Nest to Ocean

INVESTMENT PROSPECTUS

Queensland Government

Nest to Ocean Turtle Protection Program

Threatened Species Program

Australian Government

Foreword

THE QUEENSLAND COAST IS HOME TO SOME OF THE MOST IMPORTANT MARINE TURTLE NESTING AND FEEDING SITES IN THE WORLD. FIVE SPECIES OF THREATENED MARINE TURTLE CURRENTLY NEST ALONG OUR IDYLLIC BEACHES.

Despite the integrity of our nesting beaches and coastal areas, there has been a severe global decline of sea turtle populations, and of the seven species found in the world, three are classified by the International Union for the Conservation of Nature (IUCN) as `endangered', with all six species occurring in Australia listed as either endangered or vulnerable under Australian and Queensland State legislation. In Queensland studies have found feral pigs to be responsible for destroying over 70 per cent of turtle nests at some important nesting beaches. Such continued loss of turtle hatchlings is unsustainable.

To address this, the Queensland and Australian Governments have established the **Nest to Ocean Turtle Protection Program (Nest to Ocean)**.

The Program has identified key marine turtle rookeries along the Queensland coast for active nest protection and predator control to reduce the threat posed by feral animals such as pigs and foxes. Key to the success of this approach has been the development of strong partnerships. With some of the most important marine turtle nesting sites located outside of formal protected areas it is has been critical to bring together traditional owners, land managers, businesses and the wider community to support the management of key turtle nesting beaches.

However, a project of this scale involves significant expense. Your support and investment are needed to help save these important species. By releasing this prospectus, we are looking beyond government, to invite the business, industry and philanthropic sectors to join us. The Queensland and Australian Government is investing in this important initiative, and we extend this opportunity for you to share in this inspirational and rewarding program.

Migration is a remarkable thing. For our marine turtles, Queensland beaches are a springboard from which hatchlings begin a massive oceanic adventure. Hatchlings can travel up to thousands of kilometres to foraging grounds before returning to breed and nest in Australia as adults. However marine turtles face many challenges, both in the marine environment and on the land. All over the world there is mounting pressure on these tiny voyagers.

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NEST TO OCEAN GOALS

The Queensland Parks and Wildlife Service and Partnerships (QPWS&P) funds on-ground pest management that focuses on the conservation of the state's protected areas and ecosystems and currently has several active projects that include reducing the impact of feral pigs and foxes on turtle rookeries. However, the level of predation on turtle rookeries is considered unsustainable and several key rookeries under threat in Queensland are located outside of formal protected areas. To address this issue, Nest to Ocean aims to increase the successful hatching rate of marine turtle eggs to at least 70% across major turtle nesting beaches in Queensland[1]

The Program achieves this by supporting existing programs through strategic investment into marine turtle conservation. This includes working with First Nations communities and community-based natural resource management groups across the Queensland coastline.

