

Appendix 13 – Coral Spawning Correspondence Register.

The Pluto LNG Project has been operational for a total of 9 Coral Spawning windows from November 2007 to December 2008. Spawning assessments have been completed for all of the predicted spawning windows outlined in Section 4.6.6 of the DSDMP. Dredging activities have been suspended where required following consultation with the DEMG. This has been required on two occasions to date. Below outlines correspondence between Woodside and the DEC.

<i>Potential Spawning Window</i>	<i>Reference Correspondence</i>		
	<i>To</i>	<i>From</i>	<i>Date(s) / WBPL Reference Number(s)</i>
Spring 2007:			
1/11/07 - 5/11/07	N/A	N/A	Dredging not yet commenced
30/11/07 - 4/12/07	DEC	Woodside	PLU/GOV/00166; 28/11/2008
29/12/07 - 2/1/08	DEC	DEMG	21/12/2008
Autumn 2008			
27/2/08 - 3/3/08	DEC	Woodside	PLU/GOV/00195 ;26/02/2008
27/3/08 - 31/3/08	DEC	DEMG	20/03/2008; 2/04/08
26/4/08 - 30/4/08	DEC	Woodside	PLU/GOV/00228 ;21/04/2008
Spring 2008			
21/10/08 - 25/10/08	DEC	Woodside	PLU/GOV/00295; 30/09/2008
19/11/08 - 23/11/08	DEC	Woodside	PLU/GOV/00331; 11/11/2008
18/12/08 - 23/12/08	N/A	N/A	Assessment not complete prior to AACR preparation

Appendix 14 - Baseline coral health monitoring Report.



PLUTO LNG DEVELOPMENT

CORAL HEALTH MONITORING: BASELINE

Report: MSA93R4

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Document Information

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USAGE	This report provides the results of a program undertaken pursuant to the Dredge and Spoil Disposal Management Plan for the Pluto LNG Development dredging phase.
PRECIS	Baseline values for sites to be monitored for coral health are presented. Data for the initial twenty four operational sites showing the pre-dredging levels of partial mortality and bleaching of coral are provided along with estimates of coral abundance and community composition at each site.
KEYWORDS	coral monitoring Dampier Woodside dredging

Version-Date	Released by	Purpose
V.1- 16 Nov 07	JAS	Client Review
V.2- 9 Dec 08	JAS	Added all survey dates

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SUMMARY

Prior to the commencement of a major dredging project within the Dampier Harbour, Woodside Burrup Pty Ltd (Woodside) have undertaken a detailed survey of corals and coral habitat in and around the areas of likely dredging impact. Subsequently, a set of 24 Operating Sites and 9 Contingency Sites has been established for monitoring the health of corals during dredging.

This report presents the results of the baseline coral health estimates collected prior to the commencement of dredging. Estimates of Partial Mortality and Bleaching are shown for all Operating Sites along with contextual data on the abundance of coral cover and coral community composition at each site.

1.0 INTRODUCTION

1.1 OVERVIEW

Woodside Burrup Pty Ltd (Woodside) is undertaking capital and maintenance dredging for the Pluto LNG development in Mermaid Sound, northern Western Australia. Environmental management is effected under a Dredging and Spoil Disposal Management Plan (the DSDMP) (SKM 2007).

In response to the requirements of Schedule 4 of the Ministerial Statement covering this project, Appendix G of the Plan has established a program of coral health monitoring to examine the status of coral communities within the zone of predicted impact and influence of the dredging and disposal operations.

Two indicators of coral health are scored under this program:

- Partial mortality of individual corals – assessed fortnightly;
- Frequency of bleaching on coral – assessed fortnightly.

In addition, contextual data on other parameters of the coral communities are to be scored, including:

- Percent cover & community composition – assessed before and after dredging;
- Abundance of small (<50mm) corals – assessed before and after dredging.

This baseline report provides the results of the assessment for all of the above prior to the onset of dredging for all Operational Impact and Reference sites. Sites to be used as Contingency Impact or Reference sites are not reported here, but will be surveyed and reported separately prior to them experiencing any impacts of dredging (as judged from water quality measures).

1.2 SURVEYS TO DATE

Data reported in this baseline study has been gathered from surveys over the period 1 – 16 November 2007. Dredging is scheduled to commence on 19 November 2007.

Table 1. List of surveys to this time.

Survey #	Dates	Sites
1	1 – 14 Nov 07	All Operating sites

2.0 METHODS

2.1 SAMPLING LOCATIONS

The rationale for site selection is contained in Appendix G the DSDMP. Sites to be used for routine fortnightly monitoring are designated as Operating sites (Table 2).

Table 2. Operating sites for coral health monitoring.

Site Name	Position (GDA94 Zone 50)		Coral Community	Surveyed
	Easting	Northing		
Inner Zone B Impact				
NWIT	477059	7725275	TFPo	1-14 Nov 2007
SCON	477692	7726335	FPo	1-14 Nov 2007
SWIT	476529	7723696	FTO	1-14 Nov 2007
SUP2	473437	7719662	FTO	1-14 Nov 2007
INTI	462909	7716536	PoPvO	1-14 Nov 2007
MIDI	464008	7714219	OPvF	1-14 Nov 2007
WLI1	458896	7720645	PoO	1-14 Nov 2007
WINI	459616	7712772	PoO	1-14 Nov 2007
Inner Zone C Impact				
ANG2	477632	7731862	FAcPo	1-14 Nov 2007
ANG3	478431	7731179	AcPo	1-14 Nov 2007
ANGI	478711	7734574	FTO	1-14 Nov 2007
COBN	479487	7728716	PoT	1-14 Nov 2007
CONI	476837	7729162	Po	1-14 Nov 2007
GIDI	478784	7736380	OTF	1-14 Nov 2007
Inner Zone C Reference Sites				
FFP1	480988	7734091	OT	1-14 Nov 2007
MALI	468088	7730742	Po	1-14 Nov 2007
Outer Zone C Impact Sites				
CRTS	469188	7736562	AcO	1-14 Nov 2007
HAM3	478293	7746613	O	1-14 Nov 2007
HAM4	480692	7748006	AcO	1-14 Nov 2007
LANI	460674	7739214	AcF	1-14 Nov 2007
NELS	466203	7738649	OPoAc	1-14 Nov 2007
Outer Zone C Reference				
LEGD	483389	7749405	OPo	1-14 Nov 2007
MAL2	464559	7730303	Po	1-14 Nov 2007
MIDR	464301	7735390	PoFO	1-14 Nov 2007

In addition to Operating sites which have their baseline captured and scored prior to any dredging, a number of Contingency Sites have been established (Table 3).

Contingency Sites provide two functions:

1. A secondary source of Reference levels of partial mortality for Zone C sites should any of the Zone C Reference sites show water quality consistent with an effect of the plume from dredging or disposal;
2. A method to assess whether coral impacts spread outside of the predicted area of plume effects should the plume effect water quality at these areas.

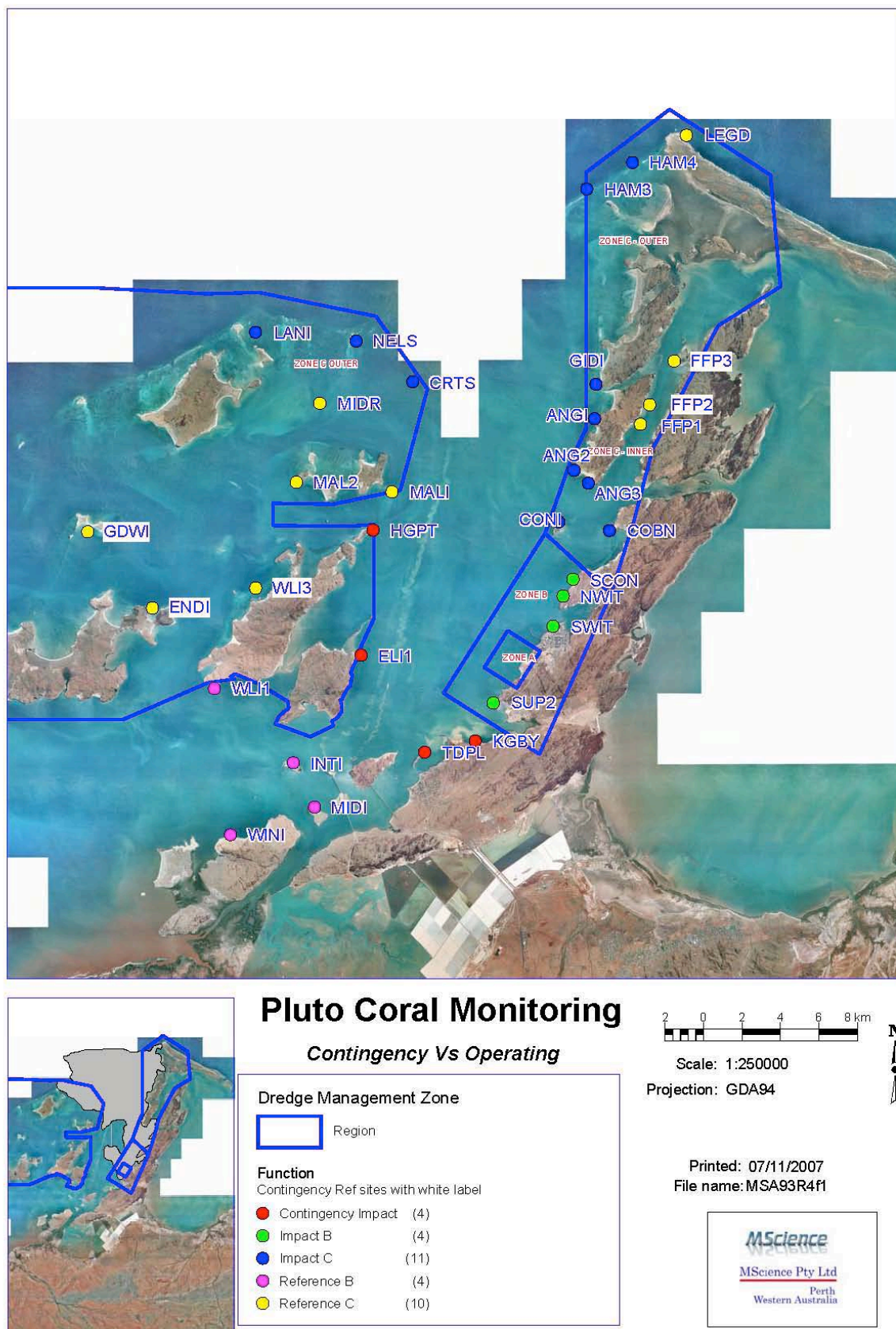
Coral communities at Contingency sites have been sampled prior to any potential for dredging to impact them. Baseline images for these sites will be recorded but not analysed until required.

