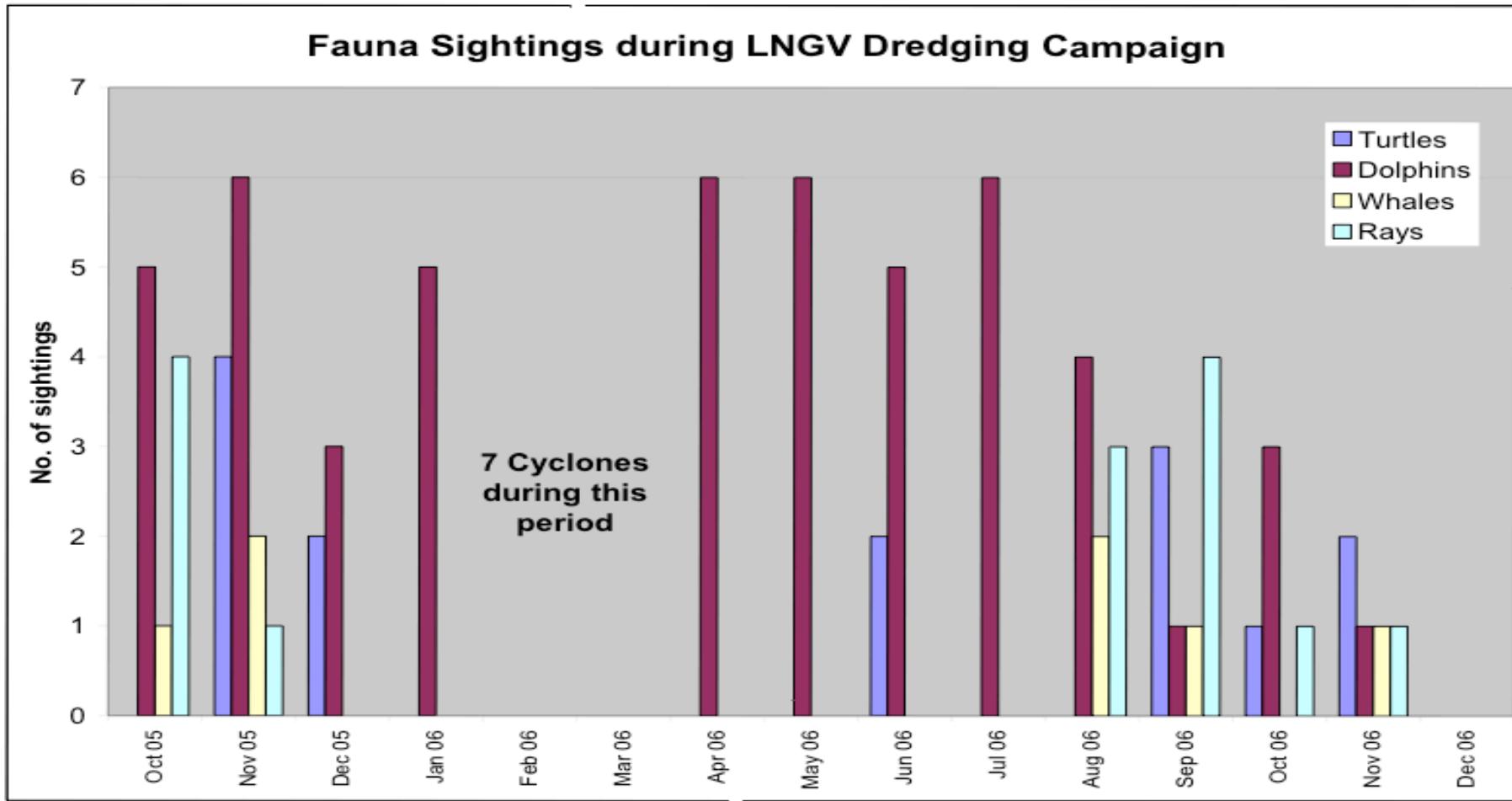


Appendices

Appendix 1

Marine fauna observations for the LNGV dredging programme



Source of data: Woodside

Appendix 2
Pluto Dredging Environmental Induction



Pluto LNG Development

Dredging Environmental Induction



Woodside Environmental Policy

environment policy



objectives

Woodside believes environmental performance is essential to our business success and contributes to strong relationships with customers, social and environmental needs of communities downstream. We are committed to reducing our environmental footprint in the way we live and work while delivering value to our shareholders. Setting a challenge with our legal obligations, Woodside will continue to improve its environmental performance, and thereby contribute to the health of the environment.

strategy

Woodside has adopted the following strategy:

- Engaging with relevant local regulators and our stakeholders regarding applicable legislative issues.
- Monitoring policies and environmental impact of our activities at a local, regional and global level.
- Setting standards and targets relative to efficiency in design, engineering and practice.
- Integrating environmental issues into the management and delivery processes to drive the focus for all our environmental activities.
- Monitoring the effects of our oil and dredging operations. Learning from experience.
- Managing potential risks and opportunities associated with environmental issues.
- Reporting environmental performance using environmental management systems.
- Learning from our experiences to address our problems, best practice and innovation and driving our learning from our peers.
- Being a leader in environmental management by setting and achieving goals.
- Being a leader in environmental management by setting and achieving goals.

application

Woodside's environmental policy is overseen by the Board of Directors for setting strategy and direction, implemented through annual performance reviews. The policy will be reviewed every three years.

Woodside managers are responsible for the implementation of the environmental management system throughout their operational control. Woodside managers are also responsible for promotion of the policy at their operational control.

 David V. Kite
Managing Director
Woodside Energy Ltd.

WOODSIDE



Presentation Objectives and Outline



- Woodside Environmental Policy
- Legislative processes
- Project Outline and environmental receptors
- Key environmental issues/ impacts
- Your role and responsibilities



Blue Planet Marine Pluto Induction 17 Nov. 2007

2

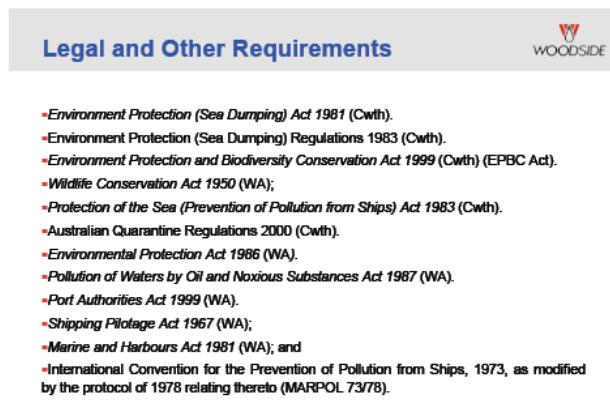
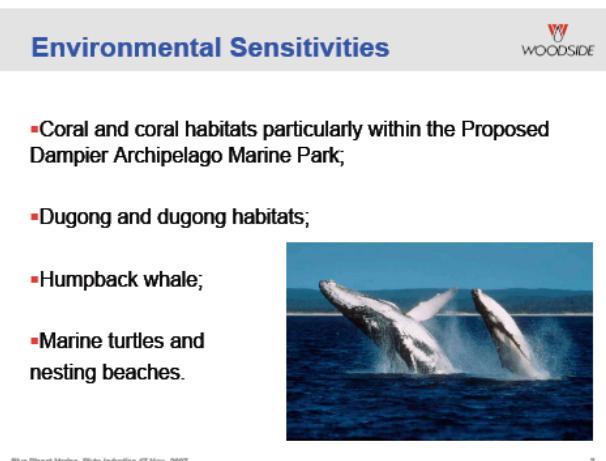
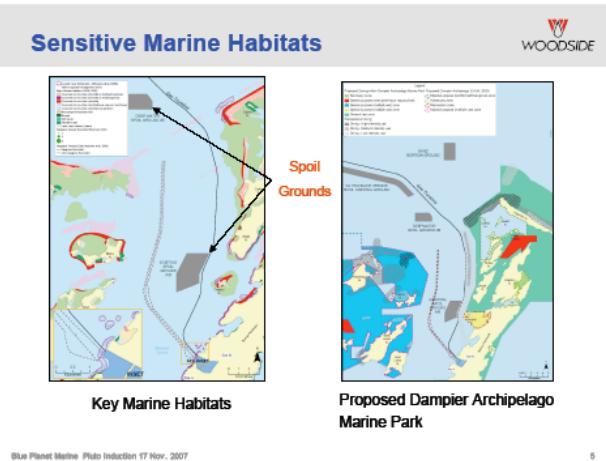
Environmental Assessment Process



- Public Environmental Review;
- Identified sensitive marine habitats;
- Identified the highest environmental risks associated with the Pluto Project is associated with the dredging activity.



