# Statement of Evidence to the Parliamentary Standing Committee on Public Works

## Great Barrier Reef Marine Park Authority: Douglas Shoal Environmental Remediation

# Table of Contents

# Introduction

1. The Great Barrier Reef Marine Park Authority (Reef Authority) is the lead agency responsible for managing the Great Barrier Reef Marine Park.

2. This submission by the Reef Authority provides evidence to the Parliamentary Standing Committee on Public Works (PWC) on the proposed environmental remediation of Douglas Shoal following a ship grounding incident.

3. The Reef Authority is seeking approval for the expenditure of $19.4 million for the removal and management of loose rubble and contaminants required for the environmental remediation of Douglas Shoal.

4. These proposed remediation works in the Great Barrier Reef will repair critical marine habitat damaged by a ship grounding, clean-up contaminants, and demonstrate Australia's commitment to holding to account those who damage our environment.

5. The Douglas Shoal Environmental Remediation Project is one of the most ambitious and large-scale coral reef clean-ups ever undertaken globally. There are no known precedents for such remediation. Significant planning and underwater surveys have been required to progress the remediation.

# Background

6. Douglas Shoal is located in the Great Barrier Reef Marine Park, approximately 90 kilometres north-east of Gladstone and 45 kilometres north-west of Heron Island (see Figure 1 below).

7. Douglas Shoal is within the sea country of the Bailai, Gurang, Gooreng Gooreng, and Taribelang Bunda Peoples (collectively known as the Port Curtis Coral Coast, or PCCC Peoples).

8. Douglas Shoal is wholly submerged being 10 to 15m below the water (at Mean Low Water). The shoal is elongated east–west and the western section of the shoal rises about 45m from the mid-shelf seafloor to the relatively low relief reefal-shoal top.

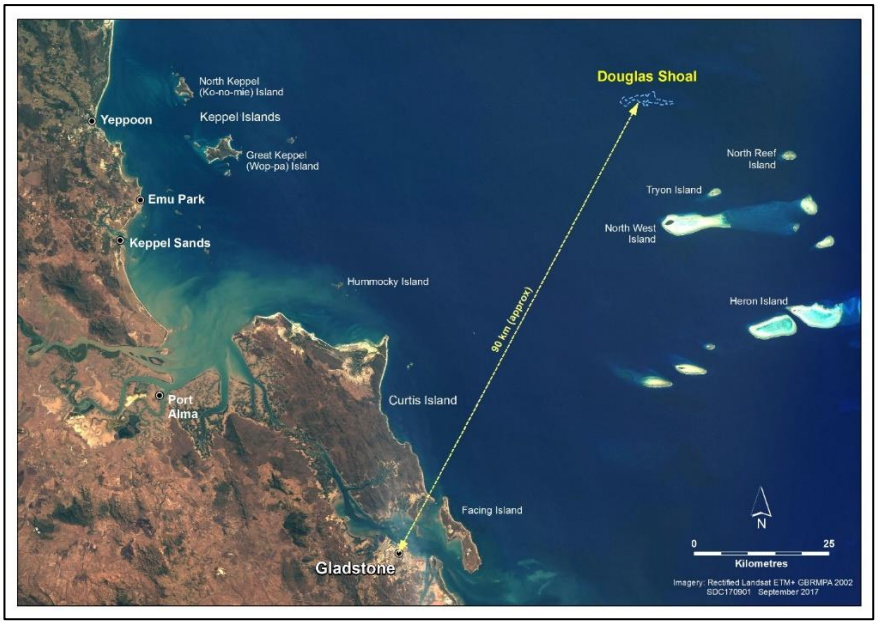


***Figure 1: Location map of Douglas Shoal***

9. In April 2010 the ship *Shen Neng 1* departed Gladstone Port fully laden with coal. The crew negligently ran aground at Douglas Shoal and caused extensive damage over a period of ten (10) days until the vessel could be removed. The Commonwealth pursued civil and criminal penalties through the courts.

10. With the grounded ship moving over more than 40 hectares of the shoal, the site bears the largest ship grounding scar known in the Great Barrier Reef Marine Park, and possibly the largest reef-related impact in the world.