Table 3. List of Contingency Sites.

Site Name	Position (GDA94 Zone 50)		Coral Community	Surveyed
	Easting	Northing		
Sites Outside Zoned Area of Impact B				
KGBY	472454	7717680	FTO	1-14 Nov 2007
TDPL	469795	7717092	PvFPo	1-14 Nov 2007
HGPT	467093	7728731	PvPo	1-14 Nov 2007
ELI1	466472	7722175	PvPo	1-14 Nov 2007
Inner Zone C Reference Sites				
FFP2	481514	7735136	-	1-14 Nov 2007
FFP3	482886	7737596	-	13 Nov 2008
Outer Zone C Reference				
GDWI	452136	7728645	-	12 Dec 2007
ENDI	455523	7724651	-	2 Oct 2007
WLI3	460941	7725700	-	2 Oct 2007

A general map showing all site locations is shown in Figure 1. Higher resolution maps for all operating sites and their individual transects are presented in Appendix A as spatially accurate maps.

Figure 1. Map of all coral health sites.



2.2 HEALTH MEASURES

2.2.1 PARTIAL MORTALITY

Coral mortality may be recorded on entire colonies, however partial mortality, where a part of the coral colony has died, may also be evident.

Partial mortality has been scored here as:

- coral tissue which has clearly lost its original colour – other than ‘white-bleached’;
- any coral which has been covered with algae growing on the coral; and
- coral with tissue covered by a depth of sediment sufficient to obscure vision of the underlying coral.

Physical Damage - coral mortality often occurs via the loss of entire colonies, or parts of colonies, from physical damage. In the Dampier Archipelago, this form of loss can occur through wave action, anchor damage or diver damage. Where a coral is physically damaged, the outline of coral for scoring on the validation set will be adjusted to remove the area lost.

To allow evaluation of a statistically relevant (see App G DSDMP) cross section of individual corals, a target of 50 corals per analytical event was established. In practice, a set of 60 corals per site was targeted as a number which would allow loss of some corals over the study period and still provide the minimum sample of 50 individuals.

Individual corals were located along the permanent transects established as described in Section 2.3 below.

2.2.2 BLEACHING

Coral bleaching is defined here as the loss of a coral’s symbiotic algae to the point where the colour has been lost (as judged by *in situ* observation) from the living tissue of a hermatypic coral, but the living tissue remains intact. This state cannot be determined using only photographic images of entire coral colonies as a photograph cannot determine whether white areas on a coral represent live tissue or a bleached skeleton. To address this in addition to a photograph being taken, bleaching will be confirmed by diver observation on whether there is live coral tissue (polyps) present. If there is no coral tissue, and just the white skeleton then the coral will be recorded as dead. If it is classed as bleaching the photograph will be analysed using the same technique as the assessment of coral partial mortality.

The same set of corals used in Section 2.2.1 is also evaluated for bleaching.

2.2.3 STATISTICAL TREATMENT

Each coral image is assigned a percent partial mortality (for coral i – PM_i) where $PM_i = (\text{points scored as partial mortality} / \text{number of points within the coral boundary})$ where PM_{ix} is the partial mortality of coral i at survey x .

The Partial Mortality estimate for a site is the average of that for the corals scored at that site for that survey – eg for Site ANGI in Survey 2:

$$PM(ANGI_2) = \sum PM_{i2} / N \quad (\text{Eq. 1})$$

where i goes from 1 to N corals;

The Gross Mortality at a site is calculated as (eg for site ANGI at Survey 2)

$$PM(ANGI_2) = \sum (PM_{i2} - PM_{iB}) / N \quad (\text{eq. 2})$$

where i goes from 1 to N corals with N corals being the corals measured at time 2 and iB those same corals from the baseline survey.

Net Mortality at a site is the Gross Mortality at that site during survey x less the average Gross Mortality of all Reference sites during survey x .

At this time only the average Partial Mortality (Eq.1) for sites has been calculated.

2.3 CORAL COVER AND COMMUNITY COMPOSITION

Belt transects were used to validate visual estimates of cover. Belt transects examine a relatively small proportion of the coral community at any site, but provide robust information on densities and community composition.

Transects were placed along in a set linear design through representative sections of the highest local cover in coral communities.

Three 10 metre fixed transects were established and recorded using the methods of Stoddart et al. (2005).

Images were scored for coral and benthic cover using the categories of Table 4. Coral cover estimates methods & accuracy are discussed in Stoddart et al. (2005) and community classification follows the scheme of Blakeway & Radford (2005).

Table 4. Benthic categories scored in transects.

Category	Description
Live Coral	
<i>Acropora</i>	Members of the genus <i>Acropora</i>
Faviids	Members of the family Faviidae – a wide range of species with the most common <i>Goniastrea australensis</i> or <i>Platygyra sinensis</i>
<i>Pavona</i>	Members of the genus <i>Pavona</i> – almost exclusively <i>P. decussata</i> here.
<i>Porites</i>	Members of the genus <i>Porites</i> – most commonly <i>P. solida</i> and <i>P. lobata</i> .
<i>Turbinaria</i>	members of the genus <i>Turbinaria</i> – mostly comprising the 4 species common in Mermaid Sound
Other	all scleractinian coral species not included above – plus Milleporid corals
Non- coral substrate	
Abiotic	Rock, rubble, sand, incl. sparse cover of turf algae and fine sediment
Fauna	All benthic fauna other than scleractinians: soft corals, urchins, zoanthids, sponges
Flora	All floating or attached flora: macro-algae, seagrasses, dense turf algae
Unknown	Items which are either part of the monitoring equipment (rope, stake) or unable to be identified – these are excluded from further analyses
Dead Coral	Colonies that retain the 'all-white' appearance of freshly dead coral before being colonised by turf algae. After colonisation by algae the coral is scored as rubble.

2.4 CORAL RECRUITMENT SURVEYS

To assess the potential impact on recently settled corals, the abundance of small colonies at each site has been recorded. The same measure will also be recorded following project completion to determine whether the dredging or disposal adversely effects coral recruitment. Corals with a maximum dimension less than 50 mm are used as a size class likely to represent recently settled recruits which can still be measured by practical means.

A survey of 35 quadrats is undertaken within each site used for assessment of coral condition. Quadrats (~25 cm x 25 cm) are searched intensively and a mean and variance of corals <50 cm per square metre estimated.

3.0 OUTCOMES

3.1 GENERAL APPRAISAL

As per the results of previous surveys of coral mortality in this region, there is considerable difference between the status of coral communities at different sites. While site selection has attempted as far as possible to match the physical setting and coral communities at Impact and Reference Sites, this has not always produced a high degree of concordance. In general, priority has been given to matching the physical settings, principally exposure to weather and currents, as these effects are likely to provide the main natural forcings on coral mortality.

While overall communities may vary in the relative dominance of their coral forms, sites all share a common set of species. This commonality is reflected in the selection of individual corals selected for the 'health assessment' set. A separate document will provide taxonomic details of the set of corals selected at each site.

3.2 CORAL HEALTH

The baseline coral health values have been constructed from the results of surveys of the Operating Sites conducted between the 1st and 14th of November 2007.

3.2.1 VALIDATION SET OF CORALS

Following collection of images of corals from all operating sites (and several contingency sites), a set of images was established for the baseline (pre-dredging) record. These images will be used for future reference in identifying the individual corals and their original condition.

Although not all the 60 corals selected at each site met the criteria for selection set out in App. G of the DSDMP, each site is represented by at least 55 corals, which should prove adequate for the program duration. If replacement corals are required later, they will be selected from individuals of appropriate species showing no partial mortality.

