture &amp; Fisheries; Qld Department of Environment &amp; Science; Defence (internal)</td>
<td>Conduct of risk assessment workshop as a key input to the scoping of further EIA activities and exercise design considerations.</td>
</tr>
<tr>
<td></td>
<td>Townsville Harbour Master</td>
<td>Briefing on evolving exercise design and considerations for response to a major maritime pollution incident.</td>
</tr>
<tr>
<td>Jul 2018</td>
<td>AgForce, Queensland Police</td>
<td>Briefing on evolving exercise design.</td>
</tr>
<tr>
<td></td>
<td>Whitsunday Regional Council; Bowen Police; Mackay Regional Council; Mackay Police; Mackay Airport; Collinsville Police</td>
<td>Briefing on evolving exercise design, considerations for use of public spaces and facilities.</td>
</tr>
<tr>
<td>Aug 2018</td>
<td>‘Exercise Torres 2018’</td>
<td>Representation at the AMSA-led desktop exercise to consider responses to a hypothetical hydrocarbon spill in the Torres Strait. Enabled correlation to planning for TS19 and networking for future formal engagements.</td>
</tr>
<tr>
<td></td>
<td>Cassowary Coast Regional Council; Hinchinbrook Shire Council; Cairns Harbour Master</td>
<td>Briefing on evolving exercise design and consideration of Defence access to public spaces and infrastructure.</td>
</tr>
</tbody>
</table>

**Detailed Planning**

<table>
<thead>
<tr>
<th>Date</th>
<th>Stakeholder(s)</th>
<th>Summary of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 2018</td>
<td>SWBTA EAC</td>
<td>Briefing on evolving exercise design following Mid-Planning Conference.</td>
</tr>
<tr>
<td></td>
<td>Darumbal Enterprises; Rockhampton Shire Council; Livingstone Shire Council; AgForce; Rockhampton Airport;</td>
<td>Briefing on evolving exercise design following Mid-Planning Conference, consideration of more detailed matters.</td>
</tr>
<tr>
<td>Date</td>
<td>Stakeholder(s)</td>
<td>Summary of activity</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dec 2018</td>
<td>Rockhampton Police</td>
<td>Including requirements for declaration of ‘Defence Areas’ where required.</td>
</tr>
<tr>
<td></td>
<td>Mackay Police; Mackay Regional Council</td>
<td>Briefing on evolving exercise design following Mid-Planning Conference, consideration of factors that may limit Defence activities or equipment on public land.</td>
</tr>
<tr>
<td></td>
<td>GBRMPA; Parks Australia; QPWS</td>
<td>Annual General Meeting between Defence and GBRMPA in accordance with the established Memorandum of understanding. Included update on exercise design, discussion of direct use of the GBRMP, Coral Sea and other marine areas specifically on the matter of blackwater and emergency ordnance jettison, future actions to enhance environmental awareness of exercise participants.</td>
</tr>
<tr>
<td></td>
<td>Whitsunday Regional Council</td>
<td>Briefing on evolving exercise design and proposed use of public spaces.</td>
</tr>
<tr>
<td>Feb 2019</td>
<td>Stanage Bay landholders</td>
<td>Briefing on Exercise design and proposed use of landholder properties</td>
</tr>
<tr>
<td></td>
<td>DFAT</td>
<td>Briefing on exercise design and Environmental Risk Assessment as it applies to activities in the GBRMP</td>
</tr>
<tr>
<td>Mar 2019</td>
<td>Bowen landholders, Whitsunday Regional Airport, Mackay Regional Council, Mackay Sugar, Sarina landholders, QPS</td>
<td>Briefing on exercise design and proposed use of landholder properties and council owned facilities.</td>
</tr>
<tr>
<td></td>
<td>Jura People, Yuwibarra People, Darumbal People</td>
<td>Liaison and briefings with the Indigenous representatives at the areas in which amphibious activities are planned to occur to seek their consents to the declaration of Defence Areas over these sites. Consents as requested were provided.</td>
</tr>
<tr>
<td></td>
<td>Whitsunday Regional Council, Mackay Regional Council, QP&amp;WS</td>
<td>Liaison and briefings with state and local government authorities at the areas in which amphibious activities are planned to occur to seek their consents to the declaration of Defence Areas over these sites. Consents as requested were provided.</td>
</tr>
<tr>
<td></td>
<td>Livingstone Shire Council</td>
<td>Liaison and briefings with Livingstone Shire Council to seek their consent to the</td>
</tr>
<tr>
<td>Date</td>
<td>Stakeholder(s)</td>
<td>Summary of activity</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Midge Point Progress Association, Mackay Regional Council, and Whitsunday</td>
<td>declaration of a Defence Area over Stanage Bay Road. Consent as requested was not</td>
</tr>
<tr>
<td></td>
<td>Regional Council</td>
<td>provided citing potential negative impacts on landholders and rate payers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Briefing on exercise design and proposed use of landholder properties and council</td>
</tr>
<tr>
<td></td>
<td></td>
<td>owned facilities.</td>
</tr>
</tbody>
</table>
4. Description of the TS19 Environment

The following sections provide a broad discussion and summary of environmental values for each of the localities where TS19 activities will be conducted. It does not seek to duplicate information that is available from publicly accessible resources however does highlight the aspects of the environment that are important for consideration in the assessment of significance. In addition to specific information from other sources where cited, key resources considered for all sites, subject to the relevant state jurisdictions, include:

- Australian Bureau of Statistics, 2016 census;
- Species profile and threats database for protected species;
- DOEE’s EPBC Act protected matters search tool;
- Directory of important wetlands in Australia;
- Australian heritage database for natural, historic and Indigenous heritage places in addition to listed Commonwealth heritage;
- Australian national shipwreck database;
- eAtlas;
- National Conservation Values Atlas;
- Atlas of Living Australia;
- Native Title Tribunal;
- Qld wildlife records online;
- Qld Department of Aboriginal and Torres Strait Islander Partnerships database;
- Qld vegetation maps online;
- Qld wetland maps online; and
- NSW BioNet.

Descriptions of the locations within which TS19 will be conducted have been separated on the basis of whether activities are based on land, at sea or a combination; within or outside of the GBR World Heritage Area (WHA). This enables easier correlation to subsequent sections of the report, in particular Section 6 where the potential impacts of the exercise are assessed against EPBC Act requirements.

4.1. Marine Training Areas

The Coral Sea and Tasman Sea enable deep water manoeuvre. By comparison, the GBR enables a degree of deep water manoeuvre however is also critical to enabling the amphibious activities. The GBR also enables access to and support of most of the coastal NDTA as the originating area for projecting EABO effects into terrestrial training areas from the maritime platforms.

The following sections address environmental values of relevance to TS19 relative to each of the marine training areas. The Coral and Tasman Seas are addressed jointly while the GBR is discussed separately.

Management plans for the marine parks describe values broadly as being based on four categories. These are used as the basis for consideration of Coral and Tasman Seas environmental values in the context of TS19 activities. Broadly, values for these marine areas are:
• **Natural values** — habitats, species and ecological communities within marine parks, and the processes that support their connectivity, productivity and function.

• **Cultural values** — living and cultural heritage recognising Indigenous beliefs, practices and obligations for country, places of cultural significance and cultural heritage sites.

• **Heritage values** — non-Indigenous heritage that has aesthetic, historic, scientific or social significance.

• **Socio-economic values** — the benefit of marine parks for people, businesses and the economy.

Values of the GBR are defined further however also generally follow this categorisation.

Assessment of the environmental values in areas relevant to TS19 refer to a range of maritime jurisdictions. The extent of these areas is summarised by Geoscience Australia in **Figure 4-1** below.

![Maritime Zones](Image)

**Figure 4-1: Australian Maritime Zones**

Within these maritime zones, state and Commonwealth legislation variously applies with the primary points being:

- the EPBC Act applies to Defence in all areas, for all activities;
- state/territory legislation is relevant within coastal waters; and
- within the GBR, the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act) also applies.

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The EPBC Act under Section 225 also provides for establishment of an Australian Whale Sanctuary to ensure the conservation of whales and other cetaceans. The sanctuary comprises the entirety of the sea within the Australian EEZ except for state or territory waters and is depicted in Figure 4-2.

Figure 4-2: Australian Whale Sanctuary

The EPBC Act allows for the Minister to declare important cetacean habitat areas under Section 228A with provisions for regulations to apply to interactions with cetaceans. To date, no areas of important cetacean habitat have been declared, however the online National Conservation Values Atlas (NCVA) includes layers that identify biologically important areas for a wide range of species, including selected cetaceans.

With respect to the maritime exercise areas that will be used during TS19, coastal areas are identified by the NCVA as being of biological importance for inshore dolphins and humpback whales.

with areas of importance to humpback whales also extending east of the GBRMP into the south-western Coral Sea.

4.1.1. Coral Sea and Tasman Sea

The entirety of the Coral Sea comprises the Coal Sea Marine Park (CSMP) and is subject to the 2018 CSMP Management Plan (Director of National Parks, 2018). The extent of the Coral Sea within the Australian EEZ and corresponding zoning of the CSMP is illustrated in Figure 4-3.

![Figure 4-3: Coral Sea Marine Park extent and zones](https://parksaustralia.gov.au/marine/pub/maps/fnl-mp-2018-cs-map-zones.pdf)

Values of the CSMP are broadly defined in the Management Plan however it is also noted that for many areas within the Park, there is a low level of understanding as to the specific values of given locations. Despite this, some areas such as the Coringa-Herald and Lihou Reefs are relatively well understood as a result of being recognised as internationally important wetlands under the Ramsar Convention (refer to Figure 4-4). The Ecological Character Description (ECD) for these locations includes detailed descriptions of values at each site comprising the Ramsar listing.

The ECD for Coringa-Herald and Lihou Reefs notes that the sites have been recognised under six criteria for the listing of a Ramsar wetland. These criteria cover ecological values for marine fish, mammal and bird species in addition to biodiversity and life cycle stages.

Values of the Coral Sea beyond the Ramsar wetland areas are further expanded by Schedule 3 to the Management Plan which includes descriptions of the variables considered in determining protection levels appropriate in the Coral Sea. The variables cover four principal environmental features:

1. Bioregions, described as being areas with broadly similar characteristics determined by the distribution of fish and other marine species, seafloor types and ocean conditions;
2. Depth ranges, certain species and habitats are associated with set depth ranges and the zones determined in the Management Plan reflect recognised species assemblages and habitat;
3. Seafloor features, following the 16 features described by the Management Plan that correspond to bathymetry; and
4. Key ecological features, three key features as defined by the Management Plan as representing specific ecological communities.

Beyond the broad values recognised by the CSMP Management Plan, there are also a large number of shipwrecks\(^\text{38}\) through the Coral Sea that occur principally in association with reefs and cays however also includes some in deeper waters.

\(^{37}\) SOURCE: [http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=59#](http://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=59#) NB. Marine Protected Areas surrounding the Coral Sea Reserves as shown now includes the entirety of the Coral Sea as shown in Figure 4-3

The Tasman Sea occurs to the south of the GBR and Coral Sea. Portions of the Tasman Sea are recognised under the EPBC Act as marine park with the primary protected area relevant to TS19 being the Central Eastern Marine Park (Figure 4-5).

Figure 4-5: Tasman Sea including the Central Eastern Marine Park

The Central Eastern Marine Park is based around a series of undersea features and is intended to provide a high level of protection to these features and the marine life they support. The features include:

- undersea canyons;
- slopes;
- deep seafloor plains; and
- pinnacles.

Notable species associated with the Central Eastern MP include foraging seabirds and migrating whales and grey nurse sharks. Of particular note during conduct of TS19, humpback whales will be migrating north to calving areas. Despite this, their presence during migration will be generally

limited to the extent of territorial waters (refer to Figure 4-1) and will unlikely interact with the TS19 fleet for activities in the Tasman Sea.

Both the Coral Sea and Tasman Sea in their entirety, beyond the limit of coastal waters to the edge of the Australian EEZ, are also part of the Australian Whale Sanctuary\(^{40}\). Established under the EPBC Act as applying to all Commonwealth waters, the Sanctuary has been created to protect all cetaceans. Together with state and territory legislation relevant to coastal waters (refer to Figure 4-1) this provides for protection of all cetaceans in all Australian waters.

Environmental values potentially vulnerable to the activities that would be conducted during TS19 are largely limited to the natural values present in the upper parts of the water column in deep water areas of the Coral Sea and Tasman Sea, however selected activities may also affect values associated with reefs and cays.

Following review of the relevant recovery plans in consideration of activities that would be conducted in the Coral Sea and Tasman Sea, sources of threat to values in these areas are principally from planned activities involving:

- Vessel manoeuvre and transit (including waste disposal and ballast water);
- Low altitude aircraft; and
- Use of sonar.

4.1.2. Great Barrier Reef

The Great Barrier Reef is a globally recognised area of World Heritage value which is an iconic area not only to the identity of many Queenslanders but also Australia as a nation. This is also referenced by the National Heritage listing of the GBR under the EPBC Act. The GBR represents the most extensive and complex environment from a biodiversity and regulatory perspective that TS19 will be conducted in.

The GBR region is a complex area with mixed jurisdictions of Commonwealth and Qld State interest. It includes the Commonwealth listed GBR Marine Park, associated GBR World Heritage Area, the state listed GBR Coast Marine Park and boundaries for these areas overlap but are not consistent. For example, certain ports are excluded from the GBRMP but are still within the GBR World Heritage Area and also subject to Qld state protections. The Territorial Sea Baseline (refer to ‘TSB’ in Figure 4-1) varies in its setback from the mainland in accordance with rules established by the United Nations Convention of the Law of the Sea (UNCLOS)\(^{41}\) and consequently the overlap of state and Commonwealth interests in the GBR is not consistent with respect to the mainland. The result is a complexity of jurisdictional interests. The GBR Marine Park Authority works with the Qld Government on protecting and managing the World Heritage values of the area and provides the overarching framework to reef management through implementation of the Reef 2050 Long-term Sustainability Plan – July 2018 (Commonwealth of Australia, 2018)\(^{42}\).


A generalised indication of the interaction of Qld and Commonwealth legislation in the GBR is presented in Figure 4-6.

Figure 4-6: Great Barrier Reef legislative management

Extending along the entire east coast of Qld, north from about the Burnett River mouth, the environmental values of the GBR are described by the World Heritage listing and statement of outstanding universal values (OUV). The extent of the GBR and associated protected areas is depicted in Figure 4-7.

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Figure 4-7: Extent of the GBR Marine Park and World Heritage Area

Meeting four of the World Heritage listing criteria, the GBR is recognised for natural values including:

- Aesthetic values in respect to what can be seen above and below water, it is described as some of the most spectacular scenery on Earth. The scenery discussed in the OUV statement includes not only what can be seen from on or under the water within the GBR WHA, but also what can be seen from the air when viewing the GBR and associated landscapes.

- Ecosystems and a living example of their evolution over millennia are represented by the GBR from deep water habitats through networks of off-shore reefs, cays and continental islands. The area retains a record of the environmental history that has led to the current GBR, the world’s most extensive coral reef ecosystem.

- The diversity of natural features within the GBR is illustrated through ongoing geomorphic, oceanographic and environmental processes. Ongoing processes are also reflected by the

influence of the area’s biodiversity and relationships between plants, animals and the landscape. The OUV statement notes the assemblage of globally significant marine fauna groups and evidence of the evolution of soft and hard corals within the GBR. Reference is also made to the relationship of humans with the GBR through ongoing links between Aboriginal and Torres Strait Islander people and evidence of historical occupation.

- Globally significant biodiversity within the GBR reflecting the complexity of habitats and features created through the various processes recognised above.

Of importance to the management and protection of World Heritage areas is the concept of integrity of the place. For the GBR, this relates to the ecological integrity. While the concept of integrity with respect to the GBR and TS19 activities is considered in more detail in Section 6.1.1, factors affecting integrity also relate to ecological resilience. The sheer size of the GBR provides one aspect that mitigates against some threats to its values. In order to maintain resilience, a system such as the GBR requires interconnectedness of habitats and protection of the values for which it is recognised throughout its extent.

Notwithstanding the extensive management framework and strategic guidance prepared by the Queensland and Australian governments in relation to management of the GBR, it has been subject to recent events that have placed substantial pressure on the reef, including:

- A severe coral bleaching event (GBRMPA, 2017a) in 2016 extended into 2017 and resulted in a large portion of the GBR being significantly impacted. The effects were most pronounced in the central and northern areas of the GBRMP. This event was described as the worst coral bleaching on record for the GBR.
- Tropical Cyclone Debbie was a powerful category 4 cyclone that made landfall near Airlie Beach in the Whitsunday region on 28 March 2017. It resulted in substantial damage to a number of Qld communities affected by damage to physical infrastructure and environmental damage including to the Great Barrier Reef itself as a result of physical damage to the reef coral structures and impacts from turbid water from river discharges. Damage to the reef also affected recreational values and associated commercial activity.
- Crown of Thorns Starfish have long presented a threat to the GBR through predation of corals however a recent outbreak that started in 2012 intensified in 2017 and continues in the central and northern parts of the reef.

In response to these events, the Great Barrier Reef blueprint for resilience (GBRMPA, 2017b) was developed to influence implementation of the Reef 2050 plan that was initially released in 2015. The re-released Reef 2050 plan (Commonwealth of Australia, 2018) identifies four major influencing factors that present threats to values of the GBR. These are summarised as present threats through:

1. **Climate change** – identifying the link between sea surface temperature, ocean acidity and altered weather patterns including extreme events.
2. **Land-based runoff** – particular reference to nutrients, sediment and pesticides.

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3. Coastal land use change – principally the consequence of clearing and modifying coastal habitats and barriers to natural flows.

4. Direct use – principally concerned with illegal fishing however also notes marine debris and incompatible activities.

Sources of threat to values in the GBR as a result of TS19 would apply to activities within the broad definition of direct use as described by the 2018 update to the Reef 2050 plan. Principally, direct use threats from planned activities would involve:

- Vessel manoeuvre and transit (including waste disposal and ballast water);
- Low altitude aircraft;
- Use of sonar;
- Small boat transits; and
- Amphibious landings.

**4.2. GBR Coastal Training Areas**

Coastal training areas share environmental characteristics of the areas where maritime and land activities will be undertaken. The primary point of difference for these sites is that they will be subject to activities which transition from marine to terrestrial environments, and as a result will cross jurisdictional boundaries relevant to both Commonwealth and state legislation.

Due to the location of the following training areas within or directly adjacent to the GBRMP, they have been grouped on the basis that many of their values are shared with the GBR and as such the following discussion relates principally to values that are not already discussed in Section 4.1.2.

**4.2.1. Shoalwater Bay Training Area**

The Department of Defence provides an overview of the role and values of SWBTA in the 2008 State of the Environment Report (Defence 2009)48 as follows:

*Shoalwater Bay Training Area (SWBTA or the Area) is located 80 kilometres north of Rockhampton and covers a total area of approximately 453 700 hectares. The Area includes both terrestrial (289 700 hectares) and marine environments (164 000 hectares). Prior to Commonwealth acquisition in 1965, SWBTA consisted of a number of pastoral leases. Currently the Area is surrounded by a variety of land uses including local government roads, State Forests, National Parks and pastoral properties.*

*SWBTA is an important asset for Defence as a suitable venue for effectively integrating blue water naval forces with comparable air and land assets. Currently, it is the only economically viable location that allows large-scale joint and combined exercises where most weapon systems can be employed and integrated with live ammunition. Many activities necessary for the development of alliances and multilateral Defence agreements, commonly involving Defence forces of the United States, New Zealand and the Republic of Singapore, are conducted in SWBTA.*

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Much of the conservation and training value of SWBTA lies with its very large areas of essentially intact, continuous vegetation and coastal waters. SWBTA stretches from spectacular eastern coastal landscapes, over coastal ranges and forests to the more open western plains of the Brigalow Belt. The deeply indented coastline contains vast areas of seagrass and mangrove, and numerous beaches and rocky shorelines. SWBTA is also recognised for its ‘vicarious use’ — the value of knowing it exists — in much the same way as we might value the existence of Antarctica although we are unlikely to ever actually experience it. One of the enduring observations about the environment of SWBTA is that its attributes, and the condition of those attributes, are highly significant and inextricably linked. Some attributes only exist because of the condition of the supporting environment.

The primary difference to SWBTA since the 2009 publication is recent land acquisitions by Defence that will expand the overall size of the training area. For the purpose of this report, the general description by Defence (2009) is considered relevant. Further to this, environmental values at SWBTA have been described in detail by numerous other assessments, most recently by the TS17 PER (AECOM 2017a). The information presented in that assessment is considered to be current for the purpose of considering the potential effects of TS19.

Shoalwater Bay Training Area is illustrated in Figure 4-8.
Across the terrestrial component of SWBTA, a range of threatened communities and species are known and predicted to occur. In addition to this, there are areas of cultural and historical value which have significance to varying degrees.

The listing of SWBTA on the Commonwealth Heritage List as a natural heritage place also reflects the diversity of environmental values it represents in addition to those associated with the GBR. This listing also observes the association of Aboriginal people with the area and the significance of what it represents from a cultural perspective. In addition to the marine portion of the being within the GBR WHA and Marine Park, it is also within the Qld Great Barrier Reef Coast Marine Park.

The marine and estuarine components of SWBTA are included in the Shoalwater and Corio Bays Ramsar site (discussed further in Section 6.1.3) which also extends further north of SWBTA to include a portion of the Stanage Bay NDTA (refer to Section 4.2.2). Coincident with the Ramsar listing are two additional wetlands under the Directory of Important Wetlands in Australia (DIWA). The listed wetlands include Shoalwater Bay for which the boundary closely aligns to the gazetted extent of the training area. The other DIWA wetland is the Dismal Swamp – Water Park Creek wetland (Figure 4-9). The northern extent of this mapped wetland occurs within SWBTA.
Protection of the environment on SWBTA during the conduct of training activities is managed through the SWBTA RSO which includes provisions for the protection of sensitive aspects of the environment. These prescriptions include the need to seek approval for the conduct of certain activities, and the prohibition of others where appropriate (refer to Section 5.2.2 for further discussion).

4.2.2. Stanage Bay NDTA

As part of the preparation of the TS17 PER (AECOM 2017a), an accompanying report was prepared by AECOM (2017b) that described the nature of the environment within which activities for that exercise were to be conducted. The extent of activities planned for TS19 is generally consistent with

the preceding exercise and accordingly the environmental values described by AECOM (2017b) are considered relevant and current given:

- no substantive change to land use or vegetation cover has occurred;
- no additional species or ecological communities relevant to the area have been listed under the EPBC Act;
- no change to the conservation status of Qld listed Regional Ecosystems or fauna has occurred; and
- no major weather event or natural disaster has occurred in the intervening period.

Stanage Bay NDTA occurs at the northern end of the Torilla Peninsula, to the north of SWBTA and principally east of Stanage Bay Road as depicted by Figure 4-10. As considered for the conduct of TS17, the extent of Stanage Bay NDTA for TS19 also includes land generally to within 1000 metres of the western side of Stanage Bay Road.

Figure 4-10: Stanage Bay non-Defence training area

Beyond values described for the GBR, the Stanage area supports a number of threatened species and communities which, due to proximity with SWBTA are generally consistent with that area.

SOURCE: Adapted from ‘Figure 2’ in AECOM (2017b)
However, owing to the agricultural land management that prevails across the majority of the Torilla Peninsula north of SWBTA the integrity of natural systems varies by comparison.

The western side of the Torilla Peninsula drains into Broad Sound and to a large extent, this also coincides with the mapped extent of the Broad Sound wetland which is a DIWA listed wetland (Figure 4-11) which occurs principally to the west of Stanage Bay Road.

