

Expansion of Hong Kong International Airport into a Three-Runway System

Detailed Coral Translocation Report

May 2017

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May 2017

This Detailed Coral Translocation Report has been reviewed and certified by the Environmental Team Leader (ETL) in accordance with Condition 2.12 of Environmental Permit No. EP-489/2014.

Certified by:



Terence Kong
Environmental Team Leader (ETL)
Mott MacDonald Hong Kong Limited

Date: 15 June 2017

Our Ref : 60440482/C/JCHL160617

By Email

Airport Authority Hong Kong
HKIA Tower, 1 Sky Plaza Road
Hong Kong International Airport
Lantau, Hong Kong

Attn: Mr. Lawrence TSUI, Principal Manager

16 June 2017

Dear Sir,

Contract No. 3102
3RS Independent Environmental Checker Consultancy Services

Detailed Coral Translocation Report

Reference is made to the Environmental Team's submission of Detailed Coral Translocation Report as required in Section 3.6 of the Coral Translocation Plan certified by the ET Leader on 15 June 2017.

We would like to inform you that we have no adverse comment on the captioned submission. Therefore we write to verify the captioned submission in accordance with the requirement stipulated in Condition 1.9 of EP-489/2014.

Should you have any query, please feel free to contact our Isabella Yeung at 3922 9348 or the undersigned at 3922 9376.

Yours faithfully,
AECOM Asia Co. Ltd.



Jackel Law
Independent Environmental Checker

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1 Introduction

1.1 Background

Under the Environmental Impact Assessment Ordinance, the Environmental Impact Assessment (EIA) Report and the Environmental Monitoring and Audit (EM&A) Manual (Register No.: AEIAR-185/2014) prepared for the “Expansion of Hong Kong International Airport into a Three-Runway System” (hereafter as the Project) have been approved by the Environmental Protection Department (EPD), and an Environmental Permit (EP) (Permit No.: EP-489/2014) has been issued for the Project.

The project will be located on a new land formation area immediately north of the Hong Kong International Airport (HKIA) in North Lantau, covering a permanent footprint of approximately 650ha. As stated in the approved EIA, the project primarily comprises:

- New third runway with associated taxiways, aprons and aircraft stands;
- New passenger concourse building;
- Expansion of the existing Terminal 2 (T2) building; and
- Related airside and landside works, and associated ancillary and supporting facilities.

Pursuant to Condition 2.12 of the Environmental Permit (EP), the Airport Authority Hong Kong (AAHK) was required to prepare a Coral Translocation Plan (CTP) to include details on the detailed baseline survey in areas with potentially affected coral colonies and translocation details including information of coral colonies to be translocated, recipient area, translocation methodology and monitoring of transplanted colonies.

Mott MacDonald Hong Kong Limited (MMHK) was appointed by AAHK as the Environmental Team (ET) for the Project to provide environmental team consultancy services including the preparation of a CTP and to conduct the coral translocation.

A Coral Translocation Plan was submitted in May 2016, reporting on the findings of baseline coral dive survey and providing recommendations on recipient sites, translocation methodology and a proposed monitoring programme for the translocated coral. Coral translocation was subsequently conducted as per the CTP.

1.2 Objectives of Coral Translocation

The baseline coral dive survey identified some coral colonies along the north-eastern side of the artificial seawall on the airport island (i.e. in the areas around D6, D7 and D8 in the baseline dive survey) as being suitable for translocation.

To prepare for the translocation works, a pre-translocation survey was conducted at the main donor site (north-eastern side of airport island) in accordance with the CTP requirements. Representative locations in the main donor site were also surveyed to gauge background environmental conditions.

In addition to this, in order to translocate as many coral colonies as possible, the whole of the airport island northern seawall was revisited to search for any additional coral colonies that are

suitable for translocation (i.e. boulders less than 50cm in diameter with corals attached). Where suitable coral colonies were found, they were also translocated to recipient site.

1.3 Purpose of This Report

In accordance with the CTP, a detailed coral translocation report will be submitted to EPD and AFCD after completion of the translocation works. The report is to include the results of the pre-translocation survey at the recipient sites, the pre-translocation survey and coral translocation activities at the donor sites, preliminary post-translocation surveys and the tagged coral colony surveys. The locations, conditions and photographic records of the translocated corals and the conditions at the recipient sites are also covered in the report.

2 Pre-translocation Survey

2.1 Introduction

Based on the baseline coral dive survey findings as presented in the CTP, the main donor site was confirmed as the area along the north-eastern side of the existing airport island (i.e. in the vicinity of locations D6, D7 and D8 as identified in the CTP). While the survey locations D6, D7 and D8 in the baseline dive survey followed the same locations as in the EIA study, the baseline survey also included a re-check of the seawall / rocky shore at the north-eastern tip of the airport island. Coral colonies on small boulders were found in this area, thus the area around D6, D7 and D8 was identified as the donor site (shown in **Figure 1**).

A pre-translocation survey was conducted at representative locations, where a higher prevalence of corals were found on movable boulders in donor site and coral translocation was conducted at the donor site. The seawall / rocky shore in the donor site area was searched for suitable coral colonies and translocation was conducted as appropriate.

Subsequently, the seawall on the northern side of the airport island was also searched for additional suitable coral colonies so as to translocate as many coral colonies as possible (the searched area shown in **Appendix A**). The survey along the northern seawall confirmed that it generally comprises large boulders not suitable for translocation and only a small number of colonies suitable for translocation were identified.

2.2 Pre-translocation Survey Locations and Method

Before coral translocation, pre-translocation surveys, consisting of spot-check dive surveys and REA surveys were conducted at both donor and recipient sites to prepare for the coral translocation works. The survey locations at the donor and recipient sites are shown respectively in **Figure 1** and **Figure 2**.

In the donor site area those locations previously identified as having coral suitable for translocation were further surveyed. The whole donor site was searched for coral colonies suitable for translocation and the pre-translocation spot-check dive and REA surveys were conducted at the representative locations where higher prevalence of coral colonies suitable for translocation were found. At the Yam Tsai Wan recipient site, pre-translocation surveys were conducted in four locations.

Figure 1: Map showing the areas surveyed in the Pre-Translocation Survey



Figure 2: The locations of the four transects in the recipient sites



Spot-check Dive Surveys

Spot-check dive surveys provided an indication of the general conditions at coral areas. Suitably trained SCUBA divers dived within each coral area to identify specific environmental conditions within the areas. The survey covered each area at a density sufficient to cover a representative area. The following information was recorded during each dive:

- Date and time
- GPS location
- Survey depth range
- Visibility
- Temperature
- Weather
- Substratum type

Data was recorded on waterproof paper attached to a suitable slate.

Rapid Ecological Assessment (REA) Surveys

The surveys covered the main characteristics of each coral community at each site and comprised two transects of 100m in each area surveyed.

Upon completion of each dive survey, substratum attributes and environmental variables were recorded. Substratum attributes are assigned to hard substrate, continuous pavement, boulders (diam.>50cm), boulders (diam.<50cm), rubble, sand and silt.

Environmental variables recorded during each dive:

- Salinity
- Visibility
- Depth
- Slope of the community at regular intervals along the transect
- Exposure
- Sediment

Visibility was measured with a Secchi disc (m). Salinity was measured with a portable refractometer. The depth of sites (maximum and minimum) and average angle of community slope to the horizontal (nearest 10 %) was recorded at 2m intervals.

All data was input to Excel spreadsheets for initial storage and preliminary analyses.

Data loggers were installed to record the temperature at both ~1.5m and ~2.0m at both the donor and recipient sites. The units were attached to steel rebar placed at suitable locations at all sites, with data periodically downloaded for analysis.

2.3 Pre-translocation Survey Results

2.3.1 Results of the Spot-check Dive Surveys in Donor and Recipient Locations

Donor Sites

The pre-translocation surveys in the donor site areas were carried out in August 2016. The additional diving search along the artificial seawall on the northern side of the airport island

confirmed that the entire seawall comprises large boulders that are not suitable for translocation as identified in the CTP (example shown in **Plate 4** in **Appendix G**). The surveys were undertaken in the donor site areas in the vicinity of survey stations identified in the CTP as D6 to D8 (i.e. north-eastern side of the artificial seawall on the airport island). Three survey areas along the north-eastern part of the airport island artificial seawall, with a high prevalence of corals on movable boulders, were identified as the donor sites (D8A, D8B and D6/D7 as shown in **Figure 1**). Surveys specifically identified smaller sized boulders with coral colonies attached (example shown in **Plate 8** in **Appendix G**) for translocation.

Transect D8A

The seabed is composed of a mixture of large and small rocks boulders and rubble in this transect area. The survey identified populations of gorgonian *Guaiaorgia* sp. in a band between 1.5 to 2.9m water depth primarily occurring on small and large rocks in this area but also attached to the artificial vertical seawall. The percentage coverage of the gorgonian coral is similar to the baseline survey conducted in donor site. The results are shown in **Table 1** and **Appendix C**.

Table 1: The Spot-check Dive Data for D8A

Parameter	Results	Remarks
Date	25 th August 2016	
Time	11:15–12:25	
Weather	Sunny	
GPS location (starting point)	22 19 418 N 113 56 677 E	
Depth range of survey (m)	1.5–2.9	
Visibility (m)	0.3	Reduced to 0.2 m during the survey
Salinity (at water surface) (‰)	28	
Water temperature (at 1m depth) (°C)	27	
Seabed substratum composition	Rocky coastline, small and large rocks, boulders, sand, rubble, and silt	Ghosted fishing net, general rubbish

Transect D8B

The seabed is composed of large and small rocks, boulders, rubble and sand in this transect area. The survey identified populations of gorgonian *Guaiaorgia* sp. in a band between 1.5 to 2.5m water depth primarily occurring on small and large rocks in this area but also attached to the artificial vertical seawall. The percentage coverage of the gorgonian coral is similar to the baseline survey conducted in donor site. The results are shown in **Table 2** and **Appendix C**.

Table 2: The Spot-check Dive Data for D8B

Parameter	Results	Remarks
Date	25 th August 2016	
Time	11:30–12:30	
Weather	Sunny	
GPS location (starting point)	22 19 405 N 113 56 750 E	
Depth range of survey (m)	1.5–2.5	
Visibility (m)	0.2	
Salinity (at water surface) (‰)	27	

Parameter	Results	Remarks
Water temperature (at 1m depth) (°C)	27	
Seabed substratum composition	Small and large rocks, boulders, sand, rubble, and silt	General rubbish

Transect D6/D7

The substratum in this transect area is composed of sloping artificial seawall, large rocks and boulders with occasional small rocks in the gaps between larger boulders. The survey identified populations of gorgonian *Guaiagorgia* sp. in a band between 1.5 and 2.1m water depth and occurring on small boulders in the area. The percentage coverage of the gorgonian coral is similar to the baseline survey conducted in donor site. Survey transect results are shown in **Table 3** and **Appendix C**.

Table 3: The Spot-check Dive Data for D6/D7

Parameter	Results	Remarks
Date	25 th August 2016	
Time	12:45–13:30	
Weather	Sunny	
GPS location (starting point)	22 19 442 N 113 56 040 E	
Depth range of survey (m)	1.5–2.1	
Visibility (m)	0.5	
Salinity (at water surface) (‰)	23	
Water temperature (at 1m depth) (°C)	27	
Seabed substratum composition	Sloping artificial seawall, mostly large rocks and boulders, and some small rocks	Discarded rope

Remaining Seawall

During the additional diving search along the northern seawall a small number of additional coral colonies suitable for translocation were found, mainly around the boat launch area and the adjacent outfall in the mid-point of the northern seawall. The small number of coral colonies identified here were translocated immediately after they were located.