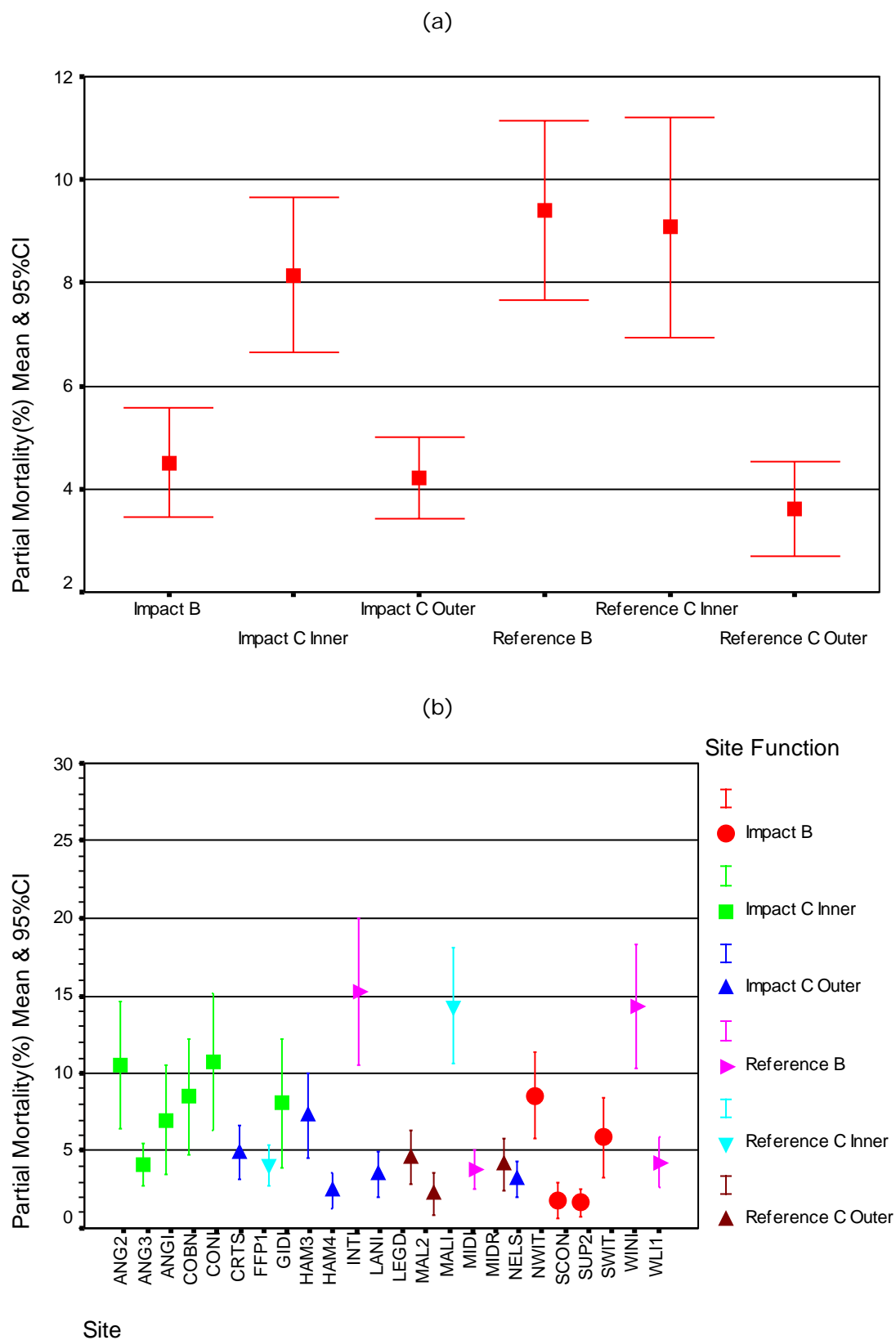
3.2.2 BASELINE PARTIAL MORTALITY

Estimates of the baseline partial mortality levels at the Operating Sites are shown in Table 5 and as means and 95% confidence intervals in Figure 2.

Table 5. Mean partial mortality for the pre-dredging baseline at each Operating Site.

Partial Mortality(%)		
Site	Mean	N
Zone B Impact		
NWIT	8.6	60
SCON	1.8	57
SUP2	1.6	58
SWIT	5.9	58
Zone C Inner Impact		
ANG2	10.6	57
ANG3	4.1	60
ANGI	7.0	56
COBN	8.5	60
CONI	10.7	59
GIDI	7.8	60
Zone C Outer Impact		
CRTS	4.8	60
HAM3	7.3	60
HAM4	2.4	60
LANI	3.4	60
NELS	3.1	60
Zone B Reference		
INTI	15.3	59
MIDI	3.8	58
WINI	14.3	59
WLI1	4.2	60
Zone C Outer Reference		
FFP1	4.1	60
MALI	14.3	57
Zone C Outer Reference		
LEGD	4.6	57
MAL2	2.2	60
MIDR	4.1	60

Figure 2. Partial mortality estimates at the baseline by a) Zone and b) site.



3.3 CORAL STRESS

There was little evidence of bleaching amongst the baseline data set. Where average bleaching values are >0 (Table 6) at a site, they were each the result of a single partially bleached coral (faviids in all cases).

Table 6. Mean percent bleaching for the pre-dredging baseline at each Operating Site.

%Bleached		
Site	Mean	N
Zone B Impact		
NWIT	0.0	60
SCON	0.0	57
SUP2	0.0	58
SWIT	0.0	58
Zone C Inner Impact		
ANG2	0.3	57
ANG3	0.0	60
ANGI	0.0	56
COBN	0.0	60
CONI	0.0	59
GIDI	0.3	60
Zone C Outer Impact		
CRTS	0.0	60
HAM3	0.0	60
HAM4	0.0	60
LANI	0.1	60
NELS	0.0	60
Zone B Reference		
INTI	0.0	59
MIDI	0.0	58
WINI	0.0	59
WLI1	0.0	60
Zone C Outer Reference		
FFP1	0.0	60
MALI	0.0	57
Zone C Outer Reference		
LEGD	0.0	57
MAL2	0.0	60
MIDR	0.0	60

3.4 CORAL ABUNDANCE & COMMUNITY COMPOSITION

Data used for describing general levels of coral abundance (%cover) and community composition (relative abundance of coral forms) was derived from the three belt transects recorded at each site. This data provides an indication of the amount and diversity of coral found within the highest density areas of coral that were readily able to be located at sites and extended over more than half a hectare.

As for the estimates of partial mortality, the percentage cover of coral varies widely between sites – often between sites that are physically and similar and in proximity of some few kilometres.

Percentage cover and community composition are likely to reflect processes operating over timescales of years to tens of years, whereas the partial mortality estimates for individual corals respond to shorter term influences. Variation (or lack of variation) in cover and composition for sites in this area over timescales of less than 1 year have been described in a baseline study undertaken for the Pluto LNG project between August 2006 and June 2007 (MScience 2007).

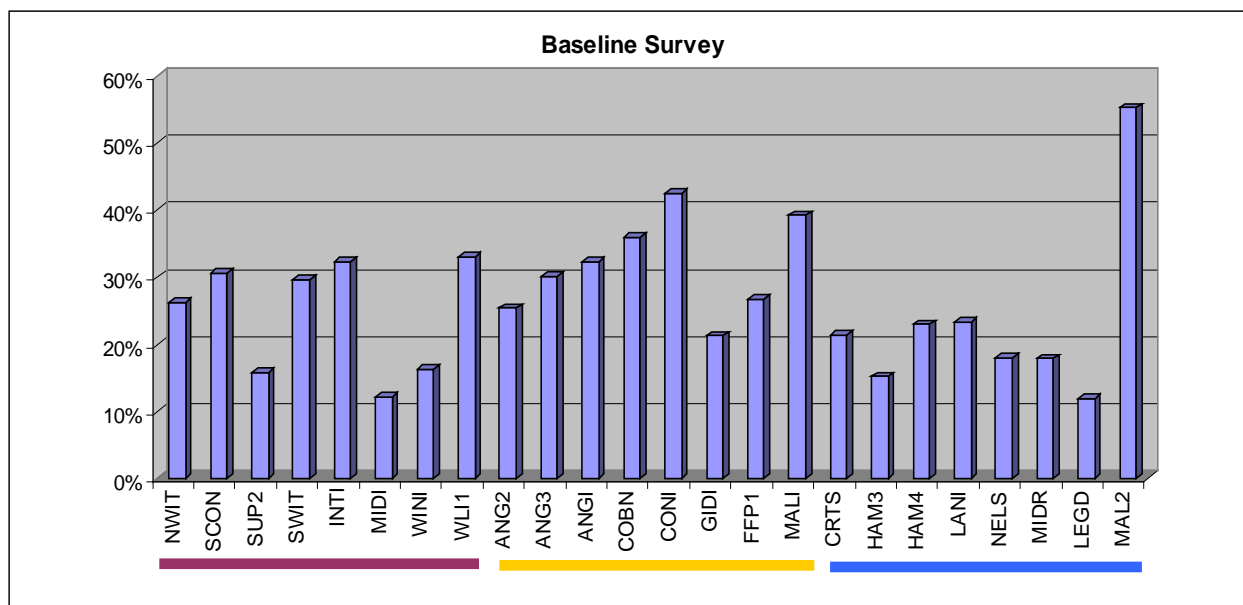
The percentage cover and community composition recorded between 15 October and 14 November 2007 are presented in Table 7 and Figure 2 & 3.

Table 7. Coral cover and relative abundance of the different forms of coral at Operating Sites prior to dredging.

