

**Australian Academy of Science submission on the
*National Environmental Standard for Matters of National Environmental Significance (MNES).***

National Environmental Standards ('Standards') are a key component of reforming Australia's national environment laws. Together with the other National Environmental Standards and bioregional plans, the MNES Standard underpins Australia's environmental protections under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Academy has contributed scientific expertise and advice to Australia's environment law reform process over the past six years. Many of the Academy's previous recommendations remain unaddressed and must be implemented to achieve better outcomes for our environment and biodiversity.

The main issue with the MNES Standard is that it creates a process-based compliance test through elevating adherence to the Principles and *assuming* outcomes will be achieved, regardless of whether the environmental outcomes are actually achieved. As drafted, the MNES Standard also only protects "irreplaceable habitat" and does not adequately address monitoring and cumulative impacts.

As drafted, the MNES Standard risks enshrining, rather than reforming, a system that has been independently and widely recognised as broken. The National Environmental Standards should be clear, unambiguous, measurable and enforceable. They must be the clearest possible statement of the government's responsibility to Australia's environment.

To achieve this, the Academy recommends the Australian Government:

- R1. Amend the MNES Standard so that compliance requires demonstrated, measurable environmental outcomes rather than consistency with the Principles alone.
- R2. Provide clear assessment thresholds and guidance for key concepts such as "residual significant impacts" and application of the mitigation hierarchy.
- R3. Refine or remove discretionary language in the MNES Standard to improve clarity, consistency, and enforceability under the EPBC Act.
- R4. Clearly define key terms (e.g. "viable", "net gain"), and ensure these definitions are used consistently and are aligned with current science.
- R5. Explicitly require the assessment of cumulative impacts under the MNES Standard, including baseline assessment, compounding impacts across projects, species, landscapes, bioregions and environmental trends over time.
- R6. Address key omissions: monitoring obligations and accounting for the impacts of climate change on MNES.
- R7. Align the MNES Standard with the principles of the United Nations Declaration on the Rights of Indigenous Peoples, and including recognition of Indigenous Cultural and Intellectual Property.

The summary table on page 5 provides suggested changes to the MNES Standard.

[Outcome-based language should be used, that includes clear assessment thresholds and evidence criteria](#)

Currently, the test of whether the MNES Standard is adhered to does not consider whether the outcome is achieved, but whether the proponent adheres to the principles. The principles emphasise whether the process has been followed and *assume* that this will achieve the outcomes and objectives, regardless of whether the objectives and outcomes have been achieved. This was identified by Professor Graeme Samuel AC in the [2020 Independent Review](#) of the EPBC Act as a key area requiring improvement: "Compliance should focus on whether environmental outcomes are being achieved (or if there are failings), rather than whether a process has been correctly adhered to." (p. 49)

Changes to the MNES Standard are required to ensure that the desired outcomes are achieved and impacts are mitigated. See summary table (page 5) for recommended changes to ensure that the MNES Standard is outcome-focussed.

As recommended in the [Academy's January submission](#), further clarity is required on how “residual significant impacts” are to be measured and compensated. Legislating clear and quantitative thresholds will ensure “net gain outcomes” under the EPBC Act are defensible, consistent and enforceable, aligning with the objectives and principles within the MNES Standard. Currently, the MNES Standard implies improvement-oriented outcomes, but contains no clear definition or accounting framework for net gain. See summary table (page 5) for a suggested definition.

Similarly, the MNES Standard should include evidence criteria on the application of the mitigation hierarchy, ensuring the basis is on science-informed evidence, outlining why steps were not feasible, how mitigation efforts will reduce impacts and how these will be implemented. Documenting these steps will improve assessment of suitable project sites.

Recommendation 1: Amend the MNES Standard so that compliance requires demonstrated, measurable environmental outcomes rather than consistency with the Principles alone.

Recommendation 2: Provide clear assessment thresholds and guidance for key concepts such as “residual significant impacts” and application of the mitigation hierarchy.

