

NATURE RESTORATION LEGISLATION, IMPLEMENTATION AND
ENFORCEMENT: STATUS, CHALLENGES AND SOLUTIONS

RESEARCH ARTICLE

Opportunities for targeted, small-scale law reform in marine and coastal restoration

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Across the globe, law reform is being considered as a mechanism to support, guide, and encourage the upscaling of ecological restoration. While high-profile examples like the European Nature Restoration Law show the value of large-scale law reform, this scale of law reform will not be feasible or politically tractable everywhere. Here we present the results of an analysis of selected legal frameworks for marine and coastal restoration in Australia to demonstrate how small-scale, targeted law reform can be utilized to find levers within existing legislative frameworks to remove some of the barriers to implementing ecological restoration.

Key words: ecological restoration, law, legal frameworks, legislation, marine and coastal restoration

Implications for Practice

- Legal frameworks and legislation can be a barrier to, or enabler of, ecological restoration.
- Law reform is being explored globally as a way to enable the upscaling of restoration.
- Large-scale law reform may not be feasible in all jurisdictions, but existing legal frameworks may have mechanisms or tools that can be used to remove some barriers to restoration.

Introduction

The importance of ecological restoration is now firmly embedded in international legal frameworks. The declaration of the United Nations Decade on Restoration (UN General Assembly 2019) placed restoration at the forefront of international discussions, and the Kunming–Montreal Global Biodiversity Framework saw almost 200 countries agree to have at least 30% of degraded ecosystems under effective restoration by 2030 (Convention on Biological Diversity 2022).

The need for restoration is particularly acute in the marine and coastal context. Marine and coastal ecosystems, including salt marsh, mangroves, oyster reefs, and seagrass, provide essential services such as water filtration, carbon sequestration, shoreline protection, and fisheries habitat, which in turn is critical for food security (Barbier et al. 2011; Costanza et al. 2014; Richardson et al. 2022). Despite this importance, the value of coastal and marine ecosystems has been historically overlooked by society, resulting in the global loss of up to 50% of coastal wetlands during the 20th century (Friess et al. 2019) and 85% of oyster reefs (Hemraj et al. 2022). Although their value is now better understood, coastal ecosystems continue to be threatened by

unsustainable human activities, including fishing, aquaculture, clearing, development, pollution, and climate change (Halpern et al. 2008; Gedan et al. 2009; Friess et al. 2020). Large-scale restoration can help remedy historic and ongoing loss and includes a wide spectrum of activities such as mangrove and seagrass planting, removing physical structures like tidal gates to restore tidal flow and allow the natural landward migration of wetlands, improvement of water quality upstream, and the construction of oyster reefs using biodegradable mesh and reused oyster shells.

Unfortunately, marine and coastal restoration progress has been hampered by a number of factors, including legal and policy barriers (Foster & Bell-James 2024). One major impediment to restoration progress has been the presence of legislation that requires restoration proponents to obtain numerous permits and other approvals prior to commencing work, most of which was developed to regulate harmful development rather than restorative interventions, and some of which is consequently

Author contributions: JB-J conceived the initial idea and led the writing; JB-J, PM, NS, AW undertook research and analysis, contributed to the text, and edited the text.

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doi: 10.1111/rec.70147

barely relevant to the proposed activity. Environmental legal frameworks are largely underpinned by a protection-based paradigm, which presumes a starting point of preserving the status quo (McCormack 2018). While protection-based frameworks are critically important to protecting ecosystems from harmful development and fully assessing the impacts of potentially harmful actions, they also classify any interference with ecosystems—even a positive one—as a type of “development” that requires close scrutiny and approval (Foster & Bell-James 2024). These frameworks have been recognized as a barrier to restoration in the United States (Craton 2022), Europe (Cortina-Segarra et al. 2021), South-East Asia (Razak et al. 2022), and Australia (Shumway et al. 2021; Bell-James et al. 2023b). Permitting frameworks in Australia have been examined in detail, and have been criticized by restoration practitioners as being time-consuming, expensive, and not fit-for-purpose, as they need to apply for the same types of permits as developers of hard infrastructure (Bell-James et al. 2023b). More fundamentally, permitting frameworks may hamper progress to the scaling-up of marine and coastal restoration, as some practitioners have reported scaling down their projects to make it easier to get permits, because some permits are only needed once projects reach a certain size or scale (Bell-James et al. 2023b). This has led to calls for reform (Bell-James et al. 2023b, 2024). While most stakeholders agree that some degree of government scrutiny is required to ensure restoration projects are of a high standard, this scrutiny should occur through a fit-for-purpose legal framework designed for restoration (Bell-James et al. 2023b; Saunders et al. 2024).

Restoration law reform is certainly not without precedent, with high-profile examples like the European Nature Restoration Law leading the way. However, while examples like the European Nature Restoration Law demonstrate the potential for large-scale legislative reform to support, encourage, and enable the upscaling of restoration, this scale of change unfortunately will not be feasible everywhere, at least in the short term. A recent empirical study conducted in Australia involved interviews with members of the wetland protection and restoration community and found that large-scale law reform is unlikely to receive political traction in Australia and instead recommended that reform efforts focus on targeted, small-scale changes to make modest improvements within existing processes (Bell-James et al. 2023a). Indeed, a recent attempt to make modest reforms to Australia’s national environmental laws in 2024 failed to pass both Houses of Parliament (Bell-James et al. 2025), so large-scale changes are highly unlikely in the near term.

While large-scale law reform remains the gold standard, it is currently aspirational. An important question then is what type of small-scale improvements can be made within an existing legislative framework to facilitate marine and coastal restoration in the near term. While this question is necessarily jurisdiction-specific, here we sought to analyze how targeted, small-scale law reform can be used in Australia. We focused on existing, protection-focused legislative frameworks for marine and coastal restoration, and analyzed them in depth to understand the permits required for marine and coastal restoration, and to identify opportunities within these frameworks for reform. Although much of our analysis is specific to Australian

legislative frameworks, we make general recommendations that will be of utility to any countries grappling with permitting complexity, but unable to achieve the necessary political traction for large-scale law reform.

Methods

As most permits in Australia are granted at the state (i.e. sub-national) level, any analysis must involve consideration of these state legislative frameworks. We therefore had to determine which state/s to focus on, and which restoration project types to consider (as the permitting requirements differ among habitats and project types). We chose to focus on four case study states: Queensland (Qld), New South Wales (NSW), South Australia (SA), and Tasmania (TAS). These states were chosen to ensure a diversity of geographic, economic, and population conditions from which to select examples. That is, our case study jurisdictions include the tropical and sub-tropical coasts and waters of Qld, through to the temperate coasts and waters of TAS; and the more densely populated and wealthy states of Qld and NSW, as well as the more sparsely populated and less wealthy states of SA and TAS. Each state in this study also has recent experience in the implementation of marine and coastal restoration projects.

We also chose to focus on two particular types of restorative interventions: reintroduction of tidal flow, and oyster reef restoration. These two project types are receiving the most attention in Australia at present, due to the introduction of a carbon methodology for reintroduction of tidal flow projects (Lovelock et al. 2023; Bell-James 2023b), and considerable government funding initiatives aimed at rebuilding lost shellfish reefs (McAfee et al. 2022). Furthermore, these two project types occur in different parts of the land—and seascape (the intertidal zone, and open water, respectively), which we hypothesized may lead to different legal arrangements and barriers to implementation.