![Figure 4-11: Broad Sound nationally important wetland](https://wetlandinfo.des.qld.gov.au/wetlands/facts-maps/diwa-wetland-broad-sound/)

### 4.2.3. Duke Islands NDTA

The Duke Islands NDTA is comprised of the southern three largest islands of the island group, namely Hunter Is., Tynemouth Is. and Marble Is. however it is probable that all activities will be limited to Marble Is. All three of these islands are rural leasehold properties managed for grazing. They are surrounded by the GBRMP and are within an area zoned for habitat protection under the GBRMP Zoning Plan. Configuration of the islands and their existing vegetation cover is illustrated in Figure 4-12. Some of the smaller islands and rocky outcrops within the Duke Islands group are also part of the Qld Broad Sound Islands National Park.

Regional ecosystem mapping for the Duke Islands indicates vegetation was originally a ‘semi-evergreen microphyll vine thicket’ community (RE 8.12.11c) and listed as being of least concern from a conservation perspective. Despite this, the majority of woody vegetation on the islands has been

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cleared with the exception of small isolated pockets. Site inspections conducted as part of the planning for TS19 observed the degraded nature of vegetation as a result of the grazing pressure from cattle and other game animals including deer. This has removed the majority of the understorey vegetation and limited the ability of natural regeneration to establish regrowth communities.

There are no mapped instances of seagrass in waters surrounding the southern islands in the Duke Islands group; however the island group consists of a number of small rocky outcrops in addition to the larger islands and associated rocky reefs.

![Figure 4-12: Duke Islands non-Defence training area, key localities](source: Google maps (2019))

Indicative of the extent of rocky outcrops and associated reefs, the Australian shipwreck database indicates three historical wrecks in the vicinity of the southern Duke Islands. These wreck sites are associated with Hunter and Tynemouth islands with the northern, eastern and southern approach to Marble Island apparently being free of any known wrecks. Records in the database suggest at least two of the wrecks are no longer in situ as a result of having either been salvaged or being broken up as a consequence of the circumstances leading to their wrecking in the first instance.
4.2.4. Mackay NDTA

Mackay is a large regional centre at the northern end of the Qld central coast with major industries including sugar and cattle grazing however a large proportion of the population is employed through the coal mining industry. It has a population of over 43,000 people and is situated at the mouth of the Pioneer River. The general locality and key features are illustrated in Figure 4-13. Mackay is included as a GBR Coastal NDTA for the purpose of this ER given the potential for some activities to take advantage of the offshore access provided either by the Mackay Port or along beaches adjacent to the town.

Figure 4-13: Mackay non-Defence training area, key localities

Seagrass mapping on eAtlas\(^{54}\) indicates the presence of large expanses of seagrass occurring offshore from Mackay in association with islands and shallow waters to the south east between the mouth of the Pioneer River and Hay Point. South of the river mouth, coastal waters are zoned for habitat protection while from the northern side of the river mouth to the tip of Slade Point including Mackay Port, waters are within the general use zone of the GBRMP.

Estuarine systems associated with the Pioneer River and coastal environments adjacent to the town would provide a range of habitat opportunities for migratory species and would also form important nursery habitats for young fish.

\(^{53}\) SOURCE: Google maps (2019)  
The Mackay Planning Scheme 2017 identifies several listed places of state and local historical heritage significance, principally comprising churches, commercial and civic structures in central Mackay.

Notwithstanding offshore ecological values and sensitive environments along the coast, areas that would form part of the NDTA for TS19 are largely urban and comprised of selected commercial, residential and industrial sites. Any facilities or public areas used will be subject to ongoing consultation and approvals from the appropriate local authority and landholder as required.

4.2.5. Midge Point NDTA

Midge Point is located approximately 35 kilometres south east of Proserpine on the western shore of Repulse Bay. It is comprised of a small coastal village with a dispersed population on larger rural parcels characterised by a mixture of cleared pastures and remnant native vegetation. It has not previously been used by Defence for the conduct of training exercises. In consideration of this knowledge gap, Defence engaged independent technical specialist contractor GHD to prepare a baseline environmental report (GHD 2018a) to enable the planning and assessment of TS19 from an environmental perspective. The general configuration of the Midge Point NDTA is illustrated in Figure 4-14.

Figure 4-14: Midge Point non-Defence training area\textsuperscript{55}

\textsuperscript{55} SOURCE: Google maps (2019)
The activities at Midge Point would be concentrated on Midge Beach, north of Yard Creek however local roads and open spaces will also be used for administrative purposes following the conduct of beach landings. Accordingly, while Figure 4.14 illustrates the area of main effort, other parts of the locality such as the grounds adjacent to the State Emergency Service (SES) facilities may also be occupied during the exercise.

The surveys undertaken by GHD (2018a) identify habitat values associated with migratory wader birds on Midge Point Beach with the potential for sea grasses to occur off-shore, particularly at the southern end of the NDTA. Other values associated with adjacent remnant vegetation and estuarine communities were also identified.

GHD (2018a) also note the area is likely to be associated with Aboriginal cultural heritage values as indicated by a registered native title claim by the Yuwibara People (QA2013/007).

4.2.6. Bowen NDTA

The Bowen NDTA is a dispersed collection of land, principally in State or local government ownership with selected private properties. A number of sites in the township of Bowen would be used for the exercise potentially including:

- Kings Beach;
- Queens Beach;
- Flagstaff Hill;
- Stone Island;
- Bowen Showground;
- Bowen Racecourse;
- Col Leather Sporting complex;
- Bowen Airfield;
- former coking works; and
- the Bowen wharf and marina.
The general locality is illustrated in Figure 4-15 highlighting the primary locations where activities may be conducted.

![Map of Bowen non-Defence training area](https://via.placeholder.com/150)

**Figure 4-15: Bowen non-Defence training area, key localities**

Other localities such as the Air Force Cadet depot are also likely to be used by the exercise from an administrative support perspective, as may other commercially hired facilities if required.

The Whitsunday Regional Council Planning Scheme lists a number of state and local heritage sites within Bowen. These sites are comprised of structures associated with WWII activities and the early European occupation of the area such as civic structures and memorials.

All localities to be used during TS19 are cleared urban, industrial or rural sites where there are little or no matters of specific environmental concern. All sites with the exception of the former coke works are actively used and Defence will conform to the requirements for use of those locations as agreed with landholders. Closure of the Bowen coke works was announced in June 2016 after having operated for 83 years since its official opening on 4 July 1933, producing coke from Bowen Basin coal (Converge 2010). Since closure, the former operator has undertaken a site clean-up to address areas of potential contamination and handed the site over to the State government.

Mapping offshore from Bowen indicates the likely presence of extensive areas of seagrass north of Queens Beach with only small isolated patches to the south. The GBRMP zoning is principally

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56 SOURCE: Google maps (2019)
'general use' however a small area of 'habitat protection' is present on the southern end of Kings Beach.

Amphibious landings at Kings Beach have been previously conducted over the preceding year without incident. The previous landing activities were subject to consultation and site assessment which identified aspects for consideration such as Aboriginal cultural heritage values however confirmed that amphibious landings were able to be conducted without posing an unacceptable hazard to the environmental values which are reflected by the GBRMP habitat protection zoning.

The waters surrounding Stone Island incorporating Bowen wharf between the southern limit of Kings Beach and encompassing the entirety of McCanes Bay is within the designated Bowen Port. The waters comprising the port are not within the gazetted boundary of the GBRMPA and as such are not subject to any zoning. Despite this, the waters of the port are still part of the GBR WHA and subject to considerations of the OUV reflected by the World Heritage listing.

Notwithstanding the limited potential for environmental values to be affected, the TS19 EMF will apply to all activities in the Bowen NDTA. The primary aspect of this framework for this area is the management of weeds and invasive plants.

4.3. Other Coastal Training Areas

TS19 involves the use of coastal training areas south of the GBR in the north coast area of NSW. These locations are described as coastal given the potential interaction between land and maritime activities.

4.3.1. Evans Head Air Weapons Range

The target area of EVDAWR is approximately 8.8 kilometres south of the township of Evans Head within Bundjalung National Park. The range has been in use by Defence since 13 July 1949 as a primary training area for military aircraft. While historically a range of munitions were used on Evans Head AWR, Defence has no plans for use of high explosives on the range for TS19.

The environmental values on EVDAWR are described by GHD (2011)\(^57\) and identify the range as being a complex of coastal heath communities adjoining dunes on the eastern edge and woodland communities to the west. Small freshwater and saltwater lakes are also present. A range of natural values including threatened flora, fauna and ecological communities also occur throughout the Evans Head AWR and are contiguous with the adjoining Bundjalung National Park. The range and national park create a continuous vegetated section of coastline extending nearly 35 kilometres between the mouth of the Clarence River at Iluka, north to Evans Head.

Figure 4-16 illustrates the location of EVDAWR in relation to Bundjalung National Park and proximate localities including the township of Evans Head.

Given that EVDAWR is a gazetted Defence training area, all activities are subject to being conducted in accordance with RSO which are specific to the training area. The EVDAWR RSO include restrictions on the types of activities that may be conducted in certain areas and also applies limitations to the nature of impacts that are permitted. These are discussed further in Section 5.2.2.

Figure 4-16: Evans Head AWR

4.3.2. Evans Head NDTA

The Evans Head NDTA will consist of the mown area comprising the aerodrome. Commercial accommodation in the township of Evans Head will also be used to support the Exercise.

The locality of Evans Head is illustrated in Figure 4-17 which illustrates the relative proximity of EVDAWR to the NDTA. Also apparent in Figure 4-17 is the extensive expanse of native vegetation comprising Bundjalung National Park to the south of Evans Head and Broadwater National Park to the north.

As the NDTA is comprised only of the managed areas adjacent to the runway and within the extent of the Evans Head Memorial Aerodrome (EHMA), potential interaction with aspects of environmental importance is limited to consideration of the need for biosecurity management, in addition to observing the historical heritage values of the site.

The NSW State Heritage Register defines the values of the site and in the ‘statement of significance’ notes:

59 SOURCE: Google maps
The Evans Head Memorial Aerodrome has historical, social and cultural significance. The aerodrome is purported to have been the largest RAAF training base in the Southern Hemisphere during World War II (No 1 Bombing and Gunnery School) and made a major contribution, through provision of trained personnel, to the Commonwealth’s war effort. The aerodrome itself has been identified as an item of State Significance. As much of the site has been subject to extensive post-war disturbance it contains only a small number of distinct archaeological features and landscapes which have a moderate level of archaeological significance. However, there are elements outside the cartilage [sic.] of the State Heritage Registered site which also have state heritage significance...

As noted by the statement, while the listed site as illustrated in Figure 4-18 is limited to the land within the marked boundary (shown in red), there are a number of additional features in the township of Evans Head and the periphery of the listed site that also contribute to the significance of the EHMA. These external features include buildings, infrastructure and places closely associated with the occupation of the EHMA and activities in support of the Commonwealth’s war effort in WWII. These external features, in addition to being mentioned in the EHMA statement of significance are also listed separately on the NSW State Heritage Register. Any interaction with other listed places in the Evans Head township will be consistent with management requirements of those properties where relevant.
4.4. Terrestrial Training Areas

Use of terrestrial training areas for TS19 involves land-based activities with air support, or ground-support to air activities. Notwithstanding the overarching scenario being tested during TS19, the activities being undertaken on the terrestrial training areas do not directly integrate with maritime activities in a way that could subsequently affect marine environmental values. Accordingly, they are presented separately, particularly as activities in these locations have no relationship to values in the GBR WHA.

4.4.1. Townsville Field Training Area

The TFTA (refer to Figure 4-19) contains numerous weapons ranges, and has several small above and below-ground diesel storage tanks. While not associated with Defence activities, the area also contains abandoned copper mines, several former landfills, mining shafts and cattle dips around the property.

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Environmental values in TFTA are varied and range from rainforest areas in the north eastern corner along the Paluma Range, to a range of eucalypt woodland and forest communities, and vine thicket vegetation as illustrated in Figure 4-20. A number of listed fauna species and ecological communities are known to occur within the training area. TFTA adjoins notable areas of conservation estate including the Wet Tropics WHA, Paluma Range National Park and the Australian Wildlife Conservancy owned Mt Zero-Taravale Wildlife Sanctuary. TFTA also contains the headwaters or upper catchments of a number of rivers and creeks which drain to the GBR WHA.
Owing to the prior use of areas comprising TFTA, there are places with heritage values linked to both Aboriginal occupation and more recent pastoral and industrial / mining activities that occurred prior to gazettal as a training area. Management of the impact of military training on these and other recognised values is managed through the TFTA RSO which include restrictions on the type of activities that may be conducted in certain locations and requirements for approval where appropriate.

4.4.2. Proserpine NDTA

The Proserpine NDTA has not previously been used by Defence for the conduct of training exercises. In consideration of this knowledge gap, Defence engaged independent technical specialist consultants GHD to prepare a baseline environmental report (GHD 2018b) to enable the planning

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62 SOURCE: adapted from ‘Figure 4’ in Rogers et al. (1999)
and assessment of TS19 from an environmental perspective. The general configuration of the Proserpine NDTA is illustrated in Figure 4-21 however may also include additional selected locations to support the exercise scenario. Properties identified in the NDTA baseline report for Proserpine include several private, freehold properties in addition to the Proserpine State Forest, Andromache Conservation Park and the Proserpine Airport. Any additional locations would not be within naturally vegetated areas or locations with environmental values requiring particular management attention.

Figure 4-21: Proserpine non-Defence training area

The Proserpine NDTA is built around the Proserpine Airport approximately 10 kilometres to the south of the township of Proserpine. The area lies in the transitional zone between the wet and dry tropics and is characterised by agricultural production with grazing land and sugar cane on the alluvial flats, extending into cattle grazing on the low coastal hills to the Clarke Connors Range in the west.
The Goorganga Plain wetlands complex, a wetland on the DIWA extends over much of the coastal plain to the east of the Proserpine NDTA (refer to Figure 4-22). The wetland complex comprises approximately 16,850 ha of seasonal wetlands that graduate from marine to freshwater environments (Reef Catchments 2014)63. This wetland also adjoins the GBRMP and WHA.

![Figure 4-22: Proserpine-Goorganga Plains nationally important wetland](https://wetlandinfo.des.qld.gov.au/wetlands/facts-maps/diwa-wetland-proserpine-goorganga-plain/)

The Whitsunday Regional Council planning scheme identifies a number of state and local listed heritage places in Proserpine and surround areas. While the majority of listed sites are civic and commercial structures in addition to churches and memorials, in closer proximity to the Proserpine NDTA is the ‘Australian Field Experimental Station’ (AFES) located adjacent to the Gunyarra railway siding and crossing. The historical context of this site is described by Whitsunday Council as including:

...The AFES was approved in 1943 and the Department of Munitions, which was responsible for chemical research at the time, was given the responsibility of establishing the station. Chemical warfare was an integral part of World War II (as it had been also in World War I) and Australian military authorities – along with their British and American counterparts – saw the value in conducting chemical warfare experiments on people and training with chemical weapons. Proserpine was selected because its climatic conditions closely resembled those of the islands to the north of

---


Australia in which Australian and American forces were currently engaged in the war...

While proximate to the Proserpine NDTA, no activities associated with TS19 will be conducted on or adjacent to the AFES site at Gunyarra.

The environmental baseline report for the Proserpine NDTA identifies that while some environmental constraints are present, the agricultural nature of the landscape is such that a diversity of activities could be conducted without the risk of a potentially significant impact to listed matters.

4.4.3. Sarina NDTA

Sarina is a small township some 35 kilometres to the south of Mackay with a population of over 5,500 people. Areas that may form part of the Exercise at Sarina comprise selected rural facilities. As illustrated by Figure 4-23, the landscape surrounding Sarina is a combination of agricultural land uses on the coastal plains with remnant native vegetation remaining primarily on steeply sloping land that is unsuitable for sugar cane farming.

While much of the remnant vegetation is listed as being of no concern with respect to its Qld legislative status, remnant communities on the alluvial plains are listed as endangered and areas supporting vegetation in estuarine areas are listed as being of concern.
With respect to known heritage in the Sarina area, the Mackay Regional Council planning scheme identifies one place of state heritage significance – the Sarina War Memorial located within the township. There are no native title determinations and places of Aboriginal cultural heritage importance are not within areas that would be used during the exercise.

TS19 will occupy selected private lands on the periphery to Sarina.

4.4.4. Bundaberg NDTA

Bundaberg is a large regional centre on the Qld central coast with a population of approximately 93,000 people. It is located on the coastal plains associated with the Burnett River and is approximately 10 kilometres inland. The landscape surrounding Bundaberg is dominated by sugar cane farming with only small isolated patches of remnant vegetation as illustrated by Figure 4-24.

Figure 4-23: Sarina non-Defence training area, overview

SOURCE: Google maps
Similar to other localities on the Qld coastal plain, remnant patches of vegetation on alluvial and estuarine systems around Bundaberg are generally subject to a higher conservation status under the state legislation while remnant vegetation on elevated ground is generally not of concern.

A number of land parcels in and around Bundaberg have been determined as being subject to native title in favour of the Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda People. Listed historical heritage places in the Bundaberg area include a number of buildings, places and memorials centred in the town, but also occur throughout the LGA.

TS19 will principally occupy the Bundaberg airport and local support to the Exercise will likely be based out of the existing Army Reserve training depot on Quay Street. The depot, currently occupied by D Company of the 9th Battalion Royal Queensland Regiment, is one of the places identified by Bundaberg Regional Council as a place with historical heritage values. Other properties surrounding and throughout Bundaberg may also be used to support the exercise scenario however these will be limited to existing facilities in urban, industrial or rural settings in areas that are already developed where no natural values would be affected by the nature or intensity of activity.

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**Figure 4-24: Bundaberg non-Defence training area, overview**

SOURCE: Google maps (2019)
5. Environmental Management Framework

As part of an ongoing program of responsible environmental management and stewardship, Defence has developed a suite of documents that guide the conduct of activities within Australia and elsewhere in the world. The Defence Environmental Strategy\(^6^7\) outlines five strategic aims that guide the planning, design, implementation and management of all activities in order to ensure compliance with legislative responsibilities. These strategic aims are:

- **Strategic aim 1**: Defence will deliver a sustainable estate across Defence maritime, land and aerospace areas, activities and operations.
- **Strategic aim 2**: Defence will understand and manage its environmental impacts.
- **Strategic aim 3**: Defence will minimise future pollution risks and manage existing contamination risks.
- **Strategic aim 4**: Defence will improve the efficiency of its resource consumption and strengthen resource security.
- **Strategic aim 5**: Defence will recognise and manage the Defence estate heritage values.

Reflecting these aims, the following sections describe the standard operating procedures and extant processes that apply to Defence activities in general (Section 0), while other measures specific to TS19 are discussed in Section 5.3. Collectively these comprise the TS19 EMF.

5.1. Environmental Risk Assessment

As introduced in Section 2.1, Annex 3 to the Defence ER Guidance provides a methodology for undertaking ERA as part of an environmental impact assessment process for Defence applications. Also described is the list of participants in the ERA workshop as part of the methodology implemented for assessment of the Exercise. This has provided the basis for the approach to risk assessment for the TS19 ER. Also reflecting the cycle of continuous improvement in exercise planning (refer to Figure 2-1), the TS19 ERA is an evolved version of the risk assessments prepared for previous iterations of TS in addition to other major exercises in the sea and land series.

The approach to ERA for TS19 has adopted a two-part appreciation of environmental risk. It is guided by evidence of historical performance in previous TS and other major exercises and an understanding of the effectiveness of the existing environmental management framework.

The first part considers activities that will be undertaken in order to understand the inherent risk to the environment from the activity in context of all standard environmental controls in addition to further exercise-specific measures that form part of the ‘action’. This is expressed in the risk assessment in terms of initial and residual risk and forms the basis for prescription in the TS19 EMP.

The second part considers the potential impact of activities that are not planned to be part of the ‘action’ however may occur in certain circumstances. These activities would be recorded as incidents, and considerations include the degree to which existing measures are in place to avoid the incident in the first case and then in the event that it occurs, what measures are in place to respond. Consideration is also given to the effectiveness of these measures where they do exist, based on an understanding of performance on past incidents and lessons learned. This more clearly addresses

the differences between activities that are planned, and events that occur in spite of controls that may be in place to avoid them occurring unexpectedly, and builds on the approaches taken in previous PERs (refer to Section 3.2.1).

The primary differences between planned and unplanned activities are:

- Planned activities are known to occur in a specific location, at a known time, frequency and intensity by a known unit or participant. These activities define TS19 and comprise the ‘action’ to be assessed in respect of the EPBC Act.
- Unplanned activities may occur at any place or time for an undetermined duration, intensity and for which the impacts are contingent on the units involved, the receiving environment and other factors that could act as multipliers to the initial environmental effect, e.g. extreme weather. These activities have either occurred in the past or are conceivably possible and are considered important in context to the assessment of the TS19 ‘action’ with regards to the effectiveness of mitigation measures that will be in place.

Assessment of risks associated with planned activities considers the approach to ERA prescribed by the ER Guidance given that activities and the environmental values where they will be conducted are known. For unplanned activities however, the assessment included the following steps:

1. Hazard identification. Following review of historical incidents and the nature of activities to be conducted, this process determined what things could go wrong in a way that presents a hazard to environmental values.
2. Definition of the context in which an incident could occur including general localities and platforms that may be involved.
3. Review of extant measures to avoid the potential for an incident with a corresponding qualitative assessment of overall effectiveness based on experience.
4. Review of extant measures to respond in the event that an incident occurs. Again this was a qualitative assessment based on experience.
5. Calculation of exposure based on the combined effectiveness of avoidance and response measures.
6. Consideration of additional controls that should be implemented to reduce exposure.
7. Assessment of overall vulnerability of the TS19 environmental management framework to unplanned activities resulting in an environmental impact through an appreciation of risk. This included the effect of additional controls through application of the ERA methodology applied to planned activities.

A summary of the overall ERA is presented in Table 5-1, this table includes an aggregated summary of both the planned and unplanned activities.
Table 5-1: Overall summary of ERA

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Domain</th>
<th>Hazards assessed</th>
<th>Residual Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Planned</td>
<td>Sea</td>
<td>52</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Land</td>
<td>57</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Unplanned</td>
<td>All</td>
<td>55</td>
<td>7</td>
</tr>
</tbody>
</table>

Following consideration of the activities planned and potential incidents that may result, Table 5-2 summarises the results of the ERA for residual risks rated as medium or higher. Risks assessed as being low are not listed as they are independently important to any given aspect of the environment. Hazards and threats assessed as having a medium or higher risk have the potential to result in a noticeable environmental impact and are important aspects of the Exercise from the perspective of environmental management. The cumulative effect of all hazards and threats, posed by the Exercise including those assessed as low are considered in terms of their potential to result in a significant impact to the environment in Section 6 of this ER.

Where appropriate, the potential impacts have been grouped on the basis of location where all other aspects are consistent. The themes identified by this summary are addressed in Section 5.3 as Exercise-specific environmental measures and includes the further consideration of unplanned activities.

