

Trans-Tasman Resources Limited
South Taranaki Bight
Offshore Iron Sand Extraction and
Processing Project



Cetacean Monitoring Report

Prepared for
Trans Tasman
Resources Ltd

Prepared by
Martin Cawthorn Associates Ltd

FINAL

November 2015

Trans-Tasman Resources Limited

Cetacean Monitoring Report

FINAL

November 2015

Document No:	TTR271115	Revision:	1
Revision Date:	27 November 2015	Copy No:	1

Table of Contents

1. INTRODUCTION	4
2. Methodology	5
2.1 Survey design.....	5
2.1 Survey operation	5
3. RESULTS	8
APPENDICES	10
Appendix A Transect Co - ordinates	11
Appendix B Summary of surveys undertaken to date	12
Appendix C Survey Reports.....	13

1. INTRODUCTION

Trans-Tasman Resources Limited (TTR) is seeking marine consents under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (the “EEZ Act”) to undertake iron ore extraction and processing operations in an area covering 35.7 km², located between 22-36 km (12-19 nautical miles) offshore in the South Taranaki Bight (Figure 1.1).

TTR has identified that cetaceans could be affected by their proposed extraction and processing operations. As a result a baseline survey was implemented to determine the presence / absence of cetaceans in and adjacent to the proposed mining area.

This report presents the methodology and results of the assessment of cetacean distribution across a large proportion of the south Taranaki Bight including TTRs proposed mining area.