We first consulted with restoration scientists to understand the particular interventions that may be involved with each of the restoration project types, which facilitated our mapping of the relevant legislative requirements. This is important as restoring an ecosystem may involve a variety of different interventions, depending on the approaches chosen. For example, oyster reef restoration may involve taking oyster spat, cleaning reused oyster shell, and then placing structures filled with these shells onto the seafloor. Alternatively, it may involve more novel techniques, such as the placement of boulders on the seabed to provide hard substrate for the reef, and playing soundscapes to attract oyster larvae drifting in the ocean water to settle on the rocks—a technique which studies have shown provides an important navigational cue for oysters (McAfee et al. 2023). The reintroduction of tidal flows may involve the demolition or partial demolition of bunds or seawalls, and/or the construction of drains or culverts under private or public roads, to restore tidal flows (Lovelock et al. 2023).

Once we understood the specific steps involved with these restoration project types, we performed a desktop analysis of all relevant legal instruments (including legislation made by Parliament, other legislative instruments made under the

authority of law, and non-statutory policy made to guide decision-making) to understand the permits that may be needed for each project type (oyster reef or reintroduction of tidal flow). We also noted where additional permits may be required depending on the project's location or the material used. For example, different legislative triggers might apply depending on where and how oyster reefs are constructed (e.g. inside a protected area, or on a shallow intertidal area or in deeper marine waters), whether oyster shells or boulders are used as substrate for marine reefs, and how oyster larvae or juvenile oysters are sourced and settled on substrate (Bell-James et al. 2024). Based on our findings, we grouped permitting requirements into several categories: land use planning, land access, and other impacts (e.g. related to vegetation clearing or heritage protection).

After completing a desktop analysis of the legislation, we performed targeted interviews with government representatives from each state (Qld, NSW, SA, and TAS) (authorized by the University of Queensland's Business, Economics and Law Low to Negligible Risk subcommittee approval 2023/HE000168 and the University of Adelaide's Human Research Ethics Committee, approval H-2021-140). This was done to confirm our interpretation of legislative permitting requirements, clarify any areas of ambiguity, and fill in any additional knowledge gaps. This was particularly critical as no state has an explicit permitting pathway for restoration, so government agencies need to make a subjective assessment of what legislative requirements apply (Bell-James et al. 2023b).

Once the legislative analysis was completed and had been clarified and confirmed with relevant government representatives, the information was classified into a "traffic light" system to aid in understanding and comparing legislative regimes across states. Each permitting requirement was categorized as "red light," "orange light," or "green light" based on the permit requirements; red meant a permit was required (that is, indicating a "stop" on activities without the necessary approval), orange meant a permit may be required depending on the circumstances (e.g. if a particular threshold was exceeded), and green meant a permit was not required (that is, indicating "go" on that aspect of the restoration project) as long as the restoration activity was compliant with a relevant code or statutory duty (Figs. 1–8). This traffic light system allowed us to compare permit requirements for each restoration activity between projects and jurisdictions. We do not suggest that a low permitting burden—more green than red—is necessarily desirable. Rather, in highlighting where, how, and for what purpose activities may need assessment and approval, the traffic light system can reveal regulatory overlaps, gaps, and confusion that are unlikely to support rapid upscaling of restoration effort consistent with global priorities (Convention on Biological Diversity 2022).

This detailed legislative and case-based analysis allowed us to identify barriers and opportunities within each jurisdiction to facilitate the two focal restoration activities (tidal flow reintroduction and oyster reef restoration). This approach also allowed us to compare the arrangements across the jurisdictions and highlight examples of restoration activities being streamlined and supported or—more commonly—where similar barriers

need to be addressed through minor and sometimes major legislative and policy reform.

Results

Reintroduction of Tidal Flow

In Qld (Fig. 1) we identified 18 different legislative processes that may be enlivened in the reintroduction of tidal flow approval process. This includes a variety of local, state and federal government planning permits, land access requirements including possible landholder consent and native title-holder consent, and potential approvals related to impacts on biodiversity, water, roads, marine parks, fish habitat, cultural heritage, and acid sulfate soils. Proponents may need to engage with six different state government agencies, two federal government agencies, as well as with local governments, private landholders, and native title-holders. Most of these legislative processes require proponents to apply for a permit (either red or orange light), but there are some "green light" codes: for example, a proponent does not need to apply for a permit to interfere with marine plants, provided their project is restoration work delivering a net benefit to marine plant communities, and they are carrying out their project in accordance with an approved plan.

In NSW (Fig. 2) we identified 20 legislative requirements that may be activated in the reintroduction of tidal flow approval process. Similarly to Qld, this includes local, state, and federal government planning permits, land access requirements including possible landholder consent and native title-holder consent, and potential approvals related to impacts on protected species, marine vegetation, water, roads, marine parks, cultural heritage, and acid sulfate soils. Restoration proponents would potentially need to engage with 15 different legislative instruments across six different state government agencies, two federal government agencies, local governments, private landowners, and any native title-holders. In NSW, all of these legislative processes required proponents to apply for a permit (16 orange light, one red light).

The South Australian approach (Fig. 3) was broadly similar, with at least 14 different legislative requirements that may apply to the approval of tidal flow projects. Like other states, these include a variety of state and federal government permits, land access requirements including possible landholder consent and native title-holder consent, and approvals related to impacts on biodiversity, water resources, roads, marine parks and other aquatic habitats, Aboriginal and post-colonial cultural heritage, and acid sulfate soils. Proponents may need to engage with at least six different state government agencies, two federal government agencies, as well as with local government, private landholders, native title-holders, and Traditional Owners under the *Aboriginal Heritage Act 1988* (SA). Further, within certain departments, such as the SA Department of Environment and Water, different sections have responsibility for different permits, for example, the Coast Protection Board, the Native Vegetation Council, and the SA Heritage Council. Depending on the land tenure, proponents may also need to engage with government departments that administer authorizations under other Acts, such as the *Mining Act 1971* (SA). Most of the legislative