Table 5-2: Summary of ERA – environmental themes affected by planned activities

<table>
<thead>
<tr>
<th>Domain</th>
<th>Activity</th>
<th>Location</th>
<th>Potential Impact</th>
<th>Residual Risk Rating&lt;sup&gt;68&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEA</td>
<td>Amphibious landings</td>
<td>DTA</td>
<td>Sedimentation impacts to adjacent flora and benthic communities</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DTA</td>
<td>Loss of public access to approaches during activity</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NDTA</td>
<td>Damage to beach substrate</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NDTA</td>
<td>Marine fauna strike causing injury or death</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NDTA</td>
<td>Loss of public access to landing sites and approaches during activity</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NDTA</td>
<td>Loss of public amenity (noise) from amphibious landings</td>
<td>Medium</td>
</tr>
</tbody>
</table>

<sup>68</sup> ‘residual risk rating’ is an indication only that the ‘potential impact’ as described is likely to occur, it should not be interpreted as a measure of significance as this will vary according to the context.
<table>
<thead>
<tr>
<th>Domain</th>
<th>Activity</th>
<th>Location</th>
<th>Potential Impact</th>
<th>Residual Risk Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicle manoeuvre in the coastal zone, on the beach</td>
<td>DTA</td>
<td>Disturbance to native fauna and habitat</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Use of flares, pyrotechnics and battle noise simulators</td>
<td>NDTA</td>
<td>Disturbance to public amenity from noise and smoke</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Ballast water exchange</td>
<td>Marine, GBRMP</td>
<td>Introduction of new marine pests or dispersal of pests that occur elsewhere in Australia</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Disposal of waste at sea, including blackwater</td>
<td>Marine</td>
<td>Adverse impact on native fauna health (e.g. ingestion)</td>
<td>Medium</td>
</tr>
<tr>
<td>LAND</td>
<td>Establishment and operation of base camps and associated facilities.</td>
<td>DTA</td>
<td>Unanticipated loss of habitat / native vegetation due to clearance</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DTA</td>
<td>Inappropriate separation and containment of waste (food, plastic, etc.) increasing logistic costs</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Off-road vehicle movements including armoured, wheeled and tracked</td>
<td>DTA</td>
<td>Damage to native vegetation (including soil compaction) and fauna habitat</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DTA, NDTA</td>
<td>Increased erosion, sedimentation and / or runoff</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NDTA, public spaces</td>
<td>Noise / dust / air pollution from dust, odours, smoke affects amenity of adjacent properties and public spaces</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Mounted manoeuvres</td>
<td>DTA, NDTA</td>
<td>Damage to or loss of native vegetation (including soil compaction) and fauna habitat</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NDTA, public spaces</td>
<td>Noise / dust / air pollution from dust, odours, smoke affects amenity of adjacent properties and public spaces</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Land transit between training areas, bases on public roads (within state / territory and interstate)</td>
<td>Public spaces</td>
<td>Increased wear to private / public infrastructure including roads</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Base operations.</td>
<td>Defence</td>
<td>Noise from wash-rack operations</td>
<td>Medium</td>
</tr>
<tr>
<td>Domain</td>
<td>Activity</td>
<td>Location</td>
<td>Potential Impact</td>
<td>Residual Risk Rating</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td>Includes wash-racks, refrigeration units, traffic, personnel</td>
<td>bases</td>
<td>adversely affects aesthetic values for neighbours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of civilian telecommunications networks</td>
<td>NDTA</td>
<td>Denial of network to civilian users</td>
<td>Medium</td>
</tr>
<tr>
<td>AIR</td>
<td>Flying aircraft including low-level (&lt;1,000ft) and supersonic flights</td>
<td>Marine, GBRMP, DTA, NDTA</td>
<td>Noise leading to disturbance for migratory birds and other fauna</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Rotary wing including low-level (&lt;1,000ft), take off / landing and troop insertions (incl. MV-22)</td>
<td>DTA, NDTA</td>
<td>Dispersal of existing or establishment of new populations of weeds / pathogens / pests (including weeds of national significance [WONS])</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Public spaces</td>
<td></td>
<td>noise impacts</td>
<td>Medium</td>
</tr>
<tr>
<td>Ground Support to air activities</td>
<td>Defence bases, public spaces, DTA, NDTA</td>
<td></td>
<td>Dispersal of existing or establishment of new populations of weeds / pathogens / pests (including WONS)</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Defence bases, public spaces, DTA, NDTA</td>
<td></td>
<td>Accumulation and release of heavy metals and other contaminants into the environment from aircraft wash-down</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Conduct of the ERA has enabled an understanding of the likely effectiveness of the Defence EMF in the context of TS19. Consequently additional mitigation measures have been determined to be necessary and are summarised in **Section 5.3**. Further to this, these exercise-specific mitigation measures are included as part of the action that is assessed in **Section 6** of this ER. The measures include actions to limit the likelihood or consequence of planned activities and enhance the effectiveness of procedures that minimise the potential for an incident, or respond to an incident once it has occurred.
5.2. Measures to Avoid or Mitigate Impacts

5.2.1. Top-level Environmental Management Plans

For activities across all environmental domains, Defence has developed an environmental management plan (EMP) that provides for a consistent and responsible approach to standard activities. Each EMP contains a suite of documents designed to assist not only the participants in an activity but also the planners to ensure that site selection, and the range of actions proposed are not undertaken inappropriately with respect to timing, duration and location. These plans are introduced in Section 1.2 and include the:

- Maritime Activities EMP (MA EMP);
- Air Activities EMP (AA EMP); and
- Land Activities EMP (LA EMP).

Of these plans, the MA EMP is the most mature while the draft LA EMP is in the process of being integrated with the activity planning process. The purpose of the EMPs is to standardise the conduct of activities in a manner that is cognisant of what would be a responsible approach by Defence to undertaking activities in a way that supports sustainable use of training areas and other locations where training is conducted. These would be regarded as Standard Operating Procedures (SOP) and include processes for planning, conducting activities and defining of what would comprise an incident requiring further action.

As part of the risk assessment process, consideration of the potential for unplanned events to result in an environmental impact required an appreciation of the effectiveness of the measures in these plans. Consistent with the continual improvement cycle that would be associated with an Environmental Management System (EMS), these EMPs are procedurally reviewed and amended to reflect current standards in environmental management both as required by legislation and for the better than business as usual goals as established by the Defence environmental policy.

In the context of maritime activities, the EPBC Regulations include provisions for interactions with cetaceans including requirements for stand-off distances, speed and the requirement for maintaining an active watch. The Regulations also include provisions for aircraft operating in the vicinity of cetaceans. While these provisions apply principally to the whale watching industry, they are reflected in the MA EMP and ensure that maritime activities are conducted in a manner that is consistent with EPBC Act requirements.

A recent environmental impact statement prepared for the Hawaii-Southern California training and testing areas (USN 2018) considered an extensive range of biota relevant to the central and western Pacific Ocean. It also included recommended mitigation measures appropriate to the activities that would be undertaken by the US Navy. Mitigation measures relating to setbacks and buffer distances to marine fauna and sensitive environmental features prescribed by the MA EMP are generally consistent with or exceed those in the EIS and provides further support for the adequacy of this top level EMP in light of the contemporary analysis undertaken by USN (2018).

These plans enable consistency however lack an appreciation of the specific details of an activity and the ability to assess the potential for significance in terms of direct and indirect impacts. Accordingly, while adoption of the plans enables individual activities to be managed in an environmentally responsible manner, the cumulative effect of an exercise is beyond the scope of these EMPs to anticipate in terms of timing, scale, duration and the combination of effects in context with prevailing environmental issues. These limitations and hence cumulative impacts, are addressed through the TS19 EMF.

5.2.2. Standing Orders

Standing Orders (SO) are written to provide guidance at a more specific level than what the top-level EMPs can, and may be prepared for discrete areas or organisations within Defence. With greatest relevance to TS19 are the SO that relate to training areas, also referred to as Range SO (RSO) in addition to Ship SO that would apply to major fleet units.

While also referring to the top-level EMPs, SO will provide specific guidance as to the manner in which activities must be conducted relevant to the location or platform to which they relate. For example, SWBTA RSO include prescriptions for:

- Sectors that are more sensitive than others, such as the prohibition of off-road vehicular access to the ‘Dismal Sector’ in order to protect Aboriginal cultural heritage, biodiversity values and ground water resources important for the Corio Bay Ramsar wetland. This measure also reduces risk to the potable water supply for Yeppoon and surrounding localities through the Kellys Dam offline water storage dam which stores water diverted from Waterpark Creek near Byfield (Livingstone Shire Council 2015).

- Restrictions on activities in the training area to ensure compliance with the GBRMP Zone Plan (2003) such as a prohibition on fishing and crabbing.

- Restrictions on activities that involve the removal of vegetation, such that a prior assessment and approval must be granted before any such activity is conducted.

- Limitations as to the locations where amphibious landing activities are undertaken in order to protect sea grass meadows, dugong, turtles and the terrestrial environments adjacent to landing sites.

- Controls for other no-go areas in order to protect environmental values, such as avoiding acid sulfate soils, areas of significant cultural heritage value to Aboriginal peoples and locations of recognised historical heritage value.

The EVDAWR RSO also include restrictions on activities that would result in vegetation removal, disturbance or other impacts to native animals and their habitat, use of natural resources, introduction of invasive species and pathogens, damage to historical and Indigenous heritage, feral animals and ground disturbance activities in general. The RSO also acknowledge the location of the range within Bundjalung National Park and prescribes assessment and approval procedures for any activity that may result in potential environmental impacts.

5.2.3. Exercise Governance

Australian Defence Force Publication (ADFP) 7.0.3\textsuperscript{71}- Exercise Planning and Conduct (Edition 3) (Defence 2018) prescribes the process by which joint and combined military exercises should be planned. The requirements include specific guidance in planning for environment and heritage protection in addition to DAMCON. For the purpose of exercise governance, ADFP 7.0.3 describes the role of all parties in relation to performance on environmental matters:

1. **Lead Planning Agency.** Responsibility is assigned for obtaining environmental approvals, coordinating environmental awareness training among the exercise participants and reporting on compliance. For the purpose of TS19, the Lead Planning Agency is Headquarters, Joint Operations Command (HQJOC). In order to communicate requirements across all aspects of exercise conduct, HQJOC will issue a CEI which is the formal command that establishes the standard to be met for environmental matters for all participants whether Australian or international. The hierarchy of environmental governance documents is illustrated in Figure 5-1.

2. Defence Environmental Officers. This role is fulfilled by the RESO, ESM and ADES whose role it is among other matters to provide advice specific to the DTA they are responsible for.

3. Directorate of Environmental Impact Management. This directorate, now known as the Directorate of Environment Planning, Assessment and Compliance (DEPAC) is responsible for the provision of advice to the lead planning agency on matters relating to the EPBC Act.

4. **Exercise Control (EXCON).** The organisation established for the purpose of exercise conduct and which is responsible for ensuring compliance during execution and providing initial reports in the event of an incident.

5. **Environmental Management Group (EMG).** An extension of EXCON responsible for field monitoring and support to exercise participants in providing advice to avoid an incident, response to an incident and situation reporting. The EMG is coordinated by the Chief Environment Officer (CEO) and enables activation of the DAMCON effect.

6. **Players and participants.** Responsibility for maintaining compliance, reporting incidents and taking initial actions to mitigate the potential impacts of an incident.

7. **Damage control units.** ADF specialist units responsible for undertaking engineering works as required to conduct DAMCON activities to rectify environmental damage in response to an incident, or in undertaking repairs to avoid the potential for consequential environmental damage. Such actions include the remediation of hydrocarbon spills, remediating pits and defensive positions, wheel rutting from vehicles and the management of waste and other residual artefacts of exercise conduct.

The hierarchy of environmental governance documentation enables a tiered approach to the dissemination of requirements according to the military principle of ‘need to know’. With each layer in the structure, different information is provided at varying degrees of complexity according to whether there is a need for strategic awareness or tactical/practical implementation of the necessary measures. As a consequence, it is unlikely that all participants will see or be aware of parts of the environmental governance documentation which are not relevant to their role and function in the Exercise. This approach minimises the risk of information overload that would otherwise present an increased likelihood of non-compliance given the complexity of the Exercise.

ADFP 7.0.3 discusses the overarching governance for exercise planning and execution however enables sufficient flexibility in order that it is scalable according to the actual exercise the process is applied to. For the conduct of TS exercises, the execution is supported by a high level of support in order to satisfy the planning guidance. How this has been applied to TS19 is described in detail in Section 2 of this report.

Further, during execution the following measures are incorporated into TS exercises as a means of achieving the intent of ADFP 7.0.3 and higher guidance of the Defence Environmental Strategy:

- EMG field teams will be deployed to all NDTA and DTA locations in response to the nature, intensity and timing of activities to ensure all activities are monitored as appropriate with regard to the relative risk associated with each site.
- EMG field teams will deploy with tablet computers to enable electronic collection of observations including pre and post exercise condition assessments and the real-time incremental documentation of exercise conduct and any associated incidents.
• Augmentation of the EMG with a Defence policy advisor to ensure timely provision of advice to EXCON for incident response or clarification of specialist concerns regarding compliance requirements.
• Invitation to GBRMPA to send personnel to join the EMG to broaden familiarisation of defence activities within the regulator’s organisation.

5.2.4. Estate Management

As introduced in Section 2.1, the Defence Estate Quality Management System (DEQMS) provides a quality assurance system that enables access to policies, processes, tools and templates for management of the Defence estate. As DEQMS is designed to support compliance with legislative requirements, it also applies to activities Defence undertaken on NDTA. Principle to the planning and assessment of activities that will be undertaken as part of TS19, DEQMS provides guidance on the information requirements for an Environmental Report and associated approval processes. These processes relate to Australian Government publications and information needed to satisfy requirements of the EPBC Act and identify responsibility for due diligence. This is also reflected in ADFP 7.0.3.

5.3. Exercise-Specific Environmental Measures

The exercise design philosophy introduced in Section 1.2 highlights the approach to consideration of environmental matters. By consciously avoiding the potential for a significant impact throughout the planning process execution is by design, specific to the exercise. This includes decisions made as to whether selection of sites can be justified in order to achieve the specific training outcomes for which TS19 is being conducted. Example considerations are illustrated below as a sample of the exercise planning and design process with respect to environmental matters.
In recognition of this decision process, the following table summarises TS19-specific controls that will be implemented and incorporated whether in the final approvals process, execution or post-exercise phase. These controls have been developed through the iterative approach taken to environmental assessment and stakeholder feedback to the exercise design process. These controls are summarised below in Table 5-3 and reflect only the additional measures necessary. The additional measures will complement the extensive and existing EMF within which Defence operates.

<table>
<thead>
<tr>
<th>Sites...</th>
<th>are chosen to be appropriate given the nature of their intrinsic environmental, social and economic values with respect to...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment...</td>
<td>that could be used in order to achieve a desired effect with consideration given to the...</td>
</tr>
<tr>
<td>Scenario...</td>
<td>being tested by the exercise or specific activity and associated...</td>
</tr>
<tr>
<td>Access...</td>
<td>routes by ships, boats, aircraft, vehicles and personnel to avoid sensitive environmental and cultural locations ensuring that...</td>
</tr>
<tr>
<td>Timing...</td>
<td>for activities causes the least amount of disruption to commercial, recreational and social activities of the community and by also understanding that the...</td>
</tr>
<tr>
<td>Intensity...</td>
<td>of Defence activities is an important consideration for mitigating the potential for environmental impacts which requires activity and location specific...</td>
</tr>
<tr>
<td>Controls...</td>
<td>to ensure compliance, avoid unnecessary impacts, mitigate impacts that cannot be avoided and respond quickly and appropriately to incidents should they occur.</td>
</tr>
</tbody>
</table>
### Table 5-3: Summary of TS19 exercise-specific environmental controls

<table>
<thead>
<tr>
<th>Activity type</th>
<th>Potential environmental issue</th>
<th>Control</th>
<th>KPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned</td>
<td>Land based activities on DTA result in numerous small scale vegetation clearances that present an unacceptable cumulative impact.</td>
<td>A consolidated exercise-specific EMP will be prepared for all activities to more comprehensively cover the diversity of activities comprising the Exercise and implement consistent controls across all locations. The EMP for TS19 will be prepared by the Lead Planning Agency (HQJOC) and be disseminated to participants upon concurrence of the relevant Defence stakeholders including but not limited to RESOs and DEPAC.</td>
<td>No unanticipated removal of vegetation on DTA or NDTA.</td>
</tr>
<tr>
<td>Planned</td>
<td>Activities in the pre and post FTX phases are conducted in a manner that is not consistent with the overarching environmental guidance for TS19.</td>
<td>Environmental awareness to also target logistics, supply chain and waste generators in order to minimise waste and seek to ensure consistency with other requirements such as biosecurity.</td>
<td>All participants across all phases of FTX preparation, conduct and finalisation receive environmental awareness briefings.</td>
</tr>
<tr>
<td>Planned</td>
<td>Land activities broadly are not aligned with the Defence Environment Strategy.</td>
<td>Where practicable, EMG field teams will increase their focus on reporting ‘near-misses’ when monitoring for compliance and environmental incidents in order to limit the number of minor incidents recorded during execution of TS19.</td>
<td>Number of ‘near-miss’ reports for TS19 is increased over previous levels.</td>
</tr>
<tr>
<td>Planned</td>
<td>Damage to native vegetation, important habitat or cultural values as a result of vehicular egress in locations where it is not approved.</td>
<td>Exercise instructions will specify use of existing tracks only where areas of environmental significance are present. For example at beach landing sites, only existing access points will be used, there will be no movement of vehicles through areas of environmental sensitivity. Where necessary, EMG field teams will physically mark go and no-go areas to demarcate acceptable egress routes.</td>
<td>No vehicular egress in unauthorised areas on DTA or NDTA.</td>
</tr>
<tr>
<td>Planned</td>
<td>Presence of military vehicles and transportation raises concern among the community or other stakeholders.</td>
<td>Ongoing communication with communities, local government and key stakeholders will be undertaken throughout the planning phase. This will be augmented by the provision of information as per the consultation and engagement strategy in the Environmental Report (refer to Section 2.3).</td>
<td>No major concerns raised concerning availability or timing of information to the community.</td>
</tr>
<tr>
<td>Activity type</td>
<td>Potential environmental issue</td>
<td>Control</td>
<td>KPI</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------</td>
<td>---------</td>
<td>-----</td>
</tr>
<tr>
<td>Planned</td>
<td>Presence of EXCON and exercise participants in smaller communities reduces performance of civilian communications networks, access to public amenities and other public spaces.</td>
<td>Defence will augment existing public telecommunications networks in areas of high usage with existing poor coverage such as Stanage Bay for the duration of the Exercise. Planning for EXCON will also ensure appropriate facilities are provided for exercise participants to avoid the potential for local facilities to be overwhelmed.</td>
<td>Access to civilian communications networks or other facilities is not compromised during TS19.</td>
</tr>
<tr>
<td>Planned</td>
<td>Defence support contracts result in little benefit to local communities as a result of existing national supply arrangements.</td>
<td>Defence will seek to engage local providers where possible ensuring that full consideration is given for opportunities to the range of available providers for services required to execute the exercise.</td>
<td>Local providers are given opportunities to support TS19.</td>
</tr>
<tr>
<td>Planned</td>
<td>Discharge from potable water production in SWBTA adversely affects areas of environmental sensitivity.</td>
<td>Locations for water production will be identified in the TS19 EMP as requiring concurrence with or prior approval from the CEMG in consultation with the RESO and others as appropriate.</td>
<td>All water production activities are approved.</td>
</tr>
<tr>
<td>Planned</td>
<td>Recovery of disabled or lost equipment results in environmental damage.</td>
<td>The TS19 EMP will include a procedure to inspect and assess the relative merits of alternative approaches to retrieval of equipment in order to identify the most environmentally sustainable approach. This will include appropriate hold points relative to the situation that also involves consultation with the appropriate stakeholders including but not limited to GBRMPA, RESOs, DEPAC, landholder, Traditional Owners and others if necessary.</td>
<td>Equipment recovery and DAMCON response results in no unacceptable environmental damage.</td>
</tr>
<tr>
<td>Planned</td>
<td>Aircraft washdown in SWBTA results in contaminants not being captured or appropriately contained and treated.</td>
<td>Exercise design includes the requirements for a self-contained temporary washdown facility to be established on SWBTA. All wastes captured will be disposed of as appropriate in accordance with Qld state regulations.</td>
<td>No uncontrolled or unauthorised discharge of potential contaminants to the environment.</td>
</tr>
<tr>
<td>Planned</td>
<td>Vehicles moving between different NDTA and DTA transport weeds and pathogens.</td>
<td>The TS19 EMP will mandate the washdown and certification of any vehicle that transits from any location to another including in the initial deployment of vehicles from their home base. This</td>
<td>All vehicles and materiel cleared of biosecurity risks prior to transportation between</td>
</tr>
<tr>
<td>Activity type</td>
<td>Potential environmental issue</td>
<td>Control</td>
<td>KPI</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Emergency jettison of ordnance and stores unnecessarily affects environmental values</td>
<td>Emergency jettison procedure developed for TS17 will be replicated for TS19. Consultation with the Fleet Maritime Safety Bureau will be undertaken to develop a process for integrating the information feed from Navy SERS for maritime incidents into the CEMG with the procedure included in the environmental annex to the CEI.</td>
<td>All jettison in accordance with procedure. All maritime incidents are captured by the CEMG.</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Unscheduled blackwater discharge from vessels (non-approved locations)</td>
<td>Environmental awareness material provided to maritime planners throughout the planning phase and to ensure activity scheduling enables vessel commanders to comply with environmental requirements. Consultation with the Fleet Maritime Safety Bureau will be undertaken early in the exercise planning phase to develop a process for integrating the information feed from Navy SERS for maritime incidents into the CEMG with the procedure included in the environmental annex to the CEI.</td>
<td>A guide to environmental controls is provided to exercise planners no later than the MPC. All maritime incidents are captured by the CEMG.</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Nuclear powered vessel radiation leak</td>
<td>The environmental annex to the TS19 CEI will include a reporting procedure relevant to any environmental incident and reflecting key contacts in the event of a leak.</td>
<td>CEI reflects extant procedures regarding nuclear incidents in Australian waters</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Hydrocarbon spill during maintenance or resupply</td>
<td>Procedure for CEMG to monitor Navy SERS for maritime incidents will be included in the environmental annex to the CEI.</td>
<td>All maritime incidents are captured by the CEMG.</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Transfer of invasive new or existing non-indigenous species by personnel, vehicles or equipment during amphibious activities.</td>
<td>ARG deployed forces to washdown prior to entry to any training location, including islands and mainland NDTA or Defence training areas.</td>
<td>All vehicles and materiel cleared of biosecurity risks prior to transportation between different sites in accordance with SOP.</td>
</tr>
<tr>
<td>Activity type</td>
<td>Potential environmental issue</td>
<td>Control</td>
<td>KPI</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Response to injury or death to marine fauna is not effectively coordinated</td>
<td>A communications strategy developed for TS17 for maritime incidents will be reviewed and updated as appropriate to ensure key contacts are identified and accessible with requirements provided to exercise planners and participants as needed. Consultation with the Fleet Maritime Safety Bureau will be undertaken to develop a process for integrating the information feed from Navy SERS for maritime incidents into the CEMG with the procedure included in the environmental annex to the CEI.</td>
<td>A guide to environmental controls including response procedures is provided to exercise planners no later than the FPC. All maritime incidents are captured by the CEMG.</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Avoidable injury or death to terrestrial fauna.</td>
<td>Environmental awareness training material for exercise participants will reinforce regulatory implications of a breach including the requirement for all participants (Australian and international) to comply with all requirements.</td>
<td>No avoidable injury or death to terrestrial fauna</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Poor coordination of response to complaints from community members regarding aircraft activity</td>
<td>Procedures in the CEI will identify incident response process including responsibility for managing nuisance noise issues.</td>
<td>All community complaints managed in accordance with the CEI</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Incidents relating to underwater noise adversely affecting marine fauna are not managed effectively.</td>
<td>Consultation with the Fleet Maritime Safety Bureau will be undertaken early in the exercise planning phase to develop a process for integrating the information feed from Navy SERS for maritime incidents into the CEMG with the procedure included in the environmental annex to the CEI.</td>
<td>All maritime incidents are captured by the CEMG.</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Discharge of chemicals to the environment during an emergency situation</td>
<td>Contingency planning for management of an environmental issue following initial incident response will be undertaken as part of developing the environmental annex to the CEI for TS19 to identify opportunities for enhancement of existing incident response capability.</td>
<td>Guidance to EMG field teams will include incident management considerations for initial response and reporting purposes.</td>
</tr>
<tr>
<td>Unplanned</td>
<td>Unnecessary generation of litter at sea</td>
<td>Review of procedures to ensure all participants can comply with Australian domestic legislation POTS Act during TS19. Guidance for exercise participants in the environmental annex to the CEI</td>
<td>A guide to environmental controls is provided to exercise planners no later than the FPC.</td>
</tr>
</tbody>
</table>
### Activity type | Potential environmental issue | Control | KPI
--- | --- | --- | ---
Unplanned | DAMCON activities not implemented effectively resulting in long-term, persistent environmental damage | Planning for DAMCON includes scheduling of activities to occur concurrently with FTX activities where these do not compromise the achievement of training objectives. | Implementation of DAMCON is not unreasonably delayed and results in no long-term, persistent environmental damage. |
Unplanned | Inappropriate disposal of waste on land results in increased volumes of comingled contaminated waste | Procedures for waste segregation and handling include promulgation to not only exercise participants but also exercise support contractors as appropriate. | Environmental awareness material distributed ahead of FTX. |

Legislative requirements included in CEI.
5.3.1. Exercise Environmental Awareness

Ensuring environmental management measures are implemented by participants requires an awareness program as part of the execution phase activities. Awareness of the environmental controls is achieved through several means and seeks to inform the role and responsibility of individual participants.