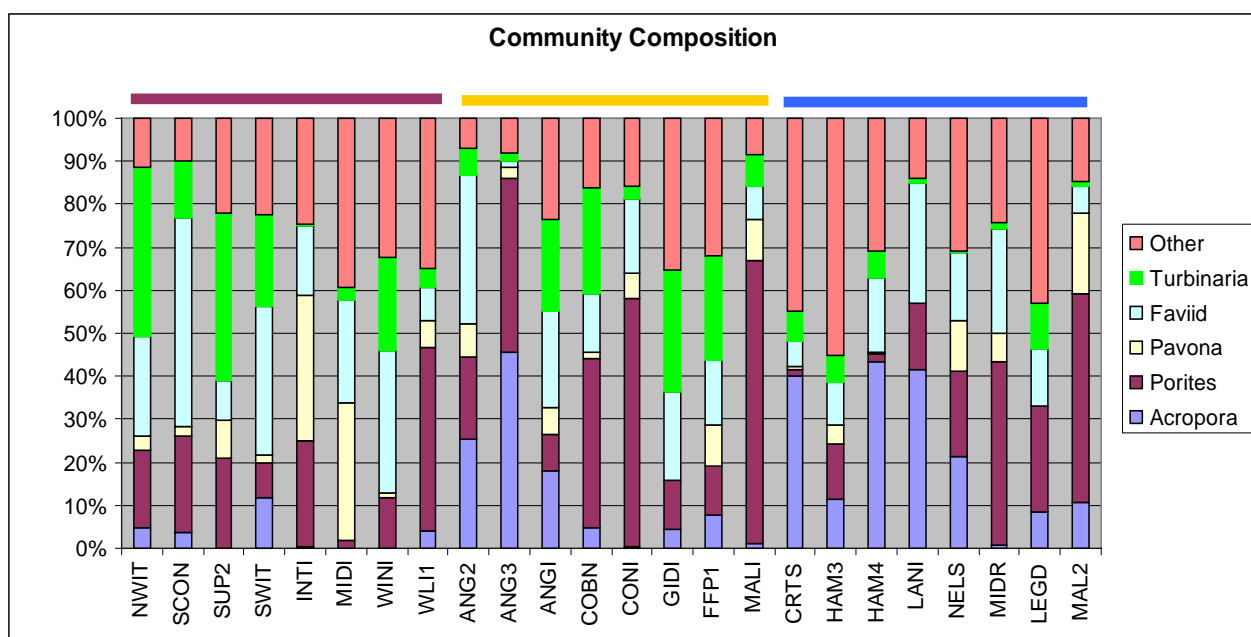
SITE	%Live coral	Acropora	Porites	Pavona	Faviid	Turbinaria	Other
Zone B							
NWIT	26%	5%	18%	3%	23%	40%	11%
SCON	31%	4%	22%	2%	48%	13%	10%
SUP2	16%	0%	21%	9%	9%	39%	22%
SWIT	30%	12%	8%	2%	35%	21%	22%
INTI	32%	0%	24%	34%	16%	0%	25%
MIDI	12%	0%	2%	32%	24%	3%	39%
WINI	16%	0%	12%	1%	33%	22%	32%
WLI1	33%	4%	43%	6%	8%	4%	35%
Zone C Inner							
ANG2	25%	25%	19%	8%	34%	6%	7%
ANG3	30%	46%	40%	3%	2%	2%	8%
ANGI	32%	18%	8%	6%	23%	21%	24%
COBN	36%	5%	39%	1%	14%	25%	16%
CONI	43%	0%	58%	6%	17%	3%	16%
GIDI	21%	4%	11%	0%	21%	28%	35%
FFP1	27%	8%	11%	10%	15%	25%	32%
MALI	39%	1%	66%	10%	8%	7%	9%
Zone C Outer							
CRTS	21%	40%	2%	1%	6%	7%	45%
HAM3	15%	11%	13%	4%	10%	6%	55%
HAM4	23%	43%	2%	0%	17%	7%	31%
LANI	23%	42%	16%	0%	28%	1%	14%
NELS	18%	21%	20%	12%	16%	0%	31%
MIDR	18%	1%	43%	7%	24%	2%	24%
LEGD	12%	8%	25%	0%	13%	11%	43%
MAL2	55%	11%	49%	19%	7%	1%	15%

Figure 3. Coral abundance (a) and composition (b) at Operating Sites.

a) site code: Zone B-brown; Zone C Inner-yellow; Zone C Outer-blue



b) site code: Zone B-brown; Zone C Inner-yellow; Zone C Outer-blue



3.5 CORAL RECRUIT NUMBERS

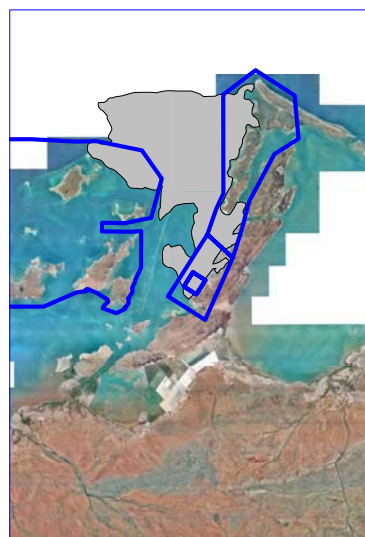
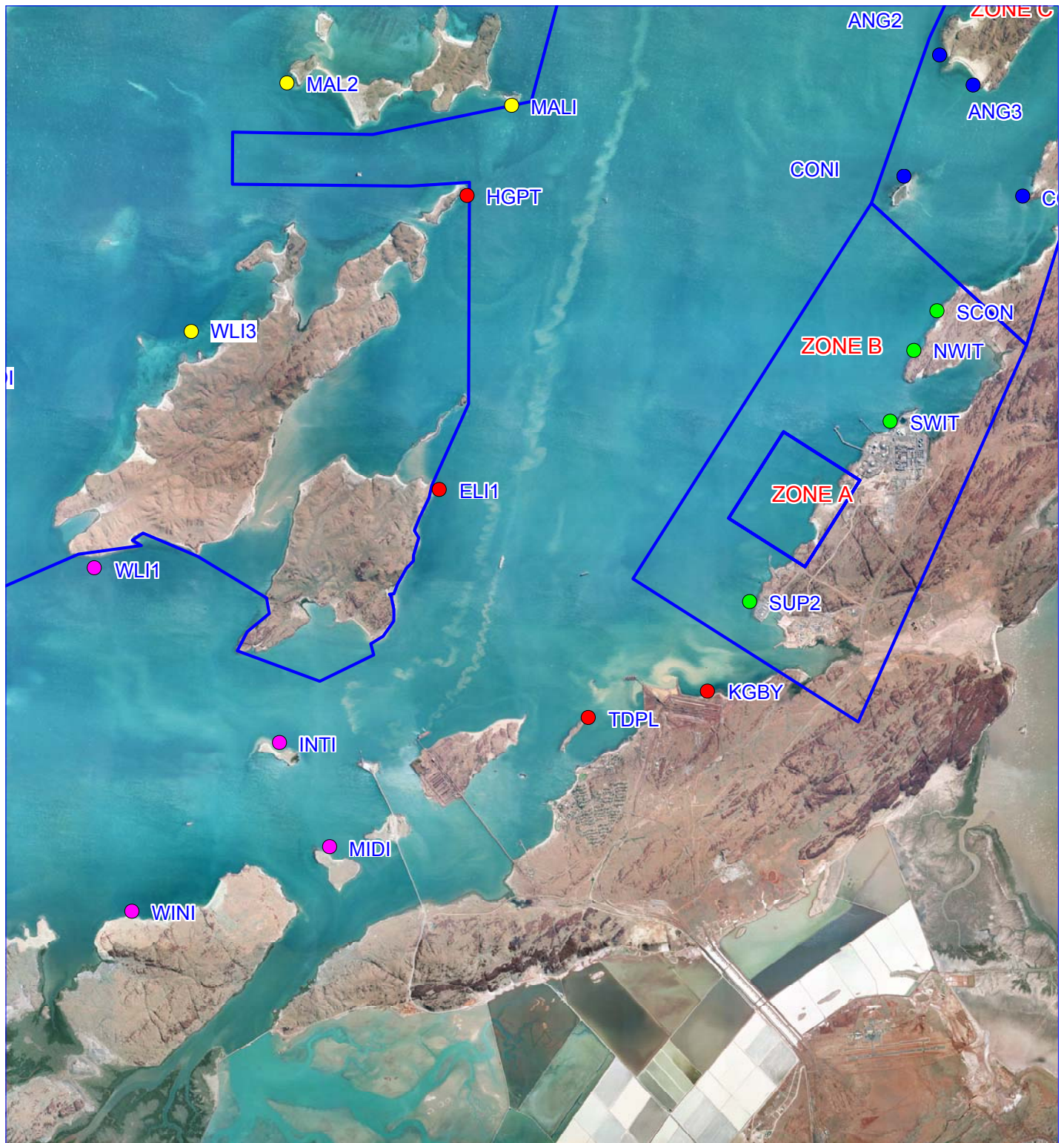
The abundance and composition of corals detected in the recruit surveys is provided as Appendix B.