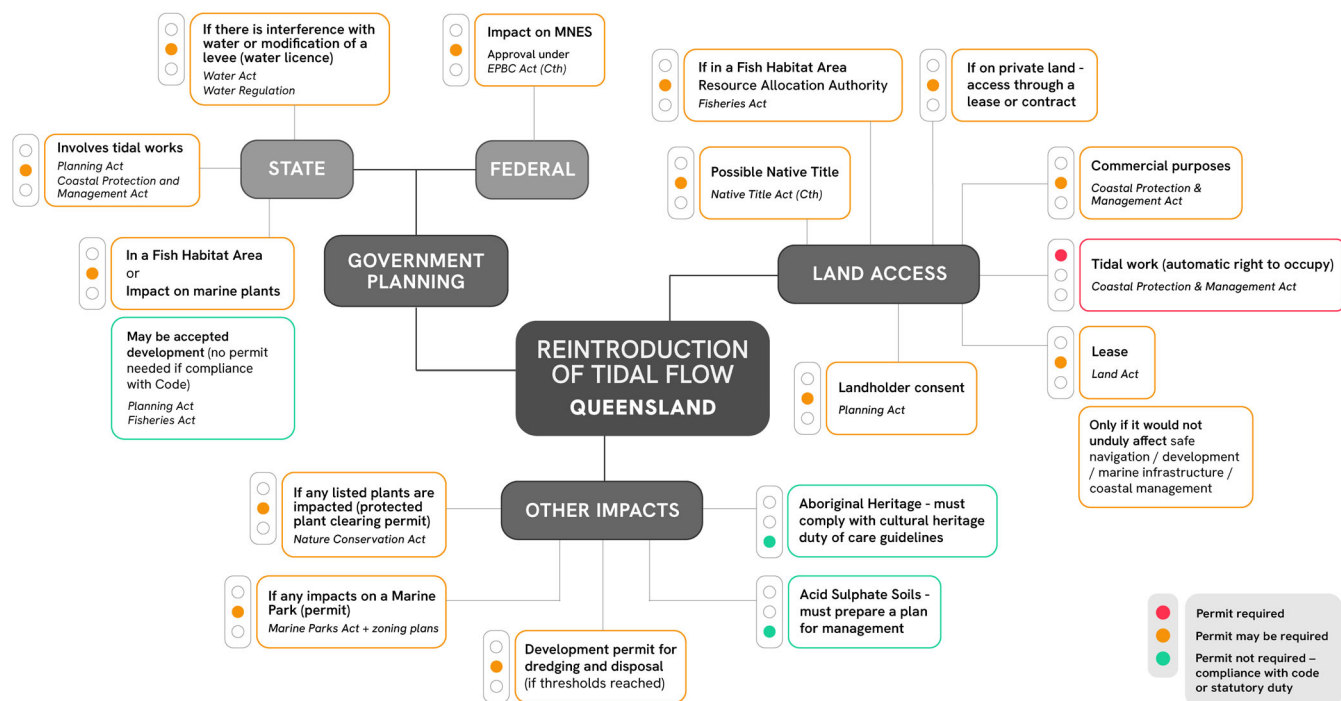


Figure 1. Legislative frameworks for reintroduction of tidal flow projects in Queensland. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”). EPBC Act, Environment Protection and Biodiversity Conservation Act 1999 (Cth).

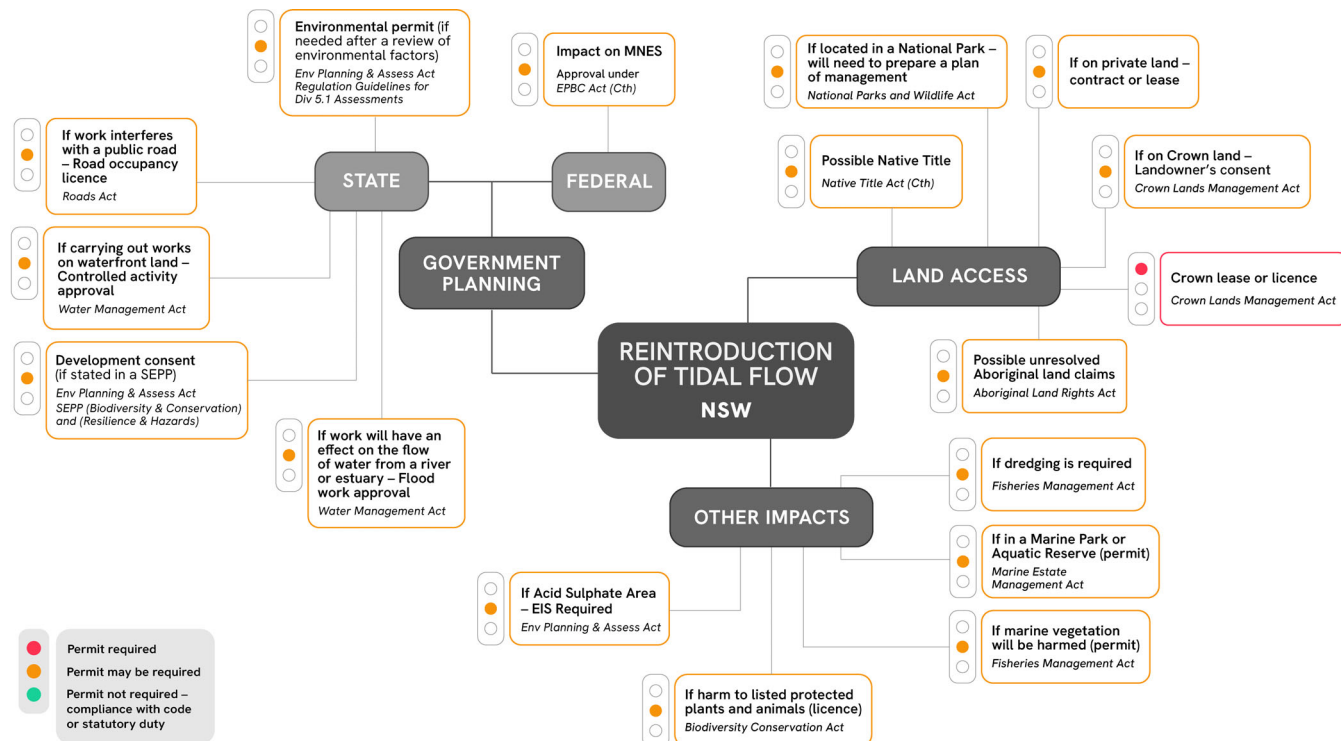


Figure 2. Legislative frameworks for reintroduction of tidal flow projects in New South Wales. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”). “EIS” refers to an Environmental Impact Statement.

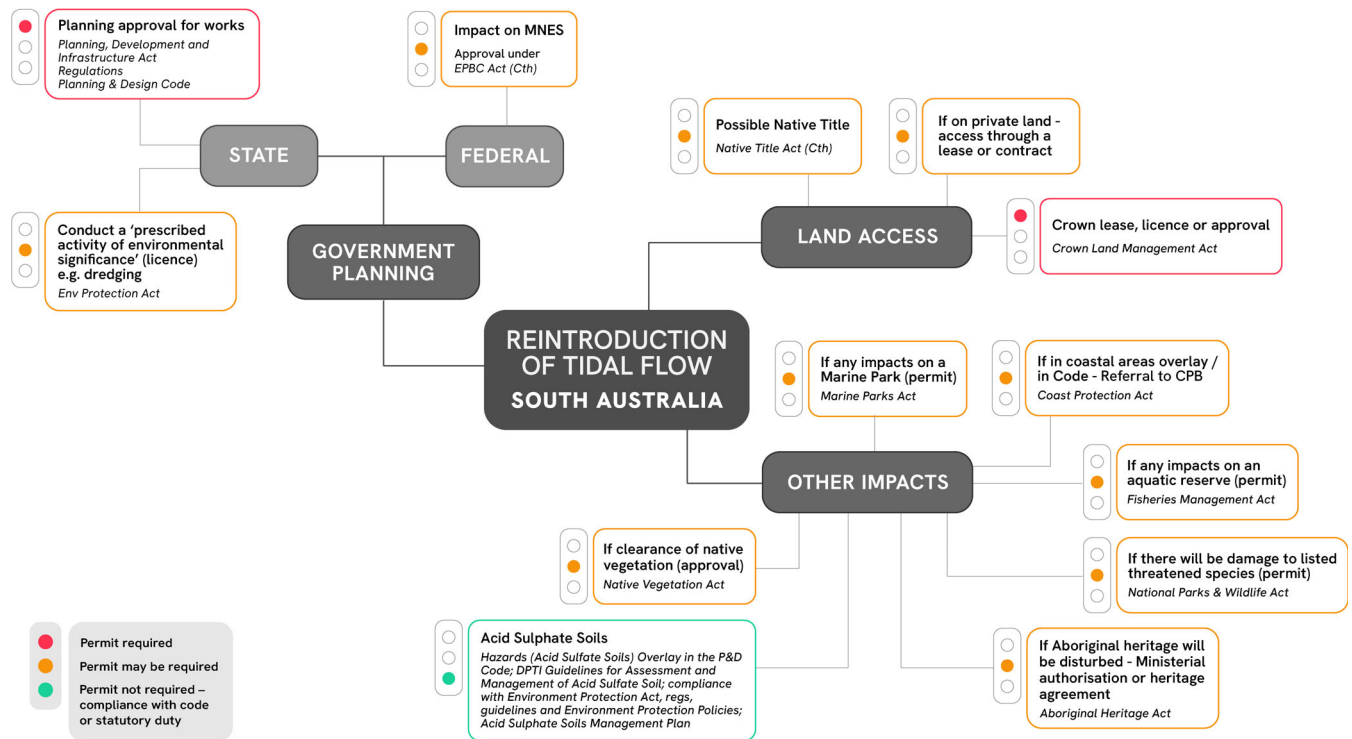


Figure 3. Legislative frameworks for reintroduction of tidal flow projects in South Australia. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”). “CPB” refers to the Coast Protection Board and

