DRAFT REPORT TO THE SOUTH AUSTRALIAN FISHING INDUSTRY

COMMITMENTS TO THE CONSERVATION AND PROTECTION OF MARINE RESOURCES BY

THE GOVERNMENT OF SOUTH AUSTRALIA

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EXECUTIVE SUMMARY: This report details the national and international commitments by which the South Australian government is obliged to conserve and protect marine resources. It provides opinion from the perspective of an ecologist and an environmental scientist. It is stressed that it is not a legal opinion.

First, International obligations of the Australian Government to protect marine biodiversity, ecological integrity and the sustainable use of marine resources are given, followed by a description of the national policy toward such a goal, including the proposal of the National Representative Strategy for a System of Marine Parks. Commitments and objectives of the South Australian Government are then given. Last, the proposals of the 'Design Principles'(Department of Environment and Heritage 2008) are discussed in-relation to these international and national commitments.

Key findings:

1) There are national and international commitments to conserve biodiversity and sustainably use natural resources.

2) There are national and international commitments to a system of marine protected areas; the South Australian Representative System of Marine Protected Areas (SARSMPA) proposes to satisfy these.

3) It is internationally recognised that a system of protected areas is not the only management action necessary for conservation of biodiversity or ecosystems.

4) Several requirements seem to have not been or indeed will not be met by the proposed SARSMPA, including:

      - to identify activities that threaten biodiversity

> - to sustainably use marine resources and promote industries which do so
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> - to establish the cost-effectiveness and appropriateness of the SARSMPA
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> - to establish the efficacy or success of the SARSMPA to conserve biodiversity
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> Proper identification of threats to marine biodiversity, the ways in which the proposed system of MPAs will 'protect' against or ameliorate such impacts and how success can be measured are crucial principles which have NOT been included in the '*Design Principles*' for the SARSMPA. It cannot be established, as such, that the proposed SARSMPA is an appropriate, adequate or cost-effective strategy to fulfil obligations to conserve, protect and sustainably use marine biodiversity. It is noted that in the "*Conclusions*" to the technical report on the outer boundaries of South Australia's marine parks network (Department of Environment and Heritage 2009) it is stated that "*The network has not been proclaimed in response to threats…*". Noting the priority given to the identification and management of threats in the documents which describe South Australia's commitments to marine protection the current proposals appear to be inappropriate.

INTERNATIONAL COMMITMENTS

Simply, Australia has international obligations to conserve biodiversity and sustainably use natural resources by signing the major international agreement, the Convention for Biological Diversity (IUCN 1993). The Convention recognizes that conservation and sustainable use of biodiversity are fundamental and compatible goals (i.e. *"provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable uses of its components"* (Article 8; IUCN 1993). Chief among the objectives agreed to in the Convention are to:

- *"identify processes and categories of activities which have or are likely to have significant adverse impacts"* (Article 7; IUCN1993)

- *"establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity"* (Article 8; IUCN 1993).

Compatible conservation and sustainable use of resources is also emphasised in Agenda 21, the landmark publication of the World Summit on Ecologically Sustainable Development (United Nations 1993) , of which Australia is a signatory.

NATIONAL COMMITMENTS

The National Strategy for Ecologically Sustainable Development (NSESD; Commonwealth of Australia 1992b) and the National Strategy for the Conservation of Australia's Biological Diversity (NSCABD; Commonwealth of Australia 1996) form the basis for Australia's policy to fulfil international obligations to conserve its biodiversity and promote ecologically sustainable use and development of its natural resources. The core goals of the NSESD echo those of the international agreements (i.e. the Convention on Biological Diversity and Agenda 21 as described in the preceding paragraph), such as *"to protect biological diversity and maintain essential ecological processes* [and] *following a path of economic development that safeguards the welfare of future generations"* (Commonwealth of Australia 1992b). The NSCAB acknowledges the core goals of the NSESD among its main principles and confirms that *"central to the conservation of Australia's biological diversity is the establishment of a comprehensive, representative and adequate system of ecologically viable protected areas"* (Commonwealth of Australia 1996).