NEST TO OCEAN WINS

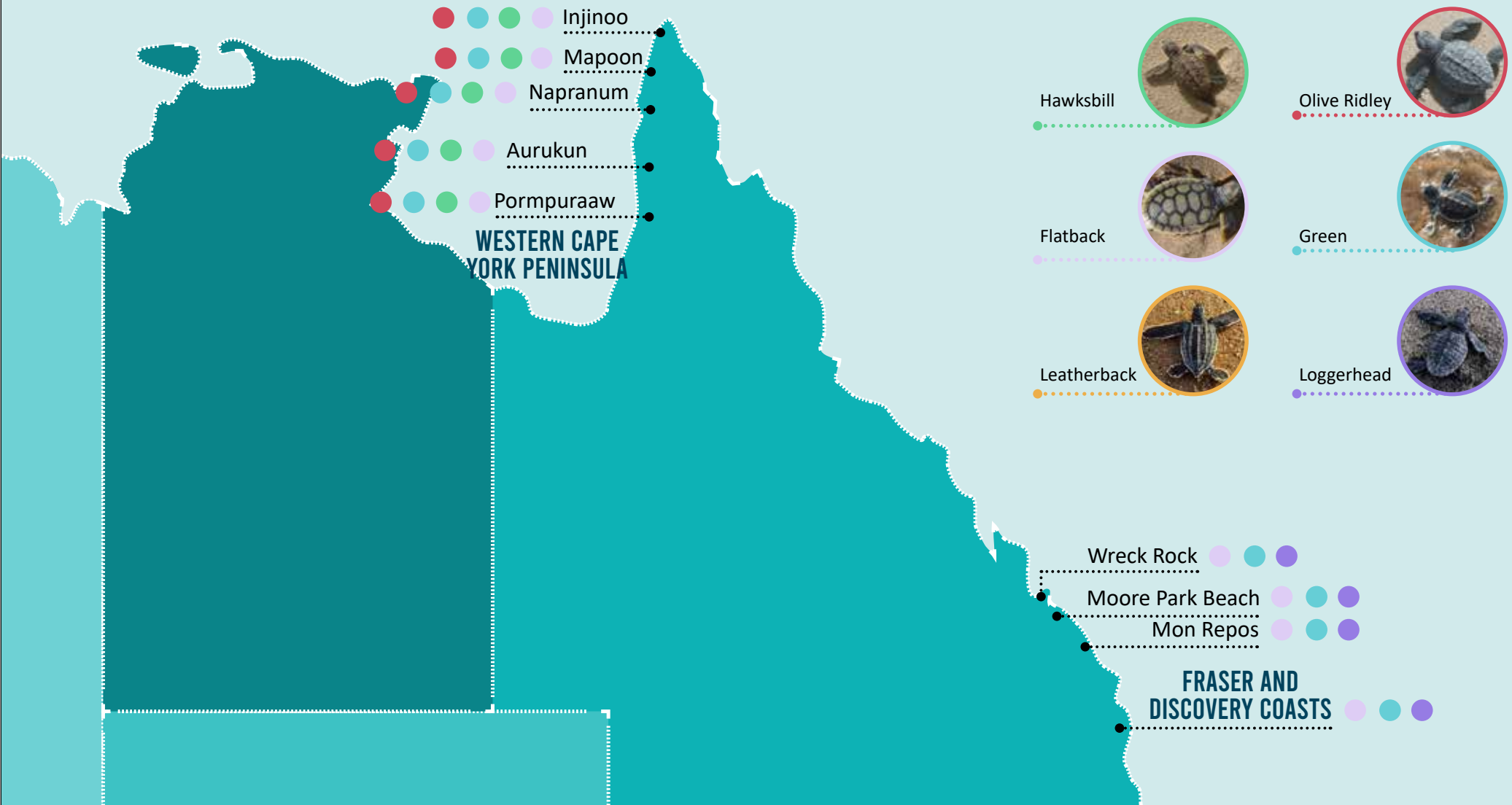
Established in 2014, Nest to Ocean has achieved several significant milestones that contribute to achieving the goals of the program. These include…

- Investment in over 36 projects covering 500km of Queensland's coastline, through a joint-funded partnership of the Australian and Queensland governments.
- Over 80% of projects have developed partnerships between community, government, and First Nations communities.
- Over 80% of all turtle nests within project areas have produced hatchlings.
- Over 80% of projects involved First Nations management of marine turtles and traditional knowledge.
- Over 80% of projects enhanced capacity in remote communities in Queensland's far north through training, employment, and education.
- Over half of all projects incorporated innovative techniques, from activities ranging from nest protection, monitoring and education.

[1] A target established under the 'Recovery Plan for Marine Turtles in Australia, Commonwealth of Australia, 2017'

Case study Locations

The following pages outline case-studies and project management components within Nest to Ocean that hold exciting investment opportunities.



CASE STUDY – WESTERN CAPE YORK

The Western Cape Turtle Threat Abatement Alliance (WCTTAA) represents an agreement between land and sea managers from Pormpuraaw, Napranum, Mapoon and Northern Peninsula Area to work together for the protection of marine turtles along the west coast of Cape York. Formed in 2013 the partnership recognised that local outcomes for turtle conservation would be further enhanced by regional coordination.

WCTTAA's vision is to seek to efficiently manage threats to coastal habitats and enhance opportunities for nesting marine turtle populations of the Western Cape.

This 150km stretch of coast contains Queensland's largest nesting population of the endemic and vulnerable flatback turtle (*Natator depressus*), the state's entire nesting population of the endangered Olive Ridley turtle (*Lepidochelys olivacea*) and a regionally important nesting population of the endangered hawksbill turtle (*Eretmochelys imbricata*). Working together between July to October each year, the focus is on improving turtle hatchling survival by undertaking an extensive aerial feral pig eradication program, beach patrols, nest monitoring and nest protection. Nest protection involves placing specially designed cages over the nests, preventing predation from digging predators, yet still permitting the hatchlings adequate space to leave the nest.