Discretionary language should be removed to strengthen the MNES Standard

As previously noted by the Academy in its [January submission](#), the MNES Standard relies heavily on non-binding terms that introduce inappropriate flexibility in interpretation. Vague terms that should be defined or replaced include “generally”, “appropriate”, “have regard to”, and “possible”. For example, the present wording to only “*have regard to* the mitigation hierarchy”. This creates gaps in enforcement and risks actions being approved without sufficient evidence that the mitigation hierarchy has been genuinely applied. More certain language is needed (e.g. “apply” rather than “have regard to”). See summary table (page 5) for suggested changes to wording.

Recommendation 3: Refine or remove discretionary language in the MNES Standard to improve clarity, consistency, and enforceability under the EPBC Act.

Definitions should be defined clearly, used consistently and aligned with current science

For the MNES Standard to be as clear and unambiguous as possible, terms must be clearly defined and should be used consistently.

The MNES Standard uses the term “viable” when referring to listed threatened species, listed threatened ecological communities, and listed migratory species (e.g. “where the habitat is irreplaceable and necessary for the species to remain *viable* in the wild”). However, no definition of “viable” is provided. It is not clear whether proponents would be expected to only consider population size thresholds, or whether this also encompasses habitat configuration and ecological corridors to maintain viable gene flow and movement. The Academy recommends that the term “viable” is defined in the MNES Standard, including considerations of factors such as population size and genetic diversity.

Similarly, “irreplaceable habitat” is defined as “impossible to restore, recreate or replace”. However, the Objectives refer to restoring irreplaceable habitat, which is illogical. In addition, the focus has been narrowed to refer only to outcomes for irreplaceable habitat. This constraint requires correction to refer to all habitat. See summary table (page 5) for suggested changes to wording.

Recommendation 4: Clearly define key terms (e.g. “viable”, “net gain”), and ensure these definitions are used consistently and are aligned with current science.

The MNES Standard does not enforce environmental baselines or adequately address cumulative impacts

Cumulative impact is not adequately considered in the MNES Standard. Cumulative impacts are the additive and interactive effects of multiple actions over time and space that, even if assessed as acceptable individually, may result in significant harm in aggregate. As recommended in the Samuel Review, the “the EPBC Act should be amended to support more effective planning that accounts for cumulative impacts” (p. 32). The government accepted this recommendation, committing to address cumulative impacts through regional planning. The MNES Standard expects that cumulative impacts will be dealt with by bioregional plans or strategic assessments.

However, there are many species whose ranges cover multiple bioregions (e.g. the koala, a listed threatened species). Furthermore, as noted in the Samuel Review, the current settings for strategic assessments have significant limitations, that result in cumulative impacts on the environment not being systematically considered.

Baseline environmental assessments and cumulative impacts must be assessed across the full geographic scale to determine the full extent of impact. For example, a large-scale fossil fuel project could result in incremental clearing in nature corridors, increased bushfire risk, and associated greenhouse gas emissions, driving environmental decline beyond the immediate project footprint. Regions containing endangered species such as the koala (and its habitat) may suffer compounding effects on landscape connectivity, reduced resilience, and accelerated biodiversity loss. These impacts are dispersed across bioregions, meaning that project by project assessment or even bioregion by bioregion assessment may risk substantially underestimating the true environmental impact.

Recommendation 5: Explicitly require the assessment of cumulative impacts under the MNES Standard, including baseline assessment, compounding impacts across projects, species, landscapes, bioregions and environmental trends over time.

The MNES Standard does not adequately consider monitoring obligations or climate change

Key omissions from the MNES Standard include the absence of monitoring obligations, and the absence of reference to climate change impacts on MNES.

The MNES Standard contains no enforceable adaptive management framework requiring reassessment or modification of approvals where monitoring demonstrates that realised impacts (including those from climate change) are greater than predictions on which an approval was based.

