TSSC Comments on the Interim Report of the Review of the EPBC Act

Submission from the Threatened Species Scientific Committee, a Statutory Committee established by the EPBC Act

September 2020

Helene Marsh (Chair), Kingsley Dixon, Cissy Gore-Birch, Richard Harper, David Keith, Sarah Legge, Nicola Mitchell and Colin Simpfendorfer (Members)

Summary of Recommendations

Please also check Appendix 2 for TSSC recommendations from its April 2020 Review Submission revised after consideration of the Interim Report

Recommendation 1: Consultative Planning Review Panels

- As an interim measure to facilitate development planning, the proponents of major projects and other projects at risk of having significant impact on biodiversity, should be required to fund the costs of an independent Consultative Planning Review Panel.
- The Panel should be established by an independent authority according to stipulated criteria reflecting relevant skills including industry, Indigenous, local communities, legal advice, NGO's, biota and ecosystem-specific specialists and other specialists (hydrologists, engineers) as appropriate.
- This initiative should be designed to ensure the input of relevant expertise from the time approval is sought from the decision maker and before the approval conditions are set to ensure that the 'right minds are in the room' to advise on priority areas and actions to minimize harm to the relevant MNES.

Recommendation 2: A new framework for threat abatement

(Note: Some of the rationale for this recommendation is also outlined in the TSSC's April submission to the Review)

- The current Intergovernmental Agreement for Biosecurity should be a model for developing a new and separate framework for biodiversity threat abatement.
- The National Strategic Plans for each of nine high-level threats (Table 1) should be listed in a schedule to an intergovernmental agreement on the 'Recovery of Threatened Species and Ecological Communities from Environmental Threats', or preferably as a component of a more generic agreement (or series of agreements) to deliver the EPBC Act reforms.
- The EBPC Act should be amended to enable operational response plans (TAPs, TAAs, Action Plans) to be developed for specific threats nested in these high-level threats.
- The EBPC Act should be amended to enable several types of operational response plans that meet required standards to be statutory instruments to enable cross-agency and cross-jurisdictional partnerships to jointly develop statutory threat abatement instruments as appropriate for a specific threat.
- The requirement for links between Conservation Advices/Recovery Plans and relevant operational threat abatement instruments should be explicit and reflected in appropriate standards.
- The requirement for Australia's performance in threat abatement to be reviewed by expert reviewers at five year intervals should be reflected in appropriate standards.

Recommendation 3: Regional Planning

- The Final Report of the Review should recommend that Regional Planning is a key driver of government investment in biodiversity conservation, and that the required principles and processes be informed by meaningful stakeholder engagement prior to Stage 2 reforms.

Recommendation 4: Implementing Commitments to the States and Territories for listing ecological communities

- To enable Stage 1 reforms, the Final Report of the Review should recommend necessary changes to the EPBC Act and relevant Regulation to enable adoption of the international standard and co-operative protocols for listing ecological communities as agreed with states and territories.

Recommendation 5: Critical Habitat Matters

(Note: Some of the rationale for this recommendation is also outlined in the TSSC's April submission to the Review)

- 'Habitat Critical to Survival' is incorporated into the Register of Critical Habitats under a national agreement modelled on the CAM agreement.
- The Critical Habitat of a threatened ecological community is identified using the condition thresholds developed during the listing process.
- Emergency listing powers are provided to enable the Register of Critical Habitats to improve conservation outcomes following environmental disasters.
- The term 'Habitat Critical to Survival' is replaced by the term 'Critical Habitat' in all statutory documents over time.
- The definition of habitat is amended to recognise that the habitats of many protected assets will change as a result of climate change.

Recommendation 6: Strategic Assessments

That strategic assessments should be capable of being updated and reviewed when threats, threatened species and ecosystems unknown at the time of the assessment come into focus.

Recommendation 7: Indigenous Matters

- Meaningful, mainstream Indigenous involvement embedded in all elements of the EPBC Act with statutory requirements for standards for broader Indigenous engagement
- Culturally-significant entities (species, populations, communities/landscapes/stories) are MNES

- The Indigenous Advisory Committee is the Listing Authority for culturally-significant entities.
- All proto-type standards are checked to ensure that they conform to the provisions of the Native Title Act and subsequent rulings by the High Court of Australia.

Recommendation 8: Bonn Convention and CITES

- That the Act be changed to remove the requirement for all species listed on Appendix II of the Bonn Convention to be automatically listed as Migratory.
- That no changes are made to the need for import permits for species listed on Appendix II of the Convention on International Trade in Endangered Species

Recommendation 9: Fisheries Matters

- The Final Review Report should provide comment on the management of state and territory managed fisheries.
- That the requirement for all Australian fisheries to meet ESD principles continue to be required.

Recommendation 10: Threatened Species Scientific Committee

- The Threatened Species Scientific Committee should be renamed the 'Biodiversity Conservation Scientific Committee' to better represent its functions with regards to the conservation of threatened species and ecological communities and migratory species.
- This Committee should have the Terms of Reference listed in this document.

Recommendation 11**:** A step change in data acquisition and monitoring

- The Final Report should stress that an outcomes-focussed Act can only function with significant and strategic improvements in data acquisition, accessibility and synthesis across all biodiversity (i.e. broader than MNES) and across the entire Australian jurisdiction.
- Data acquisition cannot rely solely on bottom up delivery - a top-down, strategic approach is essential to successful functioning of a devolution model by identifying and acquiring key datasets for reporting on performance against the national standards. This should be the responsibility of a biodiversity institute (Bureau of Biodiversity) modelled, for example, on the Bureau of Meteorology, with the necessary expertise, authority and capability to establish and maintain core long-term data-sets, apply them to Key Performance Indicators for the National Environmental Standards, and implement enduring information reform.
- The Bureau of Biodiversity initiative must have key responsibilities for building the required capacity for biodiversity reporting against national standards, providing scientific leadership and career paths to catalyze industry and community contributions to data streams, and contribute to post-COVID recovery of jobs and economic growth.

- Acquired data need to have greater functionalities than reporting on trends. Understanding the impacts of threats, and of management interventions is vital to ensure that data can inform management and policy revision.
- The Bureau of Biodiversity also needs excellent interpretational capacity, and needs to be accessible for a range of users (again, similar to the current BoM).
- **The Bureau of Biodiversity should be a required component of the shift to devolved environmental decision-making**.
- The Bureau of Biodiversity should have the capacity to support state and territory animal ethics committees in rapid approval for emergency monitoring of vertebrate fauna.

Recommendation 12: Improving SoE reports

The requirements around SoE reporting in the Act should be modified so that

- Agreed core indicators are established as part of a foundational environmental data sets for Australia.
- The maintenance of these data required to report on the state of the environment is mandated (rather than the current system of data scavenging every five years).
- SoE should follow a consistent but flexible format allowing comparison between reports.

Recommendation 13: Improving data availability for species that trigger the Act

- Summary expert advice should be obtained on how to monitor, at a range of appropriate scales, each threatened species, ecological community and migratory species that regularly result in controlled action decisions as soon as possible and incorporated into relevant Conservation Advices/Recovery Plans and Wildlife Conservation Plans with high priority. This advice would need to be put into effect (i.e. monitoring would need to take place), with acquired data curated and stored in a national facility, ready for analysis for a range of needs (SoE to impact assessment processes).

- The list of threatened species and ecological communities and migratory species that regularly result in controlled actions under the EPBC Act should be published on the departmental website to ensure that these assets are priorities for scientific monitoring

Recommendation 14: National Restoration and Recovery Standard

- A statutory **National Restoration and Recovery Standard** should be developed where restoration and recovery actions are based on proven ability to reinstate species, communities and their functional processes that result in a net gain for the MNES in spatial extent, structural continuity and ecological resilience commensurate with the best available knowledge for the native reference ecosystem. (see Appendix 1).

Recommendation 15: Biodiversity Payments

- A biodiversity co-payment should be used to incentivize land and sea based (blue) carbon mitigation activities with accompanying standards to ensure real and sustainable biodiversity outcomes from investment, analogous to those developed for carbon mitigation (i.e. ACCUs).
- The EPBC Act listing processes should be used to underpin a biodiversity payment scheme by identifying species and ecological communities at threat and in need of restoration and thus provide a robust and verified basis for prioritization of restoration activities.

Contents

Introduction

The Threatened Species Scientific Committee (TSSC) congratulates Professor Samuel for his frank appraisal of the failures of the EPBC Act to protect Australia's natural environment and iconic places, and his recognition of the concerns of Traditional Owners. The Committee also notes the Interim Report's acknowledgement of the concerns of both the development industry and landholders about the complexity, delay and uncertainty in EPBC processes.

The Committee agrees that fundamental reform of national environmental law is required and recognizes the potential of the proposed legally enforceable National Environmental Standards to make a difference without compromising environmental sustainability.

We appreciate why the initial emphasis is on outcome standards but suggest that process standards must be also developed nationally and in parallel if the proposed outcome standards are to succeed in: (i) halting and reversing the decline of Australia's biodiversity; (ii) encouraging sustainable economic development, especially in Australia's regions; and (iii) enabling Indigenous people to achieve their healthy country aspirations.

To this end, we emphasize the need for standards for Monitoring, Restoration and Recovery, Offsets, and Data and Information to be developed in the first tranche of standards. We have drafted an approach for suitable standards for threatened species, ecological communities, migratory species and species listed as Conservation Dependent and collaborated on drafting standards for Restoration and Recovery (Appendix 1).

The Committee has focused this submission around matters relevant to its functions and expertise. Accordingly we have commented on regional planning, critical habitat, strategic assessment, wildlife trade provisions, fisheries, community participation, data and information and systems, monitoring data and reporting, and restoration and carbon markets. In some cases, we have revised recommendations from our April Submission to the Review to reflect the direction of the Interim Report (Appendix 2) and have listed additional suggestions for minor modifications to the Act (Appendix 3).

In recognition that the data will not be available to develop 'granular' standards for at least several years, we have suggested interim Consultative Planning Review Panels to facilitate the robust and timely environmental assessment of large projects and other projects likely to cause significant impact on MNES. We suggest how robust advice on monitoring of the protected assets that trigger the Act might be efficiently incorporated into Conservation Advices and Recovery Plans. We also outline how the framework currently used to abate biosecurity threats might be adapted for biodiversity threats while incorporating the National Strategic plan concept outlined in the Review Report.

We have nominated a Committee lead for each subsection of this submission to facilitate subsequent follow-up with the Review Secretariat.

In the comments below, our chapter numbering and references to page numbers reflect the Interim Report.

Chapter 1 - National level protection and conservation of the environment and iconic places

Pathway to adoption of the National Environmental Standards for project approvals: Consultative Planning Review Panels for facilitating environmental assessment of large projects and other projects likely to cause significant impact to MNES *(Kingsley Dixon)*

The Interim Report proposes that new legally-enforceable National Environmental Standards should be the foundation of the reform of the EPBC Act to halt the decline of Australia's national environment and iconic places.

The Interim Report envisages the National Environmental Standards as regulatory instruments that 'must be applied, unless the decision-maker can demonstrate that the public interest and the national interest is best served otherwise'. The desired standards are to be 'precise and quantitative' and underpinned by quality data and information, to 'support faster and lower-cost assessments and approvals, including the capacity to automate consideration and approval of low-risk proposals'.

The TSSC considers that the application of this approach has the potential to be a very significant reform. However, the development and application of 'granular' standards for threatened species and ecological communities, the MNES about which the Committee must advise the Minister of Environment (EPBC Act Section 503), are several years away. This lag is inevitable even with significant Commonwealth investment in: (a) environmental information and (b) revision of the relevant regulatory instruments such as Conservation Advices for the listed threatened species and ecological communities that trigger the Act.

Department of Agriculture, Water and the Environment records indicate the magnitude of the latter task: ~220 threatened species, and ~59 listed migratory species (which were not also listed as threatened), resulted in controlled action decisions five or more times between the commencement of the Act in July 2000 and June 2019. In addition, some 34 Endangered and Critically Endangered ecological communities have also resulted in controlled action decisions under the Act, five or more times to date. These figures are indicative only as exact numbers are difficult to obtain and the number of listed species and ecological communities will increase rapidly over the next couple of years, partially as a result of the 2019/20 fires.

The challenge is particularly great for wide-range species such as the koala. The koala triggers the Act more than any other threatened species. The combined koala populations of Queensland, New South Wales and the Australian Capital Territory triggered the Act 165 times in the seven years from when the listing was made in 2012 to mid-2019. Nonetheless,

population sizes and trends are unknown in large areas of the koala's range. Such data are essential for meaningful implementation of the proposed Standards for this species because of the confounding effects of recent fires, drought and habitat loss due to peri-urban development.

The koala triggers the EPBC Act more than any other threatened species. The koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) resulted in controlled action decisions 165 times between May 2012 and June 2019. Nonetheless, population sizes and trends are unknown for large areas of the species' range making a granular standard for this species challenging to develop.

Given the inevitable problems associated with the transition to National Environmental Standards, the Committee suggests that, at least as an interim measure, the proponents of each major project or other projects likely to have significant impact on MNES, should be required to fund the costs of an independent Consultative Planning Review Panel for that project. This panel should be appointed by an independent authority, according to selection criteria that ensure relevant expertise and independence, from the time approval is sought from the relevant decision maker and before the approval conditions are set. This approach would ensure that the 'right minds are in the room' to advise on priority areas and actions to avoid or minimize harm to the relevant MNES. Experience with this approach (see examples below) demonstrates that it can save time and money.