4.0 REFERENCES

- Blakeway DR, Radford B (2005) Scleractinian Corals of the Dampier Port and inner Mermaid Sound: species list, community composition and distributional data. In: Stoddart JA, Stoddart SE (eds) Corals of the Dampier Harbour: Their Survival and Reproduction During the Dredging Programs of 2004. MScience Pty Ltd, Perth Western Australia, pp 1-8
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- Stoddart JA, Grey KA, Blakeway DR, Stoddart SE (2005) Rapid high-precision monitoring of coral communities to support reactive management of dredging in Mermaid Sound, Dampier, Western Australia. In: Stoddart JA, Stoddart SE (eds) Corals of the Dampier Harbour: Their Survival and Reproduction During the Dredging Programs of 2004. MScience Pty Ltd, Perth Western Australia, pp 31-48

APPENDIX A

DETAILED SITE MAPS



Zone A & B

Coral Sites

Dredge Management Zone



Function
Contingency Ref sites with white label

- Contingency Impact (4)
- Impact B (4)
- Impact C (11)
- Reference B (4)
- Reference C (10)

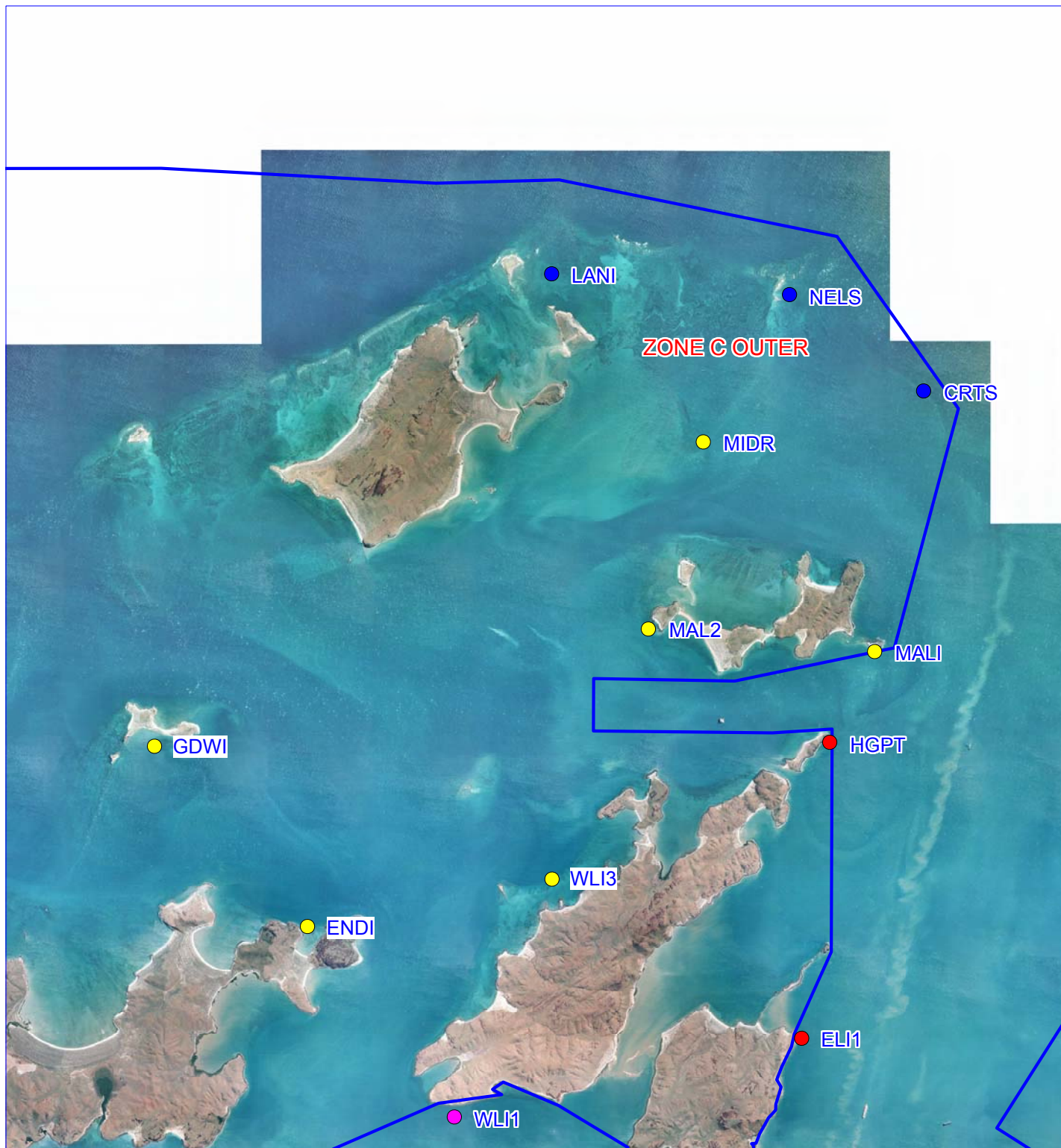
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Projection: GDA94 (mz50)



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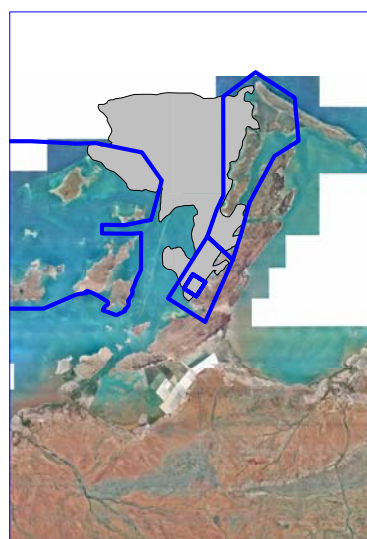


Zone C West

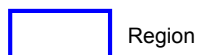
Coral Sites

Scale 1: 100,000

Projection: GDA94 (mz50)



Dredge Management Zone



Region

Function

Contingency Ref sites with white label

- Contingency Impact (4)
- Impact B (4)
- Impact C (11)
- Reference B (4)
- Reference C (10)

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File name: MSA93detail





Zone C East

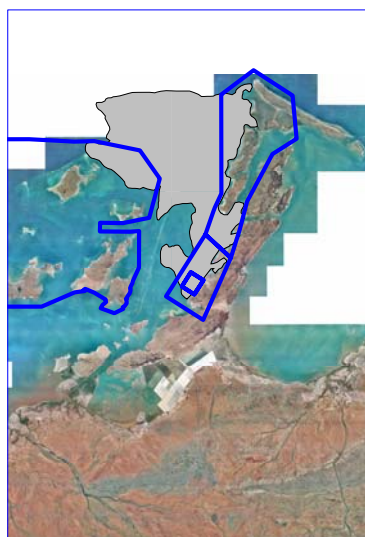
Coral Sites

Scale 1: 100,000

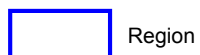
Projection: GDA94 (mz50)



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Dredge Management Zone

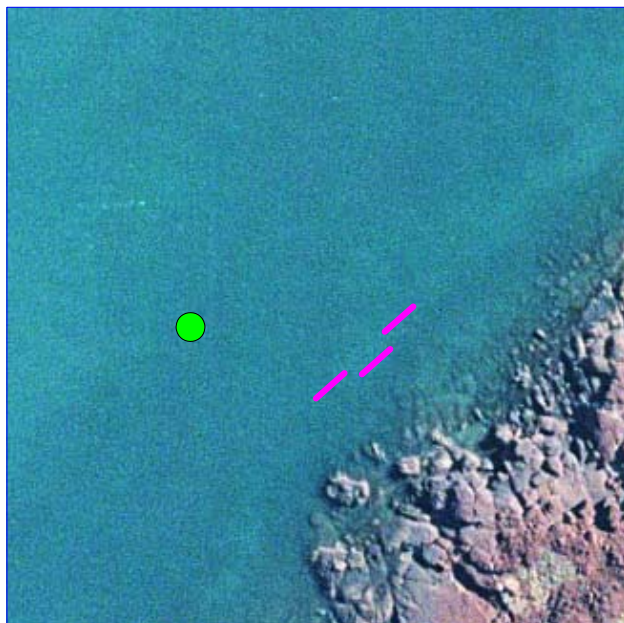


Function

Contingency Ref sites with white label

- Contingency Impact (4)
- Impact B (4)
- Impact C (11)
- Reference B (4)
- Reference C (10)

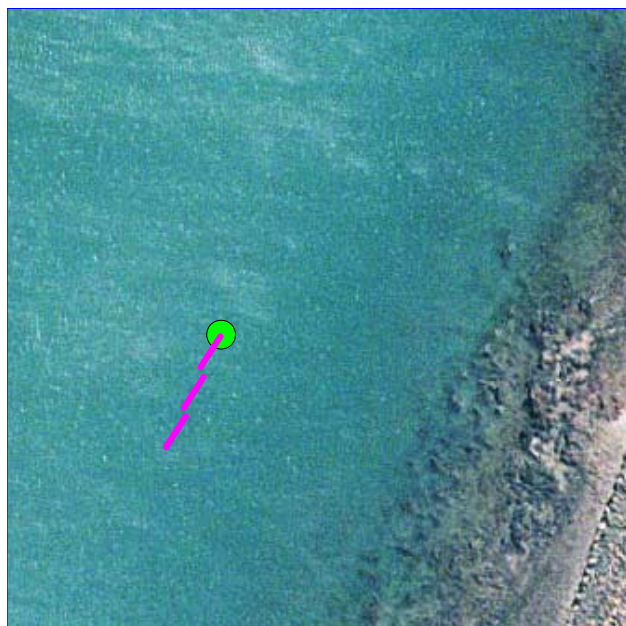
MScience
MScience Pty Ltd
Perth
Western Australia



NWIT



SWIT



SUP2



SCON

Pluto site details
Detailed transect locations Zone B
November 2007



Scale 1: 2,000
 Projection: GDA94(zone 50)