A Unit Environmental Liaison Officer (UELO) will be appointed from each military unit participating. It will be the role of the UELO to promote environmental awareness and ensure that environmental controls appropriate to their activities and unit are implemented. The role of the UELO is supported by the RSO&I process including the provision of training, inductions, briefings and dissemination of awareness cards specific to each training area.

The environmental training aims to provide Exercise participants with an understanding of the environmental management requirements for TS19, in particular how they may vary from standard practice. The training will be delivered to all Exercise participants following the requirements outlined in the TS19 Combined Exercise Instruction which gives effect to the requirement of all participants to implement the TS19 EMF as appropriate.

For the benefit of general awareness, some of the materials produced for exercise participants will be published on the TS19 website, in particular the environmental awareness videos. These will be made available as soon as possible following finalisation of video production.

5.3.2. Environment Management Group

The EMG was introduced in Sections 1.3.4 and 0; it performs one of the governance functions as part of the EXCON in respect to management of environmental aspects of the exercise. The EMG is responsible for:

1. conduct of pre and post-exercise environmental inspections;
2. monitoring compliance with environmental instructions;
3. providing environmental advice and assistance to exercise controllers, planners and training audience;
4. reporting environmental incidents and/or deviations from environmental approval conditions or RSO, and coordination of DAMCON responses;
5. documenting and investigating environmental incidents; and
6. providing input to post-exercise environmental reports.

For TS19 the Combined Environment Management Group (CEMG) will be structured around the main EXCON group that will be based at SWBTA. From here, the CEO will coordinate EMG and DAMCON activities in support of the Exercise Director. The following organisation chart (Figure 5-2) illustrates the CEMG structure for TS19. This structure will enable the EMG to deliver its effect at all NDTA and DTA being used for the exercise and will also provide for flexibility in providing coverage at locations that will not endure the full duration of the Exercise.
Figure 5-2: TS19 Indicative CEMG Organisation Chart
6. EPBC Act Impact Assessments

The EPBC Act requires Defence to consider the potential impact of its activities on MNES and the environment in general. The following sections consider aspects of the EPBC Act relevant to Defence activities and follows guidance material published by the regulator, DoEE where appropriate.

6.1. Matters of National Environmental Significance

The assessment of MNES under the EPBC Act is guided by SIG 1.1 in addition to other guidance documents prepared for specific MNES.

6.1.1. World Heritage Properties

TS19 will be conducted in locations where two World Heritage properties will be relevant considerations. The Wet Tropics of Queensland (Wet Tropics) World Heritage Area (WHA) and GBR WHA are both listed under the same four World Heritage listing criteria which reflect the OUV for the properties as follows:

**Criterion (vii):** superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance.

**Criterion (viii):** outstanding example representing major stages of earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features.

**Criterion (ix):** outstanding example representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals.

**Criterion (x):** most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.

The EPBC Act SIG 1.1 state that an action is likely to have a significant impact on the World Heritage values of a declared World Heritage property if there is a real chance or possibility that an action will cause:

- one or more of the World Heritage values to be lost;
- one or more of the World Heritage values to be degraded or damaged; or
- one or more of the World Heritage values to be notably altered, modified, obscured or diminished.

Subsequent to the publication of SIG 1.1, the Department of the Environment released referral guidelines for the OUV of the GBR WHA (DoE 2014). These guidelines included additional

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72 ‘property’ in the context of a World Heritage area refers to the area in its entirety that has been inscribed on the World Heritage list by the UNESCO World Heritage Committee, and declared by the Minister for the Environment to be a World Heritage property under the EPBC Act.

consideration for the assessment of potential impacts to that property with respects to its attributes and integrity. Attributes refers to specific elements or features of a World Heritage property that contribute to its OUV, and which collectively link to one or more criteria for World Heritage listing. Integrity is considered in terms of the wholeness, intactness and threats relevant to the property and is described in the referral guidelines as:

...a measure of the wholeness and intactness of the natural and/or cultural heritage and its attributes. Examining the condition of integrity therefore requires assessing the extent to which the property:

a) includes all elements necessary to express its Outstanding Universal Value;

b) is of adequate size to ensure the complete representation of the features and processes that convey the property’s significance;

c) suffers from adverse effects of development and/or neglect.

Following the guidance in SIG 1.1 (DoE 2013) and the referral guidelines for the OUV of the GBR WHA (DoE 2014), the sections below consider the potential impacts on World Heritage areas as a consequence of TS19.

**Wet Tropics of Queensland**

The Wet Tropics WHA was inscribed on the World Heritage List on 9 December 1988.

As described by the DoEE website, the Wet Tropics WHA stretches along the northeast coast of Australia for some 450 kilometres and comprises in the order of 894,420 hectares of mostly tropical rainforest. The property is recognised for the record it represents of the ecological and evolutionary processes that shaped the flora and fauna of Australia from the Gondwanan forest that covered parts of the ancient supercontinent of Gondwana between 50 and 100 million years ago. It supports tropical rainforests at their latitudinal and climatic limits, and unlike most other seasonal tropical evergreen equatorial forests, is subject to a dry season and to frequent cyclonic events. Many of the distinct features of the Wet Tropics relate to its extremely high but seasonal rainfall, diverse terrain and steep environmental gradients. In addition to its complex array of species and life forms, the Wet Tropics is also recognised as an area possessing outstanding scenic features, natural beauty and magnificent sweeping landscapes.

The extent of the Wet Tropics WHA is illustrated in Figure 6-1 with TFTA adjacent to the southern end of the property.

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The statement of integrity adopted by the World Heritage Committee (WHC 2012a) notes among other matters in respect of the Wet Tropics WHA that:

‘At the time of its inscription the property was identified as being an essentially intact ecosystem with the level of human impact low, especially when compared to other tropical forest regions, with 80% of the estimated cover originally present at the time of the first European settlement remaining...’

The extent of TFTA that could indirectly impact the Wet Tropics WHA is limited to the Paluma Range in the north eastern corner of the training area. This portion of the training area is within the Wet Tropics Bioregion\textsuperscript{76} and shares many of the same attributes as the World Heritage property.

\textsuperscript{75} SOURCE: adapted from \url{https://www.wettropics.gov.au/wha-maps/}

\textsuperscript{76} Interim Biogeographic Regionalisation of Australia \url{http://www.environment.gov.au/land/nrs/science/ibra}
Reflecting these values, it is protected to a higher standard than other parts of the range in recognition of its environmental sensitivities. Activities within this area and other parts of TFTA are managed through the TFTA RSO. Specific restrictions apply to parts of the training area adjacent to the Wet Tropics WHA (outlined in Table 6-1) in addition to the more general requirements applicable under the TFTA RSO.

**Table 6-1: TFTA RSO prescriptions on use of Wet Tropics Bioregion parts of the range**

<table>
<thead>
<tr>
<th>Permitted</th>
<th>Not permitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>• infantry minor tactics(^{77}) up to Company level;</td>
<td>• use of any weapons;</td>
</tr>
<tr>
<td>• survival training;</td>
<td>• off-road vehicle movement.</td>
</tr>
<tr>
<td>• vehicle transit on existing, formed tracks.</td>
<td></td>
</tr>
</tbody>
</table>

These limitations mean that the potential effect of any activities in areas that could directly or indirectly affect World Heritage values and attributes are not likely to result in any adverse impacts. Notwithstanding, all generic controls that apply under the TS19 EMF (such as biosecurity measures), will be implemented to mitigate identified potential threats. Accordingly there is no real chance or possibility that TS19 will impact on the integrity of the property or cause one or more of the World Heritage values or attributes to be:

- lost;
- degraded or damaged, or
- notably altered, modified, obscured or diminished.

Further to this and as a consequence of the limitations on use of the training area, it is not likely that the Exercise will result in a significant impact to the integrity of the Wet Tropics WHA.

**Great Barrier Reef World Heritage Area**

The GBR WHA (refer to Figure 4-7) is globally recognised as a consequence of having been on the World Heritage list since 1981. Consideration of the potential impact of TS19 follows the EPBC Act referral guidelines for OUV of the GBR WHA (DoE, 2014) and the SIG 1.1 (DoE, 2013).

Other relevant guidance material is also presented by the Reef 2050 Plan (Commonwealth of Australia 2018) and Reef Blueprint for resilience (GBRMPA, 2017b & 2018\(^{78}\)). These documents identify strategies and actions being implemented by GBRMPA to enhance the management effectiveness of the GBR WHA. While these documents acknowledge the challenge posed by increasingly volatile climatic conditions associated with global warming, they identify themes that enable consideration of actions on a smaller scale and which would be relevant considerations for Defence in relation to the assessment of activities associated with TS19.

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\(^{77}\) Minor tactics are those tactical actions, techniques and drills employed by dismounted troops conducting offensive, defensive, stability and enabling activities.

Almost all activities comprising TS19 will be within the GBR WHA, within terrestrial catchments that drain into the GBR WHA, or in areas directly adjoining the GBR WHA. The threatened species, communities and other MNES which occur in this area also contribute to the OUV of the GBR WHA. A holistic approach to environmental management of the Exercise with a focus on the most heavily regulated aspect is therefore appropriate. As such the EMF for TS19 is designed to comprehensively protect the attributes that contribute to the OUV of the GBR WHA.

Given the high level of sensitivity and corresponding protection afforded to the GBR WHA, effective management of activities affecting the GBR would also substantially limit the likelihood for any potential impacts that could be considered significant under the EPBC Act with respect to other MNES or the broader environment. Table 6-2 presents a discussion against each of the factors prescribed by the referral guidelines for OUV of the GBR WHA (DoE 2014) with consideration also of the Operational Guidelines for the Implementation of the World Heritage Convention (WHC 2012b).

Table 6-2: Assessment of potential impacts to GBR WHA OUV

<table>
<thead>
<tr>
<th>loss of one or more of the attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attributes of the GBR WHA include ‘landscape scale’ features which are the result of multiple environmental variables and their combined effect to support a diversity of biological processes, species and communities in addition to geological and geomorphic features across the range of environments represented within the property. The nature of TS19 is such that there will be no attributes of the GBR WHA lost as a consequence of the Exercise given that it is:</td>
</tr>
<tr>
<td>- a short-term, temporary activity (e.g. TS19 will be conducted between 11 and 24 July 2019);</td>
</tr>
<tr>
<td>- an activity that does not affect cays or reefs;</td>
</tr>
<tr>
<td>- designed to avoid areas of environmental sensitivity according to the nature of platforms and activities (e.g. only established beach exits will be used for moving amphibious vehicles off beach landing sites);</td>
</tr>
<tr>
<td>- designed and managed according to a framework that is subject to consultation with the community, regulators and Traditional Owners;</td>
</tr>
<tr>
<td>- an activity which does not involve the development of permanent structures;</td>
</tr>
<tr>
<td>- an activity that will not result in a change in land use for any of the areas that will comprise the exercise area;</td>
</tr>
<tr>
<td>- an activity that does not coincide with the breeding of turtles or migratory birds; and is</td>
</tr>
<tr>
<td>- an activity that follows standard environmental controls employed by Defence which include avoidance of marine fauna, management of sonar to reduce noise impacts to cetaceans and other fauna, restrictions on low altitude flying in certain locations and in proximity to wildlife, in addition to numerous other measures specific to platforms, sensors, weapons systems and locations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>degradation or damage to one or more of the attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>The short term and dispersed nature of activities associated with TS19 will result in localised effects of a temporary nature that will not result in degradation or damage to any of the attributes of the GBR WHA. Despite this, associated activities comprising TS19 have the potential to result in small scale, localised and temporary effects as part of a broader cumulative effect resulting from human use of the GBR. In particular, this includes:</td>
</tr>
</tbody>
</table>
• increased shipping and the associated underwater noise from sonar and shipping;
• blackwater discharge by selected ships in approved locations; and
• increased human presence including movement of small boats, landing craft, helicopters, planes and fast jets.

For all activities comprising TS19, the location, duration and potential effects to the environment are considered throughout the exercise planning phase as described in Section 2. The appropriateness of the location in addition to any necessary controls over the conduct of the activity that are additional to SOP (including the MA EMP, RSO and others as appropriate) is considered. This process has a two-fold aim to:

1. reduce the risk to the environment to as low as reasonably practicable; and
2. avoid the potential for a significant impact to the environment or MNES under the EPBC Act.

Additional measures that have been developed in response to the perceived risks to the GBR WHA and regulatory obligations principally relate to the management of blackwater. For all other activities comprising TS19 that have the potential to directly affect attributes of the GBR WHA, extant procedures under the MA EMP, SWBTA RSO and other policy documents effectively mitigates the potential for any persistent environmental effect.

Specific measures relating to blackwater involve discharge only within defined areas, for which GBRMPA concurrence has been obtained and only by vessels which do not have the ability to discharge by another means elsewhere. Through these measures, risk to the environment has been reduced to being as low as reasonably practicable, unnecessary impacts to the GBR WHA will be avoided and Defence regulatory obligations under Part 5.2 of the GBRMP Zoning Plan 2003 will have been met. The consequential direct impact to the attributes of the GBR WHA will not be significant and the extent to which the activity contributes to a cumulative impact to overall declining water quality in the GBR will be negligible.

As a result, TS19 will not result in a persistent or detectable impact that could be considered as substantially contributing to the degradation or damage to any of the attributes of the GBR WHA.

**notably alter, modify, obscure or diminish one or more of the attributes**

The temporary, transient and dispersed nature of training activities comprising TS19 will result in no permanent environmental impacts or contribute in any meaningful way to cumulative impacts on the attributes of the GBR WHA. The direct and indirect effects of the exercise are mitigated through the design and implementation of the exercise under the TS19 EMF.

The lack of any permanent physical impacts resulting from TS19 ensures there will be no notable alteration, modification, obscuration or diminishing of any attributes of the GBR WHA.

**impact on the integrity of the property**

In addition to meeting the criteria to be of OUV, a World Heritage property must also meet the conditions of integrity. Integrity is defined as the measure of the wholeness and intactness of the natural attributes (DoE, 2014).

WHC (2012a) summarise the integrity of the GBR WHA as follows:
'The ecological integrity of the GBR is enhanced by the unparalleled size and current good state of conservation across the property. At the time of inscription it was felt that to include virtually the entire Great Barrier Reef within the property was the only way to ensure the integrity of the coral reef ecosystems in all their diversity... At the scale of the GBR ecosystem, most habitats or species groups have the capacity to recover from disturbance or withstand ongoing pressures. The property is largely intact and includes the fullest possible representation of marine ecological, physical and chemical processes from the coast to the deep abyssal waters enabling the key interdependent elements to exist in their natural relationships.'

Military activities in general have the potential to pose threats upon the environment. Examples of TS19 activities and resultant potential threats to certain attributes of the GBR are summarised below in accordance with the referral guidelines for the OUV of the GBR WHA (DoE 2014).

<table>
<thead>
<tr>
<th>Threat</th>
<th>Example military activity contributing to threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>habitat degradation and fragmentation</td>
<td>Vehicular movement through terrestrial vegetation communities, disturbance to marine benthic communities, especially seagrass near beach landing sites.</td>
</tr>
<tr>
<td>shipping and boating incidents including collisions with marine mammals and/or sea turtles</td>
<td>Vessel transit and manoeuvres during administrative and operational activities; high speed movement of landing craft and small boats during beach landings and ship to ship transfers.</td>
</tr>
<tr>
<td>poor water quality and pollution</td>
<td>Gross litter in terrestrial catchments to the GBR, hydrocarbon and other chemical spills on land and in marine areas, other discharges from ships, in particular blackwater.</td>
</tr>
<tr>
<td>marine debris and litter</td>
<td>Loss of parachutes, incidental debris resulting from operational activities (e.g. sonobuoys).</td>
</tr>
<tr>
<td>introduction of exotic plants and animals</td>
<td>Movement of vessels, personnel, equipment and vehicles between domestic and international locations and associated potential for movement of exotic and invasive species.</td>
</tr>
<tr>
<td>increased human presence</td>
<td>TS19 will involve in the order of 33,000 personnel. It is anticipated that approximately 10,000 will be on the CSG operating in the Tasman and Coral Seas, a further 8,000 will comprise the naval and littoral forces operating in the GBR lagoon, and the remaining personnel will be spread across the terrestrial training sites and bases (with SWBTA supporting in the order of 9,000 personnel). This increase in human presence is consistent with previous TS exercises however does represent an increase over day-to-day numbers.</td>
</tr>
</tbody>
</table>

Mitigations and Exercise Design Considerations

Section 5 of this report describes the TS19 EMF. It incorporates a comprehensive ERA which includes
lessons learned in preceding major exercises, and builds upon the EMF developed for those activities. The TS19 EMP includes measures designed specifically to address the potential and known threats to the GBR WHA. This comes both from the perspective of what can reasonably be expected to occur during the exercise, and in anticipation of incidents that although not necessarily part of what is planned, have been anticipated. In preparing anticipated incidents, further measures are devised to limit the potential for them to occur in the first instance, reduce the potential consequence and expedite response and remediation in the case that an incident does occur.

Exercise design decisions and key mitigation measures that are targeted to protecting the integrity and attributes of the GBR WHA also benefit the broader environment and MNES that occur within the GBR WHA and associated areas. Such design decisions and mitigation measures are in excess of the standing Defence system of environmental governance (e.g. MA EMP, RSO, etc.) and include:

<table>
<thead>
<tr>
<th>Generic Threat</th>
<th>TS19 specific mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>habitat degradation and fragmentation</td>
<td>• Vehicles and personnel transiting from beach landing sites (BLS) to activities beyond the associated dune systems will only use established beach exits.</td>
</tr>
<tr>
<td></td>
<td>• Prior to beach landings being conducted, surveys are conducted to ensure BLS are located where potential damage to seagrass meadows and other sensitive benthic communities can be avoided.</td>
</tr>
<tr>
<td>shipping and boating incidents including collisions with marine mammals and/or sea turtles</td>
<td>No additional measures specific to TS19, implementation of the MAEMP and SWBTA RSO already provides effective mitigation of this threat.</td>
</tr>
<tr>
<td>poor water quality and pollution</td>
<td>In general, provisions of the MA EMP apply to TS19 such that Defence activities are consistent with provisions in MARPOL as it relates to the GBR. Despite this, blackwater discharge remains a point of departure from this. Previously outlined additional measures are designed to reduce the impact blackwater discharge will have on the GBR to being as low as reasonably practicable. Measures include to discharge only:</td>
</tr>
<tr>
<td></td>
<td>• where necessary, if no feasible alternative exists; and</td>
</tr>
<tr>
<td></td>
<td>• subject to controls required by GBRMPA.</td>
</tr>
<tr>
<td></td>
<td>TS19 will not generate other forms of pollution that would be considered a threat to the integrity of the GBR WHA.</td>
</tr>
<tr>
<td>marine debris and litter</td>
<td>No additional measures specific to TS19, implementation of the MAEMP and SWBTA RSO already provides effective mitigation of this threat.</td>
</tr>
<tr>
<td>introduction of exotic plants and animals</td>
<td>The TS19 EMF includes the additional requirement for assurance to be provided by amphibious platforms that vehicles participating in beach landings and subsequent terrestrial manoeuvres are washed down and certified weed-free prior to being deployed to a new BLS.</td>
</tr>
</tbody>
</table>
**increased human presence**

Timing and duration of the exercise, while determined principally by other factors, ensures that exercise participants are not interacting with the majority of species that would be susceptible to increased human presence. An exception to this is the increasing population of humpback whales that migrate north to the GBR coinciding with the timing of TS exercises. Mitigations developed for TS19 that target this and other species of marine mammal, turtle, migratory bird, etc. include delivering additional awareness information to exercise participants that reinforces the need to follow procedures in extant documents. Existing provisions include those in the MAEMP that prescribe set-back distances for avoidance of whales and maintaining an effective lookout at all times whether during small boat transit or for larger vessel manoeuvre, aircraft activities and beach landing activities.

Further to the requirement for exercise participants to follow environmental mitigation measures, the TS19 EMF includes the deployment of personnel as part of the EMG in order to observe, monitor, advise commanders and report on the effectiveness of mitigations. The EMG field teams are also deployed to effect implementation of necessary adaptations to mitigation measures to limit the potential for avoidable impacts to the environment.

Incorporation of the ability to implement elements of adaptive management during the conduct of TS19 enables live and proactive monitoring of environmental risks. This ensures that the nature of risks associated with planned activities and the contextual aspect of circumstances that could lead to an incident being appreciated as early as possible. The consequence is that notwithstanding a comprehensive suite of environmental controls, threats to the environment and ultimately the integrity of the GBR WHA are managed actively throughout the execution phase.

Following consideration of the avoidance, mitigation and remediation measures incorporated into the execution of TS19, it is not likely that the exercise will result in a significant impact to the integrity of the GBR WHA or any of its attributes.

**Conclusion**

The GBR WHA and areas directly adjoining it in both marine areas and terrestrial catchments which drain to it, comprises the principle location for many of the activities associated with TS19. Owing to the criteria under which the GBR is recognised as meeting and justifying its World Heritage listed status, the GBR WHA is also home to numerous threatened species and communities and incorporates other MNES that are listed under the EPBC Act. Further to this, the area also supports other matters which are listed under Qld state legislation for protection of the environment and heritage, both historical and cultural.

A potentially significant impact to any one of these aspects of the broader environment would have an adverse impact to one or more of the attributes of the GBR WHA and its integrity. However given TS19 is a temporary and dispersed activity with a comprehensive and adaptive EMF that will result in no permanent or notable impacts to the environment, it is concluded there will be no likelihood of a significant impact to the GBR WHA.
6.1.2. National Heritage Places

The GBR WHA boundaries are coincident with the boundaries of the national heritage property by the same name. Attributes for which the GBR WHA is listed are consistent with those describing the national heritage property and as such the analysis presented in Section 6.1.1 adequately addresses the impact of TS19 on the GBR national heritage property.