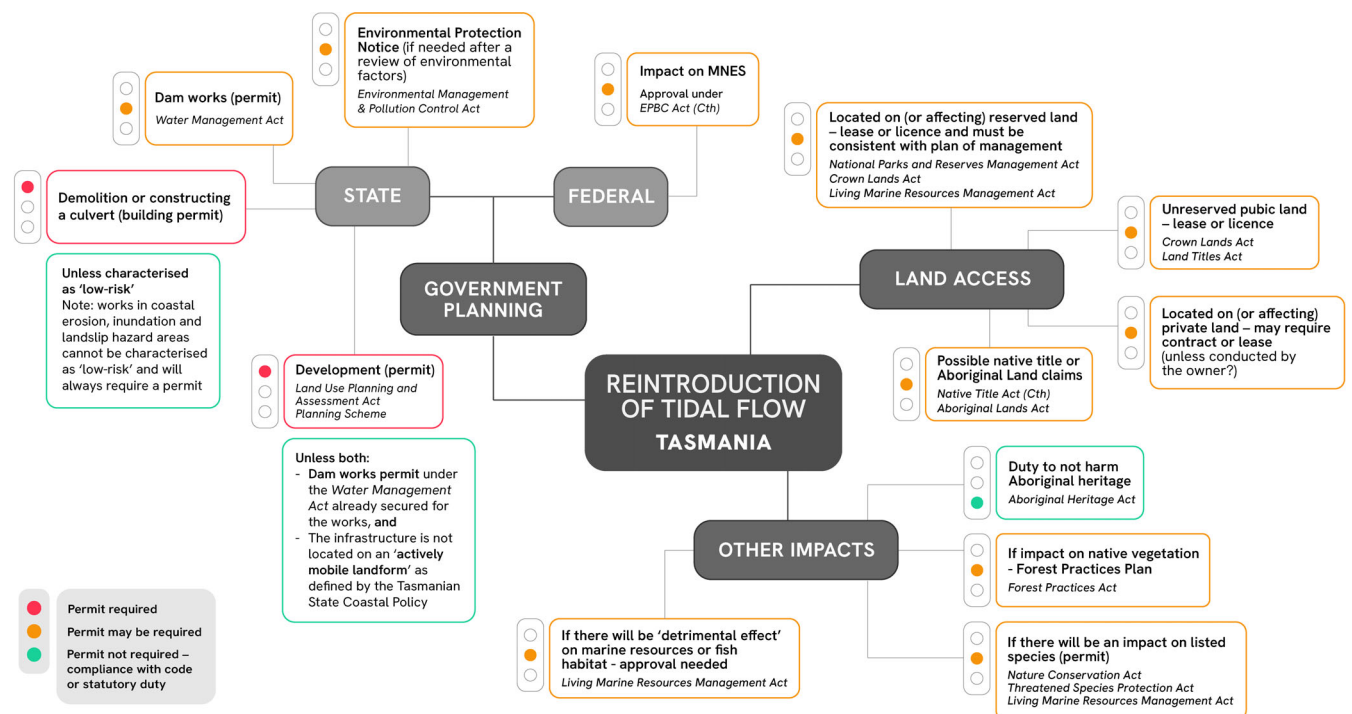


Figure 4. Legislative frameworks for reintroduction of tidal flow projects in Tasmania. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”).

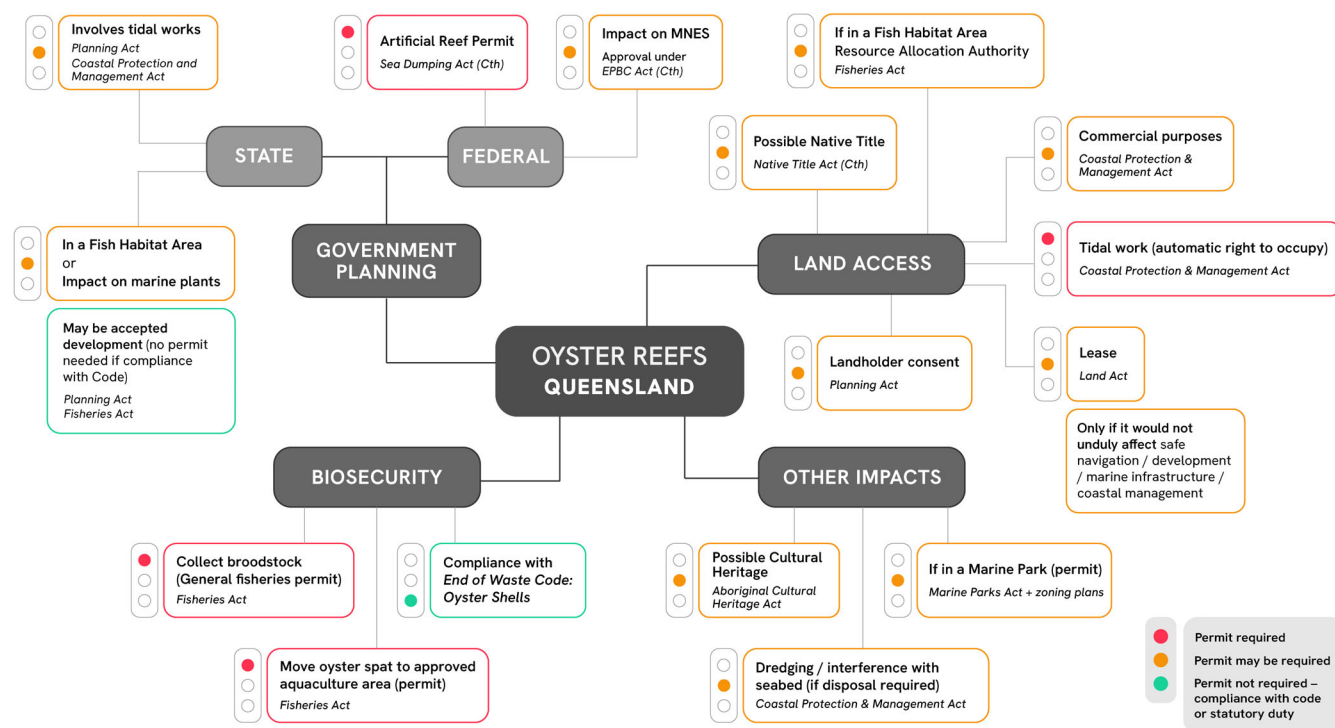


Figure 5. Legislative frameworks for oyster reef restoration projects in Queensland. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”).