Recipient Sites

Four potential recipient sites within Yam Tsai Wan (RT1, RT2, RT3 and RT4 as shown in **Figure 2**) were surveyed in August 2016 and September 2016. Spot-check dive and REA surveys were carried out at each location. Yam Tsai Wan is approximately 8km from the donor site. All potential recipient sites investigated had existing communities of the gorgonian *Guaiagorgia* sp. and had sufficient space within the existing coral community to receive additional corals.

Transect RT1

This site is situated in the most western point of Yam Tsai Wan. It consists of a section of rocky natural coastline. Gorgonians occur at depths between 1.8 and 2.5m on a 4m swath of seabed covered by sand and rocks. There is a submarine cable at the eastern end of this transect. The spot-check dive data is shown in **Table 4** and **Appendix C**.

Table 4: The Spot-check Dive Data for RT1

Parameter	Results	Remarks
Date	16 th August 2016	
Time	13:00–13:19	
Weather	Overcast	
GPS location (starting point)	22 19 696 N 114 0 684E	
Depth range of survey (m)	1.0–3.3	
Visibility (m)	0.5	
Salinity (at water surface) (‰)	23	
Water temperature (at 1m depth) (°C)	27	
Seabed substratum composition	Rocky coastline, small & large boulders on sand and rubble seabed	

Transect RT2

The location of this transect is to the east of RT1 and is in the centre of Yam Tsai Wan. The seabed has a strip of boulders and rocks that continue to a depth of 3.1m. The spot-check dive data is shown in **Table 5** and **Appendix C**.

Table 5: The Spot-check Dive Data for RT2

Parameter	Results	Remarks
Date	30 th August 2016	
Time	11:50–12:45	
Weather	Overcast	
GPS location (starting point)	22 19 745 N 113 0 828 E	
Depth range of survey (m)	1.3–3.1	
Visibility (m)	0.2	
Salinity (at water surface) (‰)	28	
Water temperature (at 1m depth) (°C)	27	
Seabed substratum composition	Rocky coastline, small & large boulders	

Transect RT3

The location of this transect is between the sandy beach in the centre of Yam Tsai Wan and RT4 at the eastern end of the bay. The seabed has a strip of boulders and rocks that continue to a depth of 3.0m. The gorgonians occur in small groups between depths of 1.6 and 2.6m. Certain level of human disturbance exists in the area, with line fishermen in this area on two of the survey days. The spot-check dive data is shown in **Table 6** and **Appendix C**.

Table 6: The Spot-check Dive Data for RT3

Parameter	Results	Remarks
Date	30 th August 2016	
Time	13:00–13:45	
Weather	Overcast	
GPS location (starting point)	22 19 806 N 114 1 042 E	

Parameter	Results	Remarks
Depth range of survey (m)	1.6–2.6m	
Visibility (m)	0.5	
Salinity (at water surface) (‰)	23	
Water temperature (at 1m depth) (°C)	28	
Seabed substratum composition	Rocky coastline, small & large boulders	

Transect RT4

The location of this transect is on the far eastern side of Yam Tsai Wan. The seabed in this area consists of sand and large boulders. The gorgonians occur in small groups between depths of 1.1m and 3.1m. A certain level of human disturbance exists in the area, with line fishermen present on three of the survey days. The spot-check dive data is shown in **Table 7** and **Appendix C**.

Table 7: The Spot-check Dive Data for RT4

Parameter	Results	Remarks
Date	30 th August 2016	
Time	14:05–14:50	
Weather	Overcast	
GPS location (starting point)	22 19 966 N 114 1 151E	
Depth range of survey (m)	1.1–3.1m	
Visibility (m)	0.5	
Salinity (at water surface) (‰)	23	
Water temperature (at 1m depth) (°C)	28	
Seabed substratum composition	Rocky coastline, small & large boulders	

2.3.2 Results of the Rapid Ecological Assessment (REA) Surveys at Donor and Recipient Sites

Donor Sites

Summary of the result are presented below whilst the data are presented in **Appendix C**.

Site D8Aa (D8A)

This site is a shallow water area and the average transect depth was 2m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 40% large boulders and ~5% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site D8Ab (D8A)

This site is a shallow water area. The average transect depth was 2.1m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 40% large boulders and ~5% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site D8Ba (D8B)

This site is a shallow water area. The average transect depth was 2.1m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 40% large boulders and ~10% rubble.

Site D8Bb (D8B)

This site is a shallow water area. The average transect depth was 2.1m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 40% large boulders and ~10% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site D6/D7a (D6/D7)

This site is a shallow water area. The average transect depth was 1.8m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky nature, which is sloping artificial seawall, large rocks and boulder with small rocks in the gaps between large boulder, with ~95% large boulders and ~5% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site D6/D7b (D6/D7)

This site is a shallow water area with an average depth of 1.9m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky nature, which is sloping artificial seawall, large rocks and boulder with small rocks in the gaps between large boulder, with ~95% large boulders and ~5% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Recipient Sites**Site RT1a (RT1)**

This site is a shallow water area. The average transect depth was 1.9m. Sediment load is low to medium at the scale of 2 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 70% large boulders and ~10% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site RT1b (RT1)

This site is a shallow water area. The average transect depth was 2m. Sediment load is low to medium at the scale of 2 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 80% large boulders and ~10% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site RT2a (RT2)

This site is a shallow water area. The average transect depth was 2.1m. Sediment load is low to medium at the scale of 2 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 90% large boulders and ~10% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site RT2b (RT2)

This site is a shallow water area. The average transect depth was 1.8m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 80% large boulders and ~20% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site RT3a (RT3)

This site is a shallow water area. The average transect depth was 1.8m. Sediment load is low to medium at the scale of 2 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 80% large boulders and 20% rubble. Gorgonian *Guaiaigorgia* sp. occurs in this area.

Site RT3b (RT3)

This site is a shallow water area. The average transect depth was 2m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 80% large boulders and 20% rubble. Gorgonian *Guaigorgia* sp. occurs in this area.

Site RT4a (RT4)

This site is a shallow water area. The average transect depth was 2.1m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 75% large boulders and ~5% rubble. Gorgonian *Guaigorgia* sp. occurs in this area.

Site RT4b (RT4)

This site is a shallow water area. The average transect depth was 2m. Sediment load is low to medium at the scale of 1 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 75% large boulders and ~5% rubble. Gorgonian *Guaigorgia* sp. occurs in this area.

2.4 Recipient Site Selection

The pre-translocation survey data was reviewed to assist the selection of recipient sites. **Table 8** lists the main advantages and disadvantages of each recipient site.

Table 8: Advantages and Disadvantages of Each Recipient Site Location

Recipient Site Location	Advantages	Disadvantages
RT1	<ul style="list-style-type: none"> • Presence of existing gorgonians • Adequate area to accept the corals • Environmental parameters match with donor sites 	<ul style="list-style-type: none"> • Not many existing colonies • Very close to submarine cable
RT2	<ul style="list-style-type: none"> • Presence of existing gorgonians • Adequate area to accept the corals • Favourable water current • Environmental parameters match with donor sites 	
RT3	<ul style="list-style-type: none"> • Presence of existing gorgonians • Adequate area to accept the corals • Environmental parameters match with donor sites 	<ul style="list-style-type: none"> • Fishing pressure
RT4	<ul style="list-style-type: none"> • Presence of existing gorgonians • Adequate area to accept the corals • Environmental parameters match with donor sites 	<ul style="list-style-type: none"> • Not many existing colonies • Fishing pressure • Very strong currents

Based on the information collected, RT2 was selected as the most suitable location to receive the corals.

3 Coral Translocation

3.1 Introduction

As per CTP recommendations, coral colonies attached on boulders of <50cm diameter were translocated. Where possible, coral colonies suitable for translocation were located prior to the translocation in the donor site areas suggested in the CTP. For some locations where visibility is very low, coral translocation was conducted concurrently after locating the suitable coral colonies. A further coral searching exercise was also conducted of the seawall along the northern side of the airport island with the intention being to translocate all coral colonies on movable boulders along the existing seawall. Fourteen additional coral colonies suitable for translocation were found around the boat launch area and the adjacent outfall in the mid-point of the northern seawall. These coral colonies were translocated immediately after they were located. In total, 384 colonies were identified for translocation including 370 colonies from the north-eastern airport island as well as the 14 colonies identified during the additional northern seawall search (details provided in **Appendix D**). Translocation was conducted in September and December 2016.

3.2 Coral Translocation Procedure

The corals suitable for relocation were placed into the lifters, which were large plastic baskets that could be attached to both sides of the boat for transportation. They were stabilized by bracing the substratum against itself in the lifters and sometimes by using pieces of foam rubber where needed to ensure no movement of the substratum was possible.

The lifters were then moved alongside the boat using lift bags and then securely fastened to the boat in preparation for translocating to the recipient site. The lifters were kept at a depth no shallower than 1.5m during the journey.

The coral transportation distance from the donor to the recipient site was 8km. The transportation of the coral had to occur during a time when the water current was flowing from west to east. This would allow a maximum boat speed but also ensure a minimal water movement against the corals by allowing the transfer boat to move at an almost drifting speed with the current.

The transportation was undertaken at a very slow speed to ensure that the stabilized coral substratum did not have an opportunity to move around and that the lifters maintained its depth and did not ride up to the surface. A slow speed of no greater than 2.5 knots (5 km/hr) was maintained during the transportation. The transportation process took about one and a half hour.

Once the boat reached the recipient site, each lifter was transferred to a smaller boat that allowed direct placement in the temporary recipient site. This was needed to ensure that the transport boat, having a greater draught, did not strike the seabed. The phases of the translocation work are detailed in the following section.

3.2.1 Collection of the Colonies from the Donor Site

Coral colonies were collected by hand with gloves from the surveyed areas to search for coral colonies suitable for translocation. Trained divers gently picked up the rocks that contained the coral colonies. Rocks with the longest length smaller than 50cm containing coral colonies with less than 10% partial mortality and size of 5cm or greater were considered suitable for translocation.

3.2.2 Stabilization in the Lifters & Attachment to the Work Boat

Once the substratum and colonies were removed from their original position they were carefully placed in a lifter. The rocks were wedged against other to keep the coral clear of pressure. When necessary, sponge rubber was introduced to help the wedging process. The objective of this packing was to ensure that the colonies would not move during transit. The lifters were transported to the side of the work boat using lift bags. They were then attached to ropes arranged along each side of the boat in preparation for transportation. The lift bag was then removed. At no time were the coral colonies in water shallower than 1.5m during this process.

3.2.3 Relocation

Once the work boat had sufficient lifters attached, the vessel was moved out into the prevailing current. The work schedule included details of the expected tidal flow so the transportation to the recipient site would occur during a west to east current flow. This allowed the boat to almost drift to the recipient site. The objective was to minimize the water flow around the lifters. A handheld GPS was used to monitor the workboat speed. The speed was maintained at about 2.5 knots (5 km/hr). The transportation process took about one and a half hours.

3.2.4 Depositing the Colonies in the Temporary Recipient Site

Upon arrival to the temporary recipient site, the lifters were transferred one by one to a smaller manoeuvrable boat. The movement to the required temporary location was carried out directly by this smaller boat if the tide allowed sufficient water depth, or by lift bag. Once the lifters were in the correct place, trained divers gently transferred the rocks with corals to the seabed. The colonies were placed along a temporary transect for later redistribution. The temporary recipient site was needed given the short time available for the coral removed from the donor site.

3.2.5 Relocation to the Final Recipient Site

Once all the corals were at the temporary recipient site, the process of moving all colonies to the final recipient location began. This was done using a small boat and lifters where necessary. Trained divers carefully placed the corals in lifters or simply carried the corals to their final designated location. Once the corals reached their final locations, the corals were stabilized and arranged in a suitable density to match the surrounding coral area.