Blue Planet Marine Pluto Induction 17 Nov. 2007



Legal and Other Requirements



- Environment Protection (Sea Dumping) Act 1981 (Cwth).
- Environment Protection (Sea Dumping) Regulations 1983 (Cwth).
- Environment Protection and Biodiversity Conservation Act 1999 (Cwth) (EPBC Act).
- Wildlife Conservation Act 1950 (WA);
- Protection of the Sea (Prevention of Pollution from Ships) Act 1983 (Cwth).
- Australian Quarantine Regulations 2000 (Cwth).
- Environmental Protection Act 1986 (WA).
- Pollution of Waters by Oil and Noxious Substances Act 1987 (WA).
- Port Authorities Act 1999 (WA).
- Shipping Pilotage Act 1967 (WA);
- Marine and Harbours Act 1981 (WA); and
- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the protocol of 1978 relating thereto (MARPOL 73/78).

Blue Planet Marine Pluto Induction 17 Nov, 2007

9

Governmental Approval (State and Commonwealth)



Woodside has gained approval from:

- Commonwealth Department of Environment and Water Resources (DEW) under the EPBC Act 1999;
- DEW has determined that the proposed activity is a controlled action under the EPBC Act.
- Western Australian Department of Environment under the Environment Protection Act 1986
- DEC has assessed the Pluto LNG Development proposal and has determined conditions to comply with the Environmental Protection ACT 1986.

Blue Planet Marine Pluto Induction 17 Nov, 2007

10

Dredging Environmental Management Plans (EMPs)



- EMPs required before project starts:
- Dredging and Spoil Disposal Management Plan
 - Marine Quarantine Management Plan
 - Oil Spill Contingency Plan
 - Sea Turtle Management Plan



Blue Planet Marine Pluto Induction 17 Nov, 2007

11

Zones of Potential Impact



Blue Planet Marine Pluto Induction 17 Nov, 2007

12

Zone A - predicted 100% coral mortality

Zone B - up to 10% coral mortality

Zone C - no impacts to corals allowed
Proposed Marine Park
Best Practice Management

Sea Turtle Management Plan (STMP)

Based on DEW and DEC's conditions of consent, and Woodside's Environmental Plan, a Pluto LNG Development Sea Turtle Management Plan (STMP) has been developed.

The STMP identifies the legislative requirements of the DEW and DEC plus identifies actions to minimise impacts on turtles and marine mammals (whale, dolphins and dugongs).

Blue Planet Marine - Pluto Induction 17 Nov, 2007

13

Requirements and objectives of STMP

Provide a management framework to enable Woodside and its contractors to detect and mitigate as necessary any impact upon marine turtles and marine mammals from the project; and

Identify darkness strategies to reduce as far as practicable lights or light glow interfering with nesting female turtles and hatchlings.



14

Activities which may have an impact on turtles and marine mammals

- Dredging for trunkline installation, navigation channel, berthing pocket, and vessel turning basin in Mermaid Sound;
- Potential drill and blasting for jetty construction and shore crossing, in the vicinity of Holden Point;
- Dredge spoil disposal both within and outside of Mermaid Sound;



Blue Planet Marine - Pluto Induction 17 Nov, 2007

15

Activities which may have an impact on turtles and marine mammals

- Rock fill for trunkline stabilisation;
- Construction of LNG and condensate storage and export facilities on Site A;
- Operation of the LNG and condensate storage and export facilities on Site A; and
- Vessel movement during all phases of the project.

Blue Planet Marine - Pluto Induction 17 Nov, 2007

16

Operating procedures



Implementation of standard operating procedures to minimise impacts during

- Dredging;
- Blasting;
- Spoil disposal; &
- Light management.



Blue Planet Marine - Pluto Induction 17 Nov. 2007

Woodside's Expectations



- 100% compliance with Woodside's environmental commitments/project conditions;
- No unauthorised discharges;
- No spills to marine environment;
- No stress/damage to corals in proposed Marine Park;
- No injury or mortality to marine fauna.



Blue Planet Marine - Pluto Induction 17 Nov. 2007

Your role and responsibilities

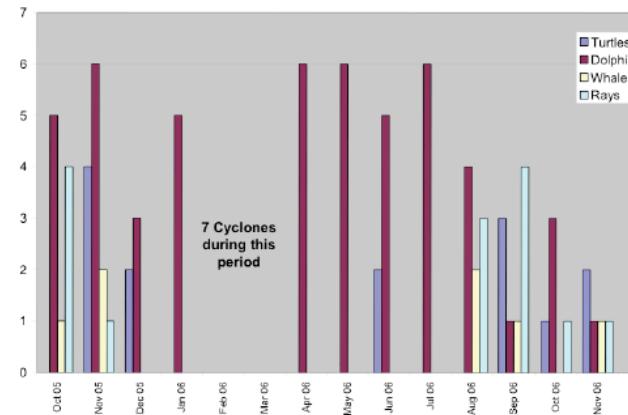


- Undertake the required wildlife observations and report/record **all** turtle and marine mammal (whales, dolphins or dugongs) sightings;
- Store chemicals/hydrocarbons appropriately (bund);
- Clean spills as soon as it occurs;
- Report spills and other environmental incidents;
- Segregate waste;
- No disposal of waste over side;
- Noise, vibration and light management;
- Vessel management.



Blue Planet Marine - Pluto Induction 17 Nov. 2007

Fauna Sightings during LNGV Dredging Campaign



Appendix 3.

Marine Fauna Observer Training Presentation



Pluto LNG Development

Marine Fauna Observer Induction



Environmental Commitments



Woodside has made commitments to undertake a range of activities to minimise potential impacts of dredging and associated activities on the marine environment

Commitments identified in Pluto LNG Development

- Dredging and Spoil Disposal Management Plan/ Environmental Management Plan
- Sea Turtle Management Plan



Blue Planet Marine - Pluto 15 Feb 2008

Presentation Objectives and Outline



- Environmental Commitments
- Role of IFO
- Operating Procedures
- Your role and responsibilities
- Identification of turtles and marine mammals



Blue Planet Marine - Pluto 15 Feb 2008



2

Environmental Commitments



- Formal induction and training of crew members to undertake the role of fauna observers;
- Independent Fauna Observer (IFO);
- Undertake turtle and marine mammal watch at all times;
- Report and record all turtle and marine mammals observed and any incidents;
- Notification of all vessels operating in the area of turtle and marine mammal sightings.