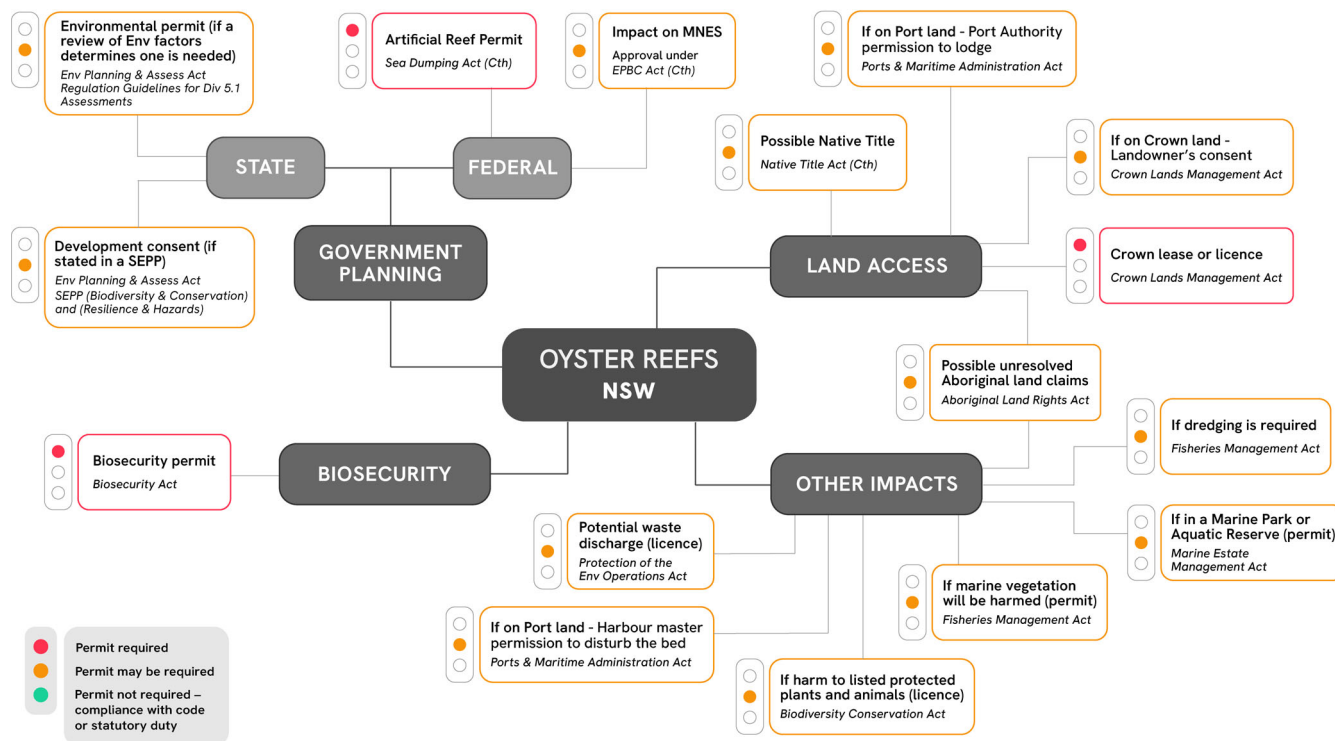


Figure 6. Legislative frameworks for oyster reef restoration projects in New South Wales. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”).

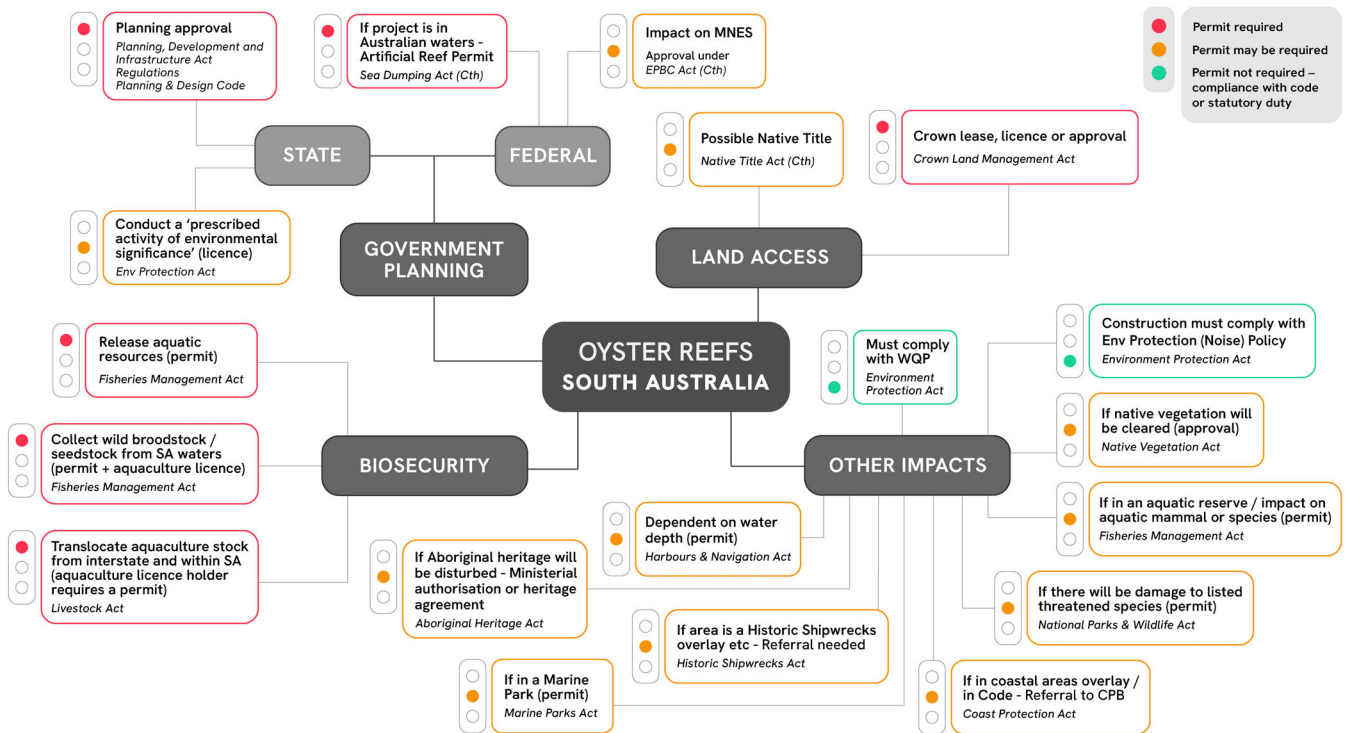


Figure 7. Legislative frameworks for oyster reef restoration projects in South Australia. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”). “WQP” refers to Water Quality Policy.