4 Post-translocation Survey

4.1 Introduction

Post-translocation survey was conducted after the corals were moved to recipient sites. The spot-check dive and REA survey methods used are same as those conducted in the pre-translocation survey. The survey was conducted at recipient site RT2 with the purpose to check the recipient site condition after translocation and confirm its suitability as recipient site.

4.2 Results of the Spot-check Dive Surveys at RT2

Transect RT2

The location of this transect was between RT1 and the sandy beach that is in the centre of Yam Tsai Wan. The location of the recipient site is presented in **Appendix B**. The seabed has a strip of boulders and rocks. The spot-check dive data is shown in **Table 9** and **Appendix C**.

Table 9: The Spot-check Dive Data for RT2

Parameter	Results	Remarks
Date	13 th December 2016	
Time	11:00-11:45	
Weather	Sunny	
GPS Location (starting point)	22 19 743N 113 0 825E	
Depth range of survey (m)	1.5-3.1	
Visibility (m)	0.4	
Salinity (at water surface) (‰)	29-30	
Water temperature (at 1m depth) (°C)	19	
Seabed substratum composition	Rocky coastline, small & large boulders	

4.3 Results of the REA Surveys at RT2

REA surveys were conducted at recipient site RT2. A summary of the results is presented below whilst the data are presented in **Appendix C**.

Site RT2a (RT2)

This site is a shallow water area. The average depth of survey was 1.8m. Sediment load is medium at the scale of 2 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 90% large boulders and ~10% rubble. Gorgonian *Guaiaogorgia* sp. occurs in this area.

Site RT2b (RT2)

This site is a shallow water area. The average depth of survey was 1.8m. Sediment load is low to medium at the scale of 0 (0 the lowest to 3 the highest). The substrate is rocky natural seabed with 80% large boulders and ~20% rubble. Gorgonian *Guaiaogorgia* sp. occurs in this area.

5 Coral Tagging

5.1 Coral Tagging and Tagged Coral Survey

According to the approved CTP, 10% of the translocated coral colonies will be tagged for post-translocation monitoring. To enable comprehensive monitoring of the post-translocated coral species, the sampling size was increased and additional tagging of translocated corals was carried out. As a result, a total of 85 translocated corals and 20 control corals were selected and tagged for subsequent monitoring. The 85 tagged coral colonies constituted over 20% of the total number of translocated coral colonies. The control coral selection criteria were based upon the selected corals having similar size, partial mortality and health condition to the translocated corals. A total of 28 rebars were used to mark the location of the corals. The tagging work and surveys were carried out in December 2016 and January 2017.

Rebars were located near all the selected colonies, close enough to allow an obvious identification of a selected colony but distant enough so as not to impact the coral. The following data were collected on each rebar:

- a) Depth
- b) Location of the rebar

The compass bearing and distance from the top of the rebar to the selected corals were also recorded to ease the relocation of each colony with respect to the rebar.

The following data on each selected colony were also recorded:

- a) Size of colonies
- b) Partial mortality of coral colony
- c) Health of the coral colony
- d) Photograph of the colony
- e) Sediment

The results of the tagged coral survey, which found the corals are in same condition as in pre-translocation survey, form the baseline for the subsequent post-translocation monitoring. The results are presented in **Appendix E**. Photographs of each monitored coral colony are presented in **Appendix F**.

6 Post-translocation Monitoring

6.1 Introduction

In order to gauge the success of coral translocation, post-translocation monitoring surveys are required. The typical monitoring programme suggested in the CTP was reviewed and it was proposed to enhance the programme by extending the post-translocation monitoring period to 8 rounds of monitoring carried out over 27 months. The updated monitoring schedule is shown in **Table 10**.

Table 10: Tentative Schedule of Post-Translocation Coral Monitoring

Post-Translocation Monitoring Survey	Timing
1 st Monitoring Survey	15 days after the translocation works
2 nd Monitoring Survey	30 days after the translocation works
3 rd Monitoring Survey	2 months after the translocation works
4 th Monitoring Survey	3 months after the translocation works
5 th Monitoring Survey	9 months after the translocation works
6 th Monitoring Survey	15 months after the translocation works
7 th Monitoring Survey	21 months after the translocation works
8 th Monitoring Survey	27 months after the translocation works

6.2 Monitoring Methodology

Each tagged coral will be monitored by trained divers. Monitoring data will be recorded on waterproof paper and photos will be taken. The results of each monitoring survey will be compared against the baseline results from the tagged coral survey.

6.3 Event and Action Plan

In order to monitor the effectiveness of the coral translocation, post-translocation monitoring surveys are required. Typically, the following information will be collected for each tagged coral:

- Size (cm)
- Partial Mortality
- General health condition of the coral
- Sediment (thickness, type and colour)

The change in partial mortality will be calculated using the following formula:

$$PMm - PMb = \% \text{ change in partial mortality}$$

Where PMb = partial mortality during baseline survey and PMm = partial mortality during post-translocation monitoring survey.

Coral health will be measured on an ordinal scale of 0 to 5 with 0 being dead and 5 being very healthy. Photographic records of the translocated and indigenous coral colonies will be taken

while maintaining as close as possible to the same aspect and orientation as photographs taken during the tagged coral surveys.

The results of the post-translocation monitoring should be reviewed and compared with reference to the baseline conditions and the data from original colonies at the recipient site (the findings of the tagged coral survey).

If observations of any die-off / abnormal conditions of the translocated corals are made during the post-translocation monitoring, the ET shall inform the AAHK, Independent Environmental Checker (IEC), and AFCD, and liaise with AFCD to investigate any mitigation measures needed. The ET will identify the source of impact causing die-off / abnormal conditions of the translocated corals and if it is related to the Project, the ET will discuss with the relevant 3RS Contractor(s) that cause impacts to the translocated corals and the AAHK on any action to be taken by the Contractor(s).

Post-translocation monitoring results will be evaluated against Action and Limit Levels. Evaluation will be based on recorded changes in percentage of partial mortality of the corals. Action and Limit Levels are defined in **Table 11**.

Table 11: Action and Limit Levels for Post-Translocation Coral Monitoring

Parameter	Action Level Definition	Limit Level Definition
Mortality	If during Impact Monitoring a 15% increase in the percentage of partial mortality on the corals occurs at more than 20% of the translocated coral colonies that is not recorded on the original corals at the recipient site, then the Action Level is exceeded.	If during the Impact Monitoring a 25% increase in the percentage of partial mortality at more than 20% of the translocated coral colonies occurs that is not recorded at the original corals at the recipient site, then the Limit Level is exceeded.

Notes: The percentage change in partial mortality of the tagged translocated and control corals are both determined by comparing the partial mortality recorded during each post-translocation monitoring with reference to the partial mortality observed during the baseline conditions, as represented by the tagged coral survey results.

If the defined Action Level or Limit Level for coral monitoring is exceeded, the actions as set out in **Table 12** will be implemented.

Table 12: Event and Action Plan for Post-Translocation Coral Monitoring

Event	ET Leader	IEC	AAHK	Relevant Contractor for the Project*
Action Level Exceedance	Check monitoring data; Identify the source(s) of impact and investigate if the exceedance is project-related; Inform the IEC, AAHK and Contractor* of the findings; Increase the monitoring to at least once a month to confirm findings; Liaise with AFCD to investigate any mitigation measures needed, and propose mitigation measures for consideration.	Discuss monitoring with the ET and the Contractor*; Review proposals for additional monitoring and any other measures submitted by the Contractor* and advise the AAHK accordingly.	Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; Make agreement on the measures to be implemented.	Inform the AAHK and ET and confirm notification of the non-compliance in writing; Discuss with the ET and the IEC and propose measures to the IEC and the AAHK; Implement the agreed measures.

Event	ET Leader	IEC	AAHK	Relevant Contractor for the Project*
Limit Level Exceedance	Undertake Steps 1-5 as in the Action Level Exceedance. If further exceedance of Limit Level is found project-related, suspend relevant construction works until an effective solution is identified.	Discuss monitoring with the ET and the Contractor*; Review proposals for additional monitoring and any other measures submitted by the Contractor* and advise the AAHK accordingly.	Discuss with the IEC additional monitoring requirements and any other measures proposed by the ET; Make agreement on the measures to be implemented.	Inform the AAHK and ETL and confirm notification of the non-compliance in writing; Discuss with the ET and the IEC and propose measures to the IEC and the AAHK; Implement the agreed measures.

*Note: "Contractor" in the table shall refer to relevant 3RS Contractor(s) that cause impacts to the translocated corals.



6.4 Reporting for Post-translocation Monitoring

A Coral Post-translocation Monitoring Report will be submitted to EPD and AFCD after the completion of monitoring works. The results of the post-translocation monitoring surveys will be reviewed with reference to the results of the tagged coral survey (recorded corals having same condition as in the pre-translocation stage), as this was carried out immediately after translocation works and thus represents a good baseline for comparison. The results will be compared to determine any changes in coral condition.

Appendices

Appendix A. Additional Search Area for Corals Suitable for Translocation

LEGEND

-  DONOR SITE
-  ADDITIONAL SEARCH AREA FOR CORALS SUITABLE FOR TRANSLOCATION



Appendix B. Location of the Recipient Site



Appendix C. Spot-check Dive and REA Data

Spot-check Dive Data of Donor Site Transects D8A, D8B and D6/D7

Parameter / Location	D8A	D8B	D6/D7
Date of survey	25 th August 2016	25 th August 2016	25 th August 2016
Weather	Sunny	Sunny	Sunny
Air temperature (°C)	28	28	28
Survey time start	11:15	11:30	12:45
Survey time end	12:25	12:30	13:30
Water temperature (°C at 1m depth)	27	27	27
Salinity (ppt)	28	27	23
GPS start	22 19 418 N 113 56 677 E	22 19 405 N 113 56 750 E	22 19 442 N 113 56 040 E
Minimum depth (m)	1.5	1.5	1.5
Maximum depth (m)	2.9	2.5	2.1
Visibility (m)	0.3	0.2	0.5
Substratum type	Rocky coastline small, large rocks Boulders Sand and rubble Little silt	Small, large rocks & boulders Sand and Rubble Little silt	Sloping artificial seawall Large rocks & boulders Some small rocks
Slope (°)	10	10	30
Remarks	Ghosted fishing net, general rubbish	General rubbish	Discarded rope
Coral Depth band	1.5-2.9m	1.5-2.5m	1.5-2.1m

Spot-check Dive Data of Receiver Site Transects RT1 to RT4

Parameter / Location	RT1	RT2	RT3	RT4
Date of survey	16 th August 2016	30 th August 2016	30 th August 2016	30 th August 2016
Weather	Overcast	Overcast	Overcast	Overcast
Air temperature (°C)	27	28	27	28
Survey time start	13:00	11:50	13:00	14:05
Survey time end	13:19	12:45	13:45	14:50
Water temperature (°C at 1m depth)	27	27	28	28
Salinity (ppt)	23	28	23	23
GPS start	22 19 696 N 114 0 684 E	22 19 745 N 113 0 828 E	22 19 806 N 114 1 042 E	22 19 966 N 114 1 151 E
Minimum depth (m)	1.0	1.3	1.6	1.1
Maximum depth (m)	3.3	3.1	2.6	3.1
Visibility (m)	0.5	0.2	0.5	0.5
Substratum type	Rocky coastline Small & large boulders Rubble & sand seabed	Rocky coastline Small & large boulders	Rocky coastline Small & large boulders	Rocky coastline Small & large boulders
Slope (°)	10	10	10	10
Coral Depth band	1.0-3.3m	1.3-3.1m	1.6-2.6m	1.5-2.3m

Spot-check Dive Data of Recipient Site Transect RT2 (Post-translocation Survey)