Blue Planet Marine - Pluto 15 Feb 2008

Role of Independent Fauna Observer



The role of the IFO includes;

- Environmental induction and training of fauna observers;
- Fortnightly site visits to undertake training and work with Woodside and its contractors to detect and mitigate impacts upon marine turtles and dolphins, whales and dugongs;
- Coordinate turtle and marine mammal sighting records and development the required reports for government agencies.



Blue Planet Marine - Pluto 15 Feb 2008

Operating procedures



Implementation of standard operating procedures to minimise impacts during



Dredging

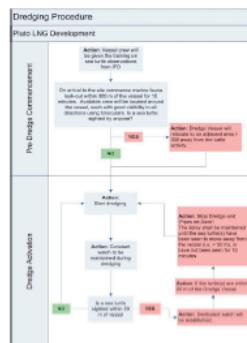


Spoil disposal

Blasting

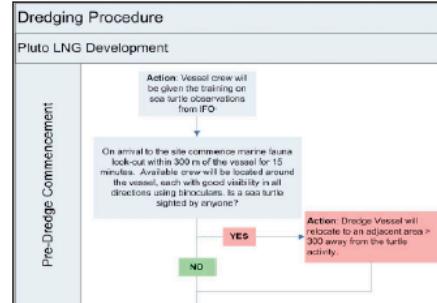
6

Dredging Procedures



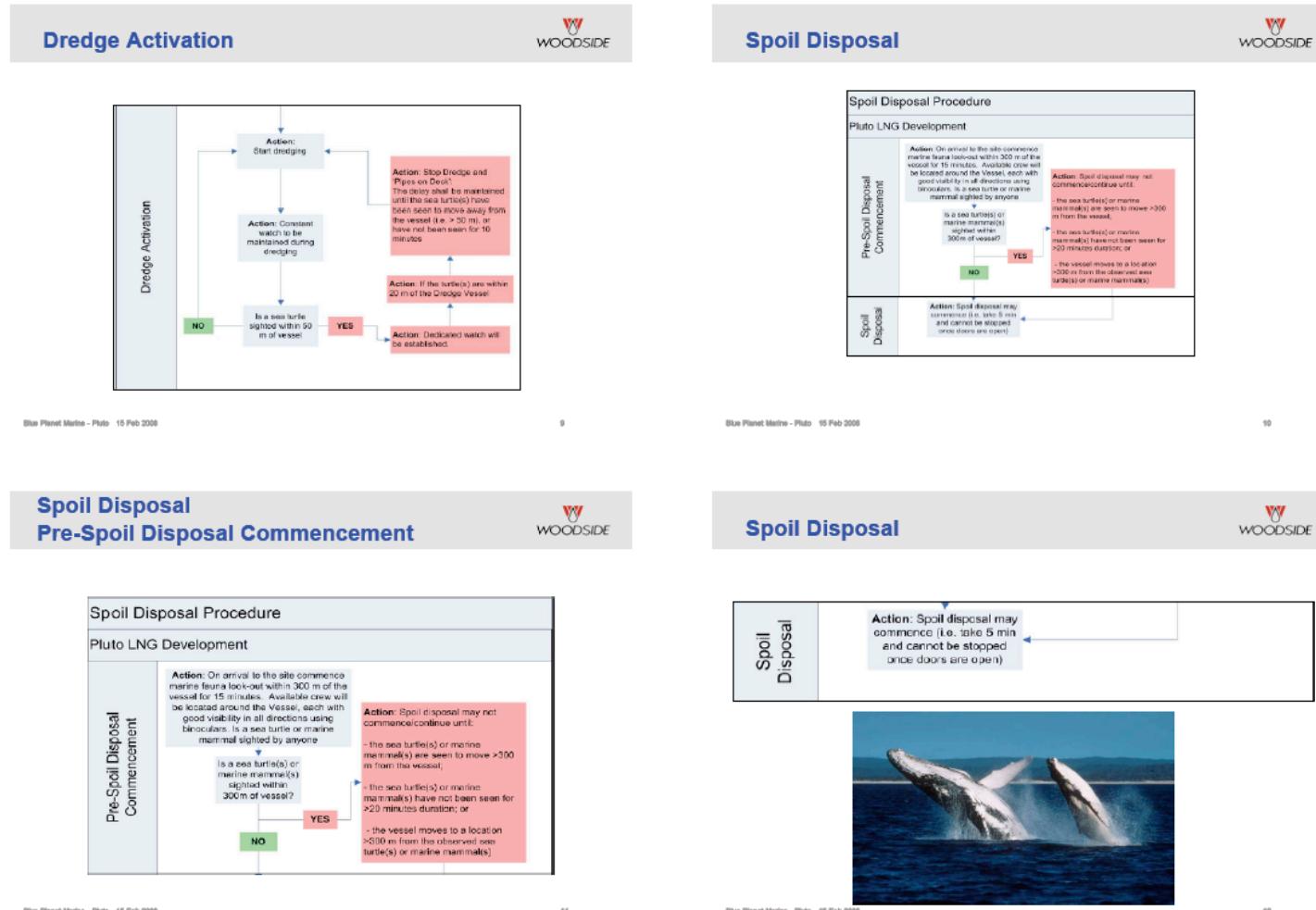
Blue Planet Marine - Pluto 15 Feb 2008

Pre-Dredging Commencement

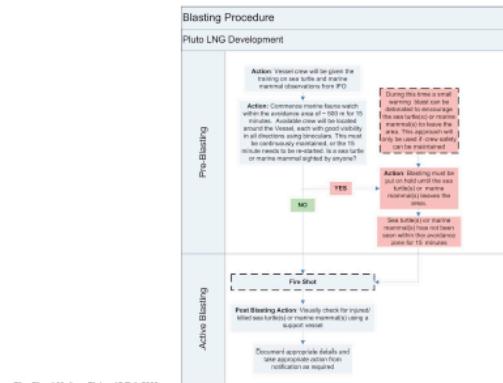


Blue Planet Marine - Pluto 15 Feb 2008

8



Blasting Procedure



Blue Planet Marine - Pluto 15 Feb 2008

13

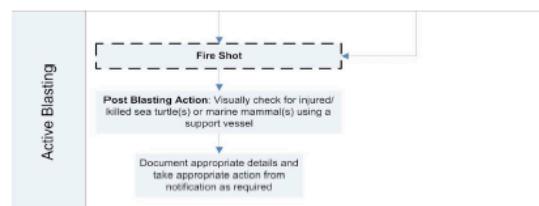
Blasting Procedure Pre-Blasting



Blue Planet Marine - Pluto 15 Feb 2008

14

Blasting Procedure Active Blasting



Blue Planet Marine - Pluto 15 Feb 2008

15

Turtle Accident, Injury and Incident Reporting Template



Appendix D - Turtle Accident, Injury and Incident Reporting template

Use this form to report any accident likely to impact on a sea turtle, any injury received by sea turtles to a sea turtle or any impact of illness involving a sea turtle. The report will be filled out by the person finding the sea turtle. Review the completed form in the following manner:

DATE	TIME
NAME OF	TIME
SPECIES	
Giant	<input type="checkbox"/>
Loggerhead	<input type="checkbox"/>
Green	<input type="checkbox"/>
Cheloniidae	<input type="checkbox"/>
Leatherback	<input type="checkbox"/>
Flatback	<input type="checkbox"/>
Unidentified	<input type="checkbox"/>
YOUTH	
Immature	<input type="checkbox"/>
Adult	<input type="checkbox"/>
Sub-adult	<input type="checkbox"/>
LOCATION	
LOCATION (Lat and Long)	
CONDITION	
Alive	<input type="checkbox"/>
Able	<input type="checkbox"/>
Dead	<input type="checkbox"/>
Weakly responsive	<input type="checkbox"/>
Not responsive	<input type="checkbox"/>
Swimming normally	<input type="checkbox"/>
Moving slowly	<input type="checkbox"/>
Not moving	<input type="checkbox"/>
Not breathing	<input type="checkbox"/>
INJURY/CONDITION (check as applying)	
TAKE OR TAG SCALES	
Left Front	<input type="checkbox"/>
Right Front	<input type="checkbox"/>
MEASUREMENTS	
Distance from front flipper to rear flipper	<input type="checkbox"/>
Current capacity with CTD	<input type="checkbox"/>
Tail length	<input type="checkbox"/>
Head width	<input type="checkbox"/>
REMARKS (Leave blank if no remarks/condition)	
PHOTOGRAPH (ISO location)	<input type="checkbox"/>
FORM COMPLETED BY	
SIGNATURE	
PRINT NAME	



Note: Use the back of this sheet for any additional notes or details on the reporting.