11. The Reef Authority established the Douglas Shoal Environmental Remediation Project (the Project) in October 2016 with $35 million in funding from an out-of-court settlement with the ship's owners and insurers arising from a civil damages case.

12. A budget of $19.4 million from this out-of-court settlement is allocated for the removal of loose rubble and contaminants and related land-based activities for the proposed remediation works at Douglas Shoal.

## Purpose of the proposed works

13. The proposed works will fulfil two (2) critical purposes:

    a. Remediate and improve the environment of damaged portions of the Great Barrier Reef Marine Park to allow for natural recovery; and

    b. Demonstrate the Commonwealth's commitment that those who damage Australia's natural environment, including the Great Barrier Reef are held accountable and fund such remediation.

## Need for works - environmental

### Environmental values of Douglas Shoal

14. The damaged section of Douglas Shoal is designated as a Habitat Protection Zone of the Great Barrier Reef Marine Park. Whilst fishing and collecting are allowed, activities including trawling are prohibited in the Habitat Protection Zone as the area provides important habitat for diverse plants and animals.

15. Surveys in the vicinity of Douglas Shoal indicate that it likely provides habitat for at least:

    a. 164 taxa of fishes, sharks and rays;

    b. 30 species of corals;

    c. 59 species protected under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) including marine turtles, seabirds and whales.