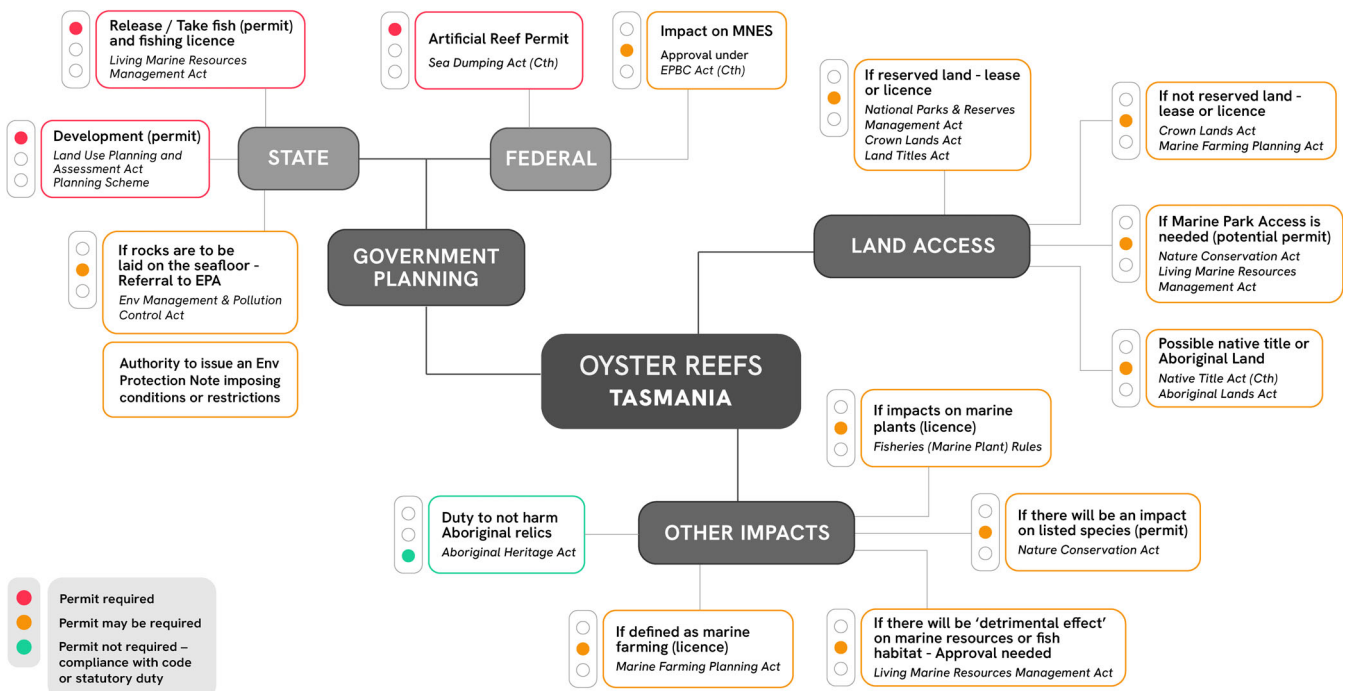


Figure 8. Legislative frameworks for oyster reef restoration projects in Tasmania. Note that a federal permit may be needed if an activity is likely to impact on a matter of national environmental significance (“MNES”).

processes in SA require proponents to apply for a permit, although two Acts are a “green light” in that they require compliance with a general duty and the Act, but do not require any authorization to be sought.

Finally, in TAS (Fig. 4), we identified 13 legislative requirements for tidal flow reintroduction projects under 26 separate legal instruments (legislation, regulations, and statutory rules) across federal, state, and local jurisdictions. These requirements include similar obligations to other states in relation to state and federal planning obligations, for both demolition and building works; land access obligations relating to native title-holders, Crown Land, private landholders and reserved land; and other potential impacts, including on cultural heritage, fish habitat and marine resources, native vegetation such as salt marshes, and listed, protected species. Unlike other states, there is no standalone instrument governing acid sulfate soils (the issue is captured instead by the requirement for an Environmental Protection Notice). There are three requirements for which a proponent may not need to secure a permit (green light). These include for low-risk building activities, and activities that comply with certain guidelines and standards produced by Aboriginal Heritage Tasmania. Uniquely, securing a development permit in TAS may also be a green light activity, provided that a dam works permit is in place and the proposed activity is not located on an “actively mobile landform,” as defined by the Tasmanian State Coastal Policy (Tasmanian Government 1996, 2024).

Oyster Reef Restoration

In Qld (Fig. 5), there are 21 possible legislative requirements that may be enlivened for an oyster reef restoration project. Many of these are similar to those required for the reintroduction of tidal flow projects, including state and federal land use planning permits, land access requirements, and permits for any impacts on cultural heritage and marine parks. The nature of oyster reef restoration means that biosecurity legislation may also be triggered, as oyster reefs are constructed using remnant oyster shells, which are bundled in baskets and placed on the seafloor. Like the reintroduction of tidal flow requirements, most of these are red or orange light requirements (i.e. permit required), but biosecurity requirements are set out in a self-assessment code (green light): that is, a proponent does not need to apply for a permit, provided that they comply with requirements specified in a code. We also found a similar range of government agencies involved (compared to reintroduction of tidal flow in Qld).

In NSW (Fig. 6), we identified 17 legislative pathways that may be required in the oyster reef restoration approval process, also including land use planning and land access requirements, as well as potential approvals related to impacts on protected species, marine vegetation, marine parks, ports, and cultural heritage. Similarly to Qld, there are additional regulations relating to biosecurity in NSW for the development of oyster reefs. Oyster restoration proponents would potentially need to engage with 15 different Acts or Regulations across seven different state government agencies, two federal government agencies, local

governments, any native title-holders, or relevant Harbor Masters. In NSW, all of these legislative processes required proponents to apply for a permit (13 orange light, three red light; Fig. 6).

In SA (Fig. 7), at least 19 different legislative requirements may apply to an oyster reef restoration project. Many of these are similar to those required for reintroduction of tidal flow projects, including state and federal land use planning permits, land access requirements, permits for impacts on marine parks, aquatic reserves, native vegetation, protected species, and cultural heritage, and in addition, biosecurity requirements. Most of these are red or orange light requirements (i.e. a permit is required). However, impacts on noise and water quality may not require an authorization but must comply with a general environmental duty in the *Environment Protection Act 1993* (SA) and the relevant Environmental Policy. We also found a similar range of government agencies involved.

In TAS (Fig. 8), we identified 15 legislative requirements for oyster reef restoration projects, only one of which was designated a green light activity. This requirement is that in TAS, the duty not to harm Aboriginal heritage may not require a permit if the activity is completed in compliance with Aboriginal Heritage Tasmania’s guidelines and standards. As in other states, the requirements are similar to those for tidal reef reintroduction, with the exception of a potential obligation to obtain a permit to take/release fish and secure a fishing license.

Discussion

Observations on Marine and Coastal Restoration Frameworks in Australia

We reviewed the permitting requirements for two different types of marine and coastal restoration projects (reintroduction of tidal flow, and oyster reef restoration) across four Australian states. This legislative review as discussed above showed that there is a broadly similar approach employed across Australian states, and across different restoration project types. In particular, in each jurisdiction there exists a complex array of legislative and policy instruments which may trigger requirements for proponents to obtain permits. Most legislative requirements fell within our “orange light” classification, meaning that a permit is only required if a particular threshold is reached, or a prescribed circumstance exists (e.g. if the site is in a marine park, or if the project has the potential to harm cultural heritage). Therefore, proponents may need to make a judgment call as to whether a particular permit will be needed based on their individual circumstances.

Although we noticed that there were some differences across the jurisdictions surveyed, each state had a broadly similar legislative framework, with permit requirements extant in planning legislation, fisheries legislation, cultural and natural heritage legislation, and other environmental legislation, as well as land access requirements and biosecurity requirements (for oyster reefs). There is currently no state that has a specific and dedicated legal framework in place to facilitate any type of coastal or marine restoration activity, although we did find some small

amendments had been made in some specific legislative instruments (e.g. in Qld there have been some amendments to fisheries codes to streamline some restoration activities and allow them to proceed without a permit). In all jurisdictions there were multiple state government agencies required to grant permits (including agencies with responsibilities for the environment, resources, fisheries, transport, and roads, among others), as well as potential permits needed from federal government agencies and from local governments.