Blue Planet Marine - Pluto 15 Feb 2008

16



Recording and Reporting Procedures



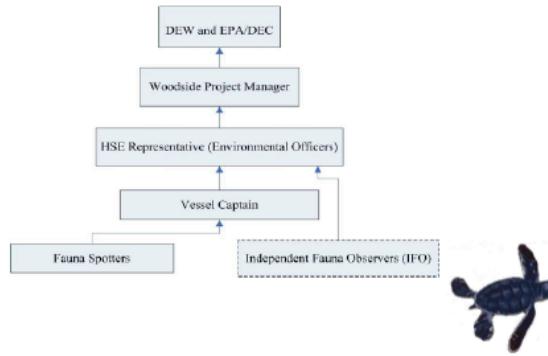
All turtle and marine mammal (whales, dolphins or dugongs) sightings are required to be recorded on the *Marine Fauna Sighting Report* spreadsheet.



Blue Planet Marine - Photo 15 Feb 2009

1

Reporting Structure



Turtle and Marine Mammal Sightings



**Photo LNG Development Dredging Program
Marine Fauna Observations
TSHD Cornish Zone**

Log to be maintained by the Vessel Master

Week ending

*If species unknown, use "turtle", "small cetacean" (ie dolphin), "large cetacean" (ie whale), or "dugong". Any question re marine fauna observations contact David Palma, Blue Planet Marine Ph: +61 (0) 451 664 472 or email blueplanet@pacific.net.au

Blue Planet Marine - Pluto 15 Feb 2006

1

Your Role and Responsibilities



- Undertake turtle and marine mammal watch at all times;
 - All vessels notified of all sightings;
 - In absence of IFO, vessel captain is responsible for ensuring all
 - sighting of turtles and marine mammals are accurately recorded;
 - injury/death of turtles and marine mammals are accurately recorded and reported;
 - other environmental incidents reported;

Blue Planet Marine - Pluto 15 Feb 2006

Marine Fauna Identification



Blue Planet Marine - Pluto 15 Feb 2008



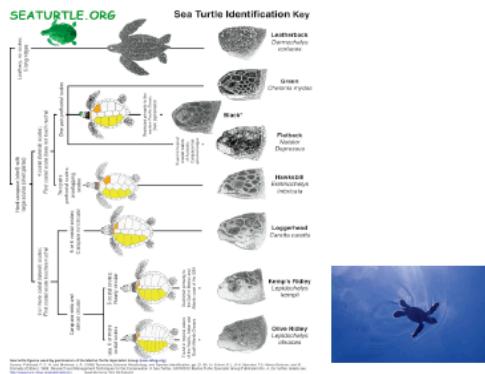
Sea Turtles



Blue Planet Marine - Pluto 15 Feb 2008



Turtle Identification



Blue Planet Marine - Pluto 15 Feb 2008



Common name
Scientific name
Global Distribution
Appearance

Humpback Whale
Megaptera novaeangliae
World wide distribution
Generally black on dorsal and white on ventral surface
long pectoral fins, knobs on head, large stocky body

Blue Planet Marine - Pluto 15 Feb 2006

Humpback Whale



WOODSIDE



Blue Planet Marine - Photo 15 Feb 2008

25

Minke



WOODSIDE

Common name
Scientific name
Global Distribution
Appearance

Minke Whale
Balaenoptera acutorostrata
World wide distribution
Sharply pointed snout, falcate fin, low indistinct blow

Brydes Whale



WOODSIDE



Common name
Scientific name
Global Distribution
Appearance

Brydes Whale, Tropical Whale
Balaenoptera edeni
Found in the tropics (between 40°N and 40°S)
3 parallel ridges on head, prominent falcate fin, skin may be mottled, dark upper side, fluke rarely seen above surface

Blue Planet Marine - Photo 15 Feb 2008

27

Killer Whale



WOODSIDE



Common name
Scientific name
Global Distribution
Appearance

Killer Whale, Orca
Orcinus orca
World wide distribution
Black and white coloration, white patch behind each eye, grey saddle-patch, large dorsal fin in mature males

Blue Planet Marine - Photo 15 Feb 2008

28

False Killer Whales



Common name

False killer whale, *Pseudorca*

Scientific name

Pseudorca carriensis

Global Distribution

Widely distributed, Mainly seen in deep off shore waters

Appearance

Uniform dark body colour, long, slim body, prominent fin

Can be confused with

Pilot whales at distance.

Blue Planet Marine - Photo 15 Feb 2008

29

Bottlenose dolphin



Common names

Bottlenose dolphin/Indo-Pacific bottlenose dolphin

Tursiops truncatus and *T. aduncus*, respectively

Cold temperate to tropical seas worldwide

1.9 – 3.9 m in length and 150 – 650kg in weight

Subdued gray colouring with dark dorsal cape, prominent fin. Differences in coloration, rostrum, general form and degree of spotting

Blue Planet Marine - Photo 15 Feb 2008

30

Spinner Dolphin



Common names Spinner dolphin (Dwarf form recognised from

Timor / Arafura Sea area)

Scientific name

Stenella longirostris

Global Distribution

Tropical and subtropical waters worldwide

Appearance

1.3 – 2.1 m in length and 45 – 75kg in weight

Performs high spinning leaps, is long and slender with a dorsal fin which has an almost vertical leading edge.

Blue Planet Marine - Photo 15 Feb 2008

31

Common Dolphin



Common name

Common Dolphin, *Delphinus delphis*

Widely distributed

Dark cape with V under fin, hourglass pattern on side

Blue Planet Marine - Photo 15 Feb 2008

32

Humpback Dolphin



Common names
Scientific name
Global Distribution
Appearance

Humpback dolphin
Sousa chinensis
Shallow coastal waters of the Indo-pacific region
2 – 2.8 m in length and 150 – 200kg in weight
There are a variety of forms throughout the species range.

Blue Planet Marine - Pluto 15 Feb 2008

53

Snub finned Dolphin



Photo Cade Perna

Common name
Scientific name
Global Distribution
Appearance

Snub finned dolphin
Orcaella heinsohni
Shallow coastal and riverine waters of the Indo-pacific region
1.5 – 2.2 m in length and 100 – 150kg in weight
Slow moving and usually occurs in groups of 1 – 2.
Slow, rolling surface. Light grey in colour

Blue Planet Marine - Pluto 15 Feb 2008

54

Dugongs



Common name
Scientific name
Global Distribution
Appearance

Dugong
Dugong dugon
Shallow, nearshore areas of the Indo-pacific region
1.5 – 2.5 m in length and 150 – 250kg in weight
Slow moving and usually occurs in groups of 1 – 2,
Herbivorous.