Using First Nations knowledge and data from previous surveys, areas of significant importance to Olive Ridley turtles were targeted. The combination of these new techniques and established predator removal methods has paid off, with some beaches recording 85% of turtle nests producing hatchlings. In 2021, WCTTAA reported they had monitored seven beaches including 3,698 marine turtle nests, removing 2,693 feral pigs from the area, reducing predation rates from 90% in 2001 to under 30% in 2021. Not long ago only 10% of nests were producing hatchlings, in these locations. WCCTAA's growing reputation for reducing feral pig predation of turtle nests was cemented last year, hitting an amazing milestone of 98% of nests remaining unscathed at one of the remote beach locations.

SCAN THE QR CODE
TO FIND OUT MORE

INVESTMENT OPPORTUNITY	DESCRIPTION	RUNNING COST PER ANNUM
Threat management	Ariel feral pig control and on-ground removal	$250,000
Science and monitoring	Turtle nest monitoring, data collection and analysis	$150,000
Fixed assets and capacity	Transport barges, quad bikes, equipment replacement (e.g., hand held devices)	$250,000

Curtesy of WCTTAA

CASE STUDY – FRASER AND DISCOVERY COASTS

The Fraser and Discovery coastline is internationally renowned for its marine turtle nesting sites. These sites support significant breeding populations of loggerhead (*Caretta caretta),* flatback *(Natator depressus*), and green sea (*Chelonia mydas*) turtles. Rare sightings of leatherback turtles (*Dermochelys coriacea*) off the coast of Bundaberg also occur with the last leatherback breeding season in Australia taking place here over 25 years ago.

First Nations Land and Sea Rangers and community groups have been working with the community-based Burnett Mary Regional Group (BMRG) to undertake turtle monitoring and fox control activities in the area north of Bundaberg to Agnes Water. BMRG has developed agreements to implement monitoring and predator control activities on land managed by private landholders, QPWS&P, Gladstone and Bundaberg Regional Councils. The QPWS&P project also provides support to volunteer community groups to undertake turtle monitoring at key rookeries and undertake community education with schools and the general public.

The European red fox *(Vulpes vulpes)*, introduced to the region, is a primary threat to the marine turtle nests in this region. Foxes dig up eggs that turtles have laid under the sand or catch the hatchlings as they head down the beach toward the ocean. Maintaining predator control programs is important as the region is supporting the largest concentration of nesting marine turtles on the eastern Australian mainland and has the most significant loggerhead turtle nesting population in the South Pacific region with the largest concentration of nesting centred at Mon Repos.

Volunteers based in areas where the fox control work is undertaken monitor the turtle nests and their hatchlings throughout the nesting season. This provides valuable data on turtle numbers and behaviours in project areas to support and guide future management plans.

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INVESTMENT OPPORTUNITY	DESCRIPTION	RUNNING COST PER ANNUM
Threat management	On-ground fox and feal pig control	$150,000
Science and monitoring	Supporting citizen science	$75,000
Fixed assets and capacity	Equipment replacement (iPad's GPS, nest protection cages, quad bikes	$150,000

CASE STUDY – AURUKUN CAPE YORK

The area of Aurukun spans 750,000 hectares and includes a vast area of spectacular coastal wetlands and country of major ecological significance. Aak Puul Ngantam (APN Cape York), Wik and Kugu Rangers working in partnership with the Wik Prescribed Body Corporate, Ngan Aak Kunch, and the Aurukun Shire Council have been supporting the recovery of the Olive Ridley turtle (*Lepidochelys olivacea*). The northwestern beaches of Cape York contain the entirety of Olive Ridley nesting locations in Queensland. The species has undergone greater than 90% nest predation at some beaches for multiple decades and is also heavily impacted by ghost nets in the Arafura-Timor Seas and the Gulf of Carpentaria. The stock of Olive Ridley in the northwestern Cape York has undergone significant decline but with the efforts of the Land and Sea Ranges there are positive signs of recovery.

APN Cape York, by partnering with CSIRO and Microsoft, are now using Artificial Intelligence (AI) to support turtle conservation on the extensive coastline of their remote traditional homelands. The rangers are using drones fitted with super high-resolution cameras capturing thousands of images of beaches that the AI will analyse to identify and locate turtle nests and predator tracks.