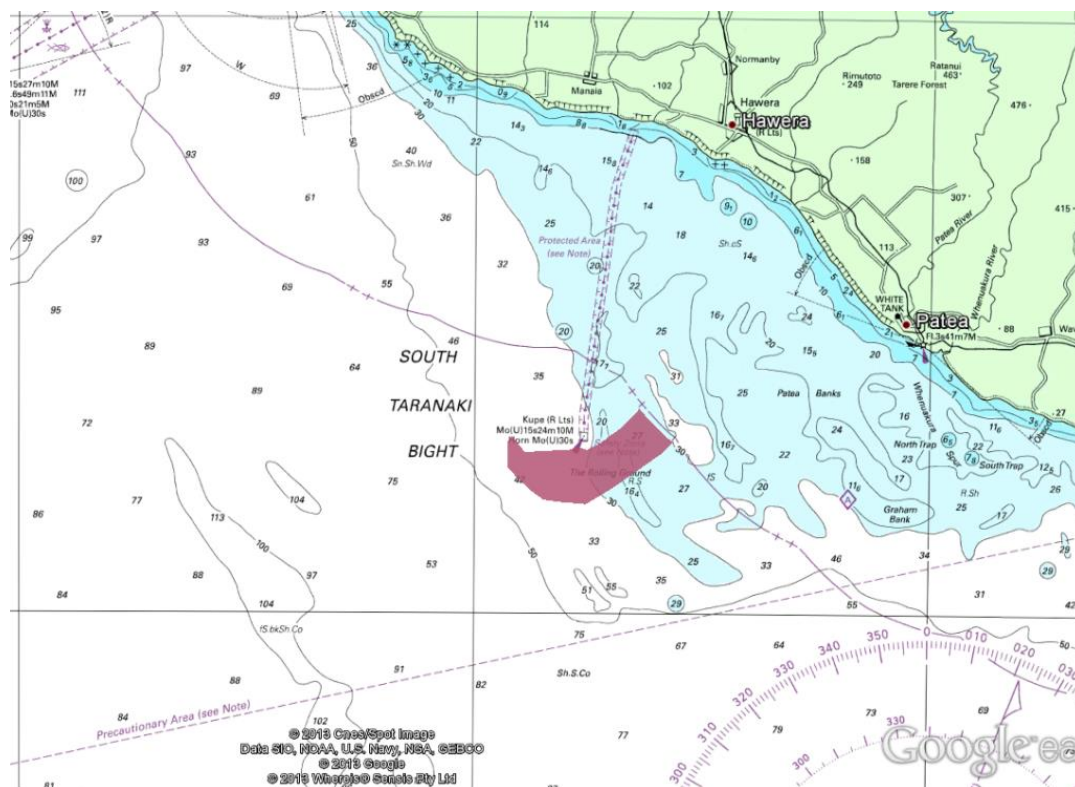


Figure 1.1: TTRs proposed mining area in the South Taranaki Bight

This is an updated version of a report of the same name dated October 2013. The report author has been provided with information relating to additional scientific work carried out for Trans-Tasman Resources Ltd (TTR) since 2014. This report is a factual descriptive report and therefore the conclusions from the 2013 report remain valid as reported in this document,

2. Methodology

2.1 Survey design

The survey area was designed to cover TTRs “initial” proposed mining area which extended offshore from approximately Manaia in the north-west to between Patea and Waverley in the south-east.

Surveys consisted of flying a series of transects parallel to the shoreline in the following configuration (see Figures 2.1 & 2.2):

1. Inshore to 6.5 nm offshore: seven parallel transects 1 nm apart from 0.5 nm to 6.5 miles (Transects 1 to 7)
2. From 8.5 nm offshore, parallel transects at 2 mile intervals to 20.5 nm and 24.5 nm (from January 2012) offshore (Transects 8 to 14 and 16 (from January 2012))

The more shoreward transects were closer together to assist with identifying species that preferentially use habitat close to shore.

Two transects were added to the survey in January 2012 (and all subsequent surveys) to cover the potential extension to TTR’s mining area.

Transects varied in length from 11.6m (Transect 1) to 28.5 nm (Transect 16).

Surveys were initially conducted at three monthly for the first seven surveys (July 2011 to February 2013). A decision was then made to increase survey intensity and from February 2013 surveys have been conducted two monthly with a month break before carrying out another two month block. The last two surveys in September 2013 were conducted on consecutive days.

Appendix A & B present transect co-ordinates and a summary of surveys undertaken to date.

2.1 Survey operation

All surveys commenced early to mid-morning to minimise potential wind effects with offshore transects being completed first and working progressively inshore.

Surveys were undertaken in winds less than Beaufort 3 (7-10 knots and maximum wave height of 1m) and flown at 500 feet at 100 knots. All cetaceans observed were circled to confirm identification before transect was resumed.

For the majority of the surveys a Cessna 207 was used. The plane was equipped with bubble windows to assist with observations, GPS to allow transect positions and cetaceans sightings to be fixed, and GPS tracking software to record the transect lines. The two trained observers on each flight had direct communication with the pilot through headsets.