The Environment Protection and Biodiversity Conservation Act (1999) is the central piece of legislation developed to fulfil Australia's international commitments to the environment. Key objects of this Act include to (Section 3):

3.1.a *"provide for the protection of the environment"*

3.2.b. *"promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources"*

3.1.c *"to promote the conservation of biodiversity"* (EPBC; Commonwealth of Australia 1999). To achieve the conservation of biodiversity, the Act sanctions to: *"protect ecosystems by means that include the establishment and management of reserves . . .* [and] ***identify processes that threaten all levels of biodiversity and implement plans to address these processes"*** (emphasis added) (EPBC; Commonwealth of Australia 1999).

Note that establishing a system of protected areas applies to all terrestrial, freshwater and marine ecosystems, but has a theoretical basis in terrestrial ecology and is predominantly mentioned in the literature in a terrestrial framework. Establishing a system of protected areas may not be an ideal strategy to achieve obligations to conserve and sustainably use resources for marine (nor indeed freshwater) systems. Indeed, failures of longstanding

protected areas in terrestrial systems are documented in scientific literature (Norse et al. 2003). Rushing into similar strategies without a proper understanding of the underlying threats and responses to such threats in systems which have markedly different dynamics, abiotic and biotic processes which control such dynamics and indeed threats (Lubchenco et al. 2002, Carr et al. 2003) seems unwise and is illogical.

Success of a strategy of protected areas in marine systems will depend on rigorous identification of the impacts on marine biodiversity and how a system of MPAs will provide effective protection against such impacts. For example, Agenda 21 (United Nations 1993) (and indeed other government policy as discussed further on, e.g. Department for Environment and Heritage 2004b), identifies pollution as a major concern for marine biodiversity. It is **unclear** how a system of protected areas can and will ameliorate impacts such as declines in water quality (i.e. contaminants and potential pollution), loss of habitat, climate change and invasive species which have been nationally identified as key (Zann 1995, Ward et al. 1997, Environment Australia 1998).

Australia's Oceans Policy (AOP; Environment Australia 1998) is the central policy that applies the principles and commitments of the NSESD, NSCAB and the EPBC Act 1999 to marine habitats. It *"promotes ecologically-sustainable development of the resources of our oceans and the encouragement of internationally competitive marine industries, while ensuring the protection of marine biological diversity"* (Environment Australia 1998). Among the key goals outlined are *"to understand and protect Australia's marine biological diversity, the ocean environment and its resources, and ensure ocean uses are ecologically sustainable"* (Environment Australia 1998). Again, it is nationally recognised that activities and processes which threaten biodiversity should be identified and ecologically understood (Environment Australia 1998). Key objectives outlined in the AOP are to:

- *"safeguard marine biological diversity;*
- *promote diverse, strong and sustainable marine industries;*
- ***provide increased certainty and long-term security for all marine users**; and*
- *ensure the establishment of a representative system of marine protected areas."*(Environment Australia 1998)

A central principle for ecologically sustainable development is that *"internationally competitive and ecologically sustainable marine industries are essential"* (Environment Australia 1998). Importantly, the policy endorses *"improved assessment of the impacts of commercial and recreational activities"* (Environment Australia 1998) and that a range of policy issues be implemented including *"marine biological diversity conservation, marine protected areas* [and] *achieving ecologically sustainable ocean resource use"* (Environment Australia 1998).

The IUCN promotes the establishment of a global network of protected areas by 2012 to satisfy international commitments primarily of the Convention on Biological Diversity. There is emphasis that less than 1 % of the oceans are currently protected (IUCN WCPA 2005). Australia already has a strong global position in terms of marine protected areas; Australia has the biggest MPA (the Great Barrier Reef Marine Park) and as at 2004 had 212 marine protected areas encompassing nearly 72 million hectares[1], or more than 30% of the world's total area of marine parks. Nonetheless, Australia agreed to establish a comprehensive, adequate and representative system of protected areas within its marine realm, i.e. the National Representative System of Marine Protected Areas (NRSMPA; ANZECC TFMPA 1998, 1999a) to fulfil commitments under the Convention on Biological Diversity to *"establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity"* (IUCN 1993). The system aims to *"contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity"* (ANZECC TFMPA1999a).