Parameter / Location	RT2
Date of survey	13 th December 2016
Weather	Sunny
Air temperature (°C)	18
Survey time start	11:00
Survey time end	11:45
Water temperature (°C at 1m depth)	17
Salinity (ppt)	31
GPS start	22 19 743N 113 0 825E
Minimum depth (m)	1.2
Maximum depth (m)	3.0
Visibility (m)	0.3
Substratum type	Rocky coastline Small & large boulders
Slope (°)	10
Coral Depth band	1.1-3.0m

REA Parameter Data of Donor Site Transects D8A, D8B and D6/D7

REA Transect	D8Aa	D8Ab	D8Ba	D8Bb	D6/D7a	D6/D7b
Location	Runway North-East	Runway North-East	Runway North-East	Runway North-East	N. Runway West	N. Runway West
Average Depth (m)	2.0	2.1	2.1	2.1	1.8	1.9
Environmental Conditions						
Temperature (°C)	27	27	27	27	27	27
Salinity (ppt)	28	28	27	27	23	23
Visibility (m)	0.5	0.2	0.5	0.5	0.5	0.5
Exposure (1~4)	3	3	3	3	4	4
Sediment (0~3)	1	1	1	1	1	1
Slope (0 = flat, 4= vertical)	3	3	2	2	3	3
Substratum Attributes						
Hard substrate (% of total)	95	95	90	90	100	100
Bedrock (% of HS)	5	0	10	5	0	0
Large boulders (% of HS)	40	40	40	40	~95	~95
Rubble (% of HS)	~5	~5	~10	~10	~5	~5
Soft substrate (% of total)	0	0	0	0	0	0
Sand (% of SS)	~5	~5	~10	~10	0	0
Silt/mud (% of SS)	0	0	0	0	0	0
Mud (% of SS)	0	0	0	0	0	0

REA Parameter Data of Recipient Site Transect RT2 (Post-translocation Survey)

REA Transect	RT2a	RT2b
Location	Yam Tsai Wan	Yam Tsai Wan
Average Depth (m)	1.8	1.7
Environmental Conditions		
Temperature (°C)	19	18
Salinity (ppt)	29	30
Exposure (1~4)	3	3
Sediment (0~3)	2	0
Visibility (m)	0.4	0.4
Slope (0 = flat, 4= vertical)	0	0
Substratum Attributes		
Hard substrate (% of total)	90	90
Bedrock (% of HS)	10	5
Large boulders (% of HS)	80	90
Rubble (% of HS)	10	5
Soft substrate (% of total)	10	10
Sand (% of SS)	100	100
Silt/mud (% of SS)	0	0
Mud (% of SS)	0	0

Appendix D. Details of Translocated Corals

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
1	30	5	1	2.8
2	10	0	1	2.8
3	15	5	1	2.8
4	20	5	1	2.8
5	15	0	10	2.2
6	25	0	10	2.2
7	25	0	10	2.2
8	20	5	15	2.0
9	24	5	15	2.0
10	23	5	15	2.0
11	5	0	15	2.0
12	5	0	15	2.0
13	17	0	20	2.5
14	10	0	20	2.5
15	30	0	26	2.6
16	31	5	26	2.6
17	17	0	33	2.0
18	30	5	35	2.1
19	39	5	46	2.1
20	33	5	46	2.1
21	10	0	47	2.1
22	10	0	47	2.1
23	12	0	47	2.1
24	22	0	47	2.1
25	10	0	47	2.1
26	13	5	48	2.2
27	10	0	48	2.2
28	10	0	48	2.2
29	5	0	48	2.2
30	30	0	50	2.1
31	30	5	50	2.1
32	20	0	50	2.1
33	10	0	50	2.1
34	33	5	53	2.5
35	34	0	53	2.5
36	32	5	55	2.2
37	24	5	55	2.2
38	23	5	55	2.2
39	31	5	55	2.2
40	10	0	62	2.0
41	34	0	69	2.0

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
42	28	0	69	2.0
43	10	0	76	2.2
44	9	0	76	2.2
45	10	0	78	2.3
46	7	5	78	2.3
47	5	0	78	2.3
48	22	0	79	2.3
49	44	0	79	2.3
50	30	0	80	2.3
51	24	0	86	2.3
52	34	0	87	2.3
53	23	5	87	2.3
54	8	0	87	2.3
55	5	0	87	2.3
56	20	0	91	2.2
57	39	0	91	2.2
58	8	0	92	2.2
59	40	0	95	2.2
60	24	0	95	2.2
61	30	0	102	2.3
62	21	0	104	2.1
63	17	5	104	2.1
64	18	0	104	2.1
65	17	0	105	2.3
66	16	5	105	2.3
67	21	0	105	2.3
68	30	0	107	2.1
69	30	0	114	2.3
70	30	0	116	2.5
71	20	0	118	2.3
72	30	0	119	2.6
73	20	0	120	2.6
74	20	0	123	2.1
75	10	0	124	2.3
76	35	0	126	2.9
77	30	0	126	2.9
78	15	0	127	2.3
79	20	5	128	2.3
80	20	5	128	2.3
81	10	0	128	2.3
82	20	0	129	2.1
83	20	5	129	2.1
84	20	0	130	2.1
85	10	0	131	2.1

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
86	10	5	131	2.1
87	30	0	133	2.1
88	20	5	133	2.1
89	20	0	133	2.1
90	20	0	134	2.2
91	30	0	135	2.2
92	10	0	135	2.2
93	15	0	138	2.1
94	10	0	138	2.1
95	10	5	138	2.1
96	10	5	139	2.1
97	10	5	139	2.1
98	10	5	140	2.1
99	30	0	141	2.2
100	10	0	146	2.0
101	10	0	146	2.0
102	30	0	147	2.1
103	30	5	147	2.1
104	30	0	148	2.1
105	30	0	149	2.1
106	20	0	149	2.1
107	20	5	149	2.1
108	15	0	150	2.0
109	20	0	150	2.0
110	20	0	151	2.0
111	25	5	151	2.0
112	10	5	152	2.0
113	10	0	152	2.1
114	10	0	153	2.1
115	10	0	153	2.1
116	20	0	155	2.0
117	15	0	155	2.0
118	15	0	156	2.2
119	30	0	157	2.2
120	15	0	158	2.2
121	15	0	158	2.2
122	10	5	158	2.2
123	30	0	159	2.2
124	15	0	159	2.2
125	30	0	159	2.2
126	5	5	159	2.2
127	15	0	160	2.1
128	30	0	160	2.1
129	20	0	160	2.1

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
130	15	0	160	2.1
131	15	5	160	2.1
132	20	5	160	2.1
133	30	0	160	2.1
134	10	0	161	2.1
135	10	5	161	2.1
136	30	5	162	2.1
137	15	0	162	2.1
138	10	0	162	2.1
139	20	0	163	2.2
140	25	0	189	1.8
141	10	0	189	1.8
142	5	0	189	1.8
143	10	0	190	2.5
144	30	0	190	2.5
145	20	0	191	2.1
146	20	0	192	2.4
147	20	0	193	2.4
148	30	0	194	2.3
149	5	0	194	2.3
150	10	5	195	2.3
151	10	5	195	2.3
152	25	0	195	2.3
153	20	0	196	2.3
154	15	0	196	2.3
155	20	0	197	2.4
156	25	0	198	2.3
157	20	5	198	2.3
158	10	5	198	2.3
159	30	0	199	2.3
160	10	0	200	2.0
161	30	0	202	2.0
162	15	0	202	2.0
163	20	0	203	2.5
164	30	5	203	2.5
165	10	5	204	2.4
166	10	5	204	2.4
167	25	0	205	2.3
168	30	0	206	2.1
169	15	0	206	2.1
170	25	0	206	2.1
171	20	0	210	2.3
172	10	0	212	2.5
173	10	0	213	2.8

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
174	30	0	213	2.8
175	10	0	216	2.8
176	30	5	216	2.8
177	10	5	217	2.4
178	10	5	217	2.4
179	10	0	221	2.2
180	25	0	221	2.2
181	10	0	222	2.1
182	5	5	222	2.1
183	20	0	223	2.2
184	30	5	224	2.2
185	15	0	224	2.2
186	30	0	225	2.1
187	30	5	225	2.1
188	10	0	226	2.1
189	30	0	227	2.2
190	10	5	228	2.3
191	10	5	229	2.1
192	30	5	230	2.0
193	10	0	232	2.5
194	5	0	232	2.5
195	10	5	233	2.2
196	5	0	233	2.2
197	30	0	236	2.2
198	10	0	237	2.2
199	10	0	237	2.2
200	20	0	238	2.2
201	30	0	238	2.2
202	25	5	239	2.2
203	5	5	239	2.2
204	25	5	239	2.2
205	15	5	240	2.2
206	5	0	240	2.2
207	30	0	241	2.1
208	15	0	242	2.2
209	10	5	243	2.2
210	5	5	243	2.2
211	10	0	247	2.1
212	25	5	247	2.1
213	10	0	248	2.1
214	10	5	249	2.2
215	10	0	250	2.2
216	5	0	250	2.2
217	25	0	251	2.2

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
218	20	0	255	2.3
219	30	0	255	2.3
220	20	0	256	2.4
221	20	0	257	2.4
222	10	5	258	2.4
223	30	0	259	2.3
224	10	5	260	2.2
225	10	5	261	2.1
226	20	5	264	2.2
227	15	0	264	2.2
228	15	0	264	2.2
229	25	0	265	2.2
230	25	5	265	2.2
231	20	0	266	2.2
232	10	0	266	2.2
233	10	0	268	2.3
234	5	0	268	2.3
235	10	0	269	2.2
236	25	0	270	2.1
237	10	0	272	2.2
238	20	0	273	2.1
239	20	5	273	2.1
240	30	0	274	2.1
241	10	5	274	2.1
242	5	0	274	2.1
243	10	0	279	2.1
244	10	0	280	2.1
245	10	0	280	2.1
246	10	0	281	2.1
247	30	0	281	2.1
248	5	0	281	2.1
249	10	0	284	2.2
250	10	5	287	2.1
251	25	0	287	2.1
252	5	0	287	2.1
253	10	0	288	2.1
254	10	0	288	2.1
255	10	5	289	2.1
256	10	0	290	2.1
257	25	0	291	2.2
258	10	0	291	2.2
259	10	0	292	2.2
260	10	0	292	2.2
261	30	5	296	2.1

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
262	10	0	296	2.1
263	10	5	297	2.2
264	10	0	297	2.2
265	5	0	297	2.2
266	25	0	298	2.1
267	10	5	298	2.1
268	10	5	298	2.1
269	5	0	298	2.1
270	5	0	298	2.1
271	25	0	298	2.1
272	10	0	300	2.1
273	10	0	300	2.1
274	10	5	301	2.5
275	30	0	301	2.5
276	15	0	302	2.5
277	15	0	302	2.5
278	10	5	303	2.3
279	10	0	304	2.2
280	10	0	305	2.5
281	30	5	305	2.5
282	10	0	306	2.5
283	10	5	306	2.5
284	25	0	308	2.5
285	10	0	308	2.5
286	10	0	309	2.6
287	30	0	310	2.5
288	25	5	311	2.5
289	25	0	312	2.2
290	5	0	312	2.2
291	20	0	313	2.5
292	15	0	313	2.5
293	20	5	314	2.2
294	30	0	315	2.3
295	15	0	315	2.3
296	10	0	316	2.5
297	10	0	316	2.5
298	5	5	316	2.5
299	30	0	316	2.5
300	30	0	317	2.2
301	20	0	317	2.2
302	5	5	317	2.2
303	20	0	319	2.2
304	30	5	320	1.8
305	25	5	320	1.8

