

EPBC Act referral



Australian Government

Department of Agriculture, Water and the Environment

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Title of proposal	2020/8770 - Gold Coast Dive Attraction Purpose-built Reef
Section 1	
Summary of your proposed action	
1.1 Project industry type	Tourism and Recreation
1.2 Provide a detailed description of the proposed action, including all proposed activities	
<p>1.2.1 Project Objectives</p> <p>The proponent is the City of Gold Coast and the proposed action is the construction and operation of a Purpose-built Artificial Reef Dive Attraction. This catalyst project is jointly funded with the Queensland Government and aims to diversify the City's tourism offering and raise the profile of the Gold Coast as a premier and unique dive destination.</p> <p>The key project objectives are:</p> <ul style="list-style-type: none">> Establish an offshore dive attraction that attracts and sustains a rich diversity of marine life, offering an interesting and exciting dive experience for a range of certification levels> Achieve best practice with an innovative fusion of art, science and engineering design> Provide significant economic, social and environmental benefit including fostering greater appreciation of the natural environment. <p>1.2.2 Site Location</p> <p>The City of Gold Coast, after much research and technical investigations has determined the location of the dive attraction at an offshore site located at a nominal depth of 30 m of water. It will be located 3.5 kilometres south-east of the Gold Coast Seaway and 2.5 kilometres offshore from Main Beach. The dive attraction will be centrally located within a dive precinct footprint of 500 m x 500 m.</p> <p>A number of possible sites offshore of the Gold Coast were considered and investigated. The investigations included an assessment of a purpose built structure at the 30 m dive site. The City of Gold Coast engaged qualified coastal/maritime Australian engineering consultants to undertake feasibility studies, including met-ocean data collection, numerical wave and current modelling, potential shoreline and seabed impacts investigations to help choose the most appropriate location.</p> <p>1.2.3 Proposed Action</p> <p>The main features of the Gold Coast dive attraction project include:</p> <ul style="list-style-type: none">> A purpose-built reef - consisting of eight buoyant/floating sculptural reef flutes extending up to 20 metres and anchored to the sea floor by weighted reef foundations;> Six moorings including buoys, lines and bottom weights/anchors;> Navigational markers and their moorings. <p>The design of the Purpose-built reef is at 50%, and it will involve the installation of a combination of clean, stable and non-polluting material ranging in complexity, vertical height and construction materials designed to maximise diver experience and safety and productivity of marine species and habitat. The adoption of best practice and an innovative balance between engineering/technical design, architectural intent and ecological benefit will ensure a world-class outcome is achieved.</p> <p>There will be eight (8) artificial reef units and each unit will be comprised of steel buoys attached by chain to concrete and steel modules. The combined reef weight total would be 774.14 tonnes.</p> <p>There are three module types:</p> <ul style="list-style-type: none">> 5 x 4 Ring Flute Reef, 4 m x 8.8 m long 8.3 tonnes;> 3 x 5 Ring Flute Reef, 3.3 m x 8.1 m long, 6.7 tonnes; and> 8 x Foundation Reef, 5 m x 5 m x 4 m high, 72.2 tonnes. <p>Each unit has a Foundation Reef with either a 4 or 5 Ring Reef buoy attached above by a Tether. The Reef Tether is a chain, shackle and swivel assembly that is used to connect the Reef Flute to the Reef Foundation. All three 5 Ring Reef Flutes are set at the same height in the water column, and therefore have the exact same Reef Tether arrangement. The 4 Ring Reef Flutes are set at two different heights in the water column to suit different dive certifications.</p> <ul style="list-style-type: none">> A 40 m x 40 m square layout of 8 units is proposed whereby units would be placed ~ 15 m apart> There would also be 6 Moorings, including Buoys,- 3 attached to the 5 Ring Reef Flutes;- 3 secured to 2.4 m x 2.4 m x 1.8 m High 25 tonne concrete blocks (Reef Foundations);> 4 Navigational markers and their 2 m x 2 m x 1 m High 9.6 tonne concrete moorings. <p>A Copy of the proposed design drawings for the purpose-built dive attraction can be found at Appendix A-6 and A-7.</p> <p>The design and build contractor, Subcon Technologies Pty Ltd (Subcon) have provided a preliminary stability assessment of the module designs against sliding, uplifting and overturning for the 1/100 years storm condition using a traditional hydrodynamic analysis. It is understood that further modelling would be done to meet the 1/200 years requirement in AS4997.</p> <p>The steel modules and the concrete modules sit at different heights in the water column and have very different shapes. Therefore, different wave data and hydrodynamic coefficients were used to determine the horizontal and vertical forces acting on each structure.</p> <p>Details of the construction methodology and ongoing long term management can be found in Appendix A-2 (Sea Dumping</p>	



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permit application).

1.2.4 Design Life and Management

The design life of the structure on the seabed is 30 to 50 years, perhaps longer, based on observations of submerged wrecks. However, it may not be removed from the site as the environmental impacts arising from retrieval would likely far exceed those of leaving it in place as a marine flora and fauna habitat. Based on this expectation, and adopting advice in the Australian Marine Structures Code (AS 4997), the design scenario will be based on the 50, 100 and 200-years average recurrence intervals (ARI) – depending upon acceptable risk and differences in project cost.

The City of Gold Coast Council is responsible for the operation, including management, monitoring and maintenance of the Purpose-built Reef. This Long Term Management Plan (LTMP) has been developed to provide clear direction on the implementation of environmental management best practices during the construction/installation, operation and decommissioning of the reef.

Detailed assessment of ecological, biological and socio-economic impacts of the proposal have been considered and addressed in this plan so that potential risks would be reduced to an acceptable level. The LTMP also includes monitoring that will verify that the goals of objectives of the project materialise. The City of Gold Coast is committed to carrying out the monitoring measures outlined in this plan.

In developing this LTMP, it is important to understand that the proposed purpose-built reef will be a dive attraction with no access to fishers. As such, the environment risks of over-fishing, or catchability of threatened species that are the focus of risk mitigation for artificial reef projects that are deployed for fishing purposes, are not applicable to this project.

1.2.5 Timing

Currently the timing of the project has the approvals in place by late 2020 with the dive attraction being installed in April 2021. A key requirement of the Queensland Government's Growing Tourism Infrastructure funding for the project is to have the dive attraction delivered and operational by 30 June 2021.

1.3 What is the extent and location of your proposed action?

See Appendix B

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland)

The deployment site for the Gold Coast Dive Attraction is situated approximately 2.5 km offshore from Philip Park, Main Beach. A 500 m x 500 m management area (Gold Coast Dive Precinct) is proposed around the reef. The seabed in this location ranges in depths of between -27 m and -30 m LAT.