APN Ranger conservation actions have focused on stopping predation of turtle nests on these beaches by managing the feral pigs through aerial shooting, fencing, and poisoning, supported by hundreds of ranger hours patrolling beaches to identify nests and monitor predation levels. Now, with the use of this new technology, APN Rangers will be able to see detailed breakdowns of these remote beaches and the areas hit hardest by predators. This technology enabled rapid monitoring and analysis and now allows the rangers to focus their efforts on conservation interventions that are aimed at specific areas informed by real-time information.

Using this new technology, APN Rangers, CSIRO, and Microsoft aim to further reduce turtle nest predation and expand the area of coastline actively managed as ranger hours are freed up from the heavy time burden of monitoring. This new technology has the potential to be applied to turtle nesting sites worldwide.

INVESTMENT OPPORTUNITY	DESCRIPTION	RUNNING COST PER ANNUM
Threat management	On-ground predator control and aerial shooting	$150,000
Science and monitoring	Quad bikes, barge hire, drones	$100,000
Fixed assets and capacity	Remote temporary Ranger bases	$150,000

Curtesy of APN

SCAN THE QR CODE TO FIND OUT MORE

MULTIPLE LOCATIONS - THREAT MANAGEMENT

To manage the threat from predators Nest to Ocean has delivered funds as grants with work undertaken across a range of tenure including areas managed by First Nations communities, private landholders, and formal reserves. The control methods used by groups include aerial and ground shooting, baiting, fox den detection (using trained dogs), trapping and fumigation, and direct nest protection to direct nest protection utilising specially designed exclusion cages. Nest protection cages have been installed over turtle nests at nesting beaches in key locations such as Cape York to exclude predators from accessing nests.

Funding for this program has allowed for this work to be applied strategically across Queensland over a continued timeframe (< 10 years). In some locations the results have seen a marked improvement in nests remaining intact, with Mon Repos reporting hatchling success rates consistently above 90% over the past few seasons. The reduced number of predators overall has resulted in increased survival of turtle nests and hatchlings.

In order to maintain these results, ongoing support is needed. To maintain the improved stocking rate for each species and to ensure sustainable turtle populations will require work over many decades and funds to undertake the predator controls.

THREAT MANAGEMENT TASK	DESCRIPTION	RUNNING COST PER ANNUM
SALARIES		
Site management and protection (regional)	Project Coordinators (Ranger salaries covered by State Funding)	$400,000
Ground-shooting	Licencing and equipment	$70,000
Baiting	Materials	$50,000
Detection dogs, trapping and fumigation	Specialist contractors	$60,000
CAPITAL WORKS		
Fencing	Temporary fencing erected during nesting around key areas	$50,000
Baits	Temporary structures - Bait stations (e.g., Feral pig feeders)	$45,000
Nest protection cages	Construction materials and replacement	$60,000
Signage	Temporary and fixed signage	$50,000
Field equipment	Tools, handheld devices etc	$150,000
Vehicles (4x4, barge hire and quads)	Hire and maintenance	$200,000
SERVICES		
Water, electricity, av gas (turtle camps)	Remote site bush camps	$150,000
Vehicular running costs	Fuel and maintenance	$75,000
New projects	Expansion of sites	$100,000

MULTIPLE LOCATIONS - SCIENCE AND MONITORING

The continued active adaptive management of threats to marine turtle rookeries, requires consistent, long-term scientific study and monitoring in order to effectively steer the program towards its overarching goals. Among the most important parameters to quantify and monitor over time are:

- The distribution and abundance of nesting species across key locations in Queensland.
- Quantification of subsequent losses of clutches by predator species.
- Reporting on the survival rate of marine turtles and their clutches of eggs and hatchlings.
- Reporting the number of predator species removed because of the control program.
- Establishment of long-term monitoring in areas identified as knowledge gaps across Queensland.[2]

[2]Queensland Marine Turtle Conservation Strategy 2021-2031

Curtesy of APN

THREAT MANAGEMENT TASK	DESCRIPTION	RUNNING COST PER ANNUM
SALARIES		
Migration tracking (turtle nesting, tracks, and predators)	Aerial surveys with hi-resolution GPS identifiable image capture	$250,000
Modelling (including AI investment)	Aerial monitoring and AI image processing	$150,000
Aerial platform and night thermal scope training	Training program for in firearms safety, aerial platform shooting, and night-thermal shooting	$40,000
Targeted Predator Control - Aerial and On-ground	Predator control is dependent on location at and target species and may use a combination of methodologies	$70,000
Cages and Nest Protection Mesh	Nest protection cages have proved highly effective in increasing at-risk rookeries	$200,000
Advances in monitoring methodology	Trial novel techniques and new technologies to improve population monitoring	$60,000
CAPITAL WORKS		
Storage and built infrastructure such as aerial platform	Remote bush camps. Aerial platforms for predator management	$60,000
Monitoring equipment	Barge hire	$95,000
Office and field equipment	Handheld devices. Nest markers	$50,000
Security and signage	Educational and program promoting signs	$75,000
SERVICES		
Water, electricity, AV Gas	For remote sites and bush camping	$40,000
New projects	Maintenance and replacement of equipment	$75,000