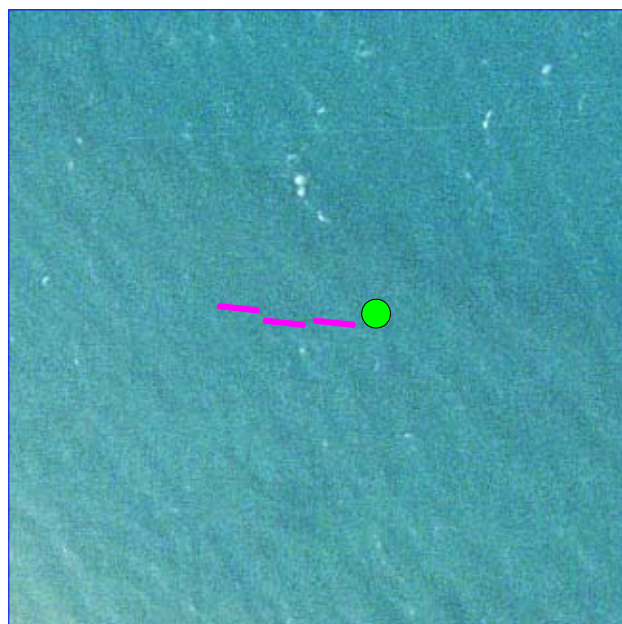
INTI



SWIT



WLI1



WINI

Pluto site details

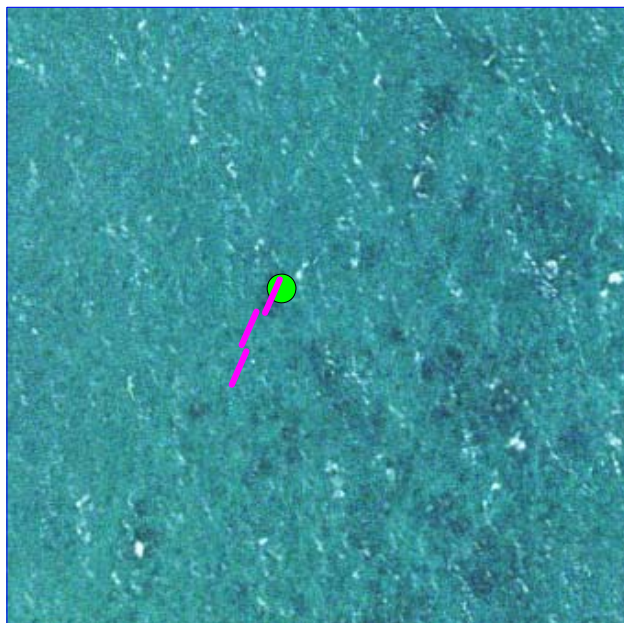
Detailed transect locations Reference Sites for Zone B

November 2007



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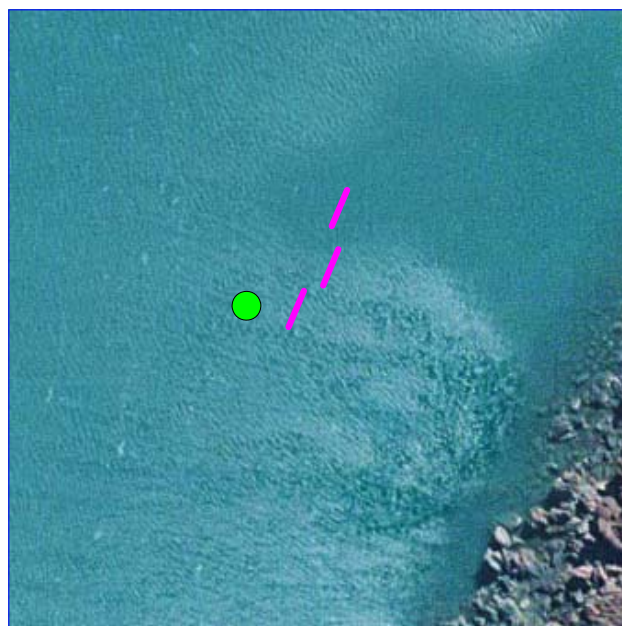
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LANI



CONI



COBN

Pluto site details

**Detailed transect locations
Zone C - 2 Inner & 1 Outer
November 2007**



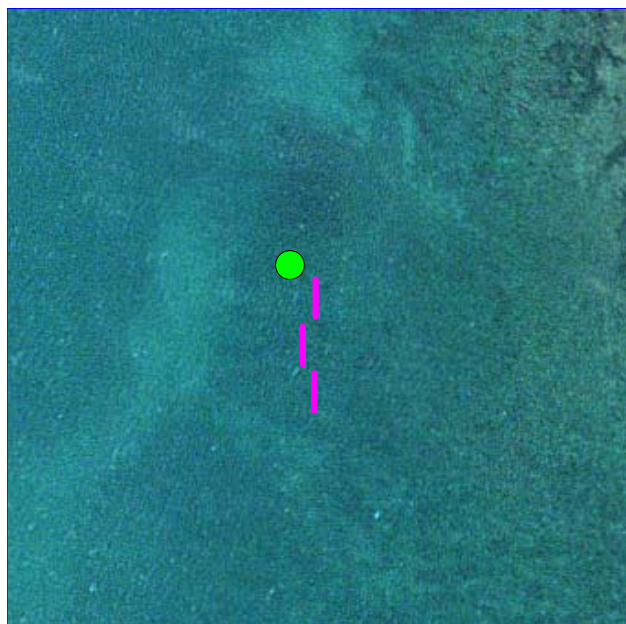
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ANGI