Importantly, it is internationally and nationally acknowledged that establishing a comprehensive, representative and adequate system of protected areas is important, but not a singular solution to the conservation of biodiversity. It is understood that *"the NRSMPA forms part of an integrated strategy for marine conservation and management"* (ANZECC TFMPA 1999a) endorsed by Australia's Oceans Policy (Environment Australia 1998). Key wording includes aims to *"protect ecosystems by means that include the establishment and management of reserves"* (EPBDA; Commonwealth of Australia 1999) and an understanding that *"completing the global system of protected areas will not be sufficient to achieve biodiversity conservation*

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[1] http://www.abs.gov.au/ausstats

objectives" (IUCN WCPA 2005) Note also that this strategy is not prescribed nationally and internationally as a complete solution to ecologically sustainable development and indeed, may not be a major contributor towards this obligation.

Australia has adopted the IUCN Categories for protected areas (Dudley 1994) into its national law such that they can range from strict reserve areas through to areas managed for sustainable use of natural resources. The IUCN acknowledges that *"The proportion of fully protected areas versus less strictly protected areas within a network will depend on the degree of protection and **recovery** being sought and the level of decline in an area's marine resources"(emphasis added)* (WCPA IUCN 2007). The Australian national approach to MPAs acknowledges that *"The kinds of activities that are allowed in a marine protected area depend on the reasons for protecting that area. There may be no environmental reason for excluding activities that extract natural resources such as fish or minerals from some types of marine protected area"*[2]. Australia has a clear obligation to identify and assess the current impacts on marine resources (Environment Australia 1998). Then, and only then, can specific goals and objectives for MPAs be logically defined.

COMMITMENTS BY THE SOUTH AUSTRALIAN GOVERNMENT

South Australia (along with all States and Territories) agreed that *"a representative system of protected areas encompassing terrestrial, freshwater, estuarine and marine environments is a significant component in maintaining ecological processes and systems"* and that *"the national approach to the conservation, protection and management of native species and habitats may include the addition of new areas to reserve systems and protected areas"* (Intergovernmental Agreement on the Environment; Commonwealth of Australia 1992a). Importantly, it is obliged under this agreement to ensure that ***"there is a proper examination of matters which significantly affect the environment [and] measures adopted should be cost-effective and not be disproportionate to the significance of the environmental problems"*** (emphasis added) (Commonwealth of Australia 1992a).

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[2] http://www.environment.gov.au/coasts/mpa/about/index.html

The South Australian Representative System of Marine Protected Areas (SARSMPA) aims to fulfil obligations under The Living Coast Strategy (Department of Environment and Heritage 2004b), South Australia's Strategic Plan 2007 (Government of South Australia 2007) and the Blueprint for the South Australian Representative System of Marine Protected Areas (Department of Environment and Heritage 2004a). This system purports to contribute to the NRSMPA thereby fulfilling national and international agreements as outlined in the preceding text. There is a target defined in the Strategic Plan of South Australia to have *"19 MPAs by 2010"* (Government of South Australia 2007) and the measure of success will then be the *"number of marine parks created"*(Government of South Australia 2007). Such a measure of success is not in itself justified, nor based on any logical or scientific understanding that the effectiveness of MPAs can be best assessed by their number. There are national commitments to properly assess the effectiveness of MPAs (Environment Australia 1998) which cannot be achieved simply by recording an increase in the number of marine parks.

A basic principle of the SARSMPA is the *"recognition of multiple-use within MPAs. This approach provides for the specific conservation and protection of marine and estuarine ecosystems while also providing for the ecologically sustainable use of the area. This means that most activities, such as recreational and commercial fishing, will still be allowed within an MPA boundary"* (Department for Environment and Heritage 2004a)

To fulfil national commitments, the SARSMPA aims to be *"comprehensive, adequate and representative (CAR)"*[3] (NSCABD; Commonwealth of Australia 1996). South Australia is indeed committed to declare and manage a CAR system of marine parks under The Marine Parks Act of South Australia (Government of South Australia 2007).