16. Figure 2 shows typical habitat at Douglas Shoal that was not damaged by the ship grounding.

17. Figure 3 shows examples of the type of damage caused by the ship grounding.

***Figure 2: Typical habitat found on undamaged parts of Douglas Shoal***

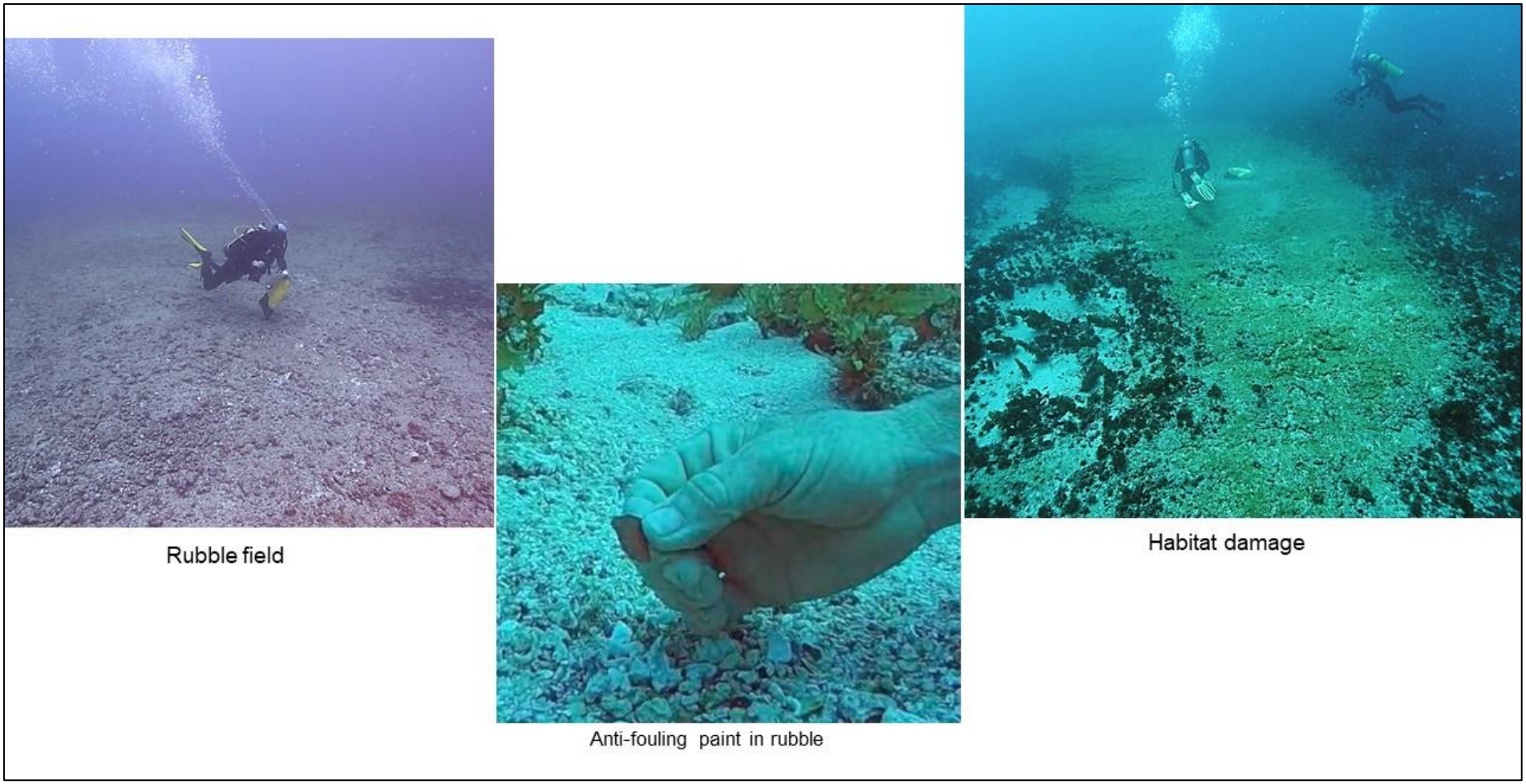


***Figure 3: Examples of damage observed at Douglas Shoal in 2010***

## Nature and scale of damage

18. To supplement surveys conducted as part of the incident response and civil damages court case (QUD178/2013) in 2010-2015, the Reef Authority conducted targeted site assessment surveys in 2018-2019. These surveys confirmed that very little natural recovery had occurred. Persistent barriers to natural recovery were identified as (a) anti-fouling paint contamination and (b) loose rubble.

19. The grounded ship moved over a shoal area of more than 40 hectares, with recent surveys identifying priority remediation areas totalling just under 10 hectares. Rubble and contaminant removal at these priority areas will enable natural recovery at Douglas Shoal. Figure 3 shows these four (4) priority remediation areas.