To address this, the Academy recommends that a new Principle on monitoring is added, that includes the following aspects:

- Monitoring periods should be proportionate to the temporal scale, uncertainty, and reversibility of impacts, including delayed and cumulative impacts.
- Monitoring designs should enable trends in MNES to be rigorously quantified regarding relevant threats, management actions, and environmental covariables, including climate variations.
- Approval conditions should specify measurable ecological thresholds and corresponding management responses to be implemented if monitoring indicates that outcomes are not being achieved.
- Environmental monitoring data, methodologies, assumptions, and compliance reports should be publicly accessible in a timely and searchable form, in line with open data principles. It should be a requirement of approvals that monitoring data are contributed in raw form to the relevant Environment Information Australia database.

Environmental offsets, restoration activities, and mitigation measures should be required to demonstrate a high likelihood of long-term ecological persistence under projected climate change scenarios.

Recommendation 6: Address key omissions: monitoring obligations and accounting for the impacts of climate change on MNES.

Appropriate Indigenous engagement must include respecting Indigenous Cultural and Intellectual Property

The MNES Standard does not mention the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) or Indigenous Cultural and Intellectual Property (ICIP). Furthermore, the current wording regarding the “contribution of knowledge” from Indigenous Peoples gives the indication that knowledge is being taken rather than shared or regarded. It does not indicate the importance of consultation if knowledge is wished to be shared, and the requirement of the knowledge to be considered. See summary table (page 5) for suggested rewording.

Recommendation 7: Align the MNES Standard with the principles of the United Nations Declaration on the Rights of Indigenous Peoples, and including recognition of Indigenous Cultural and Intellectual Property.

The recommendations in this submission address the MNES Standard's core failings. Shifting to outcome-based compliance (R1), providing clear assessment thresholds and guidance (R2), assessing cumulative impact (R5), and including monitoring obligations (R6) will ensure compliance with the MNES Standard is measurable and enforceable. Removing discretionary language (R3) and clearly defining terms (R4) will ensure the MNES Standard is clear and unambiguous. Alignment with UNDRIP and ICIP will ensure that Indigenous rights, knowledge and custodianship are respected throughout environmental decision-making (R7). Together, these reforms will give the MNES Standard the scientific rigour and clarity needed to genuinely protect Australia's threatened species and ecological communities.

To discuss or clarify any aspect of this submission, please contact Lauren Sullivan, Science Policy and Advice Manager at science.policy@science.org.au.

Summary of recommendations

| Text in MNES Standard | Problem | Recommended change | Associated Recommendation Number |
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| <p>Page 2: compensate, in relation to residual significant impacts, means either or both of:</p> <ul style="list-style-type: none"> (a) an offset activity; and (b) a restoration contribution charge | <p>This approach is inconsistent with the government’s response to the Samuel Review’s recommendation that National Environmental Standards be outcome-focused, measurable, granular and legally enforceable.</p> <p>Carrying out an offset activity, of itself, will not compensate residual impact. True compensatory outcomes hinge on evidence that the activity is effective, or has been shown to be effective, in mitigating a similar impact.</p> <p>Restoration contribution charges risk converting non-offsetable biodiversity loss into a financial transaction untethered from demonstrated ecological outcomes.</p> | <p>The definition for “compensate” should be amended to include a requirement to demonstrate the effectiveness of the offset activity and a positive outcome.</p> <p>To demonstrate a positive outcome post-approval, a proponent must provide evidence from monitoring the effects of the offset activity until a net gain outcome is achieved, after which it must be maintained for the duration of the residual significant impacts.</p> | <p>R1</p> |