Over water access to the proposed site will be available through the existing entrances of the Gold Coast Seaway (3.5 km to the north) and Tweed River Entrance (25 km to the south). Over water access to the site can also be made through the Port of Brisbane (approximately 70 km to the north).

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

The disturbance footprint of the structures that comprise the purpose-built artificial reef would be limited to an area of ~250 sq. m (see Appendix A-7, and as already indicated (Section 1.2.2), there would be a 500 m x 500 m management area around the reef, delineated by marker buoys. A seabed term lease for the site for the purpose of the Gold Coast Dive Attraction has been requested from the Queensland Department of Natural Resources Mines and Energy (DNRME).

1.7 Proposed action location

Other - As described above, the site is approximately 2.5 km to the east of Main Beach on the Gold Coast, a

1.8 Primary jurisdiction

Queensland

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

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Yes

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No

1.10 Is the proposed action subject to local government planning approval?

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Yes

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No



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1.11 Provide an estimated start and estimated end date for the proposed action	Start Date	31/03/2021
	End Date	31/03/2070

1.12 Provide details of the context, planning framework and state and/or local Government requirements

The following approvals are required:

- > Sea Dumping Permit - Environment Protection (Sea Dumping) Act 1981
- > Operational Works – Tidal Works - Planning Regulation 2017, Coastal Protection and Management Act 1995.

A number of pre-lodgement discussions have been held with the government, including the Department of Agriculture, Water and the Environment regarding the Sea Dumping permit and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) referral, and discussions have also been held with the Statutory Land and Asset Management team in Department of Natural Resources Mines and Energy, who manage unallocated state land under Tidal Water.

Tenure is being negotiated with the Queensland Government, the Department of Natural Resources Mines and Energy (DNRME) who manage all unallocated state land, including land below the high water mark. Following a number of meetings and ongoing discussions between Council and DNRME, an application for a 50 year term lease for the Dive Precinct area was lodged by Council in November 2019. The occupation terms and conditions are currently being considered. It is anticipated this tenure arrangement will be finalised in coming months.

Currently the timing of the project has the approvals in place by late 2020 with the dive attraction being installed in April 2021. A key requirement of the Queensland Government's Growing Tourism Infrastructure (GTI) funding for the project is to have the dive attraction delivered and operational by 30 June 2021.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders

1.13.1 Commonwealth government
 Since early 2019, the City of Gold Coast has been liaising with the Department of Agriculture, Water and Environment regarding Sea Dumping approval under the Environment Protection (Sea Dumping) Act 1981.

1.13.2 Queensland government
 The City of Gold Coast has been liaising with the following Queensland government departments:

- > Department of Natural Resources, Mines and Energy regarding owner's consent, tenure and tidal works;
- > Department of Environment and Science regarding the State's operational and management arrangements for the ex-HMAS Brisbane and ex-HMAS Tobruk dive attractions; and
- > Department of Innovation and Tourism Industry Development regarding the GTI Fund financial incentive agreement and general project updates.

It is noted that the Department of Natural Resources, Mines and Energy sought views from a number of State department's with respect to the City of Gold Coast's application for owner's consent and tenure arrangements, including the Department of Agriculture and Fisheries and Marine Safety Queensland.

1.13.3 Non-government organisations and general stakeholder engagement
 Stakeholder engagement and planning for the project has been undertaken over several different phases. Initial engagement on the concept of a dive attraction on the Gold Coast was undertaken in 2013. A key finding of this engagement was overwhelming support (over 75 per cent of respondents) for a purpose built dive attraction on the Gold Coast, if the City could not secure a former navy vessel to scuttle. There was also overwhelming support for the proposed location of the dive attraction.

1.13.4 Indigenous Stakeholders
 City of Gold Coast Council have consulted with an Aboriginal Cultural Heritage expert during the early stages of project planning and have established due to its off shore location, it is unlikely there will be Aboriginal Cultural Heritage matters to consider under the Aboriginal Cultural Heritage Act 2003 and the site is outside of any known claim area for native title matters.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project

Overall, impacts from the proposed development will be minimal according to the following technical studies that have been carried out to better understand impacts:>Stability Report (Subcon 2020) to assist with the design and sizing of the reef modules; >Gold Coast Dive Attraction, Technical Assessment and Development Application (Cardno 2014) to assess the impacts to coastal processes and movement in the water column;>Assessment of Significance Marine Ecology (Cardno 2019) to assess potential impacts to MNES;>12 month Site Monitoring of Preferred Dive Site for a Gold Coast Dive Attraction. Report prepared by ICM Pty Ltd in partnership with Griffith Centre for Coastal Management (2012) to assist with site selection and suitability;>Geophysical Investigations (Marine and Earth Sciences (March 2020) to assist with establishing seabed



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characteristics and foundation design;>Sea dumping Permit Application document (Cardno, July 2020).These reports/assessments have been attached as App A.

1.15 Is this action part of a staged development (or a component of a larger project)?

☐ Yes ☒ No

1.16 Is the proposed action related to other actions or proposals in the region?

☐ Yes ☒ No



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Section 2

Matters of national environmental significance

2.1 Is the proposed action likely to have any direct or indirect impact on the values of any World Heritage properties?

☐ Yes ☒ No

2.2 Is the proposed action likely to have any direct or indirect impact on the values of any National Heritage places?

☐ Yes ☒ No

2.3 Is the proposed action likely to have any direct or indirect impact on the ecological character of a Ramsar wetland?

☐ Yes ☒ No

2.4 Is the proposed action likely to have any direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

☐ Yes ☒ No

2.5 Is the proposed action likely to have any direct or indirect impact on the members of any listed migratory species or their habitat?

☐ Yes ☒ No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

☒ Yes ☐ No

2.6.1 Is the proposed action likely to have any direct or indirect impact on the Commonwealth marine environment?

☐ Yes ☒ No

2.7 Is the proposed action likely to be taken on or near Commonwealth land?

☐ Yes ☒ No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

☐ Yes ☒ No

2.9 Is the proposed action likely to have any direct or indirect impact on a water resource from coal seam gas or large coal mining development?

☐ Yes ☒ No

2.10 Is the proposed action a nuclear action?

☐ Yes ☒ No

2.11 Is the proposed action to be taken by a Commonwealth agency?

☐ Yes ☒ No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage place overseas?

☐ Yes ☒ No

2.13 Is the proposed action likely to have any direct or indirect impact on any part of the environment in the Commonwealth marine area?