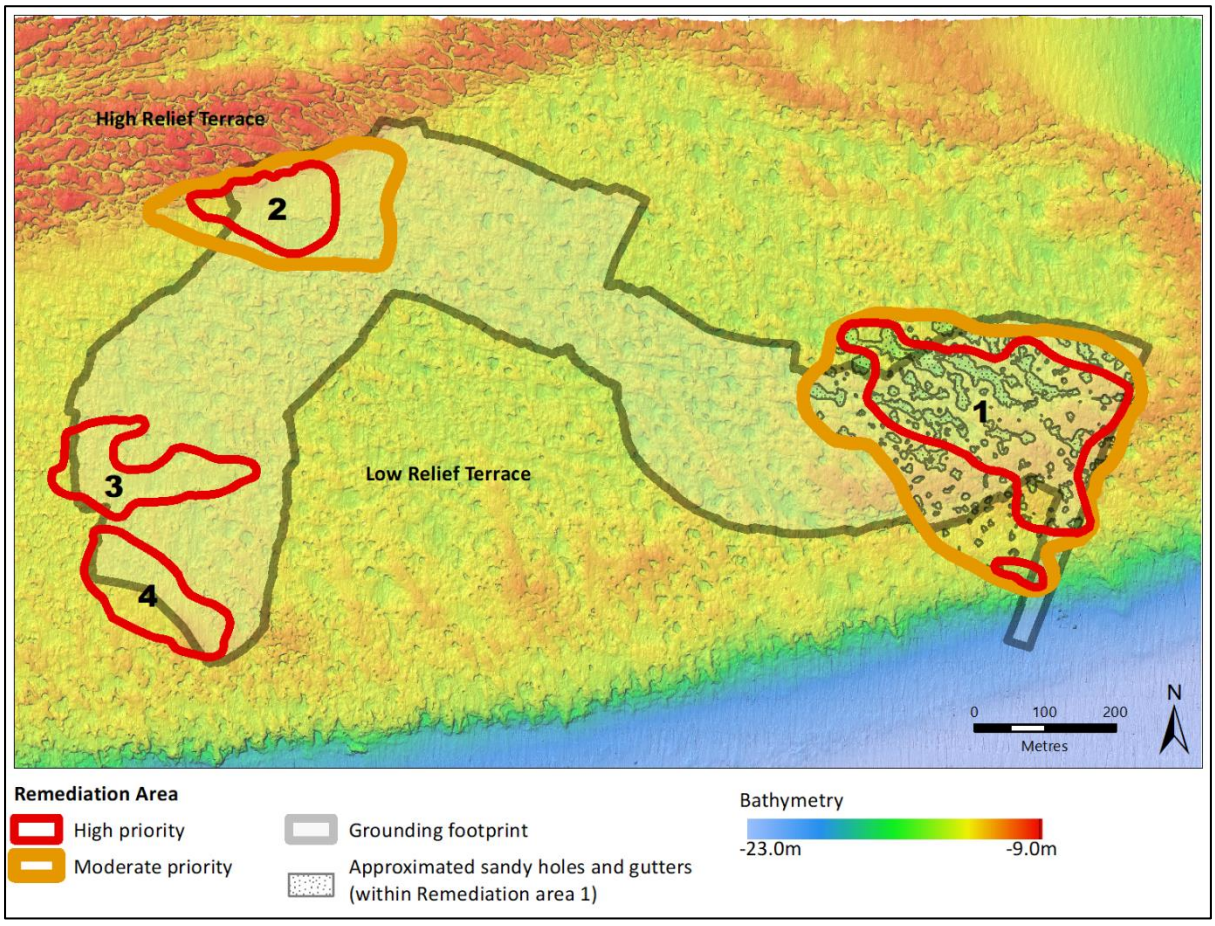


***Figure 3: Priority remediation areas at Douglas Shoal*** *– Red and orange outlines show the priority remediation areas, while the grey outline shows the full extent of damage caused by the ship grounding.*

## Anti-fouling paint contamination

20. The ship on grounding lost up to 20 tonnes of toxic anti-fouling paint. This paint is applied to hulls to prevent the growth of marine plants and animals. The anti-fouling paint deposited at Douglas Shoal includes significant amounts of the biocide, tributyltin (TBT), a substance that was banned internationally in 2008. TBT was present in the older layers of paint. Newer layers of paint included other biotoxic compounds such as pesticides and herbicides.

21. Anti-fouling paint particles at Douglas Shoal are concentrated in Remediation Area 1 (see Figure 3). Even ten (10) years after the grounding, TBT is present in Remediation Area 1 at levels that exceed acceptable marine environmental standards.

22. As long as TBT and other anti-fouling paint contaminants remain at Douglas Shoal, they will continue to impact the ecosystem and hinder natural recovery.

### Loose rubble

23. The physical impact of the ship grinding over the limestone shoal created large fields of loose rubble, comprising large gravel.

24. Surveys show that this loose rubble has not consolidated in the past ten (10) years and continues to prevent new plants and animals, including coral, from re-colonising damaged areas.

25. Surveys also show that the rubble has slowly migrated west, beyond the initial impact area. The rubble is now affecting parts of Douglas Shoal that were previously undamaged. The rubble fills in the natural channels and holes of the shoal, reducing habitat complexity and burying corals and other marine life.

26. Loose rubble is the primary issue in Remediation Areas 2, 3 and 4 (see Figure 3).

## Need for works – legal precedent

27. In addition to the need to help the environment recover, the remediation is important to demonstrate at a global scale that:

    a. Australia will not accept negligent environmental damage without remediating such damages and will hold perpetrators to account; and

    b. Broad-scale ship grounding damage can effectively be remediated to speed up the process of natural recovery.

28. In the civil case (QUD178/2013) the Commonwealth strongly argued that remediation was required to mitigate the damage to the environment and to allow Douglas Shoal to recover.

29. This project provides the opportunity for the Commonwealth to test these arguments. Robust environmental surveys that are conducted as part of this project will provide a scientific basis to evaluate the effectiveness of this remediation. This ground-breaking information will assist the Reef Authority and other marine managers worldwide to better respond to major incidents.

## Options considered

30. The Reef Authority conducted an extensive Douglas Shoal remediation options analysis exercise in 2019, using a multi-criteria analysis approach. The Options Analyses Executive Summary is publicly available on the Reef Authority's Project website.

31. Options were assessed against their alignment with the project's environmental, social, cultural and financial objectives.