Blue Planet Marine - Pluto 15 Feb 2008

55

Appendix 4.
Pluto LNG Project Dredge Activity Summary

Date November 2007	19	20	21	22	23	24	24	25	26	27	28	29	30
Coza													
Phoenix													
Hippo													

Date December 2007	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	3
Coza																														Cyclone Melani	
Phoenix																															
Hippo																															

Date January 2008	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Coza	Cyclone Melanie & Repairs																													
Phoenix	Arrived on site				Mobilisation																									
Hippo																														

On site but not dredging



Fully operational

Date February 2008	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Coza																	TC Nicholas												
Phoenix																													
Hippo																													

Date March 2008	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	3
Coza																															
Phoenix																														Coral spawning shutdown	
Hippo																														Maintenance	

Date April 2008	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Coza																															
Phoenix																															
Hippo																															

(Source of information Woodside)

 On site but not dredging



Fully operational

Appendix 5

Marine Fauna Observed Pluto LNG Dredging Project

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
1	22-Nov-07	8:00	20 36.2	116 45.1	Dredging	20	Dolphin	1	nil - it moved off	2	very good	Cornelis Zanen
2	23-Nov-07	7:15	20 27.4	116 43.5	Transit	30	Dolphin	~6	swimming slowly	calm	very good	Cornelis Zanen
3	23-Nov-07	15:10	20 36.3	116 45.2	Dredging	400	Dolphin	1	Moved off	1	very good	Cornelis Zanen
4	24-Nov-07	22:45	20 36.3	116 45.3	Dredging	15	Dolphin	3	moved away	calm	poor/average	Cornelis Zanen
5	25-Nov-07	12:46	20 36.3	116 45.2	Dredging	100	Dolphin	3	Feeding	calm	very good	Cornelis Zanen
6	25-Nov-07	15:37	20 36.2	116 45.2	Dredging	20	Dolphin	3	Moved off	slight	very good	Cornelis Zanen
7	26-Nov-07	9:36	20 36.0	116 44.9	Starting to dredge	40	Dolphin	3	feeding	slight	very good	Cornelis Zanen
8	27-Nov-07	10:05	20 36.2	116 45.0	Dredging	70	Dolphin	1	swimming	2 slight	very good	Cornelis Zanen
9	27-Nov-07	11:20	20 28.7	116 43.6	Starting to dredge	50	Dolphin	4	following in wake	2 slight	very good	Cornelis Zanen
10	28-Nov-07	7:50	20 36.0	116 45.1	Dredging	45	Dolphin	4	feeding in area	clam	very good	Cornelis Zanen
11	29-Nov-07	7:55	20 36.0	116 45.2	Dredging	40	Dolphin	2	Feeding	Clam	very good	Cornelis Zanen
12	29-Nov-07	11:30	20 36.3	116 45	Dredging	50	Dolphin	4	swimming	clam	very good	Cornelis Zanen
13	29-Nov-07	14:56	20 36.2	116 45	Dredging	300	Dolphin	3	feeding	clam	very good	Cornelis Zanen
14	30-Nov-07	7:39	20 36.2	116 45.2	Dredging	200	Dolphin	3	Feeding	slight	very good	Cornelis Zanen
15	30-Nov-07	11:06	20 36.2	116 45.2	Dredging	10	Dolphin	3	Playing	slight	very good	Cornelis Zanen
16	06-Dec-07	13:55	20 3.5	116 44.5	Anchored	50	Turtle	1		3	Very good	Cornelis Zanen
17	06-Dec-07	14:55	20 36.1	116 45	Dredging	150	Turtle	1		3	Very good	Cornelis Zanen
18	06-Dec-07	15:05	20 36.1	116 45	Dredging	150	Dolphin	1		3	Very good	Cornelis Zanen
19	06-Dec-07	15:30	20 36.2	116 45	Dredging	20	Turtle	1		3	Very good	Cornelis Zanen

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
20	07-Dec-07	12:59	20 36.2	116 45	Dredging	100	Dolphin	1		2	Very good	Cornelis Zanen
21	08-Dec-07	9:20	20 36. 1	116 45	Dredging	300	Dolphin	1		2	Very good	Cornelis Zanen
22	08-Dec-07	13:30	20 36.1	116 44.9	Finished Dredging	50	Dolphin	1		2	Very good	Cornelis Zanen
23	09-Dec-07	9:20	20 36.1	116 44.9	Dredging	15	Dolphin	1		1	Very good	Cornelis Zanen
24	09-Dec-07	10:40	20 26.7	116 43.5	steaming	10	Turtles	2		1	Very good	Cornelis Zanen
25	09-Dec-07	15:05	20 29	116 43.3	transit	40	dugong	1		3	very good	Cornelis Zanen
26	10-Dec-07	10:00	20 36.9	116 45.1	dredging	40	dolphin	3		0	very good	Cornelis Zanen
27	11-Dec-07	8:20	20 25.7	116 43.11	steaming	100	dolphin	10 to 15		1	very good	Cornelis Zanen
28	13-Dec-07	11:10	20 26.3	116 43.9	steaming	50	Turtle	1		3	very good	Cornelis Zanen
29	14-Dec-07	12:30	20 36.3	116 45.3	Dredging	30-100	dolphin	3		2	very good	Cornelis Zanen
30	17-Dec-07	13:40	20 29.8	116 43.3	transit	200	Dolphin	20+	nil	4 to 5	very good	Cornelis Zanen
31	19-Dec-07	11:55	20 36.2	116 45.2	Dredging	50	Dolphin	3	nil	4	very good	Cornelis Zanen
32	19-Dec-07	19:00	20 23.5	116 45.5	transit	30	Turtle	1	nil	4 to 5	very good	Cornelis Zanen
33	21-Dec-07	11:30	20 36.2	116 45.2	Dredging	100	Dolphin	3 to 4	nil	1	very good	Cornelis Zanen
34	21-Dec-07	13:40	20 22.7	116 42.8	dumping	100	turtle	1	nil	1	very good	Cornelis Zanen
35	22-Dec-07	12:05	20 23.07	116 45.92	dumping	80	turtle	1	nil	1	very good	Cornelis Zanen
36	22-Dec-07	18:55	20 36.23	116 45.20	dredging	200	manta Ray	2	nil	2	very good	Cornelis Zanen
37	23-Dec-07	10:30	20 36.23	116 45. 287	dredging	200	dolphin	2	nil	1	very good	Cornelis Zanen
38	23-Dec-07	16:39	20 36.18	116 45.19	dredging	100	dolphin	2+	nil	1	very good	Cornelis Zanen