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
306	20	0	321	1.8
307	25	0	322	1.2
308	20	0	323	1.2
309	15	5	323	1.2
310	10	0	324	2.2
311	10	5	324	2.2
312	25	0	325	2.5
313	10	5	326	2.1
314	10	5	327	2.5
315	5	5	327	2.1
316	10	5	328	2.2
317	30	5	329	2.3
318	10	0	329	2.3
319	5	5	329	2.3
320	10	0	330	2.1
321	5	0	330	2.1
322	30	0	331	2.1
323	10	0	331	2.1
324	20	0	332	2.2
325	5	5	332	2.2
326	10	0	333	2.1
327	30	5	334	2.1
328	5	0	334	2.1
329	10	5	335	2.2
330	30	0	335	2.2
331	5	0	335	2.2
332	30	5	336	2.1
333	10	0	336	2.1
334	10	5	337	2.2
335	10	0	338	2.1
336	10	5	343	2.2
337	25	0	343	2.2
338	10	0	346	2.1
339	5	5	346	2.1
340	25	5	347	2.1
341	20	5	347	2.1
342	20	0	347	2.1
343	15	5	347	2.1
344	30	0	348	2.2
345	30	5	348	2.2
346	10	0	349	2.3
347	5	0	349	2.3
348	10	0	350	2.1
349	10	0	351	2.2

Colony	Size (cm)	Partial Mortality (%)	Rock No. *	Depth (m)
350	7	5	351	2.2
351	5	5	351	2.2
352	25	0	352	2.1
353	20	5	352	2.1
354	30	0	353	2.2
355	20	5	354	2.1
356	15	0	354	2.1
357	20	5	355	2.1
358	20	0	355	2.1
359	10	0	356	2.2
360	10	5	357	2.2
361	20	0	358	2.0
362	30	5	359	2.0
363	10	0	360	2.1
364	20	5	361	2.1
365	20	5	362	2.0
366	10	0	363	2.1
367	20	5	363	2.1
368	25	5	364	2.0
369	20	0	365	2.1
370	15	5	366	2.1
371	20	0	367	2.1
372	10	5	368	2.0
373	10	5	369	2.1
374	30	5	370	2.0
375	25	0	370	2.0
376	15	0	371	2.0
377	25	0	372	2.0
378	35	0	373	2.1
379	30	5	374	2.1
380	10	5	375	2.0
381	10	5	376	2.0
382	10	0	377	2.2
383	15	0	377	2.2
384	15	5	378	2.1

*Note:

Rock number refers to the number assigned to the rocks in donor site. They are not listed in order because some numbered rocks, which are not shown in this table, were not removed due to their unsuitability for translocation.

No sediment was recorded on the colonies.

Appendix E. Tagged Coral Survey Result

Rebar Name	Rebar Depth (m)	Tag*	Angle (deg)	Distance (cm)	Elevation (cm)	Height (cm)	Partial Mortality (%)	Coral Health (0 to 5)
A	1.9	B1	165	17	0	23	10	4
A	1.9	B2	195	40	16	24	10	4
A	1.9	B3	185	26	35	59	20	4
B	1.9	B6	190	53	68	17	10	5
B	1.9	B5	240	44	48	39	0	4
B	1.9	Y1	190	24	0	22	10	4
B	1.9	B7	90	41	50	22	10	4
B	1.9	B4	180	26	10	10	10	4
C	1.9	Y2	180	19	0	20	10	5
C	1.9	B8	180	19	12	10	10	4
C	1.9	B9	180	23	20	10	10	4
D	1.8	Y3	270	30	13	17	0	4
D	1.8	Y4	270	23	13	16	0	4
D	1.8	B10	20	33	25	12	0	5
D	1.8	Y5	270	19	13	15	5	4
E	1.8	Y6	0	13	0	8	5	4
F	1.9	Y8	0	37	0	24	10	4
F	1.9	Y7	0	10	0	25	10	4
G	2.0	B11	130	17	33	17	10	4
G	2.0	Y9	60	12	0	12	10	4
H	1.9	Y10	160	11	14	8	10	4
H	1.9	Y11	120	20	18	15	10	4
I	1.9	Y12	110	14	8	10	5	4
J	2.1	Y14	160	32	11	14	5	4
J	2.1	B13	210	37	44	12	15	4
J	2.1	B14	210	25	23	23	5	4
J	2.1	B12	220	40	37	24	5	4
J	2.1	Y13	150	20	18	10	5	5
K	2.0	Y15	220	23	23	15	10	4
L	1.8	Y17	130	26	13	7	0	4
L	1.8	Y16	130	17	14	5	0	4
M	1.9	B15	250	38	44	13	10	5
M	1.9	B16	210	33	25	17	10	5
N	1.9	Y20	210	24	18	7	10	4
N	1.9	B18	180	27	37	7	10	4
N	1.9	Y19	180	15	17	8	5	4
N	1.9	B17	180	27	37	15	10	4
N	1.9	Y18	130	10	13	10	0	4
P	1.8	Y24	210	34	5	5	10	4
P	1.8	Y25	240	31	13	10	10	4
P	1.8	Y21	180	28	12	24	10	5
P	1.8	Y22	180	29	12	30	10	5

Rebar Name	Rebar Depth (m)	Tag*	Angle (deg)	Distance (cm)	Elevation (cm)	Height (cm)	Partial Mortality (%)	Coral Health (0 to 5)
P	1.8	Y27	260	31	15	10	10	4
P	1.8	Y26	230	31	15	15	10	4
P	1.8	Y23	210	27	5	5	10	5
Q	1.9	Y32	290	42	25	33	20	4
Q	1.9	B19	180	76	71	33	5	4
Q	1.9	Y30	220	29	13	5	10	4
Q	1.9	B20	190	44	58	10	10	3
Q	1.9	Y29	180	48	21	10	10	4
Q	1.9	Y31	270	24	23	39	20	4
Q	1.9	Y28	170	40	20	7	10	4
R	1.8	Y36	180	48	7	18	0	5
R	1.8	Y33	90	37	32	31	10	4
R	1.8	Y34	120	31	22	34	0	5
R	1.8	Y35	150	50	10	7	0	4
S	1.9	Y38	270	13	13	18	10	4
S	1.9	Y37	310	17	19	8	20	4
T	1.8	Y43	290	30	17	24	10	4
T	1.8	Y40	350	30	30	40	10	4
T	1.8	Y39	30	25	10	5	0	4
T	1.8	Y41	340	52	20	15	10	4
T	1.8	Y42	320	54	25	10	10	4
V	1.8	Y47	120	9	2	12	10	4
V	1.8	Y50	330	27	0	24	10	4
V	1.8	Y48	100	20	5	23	15	4
V	1.8	Y52	40	23	18	22	10	4
V	1.8	Y44	110	14	11	10	10	4
V	1.8	Y46	290	14	11	20	10	4
V	1.8	Y45	60	10	11	25	10	4
V	1.8	Y51	20	8	10	10	0	4
V	1.8	Y49	210	40	6	10	10	4
X	1.9	Y55	140	13	10	9	10	4
X	1.9	Y56	140	20	10	9	10	4
X	1.9	Y54	270	17	12	6	10	4
X	1.9	Y53	0	23	21	21	10	4
X	1.9	Y57	70	24	6	30	10	4
Y	1.9	Y58	160	27	25	33	10	4
Y	1.9	Y60	350	21	25	34	10	5
Y	1.9	Y59	70	27	25	5	10	5
Z	1.9	Y61	90	34	27	32	10	4
Z	1.9	Y65	0	25	22	28	10	4
Z	1.9	Y62	80	47	28	44	10	4
Z	1.9	Y64	30	34	23	34	10	4

Rebar Name	Rebar Depth (m)	Tag*	Angle (deg)	Distance (cm)	Elevation (cm)	Height (cm)	Partial Mortality (%)	Coral Health (0 to 5)
Z	1.9	Y66	330	33	15	15	10	4
Z	1.9	Y67	340	14	15	27	10	4
Z	1.9	Y63	50	40	30	20	10	4
AA	1.8	Y68	100	24	10	21	10	4
AA	1.8	Y69	240	18	16	8	10	4
AA	1.8	Y70	260	21	14	10	10	4
AB	1.8	Y76	180	31	10	10	10	4
AB	1.8	Y72	30	26	10	5	10	4
AB	1.8	Y73	40	23	5	5	10	4
AB	1.8	Y71	0	16	5	16	10	4
AB	1.8	Y74	100	31	5	10	10	4
AB	1.8	Y75	100	35	5	10	10	4
AC	1.8	Y77	70	18	18	24	5	4
AC	1.8	Y80	70	38	35	30	5	4
AC	1.8	Y79	70	30	32	18	5	4
AC	1.8	Y78	70	22	24	17	0	3
AD	1.8	Y82	150	26	35	18	10	4
AD	1.8	Y84	180	27	26	31	10	4
AD	1.8	Y85	240	17	10	10	10	4
AD	1.8	Y81	120	25	27	25	10	4
AD	1.8	Y83	150	30	33	16	10	4




Note:

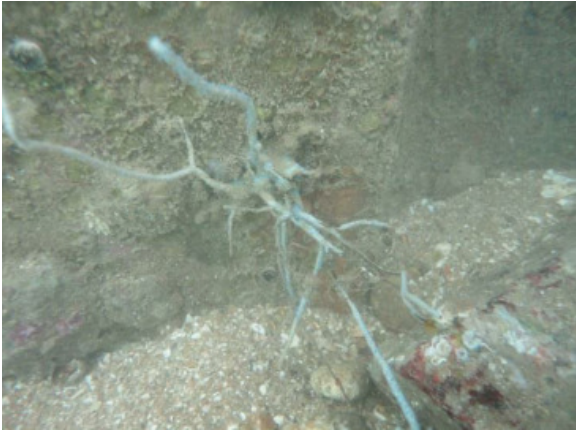



*Tag name with B = Control Coral; tag name with Y = Translocated Coral.

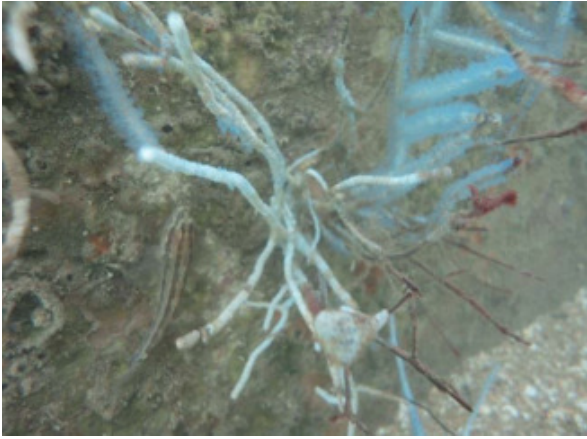


Partial Mortality (%) = Percentage of partial mortality observed in the respective coral community.