Examples of Consultative Planning Review Panels as Successful Models for Facilitating Environmental Assessment of Large Projects

The Tropicana Gold Project (Pre-approval)

Following the discovery in the early 2000s of one of Western Australia's largest gold deposits in the environmentally sensitive Great Victoria Desert, AngloGold Ashanti undertook to adopt a 'peer review' process to facilitate the approvals development. The principle was simple: establish a 'peer review panel' of experts and stakeholders to advise on key legal, regulatory, environmental, cultural and industry issues associated with developing a greenfield site in a region of high sensitivity to Traditional Owners and with very high environmental values.

A peer review panel was funded by the industry. The panel comprised expertise relevant to: biological and abiotic environmental values; cultural values; legal and regulatory standards; industry and proponent relevant issues; and NGO groups. Environmental consultants provided project oversight and editorial support. The panel operated under a Terms of Reference and met regularly with the proponents in formal meetings and inter-sessionally by electronic and video means. The panel attended site, city and regional town hall meetings with communities

and interested parties impacted by the development to provide input and overview of the key components of the Public Environmental Review document.

Success Criteria

- The panel process supported a timely production of the detailed Public Environmental Review (PER).
- The public assessment process resulted in minimal regulatory comment and only one public comment enabling the project to achieve a remarkably fast start-up.
- Stakeholders ‘owned’ the development of the PER resulting in a sense of ‘community participation’ rather than the more typical ‘community opposition’ to development.

Key Learnings

- Engage early and operate full and open disclosure.
- Ensure expertise is relevant to all the core issues, is independently appointed, impartial, at arms-length and that discussions can be open and frank at all times.
- Ensure information is scientifically robust and relevant to major issues facing the project so that the panel’s time is used effectively and efficiently.
- A proponent can openly accept professional opinion, even when this may mean that project specifications require substantial reworking.

The Alligator Rivers Region Technical Committee

The Alligator Rivers Region Technical Committee (ARRTC) was established in 1993 in the post-approval phase. In 2001, ARRTC became an independent scientific advisory panel to review research activities in the Alligator Rivers Region and to review the scientific basis for the environmental assessment and regulation of uranium mining operations in Kakadu to ensure operations resulted in no net-harm to the environmental values of the region.

The responsibilities of the Committee included:

- Independent review of research and programs relating to the effects of uranium mining operations on the environment.
- Recommending to the Minister the nature and extent of research necessary to protect and restore the environment in the Region.

Success Criteria

- Through the guidance and advice of ARRTC, the community understand and respect that the best available science is guiding the mine through to closure in 2026 and eventual reincorporation into the World Heritage Area.

Key Learnings

- Continuous, expertise-led improvement is critical to resolving complex environmental issues.
- Adaptive management is integral to ensuring that the advice of the panel is operationalized and outcomes lead to on-going improvement.
- Investment in timely and appropriate data collection is essential to ensure a panel can resolve issues and recommend proven actions.
- Continuous and informed dialogue with traditional custodians is fundamental to ensuring ownership of the process and outcome.

Recommendation 1

As an interim measure to facilitate development planning, the proponents of major projects and other projects at risk of having significant impact on biodiversity, should be required to fund the costs of an independent Consultative Planning Review Panel.

The Panel should be established by an independent authority according to stipulated criteria reflecting relevant skills including industry, Indigenous, local communities, legal advice, NGO's, biota and ecosystem-specific specialists and other specialists (hydrologists, engineers) as appropriate.

This initiative should be designed to ensure the input of relevant expertise from the time approval is sought from the decision maker and before the approval conditions are set to ensure that the 'right minds are in the room' to advise on priority areas and actions to minimize harm to the relevant MNES.

Threat Abatement (*Helene Marsh and Nicki Mitchell*)

The section of the Interim Report relating to threat abatement and KTPs is generally consistent with the information provided in the TSSC submission to the Review in April 2020, but did not support listing KTPs as MNES as the Committee recommended. The Interim Report does not mention whether Threat Abatement Plans/Advices should continue to be required, but major

threats, such as feral predators and climate change, are recommended to be addressed by 'Strategic National Plans' (p. 29).

The threat discussed more than any other in the Interim Report was climate change. The Report's first conclusion is that the EPBC Act should not be concerned with regulating actions that contribute to greenhouse gas emissions, but should offer a means to coordinate (and invest in) climate change adaptation and research (e.g. by expanding capability for forecasting and scenario exploration). This conclusion provides some context for this statement (p. 23) "The EPBC Act should…require that development proposals explicitly consider the effectiveness of their actions to avoid or mitigate impacts on nationally protected matters under specified climate change scenarios." So, as climate change is clearly portrayed as a threat in the Interim Report, the Standards will require this threat to be mitigated, which suggests a major role for environmental restoration (and associated carbon and biodiversity markets) (see Section 8.3 below) into the future.

We note that the Interim Report is silent on land clearing. Habitat loss, much of which is attributable to land clearing, adversely impacts ~750 threatened species (research by the NESP Threatened Species Recovery Hub led by Dr Josie Carwardine) plus many threatened ecological communities, and 'Habitat loss, fragmentation and degradation' is a high-level threat that should be addressed via a Strategic National Plan (see Table 1) given the constitutional responsibilities of the states and territories.

The examples in the Interim Report suggest that it is envisaged that Strategic National Plans would apply to generic high-level threats. However, the TSSC's April 2020 submission clearly indicates that plans at this level have limited efficacy at the operational level and that it is more effective and efficient for operational threat abatement planning to be done at the level of specific threats - e.g. feral cats, or groups of threats such as invasive ants, rather than at the level of high-level generic threats such as Novel Biota.

The Interim Report consistently calls for threats to be managed at 'the appropriate scale', particularly in areas of high biodiversity or high numbers of MNES, and logically suggests that threat abatement should be a core deliverable in Regional Planning. The TSSC considers that Regional Planning could be a 'game changer' for addressing cumulative threats. However, in the sections relating to standards for MNES (species and ecological communities), there is also the consistent message that actions 'must manage threats', implying piecemeal rather than coordinated regional abatement. Thus the messaging about how major threats should be abated, and by whom (Commonwealth, states, developers), and how this could be enforced is under-developed and needs to be articulated in a framework. We outline how this might be done below.

Threat Abatement by the States and Territories

Commonwealth-listed Key Threatening Processes and Threat Abatement Plans are not explicitly written into state-based legislation so there is little formal ability to address threatening processes as conservation threats at a national level. In most jurisdictions, there are laws and

policies that influence the management of threatened species including several common strategic tools and legislative instruments designed to address most of the high-level threats listed in Table 1. These include mechanisms for listing threatened species and ecological communities, the establishment of scientific committees, identification of Key Threatening Processes, Threat Abatement Plans, recovery planning, conservation strategies, review processes, and licensing and offence provisions. Nonetheless, there are gaps in the prescriptive legislation, enforcement ability, and instruments required to enable the identification of threats to threatened species and ecological communities in some states and territories. A national approach is clearly required.

Case study of the value of agreement and cooperation between governments, for effective management of threats.

A small preview of what could be achieved with enhanced intergovernmental collaboration and investment comes from the recent focus on feral cats. Feral cat management is carried out by states and territories. Jurisdictions vary widely in their management response, from efforts to eradicate cats from offshore islands, targeted baiting, trapping and exclusion fencing programs (notably in Western Australia) to very little management at all in some other jurisdictions.

In July 2015, Commonwealth, State and Territory Ministers endorsed a national declaration of feral cats as pests that threaten wildlife, and recognized that pet cats can have detrimental impacts on native animals.

The declaration has encouraged reform of legislation to remove barriers to feral cat management in some jurisdictions; included a commitment to improving pet cat management; and acknowledged that managing feral cats was important for threatened species recovery. Around the same time, the management of feral cats was listed as a key component of the national Threatened Species Strategy.

The Strategy contains explicit quantitative targets for feral cats, including increasing predator-free areas, eradicating feral cats from five islands, establishing the Feral Cat Taskforce, dedicating funding for research, monitoring and management, and culling 2 million cats over the period 2015-2020.

The Taskforce has been a useful mechanism for coalescing and focusing cat research, management and communication activities around the Australian Government's Threat Abatement Plan and its Threatened Species Strategy. This model for inter-governmental cooperation, if matched with strategic investment in management and threat abatement, could result in substantial improvements to managing introduced species.

A new framework for threat abatement

The TSSC suggests that the current Intergovernmental Agreement for Biosecurity might be a model for developing a new framework for threat abatement (see https://www.coag.gov.au/about-coag/agreements/intergovernmental-agreement-biosecurity).

The Strategic National Plans for each high-level threat could then be listed in a schedule to an intergovernmental agreement on the 'Recovery of Threatened Species and Ecological Communities from Environmental Threats' which could be a component of a more generic agreement or series of agreements to deliver the EPBC Act reforms.

These high-level threats (Table 1) have been identified in a series of workshops convened by the Australian Academy of Science in July-August 2020, attended by some members of the TSSC and other experts on threats, and informed by a NESP Threatened Species Recovery Hub project led by Dr Josie Carwardine.

Table 1: High-level threats that should be addressed in Strategic National Plans, as identified through workshops convened by the Australian Academy of Science in July - August 2020. The data are for threatened terrestrial and freshwater species, but will be extended to include threatened marine species and ecological communities[3]. Note the numbers do not reflect the severity of all the threats because of the understated challenge of estimating the impacts of emerging threats. .

High-level threatening process	**Number of threatened species adversely impacted**
Invasive species and pathogens	>1640[1]
Harmful native biotic interactions	
Habitat loss, fragmentation and degradation	~1350
Disruption of life cycles and habitats by fire regimes	~690
Overexploitation and other direct human-induced harm	~280
Climate change and severe weather	>225[2]
Changed surface and groundwater regimes	>130
Pollution	~75
Disrupted ecosystem and population processes	~30[3]

[1]The number of species impacted by these two threats has been combined because of the current difficulties in identifying whether some diseases are introduced or native.
[2]This number is a serious underestimate because of the lag in climate change impacts; climate change is an emerging threat.
[3]Addressing this high-level threat category will be very important for the conservation of ecological communities. The number of affected ecological communities needs to be quantified.

Specific threats suitable for operational threat abatement are nested within each of these high-level threats. The threats that adversely affect the largest number of species with a high level of impact should be considered as one of the factors to guide investment and the development of threat abatement plans to guide coordinated threat abatement across taxa in Regional Plans. Some of the required data (including data to inform the scale of investment required) are

already available from the relevant NESP Threatened Species Recovery Hub project (see Table 2). **Note this approach is insufficient for prioritizing emerging threats such as a newly-introduced pathogen or climate change.**

Table 2: Example of how data from a NESP Threatened Species Recovery Hub project could be used to inform investment in and development of new threat abatement plans. Data from Carwadine et al. reproduced with permission. The threats in red have existing threat abatement plans (largely inadequately funded). The threats in black have no such plan. The data suggest that it might be appropriate to develop a threat abatement plan for invasive freshwater fish.

Top 15 invasive vertebrate threats ranked based on number of threatened species impacted	Same species ranked by number of species impacted a high- level. Note 3 of the species could not be ranked using this metric
Cats	Cats
Rabbits	Foxes
Foxes	Rodents
Pigs	Pigs
Rodents	Goats
Goats	Rabbits
Dog/wild dog	Dog/wild dog*
Trout	Trout*
Cane toads	Cane toads*
Deer	Deer**
Unspecified fish	Unspecified fish**
Grazers	Redfin Perch**
Gambusia	
Redfin perch	
Carp	

*Ranked at same level; ** ranked at same level

Threat Abatement Plans/Advices (or alternative operational response plans for specific threats) should be foundation documents that inform how Regional Plans should address relevant specific threats and cumulative threats (Figure 1), according to agreed standards. The way this framework might work is outlined in Table 3 below and Figure 1. The functionality of this system would be dependent on high-level agreement(s) between the Commonwealth and the States and Territories and agreed standards of delivery and resourcing for both the Threat Abatement Plans/Advices and Regional Plans, all of which should be statutory instruments.

Table 3: Suggested framework for a new system of environmental threat abatement as a vital tool to support recovery of Australia's threatened species and ecological communities. The suggested responsibilities for the management and administration of each component are identified in columns to the right of the table.

How environmental threats could be managed	Decision making	Implementation
Intergovernmental agreement(s) on environmental threats between Commonwealth, states /territories	Commonwealth, State and Territory Environment Ministers	Agencies responsible for environment in Commonwealth, states and territories
Schedules Strategic National Plans to abate each high-level threat to Australia's biodiversity		
Threat Abatement Plans/Advices Foundation documents outlining operational actions to address a specific threat	Commonwealth Department of Agriculture, Environment & Water	Agencies responsible for leading abatement of specific threat and development assessment
Regional Plans Documents identifying deliverables, resources, and key milestones to address individual and cumulative threats to biodiversity in a region	Agencies responsible for developing relevant regional plans	Lead agency responsible for implementing relevant regional plan

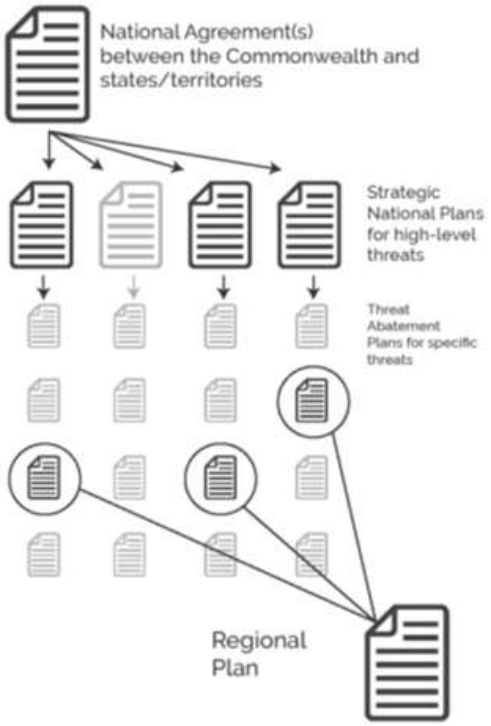


Figure 1: An example of how the framework in Table 3 might be used to inform actions for cumulative threat abatement at a regional level.