There are no other national heritage properties relevant to the conduct of TS19.

6.1.3. Wetlands of International Importance

Shoalwater and Corio Bays

The Shoalwater and Corio Bays Ramsar site includes the majority of marine areas within SWBTA in addition to other areas outside the training area in Corio Bay and parts of its tributary Water Park Creek. The Dismal Swamp sector and all of the intertidal areas within SWBTA are also within the declared wetland boundaries. The extent of the Ramsar site is illustrated in Figure 6-2.

![Shoalwater and Corio Bays Ramsar site](https://www.environment.gov.au/cgi-bin/wetlands/ramsardetails.pl?refcode=44#)

Figure 6-2: Shoalwater and Corio Bays Ramsar site

Activities within SWBTA are controlled by RSO and other extant environmental management procedures such as those prescribed by the MA EMP (discussed further in Section 6.1.3 concerning listed threatened species).

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Defence has been conducting a wide range of activities in SWBTA since its establishment under the guidance of these documents. Periodical review of the ecological values of SWBTA confirm the maintenance of values in the Ecological Character Description (ECD) (BMT WBM, 2010) for the wetland with the most comprehensive being the 2008 State of the Environment Report (Defence, 2009). More recent targeted studies within SWBTA have confirmed the maintenance of ecological values however also highlight the threat posed by invasive species, inappropriate fire regimes and the conduct of training activities in areas that are sensitive to disturbance.

Reflecting the known threats, assessment of environmental risks associated with TS19 has resulted in the development of environmental management measures targeting the likelihood and consequence of the Exercise affecting environmental values in addition to the overall effectiveness of extant procedures. The TS19 EMP includes a focus on the need to control the movement of invasive species and to liaise with regional environmental personnel to ensure activities are conducted in locations where they do not result in avoidable impacts.

Considerations for the assessment of significance of an action on an internationally important wetland are described in SIG 1.1. An action is likely to have a significant impact on the ecological character of a declared Ramsar wetland if there is a real chance or possibility that it will result in:

- areas of the wetland being destroyed or substantially modified;
- a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland;
- the habitat or lifecycle of native species, including invertebrate fauna and fish species, dependant [sic.] upon the wetland being seriously affected;
- a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health; or
- an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland.

The TS19 EMP is built upon the experience of previous major exercises and a contemporary understanding of sensitive environmental issues. It incorporates measures developed on a SMART model (refer to Section 2.1) which respond directly to the threats that are posed by TS19 to the values of the Ramsar site. Accordingly, the design of TS19 and the measures being implemented to mitigate the overall environmental impact of the exercise limit the potential for there to be any likelihood of a significant impact to the ecological character of the Shoalwater and Corio Bays Ramsar wetland.

**Coral Sea Reserves – Coringa-Herald and Lihou Reefs and Cays**

The Coral Sea Reserves are Ramsar wetlands (illustrated in Figure 4-4) which have been incorporated into the Coral Sea Marine Park. It is also within the expanded International Maritime Organisation (IMO) particularly sensitive sea area (PSSA) that also covers the Torres Strait and GBR and a large part of the Coral Sea. The PSSA declaration establishes an ‘area to be avoided’ by formalising shipping channels in the vicinity of the listed Ramsar wetlands in recognition of their environmental
and scientific values. The declaration of the Coral Sea Marine Park with it associated zonings and management plan achieve the management objectives of the PSSA declaration and provide for governance within the Australian environmental regulatory system.

While activities associated with TS19 will be conducted in the Coral Sea, these will be controlled through extant environmental management procedures as directed under the TS19 CEI. Further to this, as TS19 involves no live firing and all activities in the Coral Sea will be maritime, involving no landings on reefs, cays or islands, there will be no adverse impacts to the Coringa-Herald and Lihou reefs such that any of the significant impact criteria in SIG 1.1 would be triggered. The exercise will not result in a significant impact to the Coral Sea Reserves Ramsar wetlands.

6.1.4. Listed Threatened Species

Owing to the wide geographic footprint of TS19, a substantial number of threatened species are known or considered likely to occur in areas where the Exercise will be conducted. Protected Matters Search Tool (PMST) reports generated for all of the areas where the exercise will be conducted can be summarised in terms of the total number of threatened species (flora and fauna) potentially present, as per Table 6-3.

Table 6-3: PMST Numbers of EPBC Act listed Threatened Species

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Total*</th>
<th>Critically Endangered</th>
<th>Endangered</th>
<th>Vulnerable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coral &amp; Tasman Seas</td>
<td>35</td>
<td>3</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Great Barrier Reef</td>
<td>40</td>
<td>4</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Evans Head AWR &amp; NDTA</td>
<td>85</td>
<td>7</td>
<td>25</td>
<td>53</td>
</tr>
<tr>
<td>Bundaberg NDTA</td>
<td>63</td>
<td>6</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td>SWBTA</td>
<td>56</td>
<td>6</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Stanage Bay NDTA</td>
<td>43</td>
<td>5</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>Duke Islands NDTA</td>
<td>21</td>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Sarina NDTA</td>
<td>44</td>
<td>4</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>Mackay NDTA</td>
<td>41</td>
<td>4</td>
<td>13</td>
<td>24</td>
</tr>
<tr>
<td>Midge Point NDTA</td>
<td>40</td>
<td>4</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Proserpine NDTA</td>
<td>40</td>
<td>4</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>Bowen NDTA</td>
<td>38</td>
<td>4</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>TFTA</td>
<td>40</td>
<td>3</td>
<td>13</td>
<td>24</td>
</tr>
</tbody>
</table>

* totals include a substantial overlap of species that are common between each training area and cannot be aggregated across all sites by adding the Total column

For aspects of the exercise design, consideration has been given to the environmental values of each location and the potential presence of threatened species and their habitats. Where attributes associated with threatened species have been identified, exercise activities and their locations have been adjusted or moved in order to avoid the potential for any impact in the first instance. This process has resulted in an exercise design that adopts the philosophy that from the outset, there will
be no significant impact on the environment. Any residual threats to the environment are subject to a series of activity control measures. Such examples include:

- Vehicles and personnel taking part in amphibious activities will only use approved beach exits when approaching or departing the beach while on shore. This measure acts to avoid impacts to threatened flora and fauna habitat and sensitive environmental values associated with dune systems and ‘back of dune’ vegetation, which in the exercise area is also likely to coincide with one of the six threatened ecological communities known to occur within the Exercise’s footprint (refer to Section 6.1.5). This measure also avoids the potential for interaction with Indigenous cultural heritage that is often associated with dune systems (among other landscape features).

- Biosecurity measures will be followed at all times in order to minimise the potential for transfer of exotic and invasive species between training areas (both DTA and NDTA) and applies equally to participants from Australia as it does to participants from the US and other third country participants involved. Measures will include:
  - Certification of all foreign equipment as being weed free, prior to entry into Australia in accordance with requirements of the Australian Government Department of Agriculture and Water Resources;
  - Wash down of vehicles, machinery, aircraft and equipment to remove weeds and potential sources of pathogens prior to entering new NDTA or other training areas; and
  - Ballast water exchange in accordance with IMO requirements\textsuperscript{80} and/or the Biosecurity Act 2015 as appropriate.

- Measures under the MA EMP, SWBTA RSO and other standing controls will be implemented as a standard practice requirement. These convey a wide range of expectations for exercise participants however also include measures to assess the current environmental values of an exercise locality with subsequent measures to be implemented in response, including:
  - All vessels are to maintain an effective look out for marine fauna; depending on what species is observed and what activity is being conducted, a range of responses may apply in order to avoid an adverse impact. This requirement applies to small boats, landing craft and larger vessels undertaking tactical manoeuvres or transit. Beyond the transit itself, activities for which these measures apply include use of sonar, amphibious landings, weapons practices, low altitude flying among others.
  - A number of temporal factors are also built into standing controls and take into consideration the presence or absence of migratory species of bird, marine mammals and marine reptiles relative to a range of activities in addition to limitations on the duration of activities at certain locations, relative to tidal movements.

For each of the locations where TS19 activities will be conducted, the exercise design process has focussed on areas where threatened species and/or habitats are not known to be present. Where

\textsuperscript{80} International Convention for the Control and Management of Ships’ Ballast Water and Sediments (Ballast Water Convention)
such values are present, they are identified in the TS19 EMP as areas to be avoided. The TS19 EMP also provides additional guidance on the avoidance and mitigation of impacts to threatened species and their habitat and applies to all locations. The following Table 6-4 summarises the broad groupings of threatened species on the basis of common habitat characteristics, training areas, activities and relevant standing environmental controls that apply as standard practice.
### Table 6-4: Threatened species groupings and potential interaction with TS19 activities

<table>
<thead>
<tr>
<th>Species group*</th>
<th>Description</th>
<th>Training Area</th>
<th>Relevant TS19 activities</th>
<th>Standing Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marine fauna</strong></td>
<td>Deep water marine mammals, birds and pelagic fish occurring in the Coral and Tasman Seas.</td>
<td>Coral Sea Tasman Sea</td>
<td>Manoeuvre by small boats and large vessels, use of sonar, aircraft movements by fixed and rotary wing.</td>
<td>MA EMP</td>
</tr>
<tr>
<td><strong>Inshore-marine fauna</strong></td>
<td>Marine mammals, birds, sharks and reptiles occurring within the GBR lagoon and associated saltwater lakes.</td>
<td>Great Barrier Reef</td>
<td>Littoral manoeuvre by small and large vessels, amphibious landings, use of sonar, parachute insertions, aircraft movements by fixed and rotary wing.</td>
<td>MA EMP SWBTA RSO</td>
</tr>
<tr>
<td><strong>Terrestrial flora and fauna</strong></td>
<td>Mammals, reptiles and birds occurring on the Australian mainland and continental islands. Also includes plant species limited to dry land.</td>
<td>Evans Head AWR &amp; NDTA Bundaberg NDTA SWBTA Stanage Bay NDTA Duke Islands NDTA Sarina NDTA Mackay NDTA Midge Point NDTA Proserpine NDTA Bowen NDTA TFTA</td>
<td>Mounted and dismounted manoeuvre, base camp establishment and occupation, defensive position establishment and occupation, parachute insertions, battlefield pyrotechnics, post-exercise DAMCON, aircraft movements by fixed and rotary wing.</td>
<td>LA EMP SWBTA RSO TFTA RSO EVDAWR RSO</td>
</tr>
<tr>
<td><strong>Aquatic flora and fauna</strong></td>
<td>Species of flora and fauna restricted to freshwater environments such as wetlands, rivers and lakes.</td>
<td>Evans Head AWR &amp; NDTA SWBTA Stanage Bay NDTA Midge Point NDTA Proserpine NDTA Bowen NDTA TFTA</td>
<td>Creek crossings by vehicles and personnel, aircraft movements by fixed and rotary wing.</td>
<td>LA EMP SWBTA RSO TFTA RSO EVDAWR RSO</td>
</tr>
</tbody>
</table>

* species grouping on the basis of biology as opposed to EPBC Act listing categories
6.1.5. Listed Ecological Communities

Threatened ecological communities that are predicted by the PMST to occur within the general area where TS19 will be conducted include the following:

- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (Critically Endangered), referred to as ‘littoral rainforest’;
- Lowland Rainforest of Subtropical Australia (Critically Endangered), referred to as ‘lowland rainforest’;
- Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland (Endangered), referred to as ‘tea-tree woodland’;
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (Endangered), referred to as ‘SEVT’;
- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community (Endangered), referred to as ‘swamp oak forest’; and
- Subtropical and Temperate Coastal Saltmarsh (Vulnerable), referred to as ‘saltmarsh’.

For a number of the areas to be used, the presence or absence of the communities has been verified through site inspections for locations where activities would be conducted off-road and in undeveloped areas. For the gazetted Defence training areas, environmental baseline information is available that provides a more extensive understanding of the presence of these communities. Depicted in Table 6-5 is a summary of the potential occurrence of threatened ecological communities based on PMST reports.

### Table 6-5: PMST Occurrence of EPBC Act listed Threatened Ecological Communities

<table>
<thead>
<tr>
<th>Training Area</th>
<th>Critically Endangered Littoral rainforest</th>
<th>Endangered Lowland rainforest</th>
<th>Tea-tree woodland</th>
<th>Endangered SEVT</th>
<th>Swamp Oak forest</th>
<th>Vulnerable Saltmarsh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evans Head AWR &amp; NDTA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Bundaberg NDTA</td>
<td>-</td>
<td>L</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SWBTA</td>
<td>L^</td>
<td>-</td>
<td>L^</td>
<td>L^</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stanage Bay NDTA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>L^</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Duke Islands NDTA</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sarina NDTA</td>
<td>L</td>
<td>-</td>
<td>L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mackay NDTA</td>
<td>L</td>
<td>-</td>
<td>L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Midge Point NDTA</td>
<td>L^</td>
<td>-</td>
<td>L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Proserpine NDTA</td>
<td>L</td>
<td>-</td>
<td>L^</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bowen NDTA</td>
<td>-</td>
<td>-</td>
<td>L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>TFTA</td>
<td>-</td>
<td>-</td>
<td>L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*L = PMST report ‘Likely’ occurrence; ^ = Confirmed through site survey*
For activities that will be undertaken on SWBTA, small areas of vegetation removal is likely to be required in order to enable the establishment of defensive positions and certain administrative areas, where appropriate clearings do not already exist. Such works would be conducted in accordance with guidance by the SWBTA RSO which prohibits vegetation clearance without an ECC. For the purpose of TS19, no areas of listed threatened ecological community will be subject to vegetation clearing on SWBTA.

Clearing of vegetation will not be undertaken on any other DTA or NDTA, whether in an EPBC Act protected community or otherwise.

Acknowledging the threat posed by the introduction of invasive species, specific measures are incorporated into the TS19 EMP to ensure the potential for vehicles and personnel to spread weeds is limited. This also reflects threats to SEVT as described by its national recovery plan\(^1\) and appropriately responds to aspects of the exercise which may present a hazard.

The following Table 6-6 considers the potential impacts of TS19 on threatened ecological communities in accordance with requirements of SIG 1.1.

**Table 6-6: Assessment of potential impacts to threatened ecological communities**

| **reduce the extent of an ecological community** | None of the threatened ecological communities known to occur within the footprint of TS19 will be reduced in their extent as a result of the exercise. |
| **fragment or increase fragmentation of an ecological community** | Vegetation clearing associated with TS19 will be contained to selected small areas of SWBTA and will not directly affect any threatened ecological communities. The indirect effects of any clearing will not adversely impact connectivity between extant patches of listed communities. |
| **adversely affect habitat critical to the survival of an ecological community** | No areas of habitat critical to the survival of ecological communities occur where TS19 activities are to be conducted or will be indirectly affected by the exercise. |
| **modify or destroy abiotic (non-living) factors** | No aspects of TS19 will result in a change to abiotic factors upon which any of the potential threatened ecological communities rely. |
| **cause a substantial change in the species composition** | The conduct of TS19 does not involve the selective removal of any vegetation species or stratum in any location. Similarly, the TS19 EMF involves implementation of biosecurity measures to limit the potential for introduction of existing weeds or dispersal of new and potentially invasive species. |

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Accordingly TS19 is not likely to cause a substantial change in the species composition of any area of a threatened ecological community.

**cause a substantial reduction in the quality or integrity of an occurrence of an ecological community**

TS19 will not reduce the quality or integrity of any occurrence of any of the areas of threatened ecological community.

**interfere with the recovery of an ecological community**

Conduct of TS19 will not interfere with the recovery of any of the potentially affected threatened ecological communities.

Avoidance through design is the principle mechanism through which it has been assessed that there will be no significant impact to any threatened ecological community. The TS19 EMP also includes measures to mitigate actual impacts and minimise the potential for threatening processes such as the introduction of potentially invasive species.

### 6.1.6. Listed Migratory Species

Consideration of the potential impacts of TS19 on migratory species centres on the protection of ‘important habitat’. This is explained by SIG 1.1 and when applied to areas where TS19 will be conducted, can be interpreted as follows:

- Migratory wetlands birds are generally in decline as a result of habitat destruction across their range. Accordingly, all shorebird habitats are considered to be ‘important habitat’ for those migratory species.
- Areas where humpback whales aggregate during their northern migration along the Australian east coast constitutes areas of ‘important habitat’.
- Areas of seagrass meadow, in particular large expanses such as those in SWBTA would represent ‘important habitat’ for dugong and marine turtles, especially green turtles.
- Inshore areas, in particular those in the vicinity of Shoalwater Bay and other amphibious landing sites would represent ‘important habitat’ for the listed migratory species of inshore dolphin, Indo-Pacific humpback, Indo-Pacific bottlenose and Australian snubfin dolphins.

Of these species, humpback whales are one of the most visible and potentially susceptible in addition to occurring throughout the marine environment of the GBR where TS19 will be conducted. Susceptibility is due to the migration including mothers with calves and pregnant females which travel north to give birth in addition to the breeding activity which occurs across other parts of the humpback whale population during this period. For species such as turtles, sharks, dugong and inshore dolphins, the additional controls on use of the inshore areas of SWBTA in particular includes speed limits for vessels of 5 knots. This measure coincides with the Shoalwater Bay Dugong Sanctuary and also effectively mitigates potential threats from TS19 to areas of ‘important habitat’ for these species. There are no other listed migratory species for which the conduct of TS19 will involve activities in or adjacent to areas of ‘important habitat’ following the guidance of SIG 1.1.
Areas of the GBRMP most strongly associated with humpback whale breeding and calving were modelled by Smith et al. (2012) from data collected between 2003 and 2007 and subsequently correlated with satellite tracking data for humpback whales tagged in 2009. The modelling for that period indicates a preference for two core areas as illustrated in Figure 6-3 as having a greater than 70% modelled suitability. The first is offshore from Proserpine extending south to Mackay within the inner reef lagoon region, and the second coinciding with the Capricorn and Bunker groups of islands and reefs approximately 100 kilometres east of Gladstone.

![Figure 6-3: Prediction of average environmental suitability for Humpback Whales in the GBRMP](image)

Relevant to the conduct of TS19, the modelled environmental suitability of habitat for humpback whales in the GBRMP coincides with the location of activities that will be undertaken in support of amphibious landings between Bowen and Midge Point. Amphibious landings to be conducted in the

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82 SOURCE: adapted from ‘Figure 4’ in Smith et al. (2012) [online: https://www.int-res.com/articles/meps2011/447/m447p259.pdf]
Stanage Bay and SWBTA areas are less strongly associated with preferred habitat features. Despite this, it is understood that movements by pods of whales including mothers with calves tend to be closer to the coast than for pods without young, and humpback whales are commonly observed in the vicinity of SWBTA and other coastal areas in the GBRMP that do not coincide with areas modelled in Figure 6-3. It is therefore anticipated that all maritime activities within the GBRMP have some potential to interact with humpback whales, or at least observe the passage of whales through the GBR.

Implementation of the TS19 EMF complete with provisions of the MA EMP relevant to movement of vessels and operation of other equipment in areas where cetaceans may occur will limit the potential for adverse impacts. The primary mechanism for this is the posting of an active watch on all vessels while underway or conducting activities such as employment of sonar. This includes movements by smaller craft including zodiac, RHIB, LLC, LCAC (refer to Appendix A) and others in addition to the larger fleet units. This measure also benefits other marine fauna whether listed under the EPBC Act as migratory or otherwise.

From records of previous TS exercises and maritime activities in general, the incidence of boat strike on whales and dolphins by naval vessels is rare. This is also reflected in the analysis undertaken by the US Navy (USN 2018) which draws the same conclusion in respect of US Navy activities in the central and western Pacific Ocean which are also subject to controls comparable to those in the MA EMP. This points to the efficacy of avoidance and mitigation measures adopted by Defence for maritime activities and is considered further in Table 6-7 with respect to potential impacts of TS19 on listed migratory species in accordance with SIG 1.1.

Table 6-7: Assessment of potential impacts to listed migratory species

<table>
<thead>
<tr>
<th>substantially modify, destroy or isolate an area of important habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>The primary potential for an impact to important habitat for migratory species would result from the conduct of amphibious landing where seagrass meadows are affected by sea-bottom scouring as a result of propulsion systems or vessel bottoming. Despite this, the potential impacts from amphibious landings are mitigated through the selection of landing sites and approach lanes that minimises the potential for interaction with seagrasses. In the unlikely event that areas of seagrass are affected, this will be very localised and limited in extent such that it would not be considered a substantial modification of the habitat.</td>
</tr>
</tbody>
</table>

Accordingly, TS19 will not result in any impact that substantially modifies, isolates or destroys any area of important habitat for a listed migratory species.

<table>
<thead>
<tr>
<th>result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures incorporated into the TS19 EMF include a specific focus on biosecurity for terrestrial, marine and aquatic environments in order to avoid the potential for the introduction or dispersal of invasive species. Further, through the monitoring and reporting process that will be implemented by the EMG, an expedited response to the discovery of potential biosecurity hazards can be implemented in order to contain and remove the threat of spread. Accordingly it is not likely that the exercise will result in the introduction of an invasive species that is harmful to a migratory species becoming established in any area of important habitat.</td>
</tr>
</tbody>
</table>
seriously disrupt the lifecycle of an ecologically significant proportion of the population of a migratory species

Across the range of migratory species in the TS19 footprint, this is not likely to occur:

As a consequence of the timing of TS19, there will be no potential for interaction with breeding migratory wetlands birds given the vast majority of these species breed in the northern hemisphere during the Australian winter, with their return to the southern hemisphere coinciding with the Australian spring. Accordingly, TS19 will not seriously disrupt the lifecycle of any migratory wetlands bird species.

Along the eastern Australian coast in locations where TS19 will be conducted, nesting by marine turtles generally occurs between mid-October and early April with hatching peaking between December and February. While there is some variation between different species of marine turtle, the timing of TS19 does not coincide with the breeding period of any species.

Dugong have a low reproductive rate but may breed at any time of the year after reaching sexual maturity and females will give birth to a single calf at three to seven year intervals. Due to the non-specific timing of breeding by dugong, there are no aggregations of females. However, depending on the location, aggregations of males may occur to attract females and compete for mating. Males may hold and defend a territory. In Shoalwater Bay, high numbers of dugong are regularly observed however these are protected by the dugong sanctuary and plan of management (GBRMPA, 1997)\(^{83}\). While the dugong in Shoalwater Bay are likely to be engaged in breeding, management of defence activities under the SWBTA RSO is known to be effective and consequently the conduct of TS19 is not likely to represent a threat to dugong at Shoalwater Bay. The TS19 EMF also adopts equivalent measures for the management of maritime activities across other locations where dugong may occur including the limiting of vessel speed where appropriate and maintaining an active watch during any transit.

Breeding by inshore dolphins is not limited to any particular period during the year and there are no known breeding aggregations of an ecologically significant proportion of the populations of these species occurring within the footprint of TS19. However, the migration of humpback whales for breeding and calving along the east coast of Australia also coincides with the timing for TS exercises and it is expected that many will be observed from maritime platforms and coastal locations.

Humpback whales and inshore dolphins are vulnerable to a number of environmental threats and as a result of defence activities that would be conducted during TS19, underwater noise is the primary theme. Owing to their life cycle and habitat requirements, inshore dolphins would also be vulnerable to water quality decline and the potential for collisions with vessels while underway. Susceptibility to these issues is also reflected by vulnerability assessments undertaken by GBRMPA as part of the 2013 GBR Biodiversity Conservation Strategy\(^{84}\).