- Comprehensiveness: *"the degree to which the full range of ecological communities and their biological diversity are incorporated"* (Commonwealth of Australia 1996). The proposed CAR system aims to ensure *"samples of the full range of marine ecosystems are included"*(ANZECC TFMPA1999b)

- Adequacy: *"the ability of the reserve to maintain the ecological viability and integrity of populations, species and communities"* (Commonwealth of Australia 1996). An MPA must

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[3] Again, note that this principle was based on terrestrial reserve design

"have the required level of reservation to ensure the ecological viability and integrity" (ANZECC TFMPA 1998)

- Representativeness: *"capable of reflecting the known biological diversity and ecological patterns and processes of the . . . ecosystem concerned"* (Commonwealth of Australia 1996). The proposed MPAs *"should reasonably reflect the biotic diversity of the marine ecosystems from which they derive"*(ANZECC TFMPA 1998).

The proposed bioregional approach seems to be in response to the idea that the current system of MPAs is not a *"representative"* system of MPAs (i.e. that *"* habitat types are under-represented, most MPAs are too small, are relatively isolated from each other and were initially established for single-species protection rather than an ecosystem approach; State of the Environment Report Environment Protection Authority 2003) and *"because marine biogeographical regions have major differences in their biota, the conservation benefits of a MPA system can only be optimised by representing all bioregions in the system"* (Baker 2004).

National and International commitments unlikely to be met by the proposals given in the 'Design Principles' (Department of Environment and Heritage 2008).

Commitments to properly identify significant threats

The term 'protected area' as used by the Convention on Biological Diversity (IUCN 1993) is defined as an area which is *"managed to achieve specific conservation objectives"*. Conservation objectives cannot realistically be set unless existing and potential impacts are clearly and properly identified. Indeed, it is as much an international requirement to *"identify processes or categories of activities which have or are likely to have significant adverse impacts"* (IUCN 1993) as it is to *"establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity"* (IUCN 1993). Hand in hand with the identification of threats to biodiversity is a requirement to understand the adverse effects of these on biodiversity and ways in which these can be solved (e.g. through Australia's Oceans Policy Environment Australia 1998).

Calling for protected areas in the absence of properly identified threats is wasteful and unwise. Furthermore, The Living Coast Strategy identified that *"pollution is the major risk to our coastal, estuarine and marine environments"* (Government of South Australia 2004b). Other key potential impacts for marine resources were listed in this report as climate change, introduced species, loss of habitat and increasing residential development. How the SARSMPA plans to be a cost-effective and adequate management plan for these impacts is unknown.

Unsustainable use of marine and coastal waters was identified among the top five concerns for the marine environment in the State of the Marine Environment Report for Australia (Zann 1995). Australia's seriously overfished species identified in Zann (1995), such as eastern gemfish and southern bluefin tuna, are either not taken in South Australian waters or are managed by the Commonwealth Government. 'Inappropriate fishing practices' such as fish trawling and scallop-dredging are not used in South Australian State waters. Whilst the State of the Environment Report for SA (Environment Protection Authority 2003) states that *"most of South Australia's fisheries are fully exploited"* and *"loss of biodiversity"* is listed as a result of *"over- exploiting fisheries"*, it also states that *"Our fisheries are, on the whole, being managed within sustainable limits. There is insufficient information on the impact that fishing has on fishery habitats and ecosystems"*.

Under the Fisheries Management Act (Commonwealth of Australia 1991) and the Environment Protection and Biodiversity Conservation Act (Commonwealth of Australia 1999), an assessment of the impacts of fishing must be done. The Living Coast Strategy sates that *"the MPAs monitoring program will provide significant capacity to assess the impacts of resource use activities on marine systems, and the capacity of those systems to recover from extractive use"* (Government of South Australia 2004b). This is a post-hoc assessment of the potential impacts of fishing, and in the absence of detail on how it is proposed to be carried out it cannot be assumed to provide adequate assessment of the impacts, or lack thereof, for each fishery or gear type. It also appears unlikely to be the most beneficial or cost-effective means of identifying impacts of fishing. South Australia is committed to a CAR system of 'protected' areas (Commonwealth of Australia 1996), i.e. they need to 'protect' explicitly

against all threats which have been properly identified as significant (IUCN 1993). Detecting real ecological impacts is a complex process and requires a good deal of careful design and scientific rigour (Underwood 1991, 1992, Underwood & Chapman 2002), none of which is even hinted at in the Design Principles (Department of Environment and Heritage 2008).