☐ Yes ☒ No



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Section 3

Description of the project area

3.1 Describe the flora and fauna relevant to the project area

A number of studies and impact assessments have been conducted in relation to marine ecology in waters off the coast of the Gold Coast and these were used to inform this application, which are referenced in Section 1.14 of this referral. Generally, soft sediment habitats, such as the proposed site for the purpose-built reef can support extremely diverse macro-faunal assemblages. A number of studies conducted in or near the management area found the soft sediments were dominated by various taxa, including polychaete worms and to a lesser degree by sea cucumbers on the seabed in the coarser sand habitat. Other common taxa included brittle stars (Ophiuroidea); peanut worms (Sipuncula); crustaceans such as amphipods (esp. Corophiidae, Zobrachoidae), isopods (esp. Anthuridae) and tanaids; and ostracods. In Queensland's south, a few common groups make up the fish fauna of nearshore, sandy areas. The elasmobranchs are often represented by Urolophid and Rhinobatid rays. There may also be many small planktivorous fishes. Other common and commercially important groups are the flatheads (Platycephalidae), which are voracious predators and whiting (Sillaginidae), which are benthic feeders. Fish assemblages on reefs in the vicinity of the proposed purpose-built dive attraction have been assessed using benthic baited cameras (Ecosure 2014). These can be a mixture of tropical and subtropical species, depending on the season. A total of 39 fish species were recorded on Mermaid Beach Reef to the south of the purpose-built dive attraction during the current survey, representing 29 families. Butterfly fish (Chaetodontidae) were the most commonly observed family with a total of four species recorded. As part of the ecological studies carried out in these waters, as referenced earlier, species of conservation significance were identified from database searches of the proposed management site for the Gold Coast purpose-built dive attraction and surrounds (up to 10 km). Results of the database searches indicated that there are 26 species of birds, 30 species of fish, 10 species of marine mammals, six species of elasmobranchs and 11 species of marine reptiles currently listed as either threatened (including near threatened as per the Nature Conservation Act 1992 (NC Act)) or EPBC Act or protected (including migratory-listed) in the area. Commonwealth registers of critical habitats were also searched and none were identified within the study area. Searches for seabirds likely to forage offshore and in the proposed reef deployment area were also carried out. Strictly terrestrial and freshwater species and shore and wading birds, such as sandpipers, curlews and plovers, were excluded from the assessment as they are unlikely to occur in the study area or to be affected by the proposal. The main groups of seabirds that were found to occur included albatrosses, petrels, shearwaters and terns. Of the 26 spp predicted to occur, about half (12) were considered to have a moderate or high likelihood of occurrence due to their distribution and habitat requirements. Eleven of the 12 spp are listed as threatened and/or migratory under the EPBC Act and five of these were also listed as threatened under the NC Act. The White-bellied Sea-eagle (*Haliaeetus leucogaster*) is protected under the EPBC Act. Six marine mammal spp, 11 marine reptiles and six elasmobranchs were considered to have a moderate or high likelihood of occurrence in the study area based on their distribution and habitat requirements. All six marine mammals are listed as threatened and/or migratory under the EPBC Act with four of these also listed as threatened under the NC Act. Seven of the 11 marine reptiles are listed as threatened and/or migratory under the EPBC Act and also listed as threatened under the NC Act. The remaining five marine reptile spp are protected under the EPBC Act. Five of the six elasmobranchs are listed as threatened and/or migratory under the EPBC Act with only the Grey Nurse Shark (*Carcharias taurus*) listed as threatened under the NC Act. The fifth elasmobranch is the Estuary Stingray (*Hemitrygon fluviorum*) and is listed as near threatened under the NC Act. One fish species (Black Rockcod (*Epinephelus daemeli*)) listed as threatened under the EPBC Act was considered to have a high likelihood of occurrence in the study area. An additional 14 Syngnathids (Pipefish and seahorses etc), protected under the EPBC Act, were considered to have a moderate or high likelihood of occurrence in the study area. Assessments of significance (AoS) in accordance with the Matters of National Environmental Significance: Significance Impact Guidelines have been completed for 11 bird spp, six marine mammals, six marine reptiles, five elasmobranchs and one fish spp (see App A-1). A Likelihood of Occurrence exercise of all threatened spp under both the EPBC Act and the NC Act can be found in the Sea Dumping application App A-2 (Table 1.5 and 1.6).

3.2 Describe the hydrology relevant to the project area (including water flows)

The project is located offshore, and will be fully submerged in coastal waters in a marine environment. Various studies have been undertaken to assess the interaction of the structures and the hydrological environment such as ocean and nearshore waves, flows, tides, and longshore currents with meteorological influences such as wind and climate along with the metocean conditions. These are listed and summarised in Section 3.7.

3.3 Describe the soil and vegetation characteristics relevant to the project area

N/A- the soft sediment habitat which dominates the development site has relatively homogeneous habitat conditions with the absence of any marine plants and low diversity. The characteristics of the substrate/seabed within the dive management area is described in section 3.6 and 3.7, but can be summarised as having bare and sandy substrate.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area

N/A- The project site has been selected for its lack of outstanding natural features or important unique values. The site is



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described as fitting the required ideal offshore artificial reef criteria for being a bare, sandy, and 'habitat limited' environment. The site is dominated by sandy substratum away from areas of naturally occurring reef.

3.5 Describe the status of native vegetation relevant to the project area

N/A- the project is located offshore, and as mentioned in Section 3.3 is devoid of marine plants.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area

A marine geophysical study was carried out by Marine and Earth Sciences (MES, March 2020, Gold Coast Artificial Reef – Geophysical Investigations) to assist with foundation design of the purpose-built reef. The study carried out sub bottom profiling (SBP), a continuous marine seismic refraction survey (CMSR), and carried out side scan sonar and grab sampling.

The seabed levels and characteristics as well as subsurface geological layers over the selected 200 m by 200 m survey area allocated for the dive attraction construction footprint were mapped using these techniques. A copy of the study results can be found in Appendix A-8 and A-9.

The key results from the study are:

- > The seabed levels across the 200 m by 200 m site range from -28.2 AHD to -31.6 AHD and deepened towards the South East at a grade of 1%.
- > The side scan sonar identified two sonar signatures consistent with unconsolidated sands and silty clays with a distinct boundary between these at the southern extents of the site.
- > The unconsolidated sands are expected to be mobile in nature forming north south linear ripples while the silty clays display no form and are flat and featureless.
- > The sub-bottom profiling interpretation has identified a variably thick, continuous near surface sandy and clayey unit overlying a bedrock reflector.
- > An east-west oriented palaeo-channel was also identified which crosses the northern part of the survey area.

The SBP models generally agree well with the CMSR models whereby the onset of the bedrock reflector coincides with the 1900 m/s contour interval. The seismic velocities below the 1900 m/s contour interval display laterally variable weathering or lithology variations.

Suitable depth of water above the reef is important in order to avoid creating a navigational hazard, for the stability of the modules (in terms of ability to withstand certain hydrodynamic forces) and accessibility to divers (via boat). Clearance depth over the purpose-built dive attraction post deployment is proposed to be no less than 10 m (LAT). This will be confirmed post reef deployment.