ANG3



ANG2



GIDI

Pluto site details

Detailed transect locations

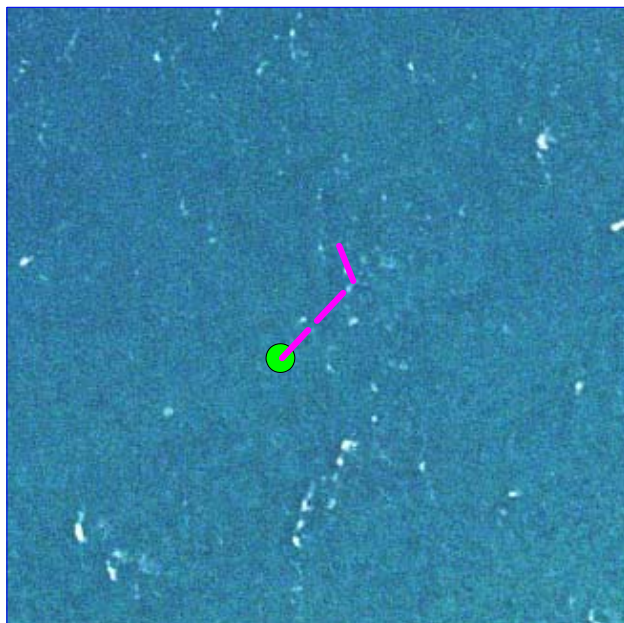
Zone C - Inner 4 sites

November 2007

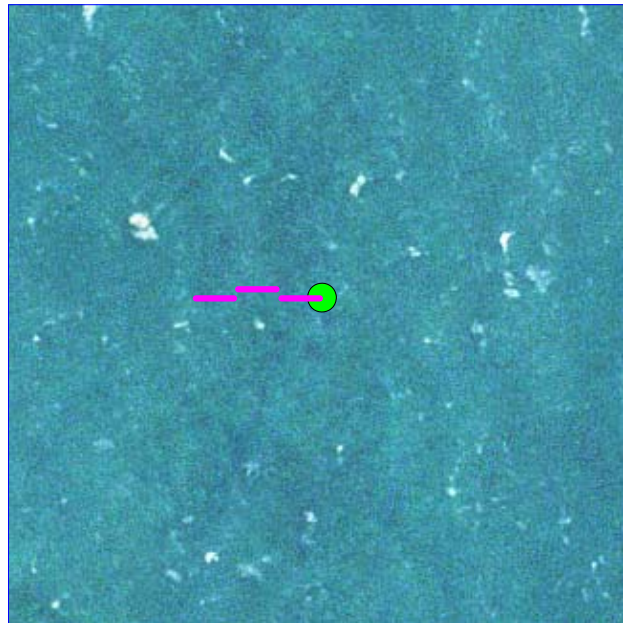


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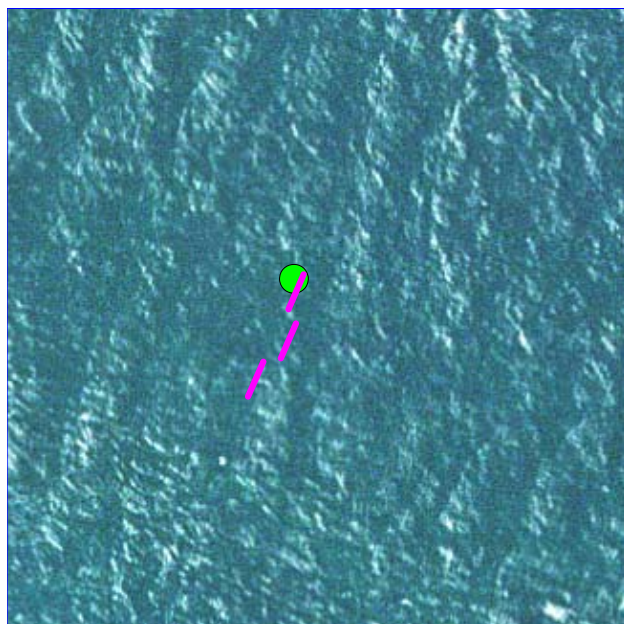
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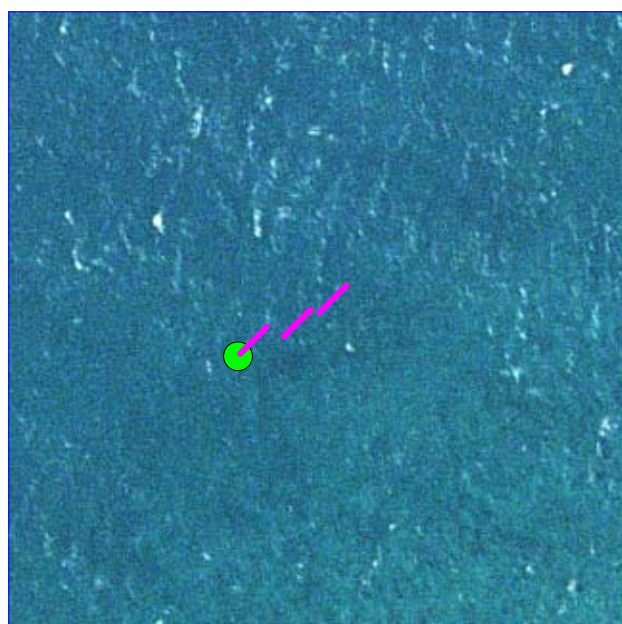
HAM2



NELS



CRTS



HAM4

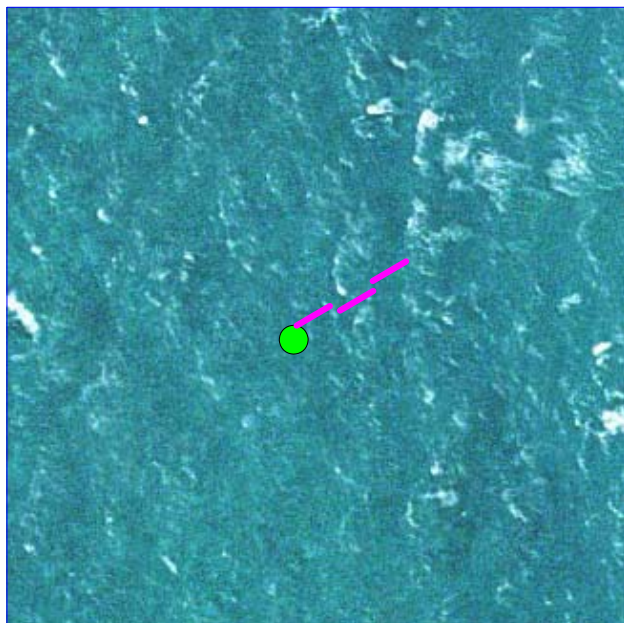
Pluto site details

Detailed transect locations
Zone C - Outer Part a
November 2007

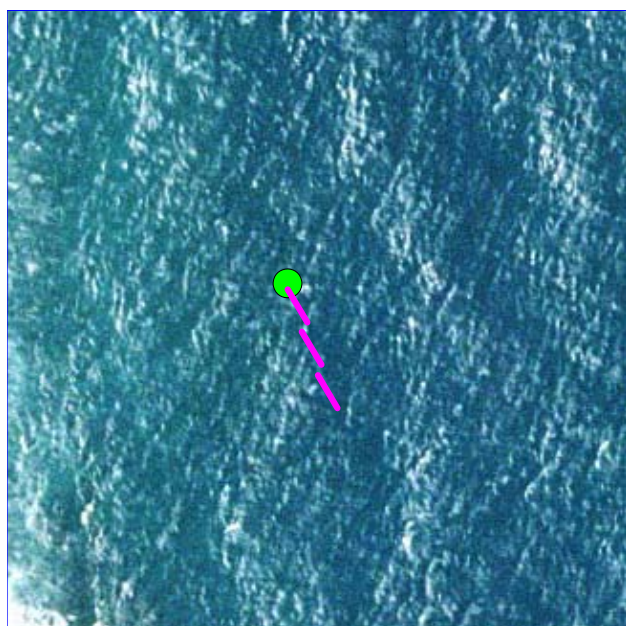


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MIDR



LEGD



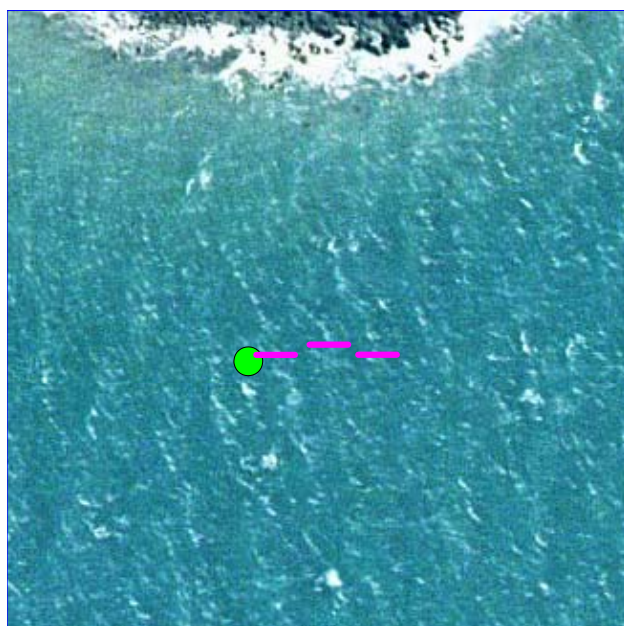
MAL2

Pluto site details

Detailed transect locations
Reference Sites for Zone C Outer
November 2007



Scale 1: 2,000
Projection: GDA94(zone 50)



WLI1



FFP1

Pluto site details

**Detailed transect locations
Reference Sites for Zone C Inner**

November 2007



Scale 1: 2,000

Projection: GDA94(zone 50)

APPENDIX B

CORAL RECRUIT NUMBERS

During the collection of baseline data in October & November 2007 prior to commencement of dredging for the Pluto LNG Project, intensive surveys were made around the coral monitoring sites to assess the abundance of small corals. Corals under 50mm in maximum diameter have been postulated to provide a good indicator of the amount of settlement occurring within an area.

The Dredging and Spoil Disposal Management Plan for the Pluto LNG Development establishes a requirement to collect and report the abundance of sub 50mm corals.

Surveys were undertaken as per the Methods section of this report (MSA93R4). The sites surveyed have been described within the body of the report and their locations given. This appendix to the main report presents the results of the surveys for small corals, here called the Coral Recruitment Surveys.

Recruit numbers are presented by site and coral management zone in Table 1 and Figures 1 – 3.

As would be expected with small size classes, numbers varied substantially between sites. There was no clear difference in the numbers of recruits between zones (Figure 4). The high mean number of recruits for Zone C-Inner derives from 2 sites having high numbers of recruits (GIDI and MALI). However, these sites are similar in recruit numbers to the Zone B site INTI. Thus it is unlikely that there is a systematic spatial patterning to recruit numbers.

In addition to the spatial variation in recruit numbers it is probable that numbers vary within sites over time to a similar degree. Given the mean:SE ratio, recruit numbers would have to increase by 100% or decrease by 50% at a site to yield a statistically significant change.

Table 1. Number of quadrats counted, means and standard deviation in recruit counts between quadrats within sites.

Zone Site	2-Way Table of #Recruits/m ²		
	Means	N	Std.Dev.
C-Outer	47.3	168	42.76
LEGD	49.5	21	43.79
HAM3	30.5	21	31.56
HAM4	25.1	21	24.56
MAL2	69.3	21	69.62
CRTS	37.3	21	30.08
LANI	49.5	21	28.58
NELS	49.5	21	43.50
MIDR	67.8	21	37.49
C-Inner	55.8	251	54.54
CONI	27.9	35	51.09
GIDI	107.4	35	69.37
ANGI	34.7	35	25.88
ANG2	33.8	35	27.10
ANG3	50.3	21	46.73
COBN	42.4	34	26.39
MALI	100.6	35	60.56
FFP1	41.1	21	29.75
B	45.0	293	53.38
NWIT	20.1	35	23.39
TDPL	23.8	35	31.13
MIDI	64.0	21	47.19
WLI1	71.6	21	45.15
SWIT	30.1	34	29.68
KGBY	27.0	35	27.38
WINI	25.6	35	29.86
INTI	117.0	35	93.36
SUP2	51.0	21	28.45
SCON	36.6	21	33.23
All Groups	49.4	712	51.67