We found that the interpretation and application of some legislation was ambiguous. As very little of the legislation surveyed specifically refers to “restoration,” this means that both restoration practitioners and government decision-makers must make a judgment call about whether a particular permit might be required. For example, in Qld, a permit is required under the *Water Act 2000* (Qld) to modify a “levee.” It is not clear from the legislative definition whether a bund wall would constitute a “levee,” and it may be open to interpretation by both the proponent and government agency. This lack of clarity has led to disconnects between the laws as drafted, and internal government decisions implementing those laws. For example, an empirical study with restoration practitioners noted that there might be a legal entitlement to apply for permission to disturb acid sulfate soils, but a local government has internally decided not to grant any permits of this type (Bell-James et al. 2023b). Similarly, legislation may indicate that a host of different permits will be required for a restoration activity but, in practice, a government agency may decide to incorporate many (but not all) of those obligations under a single approval process. Some restoration practitioners have expressed frustration about receiving two entirely different sets of permitting requirements for similar projects (Bell-James et al. 2023b).

Fundamentally, a major issue with all the legislative frameworks we examined is that they were not designed for restoration activities. In Australia, like in many parts of the world, environmental law is underpinned by a protection-focused paradigm, with an aim of protecting the environment from activities that have the potential to cause harm (Richardson 2018; McCormack 2020; Akhtar-Khavari & Telesetsky 2022; Foster & Bell-James 2024). Traditionally, environmental law has been forward-looking, using environmental impact assessment processes to predict likely harm that may result from proposed development and controlling it through refusing or conditioning development. The establishment of protected areas serves a similar purpose, through preventing future harm (Richardson 2016; Bell-James 2023a). The type of restoration we have contemplated in this article requires looking *backward* at historical losses of ecosystems and repairing this harm—a fundamental mismatch between the activity and the objectives of the relevant legislative frameworks. This leads to a perverse situation where interventions designed to repair nature and reinstate lost ecosystems and ecosystem services are absorbed into a legal framework that essentially starts from the position that harm to the natural environment is likely, and the harm must be mitigated or minimized. Indeed, in an empirical study of Australian restoration practitioners, this was noted as a major concern—that their proposed interventions are treated no differently from

harmful developments (Bell-James et al. 2023b). However, given the enormous volume of legislation, legislative instruments, and policy that comprise this protection-focused regime, law reform may be challenging.

Searching for Small-Scale Reforms to Permitting Frameworks for Marine and Coastal Restoration in Australia

The results of our legislative analysis revealed a complex framework, with proponents required to navigate numerous legislative permitting requirements scattered across a range of government agencies. The complexity of these frameworks has led to calls for reform from the restoration community (Bell-James et al. 2023b).

When considering options to improve the current system, we suggest that there are three theoretical options available. The first is large-scale law reform, involving entirely new legislative frameworks. This would remove the oversight and permitting of restoration from current, protection-focused laws designed to prevent harm, and move them into a system that, while still providing scrutiny of projects, recognizes the benefits of restoration from the outset. Second, law reform could be smaller in scale, situated within the existing protection-focused framework. This would involve introducing or clarifying the operation of easily accessible “levers” within existing frameworks. That is, smaller-scale reforms could make minor changes to permitting frameworks, possibly through non-statutory policy. Finally, a third, non-reform option, is to improve the clarity about how existing frameworks operate, simply by progressing work that is already underway on guides, government-supported “explainers,” and published case studies of how to navigate permitting frameworks. This third option provides a way of informing and guiding proponents and can also demonstrate government support for these kinds of restoration projects (Government of New South Wales MEMA 2021; Bell-James et al. 2024; Wawryk et al. 2024).

Large-scale law reform has occurred in some countries, and a number of jurisdictions now have dedicated restoration law. For example, the European Union’s Nature Restoration Law (EU Regulation 2024/1991) and Japan’s 2002 Act for the Promotion of Nature Restoration, which, among other things, introduced a mechanism to bring together government agencies to make decisions about restoration projects (Hamman 2019). There are also examples of restoration law reform at the sub-national level. A good example is California’s *Habitat Restoration and Enhancement Act*, which introduced an expedited, single permit for restoration activities to replace several other permit requirements (Grenier et al. 2021).

Restoration-specific law is an aspirational goal, as it allows for restoration projects to be assessed for what they are—that is, initiatives that aim to reinstate ecological values that have been lost. This would be a major improvement on current permitting frameworks that view restoration projects through the lens of development and protection of harm. However, achieving the requisite political support to pass these laws may be challenging—this was certainly the case with the EU Nature Restoration Law (Cliquet et al. 2024). As noted above, members

of the restoration community have expressed a view that large-scale law reform, while being ideal, would be politically complex in Australia. This is due to the large number of legislative regimes in place, the number of government agencies involved, and the degree to which these protection-focused regimes and institutions are already entrenched (Bell-James et al. 2023a). Given the urgent need for restoration, it may be more feasible to search for smaller and more targeted opportunities for law reform to remove at least some of the hurdles to restoration—potentially as a short-term solution, with large-scale law reform remaining as a highly aspirational, long-term goal. Three examples—one each from Queensland, SA, and TAS—are set out below to demonstrate the diversity of challenges and opportunities arising across the case study areas.

In Qld, reform has centered around the use of “accepted development” codes. Under Queensland’s *Planning Act 2016* (Qld), certain types of development can be categorized as “accepted development,” which means that development approval is not required (section 44), provided that the developer complies with a list of requirements set out in a document called an accepted development “code.” These codes are made by government regulations, which can be made by the executive and do not require Parliamentary approval. This approach has already been used in Qld to replace one type of permit, which is a permit to disturb marine plants. The relevant code provides that if a proposed project involves restoration work that will have a net benefit to marine plants, then the proponent can undertake works to remove, destroy or damage marine plants, in accordance with a plan (Queensland Government Department of Agriculture and Fisheries 2017). This essentially contemplates situations where a proponent might need to disturb some marine plants in delivering a restoration project (e.g. when demolishing a bund wall), but with the intention that the project will deliver a net benefit for marine plants once it is complete. In recognition of the increasing interest in reintroduction of tidal flow projects, the Qld government has also recently drafted an accepted development code for waterway barrier works—another permit that is presently required to undertake a project of this type (Queensland Government Department of Agriculture and Fisheries 2024). This draft code has been advertised for public consultation and is under consideration by the Qld government. While this example is clearly unique to the Qld context, it demonstrates a creative example that can be implemented within the statutory framework, and that does not require the passage of new legislation. While the nomenclature may differ in other jurisdictions, there may well be various executive instruments that can be made under existing legislation to remove or simplify permitting requirements.

Interestingly—and in contrast to the introduction of accepted development codes for the clearance of marine plants in Qld to remove the need for a permit—SA provides an example of small-scale reform that could be achieved through the *addition* of another permit. In this jurisdiction, under the *Environment Protection Act 1993* (SA) (“EP Act”), it is a criminal offense to cause an environmental nuisance, or material environmental harm, or serious environmental harm by polluting the environment, without the necessary authorization. Also, the Act

establishes an “environmental duty” not to cause undue environmental harm by undertaking an activity that pollutes, or might pollute, the environment. It is not a criminal offense to breach the environmental duty, but breaching the duty may form the basis for the Environmental Protection Agency (EPA) to issue an administrative order such as an Environment Protection Order requiring the proponent to cease polluting activities, or may be the basis for a civil remedy such as an injunction or a civil penalty.

Securing an approval under the EP Act from the South Australian Environment Protection Authority (“EPA”) could mitigate the risk of enforcement action, provide comfort to a restoration proponent about their compliance with the EP Act, and enable the EPA to provide guidance about avoiding environmental harm during a restoration project. However, at present, that approval is not required for restoration activities. The EP Act provides that a person who undertakes activities consistently with an authorization under the Act (a license—to conduct a “Prescribed Activity of Environmental Significance (PAES)” or works approval for building works associated with a PAES) will not breach the environmental duty or commit a criminal offense by causing environmental harm. However, depositing material for reef substrate such as concrete, limestone blocks or oyster shells on the seabed does not fall within the definition of a PAES in the EP Act. Therefore, despite the potential negative environmental impacts, works approval and a license are not required to undertake those activities. A reef restoration project may therefore proceed without a license or works approval, but the reef restoration practitioner must ensure they undertake the project in a way that means they do not breach the general environmental duty in s 25 of the EP Act, or commit a criminal offense, by polluting the environment and causing “environmental harm.”