3.7 Describe the current condition of the environment relevant to the project area

Offshore artificial reefs are considered to be most effective (in terms of increasing biodiversity) and have minimal adverse impacts (to sensitive marine environments) when placed in bare, sandy, environments. Selection of the site has therefore focussed on areas known or likely to consist of sandy substratum away from areas of naturally occurring reef. In summary, the soft sediment habitat which dominates the development site can be considered as having relatively homogeneous habitat conditions with the absence of any marine plants and having low diversity and abundance of epifauna (animals living on the surface of the seabed). Detailed studies in relation to coastal process and site selection have been carried out to assess both impacts of the project and to locate the Purpose built reef in the most suitable location. These studies are attached in App A and include:>Cardno (2014) Gold Coast Dive Attraction, Technical Assessment and Development Application (App A-3).>International Coastal Management (ICM) (2012) 12 month Site Monitoring of Preferred Dive Site for a Gold Coast Dive Attraction. Report prepared by International Coastal Management Pty Ltd in partnership with Griffith Centre for Coastal Management (App A-4). Water movements in the proposed Gold Coast Dive Precinct may be caused by a variety of physical processes, including:> tides;>winds;>density flows;>coastal trapped waves;>the East Australian Current; and>nearshore wave processes. Sediment transport is caused by the water particle motions of waves and currents that lead to shear stress on the seabed sediment particles. Generally, sediment motion commences when the seabed shear stress exceeds a threshold value, which depends on particle size and density (ICM 2012). At shoreline locations, sediment transport may be alongshore and/or onshore/offshore. Where waves break obliquely to the shoreline, a longshore current may cause longshore transport. Offshore transport normally occurs during a storm, with a longer-term onshore transport following storm abatement. The majority of sediment transport along the Gold Coast is inshore from the depths under consideration for this purpose- built reef project. During storms with relatively large waves, beach sand moves offshore to form bars. This process typically occurs over a period of hours to days. When extended periods of calmer waves occur, the material held in these bars migrates onshore to re-build the beach. Depending on the magnitude of the preceding storm, this beach building process can occur over a time scale of days to years (ICM 2012). Ocean currents at the management site were evaluated using velocity data collected from an Acoustic Doppler Current Profiler (ADCP). A nominal limiting threshold of 0.5 m/s (or 1 knot) was selected to determine when it would be safe to dive. Maximum velocities peaked at 0.65 m/s. It was estimated that depth averaged velocities would be between 0-0.25 m/s for 180 days in a year, between 0.25-0.5 m/s for 138 days and >0.5 m/s for 21 days (ICM 2012). Safe site accessibility and diving operations may also be influenced by the wind. Wind speed and direction data obtained from nearby meteorological station at the Gold Coast Seaway has been used to characterise the general wind environment of the proposed deployment site. A nominal exceedance threshold of 20 knots was set to



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determine the accessibility of the site. The number of days where wind exceeded 20 knots was determined for each month and ranged from 0% in November to 17% in December (ICM 2012). The potential impacts of the proposed reef on wave climate, currents and scour are discussed in Section 4.

3.7.1 Existing Seabed Characteristics

A bathymetric survey was performed on the 3 August 2011 (ICM 2012), to gain basic information about the seabed at the management site. The aim of the survey was to provide a complete description of the physical characteristics of the sea floor, highlighting the presence of unsuitable substrata, i.e. reefs, obstructions, or items of heritage significance, e.g. shipwrecks, were they to exist. The survey provided seabed depths and descriptions of observed features including: > The site is not flat but varies in seabed level about 3 m over the investigation area. > At the time of survey, a small gully about 1 m deeper than the surrounding seabed, was located about 150 m south east of the centre of the monitoring site. > Depth contours were not parallel to shore but ran at about 45 degrees to shoreline. A number of small rocky features were identified in the side scan and major targets were located in the vicinity of the proposed dive site. None of these features were deemed to be an issue with the selection of the broad dive precinct but the results of a further marine geophysical study carried out by Marine and Earth Sciences (MES, March 2020 see App A-8 and A-9) allowed the preferred placement site to be refined slightly within the broader management area.

3.8 Describe any Commonwealth Heritage places or other places recognised as having heritage values relevant to the project

Due to the offshore location of the project, the focus of Commonwealth Heritage matters has been on accessing the Australasian Underwater Cultural Heritage Database resource, and specifically shipwrecks in the vicinity of the project. Information about shipwrecks known or potentially occurring within 5 km of the coast between the Gold Coast Seaway and Burleigh Heads, and within that part of the Broadwater south of the Gold Coast Seaway, was sourced from a database search of the Australian National Shipwreck Database (DEE 2018). Two wrecks are located within the Broadwater and are of no concern to the project. Four others occur offshore (Table 3-1) with the nearest, the Scottish Prince, being ~1.5 km directly inshore from the centre of the exclusion zone. Apart from the Mississippi and Lorna Doone, the mapped shipwrecks are protected by heritage protection legislation (i.e. either by the Commonwealth Historic Shipwrecks Act 1976 or the Queensland Heritage Act 1992) and the placement of the Purpose-built Artificial Reef must not impact them in any way. It is considered that the Scottish Prince and other shipwrecks are sufficiently distant from the proposed deployment area such that none pose a potential deployment or operational concern from the proposed Purpose-built Artificial Reef.

Vessel Name	Vessel Type	Year Wrecked	Wreck Location	Protection
Mystery	Single screw steamer	1897	Main Beach, directly inshore from the placement site, close to beach	Cmwth Historic Shipwrecks Act 1976
Scottish Prince	Sailing vessel	1887	Main Beach, ~1.5 km directly inshore from the placement site	Cmwth Historic Shipwrecks Act 1976
Coral Queen	Sailing vessel	1870	Main Beach, ~2.0 km south of the placement site, close to beach	Queensland Heritage Act 1992
Mississippi	Unknown	1958	Mermaid Beach, ~10 km south of the placement site, ~5 km off the beach	Not protected
Gullen Of Ayr	Sailing vessel	1841	In the Broadwater, ~200 m off Seaworld	CmWth Historic Shipwrecks Act 1976
Lorna Doone	Sailing vessel	1888	In the Broadwater, in Seaworld compound	Not protected

3.9 Describe any Indigenous heritage values relevant to the project area

The current coastline was formed when the sea level stabilised approximately 7,000 years ago, inundating the placement area and any archaeological record of human occupation that may have been present there (Cardno 2020). The seafloor within the placement area is currently between ~30 metres underwater, and is understood to be functionally flat, sandy with no exposed surfaces that may formerly have been ground surface prior to inundation, significant vegetation or other ecological considerations. Given the depth and distance from shore, it is considered that:

- > there is negligible potential for the presence of in-situ Aboriginal objects within the placement area;
 - > there is a low possibility of Aboriginal objects being transported to the placement area by natural or assisted means;
- and
- > if Aboriginal objects are present within the placement area, they are likely to have been buried by natural coastal processes.