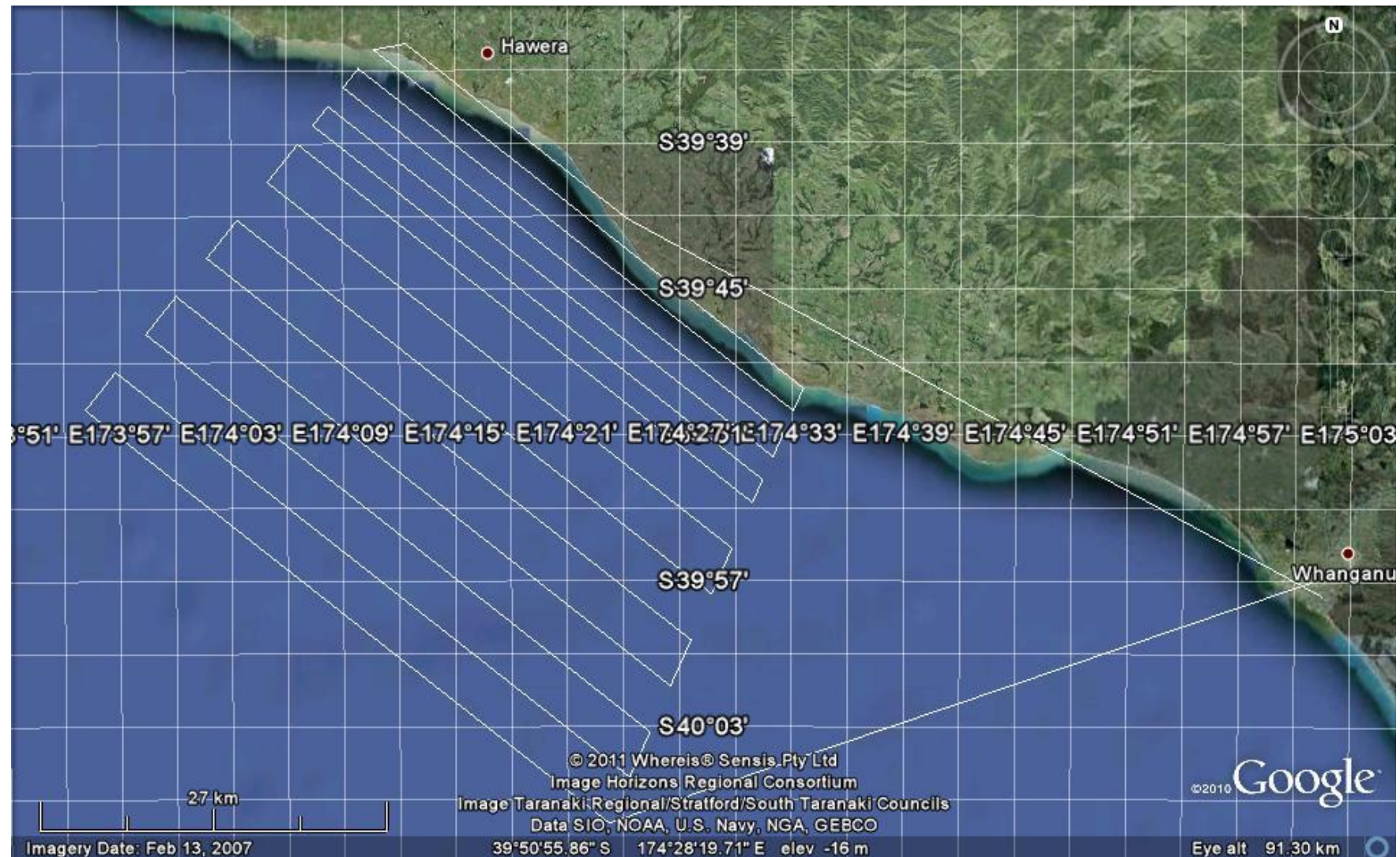


Figure 2.1: TTR transect layout for July and October 2011 surveys.