32. Table 1 summarises conclusions drawn from the Options Analysis report. Options were classified as either:

a. Potentially feasible for full-scale remediation (2 options);

b. Unlikely to be feasible for full-scale remediation but may have merit as supplementary methods to support full-scale remediation (3 options); or

c. Not feasible at Douglas Shoal (3 options).

***Table 1: Outcome of Options Analysis***

| Potentially feasible | Unlikely to be feasible for full-scale remediation (but may have merit for targeted locations) | Not feasible |
|---|---|---|
| Remove loose rubble and contamination using a trailer suction hopper dredge (TSHD) vessel | Construct gabions with loose rubble to prevent rubble from migrating to new areas *(Note: does not address contamination)* | Cover loose rubble with steel netting to prevent rubble from migrating to new areas *(Note: does not address contamination)* |
| Remove loose rubble and contamination using small-scale, diver-operated suction vacuums | Cap loose rubble and contamination with concrete | Treat contamination in-situ using chemicals to neutralise contaminants *(Note: does not address loose rubble)* |
| | Do nothing (monitor natural recovery) | Conduct targeted, small-scale habitat restoration using divers *(Note: does not address contamination)* |

## Potentially feasible options

33. The use of a trailer suction hopper dredge (TSHD) vessel was considered to be the option most closely aligned with the project's objectives. Key strengths include:

    a. Speed and efficiency at addressing large areas of loose sediment;

    b. Reduced risk to worker safety – Personnel are not required to enter the water, noting that potentially dangerous sharks are frequently observed at Douglas Shoal;

    c. Innovation – Opportunity to learn for future incidents, as this technique has not been widely used for marine environmental remediation purposes.

34. Using divers to remove loose rubble and contamination was considered potentially feasible but with higher worker safety risks and financial costs than removal by a TSHD vessel.

## Options that may have merit for targeted locations

35. Three (3) options were considered unlikely to be feasible for full-scale remediation, but could have merit for targeted locations to supplement the primary method.

36. The 'do nothing' option assumed that the Reef Authority would monitor the site for natural recovery, providing data to inform future incident responses. This option was included in this category because:

    a. some areas on Douglas Shoal may be too difficult or environmentally sensitive to attempt other methods (that is, the potential environmental or worker safety risks may outweigh the potential environmental benefits).

b. to maximise learnings for future incidents, it is useful for some small sections of damaged habitat not to be remediated, to compare with natural recovery of remediated areas.

### Not feasible options

37. Three (3) options were considered unlikely to be feasible for either full-scale remediation or as targeted, supplemental methods. Of these:

    a. Netting and chemical treatment in-situ were considered not feasible due to strong currents and waves at Douglas Shoal.

    b. Targeted, small-scale habitat restoration using divers was considered not feasible because the higher financial costs and worker safety risks far outweighed any potential environmental benefits.

## Proposed scope of works

38. Subject to procurement outcomes and Parliamentary approval, key activities and timeframes are expected to be:

    a. Offshore remediation activities at Douglas Shoal conducted for approximately 2-12 weeks in total between mid-2022 to mid-2023:

        i. Removal of potentially contaminated sediment;

        ii. Removal of uncontaminated sediment (loose rubble which is impeding natural recovery).

    b. Onshore dewatering of removed sediment and possible transfer to ultimate disposal site(s) may extend into late 2023 or 2024.

    c. If funds remain available after the removal of contaminated sediment and loose rubble, the Reef Authority may conduct some small-scale habitat restoration activities as ‘learning opportunity’ trials to inform future management decisions (late 2023 or 2024)

### Offshore remediation activities

39. Remediation will focus on removal of potentially contaminated sediments and loose rubble using a medium to large size (80m to 145m length) TSHD vessel. Subject to funding availability and other environmental and work place health and safety considerations some shoal areas may require the use of diver or ROV-assisted suction dredging. This will not be known until procurement of a remediation contractor is finalised.

40. The total estimated volumes of sediments that may be removed are 1,400 $m^3$ potentially contaminated sediments and 5,700 $m^3$ uncontaminated sediments (clean rubble). The number of return trips for the main dredge vessel are dependent on the size of the TSHD vessel and the efficiency of operations at the shoal.