Hence, the proposal has a very low likelihood of resultant harm to Aboriginal objects. This is a result of the location of the placement area offshore and the minimal ground disturbance associated with the project.

Given this offshore location, the City of Gold Coast's Aboriginal Cultural Heritage Officer (Legal Services, City Governance Branch) has advised there are no Aboriginal cultural heritage issues and therefore no requirements under the Aboriginal Cultural Heritage Act 2003 to form a Cultural Heritage Management Plan or agreement with an Aboriginal party. The proposed area is outside the Native Title claim area.

While there are no known Cultural Heritage Sites in the vicinity of the dive precinct site, City of Gold Coast acknowledges



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the significance of sea environments to the local indigenous people and their connectedness to land and sea.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area

The project is located on Unallocated State Land 2.5 km out to sea off the Gold Coast in South East Queensland. Following a number of meetings and ongoing discussions between City of Gold Coast and DNRME, an application for a 50 year term lease for the Dive Precinct area was lodged by Council in November 2019 with DNRME. The occupation terms and conditions are currently being considered. It is anticipated this tenure arrangement will be finalised in coming months.

Under Section 51 (2) of the Planning Act 2016 a development permit application must be accompanied by the written consent of the landowner. Accordingly, Owner's Consent was applied for from DNRME in July 2019 and was subsequently granted on 9 March 2020 with additional conditions that a term lease must be finalised with the DNRME before occupation or construction can commence.

3.11 Describe any existing or any proposed uses relevant to the project area

As described in previous sections the site is offshore and currently does not have any existing uses. The proposed use, as a recreational dive attraction has been described in Section 1 of this referral.



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Section 4

Measures to avoid or reduce impacts

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action

4.1.1 Soft sediment assemblages

The Purpose-built Reef would replace some soft sediment habitat in the region. Overall, however, there were no indications that the macroinvertebrate or fish assemblages within the proposed placement area were unique. Rather, the assemblages showed similar attributes and taxa to those in surrounding areas where the habitat is common. Hence, the replacement of a small amount of soft sediment habitat would not be of concern and no mitigation measures are proposed.

Initial deployment of the proposed Reef is expected to cause localised disturbance and resuspension of sandy sediment in the area where the units are installed which may result in mobile macroinvertebrates being temporarily displaced. A large proportion of animals living within the direct footprint of where individual modules are placed would also be lost through smothering. This would be limited to an area of 250m². This loss of sandy habitat occupied by the reef modules, would, however, be negligible when considered in context with the extensive areas of similar habitat within the reef installation area, therefore no mitigation measures are proposed.

4.1.2 Rocky reef assemblages

The Purpose-built Reef would create some new reef habitat in the region. Given the nearby patches of reef and the mobility of many species of fish, there would be some movement of fish to and from the artificial reef from nearby reefs. Given the proposed Reef is not designed for fishing, there would be no concern of the project causing increased vulnerability to fish from fishing pressure, as can potentially occur with other artificial reefs where fishing is allowed. It is more likely that the additional reef habitat created by the Purpose-built Reef would simply increase biodiversity and abundance of fishes in the area.

It is considered likely that there would be initial increases in fish numbers on the proposed Reef as a result of attraction and aggregation from nearby small patch reefs, but that over time (once the reef has become established), the Purpose-built Reef would contribute to overall production of fishes. Over time it is expected that the proposed Reef will support a wide variety of reef associated fish as well as pelagic species. However, the community is likely to be made up of a larger number of species with greater diversity than natural nearby reefs given the complexity and vertical relief of the structure. There will also be ample space for sand associates species in spaces among the dive modules.

4.1.3 Navigation

There is a risk the development will cause navigational hazards to vessels approaching port and marinas inshore. To mitigate this, the proposed Purpose-built Artificial Reef has been located away from shipping channels and will have the appropriate signage, markers and statutory notifications and charted information to ensure that it does not cause a navigation hazard. The markers will be special purpose marker buoys compliant with the IALA Buoyage System 'A'. Navigation aids are to be installed around the perimeter of the Dive Management Zone. There is a potential risk that vessels may be damaged or damage the reef structures if their hull or propeller comes into contact with the structures. However, this would be mitigated by ensuring sufficient clearance at all tides and in high wave conditions. Further, the implementation of a permitting arrangement will ensure that only suitably qualified commercial dive operators operate at the site. Private vessels will also be allowed to use the site but there will be fixed limits on the numbers of commercial and recreational vessels allowed at the site at any one time.

4.1.4 Fishing

A major conflict at other artificial reefs sites is fishing and entanglement of marine fauna and pressure on newly established populations. However, to mitigate this, it is proposed the dive precinct of approximately 25 hectares (500 m x 500 m) would be regulated by a City of Gold Coast Local Law that excludes all incompatible activities such as fishing and general boating navigation through the area. All vessels entering the zone will be required to obtain a permit prior to entering. Creating a zone restricting certain activities also means that the site will be easy to patrol for illegal fishing activities and will be clearly demarcated with regulation navigational buoys and markers.

4.1.5 Ocean currents, tides and prevailing weather conditions

The existing environment in relation to coastal processes includes the local wind and wave climate, prevailing currents, water levels and processes that affect sediment transport. Overall though, the outcomes of the coastal processes study undertaken by Cardno (2014) (included as Appendix A-3) demonstrated that the proposed reef deployment would be sustainable in terms of coastal processes and would cause no identifiable changes, other than in the immediate vicinity of each module.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved

Artificial reefs are generally placed at an appropriate distance away from existing reefs so as to create new reef habitats and create an opportunity to increase local reef productivity, rather than adding to existing reef habitat (a distance of no less than a few hundred metres is considered sufficient). Natural reef habitats, habitats unique to an area, or locations known to support diverse benthic/epibenthic communities are generally avoided so as to minimise potentially adverse impacts to biodiversity. Areas of conservation significance and habitats critical to the survival of a particular species, particularly threatened species are also generally avoided, although information on the occurrence and distribution of threatened species is generally sparse and may be limited to predictions based on presence of suitable habitat and/or records of a species