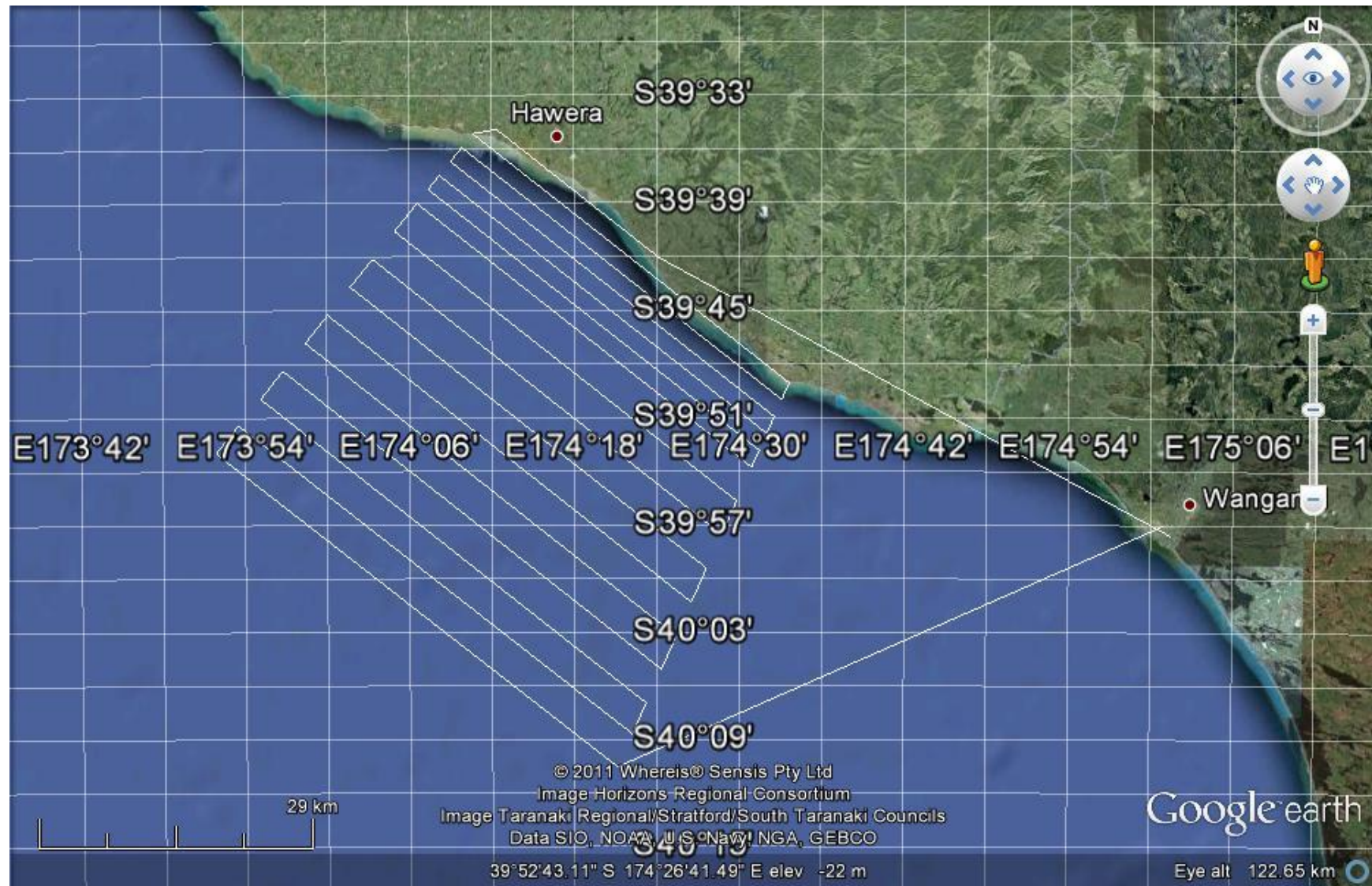


Figure 2.2: TTR transect layout for surveys since January 2012.

3. RESULTS

Individual survey reports are presented in Appendix C. Table 3.1 presents a summary of the results. The key points to note are as follows:

- A pod of common dolphin (6-8) were observed in the October 2012 survey on Transect 13 located within the Project Area, and again on T11 and T6.
- Very low densities of fur seals were observed between July 2011 and June 2013 on transects all outside of the Project Area, closer to shore.
- A variety of other fauna were also observed including seabirds, fish (usually mullet or kahawai) and sharks.
- A total of approximately 4,550 nm (or 8,426 km) of transect was flown to date which equates to approximately 7,300 nm² (or 25,040 km²).

Overall, it was concluded that the abundance of marine cetaceans given the area surveyed is very low.

Species	Number	Waypoint / Transect Location	Survey Date
Common dolphin	6-10	26-25 (T13)	October 2012
		22-21 (T11)	
		12-11 (T6)	
Fur seal	2	NR	July 2011
	2	4-3 (T2)	October 2011
	1	10-9 (T5)	October 2012
	2	14-13 (T7)	June 2013

Table 3.1: Summary of key species observed during surveys

3. DISCUSSION

The most obvious characteristic of the area surveyed is the paucity of marine mammals.

Fewer than 10 New Zealand fur seals and only one pod of 6 common dolphins were seen during the aerial survey. Fur seals breed on the Sugar Loaf Islands off New Plymouth approximately 120km around the coast past Cape Egmont, and their scarcity in the survey area is not surprising given the lack of suitable haulout sites ashore and demersal fish life.