The South Australian Government has implemented a non-statutory measure—focusing on guidance for proponents—to mitigate the uncertainty that this regulatory arrangement creates. Through SA’s Blue Infrastructure Working Group, the EPA provides governance advice to ensure oyster reef restoration projects will meet the objects of the Act and not cause environmental harm by polluting the environment. Although this “advice” is not legally binding, in practice, project proponents are unlikely to receive approvals required under other legislation (such as planning consent under the *Planning, Development and Infrastructure Act 2016* [SA]) if they do not adhere to it, as they will then be at risk of breaching the EP Act.

This advice-based approach has the advantage of flexibility, but it is still uncertain. To resolve that uncertainty, the EP Act could be amended to list oyster reef restoration projects in the marine environment as a PAES, so that projects would be referred to the EPA. The Authority would then be empowered to issue regulatory guidelines to provide clear information on the type of projects, methods, and materials that the EPA considers would lead to compliance with the EP Act. Providing this clarity and certainty to restoration practitioners could better enable large-scale marine reef restoration projects to proceed while protecting the environment from harm. Given that many criticisms of permitting frameworks have centered around the

large number of permits required (Bell-James et al. 2023b) it may be surprising that this suggested solution involves *adding* a permit, but this underscores the importance of considering the unique circumstances of every jurisdiction and the particular set of legal instruments and tools available.

A similar intersection between flexibility and uncertainty exists in TAS. In that State, the legislative arrangements for oyster reef restoration appear to require up to 15 permits or approvals, but research participants identified that many fewer approvals will likely be required in practice—perhaps as few as two or three—either because of the specific characteristics of a project (i.e. no nationally listed, protected species affected) or because an overarching approval process, such as the state government's Environmental Protection Notice, can refer the application to other relevant agencies and consolidate many different permit conditions in a single approval. While a small number of approvals is clearly preferable, the difference between the law “on paper” and its practical implementation means that the frameworks risk being applied in unpredictable and inconsistent ways. Formalizing the referral approach that is being used in practice offers a valuable opportunity to improve the predictability of the regime while dramatically streamlining the otherwise burdensome range of required approvals.

In the absence of large-scale and small-scale statutory reform, developing guidelines and using existing streamlining opportunities, such as those described above, offer an important third form of intervention to facilitate restoration. Agency guidelines, streamlined access to permitting processes, and even published case studies of successful restoration projects and the process that was followed are reasonably low-effort, low-resource, and downscaled (that is, jurisdiction and agency-specific) interventions that may nevertheless achieve meaningful results in facilitating coastal and marine restoration. For example, an accepted development code or prescribed activity category could go a long way to addressing key challenges for oyster reef restoration in the state of TAS, where our research identified some confusion about agency responsibility for issuing permits for constructing reefs on the seabed, which is designated as Crown land. A specific delegated legal instrument could clarify agency responsibilities and environmental protection standards, among other things, improving the governing arrangements for both clarity and predictability, and to achieve the important environmental benefits that global restoration priorities demand (e.g. Global Biodiversity Framework, Convention on Biological Diversity 2022; and the United Nations Decade of Restoration). Finally, resources such as the figures produced in this article and an associated summary of permitting requirements (Bell-James et al. 2024) can also be disseminated among proponents to give them more information on permitting regimes.

Small-Scale Reform to Restoration Permitting Processes—General Principles

The examples discussed above are necessarily quite specific to their individual statutory contexts, and therefore not directly transferable to other jurisdictions contemplating reform of a

similar scale. However, we can distill some general principles from this experience that may inform other jurisdictions.

We suggest that it is first necessary to map out current legal frameworks in detail to understand the permits currently required, and the legal frameworks that they operate within. Once this mapping is complete, it might become apparent where small changes can deliver high-value benefits; for example, by making some work types self-assessable or exempt from permitting, or through use of any other tools to streamline permitting that exist in a particular legislative framework. Although restoration practitioners in Australia have lamented the fact that they must engage with the development assessment process, this process also has some benefits. In particular, some states' permitting laws specifically contemplate the use of various policy mechanisms to “fast-track” particular types of development that are deemed desirable by the government of the day. This includes the possibility for codes (e.g. Qld's planning legislation allows for types of development to be made self-assessable through development of a code) and exemptions or streamlined assessment practices (e.g. TAS's EPA taking responsibility for multiple approvals) to be created to exempt particular types of development from assessment provided the code is followed. Although these mechanisms were developed for different purposes, it is being harnessed in the restoration context to facilitate restoration.

Finally, in the absence of large-scale or even small-scale legislative reform—or as a precursor to these reform pathways—we recommend that this mapping out of legislative frameworks is captured and made available as a resource to potential restoration proponents (Bell-James et al. 2024). While this will not solve some of the fundamental problems associated with working in a legislative framework designed to protect the environment from damaging development, it will streamline part of the process for potential restoration proponents by giving them detailed information on permits that may be required for their work type. Guidelines and case studies can help to demonstrate government support for restoration activities and illustrate the existence of practical “pathways through” what are otherwise complex statutory regimes. Articulating the full extent of existing legal instruments, and recording proponents' experience of these frameworks in operation, also mean that the problems and potential solutions are carefully mapped, which provides an opportunity to act quickly when an appropriate “policy window” for legal reform becomes available (Rose et al. 2020).

In summary, regulatory frameworks for permitting marine and coastal restoration are complex in many jurisdictions, including in Australia. This has led to calls for legal reform to streamline legislative frameworks in order to facilitate the rapid upscaling of restorative efforts needed to progress international and national goals (see e.g. Bell-James et al. 2023b).

While there are excellent examples of large-scale reform (e.g. the EU Nature Restoration Law), this scale of reform may not be feasible in all jurisdictions—at least in the short-term—especially in countries with a long history of deeply-entrenched, protection-focused environmental legislation in place. With 2030 looming (and the intended realization of the 30% restoration target in the Global Biodiversity Framework), it is not

feasible to hold out for large-scale law reform, and it may be more prudent to look for these opportunities to work within existing legal frameworks to find small opportunities for change—while keeping an eye out for an appropriate “policy window” to progress more ambitious legislative change.

To provide guidance for countries facing these challenges, we sought to analyze how targeted and smaller-scale law reform and synthesis of legislative information can be delivered within these systems, using Australia as an example. Small-scale permitting reform will look different in every jurisdiction, depending on their unique circumstances, and the results may be surprising depending on the unique legal context of a particular jurisdiction. For example, although reducing the number of permits required would usually be seen as a means of better enabling restoration projects to proceed, our analysis showed that in one example, reform could take the form of an additional permit, as this would provide necessary legal certainty to proponents of large-scale projects. We encourage other countries to similarly consider any opportunities within their existing framework to progress minor, but high-value changes.

Acknowledgments

This research was supported by the Australian Government under the National Environmental Science Program, Marine and Coastal Hub, Project 3.7. Open access publishing facilitated by The University of Queensland, as part of the Wiley - The University of Queensland agreement via the Council of Australian University Librarians.

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Guest Coordinating Editor: Alexandra Aragão

Received: 14 December, 2024; First decision: 10 April, 2025; Revised: 5 July, 2025; Accepted: 6 July, 2025