The MA EMP includes procedures for limiting the potential for underwater noise from the use of sonar where cetaceans and other marine fauna have been observed and also includes procedures to avoid boat strike collisions. As previously noted TS19 will not include any live fire activities and as such there will be no underwater demolitions (refer to Section 1.3.4). While sonar will be used, this


will be primarily in deeper areas outside the GBRMP and the principal contribution to underwater noise by the exercise will be through the cumulative effect of vessel traffic.

Additional measures in the TS19 EMF target water quality issues surrounding the discharge of blackwater by limiting the location and other discharge factors in order to maximise dilution and minimise the potential for adverse environmental effects.

Avoidance of physical impacts to listed migratory species, especially marine fish, reptiles and mammals is addressed through the posting of an active watch during all vessel movements. The infrequent, rare incidence of reported collisions with marine fauna by naval vessels suggests this measure is effective and will continue to be employed during TS19.

Given the combined measures of the MA EMP and the TS19 EMF, the conduct of TS19 is unlikely to seriously disrupt the lifecycle of an ecologically significant proportion of any listed migratory species.

It is concluded that TS19 is not likely to result in a significant impact to listed migratory species given the proven effectiveness of mitigation measures that form part of Defence standard practice. Design of the exercise has also sought to avoid, where practical, areas of potential environmental sensitivity such as seagrass meadows, further reducing the potential for unanticipated impacts on listed migratory species.

6.1.7. The Great Barrier Reef Marine Park

Reflecting the overwhelming importance of the place, the Great Barrier Reef Marine Park is a MNES in its own right, in addition to being a matter for consideration under the World and national heritage categories. Assessment of the factors relevant to the GBRMP is presented in Section 6.1.1 which concludes that TS19 is not likely to result in a significant impact to the GBRMP.

6.1.8. Nuclear Action

TS19 is not a nuclear action. The exercise does not involve the use of depleted uranium munitions or armour and will result in no radioactive material being released to the environment from these sources.

Despite this, a number of naval vessels participating may be powered by nuclear sources. Any port visits will be conducted under guidance of the Australian Radiation Protection and Nuclear Safety Authority (ARPANSA) and associated publications relating to nuclear powered warships. Following the approach to risk assessment adopted by the TS19 EMF, it is considered that adequate effective measures are in place to both avoid the potential for a nuclear incident in the first instance, and secondly to effectively respond in the case that an incident occurs.

6.1.9. Commonwealth Marine Areas

A large proportion of TS19 will be conducted in Commonwealth marine areas. As introduced in Section 1.3.1, activities will be conducted in the Tasman Sea, Coral Sea and parts of the GBRMP.

which also includes Commonwealth marine areas. The Commonwealth marine area also coincides with the Australian Whale Sanctuary which occupies the extent of the Australian EEZ beyond the limit of State and Territory waters Figure 4-2. In the context of mitigation measures that form part of the TS19 EMF, the following Table 6-8 considers the SIG 1.1 significant impact criteria.

**Table 6-8: Assessment of potential impacts to Commonwealth marine areas**

<table>
<thead>
<tr>
<th>Result in the establishment of a known or potential pest species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defence implements as standard practice, measures to ensure compliance with the Biosecurity Act 2015 and with relevance to TS19 and Commonwealth marine areas, this principally relates to ballast water management. The Department of Agriculture and Water Resources publication ‘Australian Ballast Water Management Requirements’ (DAWR 2017) outlines the necessary standard for vessels to meet for both international and domestic shipping and is identified in the TS19 EMF as one of the many standards that participants must adhere to.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result in an adverse impact on marine ecosystem functioning or integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>The temporary and dispersed nature of activities comprising TS19 that will not result in any physical impact to habitats in Commonwealth marine areas limits the potential for the exercise to affect marine ecosystem function or integrity. Activities will be limited to deep water locations and will not include landings on cays, reefs or islands in Commonwealth marine areas. Further, while vessels and aircraft including rotary and fixed wing will be used, these will be subject to the TS19 EMF and as such, interaction with wildlife will be minimised and avoided where practicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substantially affect a population of a marine species or cetacean</th>
</tr>
</thead>
<tbody>
<tr>
<td>As discussed above, the nature of activities that will be conducted as part of TS19 in Commonwealth marine areas will not affect islands, reefs, cays or other shallow water areas, the activities will be temporary and also widely dispersed across the Tasman and Coral Seas. Despite this, there remains the potential for interaction with cetaceans and certain marine species. Several of these have already been considered in the context of threatened species (Section 6.1.4) and migratory species (Section 6.1.6) however numerous other species would also occur in these areas that have not been specifically considered above.</td>
</tr>
</tbody>
</table>

| |
| One of the species likely to be present includes dwarf minke whales (*Balaenoptera acutorostrata* – unnamed subspecies) which tend to aggregate in the outer GBRMP off Cairns at around the same time of year as TS exercises are conducted. Similar to other marina fauna, dwarf minke whales would be susceptible to underwater noise such as that generated by employment of sonar. |

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The aggregation of dwarf minke whales is thought to be associated with breeding\(^8^7\) however it has also been postulated the aggregation represents the northern terminus of an annual migration from Antarctic waters, or equally as part of an east-west migration (GBRMPA 2013). Regardless, little is known of the life history of dwarf minke whales and aggregations such as those which occur in the GBRMP are considered to be an important life-cycle stage for which due consideration is required in relation to the conduct of maritime activities.

Management of underwater noise and vessel movements is conducted with deliberate avoidance and mitigation of potential impacts to marine fauna through SOP by Defence. These measures form part of the TS19 EMF as discussed in preceding sections and detailed in Section 5. TS19 involves no activities that deliberately target cetaceans and includes measures to actively avoid unnecessary disturbance. Application of the TS19 EMF will maintain consistency to the greatest extent practicable with the EPBC Regulations concerning interactions with cetaceans and as such any adverse impacts to cetaceans would be unanticipated but subject to an adaptive management approach to minimising further incidents.

Through design of the exercise and implementation of the TS19 EMF, the exercise will not result in a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) or spatial distribution.

<table>
<thead>
<tr>
<th>result in a substantial change in air quality or water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of activities conducted in the Commonwealth marine areas under the TS19 EMF will avoid dumping or discharge of wastes including air pollution from ships in a manner that would be inconsistent with the provisions of MARPOL and its implementation through the POTS Act and Navigation Act 2012. Consistency with these provisions will ensure the exercise will not result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity; social amenity or human health within Commonwealth marine areas.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>result in persistent organic chemicals, heavy metals, or accumulation of other potentially harmful chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>The nature of activities comprising TS19 within Commonwealth marine areas does not involve the use or disposal of any persistent organic chemicals, heavy metals, or other potentially harmful chemicals that may accumulate in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>result in a substantial adverse impact on heritage values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities comprising TS19 will have no impact on any area of known heritage value in Commonwealth marine areas including, but not limited to historic shipwrecks.</td>
</tr>
</tbody>
</table>

It is concluded that while certain activities that result in the generation of underwater noise may interact with some cetaceans and other marine species, measures that form part of the TS19 EMF...

\(^8^7\) [http://minkewhaleproject.org/biology/life-history/]
will effectively mitigate or avoid the potential for a significant impact to Commonwealth marine areas.

6.2. Whole of Environment Assessment

As a dispersed, temporary activity that will result in no new infrastructure or other permanent impacts, the impact of TS19 on the whole of the environment is designed to be minimised to the greatest extent practicable such that a significant impact does not result. This is further supported through the TS19 EMF which includes a comprehensive suite of tools applied during design and execution of the exercise to avoid impacts where possible and mitigate residual effects through proven measures.

Notwithstanding this, the following sections address assessment considerations under the EPBC Act as a result of requirements of Section 28 and the guidance of Significant Impact Guidelines 1.2 (SIG 1.2) (DSEWPAC 2013).

6.2.1. Impacts on Landscapes and Soils

TS19 will be conducted across a diversity of landscapes; the greatest diversity of which occurs within SWBTA and is well understood and documented (Defence 2009). Important landscape features within SWBTA and other aspects of the environment are protected specifically where appropriate through the relevant RSO. General guidance under the TS19 EMF will provide further support to the avoidance of unnecessary impacts to the environment in general.

Activities on EVDAWR and TFTA are similarly managed through RSO which are established to manage landscape features particular to each training area, and in a complementary fashion to the adjacent national park areas. For EVDAWR this is Bundjalung National Park while at TFTA it is the Paluma Range National Park.

Landscape features in other areas subject to TS19 activities are mostly within the terrestrial catchments of the GBRMP with the exception of the southern NDTA at Evans Head and Bundaberg. Despite this, landscape features are generally comprised of:

- Beaches;
- Dune systems;
- Coastal plains characterised by naturally vegetated and agricultural landscapes that variously include wetlands and associated drainage systems;
- Coastal villages and urban centres; and
- Adjacent hills and ranges.

Within these areas, there are no outstanding, rare, unusual, valuable or important landscape features or landforms that are at threat from TS19 due to avoidance through exercise design. The temporary, short-term and dispersed nature of the exercise also does not result in the potential for adverse significant impacts to landscapes and soils.

Despite this, potential exists for inadvertent impacts to potential acid sulfate soils from vehicular movement, in particular on SWBTA. The potential for this to occur is mitigated through the TS19 EMF which includes guidance to exercise participants to avoid such areas but also includes measures.
to respond to incidents so as to contain and repair any environmental damage that may result in the event of an incident.

Historically, such areas have been affected by previous exercises and remediation that has followed has ensured no acid runoff or consequential damage to the local area or values of the GBR WHA or Marine Park has resulted. Performance in avoidance and remediation of inadvertent damage has demonstrated these measures are effective and as such form part of the TS19 EMF.

As a consequence of mounted manoeuvre, or the off-road movement of vehicles, it is common that rutting of affected ground results from both wheeled and tracked vehicles. This effect is exacerbated by environmental conditions including soil type and wetness, and also the number of vehicles or repeat transits of the same area. A substantial proportion of the DAMCON activities following an exercise involves the remediation of wheel rutting in situations where natural recovery is unlikely to occur or where the disturbance to the soil may result in the redirection of overland water flow and consequential erosion. Given the ongoing use of SWBTA subject to a regime of DAMCON following each exercise and the continued sustainability of the training area, the potential effects of wheel rutting are not considered significant. This is subject to the effective implementation of DAMCON which is a key component of the TS19 EMF (refer to Section 0).

Accordingly there is no real chance or possibility that TS19 will:

- substantially alter natural landscape features;
- cause subsidence, instability or substantial erosion; or
- involve medium or large-scale excavation of soil or minerals.

### 6.2.2. Impacts on Coastal Landscapes and Processes

Amphibious landings at numerous sites through the conduct of TS19 will result in minor impacts to beach substrates subject to the nature of vessels used in the landings. The effect of the various platforms is summarised below in Table 6-9, reference should be made to Appendix A for illustrations of the various platforms.

**Table 6-9: Comparative effects of amphibious platforms on beach substrates**

<table>
<thead>
<tr>
<th>Platform</th>
<th>Propulsion system*</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zodiac</td>
<td>55 horsepower (HP) outboard motor.</td>
<td>Scrapping of sand on beach by hull when being beached, may result in scouring substrates in shallow water by propellers.</td>
</tr>
<tr>
<td>RHIB</td>
<td>Yanmar 319 HP Diesel engine with Hamilton HJ274 series Water Jet.</td>
<td>Scouring of substrates in shallow water. Creation of holes up to 1.8 metres deep in sand created by propulsion systems on all platforms while holding position during embarkation and disembarkation on beach at landing point. Size of holes is subject to holding times on the beach, beach substrate, currents, wave action and to an extent, operator experience.</td>
</tr>
<tr>
<td>LCM8</td>
<td>8v-92 Silver Series Detroit Diesel engines with two propellers.</td>
<td></td>
</tr>
<tr>
<td>LLC</td>
<td>Two MAN D-2842 LE 402X diesel engines (809 kW each) with two waterjets.</td>
<td></td>
</tr>
<tr>
<td>LCU</td>
<td>Two 680 HP Detroit 12V-71 Diesel engines with two shrouded propellers.</td>
<td></td>
</tr>
<tr>
<td>LARC-V</td>
<td>Cummins V8-300 Diesel, 300 HP with Wheel tracks in sand.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>LCAC</td>
<td>Four Allied-Signal TF-40 gas turbines (2 propulsion / 2 lift); 16,000 HP sustained; two shrouded reversible pitch airscrews; four double-entry fans, centrifugal or mixed flow (lift). Wind-blown sand from hovercraft skirt and airscrews.</td>
<td></td>
</tr>
<tr>
<td>AAV</td>
<td>400 HP turbocharged diesel V-8 engine with tracks and two rear-facing water jets. Tracks in sand.</td>
<td></td>
</tr>
</tbody>
</table>

* indicative only, derived from numerous open-source websites, actual system may be classified.

From observation and monitoring of beach landings in previous exercises, it has been identified that the effects of landing craft on beaches is temporary. Subject to the wave energy of the affected beach, the evidence of a beach landing will generally be indiscernible within a 24 hour period and undetectable within a week. This was observed during the previous TS exercise at beach landing sites in Upstart Bay, Stanage Bay and SWBTA. Persistence of holes created by landing craft did not extend more than a week following the last landing event and follow up inspections in the 12 months subsequent to the exercise identified no apparent change to beach structure, stability or appearance. As a result of this natural recovery, locations where beach landings will be conducted are not likely to be subject to the potential for notable cumulative effects through repeated landings due to the time between exercises.

While there may be some form of environmental effect that results from all platforms used in amphibious landings, the effects are temporary and self-remediating. Notwithstanding this, Defence also employs a DAMCON capability at beach landing sites to undertake assisted remediation of beach substrates where appropriate. This remediation only involves the pushing of displaced sand back into holes and does not include the movement or importation of material from other parts of the beach or from other sites.

The temporary, short term and dispersed nature of TS19 in combination with implementation of the TS19 EMF will ensure that there is no real chance or possibility that the exercise will:

- alter coastal processes, including wave action, sediment movement or accretion, or water circulation patterns;
- permanently alter tidal patterns, water flows or water quality in estuaries;
- reduce biological diversity or change species composition in estuaries; or
- extract large volumes of sand or substantially destabilise sand dunes.

### 6.2.3. Impacts on Ocean Forms, Ocean Processes and Ocean Life

The conduct of TS19 will not involve permanent changes to environmental values as it is a temporary, short-term and dispersed activity. The primary activity that will occur, incidental to the conduct of training involves the discharge of blackwater generated from vessels at sea. With the exception of the limited number of vessels that have no capacity to treat blackwater beyond maceration, all other discharges will be in accordance with MARPOL requirements as expressed through the POTS Act.
Consideration of the potential impacts to marine environments is presented in **Section 6.1.1** and **Section 6.1.9**. These sections identify there will not be a significant impact to MNES as a result of maritime activities including blackwater discharge. It is also noted that in the case of the GBRMP, blackwater discharge would only occur with the concurrence of GBRMPA and any associated guidance ensuring that obligations under the GBRMP Zoning Plan 2003, in conjunction with Section 38DD of the GBRMP Act, and Part 3A of the GBRMP Regulations, are satisfied.

While the Exercise will result in the discharge of blackwater, including both treated and untreated (but still macerated), discharges will be dispersed, infrequent and limited to the period over which the exercise is to be conducted. The contribution to declining water quality in the GBRMP will be negligible, and not result in any detectable contribution to overall water quality. Discharge will be conducted in a manner so as to maximise dilution in locations that are not subject to recreational pressure, crown-of-thorns starfish outbreaks or otherwise characterised by attributes important to the OUV of the GBR WHA.

The possibility for foreseeable impacts either from planned activities comprising the action, or incidents that could occur is minimised through implementation of the TS19 EMF. This includes the potential for release of hydrocarbons or other chemicals in notable quantities and is addressed through procedures that address matters including but not limited to:

- Emergency jettison;
- Incident reporting and response;
- Fuel handling and storage;
- Storage and handling of other hazardous materials; and
- Waste handling and disposal.

Under Section 248 of the EPBC Act marine species belonging to certain families or genera may be listed by the Minister for the Environment in order to ensure their long term conservation. The Act establishes an offence for killing or injuring listed marine species in a 'Commonwealth marine area'\(^\text{88}\). Areas to which this definition applies with respect to TS19 includes sea and air components of the waters and seabed of the Australian EEZ (excluding State and Territory waters) in addition to the areas of sea and seabed within a Commonwealth reserves. As with other aspects of the environment, TS19 does not involve activities that target listed marine species and includes measures to avoid and mitigate potential impacts.

Accordingly there no real chance or possibility that TS19 will:

- reduce biological diversity or change species composition on reefs, seamounts or in other sensitive marine environments;
- alter water circulation patterns by modification of existing landforms or the addition of artificial reefs or other large structures;
- substantially damage or modify large areas of the seafloor or ocean habitat, such as sea grass; or
- release oil, fuel or other toxic substances into the marine environment in sufficient quantity to kill larger marine animals or alter ecosystem processes.

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\(^{88}\) As defined by Section 24 of the EPBC Act
While TS19 involves the discharge of blackwater into areas of the GBRMP, this will be undertaken in accordance with the approach endorsed by GBRMPA. This approach has been evolved beyond the requirement established in the conditions issued by the Minister for the Environment with respect to the referral for TS05. The concurrence of GBRMPA for this to occur in selected locations will ensure the transient, short-term discharges will have no detectable or significant impact on ocean forms, process and life.

6.2.4. Impacts on Water Resources

While there will be no physical works to water courses or in locations that are prohibited by SWBTA RSO during the conduct of TS19, one activity that will occur is the treatment of raw water in order to generate potable supplies. Water sources to be accessed will include creeks and shorelines within SWBTA in locations where this activity is permitted in accordance with the SWBTA RSO. Prescriptions in the SWBTA RSO prohibit the use of potable water for dust suppression and include prescriptions that account for: water requirement (whether potable or non-potable); prevailing weather and environmental conditions; sustainability and other competing demands.

Water extraction for this purpose will be small scale and short-term, and will also involve notification to the relevant authorities where there is a potential to interact with other jurisdictions or environmental values such as the GBR WHA. In particular the discharge of treated water concentrate will be undertaken in the manner specified by the TS19 EMF such that: locations are selected in consultation with the RESO; following notification to GBRMPA (if required); and in a manner that enables effective dilution prior to any potential interaction with corals, macro algae or other features of environmental value in the marine environment. Similar guidance also applies to the discharge of treated water concentrate where this activity is conducted on freshwater sources within SWBTA.

Through the implementation of these measures, and as observed in previous exercises, no adverse impacts to water resources results from the extraction and treatment of water for potable supplies and discharge of concentrate during the conduct of a TS exercise. Considering there will be no other potential impacts to other water resources, there is no real chance or possibility that TS19 will:

- measurably reduce the quantity, quality or availability of surface or ground water;
- channelise, divert or impound rivers or creeks or substantially alter drainage patterns; or
- measurably alter water table levels.

6.2.5. Pollutants, Chemicals and Toxic Substances

No aspect of TS19 involves the deliberate release of pollutants beyond normal operating emissions from the range of platforms participating in the exercise. This represents a small scale cumulative effect that contributes to broader issues such as the global increase in atmospheric carbon; however independently is not considered to be significant. While certain chemicals may be kept on hand for use in response to an emergency where loss of life or damage to property may occur (e.g. firefighting foams), any such chemical would only be used in an emergency, if absolutely necessary and only in accordance with Defence procedures relevant to the scenario.

As indicated in preceding sections such as Section 6.2.1 in relation to inadvertent impacts from vehicle manoeuvre in SWBTA exposing potential acid sulfate soils, the potential for incidents with an
environmental aspect remains in spite of the measures in place. Past examples of this particular incident were unintended, not substantial and rapidly remediated to ensure no consequential impacts to sensitive environmental values resulted. Other releases to the environment such as in the case of blackwater discharge (Section 6.2.3) are deliberate but planned to occur in a manner that accounts for sensitive receptors and ensures a significant impact does not result.

On this basis it is concluded that conduct of TS19 involves no real chance or possibility that the exercise will:

- generate smoke, fumes, chemicals, nutrients, or other pollutants which will substantially reduce local air quality or water quality;
- result in the release, leakage, spillage, or explosion of flammable, explosive, toxic, radioactive, carcinogenic, or mutagenic substances through use, storage, transport, or disposal;
- increase atmospheric concentrations of gases which will contribute to the greenhouse effect or ozone damage; or
- substantially disturb contaminated or acid-sulphate soils.

### 6.2.6. Impacts on Plants

Vegetation in general will be subject to disturbances from a range of activities including mounted and dismounted manoeuvre in addition to the establishment and occupation of defensive positions and administrative areas.

Off-road vehicle manoeuvre will be conducted as part of TS19 in SWBTA and Stanage Bay NDTA. This will result in low level, localised disturbance to affected areas. While dismounted manoeuvre is simply comprised of personnel moving by foot through an area, off-road mounted manoeuvre can be characterised as follows:

- dispersed vehicles separated by 50 metres to 200 metres spacing;
- movement is in one direction only following progression of the exercise scenario;
- potentially three to four waves of vehicles may move through an area however in most instances movement would be limited to one wave;
- vehicles may or may not follow tracks of preceding vehicles;
- having moved through an area, back-tracking would not typically be undertaken;
- established creek crossings would be used;
- areas of potential acid-sulfate soil would be avoided;
- vehicles entering the off-road manoeuvre space from beach landings will exit beaches on established tracks; and
- dismounted manoeuvre may occur concurrently with mounted manoeuvre.

The implications for vegetation as a consequence of mounted and dismounted manoeuvre are that selected plants may be damaged. This may occur through the crushing of shrubs and grasses, selected removal of branches for camouflage or damage to larger trees and saplings from collision with vehicles. Impacts resulting from dismounted manoeuvre are negligible and would not be discernible following the conduct of an activity.
For the establishment and occupation of defensive and administrative positions, there is likely to be a requirement for selective removal of vegetation on SWBTA. Any vegetation removal will be undertaken in accordance with SWBTA RSO and guided by the TS19 EMF which will be effected through the TS19 EMP.

The net effect of this impact to vegetation is minor and will have no long term adverse impact of the quality, extent or integrity of native vegetation communities. This is evidenced through the extensive regeneration of native vegetation on SWBTA since its acquisition by the Commonwealth in 1965 (Defence 2009) despite continuous use including by major exercises such as previous TS iterations.

Substantial attention is also placed on the management of biosecurity risks as a result of the movement between numerous locations by personnel, vehicles and their associated equipment. Measures in the TS19 EMF specifically target this and seek to minimise to the greatest extent practicable, the possibility that the exercise would lead to the dispersal of any invasive species. Accordingly, TS19 involves no real chance or possibility that the exercise will:

- involve medium or large-scale native vegetation clearance;
- involve any clearance of any vegetation containing a listed threatened species which is likely to result in a long-term decline in a population or which threatens the viability of the species;
- introduce potentially invasive species;
- involve the use of chemicals which substantially stunt the growth of native vegetation; or
- involve large-scale controlled burning or any controlled burning in sensitive areas, including areas which contain listed threatened species.

6.2.7. Impacts on Animals

There is no aspect of TS19 that involves the deliberate targeting of any animal however, occasional injury or death may occur as an unintended consequence of an activity. Measures incorporated into the TS19 EMF for both terrestrial, maritime and air activities seek to avoid disturbance of any kind to all wildlife. Beyond the potential for selective vegetation removal as a part of site establishment, no areas of fauna habitat would be affected to any substantial extent.

As the exercise does not involve live fire, there will be no unintended injury or death to animals through this means. The likely source of possible injury to animals would be through accidental collision with a vehicle, aircraft or maritime platform. The potential for this to occur is mitigated through standard procedures in addition to controls such as speed limits, route selection and maintaining an active watch where necessary.