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occurring at nearby locations. It is especially difficult to predict where highly mobile individuals (such as fish or migratory marine mammals) occur due to their itinerant nature. The Purpose-built Reef is proposed to be located on soft sediment. There are small patch reefs nearby and in the general area but none of notable size for at least a few hundred metres. The following Key Threatening Process (KTPs) has been identified as potentially relevant to the proposal:> Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris (EPBC Act). This KTP applies to vertebrate marine life protected under the EPBC Act. The Department of Agriculture, Water and Environment has developed a draft Threat Abatement Plan to address the impacts of this KTP. It is considered that the majority of impacts that could occur as a consequence of this KTP are not relevant to threatened or protected species that have potential to move and/or recruit into the proposed reef placement area because the Purpose-built Reef would be a 'non-fishing' reef. Further, the floating buoys would be constructed from non-hazardous steel with smooth or rounded surfaces, no protrusions and with no potential for ingestion. Openings within the buoys would be blocked by holed plates disallowing air-breathing species to enter certain areas within the buoy although still allowing swim throughs in other areas that are safe from entanglement. The buoy structures have been designed to allow species to move freely through the structures without any possibility of being snagged or entangled by projections or outcroppings. Notwithstanding this, following deployment of the reef, it is proposed for any incidents, recorded or reported interactions with threatened or protected species to be reported at 6 monthly intervals to the relevant agency for further assessment as detailed in this plan. The AoS, carried out under the EPBC guidelines, considered that the incidental entanglement of listed sea birds, marine turtles or marine mammals was very unlikely on the purpose-built dive attraction. Given it is not a fishing reef, the only potential risk would be from entanglement on mooring lines. For this reason, no direct mitigation measure is considered to be required. Notwithstanding this, given whales have been known to become entangled in the mooring lines of lobster pots in southern Australia and could potentially be prone to boat strike, consideration will be given as to the design and configuration of mooring lines so that they do not pose a risk of entanglement to whales and a Marine Fauna Interaction Management Plan will be prepared to monitor, mitigate and manage interactions. The plan includes a marine fauna entanglement avoidance protocol and the observer protocol. The protocol aims to minimise the threat of entanglement and entrapment of marine fauna in artificial reef infrastructure, as well as implement prompt and appropriate management if incidences occur in order to maximise successful releases and minimise injuries and stress to marine fauna. Any entanglement events will be recorded and reported to the relevant agency which will monitor the implementation and effectiveness of this protocol. In addition to the threatened species considered above, those Listed Marine Species under the EPBC Act and species protected under the NC Act also require consideration. Some of these species would potentially be affected by the proposal but only because new foraging and sheltering habitat would be created for them. This would be a benefit of the project. As this is a world first purpose built dive attraction, research based on the success of other artificial reefs can be applied to this design but with limitations and as the design is only at 50% there remains some uncertainty about the outcomes of the design. For this reason an adaptive management approach is proposed with objectives and outcomes and performance indicator set and applied over an initial period of five years. The Monitoring Programme/LTMP is summarised in the Sea Dumping application in App A-2.



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Section 5

Conclusion on the likelihood of significant impacts

5.1 You indicated the below ticked items to be of significant impact and therefore you consider the action to be a controlled action

- ☐ World Heritage properties
- ☐ National Heritage places
- ☐ Wetlands of international importance (declared Ramsar wetlands)
- ☐ Listed threatened species or any threatened ecological community
- ☐ Listed migratory species
- ☐ Marine environment outside Commonwealth marine areas
- ☐ Protection of the environment from actions involving Commonwealth land
- ☐ Great Barrier Reef Marine Park
- ☐ A water resource, in relation to coal seam gas development and large coal mining development
- ☐ Protection of the environment from nuclear actions
- ☐ Protection of the environment from Commonwealth actions
- ☐ Commonwealth Heritage places overseas
- ☐ Commonwealth marine areas

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action

Considering the social-economic, environmental and biological issues associated with deployment of artificial reefs generally and the issues specific to proposed location for the Purpose-built Reef, the placement area off Main Beach would be suitable and would not have significant impact on matters protected under the EPBC Act and therefore is not considered to be a controlled action. The case for this is outlined below.

5.2.1 Socio-economic Matters

The Purpose-built Artificial Reef would provide an iconic dive site for attracting visitors to dive the Gold Coast and that would encourage repeat visitation. The site would ensure business viability for operators including consideration of site access, water quality, weather and sea conditions and is projected to bring \$32.8 million into the region's economy in the first 10 years of operation. The proposed placement area is appealing to other stakeholders, having negligible impact to commercial and recreational fishers, and there are no impacts expected on aboriginal cultural heritage or to historic shipwrecks.

5.2.2 Environmental Matters

The proposed placement area presents a perfect site for installation of the Purpose-built Artificial Reef given it is an adequate distance from natural reef with no underlying rocky reef identified. The depth is also suitable so that it would be stable even in extreme storm events. When a structure is placed in a marine environment, the presence of the structure will change the flow pattern (associated with currents and passing waves) in its neighbourhood. There may be some localised scour but no material impacts to sediment transport further inshore at Main Beach or elsewhere. The impact of the proposed reef deployment is negligible for the wave conditions.

5.2.3 Biological Matters

Macroinvertebrates living in sediment within the direct footprint of where individual modules are to be placed would be lost through smothering. The loss of sandy habitat (and the macroinvertebrates present at the time) overlain by the reef modules, would, however, be negligible when considered in context with the extensive areas of similar habitat within and nearby the reef installation area. It is possible that species numbers and/or diversity in sandy habitat adjacent to the reefs may decrease as a result of increased predation by benthic and demersal fish or decapods attracted to and/or growing on the reef. However, the habitat will continue to support a wide variety of marine organisms found living on or over soft sandy substrata. Increased predation on benthos is therefore not considered to have a significant impact within the broader study area.

Small patch reefs are located nearby the proposed placement area but there is an adequate buffer of at least two hundred metres between existing large, natural reefs and the Purpose-built Artificial Reef in order to reduce the effect of 'draw-down' (that is individuals readily moving from the natural reef onto the artificial reef). However, over time it is expected, due to this process and also natural recruitment, that the proposed Reef will support a wide variety of reef associated fish as well as pelagic species and some of these may be species of conservation significance listed under EPBC Act (see Table 1-6 in the Sea Dumping Permit in Appendix A-2. Notwithstanding this, given the Purpose-built Artificial Reef is not designed for fishing, there would be no concern of the project causing increased vulnerability to threat-listed or migratory fish or sharks from fishing pressure, as can potentially occur with other artificial reefs where fishing is allowed. It is more likely that the additional reef habitat created by the Purpose-built Reef would simply increase biodiversity and abundance of listed species in the area.

This assessment considered that the incidental entanglement of threat-listed or migratory sea birds, marine turtles or marine mammals was very unlikely on the Purpose-built Reef dive because it would not be a fishing reef, there would be adequate swim-throughs with no snagging edges or projections and there would be specific consideration given to the design and configuration of mooring lines. Nevertheless, a Marine Fauna Interaction Management Plan will be prepared to monitor, mitigate and manage interactions. Although some species of conservation significance would potentially be affected by the proposal because new foraging and sheltering habitat would be created for them, this would be a benefit of the project.