41. When removing potentially contaminated sediments in Remediation Area 1, the TSHD vessel will operate in ‘no overflow’ mode, retaining all seawater and returning it to shore for appropriate treatment (see ‘Methodology – onshore’ for details).

42. When removing uncontaminated sediments in Remediation Areas 2-4, the TSHD vessel will use a green valve system, allowing excess seawater to be discharged at

sea. Hydrodynamic modelling conducted by the Reef Authority indicates that even in 'worst case' scenarios, such discharge (and associated vessel manoeuvring) will not impact sensitive receptors such as corals. This is due to the coarse gravelly composition of the sediment and the high energy environment (strong currents) at Douglas Shoal.

43. The primary dredge vessel is expected to use some form of GPS and / or dynamic positioning, avoiding the need for extensive anchoring or mooring arrays, which may otherwise damage the sea bed.

44. One or two small support vessels (such as a hydrographic survey vessel) will likely operate in the vicinity of Douglas Shoal from time to time. Support vessels are expected to anchor or moor overnight at existing established sandy anchoring areas around North West Island.

## Onshore dewatering and disposal activities

45. The Reef Authority has secured some necessary approvals and is working to secure agreed commercial arrangements at Gladstone Port for onshore dewatering and disposal activities, as it is the closest port to Douglas Shoal. However, the Reef Authority is open to proponents proposing the use of a different port.

46. The dredge vessel will discharge all sediment and seawater that is collected onto port land via a fully enclosed temporary floating pipeline or other fixed pipeline. Table 2 below shows the estimated volumes of water and sediment to be deposited onshore.

*Table 2: Estimated volumes of sediment and seawater to be deposited onshore*

| Remediation Area | Sediment ($m^3$) | Seawater ($m^3$) | Nature of sediment and seawater |
|---|---|---|---|
| 1 | 1,400 | 24,750 | Potentially contaminated |
| 2, 3 and 4 (combined) | 5,700 | 11,400 | Uncontaminated |
| *Total* | *7,100* | *36,150* | |

47. All potentially contaminated water and sediment collected from Remediation Area 1 will be transferred to a bunded cell on port land.

    a. Water will only be discharged from this cell once an appropriate testing regime confirms it meets relevant environmental standards. Initial calculations by the Reef Authority indicate that only primary treatment (settling) will be required to achieve this standard. However, allowance will be made in the project budget and schedule for further treatment if testing indicates this is required.

    b. The sediment is expected to be dewatered over a period of 3 to 12 months until it meets dryness requirements specified by the ultimate disposal site.

        i. If testing confirms the material is still contaminated above identified threshold levels after dewatering, it will be transferred by truck to a licenced hazardous waste disposal site.

        ii. If testing confirms that material is no longer contaminated after dewatering, it will remain in place on port land for beneficial reuse or be transferred to an agreed location.

    c. Any filtration by-products (such as concentrated contaminants above identified threshold levels) will be transferred to a licenced hazardous waste disposal site.

48. All uncontaminated sediments (clean gravel) and residual seawater collected from Remediation Areas 2-4 will be transferred directly into an existing reclamation area on port land for beneficial reuse, becoming the property of the port upon transfer.

## Other issues

### Governance

49. Good governance for the Douglas Shoal Environmental Remediation Project is being delivered through the adoption of these principles and initiatives:
    a. Adhering to an approved project plan, with any significant changes approved at the appropriate senior delegation level.
    b. Complying with all relevant laws, regulations and Australian Government policies.
    c. Regular monitoring, evaluation and reporting to the Reef Authority Board, Executive and Minister for the Environment on project status and progress towards realising desired outcomes.
    d. Recording and communicating decisions made at all approval gates and major management meetings for the project.
    e. Supporting decision briefs with information that allows reliable decision-making and understanding and appraisal of risks.
    f. Fostering a culture of open communication with the Project's Steering Committee which comprises members external to the Reef Authority.
    g. Development and implementation of a probity framework including appointment of an independent probity advisor.
    h. Appointment of external legal and contract content advisors.
    i. Contracting of specialist planning and technical expertise and procurement expertise.
    j. Development and implementation of a procurement and evaluation plans before approaching the market; contract management plans for the duration of the contract; and a contract finalisation report at the conclusion of contracts
    k. Responding promptly to all reasonable requests for advice and information.
    l. Ensuring that internal and external stakeholders are engaged at a level that reflects their importance to the Reef Authority.
    m. Promoting personal responsibility for workplace health and safety and environmental protection among all staff and contractors.
    n. Holding all Project Staff accountable to the Australian Public Service Code of Conduct.