Given the limited potential for impacts to animals, and the unintended, unforeseeable nature of any impacts should they occur, there no real chance or possibility that TS19 will:

- cause a long-term decrease in, or threaten the viability of, a native animal population or populations, through death, injury or other harm to individuals;
- displace or substantially limit the movement or dispersal of native animal populations;
- substantially reduce or fragment available habitat for native species;
• reduce or fragment available habitat for listed threatened species which is likely to displace a population, result in a long-term decline in a population, or threaten the viability of the species;
• introduce exotic species which will substantially reduce habitat or resources for native species; or
• undertake large-scale controlled burning or any controlled burning in areas containing listed threatened species.

6.2.8. Impacts on People and Communities

Activities comprising TS19 include the use of a number of NDTA and associated civilian areas for governance and exercise support purposes. This is in addition to the Defence facilities located within civilian populations that are normally used for supporting a TS exercise (such examples include civilian airports, roads and more specifically Rockhampton depot). Each NDTA and Defence training area in use for the exercise, as described in Section 4, will present the potential for an increase in demand on community services or infrastructure. This has been addressed through the design of TS19 with the following considerations:

• Augmentation of civilian telecommunications networks in the SWBTA region to alleviate pressure on voice and data services;
• Placement and inclusion of supporting services (such as portable toilets, potable water, electricity and communications networks, accommodation, meals, etc.) at each location where a governance effect is to be delivered as part of the exercise design. It is noted that exercise participants will not rely on civilian services, and the extent to which civilian services will be used by the governance group will be limited by the provision of supporting services as described; and
• Scheduling of road movements and convoys to cause minimum disruption to civilian traffic, noting that the exercise timing coincides with school holidays in NSW and Qld.

In order to ensure the safety of the Exercise participants and general public, Defence issues ‘notices to mariners’ (NOTMAR) and ‘notices to airmen’ (NOTAM) through the relevant authorities. The effect of these notices may include the exclusion of certain areas for public access given the presence of military aircraft or vessels and the hazard they may present to recreational and commercial traffic. During TS19 NOTMAR and NOTAM will be issued for areas associated with SWBTA and in accordance with standard practice during major exercises, will result in the closure of waters and the airspace within the gazetted footprint of SWBTA.

Land-based activities on NDTA will be conducted in locations that are approved through agreements with all relevant stakeholders. While this will not result in the closure of any public roads, to provide the appropriate level of safety and security temporary traffic control may need to be implemented, in particular for certain heavy vehicles. Any traffic controls would be coordinated by the relevant state authority and result in a negligible impact to travel times. At beach landing sites on NDTA, while none of the beaches will be closed to public access, the area being used by Defence will be controlled to provide for safety of the general public and the Exercise participants.

The provision of supporting services is also balanced against an understanding of what may be provided under contract by local suppliers. While this is not necessarily a consideration in the
context of the impact assessment part of this ER it is notable given that Defence has sought through
the planning and execution phases of the TS19 design process to identify and engage local suppliers
where possible, subject to Commonwealth procurement rules.

In the planning phase of TS19 a significant effort is put into consultation with affected communities
on the nature of the exercise and in particular engagement with key stakeholders to understand
what is feasible with respect to Defence presence and activities in civilian areas. While this is
addressed in substantially more detail in Section 3.3, the central point of contact and information on
the exercise has been for previous iterations, and continues to be for TS19, an exercise-specific
website. This website is updated with information as it is confirmed through the planning process,
and aims to inform the community as early as possible as to the nature of planned activities.

An inevitable consequence of the increased activity surrounding the conduct of a major exercise is
increased noise, traffic and personnel. The increased traffic and personnel are addressed through
measures as discussed in the dot-points above, while the potential for increased noise also includes
the application of additional measures. Through experience on previous major exercises including in
the TS series, unilateral exercises such as the Wallaby series, and others such as the Pitch Black
series conducted in the Northern Territory, the issue of noise management is one that despite
planning to avoid impacts, also requires additional capacity to respond to incidents effectively.

The usual issues that arise during major exercises include noise from:

- low flying aircraft;
- increased aircraft movements; and
- camp establishment and operation (e.g. generators).

In response to these issues Defence more broadly has implemented systems as standard practice
for improved public awareness of potential noise impacts through:

- the Air Force Flying Operations website;
- localised amendments to flight paths around training areas reflecting sensitive receptors;
- increased consultation with neighbours of training areas (such as through the SWBTA
  Environmental Advisory Committee);
- consultation specifically in relation to individual exercises including through:
  - advertising Defence information sources through a range of print and social media;
  - coordination of online messaging with local governments through their own
    websites;
  - publication of this ER and the seeking of feedback to guide planning; and
- the appointment of a senior officer to respond to public affairs issues on exercises such as
  TS19.

Accordingly, while incidents do occur with respect to noise, Defence has an established and proven
process to respond to and adapt activities as appropriate to avoid or mitigate further unnecessary
impacts.

Given this, there is no real chance or possibility that TS19 will:

- substantially increase demand for, or reduce the availability of, community services or infrastructure which have direct or indirect impacts on the environment, including water supply, power supply, roads, waste disposal, and housing;
- affect the health, safety, welfare or quality of life of the members of a community, through factors such as noise, odours, fumes, smoke, or other pollutants;
- cause physical dislocation of individuals or communities; or
- substantially change or diminish cultural identity, social organisation or community resources.

6.2.9. Impacts on Heritage

Conduct of TS19 will be undertaken with respect given to areas of historic and cultural heritage importance. This has involved consideration in the planning phase of potential constraints to activities that may be posed by listed heritage items such as those identified through State and Commonwealth online database searches and in consultation with key stakeholders. These steps have been of primary importance for the design of activities on NDTA.

For exercise activities that will be conducted on SWBTA and other parts of the Defence estate, established heritage management plans and provisions promulgated through the respective standing orders will be followed. Consequently, all known areas, places and items of heritage importance will be avoided.

Where the unanticipated discovery of an item of suspected heritage importance occurs during execution of the exercise, procedures for both Defence estate and NDTA have been incorporated into the TS19 EMF to ensure all appropriate steps are taken to protect the find. The procedures include measures to protect the find, engage with the relevant authorities and stakeholders, and to implement the most appropriate response in consideration of regulatory obligations and the wishes of key stakeholders.

Through the process of consultation and community engagement on the design for TS19, identification of places with importance for cultural purposes has also been considered. This enables Defence to avoid the potential that conduct of the exercise results in the exclusion of a group or community from an area that is important as a cultural or ceremonial site.

Places of listed heritage value identified in the various NDTA will not be affected by the conduct of TS19. The Exercise will either avoid all such places or conduct activities that are consistent with established management protocols and subject to guidance from local authorities. Planning for the exercise has considered local, state, national and Commonwealth listed historical heritage places including land-based and maritime. Local Aboriginal heritage values have also been addressed through the ongoing process of consultation and values respected through implementation of controls as appropriate.

Accordingly, there is no real chance or possibility that TS19 will:
• permanently destroy, remove or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place;
• involve extension, renovation, or substantial alteration of a heritage place in a manner which is inconsistent with the heritage values of the place;
• involve the erection of buildings or other structures adjacent to, or within important sight lines of, a heritage place which are inconsistent with the heritage values of the place;
• substantially diminish the heritage value of a heritage place for a community or group for which it is significant;
• substantially alter the setting of a heritage place in a manner which is inconsistent with the heritage values of the place; or
• substantially restrict or inhibit the existing use of a heritage place as a cultural or ceremonial site.

6.3. Conclusion from Impact Assessments

Consideration of the potential for TS19 to result in a significant impact to any of the MNES and the whole of the environment is presented in the preceding Sections 6.1 and 6.2. The assessments follow guidance published by the regulator, the Department of the Environment and Energy in SIG 1.1 and 1.2 respectively and rely on information that has been generated specifically for TS19 where information gaps exist, in addition to other sources as appropriate.

The assessments identify that no aspect of the exercise would involve a deliberate impact to any protected matter or aspect of the environment in a manner that could be considered significant. Effects of conducting TS19 would include indirect impacts, that due to the short term nature of the exercise would be temporary and widely dispersed.

Notwithstanding this, it is acknowledged that some adverse impacts are anticipated, the primary areas of potential impact arise from the following aspects:

• use of sonar by maritime platforms;
• discharge of blackwater within the GBRMP;
• amphibious landings disturbing beach substrates;
• damage to vegetation and soil (including acid sulphate soils) as a result of mounted, off-road manoeuvre; and
• increased noise and traffic in civilian areas from the presence of Defence personnel and equipment.

The process of exercise planning has been cognisant of these and many other potential environmental issues as described in preceding sections. In response, the exercise has been well designed to avoid the potential for any significant impact. In order to ensure this is the case, a comprehensive environmental management framework forms part of the overall design for the execution of TS19. This framework is comprised of environmental control measures that are standard practice in Defence such as the top-level EMPs in addition to a set of measures customised to TS19 that are the result of experience and lessons learned in other major exercises, including seven previous iterations of the TS series. Accordingly, it includes measures that specifically address
the primary areas of potential environmental impact as determined through risk assessment and assessment of environmental significance under Commonwealth legislation.

From collective experience on major exercises and as a result of assessment in accordance with EPBC Act requirements, it is concluded that TS19 is not likely to result in a significant impact to the environment. It is also concluded that the environmental governance system is effective in identifying and responding to emerging issues in order to avoid unnecessary impacts from unforeseen matters.
7. Other Commonwealth Obligations under the EPBC Act

Beyond the matters addressed by environmental impact guidance published by the DoEE in SIG 1.1 and 1.2, further matters apply to the Commonwealth for actions such as TS19. These are considered as part of the impact assessment in Sections 6.1 and 6.2 and are expanded upon further in the following sections.

7.1. Critical Habitat

There are no listed areas of critical habitat relevant to the conduct of TS19\(^\text{91}\). This matter requires no further consideration.

7.2. Recovery Plans

Recovery Plans made or adopted under the EPBC Act are published on the DoEE website\(^\text{92}\). A full list of species and communities for which a recovery plan has been made or adopted is presented in Appendix B for matters relevant to the footprint of TS19 for both terrestrial and marine environments.

The requirements of these recovery plans have been considered and taken into account in both exercise planning and the assessment of significance for TS19 to ensure activities comprising the exercise are consistent with the plans.

7.3. Threat Abatement Plans

Threat abatement plans prepared under the EPBC Act respond to key threatening processes listed under Section 183 of the Act. In consideration of the activities and locations comprising TS19, there are four approved threat abatement plans\(^\text{93}\) relevant to the exercise as follows:

- Threat abatement plan for the impacts of marine debris on vertebrate wildlife of Australia’s coasts and oceans;
- Threat abatement plan to reduce the impacts on northern Australia’s biodiversity by the five listed grasses;
- Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi*; and
- Infection of amphibians with chytrid fungus resulting in chytridiomycosis;

These are considered further in the following Table 7-1 in relation to the approach taken in planning TS19 with regards to the objectives of these plans.

<table>
<thead>
<tr>
<th>Threat Abatement Plan</th>
<th>TS19 Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine debris</td>
<td>The generation of marine debris as a result of defence activities is infrequent and generally associated with:</td>
</tr>
</tbody>
</table>


Threat Abatement Plan | TS19 Response
--- | ---
- Expendable materiel such as bullet casings and sonobuoys; and
- Articles lost as a result of an incident.

Of these, it is probable that TS19 will contribute a minor amount of marine debris that is incidental to the conduct of the exercise, principally in relation to the deployment of sonobuoys. Low numbers of sonobuoys are used and do not present a known entanglement or ingestion hazard for marine fauna. Similarly, they do not present a notable hazard to environmental health given they are comprised primarily of electronic components and a saltwater-activated battery that may be one of a number of varieties according to the type of sonobuoy being used and may be magnesium or silver chloride, lithium chemistry or thermal batteries. Upon reaching a predetermined useful life of when expended, the sonobuoy sinks and is not recoverable.

Other instances where the Exercise may contribute to the prevalence of marine debris would be the result of incidents where equipment is lost overboard. Circumstances where this might occur include an over-water parachute insertion that results in the loss of a parachute or associated material during recovery in the event that a safety issue takes priority. Such an event occurred during TS17 and resulted in the loss of a parachute and its harness. Following recovery of the personnel, the initial response involved conducting visual and sonar searches for the lost equipment to make all reasonable efforts to recover however no recovery was effected.

TS19 adopts a similar approach to incident response in order to minimise the potential for persistent marine debris an effect recovery wherever practicable.

Given that the provisions of MARPOL are followed in relation to management of ship-borne wastes, it is not likely that the presence of military vessels for TS19 will contribute to the incidence of marine debris in Australian waters. The Exercise is not inconsistent with the objectives of the threat abatement plan.

**Five listed grasses**

**Phytophthora cinnamomi**

**Chytridioidyocosis**

The remaining threat abatement plans respond to different issues however are all affected by the efficacy of measures taken to protect biosecurity. This is acknowledged in the design of the TS19 EMF which places a high priority on the management of weeds and potential sources of pathogens. To this effect, all reasonable measures have been incorporated into the design of TS19 such that the exercise is not inconsistent with the objectives of these threat abatement plans.

7.4. Biosphere Reserves

Australia presently has nine biosphere reserves however, none occur within or adjacent to the footprint of areas that would be used during TS19\textsuperscript{95}. The most proximate is the Great Sandy Biosphere which occurs offshore from the Bundaberg NDTA, encompasses a large marine area including Fraser Island in addition to the communities of Hervey Bay, Maryborough, Gympie and their associated terrestrial catchments. There will be no effects from TS19 relevant to the Great Sandy Biosphere.

8. EPBC Act Permit Requirements

As introduced in Section 3.1.1, where Defence proposes to undertake an action which is not considered to be a controlled action, however affects certain listed matters, a permit under Part 13 of the EPBC Act may be required. The Minister for the Environment may issue a permit under the EPBC Act in relation to:

- threatened species and communities (S.201);
- migratory species (S.216); and
- whales and cetaceans (S.238).

Given the nature of activities undertaken by Defence and of relevance to TS19, a permit may only be issued where the Minister is satisfied that:

- the impact of the specified action on the affected matter is incidental to, and not the purpose of, the taking of the action and;
- the taking of the action will not adversely affect the conservation status of that matter; and
- the taking of the action is not inconsistent with a plan for that species that is in force; and
- the holder of the permit will take all reasonable steps to minimise the impact of the action on that matter.

Consequently, a permit might be issued in situations where an impact will occur to a protected matter as listed above, in circumstances where there is not likely to be a significant impact as determined by an impact assessment (refer to Sections 6.1.4, 6.1.6 and 6.1.9 above).

Assessment of the potential impact of TS19 on the matters protected by Sections 201, 216 and 238 of the EPBC Act as discussed above did not identify a potentially significant impact resulting from the exercise.

The action that comprises TS19 includes no aspect of planned impact to any of the protected matters whether directly or in a manner that is incidental to the conduct of training activities. The Exercise includes a substantial environmental governance system delivered through the TS19 EMF in order to ensure that the plan for training is executed as designed and that environmental issues are actively managed. Should any impact occur to the matters protected, it would be unanticipated and in accordance with the TS19 EMF, mandatory reporting to the Minister for the Environment would be undertaken as required.

It is concluded that a permit for TS19 under the EPBC Act is not required.
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9. Program of Activities

Between finalisation of this ER and execution of TS19, the program of community consultation, key leadership engagement and finalisation of exercise planning will continue to occur. The following sections identify the anticipated program of activities including considerations for third party approvals that may need to be addressed for activities on NDTA.

9.1. Final Planning and Execution

The program of activities following finalisation and exhibition of the ER includes key leadership and stakeholder briefings, and ongoing website updates until commencement of the TS19 FTX and beyond. Principle activities anticipated are summarised in Table 9-1.

Table 9-1: TS19 Key 2019 engagement activities after ER exhibition

<table>
<thead>
<tr>
<th>Notional Timing (2019)</th>
<th>Outline of Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>April-May</td>
<td>Key leadership engagement incorporating any final decisions on the exercise design from the Final Planning Conference (FPC).</td>
</tr>
</tbody>
</table>
| May                    | Consultation report posted to TS19 website – a summary of comments received and responses adopted through consideration of relevance to TS19. To be published at:  
|                        | Preparation and submission of development application for approval from Richmond Valley Council for activities at Evans Head NDTA. |
| May-June               | Update of TS19 website with environmental awareness videos and other materials for exercise participants and general information. |
| June                   | Publication on the TS19 website of links to:  
                          | • Notices to Airmen (NOTAM); and  
                          | • Notices to Mariners (NOTMAR). |
| November               | Publication of a post-exercise report (PXR). This report will confirm the nature and location of activities conducted and provide a synopsis of all incidents and records of an environmental nature taken during the exercise. |

Throughout the final planning period the feedback capacity on the website will continue to operate. Comments may be submitted at [http://www.defence.gov.au/Exercises/TS19/ContactUs.asp](http://www.defence.gov.au/Exercises/TS19/ContactUs.asp).

Other information is also provided on the website will be updated as required relevant to the execution phase. It is anticipated this will enable communities and visitors to regions involved with the Exercise to appreciate the nature and scale of activities that will be evidenced by the presence of:
• military vehicles and personnel;
• road movements/convoys;
• military aircraft; and
• associated military activities.

9.1.1. Further Exercise Design Changes

Acknowledging the dynamic nature of exercise planning as described in Section 1.2, further refinement of exercise activities will likely occur between publication of the ER and execution of TS19. The process of continual assessment has been incorporated into the exercise design concept in order to address this. Fundamental to iterative analysis of the potential for TS19 to adversely affect the environment is the risk assessment. For exercise design changes during preparation of the ER, the risk assessment has been amended as appropriate, with new hazards to the environment appreciated in the context of the wider exercise and intended activities as a result of the change.

In the event that the design for TS19 involves substantial change between finalisation of this ER and commencement of the FTX, a defined process of assessment, notification and public exhibition will apply. This process mirrors the pre-exhibition process followed however includes the additional step of notification to ensure as complete a picture as possible is provided for public comment.

A ‘substantial change’ to the exercise design would be considered as including:

• A new location is included in the scheme of manoeuvre;
• New equipment that is unlike anything already involved in the exercise is to be included;
• A large increase (>20%) in personnel planned to be concurrently at any one location;
• New activities are planned for a location already considered part of the exercise design; or
• Identification of new information about an area where TS19 is planned to be conducted which changes the overall exercise environmental risk profile.

Should any such changes occur, a defined process will apply to ensure that not only the activity itself is assessed but also consider whether there is a notable cumulative effect in the context of the overall Exercise:

1. Conduct gap analysis of environmental baseline information;
2. Review and update environmental risk assessment;
3. Undertake site inspections and/or baseline environmental surveys if appropriate;
4. Prepare activity-specific assessment addressing all relevant regulatory requirements;
5. Review and amend mitigation measures where necessary;
6. Review of impact assessment under local, State and Commonwealth legislation as appropriate;
7. Review overall environmental impact assessment for TS19 to consider cumulative effect of the design changes;
8. Preparation of an addendum to the ER describing:
   a. nature of the change;
   b. change in risk profile;
   c. new mitigation measures;
d. new considerations in response to the EPBC Act SIG 1.1 and SIG 1.2 including relevant cumulative effects;
e. new considerations in relation to local and State laws.

9. Publishing of the addendum to the ER on the TS19 website for public awareness and feedback if desired; and
10. Amendment to the TS19 EMP and other governance framework documents as appropriate.

9.2. Third-Party Approvals and Agreements

While the focus of this ER has principally been on Defence’s obligations under the EPBC Act, due to the use of NDTA, Defence is also obligated to comply with State and local laws where applicable. Throughout the exercise planning process, Defence has sought to engage with local regulators and design activities to avoid the need for approvals under State and local legislation.

Notwithstanding, in order to enable conduct of activities on NDTA, and ensure the Exercise can proceed, Defence will undertake to satisfy requirements under other legislation with reference to the following where relevant:

- Native Title and considerations of other land rights or claims;
- State government approvals;
- Local government approvals;
- Landholder approvals and licensing.

The following sections provide further discussion of the State and local government assessment and approval requirements.

9.2.1. State Legislation

Conduct of activities comprising TS19 will involve NDTA primarily in Qld, in addition to one NDTA in NSW at Evans Head. While the EPBC Act applies in all locations and all Australian State and Territory jurisdictions, on NDTA State and Territory legislation also applies. For activities on NDTA all aspects of the TS19 EMF would continue to apply as discussed in Section 5 of this ER as appropriate and the following sections consider the extent to which State and local regulations are relevant.

Queensland NDTA

The following Table 9-2 considers the application of State legislation to activities that will be conducted on NDTA in Qld.