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| <p>Pages 2 and 3: Objectives for protected matters</p> <p>Items 1-3 contain wording: “where the habitat is irreplaceable and necessary for the species to remain viable in the wild...”</p> | <p>The reformed EPBC Act defines irreplaceable as: “irreplaceable: habitat is irreplaceable for a species or ecological community if, whether biologically, physically or technically, <u>it is impossible to reverse damage to the habitat, or impossible to restore, recreate or replace the habitat:</u> (a) in a relevant timeframe and location; and (b) with the function (including the complexity and scale) necessary to support the viability of the species or community.”</p> <p>This statutory definition indicates that irreplaceable habitat cannot be restored or recreated. Therefore, the objectives that include “restoration and recovery” of irreplaceable habitat contradict the statutory definition of irreplaceable.</p> <p>The narrowing of the focus to refer only to outcomes for irreplaceable habitat is unacceptable and not consistent with improved environmental outcomes for MNES.</p> | <p>Item Objective</p> <p>1. Listed threatened species Habitat of the listed threatened species (including critical habitat) <u>throughout its entire geographic area</u> is protected, conserved <u>and where necessary</u> restored to support survival and recovery of the species.</p> <p>2. Listed threatened ecological communities Habitat of the listed threatened ecological community (including critical habitat) <u>throughout its entire geographic area</u> is protected, conserved and <u>where necessary</u> restored to support survival and recovery of the community.</p> <p>3. Listed migratory species Habitat of the listed migratory species <u>throughout its entire geographic area under Australian jurisdiction</u> is protected, conserved and <u>where necessary</u> restored to support survival and recovery of the species.</p> | <p>R4</p> |
| <p>Page 3, Items 1-9</p> | <p>The need for monitoring is not mentioned. This limits effective implementation and refinement of any compensatory action, as well as accountability for environmental outcomes in addition to procedural compliance.</p> | <p>Add monitoring to each objective: “Protection, conservation, restoration, recovery <u>and monitoring actions</u> support the viability of...” “protected, conserved, <u>monitored</u> and (where appropriate) restored and recovered.”</p> | <p>R6</p> |
| <p>Page 3, Item 5 of the Objectives: “Indigenous heritage values of a National Heritage place are treated in a manner respectful of indigenous traditions and beliefs.”</p> | <p>This clause does not incorporate any of the key principles stated in the United Nations Declaration on the Rights of Indigenous Peoples (which Australia has endorsed), or principles relating to Indigenous Cultural and Intellectual Property.</p> <p>The term Indigenous should be capitalised.</p> | <p>Indigenous heritage values of a National Heritage place are treated in a manner respectful of Indigenous traditions and beliefs including:</p> <ul style="list-style-type: none"> • free, prior and informed consent (FPIC); • Indigenous data sovereignty; • cultural authority over ecological knowledge. | <p>R7</p> |

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| <p>Page 4, Section 6, Outcomes:</p> <p>The following outcomes of the Standard are intended to promote the objectives in section 5:</p> <p>(a) provide for the protection, conservation, and, where appropriate, restoration and recovery of protected matters;</p> <p>(b) contribute to the promotion and enhancement of the diversity, abundance, resilience, and integrity of protected matters across their entire geographic area; and</p> <p>(c) facilitate ecologically sustainable development.</p> | <p>The outcomes are about procedures and processes. An outcome is “the result or effect of an action or situation”. Of itself, providing (a), contributing (b), or facilitating (c) an action, as specified in the MNES Standard, is a necessary but not a sufficient requisite of a nature-positive outcome.</p> | <p>The following outcomes of the Standard are intended to promote the objectives in section 5:</p> <p>(a) protected matters are protected, conserved and, where appropriate, restored and recovered;</p> <p>(b) the diversity, abundance, resilience, and integrity of protected matters are promoted and enhanced across their entire geographic area</p> <p>(c) the action or class of actions accords with ecologically sustainable development</p> | <p>R1</p> |
| <p>Pages 4-5, Section 7</p> <p>Principles (2) and (4) (a), (b), (c), (d), and (e).</p> | <p>These are quasi-deeming clauses because consistency with the principles is treated as sufficient basis for concluding that an approval complies with the Standard.</p> <p>This approach appears inconsistent with the government’s response to the Samuel Review’s recommendation that National Environmental Standards be “outcome-focused, measurable, granular and legally enforceable.”</p> <p>Page 5: Section 7 Principles (4) (c): This principle applies a lower threshold (“not inconsistent with”) rather than requiring affirmative consistency.</p> | <p>Omit Section 7 Principles (2) and (4) (a), (b), (c), (d), and (e)</p> | <p>R1</p> |
| <p>Page 6: Principle 2</p> <p>In considering the nature, extent or severity of an adverse impact on a protected matter, <u>regard should be had</u> to the context in which the impact might occur.</p> | <p>The phrase ‘regard should be had’ creates only a procedural obligation to consider contextual matters and does not require decision-makers to evaluate whether the proposed action will avoid or prevent significant cumulative impacts.</p> | <p>Suggested rewording:</p> <p>In considering the nature, extent or severity of an adverse impact on a protected matter, the context in which the impact might occur <u>must be considered</u>, including the cumulative impacts on the protected matter.</p> | <p>R3</p> |