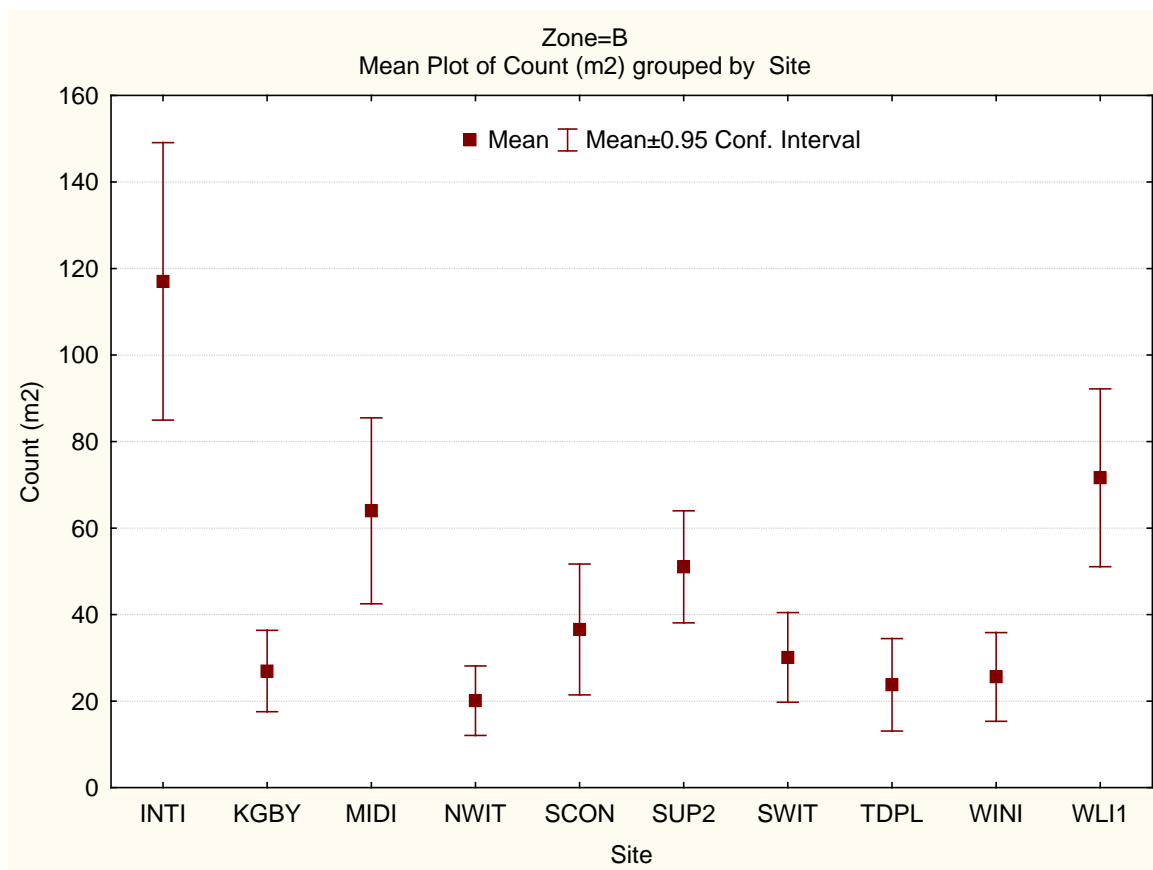
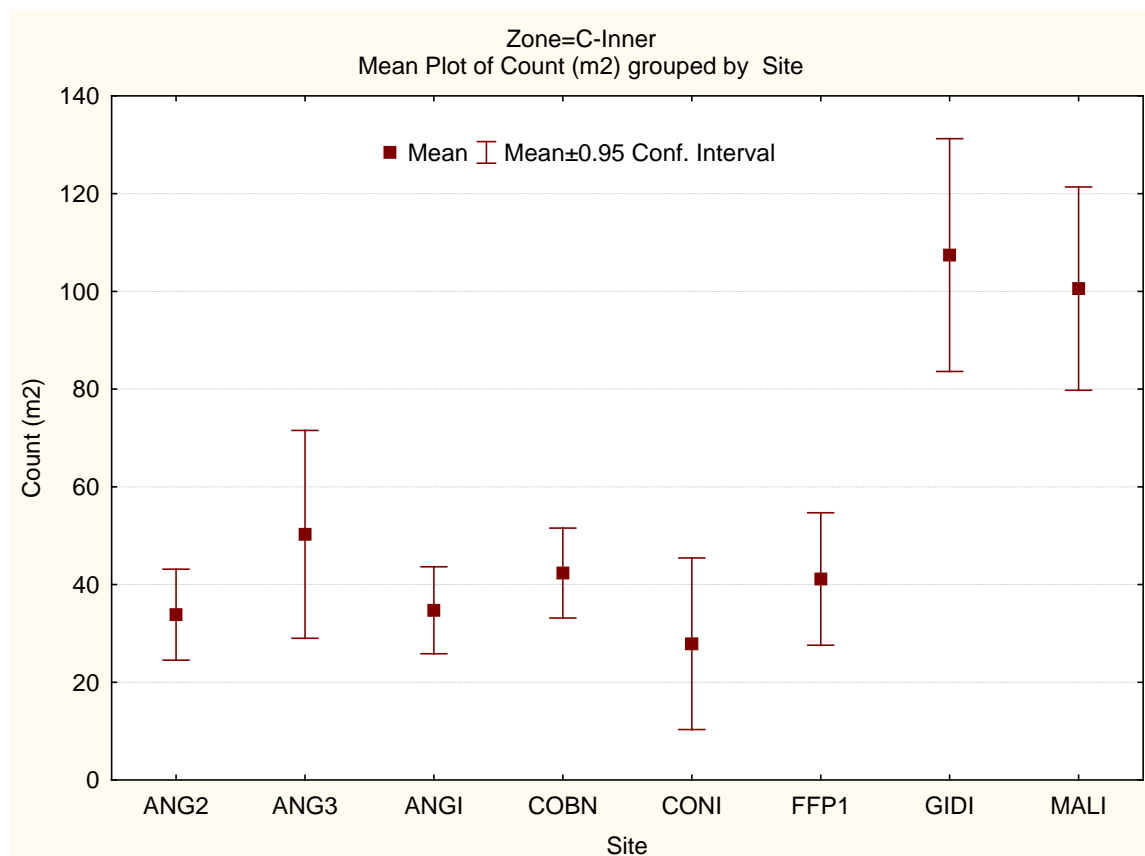
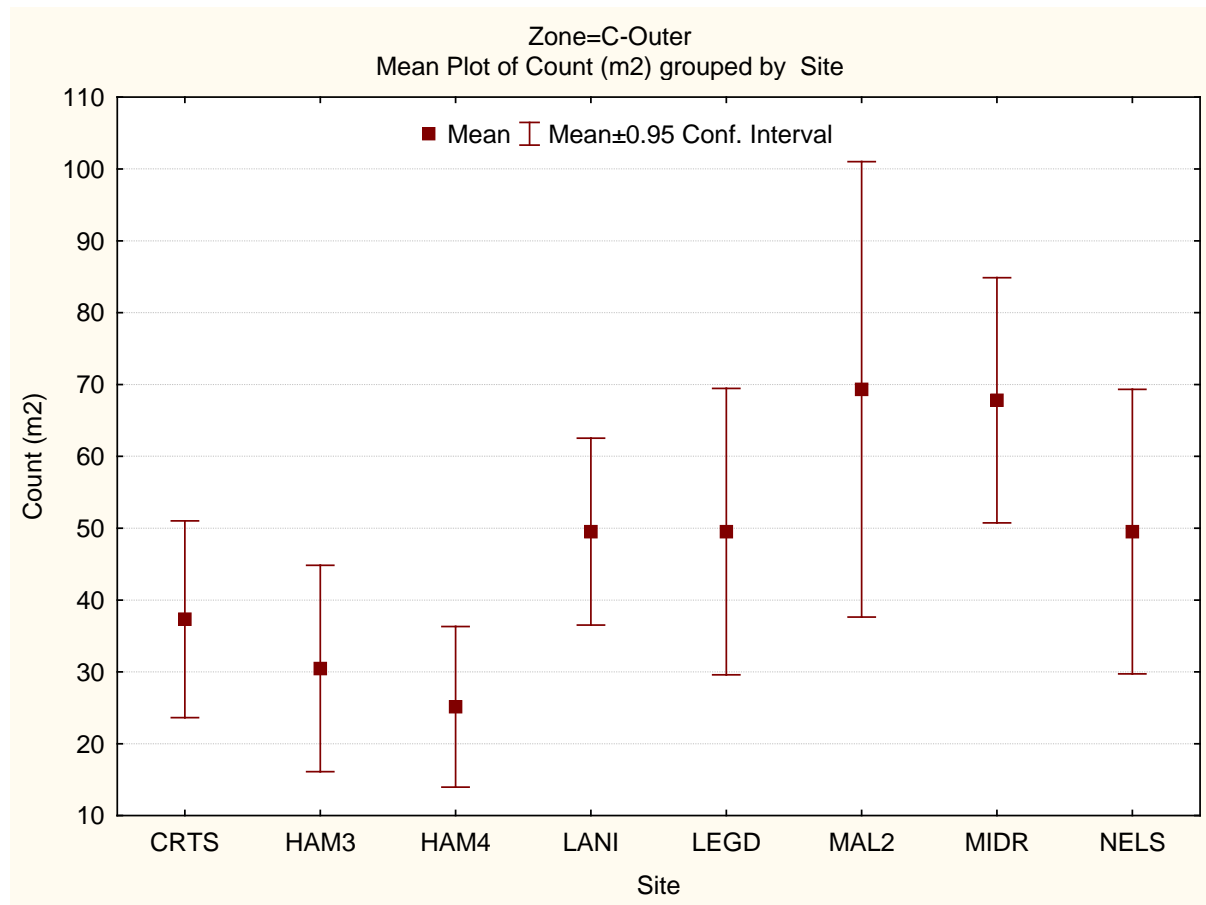
Figure 1. Mean recruits per m² for Zone B sites.Figure 2. Mean recruits per m² for Zone C Inner sites.

Figure 3. Mean recruits per m² for Zone C-Outer sites.Figure 4. Mean recruits per m² by Zone.