These ideas align with some existing mechanisms as explained in the examples in Table 4. The two examples in the table illustrate how some of the layers in Table 3 and Figure 1 already exist for some threats via the Intergovernmental Agreement on Biosecurity. However, the signatories to the current agreements have generally not committed sufficient resourcing to address a specific threat effectively.

Thus the success of the new framework would depend on agreed standards of delivery and resourcing that could be reflected in the high level agreement(s) between the Commonwealth, states and territories and the national strategic plans. The TSSC is wary of biodiversity threat abatement being subsumed into biosecurity threat abatement because of their different priorities.

Table 4: Examples of how the management of listed threats agrees with and differs from the arrangements proposed in Table 3. The success of the proposed new arrangements would depend not only on the agreed standards of delivery and resourcing that could be reflected in the high-level agreement(s) between the Commonwealth, states and territories and the national strategic plans, but would also require consequential changes to the EPBC Act. For example, Commonwealth legal advice indicates that the EPBC Act only allows one Threat Abatement Plan (TAP) per Key Threatening Process (KTP), a major constraint when a KTP is high-level, such as the Novel Biota KTP.

Marine debris		Proposed Mechanisms	*Phytophthora cinnamom*i (PC) die back	
Notes	Agreement/Plan		Agreement/Plan	Notes
Agreements on waste management flow from international agreements and agreements between governments on specific issues.	No specific Intergovern-mental Agreement	Intergovern-mental Agreements (C'wth, state and territory Ministers)	Intergovernmental Agreement on Biosecurity (IGAB)	IGAB has objectives to manage nationally significant pests and diseases. Would require additional government focus to implement meaningfully for *Phytophthora*.
National Waste Policy provides a framework focused on avoiding waste and waste products. Does not directly reference marine debris so only manages the inputs to marine debris. May require a separate Strategic National Plan to strengthen existing policy.	National Waste Policy/ National Waste Policy Action Plan	Schedules / Strategic National Plans (C'wth, state and territory Ministers or govt depts)	Novel Biota Key Threatening Process (KTP) and Threat Abatement Advice (TAA).	At present a C'wth doc – would need to be redrafted as a joint doc. *Phytophthora* falls under the overarching threat of Disease or the KTP Novel biota. The TAA recommends that a TAP is implemented but a TAP is not possible under the existing EPBC Act, as explained above.

Unfunded and uncoordinated.	Threat abatement plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans.	Threat Abatement Plans / Advices (C'wth)	Threat abatement plan for disease in natural ecosystems caused caused by *P. cinnamomi*.	Goodwill and cooperation associated with TAP but unfunded so poorly implemented.
Regional action occurs but not linked to plans. Mostly focused in education about the problem and personal consumer action. Examples: - Australian Antarctic Division implements regional marine debris action linked to international agreements. - NGOs run education and beach cleaning programs. - Pledges from industry to reduce waste.	Regional Plans apparently do not exist at present.	Regional Plans (regions, possibly tied to C'wth funding)	Examples of existing 'Regiona'l Plans for the management of *Phytophthora:* - Strategic Regional Plan for Tasmania: Report on Conservation of Tasmanian Plant Species and Communities *Threatened by Phytophthora cinnamomi.* Managing *Phytophthora* Dieback: Guidelines for Local Government (WA)	Regional Plans for *Phytophthora* come in a variety of forms from Industry plans to prevent the spread from their business to protected areas managing visitor impacts.

Recommendation 2

(Note: Some of the rationale for this recommendation is also outlined in the TSSC's April submission to the Review)

- The current Intergovernmental Agreement for Biosecurity should be a model for developing a new and separate framework for biodiversity threat abatement.
- The National Strategic Plans for each of nine high-level threats (Table 1) should be listed in a schedule to an intergovernmental agreement on the 'Recovery of Threatened Species and Ecological Communities from Environmental Threats', or preferably as a component of a more generic agreement (or series of agreements) to deliver the EPBC Act reforms.
- The EBPC Act should be amended to enable operational response plans (TAPs, TAAs, and Action Plans) to be developed for specific threats nested in these high-level threats.
- The EBPC Act should be amended to enable several types of operational response plans that meet required standards to be statutory instruments to enable cross-agency and cross-jurisdictional partnerships to jointly develop statutory threat abatement instruments as appropriate for a specific threat.
- The requirement for links between Conservation Advices/Recovery Plans and relevant operational threat abatement instruments to be explicit should be reflected in appropriate standards.
- The requirement for Australia's performance in threat abatement to be reviewed by expert reviewers at five year intervals should be reflected in appropriate standards.

Regional Planning (*Helene Marsh*)

The Interim Report proposes three Regional Planning tools:

1. Regional Recovery Plans—to be developed by the Commonwealth for MNES.
2. BioRegional Plans—to be developed collaboratively between the Commonwealth and state and territory governments.
3. Strategic assessments—to be developed at the request of a proponent, in partnership with the Commonwealth and the relevant state or territory government.

These initiatives are envisaged as part of the Phase 2 reforms, when conversations with the states and territories about their Regional Planning priorities and priorities for strategic national plans commence.

This Regional Planning approach is broadly consistent with the TSSC submission, which recommended the use of Regional Planning as a critical means of addressing cumulative threats (see Figure 1) but stressed the need for extensive stakeholder discussion before

implementing such reforms. Nonetheless, the Interim Report is silent on several key matters (listed below), which the TSSC considers are essential to the success of this approach and which will need to be addressed in a Regional Planning framework. We have not outlined a suggested framework in this document because, as we explained in our submission to the review in April 2020, we consider that such a framework needs to be developed with extensive stakeholder input, and that there is unlikely to be a 'one-size-fits all' model for all regions under Australian jurisdiction. It would be more appropriate for the Final Review Report to include principles for Regional Planning rather than a framework *per se.*

Matters that need clarification in the Review's final report:

1. The relationship between Regional Recovery Plans (which the Interim Report envisages falling under the responsibilities of the 'Threatened Species Science Committee'), and Regional Plans (to be developed collaboratively between the Commonwealth and state and territory governments). It is important to specify these relationships to ensure that all the components of planning relevant to MNES are working in synergy.
2. The role of the existing NRM bodies in the development of Regional Plans. The Interim Report suggests that Regional Recovery Plans could draw from regional-scale plans that are already in place, including Healthy Country Plans and plans prepared by Natural Resource Management groups.
3. How this system would be implemented for marine species and communities. The TSSC notes that ~35 listed threatened species spend all or some of their life in the sea (this number excludes seabirds and shorebirds). There are also four listed ecological marine communities.
4. How the standards for costing, funding, monitoring and reporting of the various plans are to be set.
5. The future of Recovery Plans for threatened species and ecological communities, which the TSSC submission recommended be retained for species/ecological communities with high public profile, bespoke management and/or stakeholder coordination needs. Recovery Plans are particularly important for cross-jurisdictional threatened species and ecological communities, and marine species and ecological communities.

The TSSC is also concerned about the 'Solomon's Judgement' recommendation (p. 27), which states 'Importantly, Regional Recovery Plans should provide the basis for prioritizing Commonwealth action and investment, including the direction of offset obligations arising from development. These plans should identify areas where protection, conservation and restoration are needed, and areas for investment that will deliver the greatest environmental benefit'. This proposed approach propagates the principle that some Australian ecosystems are more valuable than others which promotes their continued loss. In a nation where we are depleting natural assets, a guiding principle must be that all natural ecosystems are valued and valuable, noting that knowledge of these values often lags behind a development.

Representative deliberative processes for developing Regional Plans

For Regional Planning to work, meaningful landholder and stakeholder participation will be essential. Representative deliberative processes are currently considered to be one of the most innovative methods of fostering citizen participation in government. The OECD has collected evidence on how such processes work across different countries. There are a wide variety of models. Nonetheless, analysis of the evidence reveals common principles and good practices to guide policy makers seeking to develop and implement such processes as outlined in their 'Good Practice Principles for Deliberative Processes Public Decision Making' http://www.oecd.org/gov/open-government/good-practice-principles-for-deliberative-processes-for-public-decision-making.pdf. These good practice principles could provide those with responsibilities for developing Regional Plans with useful advice and should be considered as part of the framework for developing Regional Plans.

Recommendation 3

The Final Report of the Review should recommend that Regional Planning is a key driver of government investment in biodiversity conservation, and that the required principles and processes be informed by meaningful stakeholder engagement prior to Stage 2 reforms.

Implementing national standards for ecological communities *(David Keith)*

Consistency of listing protocols and conservation advice for ecological communities across jurisdictions is an essential requisite for the successful implementation of a devolvement model for managing Australia's national biodiversity assets. Commonwealth, state and territory jurisdictions reached agreement in-principle in 2016 that listings of both species and ecological communities should align with international standards defined by IUCN Red List criteria and guidelines, as is the practice in many other countries (Common Assessment Method - CAM Agreement 2016). Implementation of the agreement is well advanced for species, with significant benefit of jurisdictional alignment already being realized. The lack of equivalent progress on ecological communities remains a barrier to devolvement reforms, and requires technical adjustments to the EPBC Listing Regulation for resolution. Such adjustments have already been made to equivalent regulations in three state/territory jurisdictions.

Recommendation 4

To enable Stage 1 reforms, the Final Report of the Review should recommend necessary changes to the EPBC Act and relevant Regulation to enable adoption of the international standard and co-operative protocols for listing ecological communities as agreed with states and territories.

Critical habitat matters *(Colin Simpfendorfer)*

The Interim Report states that Regional Recovery Plans should identify important populations or areas of critical habitat. The TSSC agrees with this recommendation but points out that it will be challenging to achieve in practice. The Interim Report notes that 'Section 207A of the EPBC Act provides for a Register of Critical habitat. This Register is currently incomplete. Critical habitat should be identified and listed over time'. Listing of critical habitat will require changes to the EPBC Act and its Regulations as explained below.

The EPBC Act recognizes two interrelated habitat concepts. The first is that it specifies a ***Register of Critical Habitats*** (s207). This register has been little used for two reasons: 1) its statutory effect applies only on habitat in or on a Commonwealth area (<0.5% of the land surface of Australia); and 2) the Regulations require extensive landholder consultations before the Minister can approve additions to the Register. The second concept is ***Habitat Critical to the Survival*** which is a requirement in Recovery Plans with s270 specifying "identify the habitats that are critical to the survival of the species or community concerned and the actions needed to protect those habitats". However, this concept falls within the section of a Conservation Advice that specifies "information about what could appropriately be done to stop the decline of, or support the recovery of, the species or community" (s266B(2)(b)(i)). The Act should be amended to remove this confusing dual terminology and require Conservation Advices to specify the habitat critical to the survival of a species or ecological community using a preferred terminology. 'Critical Habitat' is the accepted scientific and management term. 'Critical Habitat' is defined in the Act s528 as having the meaning expressed in s207A4 (which is an unsatisfactory definition). Habitat is defined in the Act as meaning 'the biophysical medium or media: (a) occupied (continuously, periodically or occasionally) by an organism or group of organisms; or (b) once occupied (continuously, periodically or occasionally) by an organism or group of organisms and into which organisms of that kind have the potential to be introduced'. This definition should be redefined in an amended Act to include habitats that will become suitable under climate change (likely to be habitats to the south or upward in elevation).

Recommendation 5

(Note: Some of the rationale for this recommendation is also outlined in the TSSC's April submission to the Review)

- 'Habitat Critical to Survival' is incorporated into the Register of Critical Habitats under a national agreement modelled on the CAM agreement.
- The Critical Habitat of a threatened ecological community is identified using the condition thresholds developed during the listing process.
- Emergency listing powers are provided to enable the Register of Critical Habitats to improve conservation outcomes following environmental disasters.
- The term 'Habitat Critical to Survival' is replaced by the term 'Critical Habitat' in all statutory documents over time.
- The definition of habitat is amended to recognize that the habitats of many protected assets will change as a result of climate change.

Strategic Assessments (p. 21) (*Kingsley Dixon*)

The rapid contemporary change in information and science, unexpected outcomes from adaptive management and the rapid pace of environmental change often lead to unpredictable outcomes for species and ecosystems. This means that strategic assessments can lead to unintended impacts that in hind-sight would not have been approved. The same is true of other devices that operate with long durations that span knowledge and science epochs, such as State Agreement Acts. For example, in southwest Australia, under a State Agreement Act mining removes between 5-7 sq km per annum in the 30% of the remaining native vegetation, despite this vegetation supporting multiple threatened species. Devices such as strategic assessments must be capable of update and review when threats, threatened species and ecosystems unknown at the time of the assessment come into focus.

Recommendation 6

That strategic assessments should be capable of being updated and reviewed when threats, threatened species and ecosystems unknown at the time of the assessment come into focus.

Chapter 2: Indigenous culture and heritage (*Cissy Gore-Birch*)

The TSSC is pleased to note that the Interim Review emphasizes the importance of meaningful Indigenous involvement in the design and implementation of all aspects of the EPBC Act and considers that Indigenous peoples are best placed to comment on that aspect.