The low densities of cetaceans observed in surveys is likely to be due to a number of factors including: the limited benthic fauna present which would otherwise provide an attraction for higher order marine life; the homogenous habitat present across the continental shelf in this location providing no refuge or features of interest to hold transitory cetaceans; and the harsh nature of the prevailing environment conditions.

APPENDICES

Appendix A Transect Co - ordinates

Transects	Point A				Point B			
T1	39	42.095	174	24.189	39	34.906	174	12.390
T2	39	49.075	174	33.635	39	35.14	174	10.664
T3	39	50.006	174	33.099	39	35.912	174	9.856
T4	39	50.951	174	32.553	39	36.692	174	9.041
T5	39	51.891	174	32.006	39	37.468	174	8.230
T6	39	52.837	174	31.456	39	38.249	174	7.413
T7	39	53.781	174	30.907	39	39.028	174	6.600
T8	39	55.657	174	29.816	39	40.585	174	4.970
T9	39	57.537	174	28.722	39	42.139	174	3.343
T10	39	59.426	174	27.621	39	43.693	174	1.713
T11	40	1.315	174	26.519	39	45.259	174	0.069
T12	40	3.204	174	25.417	39	46.815	173	58.435
T13	40	5.066	174	24.327	39	48.369	173	56.800
T14	40	6.956	174	23.222	39	49.931	173	55.157
T15	40	8.682	174	22.202	39	51.419	173	53.536
T16	40	10.531	174	21.127	39	52.965	173	51.883

Appendix B Summary of surveys undertaken to date

	Date	Number of Transects	Distance surveyed (nm)	Approximate area covered (nm ²)
1.	4 July 2011	14	332.2	523
2.	30 October 2011	14	332.2	523
3.	17 January 2012	16	388.7	625
4.	20 April 2012	16	388.7	625
5.	10 July 2012	16	388.7	625
6.	30 October 2012	16	388.7	625
7.	20 February 2013	16	388.7	625
8.	22 March 2013	16	388.7	625
9.	13 May 2013	16	388.7	625
10.	2 June 2013	16	388.7	625
11.	2 September 2013	16	388.7	625
12.	3 September 2013	16	388.7	625
	TOTAL	-	4,551	7,296

Appendix C Survey Reports

4 July 2011

1st AERIAL SURVEY ex Wanganui

WPT #	Time	Comments	WPT #	Time
	07.31:10	T/O W'nui		
28	7.47:36	On track. 10 kt NWly headwind. Few sct whitecaps	27	Turning
26	8.06:08	Conds. Perfect light rippled sea, cloud 8/8 O/C	25	08.22:18
24	8.24:01	Cloud 8/8 o/cast ceiling 1500ft	23	08.30:00
22	8.41 :54	No sightings	21	08. 57:54
20	8.59:20	No sightings	19	09. 15:07
18	9.16:46	Conds prfct 0930:18 Fish @ 80°	17	09. 31:46
16	9.33:30	9.35:19 Fish@8°, 5-6 fishing vvl	15	09.48:20
14	9.50:00	No sightings	13	10.04:32
~	10.19:28	Landed W'nui to refuel		
~	10.59:19	T/O hdg to WPT 12		
12	11.07:00	11.17:28 1fursl @ 43°	11	11.26:14
10	11.27:18	No sightings	9	11.41:27
8	11.42:47	Searching: conds perfect cld ceiling @ 1500'	7	11.56:48
6	11.57:49	Searching, nothing at all.	5	12.11:32
4	12.11:50	Along shore parallel to coast. 1 frsl, 1 gannet	3	12.26:16
2	12.27:12	Longshore; wpt ashore abeam port side	1	12.34:30
Survey Finished		Landed Wanganui		12.53.00

Flight Summary

Personnel:

Conditions:

		Total Survey	
Total flight time:	4hrs 34min	Time:	3hrs 43min
Total Flight miles:		Total Survey Miles:	
Altitude:		Speed:	

Sightings Summary

Marine mammals:	2 fur seals
Fish:	2 fish boilers
Birds:	1 gannet
Fauna:	
Vessels:	5-6 fishing vessels
Other:	

30 October 2011 2nd Aerial Survey ex Nelson

(NB: Time shown is from GPS)

WPT#	Time	Comments	WPT#	Time
	09.15:00	Take off from Nelson Airport. Conditions B1 sct cloud, bright sun. Set course for WPT # 28.		
28	10.54:00	Sct low cloud to 500'. 3 fish aggregations. No mm obs	27	11.12:15
26	11.12:54	1117 Oil platform @3°; 1121:30, 8 fish boilers	25	11.25:22
24	11.31:05	1142:12 Oil platform@ 5°; fish boilers to vis. limit	23	11.47:06
22	11.49:15	No cetacean sightings; black backed gulls	21	12.04:21
20	12.07:00	No mm obs. Jack mackerel/kahawai schools numerous	19	12.22:22
18	12.25:00	2 small fishing boats; kelp and logs	17	12.39:00
~~	????	Landed Wanganui for fuel and break		
~~	???	Take off from set course for WPT 16		
16	12.53:13	Conds B1 NE. Kelp & logs	15	13.08:00
14	13.09:45	1317:30 Kelp & logs	13	13.25:00
12	13.26:00	???	11	???
10	13.39:00	Conds B1 7/8 drifting cloud + sun No obs.	9	13.54:09
8	13.56:17	Rain over coast to N circled for bird and log	7	14.11:38
6	14.12:29	No sightings	5	14.26:10
4	14.27:02	1432:04 1 fur seal, 1438:40 1 fur seal	3	14.40:51
2	14.41:43	???	1	14.48:45
Survey Finished				

Flight Summary

Personnel:

Conditions: flat, calm; Wind: <10kts

Total flight time: ??? Total Survey Time: 3hrs 41min

Total Flight miles 420 nautical miles Total Survey Miles: 353 nautical miles

Altitude: 500ft Speed: 100kts

Sightings Summary

Marine mammals: 2 Fur seals

Fish: Numerous fish boilers

Birds: Black-billed gulls

Fauna: Kelp

Vessels:

Other: Logs

17 January 2012 3rd Aerial Survey ex Wanganui

WPT #	Time	Comments
	06.11:00	Take off
32	06.27:00	Start at outermost wpt. Wind ESE 5-10 kts Sct white caps
31	06.44:40	Turning
30	06.46:35	Heading into rising sun. Glare 10° off track reduced to appx 3/10. 0655 ½ way along track.
29	07.04:40	Turning
28	07.05:40	Prions, blackbacked gulls, red billed gulls. Breeze reducing.
27	07.22:00	Turning. No sightings so far.
26	07.23:50	Glare still ahead of strut viz. not compromised. 0735 boiler +birds
25	07.40:00	No obs. Large gp of birds feeding 500m off port side.
24	07.43:10	No observations so far.
23	07.58:50	Turning
22	07.59:50	On track. 0805 1 boat hdg S 2miles off pt wing. 0808 ½ way.
21	08.15:30	Turning
20	08.17:37	0822 v.large fish boiler 250m port side. Black back gulls +gannets
19	08.33:00	Fish and birds
18	08.34:40	Glare 4/10 on port side. 0843 ½ way. Power boat @ 09°
17	08.48:35	Lg boiler + 1 school 10-12 sharks (rig?)
~~	09.11:00	Touchdown Wanganui Coffee and break.
~~	10.03:00	Take off Wanganui
16	10.13:41	On track wind veering slightly B1-2 Hunks of kelp about.
15	10.28:15	Turning. No obs so far.
14	10.30:10	Sea dead calm. 1038:40 ½ way
13	10.44:30	Turning
12	10.46:00	Wind <5kts. Clumps of kelp. 1 lg shark.
11	11.05:00	Turning
10	11.01:08	Glare at E5. 1 fizz-boat at 21°
9	11.05:06	Turning nearing inshore water quite discoloured
8	11.16:10	Now flying over green soup. No sightings so far.
7	11.30:00	Turning
6	11.31:03	On track
5	11.45:55	Turning
4	11.46:45	Nothing
3	11.59:00	Turning
2	12.00:00	Inshore transect no obs.
1	12.07:10	Survey finished
	12.26:00	Landed Wanganui