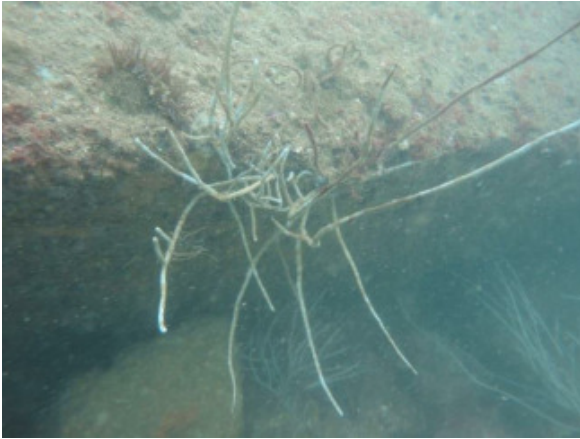


Coral Health : 0 (Dead) to 5 (Very healthy)

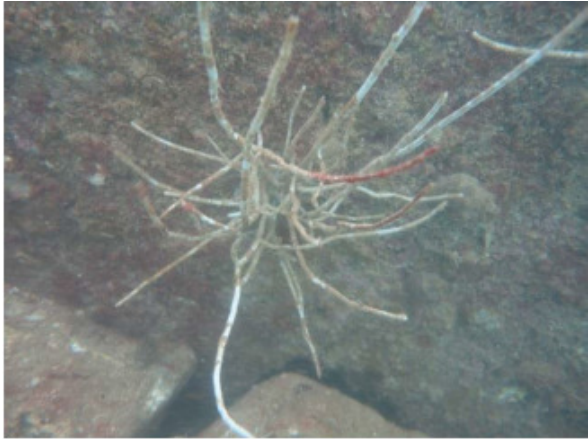


Appendix F. Photographs of Monitored Coral Colonies



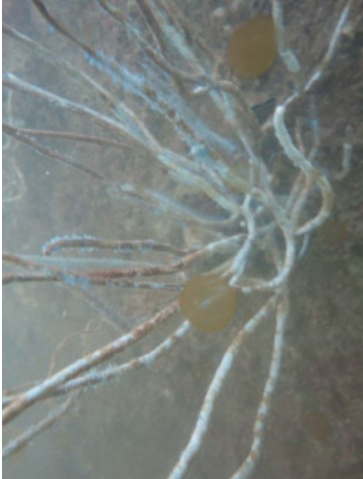
Coral Tag Number	Monitored Control Coral Colony
C1	 A photograph of a coral colony with several thin, light blue, branching polyps extending upwards from a central base. The background is a dark, sandy seabed.
C2	 A photograph of a coral colony with multiple thin, light blue, branching polyps. The colony appears to be growing on a rocky or sandy substrate.
C3	 A close-up photograph of a coral colony showing numerous thin, light blue, branching polyps. The polyps are densely packed and extend in various directions.


Coral Tag Number	Monitored Control Coral Colony
C4	
C5	
C6	
C7	

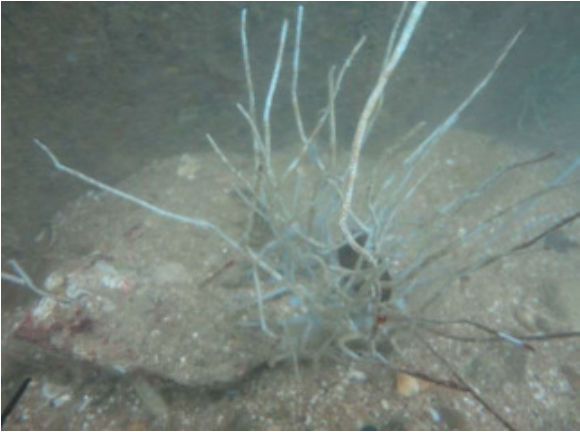
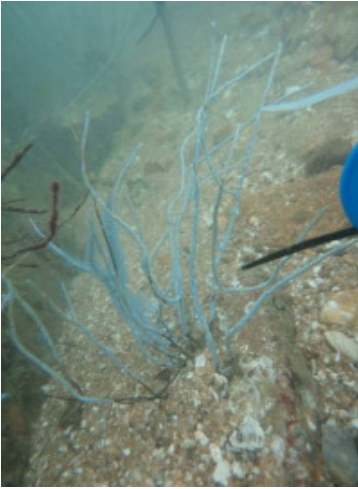

Coral Tag Number	Monitored Control Coral Colony
C8	
C9	
C10	




Coral Tag Number	Monitored Control Coral Colony
C11	
C12	
C13	




Coral Tag Number	Monitored Control Coral Colony
C14	
C15	
C16	




Coral Tag Number	Monitored Control Coral Colony
C17	 An underwater photograph showing a coral colony with several thick, white, branching polyps extending upwards from a dark, rocky substrate. The water is slightly turbid.
C18	 An underwater photograph of a coral colony with white, branching polyps. The colony is situated on a dark, textured rock surface. The lighting is somewhat dim, and the water has a greenish tint.
C19	 A close-up underwater photograph of a coral colony. The polyps are white and branching, with some showing a yellowish-brown hue. The background is dark and indistinct.



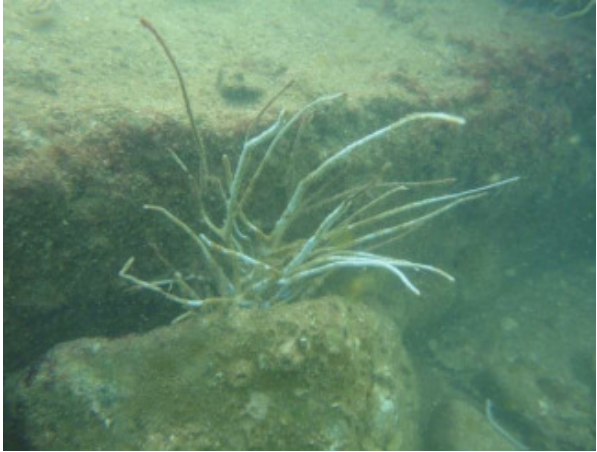
Coral Tag Number	Monitored Control Coral Colony
C20	




Coral Tag Number	Monitored Translocated Coral Colony
T1	 An underwater photograph showing a coral colony with numerous thin, light-colored branches extending upwards from a sandy substrate. The water is slightly turbid.
T2	 An underwater photograph of a coral colony with thin, light-colored branches. A blue object, possibly a tag or part of a diver's gear, is visible on the right side of the frame. The substrate is sandy.
T3	 An underwater photograph showing a coral colony with thin, light-colored branches. The branches appear somewhat sparse and are growing from a sandy substrate.

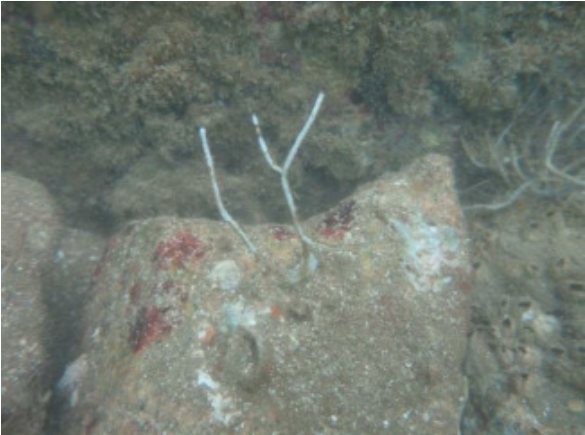


Coral Tag Number	Monitored Translocated Coral Colony
T4	 An underwater photograph showing a coral colony with several thin, branching, light-colored (possibly bleached) stems. The stems are somewhat sparse and appear to be growing from a sandy or silty substrate. The background is dark and blurry, suggesting an underwater environment.
T5	 An underwater photograph showing a coral colony with thin, branching stems. The stems are light-colored and appear to be growing from a sandy or silty substrate. The background is dark and blurry, suggesting an underwater environment.
T6	 An underwater photograph showing a coral colony with thin, branching stems. The stems are light-colored and appear to be growing from a rocky substrate. A white tag is visible on the left side of the image, attached to one of the stems. The background is dark and blurry, suggesting an underwater environment.




Coral Tag Number	Monitored Translocated Coral Colony
T7	 An underwater photograph showing a coral colony with numerous thin, white, branching polyps. The colony is situated on a sandy seabed with some reddish-brown sediment. The background is dark, suggesting a deep or shaded underwater environment.
T8	 An underwater photograph of a coral colony with white, branching polyps. The colony is growing on a rocky substrate. The surrounding water is dark, and there is some sediment on the seabed.
T9	 An underwater photograph of a coral colony with white, branching polyps. The colony is located on a sandy seabed with some rocks. The water is dark, and there is some sediment visible.




Coral Tag Number	Monitored Translocated Coral Colony
T10	 An underwater photograph showing a coral colony with a complex, branching structure. The coral is light-colored, possibly bleached, and is situated on a rocky substrate. The background is dark and slightly hazy, suggesting an underwater environment.
T11	 An underwater photograph of a coral colony with a branching structure, similar to T10. The coral is light-colored and appears to be on a rocky substrate. The lighting is somewhat dim, and the background is dark.
T12	 An underwater photograph of a coral colony with a branching structure. The coral is light-colored and is positioned on a rocky substrate. The background is dark and slightly hazy.




Coral Tag Number	Monitored Translocated Coral Colony
T13	 An underwater photograph showing a coral colony with a central vertical stem and several thin, branching arms extending upwards. The colony is attached to a light-colored, porous rock substrate. The surrounding water is slightly turbid, and other coral structures are visible in the background.
T14	 A close-up underwater photograph of a coral colony. The colony consists of several thin, dark brown, branching stems that are attached to a light-colored, porous rock. The water is clear, and the background is a soft, out-of-focus blue.
T15	 An underwater photograph of a coral colony with a central vertical stem and several long, thin, branching arms extending outwards. The colony is attached to a light-colored, porous rock. The water is clear, and the background shows a sandy seabed with some other coral structures.




Coral Tag Number	Monitored Translocated Coral Colony
T16	 An underwater photograph showing a coral colony. On the left, there is a dense cluster of small, rounded coral polyps. To the right, a single, long, thin, white, branching coral branch extends outwards. The background is a dark, slightly hazy underwater environment.
T17	 An underwater photograph of a coral colony. The left side shows a textured, brownish coral structure. A single, long, thin, white, branching coral branch extends from this structure towards the right. The water is dark and somewhat turbid.
T18	 An underwater photograph showing a coral colony on a rocky substrate. Two long, thin, white, branching coral branches are the central focus, extending upwards. The surrounding area is covered in smaller, reddish-brown coral and other marine life on the rock.





Coral Tag Number	Monitored Translocated Coral Colony
T19	 An underwater photograph showing a coral colony (T19) on a rock. The coral consists of several thin, white, branching structures. The surrounding water is slightly turbid, and the rock surface is covered in a thin layer of sediment and some red algae.
T20	 An underwater photograph showing a coral colony (T20) on a rock. The coral is a dense, branching structure with a light, almost white color. The background shows a rocky reef structure with some sediment and other coral fragments.
T21	 A close-up underwater photograph of a coral colony (T21). The coral is a dense, branching structure with a light, almost white color. The background is a hazy, greenish water, suggesting a shallow reef environment.




Coral Tag Number	Monitored Translocated Coral Colony
T22	 An underwater photograph showing a coral colony with several thin, light-colored branches extending upwards. The water is slightly turbid, and some yellowish circular objects are visible in the background.
T23	 A close-up underwater photograph of a coral colony. The coral has a branching, light-colored structure and is situated on a rocky substrate. The surrounding water is clear, and some brownish sediment is visible on the rocks.
T24	 An underwater photograph of a coral colony with thin, light-colored branches. The coral is growing on a sandy or silty seabed. There are some yellowish circular objects in the foreground, and the overall water quality appears slightly hazy.




Coral Tag Number	Monitored Translocated Coral Colony
T25	 An underwater photograph showing a coral colony with several thin, white, branching structures. The coral is situated on a sandy or silty seabed. The water is somewhat turbid, and the background is a hazy, light-colored wall.
T26	 An underwater photograph of a coral colony with thin, white, branching structures. The coral is growing on a dark, rocky substrate. The water is clear, and the background is a light blue-green wall.
T27	 An underwater photograph of a coral colony with thin, white, branching structures. The coral is growing on a sandy or silty seabed. The water is somewhat turbid, and the background is a hazy, light-colored wall.




Coral Tag Number	Monitored Translocated Coral Colony
T28	 An underwater photograph showing a coral colony with a central, light-colored, branching structure. The colony is surrounded by numerous thin, reddish-brown branches extending outwards. The background is a dark, sandy seabed.
T29	 An underwater photograph showing a coral colony with a central, light-colored, branching structure. The colony is surrounded by numerous thin, reddish-brown branches extending outwards. The background is a dark, sandy seabed.
T30	 An underwater photograph showing a coral colony with a central, light-colored, branching structure. The colony is surrounded by numerous thin, reddish-brown branches extending outwards. The background is a dark, sandy seabed.