The TSSC understands that a standard for Indigenous engagement is being negotiated with the Indigenous Advisory Committee with the involvement of other Indigenous leaders including Ms Cissy Gore-Birch from the TSSC. The Committee discussed the 'Vision for Aboriginal and Torres Strait Islander Heritage in Australia' with Lyndon Ormond-Parker and Rachel Perkins on August 31 and agreed to endorse it.

The TSSC notes with concern that some of the proto-type standards in the Interim Report appear to be inconsistent with the Native Title Act 1993 and subsequent High Court rulings regarding the hunting rights of Traditional Owners.

Recommendation 7

(Note: Some of the rationale for this recommendation is also outlined in the TSSC's April submission to the Review)

- Meaningful, mainstream Indigenous involvement is embedded in all elements of the EPBC Act with statutory requirements for standards for broader Indigenous engagement
- Culturally-significant entities (species, populations, communities/landscapes/stories) are MNES
- The Indigenous Advisory Committee is the Listing Authority for culturally-significant entities.
- All proto-type standards are checked to ensure that they conform to the provisions of the Native Title Act and subsequent rulings by the High Court of Australia.

Chapter 4: Efficiency

Wildlife trade provisions and the Bonn Convention (*Colin Simpfendorfer*)

The Interim Report makes comments on two International conventions to which Australia is a signatory - the Convention on International Trade in Endangered Species (CITES) and the Bonn Convention (Convention on Migratory Species, CMS).

Bonn Convention

The Interim Report recognizes, as did the Hawke Review, that Australia's implementation of stronger domestic measures for species listed on Appendix II of the Bonn Convention, that require a species to be listed as Migratory under the EPBC Act (and hence MNES), can lead to perverse policy outcomes. Under the Convention, signatories are only required to cooperate to improve conservation outcomes for species listed on Appendix II. Only for Appendix I listed species does the Convention require protection. Instead, the measure as implemented under the EPBC Act results in Appendix II listed species being protected as Migratory species and making their take illegal. This measure was of little consequence to Australia until shark species, which are sustainably managed and regularly caught by fishers (commercial and recreational) in Australian waters, began to be listed. This situation now sets up a policy conflict that is mostly being resolved by Australia taking an exemption to the Bonn Convention listings, which means that the listing is not valid in Australia. However, this taking of exemptions has resulted in the Australian Government being the target of strong criticism from environmental advocates as a result of Australia taking 14 exemptions to CMS Appendix II listed sharks and rays. The TSSC supports the resolution of this policy conflict by removing the requirement for species listed on Appendix II of the Bonn Convention to be automatically listed as Migratory. This outcome could be achieved in three ways - (i) require only those species listed on Appendix I to be listed as Migratory under a revised Act, (ii) exempt fish (bony and cartilaginous fish) from being listed as Migratory if they are included on Appendix II, or (iii) providing the Minister with the ability to decide, based on input from relevant experts, if an Appendix II listed species is listed as Migratory. Continuing to require Appendix I listed species to be listed as Migratory should remain as a requirement to be consistent with the Convention.

CITES

The Interim Report recognizes that the EPBC Act requires that entities importing products from CITES listed species are required to be issued with an Import Permit, and that Export and Import Permits are required for small amounts of household products, souvenirs and products that are caught on the high seas (i.e. Introduction from the Sea provisions). The Interim Report indicates that these requirements are over and above the minimum requirements of signatories to the Convention. In particular, the use of Import Permits is above the minimum requirements of the Convention for species listed on Appendix II. However, the Convention does require Import Permits where a species is listed on Appendix I. The use of Import Permits allows Australia to meet other requirements of the Convention, namely that they are required to check and validate the Export permit issued. In replacing the Import Permit system for CITES Appendix II listed species Australia would need to develop some other process of checking and validating Export Permits for goods arriving in Australia in line with Convention requirements. The question will be: is that process more efficient than the current Import Permit system, especially since there will continue to be a requirement for Import Permits for products from Appendix I listed species? The issue of the requirement for permits for household goods and souvenirs is complex, with limits placed on products from many species under these resolutions of the Convention. Australia would be required to continue to check that species listed on the

Convention under household goods and souvenir provisions fall within the limits agreed by Convention members.

Recommendation 8

- That the Act be changed to remove the requirement for all species listed on Appendix II of the Bonn Convention to be automatically listed as Migratory.
- That no changes are made to the need for import permits for species listed on Appendix II of the Convention on International Trade in Endangered Species.

Commonwealth fisheries (*Colin Simpfendorfer*)

The management of fisheries, both Commonwealth (via the Australian Fisheries Management Authority, AFMA) and State/Territory (via state agencies), is an important process for ensuring the sustainable use of Australia's aquatic resources. The Interim Report identifies that the role of the EPBC Act is in ensuring that fisheries are managed in an ecological sustainable way through Part 13/13A assessments for Wildlife Trade Operation (WTO) approvals. It also suggests that:

- given AFMAs capability and systems, that this level of oversight by the EPBC Act has led to inefficiency in the permitting system;
- inefficiency could be overcome by using strategic assessments (S10 of the EPBC Act) or developing Environmental Standards to which management should conform and be accredited.

Comment in the Interim Report is made only in relation to Commonwealth managed fisheries via AFMA (and jointly managed fisheries), and is silent on the same issue for state and territory managed fisheries. Given that state and territory managed fisheries make up a large portion of managed fisheries in Australia it would be helpful for the Final Report to make some comment on the applicability of the same approach to the jurisdictions.

It is widely considered that the WTO approval process has resulted in significant improvements in sustainability outcomes for fish stocks Australia-wide. For example, the WTO approval process was used to ensure that Queensland developed management for its East Coast Inshore Finfish Fishery that resulted in sustainable fishing of shark species. Through the use of conditions on the WTO Approval, starting in 2008, the Commonwealth was able to ensure that Queensland developed new management that met ESD principles for a group of species that were previously unmanaged. There are many examples similar to the above that demonstrate that the processes supported under the EPBC Act have led to significant improvements in the management of non-target fish species, threatened protected species and habitats of fishery species. The TSSC therefore consider that the Part 13/13A approvals have played an important role in ensuring management of species that are listed as threatened, migratory, marine or

Conservation Dependent under the EPBC Act; and that any system that replaces it must also be capable of delivering ongoing improvement of fisheries management for both Commonwealth, and state and territory, managed fisheries.

Recommendation 9

- The Final Review Report should provide comment on the management of state and territory managed fisheries.
- That the requirement for all Australian fisheries to meet ESD principles continue to be required.

Chapter 5: Trust in the EPBC Act

Community participation (*Richard Harper*)

The agriculture sector manages around half of Australia's land, and thus interacts with large areas of remnant biodiversity. The Craik Report noted issues around the application of the EPBC Act in the agriculture sector, and made specific recommendations about communication with landholders about listing and subsequent obligations, and ensuring landholders can actively participate in on-farm biodiversity conservation and management. The Craik Report's recommendations are endorsed in the Interim Report (p. 95), and the TSSC concurs with this approach. The Interim Report's recommendations for streamlining decision making processes between the Commonwealth and States, and information management may also help remove some of previously identified tensions and this is also supported by the TSSC.

Strengthen independent advice (*Helene Mars*h)

The advisory committee structure proposed in the Interim Report essentially reflects the TSSC's recommendations of an overarching committee with an independent chair and the chairs of five advisory committees. The TSSC is pleased to see recognition of the scientific role of our Committee and its role to advise on the status of threatened species and ecological communities and actions needed to improve their condition in Regional Recovery Plans. We note with concern that the Interim Review is silent on which advisory committee is responsible for threat abatement. We consider that this is the role of 'Threatened Species Science' or its equivalent, as the TSSC has this responsibility under the current Act.

We suggest a new name and include Draft Terms of Reference for the Committee at Professor Samuel's request. This text is partly modelled on the NSW Biodiversity Conservation Act 2016.

https://www.legislation.nsw.gov.au/view/html/inforce/current/act-2016-063#pt.4-div.7

Biodiversity Conservation Scientific Committee

It is proposed that the Threatened Species Scientific Committee be renamed the Biodiversity Conservation Scientific Committee to better describe the breadth of its responsibilities.

The Environment Minister currently has discretion to decide which species, ecological communities and threatening processes are prioritized for assessment by the Scientific Committee. The Minister must consider proposed items from the Committee when deciding on the priorities.

Given that the assessment and listing of the prioritized items is a scientific process, using internationally accepted criteria, it would improve administrative efficiency if the Biodiversity Conservation Scientific Committee were the Listing Authority for threatened species and ecological communities.

Establishment and membership of Scientific Committee

1) The Biodiversity Conservation Scientific Committee is established.
2) The Scientific Committee is to consist of 12 members.
3) The Minister is to invite expressions of interest from individuals with demonstrated scientific expertise interested in being considered for appointment.
4) The Minister is to appoint the members of the Scientific Committee on a part-time basis, and must appoint one of the members to chair the Committee.
5) At least one member should identify as an Indigenous Australian.
6) All members should contribute to a balance of scientific expertise across and within the following areas
    a. Biology of plants, animals and other biological entities
    b. Ecosystem and species ecology and dynamics across terrestrial, freshwater and marine environments
    c. Current methods of biodiversity assessment and conservation
    d. Threatening processes and threat abatement

Functions of Scientific Committee

1) The functions of the Scientific Committee are to use the best scientific information as follows —

    (a) to propose species, ecological communities and threatening processes as priorities for assessment.
    (b) to determine which species are to be listed under this Act as relevant categories of threatened species and which ecological communities are to be listed under this Act as relevant categories of threatened ecological communities,

(c) to determine which species are to be listed under this Act as extinct species or species extinct in the wild and which ecological communities are to be listed under this Act as collapsed ecological communities,
(d) to determine which processes are to be listed under this Act as threatening processes,
(e) to prepare and review Conservation Advices for listed threatened species and ecological communities and Threat Abatement Advices for listed threatening processes,
(f) to advise the Minister on the conservation of threatened species or threatened ecological communities and responses to threats to biodiversity in recovery plans, threat abatement plans, regional plans, strategic national plans, and other planning instruments provided for in this Act.
(g) to advise the Minister on any matter relating to the conservation of threatened species or threatened ecological communities and responses to threats to biodiversity that are referred to the Scientific Committee by the Minister,
(h) to periodically review the lists of threatened species and threatened ecological communities and threatening processes and the associated planning documents to ensure that they reflect the best current scientific information,
(i) such other functions as are conferred or imposed on the Scientific Committee by or under this or any other Act.

2) The Scientific Committee may, in the exercise of its functions, make use of consultants or obtain assistance or advice from other persons.

Recommendation 10

- The Threatened Species Scientific Committee should be renamed the 'Biodiversity Conservation Scientific Committee' to better represent its functions with regards to the conservation of threatened species and ecological communities and migratory species.

- This Committee should have the Terms of Reference listed in this document.

Chapter 6: Data, Information and Systems and

Chapter 7: Monitoring, data and reporting (*Sarah Legge*)

We address these two chapters together, as they are so tightly inter-related.

The Interim Review:

- Identifies the considerable problems with data availability, accessibility, and use, and highlights some of the contributing factors (e.g. lack of consistent funding, no centralized responsibility and coordination).
- Recommends that a single entity develops and manages a 'national data supply chain', with requirements for data provisions set by a national standard that could be applied across all sorts of data, and all sorts of data sources.
- Recognizes that substantial investment is needed to develop the systems and capability to underpin this resource and its use, including its use in modelling likely environmental outcomes from development proposals.
- Recognizes the broad and deep inadequacies of current monitoring requirements and implementation across components of Act, and across the performance of the Act itself. These inadequacies make it impossible to assess the outcomes of Government regulatory and policy involvement in environmental management. The review identifies that monitoring and reporting are not consistently required across all components of the Act, and where required, are not resourced, which leads to bare minimum reporting. Of particular concern to the TSSC, monitoring of threatened species, ecological communities and the threats that are the subject of Threat Abatement Plans/Advices is extremely limited and declining, and when it does occur is often short-term and uncoordinated across different parts of the ranges of threatened species and ecological communities.
- Acknowledges that the current State of the Environment Report is the closest tool we have for reporting on our environmental management, but suffers many shortcomings, including inadequate input data, issues with temporal inconsistency, no formal links to implementing or evaluating the effectiveness of the Act, nor to policy and management.