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| <p>Page 6, Section 9, Principle 2 - Actions appropriately consider adverse impacts to protected matters:</p> <p>Note 2: When considering bioregional plans and strategic assessments the context may also include the following:</p> | <p>Large range threatened and migratory species and ecological communities also require special consideration as their ranges under Australian jurisdiction will transcend the boundaries of regional plans and strategic assessments. For example, the range of the listed koala, the species that triggers the EPBC Act more than any other threatened species, extends over 23 bioregions.</p> | <p>Note 2: When considering:</p> <ul style="list-style-type: none"> • bioregional plans • strategic assessments • threatened and migratory species, • and threatened ecological communities that have “likely to occur” ranges that extend beyond one bioregion <p>the context may also include the following:</p> | <p>R5</p> |
| <p>Page 7, Section 10, Principle 3:</p> <p>(1) Compensation for a residual significant impact should <u>generally</u> only be considered after the prior steps in the mitigation hierarchy (avoidance, mitigation and repair) have been exhausted)</p> | <p>“Generally” introduces unconstrained discretion. This approach appears inconsistent with the government’s response to the Samuel Review’s recommendation that National Environmental Standards be “outcome-focused, measurable, granular and legally enforceable.”</p> | <p>Compensation for a residual significant impact <u>should only be considered</u> after the prior steps in the mitigation hierarchy (avoidance, mitigation and repair) have been exhausted.</p> | <p>R3</p> |
| <p>Page 7, Section 11, Principle 4:</p> <p>“Proposals for actions or classes of actions must be supported by... (b) where relevant, effective and genuine engagement with, and contribution of knowledge from, indigenous persons, where the engagement and contribution is appropriate and adapted to the nature of the interests of such persons;”</p> | <p>The wording frames Indigenous knowledge as an evidentiary input rather than recognising Indigenous authority, custodianship and rights relating to knowledge sharing and use.</p> <p>The term Indigenous should be capitalised.</p> | <p>Proposals for actions or classes of actions must be in accordance with the standard for Indigenous engagement and participation in decision-making; and (b) include the importance of Indigenous Cultural and Intellectual Property, if relevant rightsholders wish to share such knowledge and agree to its being included in the relevant proposals.</p> | <p>R7</p> |

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| <p>“Viable”/“Viability”, used throughout, for example: “necessary for the species to remain viable in the wild” and “support the viability of threatened species in the wild.”</p> | <p>This important ecological concept is not defined. That means “viability” is still likely to depend heavily on:</p> <ul style="list-style-type: none"> • ecological interpretation, • expert evidence, • population modelling, • and administrative discretion. • <p>This creates a significant ambiguity and inconsistency because “viability” can mean very different things depending on:</p> <ul style="list-style-type: none"> • time horizon, • spatial scale, • population unit, • minimum viable population assumptions, • genetic considerations, • or recovery trajectory assumptions. | <p>Suggested definition: viable, in relation to a threatened species or threatened ecological community or population, means capable of persisting and recovering in the wild over the long term as a self-sustaining component of its ecosystem without ongoing human intervention beyond normal conservation management.</p> <p>Viability includes consideration of: (a) population size and trend; (b) genetic diversity and connectivity; (c) demographic stability and recruitment; (d) the extent, condition and security of habitat; throughout its geographic range (e) resilience to existing and reasonably foreseeable threats, including climate change; and (f) the capacity for recovery throughout the relevant geographic range.</p> | <p>R4</p> |
| <p>Net gain. The draft standard repeatedly implies improvement-oriented outcomes (“restoration”, “recovery”, “enhancement”, “compensation”) but contains no definition or accounting framework for “net gain”.</p> | <p>That omission is significant because:</p> <ul style="list-style-type: none"> • net gain is increasingly central to environmental approval systems globally; poorly defined net gain frameworks have often failed to prevent biodiversity decline in practice. | <p>Define “net gain” in the Standard</p> <p>Suggested definition: Net gain means a state in which the protected matter is measurably more secure, resilient, functionally connected and viable following implementation of the action and all associated compensation measures than it would have been had the action not occurred.</p> | <p>R4</p> |