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
39	24-Dec-07	11:56	20 36.19	116 45.25	dredging	50	dolphin	1	nil	2 to 3	very good	Cornelis Zanen
40	25-Dec-07	8:00	20 36.10	116 45.2	dredging	200	dolphin	1	breaching	1	very good	Cornelis Zanen
41	26-Dec-07	10:10	Turing Basin		Survey	3	manta Ray	1	Altered Course	1	Very Good	Ocean Eagle
42	26-Dec-07	13:37	20 36.10	116 25.24	dredging	100	dolphin	2	none	2	very good	Cornelis Zanen
43	27-Dec-07	12:30	20 34.8	116 43.9	dredging	250	dolphin	2		2	very good	Cornelis Zanen
44	29-Dec-07	10:10	20 36.19	116 45.11	dredging	100	dolphin	2	none	1	very good	Cornelis Zanen
45	04-Jan-08	16:15	20 43.8	116 43.8	Dredging	40	Turtle	1	Turtle off port beam then port quarter. No action	W6	Average	Cornelis Zanen
46	06-Jan-08	17:00	20 36.3	116 45.2	Dredging	200	Dolphin	1	Dolphin ahead no action	NW 4	Good	Cornelis Zanen
47	07-Jan-08	16:30	20 24	116 42	tranist	300	Dolphin	3	none	W 4	VG	Cornelis Zanen
48	10-Jan-08	13:00	Around Black Marlin		Standby	4	Tiger Shark	1	Altered Course	1	Very Good	Ocean Eagle
49	10-Jan-08	13:15	Around Black Marlin		Standby	50	Manta Ray	1	Altered Course	1	Very Good	Ocean Eagle
50	10-Jan-08	15:00	20 34.6	116 43.8	Transit	200	dolphin	1	None	W 5	VG	Cornelis Zanen
51	11-Jan-08	11:40	20 34.6	116 43.8	Dredging	200	Dolphin	5	None	3	VG	Cornelis Zanen
52	13-Jan-08		20 34.5	116 43.7	Dredging	200	Dolphin	3	None	1 to 2	VG	Cornelis Zanen
53	13-Jan-08	6:30	20 34.4	116 43.6	Dredging	100	Dolphin	1	None	1	VG	Cornelis Zanen
54	15-Jan-08	12:55	20 23.30	116 42.50	Transit	5	Turtle	1	None	1	Good	Cornelis Zanen
55	15-Jan-08	15:32	20 34.8	116 43.82	Dredging	300	Dolphin	3	None	1	good	Cornelis Zanen
56	16-Jan-08	10:25	20 28.47	116 43.1	Transit	30	Green Turtle	1	None	1	Good	Cornelis Zanen
57	16-Jan-08	11:25	20 34.8	116 43.9	Dredging	50	Dolphin	1	None	1	Good	Cornelis Zanen

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
58	16-Jan-08	10:52	20 34.12	116 3.5	Transit	30	Dolphin	3	None	1	Good	Cornelis Zanen
59	16-Jan-08	10:54	20 34.27	116 43.56	Transit	25	dolphin	2	none	1	Good	Cornelis Zanen
60	16-Jan-08	13:19	20 30.13	116 43.22	Transit	30	Turtle	1	None	1	Good	Cornelis Zanen
61	16-Jan-08	17:00	20 34.98	116 43.97	Dredging	100	Dolphin	1	None	1	Good	Cornelis Zanen
62	16-Jan-08	15:12	20 34.7	116 43.87	Dredging	40	Bottlenose Dolphin	1	None	1	Good	Cornelis Zanen
63	16-Jan-08	15:19	20 34.9	116 44.02	Dredging	35	Bottlenose Dolphin	1	Dolphin stayed 30-40 m off Port	1	Good	Cornelis Zanen
64	16-Jan-08	16:20	20 34.90	116 43.96	Dredging	100	Bottlenose Dolphin	2	None	1	Good	Cornelis Zanen
65	16-Jan-08	16:48	20 34.68	116 43.77	Dredging	100	Bottlenose dolphin	1	None, Dolphin was observed for 11 minutes	1	Good	Cornelis Zanen
66	16-Jan-08	16:16	20 23.65	116 43.12	Transit	60	Bottlenose Dolphin	3	10 minutes before dredging	3	Good	Cornelis Zanen
67	18-Jan-08	13:20	20 34.82	116 43.93	Dredging	200	Dolphin	3	None	1 to 2	Very good	Cornelis Zanen
68	19-Jan-08	13:40	20 34.87	116.43.92	Dredging	60	Dolphin	4	None	2	Very Good	Cornelis Zanen
69	19-Jan-08	15:50	20 34.54	116 43.62	Dredging	100	Dolphin	2	None	1	Very good	Cornelis Zanen
70	20-Jan-08	12:30	20 34.67	116 43.72	Dredging	400	Dolphin	1	None	1	Very good	Cornelis Zanen
71	22-Jan-08	12:45	20 34.6	116.43.7	Dredging	200	small Cetacean	3	None	3	Very Good	Cornelis Zanen
72	22-Jan-08	14:00	20 33.8	116 43.2	Transit	50	Dolphin	3	None	3	Very Good	Cornelis Zanen
73	24-Jan-08	20:00	20 31.1	116 43.3	Transit	50	Dolphin	2	None	1	Very Good	Cornelis Zanen
74	25-Jan-08	12:00	Turning Basin		Survey	20	Turtle	1	Altered Course turtle suffering from Floater Disease. Relocated out of dredging	1	Poor	Ocean Eagle
75	25-Jan-08	13:00	Turning Basin		Survey	1	Turtle	1		1	Poor	Ocean Eagle
76	26-Jan-08	10:45	20 34.1	116 43.4	Transit	40	Turtle	1	None	2	Very Good	Cornelis Zanen

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
77	26-Jan-08	12:45	20 38	116 43.9	Transit	20	Turtle	1	None	2	Very good	Cornelis Zanen
78	26-Jan-08	13:35	20 35	116 43.8	Dredging	50	Turtle	1		2	Very Good	Cornelis Zanen
79	28-Jan-08	16:35	20 30.15	116 43.3	Transit	150	Dolphin	4	None	1	Average	Cornelis Zanen
80	28-Jan-08	0:00	Dredging area		Idle	50	Dolphin	4		1	Average	Phoenix
81	30-Jan-08	13:00			Transit	50	Turtle	1	None	1	Very good	Cornelis Zanen
82	30-Jan-08	16:15	20 36 311	226 45.021	Dredging	300	Dolphin	1	nil	1	Very Good	Cornelis Zanen
83	30-Jan-08	16:30	20 36.05	116 45.3	Dredging	100	Sea Snake	1	Nil	1	Very Good	Cornelis Zanen
84	31-Jan-08	10:20	20 36.11	116 44.9	Dredging	50	Dolphin	3	Nil	1	Very Good	Cornelis Zanen
85	31-Jan-08	15:00	20 36.27	116 44.94	Dredging	150	Dolphin	1	None	1	Very Good	Cornelis Zanen
86	01-Feb-08	8:50	20 35.4	116 44	Transit	60	Dolphin	1	None	1	Very Good	Cornelis Zanen
87	01-Feb-08	8:50	20 35.4	116 44	Transit	100	Turtle	1	None	1	Very Good	Cornelis Zanen
88	02-Feb-08	13:05	20 36.1	116 45.1	Dredging	100	Dolphin	1	None	1	Very Good	Cornelis Zanen
89	03-Feb-08	11:55	20 28.91	116 43.22	Transit	100	Dolphin	2	None	1	Very Good	Cornelis Zanen
90	04-Feb-08	11:50	20 32.5	116 43.0	Transit	200	Dolphin	10	None	1	Very Good	Cornelis Zanen
91	04-Feb-08	19:30	20 23.35	116 43	Dumping	30	Turtle	1	None	4	Very Good	Cornelis Zanen
92	05-Feb-08	11:30	20 36.14	116 44.95	Dredging	100	Dolphin	3	None	1	Very Good	Cornelis Zanen
93	05-Feb-08	13:30	20 36.18	116.44.97	Dredging	200	Dolphin Pod	Pod	None	1	Very Good	Cornelis Zanen
94	06-Feb-08	11:00	20 36.14	116 45.17	Dredging	300	Dolphin	1	none	2	Very Good	Cornelis Zanen
95	06-Feb-08	14:30	Turning Basin		Survey	2	Dolphin	2	Altered Course	1	Poor	Ocean Eagle