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Section 6

Environmental record of the person proposing to take the action

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Explain in further detail

City of Gold Coast has a proven track record of responsible environmental management, and they are committed to responding proactively to environmental challenges on many levels including protecting natural assets, planning for population growth and building sustainable communities. City of Gold Coast plan and manage their response to environmental challenges by developing strategies, plans and programs that help to enhance the city's biodiversity and support responsible guardianship of the city's resources. These strategies, plans and programs are also shaped by a range of Queensland and Commonwealth legislation which governs the protection, management and use of the environment. Examples of some of these management tools include The Gold Coast 2022 (City's Corporate Plan), Our Natural City Strategy (2017-2020), Gold Coast Ocean Beaches Strategy (2013-2023), Gold Coast Destination Tourism Management Plan (2014-2020) and The City Plan (2016), among others.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application

To the best of the knowledge of the person specified as the Contact in Section 9.2 – 9.2, Gold Coast City Council has had not had any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

☒ Yes ☐ No

6.3.1 If the person taking the action is a corporation, provide details of the corporation's environmental policy and planning framework

The City of Gold Coast Council is bound by regulatory reporting requirements which include rigorous policy and planning frameworks- including consideration of sustainability and the environment. The Gold Coast 2022 (the City's Corporate Plan) supports the delivery of the City Vision through three themes – Place, Prosperity and People. The Implementation of the plan is supported by robust planning, responsible management and the active engagement of the community. The Gold Coast 2022 is supported by key strategies such as the Culture Strategy 2023; the Gold Coast City Transport Strategy 2031; the Ocean Beaches Strategy 2013-2023; the Economic Development Strategy 2013-2023; the Solid Waste Strategy 2024, Our Natural City Strategy, and the City Plan 2016.

Further, the project will be in accordance with City of Gold Coast's corporate policies relating to the protection of the city's natural environment and the provisions of the City Plan 2016.

Detailed information in relation to the planning and policy framework of the City of Gold Coast Council, and any of the documents outlined above, can be found on their website:

<https://www.goldcoast.qld.gov.au/default.html>

It should be noted that the City of Gold Coast has contracted the works to Design and Construct Contractor, Subcon Technologies (Subcon). Subcon is a global provider of marine foundations, stabilisation and engineered reef substrates. Subcon operates and maintains an Integrated Management System (IMS) which meets the requirements of ISO 9001: 2015, 18001:2007 and AS/NZS 4801:2001 compliance with all applicable legal requirements, and with other requirements to which the Contractor subscribes relating to its Health, Safety, Environment and Quality HSEQ aspects. The project has a dedicated Health, Safety, Environment and Quality HSEQ Manager who is responsible for the design, implementation, compliance and periodic review of this system. As part of the Design and Construct Contract, Subcon will deliver a suite of documentation including, but not limited to, an Environmental Management Plan, Land and Marine Construction Management Plan, Quality Management Plan and Durability Plan.

The City of Gold Coast and their technical specialist Cardno will oversee all design documentation and works to ensure that they are conducted in accordance with the relevant permits and management plans and in a manner which is sensitive to the environment.



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6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

☒ Yes ☐ No

6.4.1 EPBC Act No and/or Name of Proposal

Whilst the person nominated as Contact in Section 9.2 – 9.4 has not previously referred an action under the EPBC Act, or has been responsible for undertaking an action referred under the EPBC Act, a review of the EPBC Referral List reveals the following EPBC referrals which specify Gold Coast City Council as the proponent over the last 3 years:

Item Details	
Referral Reference Number	2018/8328
Proponent	GOLD COAST CITY COUNCIL
Action	Waste Management (sewerage)
Location	Lot 255WD5704, Lot 6, CP815887, Lot 528WD6624 and unallocated state land/Queensland
Purpose	Long Term Recycled Water Release Program, Gold Coast, Qld
Date referred	4/12/2018
Status	Completed. Referral Decision Made- not a controlled action
Referral Reference Number	2017/7899
Proponent	GOLD COAST CITY COUNCIL
Action	Maritime Infrastructure
Location	Tidal Waters adjacent Philip Park at Main Beach, Gold Coast, Queensland.
Purpose	Ocean-side Cruise Ship terminal at Philip Park at Main Beach, Gold Coast, Queensland.
Date Referred	2017
Status	Completed. Referral Decision made- not a controlled action



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Section 7

Information sources

Reference source

- > Ecosure (2017). Three Point Plan for Coastal Protection Ecological Site Assessment – Miami to Broadbeach.
- > BMT WBM (2017). Gold Coast Water Offshore Pipeline Studies - Winter Studies.
- > BMT WBM (2018). Proposed Gold Coast Cruise Ship Terminal – benthic habitat assessment.
- > Cardno (2020). Artificial Reef Sea Dumping Permit Application. Gold Coast Dive Attraction
- > Cardno (2014):Gold Coast Dive Attraction, Technical Assessment and Development Application.
- > International Coastal Management (ICM) (2012). 12 month Site Monitoring of Preferred Dive Site for a Gold Coast Dive Attraction. Report prepared by International Coastal Management Pty Ltd in partnership with Griffith Centre for Coastal Management
- > Assessments of Significance (Cardno 2019)
- > Stability Report (Subcon 2020)
- > Engineering Drawings 50% by Subcon (2020)
- > Marine and Earth Sciences (March 2020). Gold Coast Artificial Reef – Geophysical Investigations

Reliability

All referenced documents have either been commissioned by or provided by Gold Coast City Council. These documents have been prepared and peer reviewed by suitably qualified or certified professionals and a copy of most of these reports with the permission of the owner can be provided to an assessing officer if requested. Many of the key technical documents are included with this referral to be considered as part of the decision making process.

It is acknowledged that some of the design and modelling reports are based on the 50% design, and therefore there is some uncertainty with the outcomes of these documents if the design is altered. It is proposed to amend and update some of the modelled data to reflect design as needed.

Uncertainties

The purpose built reef is a world first design utilising gas pipeline technology in submarine environments. While the design has been modelled and engineered to be fit for purpose, the design is still at 50% and further refinements may be needed as the models are updated with the new sizes and dimensions to better understand the developments interaction with the surrounding environment. Some of the technical studies relating to coastal processes and seabed interactions were based on generic artificial reef design without knowledge of this projects concept design. However, it is unlikely the outcomes and conclusions of these studies will require updating due to the assessments focusing on baseline and existing conditions, and the footprint of the wider dive precinct and management area (500m x 500m) remaining unchanged since the early stages of the project. However, to manage any uncertainties an adaptive management approach is proposed. This is outlined in App A-2.