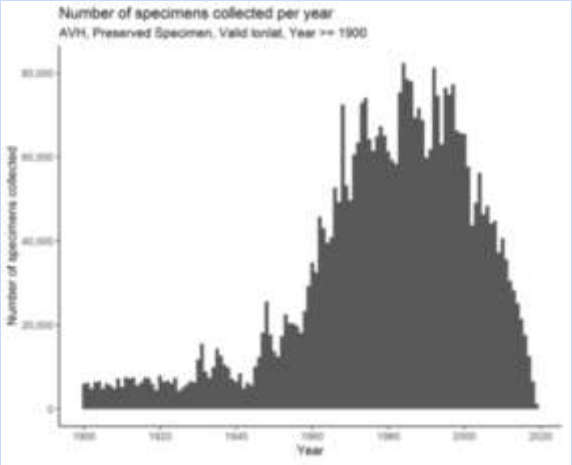
The TSSC agrees with the Review's assessment of substantial deficiencies in data availability and accessibility, and with the Review's broad recommendations. **A massive overhaul of data sourcing, management and systems is an absolutely essential foundation for moving to an outcome-focused application of environmental law**. For that reason, we are concerned that the **urgency and scale of investment required to solve this problem may be underestimated, that the extent (spatially and thematically) over which data acquisition (both for baseline and ongoing monitoring purposes) would need to occur could be underestimated, that the importance of a central, strategic data acquisition and monitoring strategy could be missed, and that our ability to predict outcomes could be overestimated**. Specifically:

- The gap between where we are, and where we need to be, in terms of data acquisition and storage is huge. None of the examples in the Review of partial precedents from previous or existing programs (including the Atlas of Living Australia, or the bioregional assessment programs) come close to being adequate for making decisions about single development proposals, or cumulative impacts.
- Given the parlous state of our current information base on biodiversity status and trends, there are few quality baselines from which to assess future change. Even with massive immediate investment to improve fundamental monitoring, it will take many years to redress this deficiency, which means that decisions will be made under the new Environmental Standards based on patchy data, for some time.
- Given that environmental function is critical to the wellbeing of all Australians, data gathering should not be restricted to MNES - we need to move to a position where we can stop species and ecological communities from being listed in the first place. This means we need to monitor status and trends much more broadly.
- Predicting environmental outcomes from any particular development will require long-term data not just from MNES at the impact site, but from across the entire distributions of the species and ecological communities involved, so that potential impacts can be contextualized.
- Nationally-scaled datasets may be too coarse for making decisions at the scale of a site. The Review mentions the issue of granularity, but the problems of acquiring data at a fine enough scale for local decisions to be made confidently, are formidable (see Box below).
- There are good technical reasons why modelling capability in ecology, with multifaceted biotic, abiotic and social interactions, lags behind the predictive capacity for other, narrower disciplines or matters that intersect with substantial economic interests (such as fisheries). Compounding the intellectual challenges, investment in training future ecologists has dropped considerably (see Box below).
- The Interim Review suggests Environmental Economic Accounts could be the mechanism to tell a cohesive story. In their current form, however, Environmental Economic Accounts are framed around Land Use and Land Cover types that are not suitable for reporting on biodiversity. Australia is currently participating in a United Nations initiative to develop Experimental Ecosystem Accounts (UN SEEA-EEA, https://seea.un.org/ecosystem-accounting). When implemented, this has the potential to frame a cohesive narrative on ecosystem components of biodiversity, while other mechanisms are required for species.
- Most existing monitoring programs for threatened biodiversity are carried out by a wide range of people (e.g. research scientists, private land managers, community groups, citizen science initiatives, Indigenous ranger groups, development project proponents) for different purposes, in different ways, for varying durations, and using methods of varying quality. **This bottom-up diversity could be an asset in a future monitoring system, but only if combined with a national biodiversity monitoring strategy and program that provides expert guidance to that diverse community on monitoring priorities and design, collects data for curation, analysis and reporting.**

- **Thus, project proponents, grant recipients, or even publicly funded institutions cannot be relied upon to populate a 'single source of truth' - we will need substantially increased investment to gather data on all the components (including trends in threatened species, ecological communities and the threats that are the subject of threat abatement plans), from across the continent, on an ongoing basis, to make a coherent whole**.
- An effective system of environmental monitoring that appropriately informs development decisions, conservation investment, guides management, and engages with, and reports to, the public, the government and the international community must have, at its heart, a strategic, nationally-scaled program that:
    - Identifies the essential components of comprehensive biodiversity monitoring and ensures that these components are prioritized (i.e. funded and implemented).
    - Supports other contributors (project proponents, NRM groups, Indigenous groups, NGOs, citizen scientists, etc) to the national effort by providing expert guidance on monitoring targets, design (including issues of spatial sampling, granularity), data collection and analysis. In essence, the national 'facility' should not only set the standards for data acquisition and management, but also put in place appropriate supports to ensure those standards are met.
    - Manages an open-access national data repository, including curation, analysis and interpretation of data.
    - Produces fit-for purpose reporting to regulators, policy-makers, funders and managers.
    - Produces composite national reports (e.g. Environmental Accounts, State of the Environment) and fulfils international reporting obligations (e.g. to CBD).

Australia's capacity to monitor biodiversity, particularly its skilled workforce, is eroding and ageing.

The graph below from Dr Rachel Gallagher shows one of several lines of evidence: the annual rate of records contributed to the Australian Virtual Herbarium has declined by more than 90% in the past 20 years and is now at WWII levels. Similarly, the only ongoing systematic field monitoring of ecological communities ceased in 2017 when Australia's high-performance Long-Term Ecological Research Network was defunded. Even with temporary boosts to project resourcing, such as the Wildlife and Habitat Bushfire Recovery Program, current capacity is insufficient to meet basic information needs to address Australia's ongoing extinction rate (For further details, see 'Monitoring threatened species and ecological communities' Eds. S. M. Legge, D. B. Lindenmayer, N. M. Robinson, B.C. Scheele, D.M. Southwell, & B.A.Wintle. CSIRO Publishing, Melbourne).



[from Gallagher R (2020) Interim national prioritization of Australian plants affected by the 2019-2020 bushfire season. Research for the Wildlife and Threatened Species Bushfire Recovery Expert Panel. Version 1.1. Macquarie University, Sydney.]

Recommendation 11

A step change in data acquisition and monitoring

- The Final Report should stress that an outcomes-focused Act can only function with significant and strategic improvements in data acquisition, accessibility and synthesis across all biodiversity (i.e. broader than MNES) and across the entire Australian jurisdiction.
- Data acquisition cannot rely solely on bottom up delivery - a top-down, strategic approach is essential to successful functioning of a devolution model by identifying and acquiring key datasets for reporting on performance against the national standards. This should be the responsibility of a biodiversity institute (Bureau of Biodiversity) modelled, for example, on the Bureau of Meteorology, with the necessary expertise, authority and capability to establish and maintain core long-term data-sets, apply them to Key Performance Indicators for the National Environmental Standards, and implement enduring information reform.
- The Bureau of Biodiversity initiative must have key responsibilities for building the required capacity for biodiversity reporting against national standards, providing scientific leadership and career paths to catalyze industry and community contributions to data streams, and contribute to post-COVID recovery of jobs and economic growth.
- Acquired data need to have greater functionalities than reporting on trends. Understanding the impacts of threats, and of management interventions is vital to ensure that data can inform management and policy revision.
- The Bureau of Biodiversity also needs excellent interpretational capacity, and needs to be accessible for a range of users (again, similar to the current BoM).
- **The Bureau of Biodiversity should be a required component of the shift to devolved environmental decision-making**.
- The Bureau of Biodiversity should have the capacity to support state and territory animal ethics committees in rapid approval for emergency monitoring of vertebrate fauna.

Recommendation 12

Improving SoE reports

The requirements around SoE reporting in the Act should be modified so that

- Agreed core indicators are established as part of a foundational environmental data sets for Australia.
- The maintenance of these data required to report on the state of the environment is mandated (rather than the current system of data scavenging every five years).
- SoE should follow a consistent but flexible format allowing comparison between reports.

Recommendation 13

Improving data availability for species that trigger the Act

- Summary expert advice should be obtained on how to monitor, at a range of appropriate scales, each threatened species, ecological community and migratory species that regularly result in controlled action decisions as soon as possible and incorporated into relevant Conservation Advices/Recovery Plans and Wildlife Conservation Plans with high priority. This advice would need to be put into effect (i.e. monitoring would need to take place), with acquired data curated and stored in a national facility, ready for analysis for a range of needs (SoE to impact assessment processes).
- The list of threatened species and ecological communities and migratory species that regularly result in controlled actions under the EPBC Act should be published on the departmental website to ensure that these assets are priorities for scientific monitoring.

Chapter 8 : Restoration *(Kingsley Dixon)*

Terminology

Terminology within the context of the revised EPBC Act is easily and effectively captured through adopting the accepted terms of the Australian national and international Standards for Restoration.

A key overarching principle of current national and international Standards for Restoration is that restoration should not be invoked as a reason to destroy natural environments.

Restoration Standards – creating certainty and net gains for ecosystems

For restoration outcomes to be meaningful, restoration needs to be supported by a commitment, enshrined in legislation, to a net gain in high quality native vegetation and a minimum standard of no net loss in the case of any listed vegetation community based on the principle of the Mitigation Hierarchy.

Any use of restoration as a tool to support sustainable development can only lead to this outcome if there is: (i) an overt preparedness to decline developments if broad net gain, or at least no net loss in particular cases, is not able to be demonstrated, and (ii) the appropriate recognition that restoration cannot yet recreate equivalents from scratch but that valuable outcomes can be attained with high aspiration.

As outlined in the Interim Report, both the evidence and public confidence that restoration is effective are almost totally lacking in Australia. Restoration Standards at the National and International level exist[1,2] and are now being adopted as guiding documents in recent (<4 years) for Conservation Advices and Recovery Plans. These Standards provide a ready, accessible, scientifically and socially acceptable means to rapid fire restoration and monitor the effectiveness of the restorative action towards achieving a net gain.

Both national and international standards can be easily and readily adapted to create a **National Restoration and Recovery Standard** as they have been through robust scientific, community, industry and government review processes with the international document now a component of the UN Decade on Ecosystem Restoration (2021-2030). These Standards provide both the metrics for defining success and a means for effective interpretation of outcomes through a 5-Star rating system.

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[1] Standards Reference Group SERA (2017) National Standards for the Practice of Ecological Restoration in Australia. Second Edition. Society for Ecological Restoration Australasia. Available fromURL: www.seraustralasia.com
[2] Gann G.D., McDonald T., Walder B., Aronson J., Nelson C.R., Jonson J., Hallett J.G., Eisenberg C., Guariguata M.R., Liu J., Hua F., Echeverría C., Gonzales E., Shaw N., Decleer K., Dixon K.W. (2019) International principles and standards for the practice of ecological restoration. Second edition. *Restoration Ecology* 27:S1–S46 (Special Issue).
[3] Stevens, J. C., Rokich, D. P., Newton, V. J., Barrett, R. L., & Dixon, K. W. (2016). Banksia woodlands: a restoration guide for the Swan Coastal Plain. UWAP.

The adoption and adaptation of the National and International Standards for Ecological Restoration and reference to the impending International Principles and Standards for Ecological Restoration of Mine Site (Young et al. 2021 – in prep) provides a ready means for creating a full Standard within the purview of the EPBC review. As such an interim National Restoration and Recovery Standard is presented in Appendix 1.

Do we have the know-how for a 'restoration economy'?

Restoration is more than gardening

The Interim Report highlights proposed classes of restoration: 'Averted loss restoration', through to 'advanced restoration' (Box 22, P86) and 'Incentivizing restoration' and 'enshrining restoration in offsets'. These principles, imply that restoration-ready knowledge is adequate, appropriate and applicable to all species and ecosystem capable of being delivered within a defined timeframes. As outlined in the Interim Report, this knowledge is lacking for almost all ecosystems with no examples where concepts such as Averted Loss Restoration and Advanced Restoration have been demonstrated for terrestrial environments.

There are limited to no 'proven restoration technologies or new approaches' (P91) applicable to all ecosystems, habitats and species in Australia. Thus strategic, species and ecosystem specific investments will often be required.

Proponents of 'restoration offsets' must be guided by the principles of the Mitigation Hierarchy. Proponents often have simplistic, unrealistic and unsupported views at the time of development approvals of the complexity, long time frames and the knowledge and technology deficits associated with achieving ecological restoration.

Example of the challenges of successful restoration

Restoration of Banksia woodland, a threatened ecological community in south western Australia, has taken 25 years of research investment to reach a stage for one proponent mining company to achieve a satisfactory level of species reinstatement that would be a 'restoration offset'. Long term function and resilience aspects for the restored threatened ecological community remain unknown. Yet, despite more than 60% of this once very extensive ecological community being lost we are as yet unable to fully restore 1 hectare.

Incentivizing the generation of the knowledge to build the 'restoration toolkit' through the proposed bioregional and Regional Plans is a critical and essential component if we are to have the necessary increase in restoration knowledge generation to create the net increase in viable habitat in Australia recommended by the Review.

The Restoration Knowledge Deficit

'The information base for development assessment decisions is heavily skewed to environmental information collected by the proponent (P74)'. This statement emphasises current failures where proponents promise restoration, no science is provided to substantiate the claims and the regulatory system has no understanding of the biological and ecological barriers that need to be overcome for an effective restoration outcome nor what constitutes the 'best possible' restorative outcome. Thus restoration standards would provide the articulation to inform proponents of the challenges of restoration at the time a proposal is being developed.

Recommendation 14

A statutory **National Restoration and Recovery Standard** should be developed where restoration and recovery actions are based on proven ability to reinstate species, communities and their functional processes that result in a net gain for the MNES in spatial extent, structural continuity and ecological resilience commensurate with the best available knowledge for the native reference ecosystem. (see Appendix 1)

Carbon markets (*Richard Harper*)

The Interim Report suggests (p. 90) that the EPBC Act should encourage restoration and that carbon markets could be leveraged to improve biodiversity in habitat types, and that private and philanthropic investment in biodiversity restoration be encouraged. The TSSC supports these suggestions.

Landscape scale approaches for biodiversity management and restoration will require large-scale funding however, this is unlikely to occur from Government funds, with a range of competing priorities. Land-based carbon mitigation investment, such as reforestation, is likely to grow as more companies seek to reduce their net greenhouse gas emissions. Investment in mitigation projects could help underpin some biodiversity protection and restoration.

In the Interim Report the use of carbon markets is treated alongside a discussion on restoration and environmental offsets. Restoration applies to two distinct activities;

- that related to new projects and the subsequent restoration (or offsetting) of disturbed vegetation, and
- restoration related to a range of past land-use activities (agriculture, mining, urban development).