Flight Summary

Personnel:

Conditions: Wind/Sea B1-2

Total flight time: 5hrs 23min

Total Survey Time: 4hrs 15min

Total Flight miles

Total Survey Miles:

Altitude:

Speed:

Sightings Summary

Marine mammals:

Fish: 3 fish boilers, school of sharks (10-12), 1 large shark

Birds: Prions, black-backed gulls, Red-billed gulls, Gannets

Fauna: Clumps of kelp

Vessels: 2 boats, 1 power boat

Other:

20 April 2012

4th Aerial Survey ex Wanganui

WPT #	Time	Comments
	07.38:00	Take off from Wanganui
32	07.54:00	Sunrise 0615. Sea rippled, crests occasionally breaking, calm, Beaufort 3.
31	08.12:00	Turning. 5 fish boilers, Black-backed gulls (bbg), red-billed gulls (rbg), terns, and prions.
30	08.16:00	On transect. 0822 ½ way along leg. 0830 no sightings.
29	08.31:00	Turning
28	08.33:00	Breeze 6kts Beaufort 2. 0839 ½ way along leg, 0847 No sightings.
27	08.49:00	Breeze dropping now 4-5kts variable, ripples now smooth and glazed.
26	08.52:00	Gas platform 2nm to port. 2 small fishing vessels. Small trawler Taimania? Large rafts of bbg and rbg sitting on glassy sea, min.8jack mackerel (jma) boilers. 5large sharks.
25	09.08:00	Turning
24	09.10:00	Grp of 3 sharks all ca 3m. 0918 ½ way. 0920 2x TTR boats portside @20°.
23	09.26:00	Turning 4 fish boilers.
22	09.28:00	0932 inshore of gas platform. 0936 very large boiler (25m+ dia.) at 30°.
21	09.43:00	Turning. Breeze has dropped away almost completely. Sea glassy.Viz. 10/10
20	09.45:00	Birds bbg, rbg sitting in large scattered rafts over fish, prions and terns.
19	10.00:00	Turning
18	10.02:00	5 large boilers @ 20° small fish jumping from large predators beneath.
	10.10:00	3 large (2.5m+) sharks, appeared very pale u/water.
17	10.17:00	Turning
16	10.19:00	No sightings on this leg.
15	10.33:00	Turning
14	10.36:00	1040:33 object seen by LG off stbd beam. Broke track to identify. Stabicraft with 3 occupants. Resumed track at 1043.
13	10.53:00	Turning
12	10.55:00	No sighting on this leg.
11	11.09:00	Turning
10	11.10:00	No sightings. 1116 - ½ half way. No sightings.
9	11.24:00	Turning
8	11.25:00	Flat calm, no wind, green water, large foamy tide-lines, 1133 - ½ way. No obs.
7	11.39:00	Turning
6	11.40:00	1144 - 3 fish boilers@ 30 - 40°.
5	11.54:00	Turning
4	11.55:00	No obs. 1202 ½ half way. No sightings.
3	12.08:00	Turning over the coast.
2	12.10:00	No sightings along coast.

1 12.17:00 Survey finished.
 12.38:00 Landed Wanganui.