It is also noteworthy that the Convention on Biological Diversity originally mandated to *"establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity"* (IUCN 1993). For 'special measures' to be taken the reasons why they are needed would need to be clearly identified. It also then implies that the management measures should indeed be tailored (special) specifically to each identified threat where it occurs. There is not a great deal that is 'special' about delineating generalised restricted areas in the absence of identification of either what protection is being provided or what special measures are being taken.

Commitments to sustainable use and the fishing industry

South Australia's commitment to conserve marine biodiversity is paralleled by a commitment to sustainably use marine resources (Commonwealth of Australia 1992b, a). For example, objectives of Australia's Ocean policy include "***to promote diverse, strong and sustainable marine industries* [and] *provide increased certainty and long term security for all marine users*** (emphasis added) *"*(Environment Australia 1998). A primary objective of the Environmental Protection Act, SA (1993) is to promote *" principles of ecologically sustainable development"*. Policies for ecologically sustainable development given in Australia's Ocean Policy include "*assessing, planning, allocating and managing the ocean resources should . . . involve the minimum effective regulatory burden on ocean users*" and "*unnecessary regulatory impediments to the development of ecologically sustainable marine industries should be removed"*. In the absence of the properly identified threats to biodiversity from fishing, it is difficult to see that regulating fishing in the proposed system is **not** an 'unnecessary burden' on the fishing industry in South Australia. Unfortunately in this push to establish this system of protected areas, alternative effective and cost-effective strategies

that would promote ecologically sustainable development seem to have been by-passed in the Design Principles (Department of Environment and Heritage 2008).

The importance of ecologically sustainable fisheries for economic and social benefit is internationally recognised; in Agenda 21, one of the activities necessary for the conservation and sustainable use of coastal resources specified, is to: *develop and increase the potential of marine living resources to meet human nutritional needs, as well as social, economic and development goals*(Chapter 17.79 (a); United Nations 1993). This is echoed by the Government of South Australia, e.g. *"in particular, fishing (both commercial and recreational) and aquaculture industries are becoming increasingly important to the State"* (Department of Environment and Heritage 2004b). Given that *"any proposed measures must be examined to identify economic and social impacts"* (Commonwealth of Australia 1992a), the impact of, and outcomes for the fishing industry of the SARSMPA should be defined. The Blueprint for the SARSMPA states that *". planning and pragmatic zoning of MPAs . . . should ensure that South Australia's MPAs have the least possible impact on marine uses . . . areas for higher levels of protection will be chosen that achieve the conservation goal while minimising impacts on . . . commercial fishers. A means to address displaced commercial fishing effort will be developed . . . "* (Department for Environment and Heritage 2004a).

Clearly, adequate cost-benefit analysis is needed to show that the potential benefits of the SARSMPA in adequately protecting against known, significant threats is the best-cost solution against alternative conservation strategies and against the potential economic losses for the fishing industry if threats such as pollution are not addressed.

Commitments to be cost-effective and proportionate

Indeed, there is an explicit commitment that *"measures adopted should be cost-effective and not be disproportionate to the significance of the environmental problems"* (Commonwealth of Australia 1992a). This cannot be achieved unless adequate support is given to properly identify significantly adverse effects, and that the severity of each is known and ranked accordingly. Priorities for conservation can then be set to ensure that measures are tailored to the specific

problem where it occurs and that are proportionate to the severity of the threat (as per; Commonwealth of Australia 1992a). Further, it is explicit to have a cost-effective assessment of how each threat is being ameliorated by the proposed system of protected areas. As discussed in the preceding paragraph, "*the economic, environmental, social and cultural values of ocean resources should be assessed, as should the impacts of proposed uses on those values, before resource allocation decisions are made*"(Environment Australia 1998). It is questionable that consideration should be given to more protected areas until the cost-effectiveness of those currently in existence is demonstrated.