A distinction can be made between these two activities; firstly because of the relative extent of disturbance, and also in terms of eligibility to participate in carbon markets. A mining project, for example, that involved land clearing and subsequent restoration would be ineligible for carbon

credit investment under the provisions of regulatory additionality. Similarly, if a mining project involved removal of vegetation and then restoration, there would be no-net carbon benefit and thus no avenue for carbon investment.

Activities related to carbon mitigation on agricultural land hold more promise. Land-based mitigation has been recognized as a key action in both international and national climate change policies. These activities can result in the generation of carbon credits, which are used by other sectors of the economy to offset their emissions. In Australia, this has been formalized under the Carbon Credits (Carbon Farming Initiative) Act 2011, with a range of formal Methodologies that allow the generation of carbon credits (Australian Carbon Credit Units or ACCUs). Methodologies are regulations to the Act and approved by the Minister.

Methodologies have been produced for carbon mitigation activities such as:

- Avoided deforestation or land clearing,
- Changing the management of existing areas to enhance their carbon storage,
- Reforestation of previously cleared land, and
- Changing fire management in savannah systems.

As noted in the Interim Report, some of these activities are likely to have already resulted in substantial biodiversity protection, although this protection is implied rather than measured. Biodiversity protection will have been primarily through avoided deforestation, as habitat loss is a major driver of biodiversity loss (see Table 1 above). Australia exceeded its Kyoto Protocol emission target through the use of that Treaty's avoided deforestation provisions, with mitigation credit claimed for halving Australia's rate of deforestation from around one million hectares per year. Avoided deforestation methodologies have also been used extensively to produce ACCUs which have been bought by the Australian Government under the Emissions Reduction Fund.

While the reforestation of previously cleared farmland is also a recognized mitigation approach, this has been less extensive, but holds the most promise. Reforestation includes a broad range of activities from commercial plantations through to biodiverse or "environmental" plantings, with existing examples of Australian projects (e.g. Gondwana Link).

Relying on the simple metrics currently adopted for carbon accounting ignores the complexity of and benefits from restoration of biodiversity. Biodiverse restoration based on a native reference system is the only robust means for ensuring MNES are protected. Carbon considerations without aspiring to a 'restoration standard' such as the existing 5-Star Standard[1,2] will fail the restoration aspirations outlined in the Review. While the Interim Report cites (p. 90) carbon investment as achieving 2.3 million hectares of 'restoration' such activity would currently fail robust examination as comprising the restoration needed within the context of providing resilient, biodiverse future habitat for threatened species and ecosystems. Thus, the development of carbon markets and trading through 'restoration' as defined in the Interim Report will require adherence to strict standards to avert 'dumbing down restoration' based on simplistic species assemblies or known technology.

While there are formal methods for the generation of carbon credits, this does not apply to the crediting of activities that are beneficial to biodiversity. Here, the EPBC Act listing processes, could be used to underpin a biodiversity payment scheme, by identifying species and ecological communities at threat and in need of restoration. In short, the EPBC listing process provides a formal evaluation and certification framework with Ministerial approval, and could thus form the basis for prioritization of activities and resource allocation.

Care is needed, however, that carbon mitigation activities (e.g. savannah burning) do not result in negative biodiversity outcomes, or that extensive reforestation does not displace food production or damage water supplies.

While there is large current Australian Government investment in carbon mitigation, and possible large-scale future private investment, it is less clear where payments for protecting and restoring biodiversity will come from. This has traditionally been the remit of Government programs. While the global finance sector is interested in sustainable finance, it is unclear whether there will be substantial private investment in active restoration that leads to biodiversity conservation outcomes. Land and sea based (blue) carbon mitigation activities have the potential to significantly increase into the future; and if properly deployed also provide landscape-scale biodiversity conservation and restoration benefits.

Recommendation 15

A biodiversity co-payment should be used to incentivize land and sea based (blue) carbon mitigation activities with accompanying standards to ensure real and sustainable biodiversity outcomes from investment, analogous to those developed for carbon mitigation (i.e. ACCUs).

The EPBC Act listing processes should be used to underpin a biodiversity payment scheme by identifying species and ecological communities at threat and in need of restoration and thus provide a robust and verified basis for prioritization of restoration activities.

Appendix 1: The TSSC's recommendations for standards for environmental assets relevant to its Terms of Reference

Threatened Species and Ecological Communities

Note:

This draft Standard has been prepared by a Working Group convened by the Threatened Species Scientific Committee.

The Committee has been informally advised by officers of the Biodiversity Conservation Division of DAWE that this Standard works as both an immediate and longer-term option. The key difference is in the readiness of the underlying documents and information base to service and support the Standard. If implemented now, the Standard would rely on existing Conservation Advices that require some improvement to support the standard fully. Priority should be given to the revision of Conservation Advices for species and ecological communities that trigger the EBPC Act. The Endnotes suggest changes to the EBPC Act that would facilitate the implementation of the Standard as a longer-term option. This draft assumes that several other standards will be developed in the first tranche of standards. If this is not correct, this Standard should be amended but we have been advised that such a change should not prevent immediate implementation of a standard that encompasses the ideas outlined below.

Threatened Species and Ecological Communities[i] (*David Keith*)

Threatened species and ecological communities are listed under section 178 of the EPBC Act, following a rigorous scientific assessment of their threat status as specified in the Act and its regulations. This assessment must be based on best practice international standards as specified from time to time by the IUCN [ii] [iii] [iv] Note that not all species and ecological communities that are eligible for listing are currently listed, so any standard should recognize that ongoing assessments (for additions to the list) will result in additional species and communities added to the list. Equally, ongoing assessments may result in species and communities being removed from the list.

Element	**Description**
Environmental Outcome	The viability, function and representation[v] of each threatened species and ecological community all improve over time.
National Standard	The recovery and restoration of each threatened species and ecological community must be in accordance with the Restoration and Recovery Standard [vi] and as described in the relevant Conservation Advice [vii] or Recovery Plan. Both conservation actions and approved actions must maintain or enhance the viability [viii], function and representation of the threatened species/ecological community. Such actions must not: · impinge on the rights of Indigenous Australians to practice customary activities and traditions in accordance with the Native Title Act; · reduce the population size or the quality or quantity of habitat of a threatened species or the quality or quantity of the habitat of an ecological community; · be in conflict with the recovery objectives set out in conservation advices, recovery plans, regional recovery plans, regional plans and/or threat abatement plans; · lead to the introduction, spread, encroachment or growth of invasive alien species that may contribute to the decline of the threatened species or ecological community; · cause, or contribute significantly to, a currently unlisted species or ecological community becoming eligible for listing as threatened. Impacts on important populations of species [ix], and large and/or diverse areas of ecological communities and/or areas that meet high extant condition thresholds and/or other indicators identified within Conservation Advices or Recovery Plans, with high contributions to viability, function or representation, must be avoided.[x]

To meet the requirement for representation, populations and habitat areas designated for impact avoidance should encompass the full range of genetic, compositional, structural, functional and biophysical variation across the habitat of the species or ecological community [xi]. Requirements for representation should be determined in statutory instruments at a geographic scale ecologically appropriate to variation in the species or ecological community [xii].

An approved action is taken to meet this Standard where, on a cumulative basis[xiii] after the stipulated baseline date [xiv] (or when a species/ecological community is first listed under the Act, whichever is the later date):

For a Critically Endangered species or ecological community, the likely impacts of the action on the species or community and the habitat and ecological processes [xv] critical to its survival are avoided across all of its habitat under Australian jurisdiction [xvi] [xvii] , unless specifically recommended in a statutory instrument or by the Threatened Species Scientific Committee [xviii].

For an Endangered or Vulnerable species or ecological community the likely impacts of the action on the species or community and the habitat and ecological processes critical to its survival must be avoided unless the following conditions are met:

There is strong evidence that any initial loss is transient and will not cause any irreversible decline in the habitat and ecological processes critical to its survival, nor the viability, function and representation of the threatened species or ecological community, ***and***

There is strong evidence that restoration and recovery actions specifically linked to an approval will produce a net gain over a timeframe appropriate to the ecology of the species in accordance with the Restoration and Recovery Standard and/or the Offsets standard.

Monitoring and reporting	The impact of conservation actions and approved actions on threatened species or communities must be monitored at appropriate temporal and spatial scales as defined in each relevant Recovery Plan/Regional Recovery Plan or Conservation Advice and in accordance with the Monitoring Standard for Protected Species [xix] .The baseline will be as stated in the Conservation Advice /Recovery Plan with a default date stipulated in the regulation [xx] .Where monitoring demonstrates that the impacts of an action are having adverse effects, that appropriate, proven and approved corrective interventions must be implemented.
Definitions	**Viability** - the long-term (5 generations or 100 years, whichever is longer) maintenance of persistence, function and distribution of a species/ecological community. **Function** - the contribution of a species/ecological community to processes in nature, including (but not limited to) those that influence the viability of other species and those that provide ecosystem services to people. **Representation** –the viability and function of a species/ecological community throughout its habitat [viii] . **Ecological Processes Critical to the Survival** of a species or community include, but are not limited to, life cycle processes (breeding, feeding and dispersal), interactions among species and physical processes such as hydrological regimes. **Habitat** - the biophysical medium or media: (a) occupied (continuously, periodically or occasionally) by an organism or group of organisms; and (b) once occupied (continuously, periodically or occasionally) by an organism or group of organisms and into which organisms of that kind have the potential to be introduced, and (c) biophysical media projected to become suitable for occupation under future climates if specified in the Conservation Advice. **Important population** is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in Conservation Advices and Recovery Plans, and/or that are:

	• key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species' range. The relative importance of populations may be dynamic, and change rapidly and substantially after major disturbance, such are extensive bushfire, flooding events or other extreme weather events. **Likely impacts** of an approved action are impacts more likely than not (i.e. >50% certainty) to arise if the action is carried out in accordance with the conditions under which it is approved. **Cumulative impacts**. A reference in this standard to impacts considered on a cumulative basis is a reference to all impacts, whether arising from approved actions or otherwise after the stipulated baseline. **Australian jurisdiction** means the collective jurisdictions of the Commonwealth, states and territories.
Further Information	The Species Profiles and Threats (SPRAT) database contains statutory and policy documents, including Recovery Plans, Regional Plans, Conservation Advices, Threat Abatement Plans, Threat Abatement Advices, Survey Guidelines, Significant Impact Guidelines, Species and Ecological Community Policy Statements and Information Guides and Factsheets.
Review	This is a prototype and should be replaced with a National Environmental Standard following consultation.

[i] This draft assumes that section 18A of the Act will be amended to ensure that Vulnerable ecological communities are protected in the same manner as Vulnerable species. There is no scientific reason for the current misalignment in the statutory protection of species and ecological communities. The present situation can lead to perverse outcomes and the deterioration of the ecological communities that the Act is designed to protect.

[ii] The listing categories and criteria defined in the EPBC Act and its Regulations are not fully aligned with the internationally best practice IUCN standards contrary to the Commonwealth's agreement with the states and territories to implement the Common Assessment Methods for listing species and ecological communities (CAM MOU). These anomalies should be rectified by amendments to the Act and its Regulations.

[iii] Conservation Dependent (CD) is not included here as CD species are not MNES (or part of the current IUCN categories and criteria). The TSSC has recommended abolishing the Category 'Conservation Dependent' and replacing it with 'Special Management' to enable a species of fish listed as threatened under the Act and managed under fisheries legislation to be flagged as 'Special Management', if it is the focus of a legally-enforced plan of management that provides for the management actions necessary to stop the decline and support the recovery of the species, so that its chances of its long term survival in nature are maximized. If this amendment is support, this category should be reflected in amendments to this standard or in a separate standard.

[iv] Because listing is a scientific activity, it would be appropriate for the Threatened Species Scientific Committee (or its replacement) to be the Listing Authority as in some other jurisdictions e.g., New South Wales. This change would require an amendment to the Act.

[v] See Definitions section. The IUCN Standard for the Green Status of Biodiversity, a system for measuring and projecting the impact of conservation action on species or ecosystem is based on three foundational elements: viability, function and representation. These specific terms are applied in preference to the more generic concept of 'condition' (as applied in the United Nations System of Environmental Economic Accounting) or Ecological Integrity (part of Ecologically Sustainable Development) because these terms provide greater clarity.

[vi] Assumes that the Restoration and Recovery Standard is developed in the first tranche of standards, the terminology used in this standard and the Restoration and Recovery Standard should be the same.

[vii] The requirement that the Minister must not act inconsistently with a Recovery Plan (s139 and many other places in the Act) should be extended to Conservation Advices (by amendment to s303 DG4A and many other places).

[viii] Habitat is as defined in this document (modified from the EPBC Act)

[ix] As defined below and in the Significant Impact Guidelines.

[x] **I**mplementation of this requirement would require populations and habitat areas for impact avoidance to be stipulated in all Conservation Advices as soon as possible with priority given to species and ecological communities that trigger the Act most frequently.

[xi] Where detailed information on the representativeness of a species or ecological community is not available the onus is on the proponent to demonstrate, with respect to conservation advices, recovery plans and regional plans, that the proposed action will not result in a decline in representativeness.

[xii] For terrestrial species or ecological communities IBRA subregions may the appropriate instrument for assessing representativeness unless otherwise specified.

[xiii] Cumulative impacts across actions and environmental threats must also be managed by Regional Plans when they are developed.

[xiv] A default baseline should be stipulated in the Standard. The TSSC recommends that this baseline be chosen to avoid the impacts of the 2019/20 droughts and fires (e.g. 1 July 2019). If the known population or distribution of habitat changes after the baseline date (e.g. due to local extinctions, discovery of new populations, etc.), the re-assessment of the listing status of the species/community may be warranted, with designations for impact avoidance, minimisation and offset adjusted accordingly. It will be very important for the baseline to be able to be revised upwards as the listed asset recovers. A baseline date should not set a permanent lower bound for improvement.