Coral Tag Number	Monitored Translocated Coral Colony
T31	 An underwater photograph showing a coral colony with several thin, white, branching structures extending upwards from a darker base. The water is slightly turbid and greenish.
T32	 An underwater photograph showing a coral colony with several thin, white, branching structures extending upwards from a darker base. The water is slightly turbid and greenish.
T33	 An underwater photograph showing a coral colony with several thin, white, branching structures extending upwards from a darker base. The water is slightly turbid and greenish.




Coral Tag Number	Monitored Translocated Coral Colony
T34	
T35	
T36	
T37	




Coral Tag Number	Monitored Translocated Coral Colony
T38	
T39	
T40	


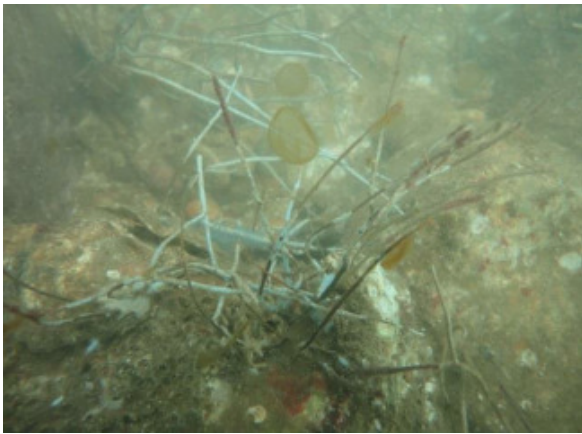

Coral Tag Number	Monitored Translocated Coral Colony
T41	 An underwater photograph showing a coral colony with several thin, reddish-brown branches extending upwards from a central base. The background is a sandy seabed with some small rocks and debris.
T42	 An underwater photograph of a coral colony with reddish-brown branches. The colony is situated on a sandy seabed with some scattered rocks and small organisms.
T43	 An underwater photograph of a coral colony with thin, reddish-brown branches. The colony is on a sandy seabed with some rocks and small organisms.




Coral Tag Number	Monitored Translocated Coral Colony
T44	 An underwater photograph showing a coral colony with several thin, reddish-brown branches extending upwards from a sandy and rocky substrate. The water is slightly turbid.
T45	 An underwater photograph of a coral colony with multiple thin, reddish-brown branches. The colony is situated on a sandy bottom with some rocks visible.
T46	 An underwater photograph of a coral colony with thin, reddish-brown branches. A prominent white vertical object, possibly a tag or a piece of equipment, is visible in the foreground. The colony is on a rocky substrate.




Coral Tag Number	Monitored Translocated Coral Colony
T47	
T48	
T49	




Coral Tag Number	Monitored Translocated Coral Colony
T50	 An underwater photograph showing a coral colony with a mix of reddish-brown and white skeletal structures. The coral is situated on a rocky seabed with some brownish sediment.
T51	 An underwater photograph of a coral colony consisting of numerous thin, light-colored (pale blue/white) branching structures. The background shows a rocky seabed with some brownish sediment.
T52	 An underwater photograph of a coral colony with reddish-brown and white skeletal structures. A yellowish, flat object is visible in the upper right portion of the frame. The seabed is rocky and covered with brownish sediment.



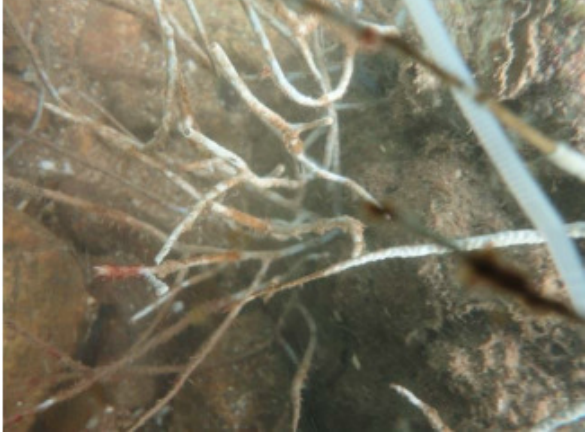
Coral Tag Number	Monitored Translocated Coral Colony
T53	 An underwater photograph showing a coral colony with several thin, branching, light-colored (possibly bleached) stems. The stems are clustered together and extend upwards. The background is a murky, greenish-brown water column.
T54	 An underwater photograph of a coral colony with thin, branching, light-colored stems. The coral is situated on a rocky or shell-covered seabed. The water is somewhat turbid.
T55	 An underwater photograph of a coral colony with thin, branching, light-colored stems. The coral is on a seabed with some yellowish sediment or algae. The water is slightly hazy.




Coral Tag Number	Monitored Translocated Coral Colony
T56	
T57	
T58	

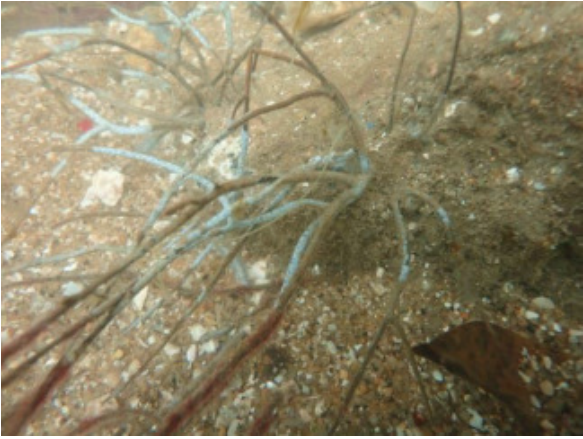


Coral Tag Number	Monitored Translocated Coral Colony
T59	 An underwater photograph showing a coral colony with several thin, white, branching polyps extending upwards from a sandy seabed. The water is slightly turbid, and there are some yellowish-brown patches on the sand.
T60	 A close-up underwater photograph of a coral colony with numerous thin, white, branching polyps. The polyps are densely packed and extend in various directions. The background is a hazy, greenish-brown water.
T61	 An underwater photograph of a coral colony with many thin, white, branching polyps. Some of the polyps appear to have a brownish or reddish hue, possibly indicating a different species or a specific part of the colony. The seabed is sandy and covered with some green algae.


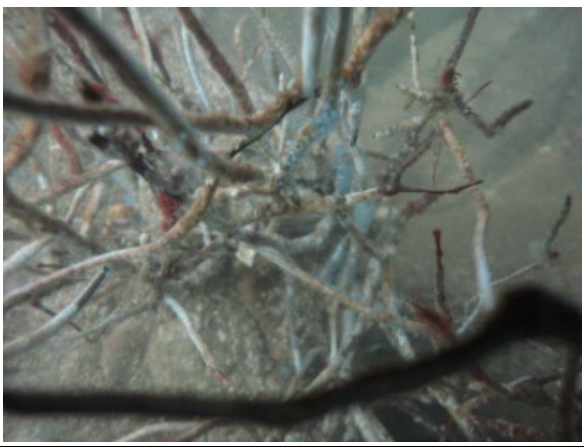
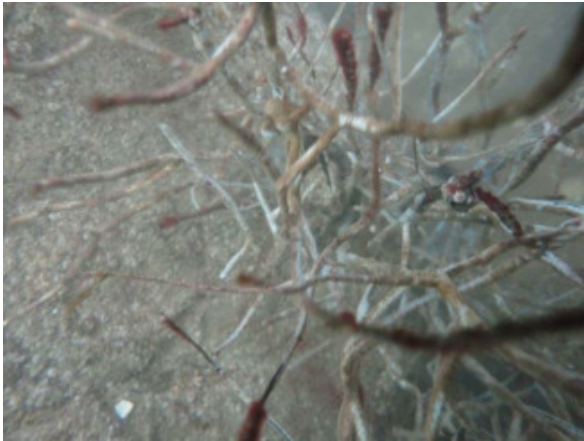
Coral Tag Number	Monitored Translocated Coral Colony
T62	 An underwater photograph showing a dense thicket of coral branches. The branches are primarily white with some brownish-orange tips, indicating some bleaching or damage. The water is slightly turbid and greenish.
T63	 An underwater photograph of coral colony T63. The coral branches are mostly white with some brown tips. A diver's hand and part of a black glove are visible in the lower-left corner, providing a scale for the colony's size. The background shows a sandy seabed.
T64	 An underwater photograph of coral colony T64. The coral branches are predominantly white and appear healthy. The water is a clear, light green color.




Coral Tag Number	Monitored Translocated Coral Colony
T65	 An underwater photograph showing a coral colony with several thick, white, branching structures. The background is a murky, greenish-brown water column over a sandy seabed.
T66	 An underwater photograph showing a coral colony with several thick, white, branching structures. The background is a murky, greenish-brown water column over a sandy seabed.
T67	 An underwater photograph showing a coral colony with several thick, white, branching structures. The background is a murky, greenish-brown water column over a sandy seabed.




Coral Tag Number	Monitored Translocated Coral Colony
T68	 An underwater photograph showing a coral colony with thin, branching, light-colored polyps. The coral is situated on a sandy and rocky seabed. The water is slightly turbid, and the overall scene is dimly lit.
T69	 An underwater photograph of a coral colony with numerous thin, branching polyps. The coral appears to be growing on a dark, possibly rocky substrate. The water is clear, and the lighting is somewhat dim, highlighting the delicate structure of the coral.
T70	 A close-up underwater photograph of a coral colony. The polyps are thin and branching, with some showing a reddish-brown hue. The coral is attached to a dark, textured rock surface. The water is clear, and the lighting is focused on the coral.

Coral Tag Number	Monitored Translocated Coral Colony
T71	 An underwater photograph showing a coral colony with several thin, branching, reddish-brown polyps extending from a light-colored substrate. The water is slightly turbid, and the background shows a sandy or rocky seabed.
T72	 An underwater photograph of a coral colony with reddish-brown polyps. The scene is heavily obscured by a thick layer of yellowish-green algae or silt, making the coral appear somewhat faded and less distinct.
T73	 An underwater photograph showing a coral colony with reddish-brown polyps. The coral is situated on a rocky substrate, and the surrounding water is clear, allowing for a detailed view of the branching structure.

Coral Tag Number	Monitored Translocated Coral Colony
T74	 An underwater photograph showing a coral colony with thin, branching, light blue and reddish-brown polyps. The coral is situated on a sandy and rocky seabed.
T75	 An underwater photograph of a coral colony with thin, branching, light blue and reddish-brown polyps. Several large, yellowish, circular objects, possibly tags or markers, are visible in the foreground and background.
T76	 An underwater photograph showing a dense coral colony with thin, branching, light blue and reddish-brown polyps. A large, yellowish, circular object is visible in the foreground.

Coral Tag Number	Monitored Translocated Coral Colony
T77	 An underwater photograph showing a coral colony with several thin, branching, light-colored stems. The stems are somewhat sparse and appear to be growing from a substrate. The water is slightly turbid, and there are some yellowish-green patches on the substrate.
T78	 An underwater photograph showing a coral colony with many thin, branching, light-colored stems. The stems are more densely packed than in T77. The water is clear, and the substrate is visible at the bottom.
T79	 An underwater photograph showing a coral colony with many thin, branching, light-colored stems. The stems are very dense and appear to be growing from a substrate. The water is clear, and the substrate is visible at the bottom.