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
96	09-Feb-08	13:02	20 34.9	116 44.1	Dredging	50	Dolphin	2	None	1	Very Good	Cornelis Zanen
97	12-Feb-08	10:50	20 36.1	116 45.1	Dredging	80	Dolphin	1	Nil	1	Good	Cornelis Zanen
98	12-Feb-08	8:50	20 36.3	116 45.2	Dredging	150	Dolphin	1	Nil	1	Good	Cornelis Zanen
99	15-Feb-08	7:00	South Malos Island				Dolphin	6		Good	Good	Phoenix
100	21-Feb-08	10:15	20 36.2	116 45.2	Dredging	100	Dolphin	1	Nil	2	Very Good	Cornelis Zanen
101	23-Feb-08	8:50	Channel crossing		Dredging	600	dolphin	9	nil	Good	Good	Phoenix
102	28-Feb-08	17:04	20 36.12	116 45.22	Dredging	25	Trutle	1	None, turtle continued moving away and observed until out of sight	2	Very Good	Cornelis Zanen
103	09-Mar-08	12:00	20 39.87	116 41.86	Transit	100	Trutle	1	nil	1	Very Good	Adrenalin Sprint
104	09-Mar-08	15:52	20 34.34	116 45.05	Dredging	150	Dolphin	10	Continued monitoring until gone	3	Very Good	Cornelis Zanen
105	09-Mar-08	16:00	20 39.87	116 41.87	Transit	50	Dolphin	2	Nil	2	Average	Adrenalin Sprint
106	12-Mar-08	11:30	20 38.46	116 36.623	Transit	50	Turtle	2	Nil	1	Good	Adrenalin Sprint
107	12-Mar-08	11:40	20 38.00	116 36.99	Transit	50	Turtle	1	Nil	1	Good	Adrenalin Sprint
108	13-Mar-08	7:00	20 36.307	116 44.270	Transit	20	Dolphin	6	Nil	1	Good	Adrenalin Sprint
109	13-Mar-08	11:00	20 36.222	116 44.936	in transit	30	Dolphins	7	not required	1	good	Phantom
110	13-Mar-08	11:30	20 36.4	116 45.0	Dredging	150	Dolphin	2	Nil	2	Very Good	Cornelis Zanen
111	13-Mar-08	16:15	20 34.48	116 44.98	Dredging	150	dolphin	1	Continued watch until out of sight	3	Very Good	Cornelis Zanen
112	14-Mar-08	9:00	20 35.871	116 45.859	waiting for barge	15	Dolphin	1	nil	2	Good	Adrenalin Sprint
113	14-Mar-08	14:00	20 34.2	116 45.0	Dredging	250	Dolphin	4	continued watch	3	Very good	Cornelis Zanen

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
114	15-Mar-08	11:53	20 34.41	116 45.02	Dredging	300	Dolphin	2	continued watch	3	very Good	Cornelis Zanen
115	17-Mar-08	14:20	20 34.45	116 44.93	Dredging	300	Dolphin	1	continued observations until dolphin out of sight	2	Very Good	Cornelis Zanen
116	19-Mar-08	10:30	20 35.1	116 44.0	Transit	100	Turtle	1	Nil	2	Very Good	Cornelis Zanen
117	20-Mar-08	12:00	20 35.870	116 45.060	At anchor	100	Dolphin	4		1	Average	Adrenalin Sprint
118	20-Mar-08	14:00	20 34.8	116 43.9	Dredging	300	Dolphins	3	Continued observations	2	very good	Cornelis Zanen
119	21-Mar-08	10:20	20 35 096	116 43.882	In transit	50	Dolphin	3	not required	0	good	Phantom
120	21-Mar-08	16:00	20 34.34	116 45.01	Dredging	300	Dolphin	2	continued watch until out of sight	2	Very good	Cornelis Zanen
121	22-Mar-08	7:35	20 34.16	116 45.13	Dredging	250	Dolphin	2	Monitored until out of sight	1	very good	Cornelis Zanen
122	22-Mar-08	16:20	20 34.5	116 44.9	Dredging	100	Dolphin	1	feeding on edge of plume	4	Very good	Cornelis Zanen
123	24-Mar-08	12:05	20 37.946	116 42.706	Transit	50	Dolphin	3		1	very good	Adrenalin Sprint
124	24-Mar-08	17:35	20 34.	116 44.9	Dredging	250	Dolphin	2	Nil	2	Very good	Cornelis Zanen
125	29-Mar-08	9:00	20 39 463	116 42.001	Transit	20	Turtle	1		1	Very good	Adrenalin Sprint
126	29-Mar-08	13:20	20 36. 424	116 43.853	Transit	20	Dolphin	3		1	Very good	Adrenalin Sprint
127	30-Apr-08	15:05	20 35.871	116 45.059	at Anchor	500	Dolphin	3				Adrenalin Sprint
128	30-Apr-08	15:30	21 35.871	117 45.059	At Anchor	50	Dolphins	2				Adrenalin Sprint
129	01-Apr-08	9:00	20 37. 796	116. 42.582	Transit	50	Dolphin	12		1	very good	Adrenalin Sprint
130	01-Apr-08	11:00	20 37.89	116 42.727	Transit	50	Dolphin	12		1	very good	Adrenalin Sprint
131	02-Apr-08	20:10	location not recorded		At anchor	2-10m	Dolphin	8	Nil	1	Good/ Night	Hippopotes
132	04-Apr-08	11:15	20 38.843	116 41.988	Transit	20	Turtle	1		2	Very Good	Adrenalin Sprint