[xv] If this Standard is adopted, Ecological Processes Critical to the Survival of a threatened species or ecological community should also be defined in an amended Act. A definition is provided in this Standard. The term is included to cover actions that do not damage Habitat Critical to Its Survival *per se* but would impact on a listed threatened species or ecological community. For example, it would be possible for an action to suppress breeding in a species without destroying its habitat. In addition, off-site actions can have on-site impacts e.g. light pollution.

[xvi] The internationally accepted Mitigation Hierarchy is central to this Standard. It requires developers and regulators to first avoid environmental impacts, minimize impacts that cannot be avoided, and offset any residual impacts. For the most Critically Endangered assets, minimization, restoration and offsets involve untenable risks of extinction because, losses are certain and mostly immediate, and yet compensatory gains are uncertain (due to environmental variability, limitations on technology, etc.) and typically involve ecological lags of years, decades or more. Hence the Standard should require Critically Endangered assets to be designated as impact avoidance, with impacts on the habitat of a species or community allowed to be offset for assets with Endangered and Vulnerable status, allowed only under the conditions stated in this standard.

[xvii] As defined in the Conservation Advice/Recovery Plan/Regional Recovery Plan for the Threatened Species/Ecological Community. Implementation of this requirement would require the habitat and ecological processes critical to its survival and monitoring requirements to survival to be rigorously defined in all Conservation Advices as soon as possible with priority given to species and ecological communities that trigger the Act most frequently. Alternatively, a more inclusive national critical habitat register could be required in an amended Act if the requirement of consultation with relevant landholders can be removed or met.

[xviii] This exemption has been included here to cover actions of conservation benefit that may cause some transient mortality, such as the eradication of pests, translocation and captive breeding.

[xix] Assumes that a Monitoring Standard is developed in the first tranche of standards and that regulators, on behalf of the public, will have the right and responsibility to harvest all assessment and monitoring data and add them to a National Environmental Data System and in accordance with a Data and Information Standard. The terminology used in this standard and these other standards should be the same.

[xx] A default baseline date should be stipulated in the Standard as specified above.

Migratory Species (*Helene Marsh*)

The term **migratory species** has the meaning given by Article I of the Bonn Convention or as described by relevant bilateral agreements between Australia and another range state. Migratory species are listed as stated in section 209 of the EPBC Act[i].

Element	**Description**
Environmental Outcome	The viability, function and representation[ii] of each migratory species are maintained or improved in their habitat under Australian jurisdiction.[iii]
National Standard	This standard applies to migratory species that are not also listed as Critically Endangered, Endangered, Vulnerable or Conservation Dependent.[iv] [v] The recovery and restoration of each migratory species managed according to this Standard must be in accordance with Restoration and Recovery Standard[vi] and as described in the relevant Wildlife Conservation Plan[vii]. Both conservation actions and approved actions must maintain or enhance the viability [viii], function and representation of the migratory species to which this Standard applies. Unless specifically recommended in a statutory instrument or by the Threatened Species Scientific Committee actions must not: · impinge on the rights of Indigenous Australians to practice customary activities and traditions in accordance with the Native Title Act; · reduce the population size or the quality or quantity of habitat of a migratory species; · undermine the recovery objectives set out in a Wildlife Conservation Plan, Regional Plan and/or relevant Threat Abatement Plans; · lead to the introduction, spread, encroachment or growth of invasive alien species that may contribute to the decline of the migratory species; · cause, or contribute significantly to, a currently unlisted species or ecological community becoming eligible for listing as threatened.

	Areas of important habitat must be priorities for avoidance. To meet the requirement for representation, populations and habitat areas designated as impact avoidance [ix] should encompass the full range of genetic, compositional, structural, functional and biophysical variation across all of the habitat of the species under Australian jurisdiction. An approved action is taken to meet this Standard where, on a cumulative basis after the stipulated, standard baseline date or when the migratory species is first listed, under the Act, whichever is the later date: Likely impacts of the action on the migratory species and the habitat and ecological processes critical to its survival must be avoided unless the following conditions are met: There is strong evidence that any initial loss is transient and is not likely to cause any irreversible decline in the viability, function and representation of the migratory species across its habitat in Australian jurisdictions, ***and*** There is strong evidence that restoration and recovery actions will produce a net gain across its habitat in Australian jurisdictions over a timeframe appropriate to the ecology of the species in accordance with the Restoration and Recovery Standard and/or the Offsets standard. Cumulative impacts across actions and environmental threats must also be managed by Regional Plans when they are developed. Australia should work with the other States Parties in the global range of the species to achieve the outcome of this Standard where the decline in the Australian range is known or likely to be caused, or partly caused, by actions taken outside Australia.
Monitoring and reporting	The impact of approved actions on migratory species must be monitored at appropriate temporal and spatial scales as defined in each relevant Wildlife Conservation Plan and in accordance with the Monitoring Standard for Protected Species [x] The baseline will be as

	stated in the Wildlife Conservation Plan or a stipulated default date.[xi]
Definitions	**Viability** - the long-term (5 generations or 100 years whichever is the longer) maintenance of persistence, function and distribution of a species/ecological community. **Function** - the contribution of a species to processes in nature, including (but not limited to) those that influence viability of other species and those that provide ecosystem services to people. **Representation** –the viability and function of a species throughout all of its habitat in Australian jurisdictions. **Ecological Processes Critical to the Survival** of a species include, but are not limited to, life cycle processes (breeding, feeding, migration and dispersal), interactions among species and physical processes such as hydrological regimes. **Habitat** - the biophysical medium or media: (a) occupied (continuously, periodically or occasionally) by an organism or group of organisms; and (b) once occupied (continuously, periodically or occasionally) by an organism or group of organisms and into which organisms of that kind have the potential to be introduced, and (c) biophysical media projected to become suitable for occupation under future climates as specified in the Wildlife Conservation Plan [xii]. **Important Habitat** is: a. Habitat utilized by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population [xiii] of the species and/or b. Habitat that is of critical importance to the species at particular life-cycle stages and/or c. Habitat utilized by the migratory species at the limit of the species' range, and/or d. Habitat in an area where the species is declining and/or. e. As specified in the relevant Wildlife Conservation Plan. **Likely impacts** of an approved action are impacts more likely than not (i.e. >50%) to arise if the action is carried out in accordance with the conditions under which it is approved.

	Cumulative impacts. A reference in this Standard to impacts considered on a cumulative basis is a reference to all impacts, whether arising from approved actions or otherwise after stipulated baseline. **Australian Jurisdiction** means the collective jurisdictions of the Commonwealth, states and territories.
Further Information	Bonn Convention and its appendices and annexes and other relevant international agreements. The Species Profiles and Threats (SPRAT) database contains statutory and policy documents, including Wildlife Conservation Plans, Threat Abatement Plans, Threat Abatement Advices, Survey Guidelines, Significant Impact Guidelines, Species and Ecological Community Policy Statements and Information Guides and Factsheets.
Review	This is a prototype and should be replaced with a National Environmental Standard following consultation.

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[i] Section 209 of the EPBC Act states that migratory species list must include

(a) all migratory species that are:

(i) native species; *and*

(ii) from time to time included in the appendices to the Bonn Convention; *and*

(b) all migratory species from time to time included in annexes established under JAMBA and CAMBA; *and*

(c) all native species from time to time identified in a list established under, or an instrument made under, an international agreement approved by the Minister under subsection (4).

[ii] See Definitions section. The IUCN Standard for the Green Status of Biodiversity, a system for measuring and projecting the impact of conservation action on species is based on three foundational elements: viability, function and representation. These specific terms are applied in preference to the more generic concept of 'condition' (as applied in the United Nations System of Environmental Economic Accounting) or Ecological Integrity

(part of Ecologically Sustainable Development) because these terms provide greater clarity.

[iii] Note it will be impossible to achieve this outcome where the decline of an Australian population is caused by an action taken outside Australian jurisdiction.

[iv] Migratory species that are also listed as Critically Endangered, Endangered, Vulnerable or Conservation Dependent must be managed in accordance with the Threatened Species Standard. Migratory species that are listed as Conservation Dependent must be managed in accordance with the Conservation Dependent Standard.

[v] This Standard provides for all listed migratory species that are not listed as threatened to receive protection equivalent to a listed Vulnerable threatened species in recognition of Australia's international obligations to these species.

[vi] Assumes that a Restoration and Recovery Standard is developed in the first tranche of standards, The terminology used in this Standard and the Restoration and Recovery Standard should be the same.

[vii] Co-occurring assemblies of listed migratory species that include both: (1) species that are listed as threatened, and (2) species that are not listed as threatened, can be managed under the same Wildlife Conservation Plan e.g. shorebirds

[viii] As defined in this document

[ix] Areas for impact avoidance should be specified in a Wildlife Conservation Plan.

[x] Assumes that a Monitoring Standard is developed in the first tranche of standards and that regulators, on behalf of the public, will have the right and responsibility to harvest all assessment and monitoring data and add them to a National Environmental Data System and in accordance with a Data and Information Standard. The terminology used in this standard and these other standards should be the same.

[xi] A default baseline should be stipulated in the Standard. The TSSC recommends that this baseline be chosen to avoid the impacts of the 2019/20 droughts and fires (e.g. 1 July 2019). If the known population or distribution of habitat changes after the baseline date (e.g. due to local extinctions, discovery of new populations, etc.), the re-assessment of the status of the listed migratory species may be warranted, with designations for impact avoidance, minimization and offset adjusted accordingly. It will be very important for the baseline to be able to be revised upwards as the listed asset recovers. A baseline date should not set a permanent lower bound for improvement.

[xii] The inclusion of criterion (c) will require modification of the Act.

[xiii] Listed migratory species cover a broad range of species with different life cycles and population sizes. An ecologically significant proportion of the population varies with the

species and should be stated in a Wildlife Conservation Plan after consideration of factors such as genetic distinctiveness, species specific behavioral patterns, and dispersal rates. At present, Wildlife Conservation Plans do not exist for all the migratory species covered by this Standard. Migratory species that trigger the Act should be given priority in Plan development.

Conservation Dependent species *(Colin Simpfendorfer)*

Note: This draft standard has been prepared by representatives from the Threatened Species Scientific Committee and the Australian Fisheries Management Authority.

Conservation Dependent species are listed under section 179 of the EPBC Act following a rigorous scientific assessment of their threat status as specified in the Act and its regulations. These species qualify for listing in a threat category (Vulnerable, Endangered or Critically Endangered), but can be listed as Conservation Dependent if they are fish species (or other marine species except marine mammals or marine reptiles [i]) where a Plan of Management is in place that will ensure its recovery. Species listed as Conservation Dependent are not currently Matters of National Environmental Significance [ii].

Element	**Description**
Environmental Outcome	The viability, function and representation of Conservation Dependent species improves over time through the ecologically sustainable use of the environment.
National Standard	A Plan of Management that will result in recovery of the species so that it no longer meets the criteria for listing in a threat category must be in force under law. For species that occur in more than one jurisdiction coordinated plans of management in force under law are required that will enable recovery[iii]. The Plan of Management must be reviewed every five years by the relevant fishery manager or more frequently if new information becomes available. Regular review of the Plan of Management will ensure that it continues to meet its objectives.
Monitoring and reporting	A Monitoring and Assessment Plan must be in place and implemented, with appropriate spatial and temporal coverage for the species [iv]. An annual report must be provided to the Threatened Species Scientific Committee (TSSC or equivalent) on the status of the species and the success of the plan, including if the species no long meets the criteria for a threat category [v].

Definitions	**Viability** - the long term maintenance of persistence, function and distribution of a species/ecological community. **Function** - the contribution of a species to processes in nature, including (but not limited to) those that influence viability of other species and those that provide ecosystem services to people. **Representation** –the viability and function a species throughout its habitat [vi]. **Habitat** - the biophysical medium or media: (a) occupied (continuously, periodically or occasionally) by an organism or group of organisms; and (b) once occupied (continuously, periodically or occasionally) by an organism or group of organisms and into which organisms of that kind have the potential to be introduced, and (c) biophysical media projected to become suitable for occupation under future climates if specified in the Conservation Advice.
Further Information	The Commonwealth Harvest Strategy Policy. The Species Profiles and Threats (SPRAT) database contains statutory and policy documents, including relevant policy documents related to Conservation Dependent species and Information Guides and Factsheets.

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[i] As defined in the EPBC Act

[ii] In its submission to the EPBC Act review the Threatened Species Scientific Committee recommended that species considered under these provisions be listed in the threat category to which they qualify, but with a Special Management flag that exempts them from being MNES unless the Plan of Management is no longer in law, or fails to recover the species, in which case the Special Management flag is removed and they become MNES.

[iii] Where a Plan of Management does not continue to be in force under law the species must be referred to the Threatened Species Scientific Committee (or equivalent) for possible inclusion on the Provisional Priority Assessment List to start the reassessment process for potential listing in a threat category.

[iv] Ongoing monitoring and assessment will enable jurisdictions to demonstrate the Plan of Management is being successful and indicate when the species no longer meets the criteria for a threat category.

[v] The Threatened Species Scientific Committee (TSSC) would consider if the species needs to be added to the Provisional Priority Assessment List, either because there is evidence that it

no longer meets the criteria for a threat category (i.e. for potential delisting) or that the Plan of Management has failed to halt the decline of the species (i.e., for potential listing in a threat category). If the Minister or other Listing Authority then adds the species to the Final Priority Assessment List, it will be reassessed by the TSSC and a recommendation made to the Minister about a change in listing status.