**Table 9-2: Selected Queensland State environmental legislation**

<table>
<thead>
<tr>
<th>Qld Legislation</th>
<th>Scope</th>
<th>Application to TS19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal Cultural Heritage Act 2003</td>
<td>Provides recognition, protection and conservation of Aboriginal cultural heritage.</td>
<td>All activities in TS19 will be undertaken following consultation with the relevant cultural heritage custodians. Planning for TS19 follows the approach recommended by the Duty of Care Guidelines (DATSIP no date) and in consideration of the more recent issues paper (DATSIP 2017).</td>
</tr>
<tr>
<td>Qld Legislation</td>
<td>Scope</td>
<td>Application to TS19</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Biosecurity Act 2014</td>
<td>Provides comprehensive biosecurity measures to safeguard the Qld economy, agricultural and tourism industries, environment and way of life, from pests; diseases; and contaminants.</td>
<td>TS19 planning adopts the requirements for meeting obligations under the Biosecurity Act 2014 (Cth) and accordingly meets all pest management requirements under Qld legislation.</td>
</tr>
<tr>
<td>Coastal Protection and Management Act 1995</td>
<td>Provides for the protection, conservation, rehabilitation and management of the coast.</td>
<td>Not relevant to TS19. The Exercise does not involve: • ‘operational work’; • A material change of use in a ‘coastal management district’; or • Reconfiguration of a lot in a ‘coastal management district’.</td>
</tr>
<tr>
<td>Environmental Protection Act 1994</td>
<td>Protection of Qld’s environment (primarily from pollution), while promoting ecologically sustainable development.</td>
<td>TS19 planning has considered the ‘general environmental duty’ under the Act. As the Exercise has been designed for NDTA to result in no ‘environmental harm’, no further action is required.</td>
</tr>
<tr>
<td>Fisheries Act 1994</td>
<td>Economically viable, socially acceptable and ecologically sustainable development of Queensland’s fisheries resource.</td>
<td>TS19 affects no regulated waters and as amphibious landings are designed to avoid seagrass meadows and other features, the Exercise includes no aspects that would impact ‘marine plants’.</td>
</tr>
<tr>
<td>Marine Parks Act 2004</td>
<td>Aims to achieve effective management of marine parks by regulating and controlling activities within them.</td>
<td>TS19 will be conducted in part in the GBRMP in areas that are also protected under Qld State legislation as the GBR Coast Marine Park (CMP) (refer to Figure 4-6). Compliance with any requirements placed upon Defence by GBRMPA will ensure consistency with Qld State legislation to the low water mark. Between the low water and highest astronomical tide is the exclusively Qld portion of the GBR CMP. TS19 will be undertaken in accordance with the procedural guide for managing defence activities on QPWS estate (DNPSR 2015) ensuring consistency with all relevant Qld environmental legislation for protected areas.</td>
</tr>
<tr>
<td>Nature Conservation Act 1992</td>
<td>Prohibits the taking or destruction without authorisation of listed threatened species of flora and fauna species.</td>
<td>TS19 involves no action that would result in impacts to Qld listed threatened species.</td>
</tr>
<tr>
<td>Planning Act 2016</td>
<td>Establishes the process by which</td>
<td>No activities will be conducted that</td>
</tr>
<tr>
<td>Qld Legislation</td>
<td>Scope</td>
<td>Application to TS19</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>planning and assessment of development proposals is undertaken in Queensland at local, regional and State levels.</td>
<td>comprise ‘assessable development’ in accordance with the Act.</td>
</tr>
<tr>
<td><em>Queensland Heritage Act 1992</em></td>
<td>Provides for the conservation and protection of places and items of historical and / or non-Indigenous cultural heritage.</td>
<td>TS19 will affect no areas of identified heritage importance and also incorporates measures to appropriately respond to unanticipated finds of potential cultural and historical heritage value. Areas where historical heritage values are undetermined will be managed through a precautionary approach that avoids any action which may prejudice future assessment through compromising the fabric, configuration or integrity of any such place. This consideration will apply to not only the inherent characteristics of places but also moveable objects.</td>
</tr>
<tr>
<td><em>Soil Conservation Act 1986</em></td>
<td>Allows for the approval of soil conservation property plans to ensure the co-ordination of runoff to control erosion. The Act allows for two types of plans: Approved property plans; and Project plans.</td>
<td>Any soil conservation measures necessary on NDTA will be implemented in accordance with licence agreements established with landholders.</td>
</tr>
<tr>
<td><em>Torres Strait Islander Cultural Heritage Act 2003</em></td>
<td>Provides recognition, protection and conservation of Torres Strait Islander cultural heritage.</td>
<td>Not relevant to TS19, no activities will affect areas relevant to the Act.</td>
</tr>
<tr>
<td><em>Transport Operations (Marine Pollution) Act 1995</em></td>
<td>Protect Qld's marine and coastal environment by giving effect to MARPOL in Qld State waters</td>
<td>All ship-borne pollutants will be managed in accordance with MARPOL. Where blackwater must be discharged in the GBRMP this will be limited to the extent permissible as determined through adoption of GBRMPA directions ensuring and activities in the GBRMP are consistent with requirements of the GBRMP Zone Plan 2003.</td>
</tr>
<tr>
<td><em>Vegetation Management Act 1999</em></td>
<td>Regulates the clearing of vegetation.</td>
<td>TS19 involves no vegetation clearing on any NDTA.</td>
</tr>
<tr>
<td><em>Water Act 2000</em></td>
<td>Provides for the sustainable management and allocation of water.</td>
<td>TS19 involves no water use or activities that may impact on water resources such that it would be assessable development.</td>
</tr>
<tr>
<td><em>Wet Tropics Heritage Protection and</em></td>
<td>Sets out the role of the Wet Tropics Management Plan Authority in managing the WHA.</td>
<td>TS19 activities in TFTA will be conducted in accordance with TFTA RSO which embodies management obligations</td>
</tr>
</tbody>
</table>
For use of the various Queensland NDTA, license agreements will be established between Defence and the landholders. However no formal applications will be made for approval of activities given nothing within the design for TS19 triggers Queensland regulatory requirements at either State or local levels. Conduct of TS19 will also respect the requirements of Qld local laws however, as there will be no operational works or assessable development, there are no explicit requirements for approval of any specific activity.

New South Wales NDTA

Table 9-3 is constructed to address the consideration of NSW state legislation to the conduct of TS19 given the establishment of the Evans Head NDTA.

Table 9-3: Selected NSW State environmental legislation

<table>
<thead>
<tr>
<th>NSW Legislation</th>
<th>Scope</th>
<th>Application to TS19</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biodiversity Conservation Act 2016</strong></td>
<td>Protection of biodiversity and threatened species.</td>
<td>Areas on the Evans Head NDTA that are characterised by native vegetation are recognised in the Biodiversity theme in the Richmond Valley Local Environmental Plan (LEP). The NDTA also adjoins Broadwater National Park reflecting the Biodiversity overlay in the LEP. Despite this, TS19 involves no activities that would represent a threat to listed matters and as a result would not constitute a potentially significant impact in relation to Section 7.3 of the Act.</td>
</tr>
<tr>
<td><strong>Coastal Management Act 2016</strong></td>
<td>The Act promotes the strategic and integrated management, use and development of the coastal environment in an ecologically sustainable way, for the social, cultural and economic well-being of the people of New South Wales.</td>
<td>Several mapped coastal wetlands occur on the periphery to the Evans Head NDTA with associated proximity lands to which provisions of the State Environmental Planning Policy (Coastal Management) apply. Despite this, TS19 does not involve works within the ‘coastal zone’ and consideration in accordance with Part 4 of the EP&amp;A Act will satisfy all requirements of the Coastal Management Act.</td>
</tr>
<tr>
<td><strong>Environment Planning and Assessment Act 1979</strong></td>
<td>The EP&amp;A Act sets out the laws under which development planning, assessment and approval in NSW takes place.</td>
<td>The EP&amp;A Act defines ‘development’ as including ‘the use of land’ (s.1.5). Consequently consideration of the objects of the Act with reference to regulations and other legislation is appropriate. This is</td>
</tr>
</tbody>
</table>
### NSW Legislation

<table>
<thead>
<tr>
<th>Scope</th>
<th>Application to TS19</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fisheries Management Act 1994</strong></td>
<td>TS19 involves no actions that would affect any of the recognised NSW fisheries or involve impacts that would require a permit in relation to dredging and reclamation, harming marine vegetation or the use of explosives and other dangerous substances. No further consideration of the FM Act is required.</td>
</tr>
<tr>
<td><strong>Heritage Act 1977</strong></td>
<td>The Evans Head Memorial Aerodrome is a State listed heritage place due to its association with flying and training activities in support of the Australian effort in WWII. Occupation of the site during TS19 will be to enable administrative support to activities in EVDAWR, to provide a facility that adds to the realism of the scenario being played out through the Exercise, and enable the conduct of infantry minor tactics in the provision of security to the site. There will be no actions undertaken that are inconsistent with the principles established under the 2009 draft Heritage Plan of Management (GHD 2009).</td>
</tr>
<tr>
<td><strong>National Parks and Wildlife Act 1974</strong></td>
<td>TS19 in Evans Head NDTA involves the use of areas that are currently cleared on and around the existing aerodrome. Areas peripheral to the aerodrome may also support dismounted activities that will result in no impact to any item or place of Aboriginal cultural heritage value.</td>
</tr>
</tbody>
</table>

Part 4 of the EP&A Act relates to development assessment and consent, and given the nature of activities proposed for TS19 in the Evans Head NDTA, the Richmond Valley Council would be the consent authority. Consideration of the activity would be in accordance with provisions of the Richmond Valley LEP as it applies to the temporary use of land. Relevant paragraphs of Clause 2.8 of the Richmond Valley LEP include factors for consideration in the temporary use of land:

2.8 Temporary use of land

(1) The objective of this clause is to provide for the temporary use of land if the use does not compromise future development of the land, or have detrimental economic, social, amenity or environmental effects on the land.

(2) Despite any other provision of this Plan, development consent may be granted for development on land in any zone for a temporary use for a maximum period of 52 days (whether or not consecutive days) in any period of 12 months.

(3) Development consent must not be granted unless the consent authority is satisfied that:

(a) the temporary use will not prejudice the subsequent carrying out of development on the land in accordance with this Plan and any other applicable environmental planning instrument, and

(b) the temporary use will not adversely impact on any adjoining land or the amenity of the neighbourhood, and

(c) the temporary use and location of any structures related to the use will not adversely impact on environmental attributes or features of the land, or increase the risk of natural hazards that may affect the land, and

(d) at the end of the temporary use period the land will, as far as is practicable, be restored to the condition in which it was before the commencement of the use.

Use of the Evans Head NDTA will require approval from Richmond Valley Council in order to satisfy Clause 2.8 of their LEP. The Richmond Valley Development Control Plan 2015 (DCP) also identifies advertising and notification requirements that will be met.
10. Summary of Commitments

The assessment of TS19 under the EPBC Act as described by this ER determines there is not likely to be a significant impact to MNES or the environment in general. This conclusion is based on the strength of existing Defence procedures designed to manage the impact of Defence activities; additional that have been identified specific to the risks of TS19; and the environmental management and support framework, the TS19 EMF, which has been developed for the Exercise.

Implementation of these controls and the procedures that support them will enable TS19 to be conducted in a sustainable manner.

Consideration of the potential impacts to the environment as a result of conducting TS19 has included a risk-based approach to avoidance and mitigation wherein potential and expected impacts are understood. Through the iterative process of design and assessment that characterises military exercise planning, a series of commitments have been established. These are summarised in the following Table 10-1 and represent the actions that HQJOC, as proponent for the conduct of TS19, will implement to ensure the Exercise results in no significant impacts to the environment.

Table 10-1: Summary of Commitments

<table>
<thead>
<tr>
<th>No.</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Defence activities will be conducted in accordance with all relevant Standard Operating Procedures and the TS19 EMF as appropriate.</td>
</tr>
<tr>
<td>2</td>
<td>Activities in the GBRMP will be conducted in accordance with guidance and any directions under Part 5 of the GBRMP Zoning Plan 2003 that may be issued by the GBRMP Authority.</td>
</tr>
<tr>
<td>3</td>
<td>Any necessary State or local government approvals will be in place prior to the commencement of the TS19 field training exercise.</td>
</tr>
<tr>
<td>4</td>
<td>An Environment Management Plan will be prepared for TS19 that provides environmental management guidance complementary to existing procedures and addresses all measures to avoid or mitigate environmental impacts as described by Table 5-3.</td>
</tr>
<tr>
<td>5</td>
<td>Any substantial changes to the Exercise design will be addressed in accordance with the procedure described by Section 9.1.1.</td>
</tr>
<tr>
<td>6</td>
<td>A supplementary report will be prepared and published on the TS19 website within six weeks of the ER being released for public comment. The supplementary report will outline the nature of all submissions received and any subsequent actions taken to address them where appropriate.</td>
</tr>
<tr>
<td>7</td>
<td>The ER shall remain on public display on the TS19 website throughout the lead-up period to the execution of TS19. Any comments received relevant to environmental factors will be considered as appropriate, and an addendum issued prior to execution that responds to issues raised.</td>
</tr>
<tr>
<td>8</td>
<td>Implementation of exercise environmental controls including the TS19 Environment Management Plan will be in accordance with Section 0.</td>
</tr>
<tr>
<td>9</td>
<td>A post exercise report will be produced within three months of conclusion of field training activities and summarise the overall environmental performance of the Exercise. It will include analysis of incidents with lessons identified and be published on the TS19 website.</td>
</tr>
</tbody>
</table>
References


<table>
<thead>
<tr>
<th>Website Description (alphabetically listed)</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convention Concerning The Protection Of The World Cultural And Natural Heritage World Heritage Committee</td>
<td><a href="http://whc.unesco.org/archive/2012/whc12-36com-8Ee.pdf">http://whc.unesco.org/archive/2012/whc12-36com-8Ee.pdf</a></td>
</tr>
<tr>
<td>Website Description (alphabetically listed)</td>
<td>URL</td>
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<tr>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
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<tr>
<td>continuous improvement process</td>
<td>e8/ContinuousImprovement/</td>
</tr>
<tr>
<td>Dwarf Minke Whale Project</td>
<td><a href="http://minkewhaleproject.org">http://minkewhaleproject.org</a></td>
</tr>
<tr>
<td>Website Description (alphabetically listed)</td>
<td>URL</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Wet Tropics Management Authority</td>
<td><a href="https://www.wettropics.gov.au/">https://www.wettropics.gov.au/</a></td>
</tr>
</tbody>
</table>
Appendix A – Overview of Equipment in TS19

All images © Commonwealth of Australia 2017

SOURCE: Defence Image Gallery (online: https://images.defence.gov.au/fotoweb/)

The following table summarises key platform types that will be employed during TS19. This is not a comprehensive list and seeks only to illustrate the range and nature of platforms. Also, if referenced in the body of the Environmental Report, imagery of other materiel is also included to provide familiarity for the reader. Reference to specific ships is only for illustrative purposes to demonstrate the type of platform/class of vessel that will be participating and does not infer that the named vessel will be involved in TS19.

Where relevant, a flag corresponding to which nation will operate the platform in TS19 is also provided. Where it is indicated a given platform is operated by more than one nation, this relates only to the platform family and not the specific variant as shown. For example, C130J Super Hercules aircraft are operated by a number of nations including Australia, Canada and the USA, however other variants are also operated by these nations and may or may not be employed during TS19.

For more information on the full suite of Australian and US equipment in addition to those which will be used during TS19, reference should be made to the following sites.

- US forces equipment - https://www.military.com/equipment/

Two Rigid-hulled Inflatable Boats (RHIB) during Exercise RIMPAC 2018 (6 July 2018)

Zodiac during Operation Manitou (30 September 2017) – may also be referred to as ‘General Purpose Inflatable Boat’ (GPIB)
LHD Landing Craft (LLC) during Exercise RIMPAC 2016, Australian LHD in background (30 July 2016)

Landing Craft Utility (LCU) disembarking heavy vehicles during TS17 (14 July 2017)

Landing Craft Air-cushion (LCAC) during Exercise Talisman Sabre 2015 (11 July 2015)

Amphibious Assault Vehicle (AAV) during Exercise Talisman Sabre 2015 (11 July 2015)

Lighter, Amphibious Resupply Cargo (LARC-V) during Exercise Talisman Sabre 2015 (11 July 2015)

Landing Craft Mechanised Mk8 (LCM8) (1 April 2017)

Landing Helicopter Dock (LHD), HMAS Adelaide launches a Multi-Role Helicopter (MRH90) (25 August 2018)

Landing Helicopter Dock (LHD-6), USS Bonhomme Richard during Exercise Talisman Saber 2017 (9 July 2017). Embarked aircraft include MV-22 Osprey and CH-53E Super Stallion
Amphibious Command Ship, USS Blue Ridge during Exercise Talisman Sabre 2005 (10 June 2005)

Landing Platform/Dock (LPD, USS Green Bay during Exercise Talisman Saber 2017 (10 July 2017)

Amphibious Dock Landing Ship (LSD), USS Ashland (LSD-48) on Exercise Talisman Saber 2017 (21 July 2017)

Halifax class patrol frigate, HMCS Calgary (FFH-335) on Exercise Kakadu 2018 (8 September 2018)

Helicopter Destroyer (DDH), JS Izumo (DDH-183) (front) with HMAS Ballarat (FFH-155) (10 June 2017)

Guided Missile Frigate (FFG), HMAS Melbourne (FFG-05) (front) and Frigate, Helicopter (FFH) HMAS Parramatta (FFH-154) (back) on Exercise Ocean Explorer 2018 (9 March 2018)

Mine Hunter Coastal (MHC), HMAS Gascoyne (MHC-85) during Exercise Kakadu 2012 (5 September 2012)

SUTEC Double Eagle mine disposal vehicle deployed from an MHC during Exercise Dugong 2015 (8 October 2015)
<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Armidale Class Patrol Boat, HMAS Maryborough (PB-95) on transit to South East Asia (22 February 2017)" /></td>
<td>Armidale Class Patrol Boat, HMAS Maryborough (PB-95) on transit to South East Asia (22 February 2017)</td>
</tr>
<tr>
<td><img src="image" alt="Aircraft carrier, USS Kitty Hawk during Exercise Talisman Sabre 2005 (14 June 2005)" /></td>
<td>Aircraft carrier, USS Kitty Hawk during Exercise Talisman Sabre 2005 (14 June 2005)</td>
</tr>
<tr>
<td><img src="image" alt="Collins class submarine (21 August 2017)" /></td>
<td>Collins class submarine (21 August 2017)</td>
</tr>
<tr>
<td><img src="image" alt="Replenishment ship USNS Rappahannock during Talisman Saber 2017 (21 July 2017)" /></td>
<td>Replenishment ship USNS Rappahannock during Talisman Saber 2017 (21 July 2017)</td>
</tr>
<tr>
<td><img src="image" alt="Replenishment ship HMAS Sirius (22 August 2018)" /></td>
<td>Replenishment ship HMAS Sirius (22 August 2018)</td>
</tr>
<tr>
<td><img src="image" alt="Sun Ray Glider during trials (21 March 2018) -- NB. example only of an unmanned underwater vessel (UUV) that may be used during TS19" /></td>
<td>Sun Ray Glider during trials (21 March 2018) -- NB. example only of an unmanned underwater vessel (UUV) that may be used during TS19</td>
</tr>
<tr>
<td><img src="image" alt="Shadow 200 unmanned aerial vehicle (UAV) during Exercise Hamel 2018 (18 June 2018)" /></td>
<td>Shadow 200 unmanned aerial vehicle (UAV) during Exercise Hamel 2018 (18 June 2018)</td>
</tr>
<tr>
<td><img src="image" alt="Wasp unmanned aerial system and 6-wheeled all-terrain vehicles (ATV) (13 August 2018)" /></td>
<td>Wasp unmanned aerial system and 6-wheeled all-terrain vehicles (ATV) (13 August 2018)</td>
</tr>
</tbody>
</table>
Truck Integrated Load Handling with Flatrack and Forklift (1 November 2017)

Bushmaster Protected Mobility Vehicle (PMV) during Exercise Talisman Saber 2017 (17 July 2017)

M1A1 Abrams main battle tank (MBT) (15 April 2018)

Australian Light Armoured Vehicle (ASLAV) during Exercise Southern Jackaroo 2016 (25 May 2016)

M88 Hercules recovery vehicle during Exercise Predators Run 2016 (2 July 2016)

M113-AS4 Armoured Personnel Carrier (APC) (17 March 2017)

G-Wagon during Exercise Pitch Black 2018 (8 August 2018)

High Mobility Artillery Rocket System (HIMARS) during Exercise Talisman Saber 2015 (12 July 2015)
- Blackhawk helicopter (7 June 2016)
- High Mobility Multipurpose Wheeled Vehicle (HMMWV) during Exercise Talisman Saber 2017 (29 June 2017)
- Tiger Armed Reconnaissance Helicopter (ARH) during Exercise Hamel 2018 (25 June 2018)
- CH-53E Super Stallion during Exercise Talisman Saber 2017 (7 July 2017)
- MV-22 Osprey during Exercise Talisman Sabre 2015 (11 July 2015)
- Multi-Role Helicopter (MRH90) during Exercise Talismans Saber 2017 (20 July 2017)
- F-35 Joint Strike Fighters (JSF) in formation with FA-18 Hornets (10 December 2018)
- Chinook CH-47F helicopter during Exercise Talisman Saber 2017 (19 July 2017)
<table>
<thead>
<tr>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="AV-8B Harrier" /></td>
<td>AV-8B Harrier short take off-vertical landing (STOVL) jet during Exercise Talisman Saber 2017 (16 July 2017)</td>
</tr>
<tr>
<td><img src="image" alt="EA-18G Growler" /></td>
<td>EA-18G Growler, Exercise Pitch Black 2018 (7 August 2018)</td>
</tr>
<tr>
<td><img src="image" alt="FA-18F Super Hornet" /></td>
<td>FA-18F Super Hornet, Exercise Pitch Black 2018 (1 August 2018) – NB. US forces fly FA-18A</td>
</tr>
<tr>
<td><img src="image" alt="C-27J Spartan" /></td>
<td>C-27J Spartan (16 March 2018)</td>
</tr>
<tr>
<td><img src="image" alt="C-130J Super Hercules" /></td>
<td>C-130J Super Hercules during Operation PNG Assist 2018 (3 March 2018)</td>
</tr>
<tr>
<td><img src="image" alt="C-17A Globemaster" /></td>
<td>C-17A Globemaster (2 May 2018)</td>
</tr>
<tr>
<td><img src="image" alt="KC-30A Multi-role Tanker" /></td>
<td>KC-30A Multi-role Tanker Transport refuels a E-7A Wedgetail during Operation OKRA (25 November 2017)</td>
</tr>
<tr>
<td><img src="image" alt="Sonobouy" /></td>
<td>Sonobouy being loaded onto an AP-3C Orion aircraft during Operation Gateway (4 November 2018)</td>
</tr>
</tbody>
</table>
Joint Threat Emitters (JTE) arrive on a truck convoy to Exercise Diamond Storm 2017 (6 June 2017)
Appendix B – Recovery Plans under the EPBC Act

The following list summarises all threatened species and ecological communities for which a recovery plan under the EPBC Act has been made. This list is generated from review of PMST reports relevant to each of the terrestrial and marine areas that will be used during TS19.

**Ecological communities**

- "Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions" ecological community

**Frogs**

- Wallum Sedge Frog *Litoria olongburensis*
- Fleay's Frog *Mixophyes fleayi*
- Eungella Day Frog *Taudactylus eungellensis*

**Mammals**

- Large-eared Pied Bat *Chalinolobus dwyeri*
- Large-eared Horseshoe Bat *Rhinolophus robertsi*
- Bare-rumped Sheath-tailed Bat *Saccolaimus saccolaimus nudicluniatus*
- Northern Quoll *Dasyurus hallucatus*
- Spectacled flying fox *Pteropus conspicillatus*
- Water mouse *Xeromys myoides*
- Proserpine rock wallaby *Petrogale persephone*
- Southern Right Whale *Eubalaena australis*
- Blue Whale *Balaenoptera musculus*

**Birds**

- Gould's Petrel *Pterodroma leucoptera leucoptera*
- Kermadec Petrel (western) *Pterodroma neglecta neglecta*
- Antipodean Albatross *Diomedea antipodensis*
- Gibson's Albatross *Diomedea antipodensis gibsoni*
- Southern Royal Albatross *Diomedea epomophora*
- Wandering Albatross *Diomedea exulans*
- Northern Royal Albatross *Diomedea sanfordi*
- Sooty Albatross *Phoebetria fusca*
- Southern Giant Petrel *Macronectes giganteus*
- Northern Giant Petrel *Macronectes halli*
- Shy Albatross *Thalassarche cauta cauta*
- White-capped Albatross *Thalassarche cauta steadi*
- Chatham Albatross *Thalassarche eremita*
- Campbell Albatross *Thalassarche impavida*
- Black-browed Albatross *Thalassarche melanophris*
- Salvin's Albatross *Thalassarche salvini*
- Black-breasted Button-quail *Turnix melanogaster*
- Regent Honeyeater *Anthochaera phrygia*
- Swift Parrot *Lathamus discolor*
- Coxen’s Fig-Parrot *Cyclopsitta diopthalma coxeni*
- Red Goshawk *Erythrotriorchis radiates*

**Fish**

- Great white shark *Carcharodon carcharias*
- Green sawfish *Pristis zijsron*
- Freshwater Sawfish *Pristis pristis*
- Oxleyan Pygmy Perch *Nannoperca oxleyana*

**Reptiles**

- Australian marine turtles (all species)

**Plants**

- a herb *Euphorbia obliqua*
- Small-leaved Tamarind *Diploglottis campbellii*
- Rusty Rose Walnut *Endiandra hayesii*
- Sweet Myrtle *Gossia fragrantissima*
- a guinea-flower *Hibbertia marginata*
- Macadamia Nut *Macadamia integrifolia*
- Rough-shelled Bush Nut *Macadamia tetraphylla*
- Southern Ochrosia *Ochrosia moorei*
- Onionwood *Owenia cepiodora*
- Milky Silkpod *Parsonia dorrigoensis*
- Swamp Mint-bush *Prostanthera palustris*
- a Cycad *Cycas ophiolitica*

**SOURCES:**

- List of Recovery Plans:  
- Protected Matters Search Tool:  