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| <p>Appropriate, used throughout, including:</p> <ul style="list-style-type: none"> • “where appropriate, management, restoration and recovery” • “Actions appropriately apply the mitigation hierarchy” • “Appropriate evidence, Indigenous engagement and consultation”. | <p>Undefined use of “appropriate” confers broad discretion.</p> | <p>Suggested definition: Appropriate, in relation to a measure, decision, assessment, evidence base, mitigation action, consultation process or condition, means suitable, proportionate and scientifically justified, having regard to: (a) the conservation status, sensitivity, ecological function and recovery requirements of the protected matter; (b) the nature, extent, duration, reversibility and cumulative effects of the impact; (c) the best available scientific information and Indigenous knowledge; (d) the principles of ecologically sustainable development, including the precautionary principle; and (e) the objective of avoiding or minimising the risk of serious or irreversible environmental harm.</p> | <p>R3, R4</p> |
| <p>Possible. The MNES Standard uses the term repeatedly, especially in Principle 1: “To the extent possible, any significant impacts ... should be avoided...” and: “...including, where possible, below the level of significance.”</p> | <p>“Possible” can be interpreted in different ways. Without definition, decision-makers and proponents can implicitly narrow the meaning toward “not commercially reasonable” or “not feasible for the proponent”, rather than: “not physically or scientifically achievable”. The term occurs in the avoidance hierarchy, where the legal threshold matters enormously.</p> | <p>Suggested definition: A claim that avoidance, mitigation or repair is not possible must be supported by transparent evidence demonstrating that all reasonable alternatives have been examined and none were found to be physically or scientifically achievable.</p> | <p>R3, R4</p> |

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| <p>Significant impact</p> | <p>The legislation relies on the phrase: “likely to have a significant impact”.</p> <p>This is one of the most important concepts in the EPBC regime. However, the EPBC Act does not provide a universal statutory definition of “significant”; nor does it establish quantitative thresholds across all MNES.</p> <p>The 2025 reforms appear to retain this basic structure, although they add the new concept of “unacceptable impacts”.</p> <p>The reforms therefore define a subset of impacts that are clearly unacceptable, but do not appear to comprehensively define “significant impact” itself.</p> | <p>Define “significant impact” in the Standard.</p> <p>Suggested definition: Significant impact means an impact on a protected matter that:</p> <ul style="list-style-type: none"> (a) is important, notable or consequential having regard to the context and intensity of the impact; and (b) has, or is likely to have, a material effect on: <ul style="list-style-type: none"> (i) the conservation status, abundance, distribution, resilience, ecological function or recovery of the protected matter; or (ii) the integrity, condition or functionality of habitat critical to the survival or recovery of the protected matter; or (iii) the ability of the protected matter to persist in the wild in the long term. <p>Without limitation, an impact may be significant whether it is:</p> <ul style="list-style-type: none"> (a) direct, indirect, facilitated or consequential; (b) temporary or permanent; (c) discrete or cumulative; or (d) certain or scientifically uncertain but credibly foreseeable and therefore appropriate for application of the Precautionary Principle | <p>R2, R4</p> |
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