Coral Tag Number	Monitored Translocated Coral Colony
T80	
T81	
T82	

Coral Tag Number	Monitored Translocated Coral Colony
T83	 An underwater photograph showing a dense cluster of branching coral. The coral is light-colored, possibly white or pale yellow, and is situated on a sandy seabed. The water is slightly turbid, and some small fish are visible in the background.
T84	 An underwater photograph of a coral colony with a similar branching structure to T83. The coral is light-colored and appears to be growing on a sandy or rocky substrate. The water is clear, and the overall scene is dimly lit.
T85	 An underwater photograph showing a coral colony that is more sparse and fragmented than the others. The coral is light-colored and is located on a sandy seabed. The water is clear, and the lighting is somewhat dim.

Appendix G. General Photographs



Plate 1. Donor site near the present airport runway.



Plate 2. Donor site near the present airport runway.



Plate 3. Donor site near the present airport runway.



Plate 4. Gorgonian community at the donor site.



Plate 5. Gorgonian community at the donor site.



Plate 6. Gorgonian community at the donor site occurs with the mussels.



Plate 7. Gorgonian community at the donor site on boulders.



Plate 8. Gorgonian community at the donor site on boulders.



Plate 9. Gorgonian community at the donor site with partial mortality.

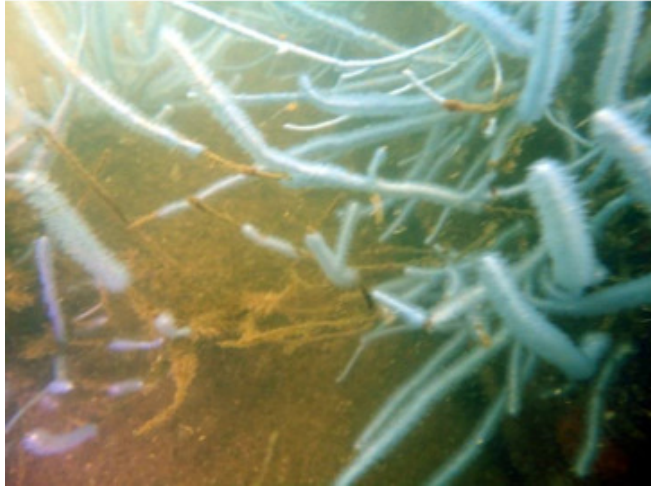


Plate 10. Close-up of Gorgonian community at the donor site.



Plate 11. Gorgonian community at the donor site.



Plate 12. Recipient Site

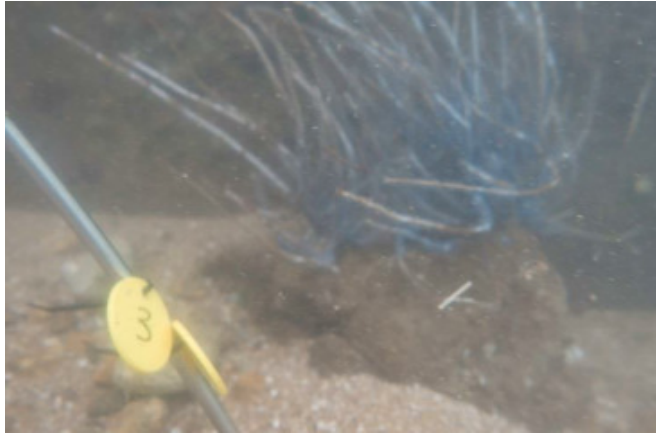


Plate 13. A tagged impact colony.

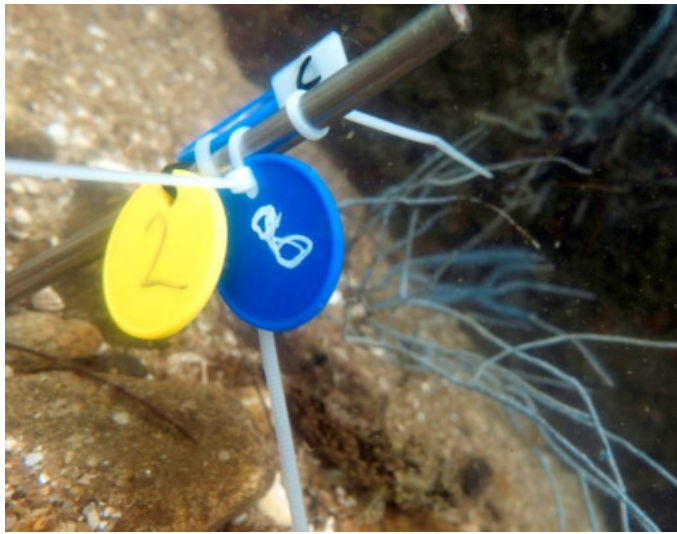


Plate 14. A tagged colony.



Plate 15. Tags for control colonies

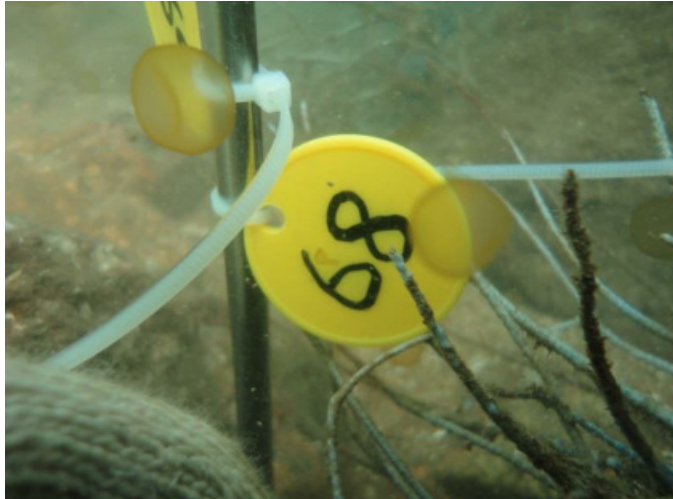


Plate 16. Tags for impact colonies.

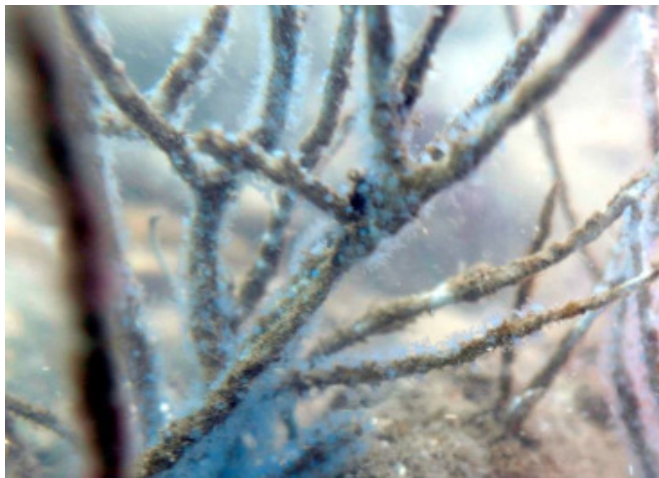


Plate 17. Close-up of a colony with thick shedding.

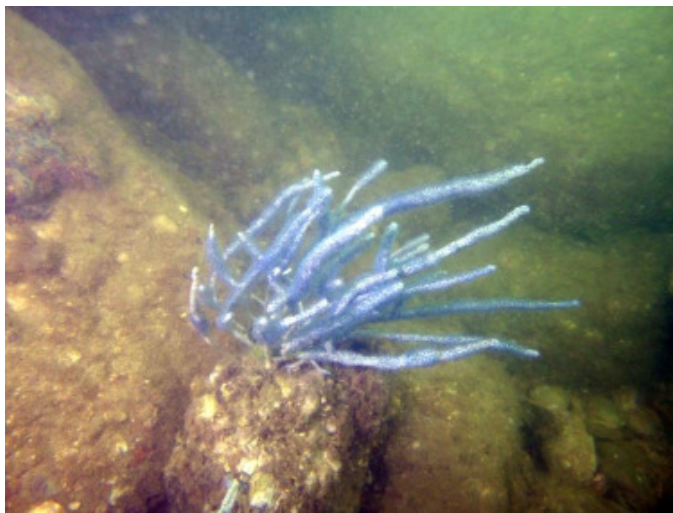


Plate 18. Gorgonians at recipient site.



Plate 19. Soft corals at recipient site.

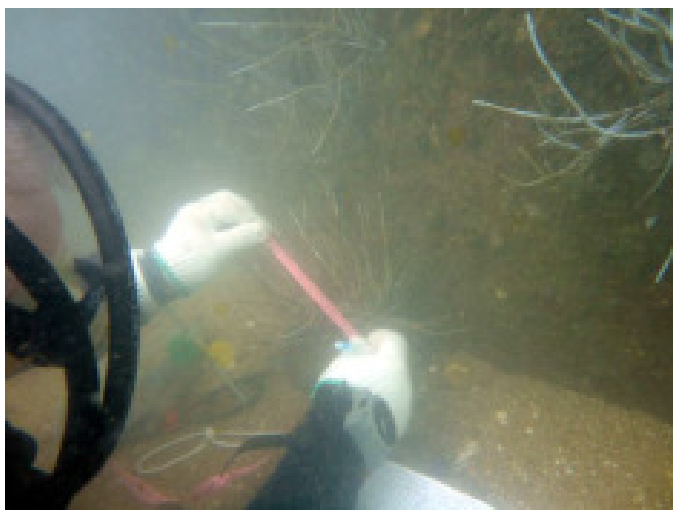


Plate 20. Measuring maximum height of gorgonians.

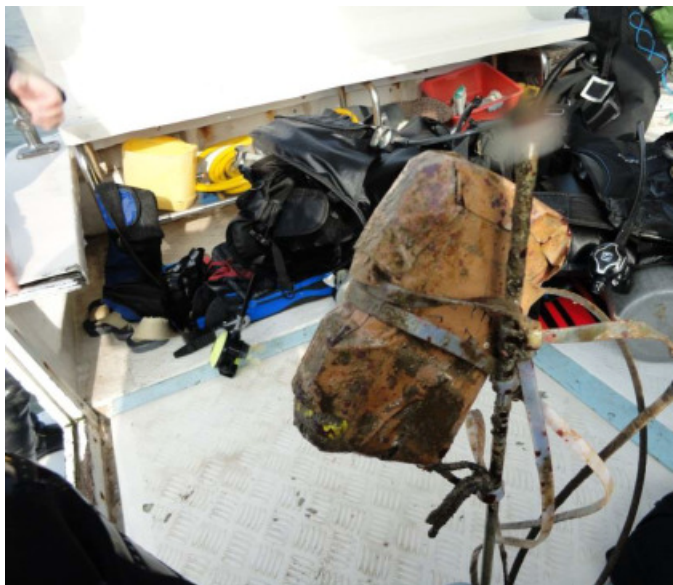


Plate 21. Data logger wrapped in a protected plastic sheet for recording environmental parameters.

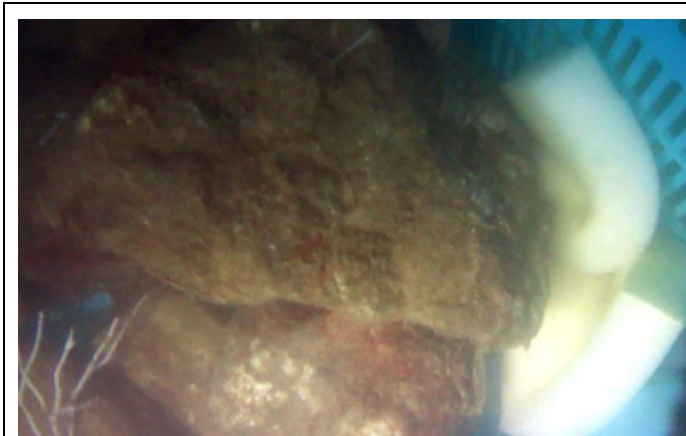


Plate 22. Soft corals in a lifter with protection by a piece of sponge.