### Risk Management

50. Risks represent hypothetical scenarios that may occur in the future and may have a negative effect on the project or the project's outcomes. The Project looks forward and identifies potential risk and the requirement for mitigation.

51. A full risk evaluation has been completed using the Reef Authority's Risk Management Framework. A Risk Assessment & Treatment Plan has been implemented and is updated regularly to reflect the current stage of the project.

52. The Project Options Analysis identified that the use of a TSHD vessel most satisfied its objectives. All environmental risks in using such a vessel have been considered in an *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* self-assessment (See 55 below). Such risks are generally low and identified mitigation measures will be finalised in the remediation contract.

53. The Project Options Analysis identified using divers to remove loose rubble and contaminated material was considered potentially feasible, but with higher worker safety and financial costs than removal by a TSHD vessel. The Project has already used divers for prior surveys of Douglas Shoal. These divers operated previously in accordance with a range of safety protocols, including using electronic shark repellent technology. The possible use of divers for remediation activities and subsequent mitigation of such risks will be finalised in the remediation contract.

## Legislation and regulatory approvals

54. *Great Barrier Reef Marine Park Act 1975* (Commonwealth) – Activities within the Great Barrier Reef Marine Park are proposed to be conducted by the Reef Authority as 'management actions' under Part 5.4 of the *Great Barrier Reef Marine Park Zoning Plan 2003* (Commonwealth). This proposed management action is supported by the detailed site assessment and subsequent options analysis.

55. *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (Commonwealth) – An EPBC self-assessment of proposed remediation activities at the shoal has been undertaken. This self–assessment will be finalised when procurement of the remediation contractor is finalised. Though some small scale damage to the shoal may occur during remediation, such activities will deliver overall net positive benefit to the Douglas Shoal marine environment. The EPBC self-assessment indicates that the remediation of Douglas Shoal will not have a significant impact on matters of national environmental significance and it will not be referred.

56. *Native Title Act 1993* (Commonwealth) – Future Act Notices are being prepared to invite comments from relevant Traditional Owner groups. The Reef Authority has worked closely with the Traditional Owners of Douglas Shoal throughout the project. Project activities are expected to strengthen Traditional Owner values, by remediating human damage.

57. *Planning Act 2019* (Queensland) – Operational works and tidal works associated with onshore activities – The Reef Authority was granted a development application that allows onshore activities at Gladstone Port. The Reef Authority is working with Gladstone Port Authority to obtain a licence over this area. If the selected contractor proposes using a different port, it will be the contractor's responsibility to secure any required approvals.

58. *Environmental Protection Act 1994* (Queensland) (EP Act) – Environmentally Relevant Activity (ERA) 50/2 – Stockpiling of bulk materials – The Reef Authority has received approval to store and treat material removed from Douglas Shoal at Gladstone Port under the EP Act. The Reef Authority is working with Gladstone Port Authority to obtain a licence over this area. If the selected contractor proposes using a different port, it will be the contractor's responsibility to secure any required approvals.

## Environmental impact assessments

59. Environmental impact assessments are / were conducted as part of other required approvals (See 55, 57).

60. These assessments indicate that the remediation may cause some small temporary and highly localised impacts but will deliver an overall net environmental benefit.

## Anticipated impacts on the local community

61. The worksite at Douglas Shoal is very lightly used due to its remoteness and prevailing sea conditions which occur at the shoal. Commercial and charter fishers occasionally fish along the outer edge of the shoal, and in extended calm conditions recreational fishing vessels visit the shoal.

62. Activities proposed to be conducted onshore are consistent with existing port uses and are not expected to create any new community impacts. The volumes of material involved are significantly less than Queensland strategic ports routinely handle as part of their regular maintenance dredging campaigns.

## Stakeholder consultation

63. The Project has maintained high transparency since its inception, with ten (10) technical reports published on the Reef Authority's Project's webpage. Large amounts of geospatial data including photographs and videos are also publicly available for viewing and download.