MULTIPLE LOCATIONS - FIXED ASSETS AND CAPACITY

Nest to Ocean has contributed to increased First Nations and community participation in turtle nest monitoring and predator control activities. All of the projects have included First Nations engagement and volunteers from the community. Over 100 Indigenous rangers have been involved in predator management and turtle monitoring.

Training provided at priority rookeries has built capacity for delivery of key aspects of the program and will leave a legacy beyond the life of the program. The funding has enabled training for rangers or community volunteers in turtle monitoring and in predator control or exclusion techniques. In many locations funding for control of predator animals has resulted in significant reductions in targeted pest species. One project in western Cape York estimates the feral pig control program has led to a 90 percent reduction in the local pig population. Projects have also identified broader environmental benefits attributable to the reduction of pest species including regrowth of sensitive vegetation communities and improvement in the health of freshwater ecosystems.

The Nest to Ocean initiative has served to focus organisational and community attention on resources to enhance the survival of marine turtle eggs and hatchlings from predation. This has been achieved through collaborative partnerships and grant funding arrangements which have built or enhanced the capacity of participant organisations to both expand existing programs and explore innovative ideas for active predator control.

THREAT MANAGEMENT TASK	DESCRIPTION	RUNNING COST PER ANNUM
SALARIES		
Education (training)	On-going development and expansion of turtle monitoring and predator control skills	$50,000
Program Coordination	Program oversight and delivery	$125,000
Web-design	Promotional and reporting	$25,000
CAPITAL WORKS		
Ranger/volunteer (turtle camp)	Field base remote bush camps for seasonal works	$30,000
Security and signage	Promotion and safety messaging for workers	$20,000
Field equipment	Hand held devices, data storage and laptops	$40,000
Vehicles lease/hire (4x4 and quads)	Sites access and transport	$80,000
SERVICES		
Water, electricity	Remote sites	
Transport		$12,500
Accommodation - workshops	Training and planning projects	$12,500
Vehicular running costs	Project coordinators and rangers	$40,000
Contingency		$55,000

How you can help

Queensland supports significant populations of nesting marine turtles, all of which are threatened. Major pressures to marine turtles include light impacts on adults and hatchlings at rookeries and predation by introduced animals at rookeries. Moderate pressures include global temperature increases, sea level rise, beach modification and impacts from marine debris. To address these pressures, the Queensland Government invests in studies to understand and quantify impacts in conjunction with facilitating projects which aim to intervene and reduce or mitigate these pressures. Much of the on-ground work requires support to and from remote and rural communities. This cost-sharing provides greater value for money and improved outcomes across all programs.

Nest to Ocean has demonstrated that through partnerships great things can be achieved but there is a need for on-going support as not all areas in Queensland can be addressed without more resources.

The Queensland Government's Department of Environment and Science will continue to support strategic direction for marine turtle conservation within our coastal areas. This includes the establishment of an Advisory Committee and Scientific Panel of Experts to guide investment and priorities. This will include reporting on annual turtle research and monitoring as well as on-ground initiatives such as predator control.

However, a project of this scale involves significant expense and many partners. Your support and investment are needed to help save these unique species.

We extend this opportunity for you to share in this inspirational and rewarding project.

IMPORTANT RESOURCES

- Queensland Threatened Species Program
- Nest to Ocean Turtle Protection Program website
- Marine turtle biology, research and conservation and Queensland Marine Turtle Strategy
- Recovery Plan for Marine Turtles in Australia
- Queensland Government: Protecting the Great Barrier Reef
- Australian Government
- An evaluation of nest predator impacts and the efficacy of plastic meshing on marine turtle nests on the western Cape York Peninsula, Australia
- Natura Pacific: Loggerhead Turtle – Back from the Brink

Australian Government

Queensland Government

Nest to Ocean Turtle Protection Program

The Nest to Ocean Turtle Protection Program
is a joint initiative of the Queensland and Australian Government