Commitments to establish success

Establishing that the proposed system does what it is supposed to do is a key commitment, i.e. that the performance of any proposed actions *contribute effectively towards the achievement of the Policy's goals*" (Environment Australia 1998) which are to conserve and protect biodiversity and sustainably use marine resources. Indicators of success of SARSMPA have not been clearly identified in the 'Design Principles' (Department of Environment and Heritage 2008) and of course, they logically can't be without prior identification of the significant threats from which protection is required.

It is intriguing that in the technical report on the outer boundaries the Department for Environment and Heritage (2009) claims success for its outer boundaries simply based on what is included within those boundaries, without any indication whatsoever of what protection is being provided. This gives the unmistakeable impression that merely having the parks is what is important to the Department, not what protection is actually provided.

Furthermore, success of the SARSMPA in regards to fulfilling the environmental commitments of the South Australian Government primarily depends upon whether the SARSMPA is 'comprehensive, adequate and representative' (Commonwealth of Australia 1996). It appears this requirement **cannot be met** given the present state of policy and strategy, especially because threats and success indicators have not been detailed. For example, the size of MPAs and the number/proportion of representative examples of each

ecosystem within each bioregion (replication, degree of connectivity, etc.) may have been assessed (Department of Environment and Heritage 2009) but the management of human impacts within and outside their boundaries have not been logically addressed or quantified.

Similarly, the Design Principles (Department of Environment and Heritage 2008) aim to achieve the CAR principles (thereby fulfilling its commitment) but logic and detail about how this will be done and the what success will be achieved by doing so has not been assessed. It is debatable whether or not achieving a CAR system is actually measurable considering the vague and ambiguous definitions of what it means. It is crucial that relevant data are gathered in appropriate ways to determine whether the system of protected areas is effectively achieving its aims. In order to rigorously do so, what risks and threats are being removed or reduced for which species, habitats or assemblages, must be translated into defined hypotheses and explicit predictions. Appropriate sampling and experimental designs must be formulated which include quantitative targets or appropriate reference areas (for example those described to measure impacts in Underwood 1991, 1992).

Given the expertise required for such data collection, the lack of any attempt to provide serious consideration of the efficacy of the proposed system in the Design Principles (Department of Environment and Heritage 2008) is concerning (see also discussion of what is required in Underwood & Chapman 2002).

The criterion of establishing 19 MPAs by 2010 (Department of Environment and Heritage 2008) as some measure of efficacy is not justified nor based on any scientific understanding that the number and size of MPAs are the best measures of their effectiveness. **It is incorrect to assume a direct and consistent relationship between the size/amount of a protected area and its adequacy or cost-effectiveness to maintain ecological functions and processes**.

In addition, the strategic Plan of Action for the NRSMPA (ANZECC TFMPA 1999a) promises that development of *"performance indicators, which are quantitative or qualitative measures"* but does little else to establish what these could be and how they will be decided, applied or assessed. So-called surrogates of ecosystem viability (e.g. floral and faunal biodiversity,

abundance and biomass; Department of Environment and Heritage 2004b) have not been shown to be effective in that capacity (e.g. Lindenmayer et al. 1999). **There is little point in establishing MPAs to protect biodiversity and marine resources unless it is entirely and logically measurable that they can and do achieve such goals.** Commitments to assess the *"contribution of marine protected areas to the conservation of biological diversity"* (Environment Australia 1998), can only be appropriately achieved if based on proper identification of the threats, adequate assessment of the efficacy of the system to protect against such threats and proper assessment of the alternatives for protecting against these threats. **These absolutely fundamental issues are unfortunately omitted from the '*Design Principles*' (Department of Environment and Heritage 2008)**.

If the SARSMPA is to meet South Australia's State, national and international requirements to protect and conserve marine resources, potential impacts must be clearly annotated, how protected areas will address these impacts and how success will be measured should be outlined as well as cost-benefit analyses that confirm that the SARSMPA is the best method for achieving such goals.

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