64. Public interest in the project has been limited due to the offshore, submerged location of the shoal, and the duration of time since the initial ship grounding. Briefings have been focused towards key stakeholders. Briefings and meetings on the project have been conducted, or information provided, to the following groups or individuals:

    a. Port Curtis Coral Coast (PCCC) Traditional Use of Marine Resources Agreement (TUMRA) Steering Committee

    b. Capricorn Coast Local Marine Advisory Committee

    c. Gladstone Local Marine Advisory Committee

    d. Burnett Local Marine Advisory Committee

    e. Shoalwater Bay Environmental Advisory Committee

    f. Mayor of Gladstone

    g. Mayor of Bundaberg

    h. Port of Townville

    i. Port of Mackay

j. Port of Gladstone

k. Port of Brisbane

65. The Project has a secondary objective to enhance opportunities for Traditional Owner participation. To this end, extensive consultation has occurred with the Port Curtis Coral Coast Trust and their nominated environmental representatives, Gidarjil Development Corporation. Previous contracts (for remediation planning and environmental monitoring) have incorporated requirements for Traditional Owner employment and participation. Traditional Owners have also participated in most site visits.

66. To date, no stakeholders have raised any concerns about the proposed remediation activities.

### Reporting

67. The project will provide a post-implementation report to the Public Works Committee within three months of works completion.

### Scheduling

68. Table 3 provides indicative timing for the project.

| **Table 3: Indicative project timelines** | |
|---|---|
| **Activity** | **Approximate timing** |
| Request for Proposals evaluation | Jan – Feb 2022 |
| Contract negotiations | March – May 2022 |
| Engage contractor/s | Subject to negotiations and Public Works Act approval |
| Offshore removal and onshore disposal activities | 6-12 months after Public Works Act approval and subject to TSHD vessel availability |
| Contract wrap up | 18 months after Public Works Act approval |
| Contract closure | 20 months after Public Works Act approval |
| Submit post-implementation report to Public Works Committee | 3 months after Contract closure |

## Cost effectiveness and public value

### Cost effectiveness

69. The remediation works will be funded from the $35 million out-of-court settlement which was paid by the ship's owners and insurers to the Commonwealth in 2016. No appropriated taxpayer funds are involved.

70. Because the settlement funds were deposited into the Reef Authority's account in late 2016, an annual discounting provision is applied to compensate for loss of value over time, in line with the Consumer Price Index (CPI).

71. Funding allocated for remediation works to remove rubble and contaminants from Douglas Shoal is $19.4 million. This amount incorporates contract(s) as well as Reef Authority-retained costs such as port land leasing and risk contingency.

72. The Reef Authority will manage these works to ensure that all proposed works are delivered within the $19.4 million budget. Should some of the key risks eventuate, the remediation scope will be adjusted to remain within the allocated budget.

73. The Reef Authority anticipates engaging a single contractor to deliver the offshore and onshore remediation activities. This contract is expected to cover detailed remediation planning (including detailed environmental, health and safety plans), establishment of onshore temporary processing facilities, mobilisation of vessels and equipment, execution of the remediation, demobilisation of vessels and equipment, disestablishment of onshore temporary processing facilities, and final clearance surveys.

74. The Reef Authority does not intend to seek any additional funds to deliver these works, in keeping with the “polluter pays” principle. The out-of-court settlement provided by the ship owners and insurers will be managed to fully cover the costs of remediating Douglas Shoal, without the use of any taxpayer money.

## Revenue

75. This project will not generate any direct revenue.

## Public value

76. These works will contribute to the ‘common good’ by:

    a. Repairing critical habitat in the Great Barrier Reef that was damaged by a ship grounding;

    b. Preventing the spread of contaminants within the ecosystem and to other areas of the Great Barrier Reef;

    c. Demonstrating Australia’s commitment to holding to account those who damage our environment; and

    d. Gathering critical data and information about the effectiveness of remediation techniques, to inform future incident responses and remediation both in Australia and worldwide.

77. These works will support Australian companies and provide direct employment to Australian residents.

78. Consistent with the project’s objectives and the Australian Government’s Indigenous Participation Policy, these works will contribute to employment and training opportunities for First Nations People, particularly the Traditional Owners of Douglas Shoal.