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Section 8

Proposed alternatives

Do you have any feasible alternatives to taking the proposed action?

☒ Yes ☐ No

8.0 Provide a description of the feasible alternative

Site selection for an artificial reef is considered critical in both successfully establishing/attracting marine biota to the artificial reef structure and limiting environmental impacts on existing natural reefs and marine habitat, therefore alternatives sites were thoroughly investigated. Site selection was informed by extensive research, consultation and monitoring of a number of Gold Coast sites. This included a 12-month monitoring study of the proposed Dive Precinct by International Coastal Management, in partnership with the Griffith Centre for Coastal Management in 2011/2012 (ICM 2012 See Appendix A-4).

The 12-month monitoring study identified the site as suitable for a dive precinct for the following reasons:

- > Location approximately 1.8 kilometres east of the existing Scottish Prince wreck, a popular local dive destination
- > The site would be accessible at least 220 days per year via the Gold Coast Seaway with 50% of those days would have 'calm' conditions (where thresholds for currents, wind and waves are not exceeded). The short trip from the Seaway will enable operators to schedule at least three return dive charters per day.
- > Minimal negative environmental impact, with the majority of the seabed in the Dive Precinct found to be predominately barren with limited features and devoid of vegetation and generally consisting of medium-course sand. Case studies show that artificial dive sites are best located in this type of submarine 'habitat limited' environment
- > The potential to attract diverse marine life
- > Visibility averaging 10.7 metres, with average visibility not falling below 2 metres
- > Average wind speed consistently below the 20 knot threshold 93% of the year, with maximum gusts below this threshold 67 per cent of the time
- > Average currents of 0.5 knots, staying below 1 knot more than 93% of the time
- > Waves averaging 1.9 metres, with site access approximately 215 days per year during monitoring and historically 223 days per year
- > Desirable water depth at 30 metres.

The proposed reef siting and design considered a variety of biological, economic, and physical sciences and engineering factors, to ensure the reef is structurally sound, environmentally friendly and safe for use as a dive site.

Following in-depth consultation with stakeholders, the proposed site off Main Beach was considered to be the most feasible option (ICM 2012).

8.1 Select the relevant alternatives related to your proposed action

- ☐ Timeframes
- ☐ Locations
- ☐ Activities



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8.25 Do you have another alternative?

☐ Yes ☒ No



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Section 9

Person proposing the action

9.1.1 Is the person proposing the action a member of an organisation?

☒ Yes ☐ No

Organisation

Organisation name GOLD COAST CITY COUNCIL
Business name
ABN 84858548460
ACN
Business address 9 Holden Pl, Bundall, 4217, QLD, Australia
Postal address
Main Phone number 07 55817742
Fax
Primary email address KMAYBERRY@goldcoast.qld.gov.au
Secondary email address

9.1.2 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

☐ Small business
☒ Not applicable

9.1.2.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations *

☐ Yes ☒ No

9.1.3 Contact

First name Kim
Last name Mayberry
Job title City Projects Coordinator
Phone 07 5581 7742
Mobile
Fax
Email KMAYBERRY@goldcoast.qld.gov.au
Primary address
Address 9 Holden Pl, Blundall 4217 QLD

Declaration: Person proposing the action

I, — Kim Mayberry

, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity.

Signature: Kim Mayberry Date: 27/08/2020

I, — Kim Mayberry

, the person proposing the action, consent to the designation of Kim Mayberry on behalf of Gold Coast City Council as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature: Kim Mayberry Date: 01/09/2020



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Proposed designated proponent

9.2.1 Is the proposed designated proponent a member of an organisation?

☒ Yes ☐ No

Organisation

Organisation name GOLD COAST CITY COUNCIL
Business name
ABN 84858548460
ACN
Business address 9 Holden Pl, Bundall, 4217, QLD, Australia
Postal address
Main Phone number 0755817742
Fax
Primary email address KMAYBERRY@goldcoast.qld.gov.au
Secondary email address

9.2.2 Contact

First name Kim
Last name Mayberry
Job title City Projects Co-ordinator
Phone
Mobile 07 5581 7742
Fax
Email KMAYBERRY@goldcoast.qld.gov.au
Primary address
Address 9 Holden Pl, Blundall 4217 QLD

Declaration: Proposed Designated Proponent

I, — Kim Mayberry, the
proposed designated proponent, consent to the designation of
myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature: *Kim Mayberry* Date: 27/08/2020



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Referring party (person preparing the information)

9.3.1 Is the referring party (person preparing the information) a member of an organisation?

☒ Yes ☐ No

Organisation

Organisation name	CARDNO (QLD) PTY LTD
Business name	
ABN	57051074992
ACN	
Business address	Locked Bag 4006 Fortitude Valley, Fortitude Valley, 4006, QLD, Australia
Postal address	
Main Phone number	+61416378904
Fax	
Primary email address	stephanie.grogan@cardno.com.au
Secondary email address	

9.3.2 Contact

First name	Stephanie
Last name	Grogan
Job title	Environmental Planner
Phone	+61416378904
Mobile	+61416378904
Fax	
Email	stephanie.grogan@cardno.com.au
Primary address	Locked Bag 4006, Fortitude Valley, 4006, QLD, Australia
Address	

Declaration: Referring party (person preparing the information)

I, Stephanie Grogan, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature: Stephanie Grogan Date: 27 August 2020



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Appendix A	
Attachment	
Document Type	File Name
action_area_images	Section 1.4 Image of Action Area.pdf
public_consultation_reports	Section 1.13 Public Consultation_Stakeholder Engagment Record.pdf
supporting_tech_reports	Assessments of Significance_Marine Ecology.pdf
impact_reduction_docs	A-1 Assessments of Significance PH.pdf
impact_reduction_docs	A-2 Seadumping Permit Document PH.pdf
impact_reduction_docs	A-3 Gold Coast Dive Attraction- Technical Assessment PH. pdf
impact_reduction_docs	A-4 12 month Site Monitoring of Preferred Dive Site PH.pdf
impact_reduction_docs	A-5 Stability Report PH.pdf
impact_reduction_docs	A-6 Engineering Drawings 50 - Reef Modules PH.pdf
impact_reduction_docs	A-7 Engineering Drawings 50 - Configuration of Dive site_Moorings PH.pdf
impact_reduction_docs	A-8 Geophysical Investigations Part A PH.pdf
impact_reduction_docs	A-9 Geophysical Investigations Part B.pdf

Appendix B
Coordinates
Area 1
-27.963935145723,153.45246773815
-27.963918337647,153.45755119009
-27.959404808191,153.45753215613
-27.959421613085,153.45244891564
-27.963935145723,153.45246773815