[vi] As defined in this document (modified from the EPBC Act)

Restoration and Recovery Standard *(Kingsley Dixon)*

This interim standard has been compiled with input from the Society for Ecological Restoration, Review Advisory Panel members and the TSSC.

This interim **National Restoration and Recovery Standard** outlines recovery actions with a proven ability to reinstate species, communities and their functional processes that result in an absolute net gain for the MNES in spatial extent, structural continuity and ecological resilience commensurate with the best available knowledge for the native reference ecosystem.

A nationally consistent restoration and recovery standard requires independent oversight by a technically competent advisory body (eg Mitigation and Restoration Scientific Committee or delegated to TSSC) mandated to ensure compliance with the Standard and to advise on non-compliance and corrective interventions.

The following interim standard has potential to be implemented within the current settings of the EPBC Act.

Element	**Description**
Environmental Outcome	Matters of national environmental significance are restored with a diversity, structure and maturity commensurate with an absolute gain in the values of impacted species and ecosystems.
National Standard	1) Actions and decisions are consistent with the principles of the National Standards for the Practice of Ecological Restoration[1] with outcomes set using the associated Five-star rating system[2]. 2) Restored and recovered species and ecosystems have 'like-for-like' biodiversity, functions and resilience to achieve a net gain outcome for biodiversity. 3) The use of restoration as a tool to support sustainable development can only lead to this outcome if there is: (i) an overt preparedness to decline developments if broad net gain is not able to be demonstrated, and (ii) the appropriate recognition that restoration cannot yet recreate equivalents from scratch but that valuable outcomes can be attained with high aspiration.

	4) For MNES, that proponents demonstrate capability in achieving full and ecologically competent species recovery and ecosystem restoration prior to approval. 5) Restoration and recovery plans for impacted MNES are independently peer-reviewed by relevant specialists prior to approval with annual review following implementation until attainment of a self-sustaining ecosystem commensurate with the agreed Five-star rating. 6) Reinstated species and restored ecosystems continue to be managed by proponents until reaching agreed levels of function and diversity based on the Five-star rating system[2]
Monitoring and Reporting	1) Recovery and restoration outcomes are monitored in accordance with the National Standard. 2) Monitoring is at an appropriate scale, frequency and complexity to inform timely intervention to guide species and ecosystem trajectory in the achievement of the desired Five-star rating. 3) Where a threshold is not achieved (i.e. inability to move to a requisite higher 'five-star' category), that proven and approved corrective interventions are implemented. 4) Restoration and recovery plans, records and monitoring including intervention actions are publicly available.
Review	This is a prototype and should be replaced with a National Environmental Standard following consultation.

[2]**Five Star Rating System**

The following matrices taken from the National Standards for the Practice of Ecological Restoration guide both the setting of a restoration and recovery action and as a means for measures of attainment of the outcome. The Recovery Wheel (populated with data for a

restoration site approaching a 3-star rating) synthesizes this information into a graphic to illustrate progression and key areas for additional effort to achieve a higher star rating.

Number of stars	Recovery outcome (Note: modeled on an appropriate local native ecological reference; cumulative)
1	Ongoing deterioration prevented. Substrates remediated (physically and chemically). Some level of indigenous biota present; future recruitment niches not negated by biotic or abiotic characteristics. Future improvements for all attributes planned and future site management secured.
2	Threats from adjacent areas starting to be managed or mitigated. Site has a small subset of characteristic indigenous species and there is low threat from undesirable species on site. Improved connectivity arranged with adjacent property holders.
3	Adjacent threats being managed or mitigated and very low threat from undesirable species on site. A moderate subset of characteristic indigenous species are established and evidence of ecosystem functionality commencing. Improved connectivity in evidence.
4	A substantial subset of characteristic biota present (representing all species groupings), providing evidence of a developing community structure and commencement of ecosystem processes. Improved connectivity established and surrounding threats being managed or mitigated.
5	Establishment of a characteristic assemblage of biota to a point where structural and trophic complexity is likely to develop without further intervention other than maintenance. Appropriate ecosystem exchanges are enabled and commencing and high levels of resilience is likely with return of appropriate disturbance regimes. Long term management arrangements in place.

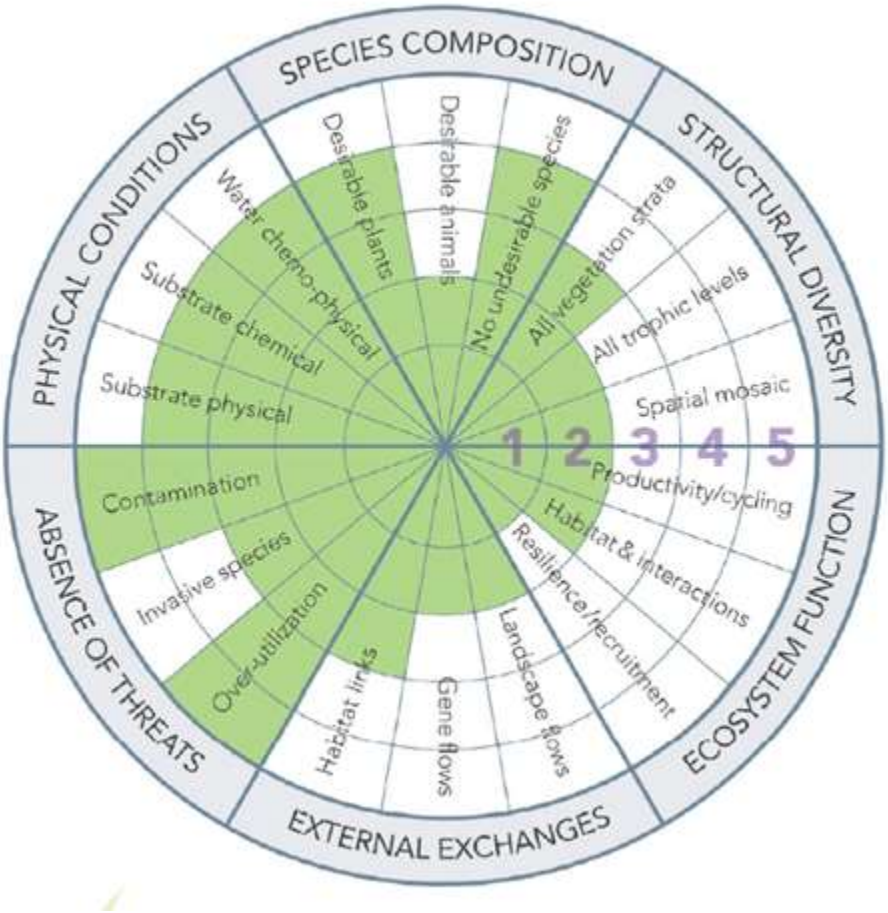
Attribute	One-star	Two-star	Three-star	Four-star	Five-star
Absence of threats	Further deterioration discontinued and site has tenure and management secured.	Threats from adjacent areas beginning to be managed or mitigated.	All adjacent threats being managed or mitigated to a low extent.	All adjacent threats starting to be managed or mitigated to an intermediate extent.	All threats managed or mitigated to high extent.
Physical condition	Gross physical and chemical problems remediated (e.g. contaminatio n, erosion, compaction).	Substrate chemical and physical properties (e.g. pH, salinity) on track to stabilise within natural range.	Substrate stabilised within natural range and supporting growth of characteristic biota.	Substrate maintaining conditions suitable for ongoing growth and recruitment of characteristic biota.	Substrate exhibiting physical and chemical characteristics highly similar to that of the reference ecosystem with evidence they can indefinitely sustain species and processes.
Species	Colonising indigenous species (e.g. ~2% of the species of reference ecosystem). No threat to regeneration niches or future successions.	Genetic diversity of stock arranged and a small subset of characteristic indigenous species establishing (e.g. ~10% of reference). Low threat from exotic invasive or undesirable species.	A subset of key indigenous species (e.g.~25% of reference) establishing over substantial proportions of the site, with nil to low threat from undesirable species	Substantial diversity of characteristic biota (e.g. ~60% of reference) present on the site and representing a wide diversity of species groups. No inhibition by undesirable species	High diversity of characteristic species (e.g. >80% of reference) across the site, with high similarity to the reference ecosystem; improved potential for colonisation of more species over time
Structural diversity	One or fewer strata present and no spatial patterning or trophic complexity relative to reference ecosystem.	More strata present but low spatial patterning and trophic complexity, relative to reference ecosystem.	Most strata present and some spatial patterning and trophic complexity relative to reference site.	All strata present. Spatial patterning evident and substantial trophic complexity developing, relative to	All strata present and spatial patterning and trophic complexity high. Further complexity and spatial pattering able to self-organise to highly resemble

				the reference ecosystem	reference ecosystem.
Ecosystem function	Substrates and hydrology are at a foundational stage only, capable of future development of functions similar to the reference.	Substrates and hydrology show increased potential for a wider range of functions including nutrient cycling, and provision of habitats/ resources for other species.	Evidence of functions commencing—e.g. nutrient cycling, water filtration and provision of habitat resources for a range of species.	Substantial evidence of key functions and processes commencing including reproduction, dispersal and recruitment of a species.	Considerable evidence of functions and processes on a secure trajectory towards reference and evidence of ecosystem resilience likely after reinstatement of appropriate disturbance regimes.
External exchange	Potential for exchanges (e.g. of species, genes, water, fire) with surrounding landscape or aquatic environment identified.	Connectivity for enhanced positive (and minimised negative) exchanges arranged through cooperation with stakeholders and configuration of site.	Connectivity increasing and exchanges between site and external environment starting to be evident (e.g. more species, flows etc)	High level of connectivity with other natural areas established, observing control of pest species and undesirable disturbances.	Evidence that potential for external exchanges is highly similar to reference and long term integrated management arrangements with broader landscape in place and operative.

[1] National Standards for the Practice of Ecological Restoration in Australia. Standards Reference Group SERA (2017). Second Edition. Society for Ecological Restoration Australasia. www.seraustralasia.com

[2] Completion criteria based on the principles and five-star standards of the National Standards for the Practice of Ecological Restoration in Australia (2017) - see additional footnote below

Figure 2: The Recovery Wheel (populated with data for a restoration site approaching a 3-star rating) synthesizes this information into a graphic to illustrate progression and key areas for additional effort to achieve a higher star rating.



Appendix 2: TSSC recommendations from its April 2020 Review Submission revised after consideration of the Interim Report

Recommendations for Significant Reform

Note: The Recommendation numbers in this Appendix refer to the April 2020 Review Submission, which should be consulted for the rationale for individual recommendations.

Recommendation 3: Regional Conservation Planning

- Approved, costed Regional Plans that meet Commonwealth Standards are:
  - (1) the major basis for directing biodiversity investment, management implementation, monitoring, and reporting against agreed quantitative performance targets
  - (2) applied to listed species, ecological communities and other MNES as appropriate
- Recovery Plans are retained for species/ecological communities with high public profile, bespoke management requirements and/or stakeholder coordination needs e.g across jurisdictions.
- Approval standards for Regional Plans, Recovery Plans and Threat Abatement Plans require them to be costed and implemented with appropriate investment, with outcome reporting at agreed intervals
- The basis upon which a regulatory decision on matters covered by Regional Conservation Plans, Recovery Plans and Threat Abatement Plans is made, is transparent.

Recommendation 7: Offsets

- Before an offset is granted, the proponent is required to demonstrate that they have investigated the options of avoidance and minimisation using a mitigation hierarchy and how each offset has been scientifically evaluated against the hierarchy
- A public register of environmental reports for offsets is developed and maintained
- Monitoring milestones and KPIs is mandatory to ensure that each offset is achieving appropriate levels of mitigation with courses of action to mitigate underperformance of the offset
- Offsets that involve substantial rehabilitation and restoration of habitats and ecosystems must be conducted according to relevant regulatory standards and The National Standards for the Practice of Ecological Restoration (Standards Reference Group 2017).

Recommendations for Incremental Changes to the Current EPBC Act

Note: The Recommendation numbers refer to the April 2020 Review Submission which should be consulted for the rationale for individual recommendations.

Recommendation 10: Categories and Criteria for Species Nominations

- The Categories and Criteria for species nominations are revised to make them more in accordance with international standards by:
  - including the IUCN Criterion D2 in the Criteria for listing a species as 'Vulnerable'
  - abolishing the Category 'Conservation Dependent' and replacing it with 'Special Management'
- A species of fish listed as threatened under the Act and managed under fisheries legislation should be flagged as 'Special Management', if it is the focus of a legally-enforced plan of management that provides for the management actions necessary to stop the decline and support the recovery of the species, so that its chances of its long term survival in nature are maximized.

Recommendation 13: Conservation Advices and Recovery Plans

- The Conservation Advice for each listed threatened species and listed threatened ecological community must include information on how its status should be monitored and reported.
- Each Recovery Plan must include information on: (1) how the status of the listed entity should be monitored and reported, with predefined thresholds of change (trigger points), and (2) the response if these trigger points are met.
- Standards for Recovery Plans/Regional Recovery Plans should be included in regulation including standards for mandatory costing, monitoring, implementation and regular reporting.
- The Minister should be able to decide/recommend that the recovery of a listed entity be addressed by a Recovery Plan or another appropriate planning instrument at the time of listing or any other time.
- When a Recovery Plan or Conservation Advice is used in approvals of actions that may have significant impacts on the listed matter, the basis for the decision must be transparent.

- The requirement that the Minister must not act inconsistently with a Recovery Plan (s139 and many other places in the Act) should be extended to Conservation Advices (by amendment to s303 DG4A and many other places).