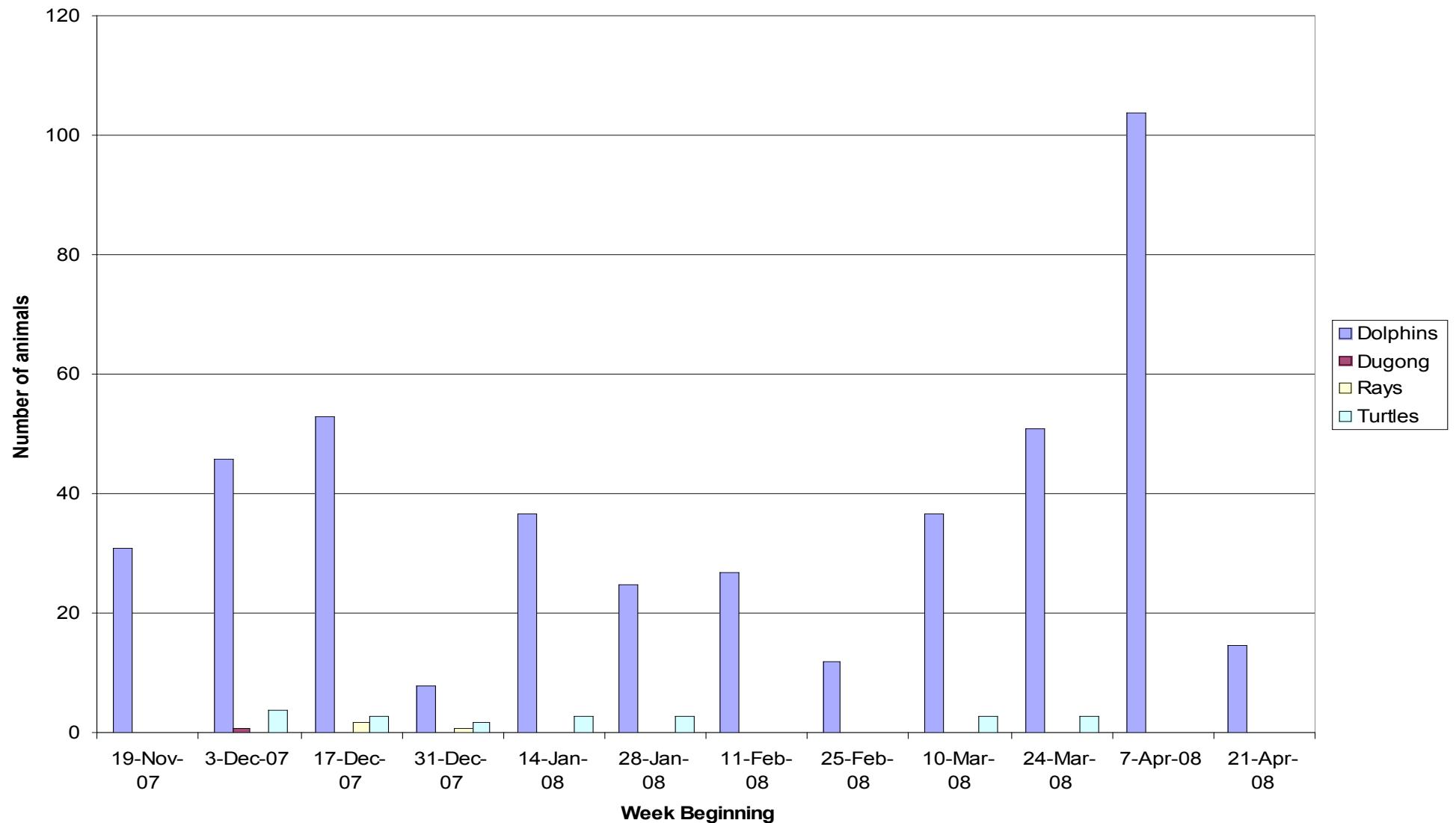
Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
133	4-Apr-08	21:30	location not recorded		Dredging	2 to 8 metres	Dolphin	1	Nil		Average/Night	Hippopotates
134	4-Apr-08	23:00	location not recorded		At anchor	2 to 8 m	Dolphin	4	nil		Average night	Hippopotates
135	05-Apr-08	10:20	20 36.024	116 44.945	Drafting	20	Dolphin	3		0	Very good	Adrenalin Sprint
136	05-Apr-08	15:05	20 39.416	116 41.995	Transit	20	Turtle	1		0	Very good	Adrenalin Sprint
137	06-Apr-08	11:00	Near inner dredge mooring		in transit	10	Dolphin	1	Not required	0	Good	Phantom
138	06-Apr-08	11:18	20 36.22	116 45.24	Dredging	100	Dolphin	1	None	1	Good	Cornelis Zanen
139	06-Apr-08	12:04	20 36.10	116 45.20	Dredging	200	Dolphin	3	None	1	Good	Cornelis Zanen
140	6-Apr-08	21:00	location not recorded		at Anchor	2 to 8 m	Dolphin	4			Average/ night	Hippopotates
141	7-Apr-08	20:00	location not recorded		At anchor	2 to 8 m	Dolphin	2			Average/ night	Hippopotates
142	8-Apr-08	20:00	location not recorded		At anchor	2 to 8 m	Dolphin	8			Average/night	Hippopotates
143	10-Apr-08	12:30	20 35.8	116 45.0	Transit	100	Dolphin	1	none	1	Good	Cornelis Zanen
144	10-Apr-08	14:20	20 34. 419	116 44.976	In transit	30	Dolphin	10	Not required	1	Good	Phantom
145	10-Apr-08	Time not recorded	location not recorded		At anchor	2 to 8 m	Dolphin	1			Average	Hippopotates
146	12-Apr-08	0:36	location not recorded		At Anchor	2 to 8 m	Dolphin	2			Night	Hippopotates
147	13-Apr-08	1:30	location not recorded		Anchor	2 to 8 m	Dolphin	3				Hippopotates
148	13-Apr-08	11:15	20 36.22	116 45.04	Dredging	100	dolphin	3	none	3	good	Cornelis Zanen
149	13-Apr-08	13:00	20 36.0	116 44.8	Dredging	100	Dolphin	1	none	1	Good	Cornelis Zanen

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
150	13-Apr-08	13:00	location not recorded		At Anchor	3	Dolphin	2	not working - no action		Very Good	Hippopotes
151	13-Apr-08	16:00	20 43.2	116 33.0	Transit	100	dolphin	1	none	3	good	Cornelis Zanen
152	14-Apr-08	1:30	location not recorded		At Anchor	2 to 8 m	Dolphin	1				Hippopotes
153	14-Apr-08	3:00			At Anchor	2 to 8 m	Dolphin	2				Hippopotes
154	15-Apr-08	8:45	20 36.2	116 45.3	Moving Hippo	30	Dolphin	1	Nil	1	Very Good	PT Kotor
155	15-Apr-08	3:30	location not recorded		Dredging	2- 8 m	Dolphin	8	Feedin gto port of midships		Fair	Hippopotes
156	15-Apr-08	8:05	20 36.3	116 45.4	Dredging	100	dolphin	2	Nil	1	good	Cornelis Zanen
157	15-Apr-08	12:00			At anchor not dredging	50m	Snub fin Dolphin	3	Nil	1	Very good	Phoenix
158	15-Apr-08	13:20	location not recorded		Dredging	20 from bucket	Manta ray	1	waited for animal to depart		Good	Hippopotes
159	16-Apr-08	14:15	20 34.7	116 44.9	Towing Barge	5	Dolphin	1	nil	1	Very good	PT Kotor
160	17-Apr-08	11:00	location not recorded		not working	50 from Bucket	Dolphin	4	Nil	2	Good	Hippopotes
161	17-Apr-08	20:10			At anchor	2 to 10 m	Dolphin	10	nil	1	goodNight	Hippopotes
162	18-Apr-08	5:00	20 33.64	116 45.38	Manouvering Hippo	20m	Dolphin	20		1	Very good	PT Kotor
163	18-Apr-08	5:00	location not recorded		Landing barge	At Excavator	Dolphin	10			good	Hippopotes
164	18-Apr-08	20:20	location not recorded		At Anchor	2 to 8 m	dolphin	2			good/Night	Hippopotes
165	18-Apr-08	21:00	location not recorded		At Anchor	2 to 10 m	dolphins	10			good/night	Hippopotes

Sighting No	Date	Time	Latitude (S)	Longitude (E)	Activity	Distance (Metres)	Species	Number of animals	Mitigation activities	Seastate (Beaufort)	Visibility	Vessel
166	21-Apr-08	17:00	20 33.4	116 45.4	Towing Barge	25	Dolphin	3		1	Very good	PT Kotor
167	23-Apr-08	13:00	location not recorded		Dredging	50	dolphin	1	heading NNW		good	Hippopotes
168	24-Apr-08	10:00	location not recorded		Dredging	30	dolphin	1	Heading norht		good	Hippopotes
169	26-Apr-08	14:10	20 37.853	116 42.596	Transit	500	Susa Dolphins	3	Nil	1	Very good	Adrenalin Sprint
170	26-Apr-08	14:15	20 33.708	116 45.029	Transit	30	Bottlenose Dolphin	6	Slowed vessel	1	Very good	Adrenalin Sprint
171	26-Apr-08	14:45	20 33.644	116 45.089	Dredging	100	Susa Dolphins	1	Nil	1	Very Good	Hippopotes

Appendix 6

Graph of Marine Fauna Observed Pluto LNG Dredging Project



Appendix 7

Locations for Marine Fauna Sightings Pluto LNG Dredging Project

Nov 2007 to April 2008