Flight Summary

Personnel:

Conditions:

Total flight time:	5hrs	Total Survey Time:	4hrs 23min
Total Flight miles		Total Survey Miles:	
Altitude:	500ft	Speed:	100kts

Sightings Summary

Marine mammals:

Fish: 26 fish boilers, 11 large sharks (>2.5m)

Birds: Black-backed gulls, Red-billed gulls, terns, prions

Fauna:

Vessels: 2 SFBs, 1 small trawler, 2 TTR boats, 1 stabicraft

Other:

10 July 2012

5th Aerial Survey ex Wanganui

WPT #	Time	Comments
	11.12:00	Take off Wanganui Airport hdg for Wpt 32 offshore
	11.25:00	start delayed by fog at N.Shore Airport
32	11.30:00	Start. Conditions perfect. Sea flat calm. No wind.
	11.39:40	½ way to wpt 31. Small school flying fish.
31	11.47:16	Turn
30	11.49:05	Small flocks of prions.(1154 ½ way) fish schools, sharks, prions
29	12.01:00	Turn
28	12.03:50	Fish boilers, lg flock pintado petrels, mollymawks x2, black backed and red billed gulls.
27	12.20:25	Turn
26	12.22:15	Mollymawks, fish boilers, breeze about 4kts (very local) (1230 ½ way), 6 fishballs and boilers, clumps of kelp,
25	12.38:34	Turn
24	12.41:00	12.41:43 fish x 4, (1249:19 ½ way), 1 pair mollymawks.
23	12.57:00	Turn, 5 fish boilers.
22	12.59:08	Seven boilers, (wind B1), (1306:18 ½ way) no further sightings.
21	13.14:49	Turn
20	13.16:50	Three boilers (1324:40 ½ way) 6 boilers.
19	13.32:00	Turn
18	13.33:50	Last run before break (1340:30 ½ way) many boilers.
17	13.48:47	Turn – Hdg for Whanganui. Mid survey break and refuel. Alternator prob.
~~	14.06:00	Landed Wanganui, refuelled and repaired wiring to alternator all ok.
~~	15.07:20	Takeoff
16	15.20:00	Conds. Beaufort1. Cloud shadow zero glare. Multiple fish boilers.
	15.28:00	360° turn over 2/3 submerged 1m. grey plastic drum.
15	15.36:54	Turn. Flocks of prions
14	15.38:20	3 large sharks, 6 large fish boilers,(1545:45 ½ way) 3boilers, 5 sharks.
13	15.52:50	Turn
12	15.54:13	6 fish boilers, 2 logs, 5 clumps of kelp. Gannets working around fish.
11	16.08:41	Turning.
10	16.09:40	2 boilers immediately off turn.(1616:26 ½ way) Zero sightings.
9	16.23:39	Turn
8	16.25:00	2 boilers. (1631:00 ½ way) 4 boilers, gannets, kelp. Sea flat calm.
7	16.39:08	Turn
6	16.40:10	Gannets. Mollymawks, (1647:00 ½ way)small birds rafted in largeflocks
5	16.53:44	Turn
4	16.54:30	This wpt on beach, transect parallel to coast.

3	17.08:42	Turn, this wpt over cowshed ashore.
2	17.13:00	On track to wpt 1
1	17.15:55	Finished survey
	17.30:00	Landed Wanganui

Flight Summary

Personnel:	William Hayman (pilot), Tom Land and Martin Cawthorn (observers)		
Conditions:	Optimal, clear sunny, sct cloud, wind B0-B2		
Total flight time:	5hrs 4min	Total Survey Time:	4hrs 15min
Total Flight miles		Total Survey Miles:	
Altitude:		Speed:	

Sightings Summary

Marine mammals:	
Fish:	Approx. 70 fish boilers, 8 large sharks, another sitting of sharks
Birds:	Black-backed gulls, Red-billed gulls, Mollymawks, Gannets, Numerous flocks Prions, Pintado Petrels
Fauna:	Kelp
Vessels:	2 SFB's
Other:	1 Plastic drum, 1 coil of polypropylene rope

30 October 2012 6th Aerial Survey ex Wanganui

<u>WPT #</u>	<u>Time</u>	<u>Comments</u>
	08.20:15	Take off Wanganui. Wind Sly 5kt. Full sun. Sea B2
32	08.42:10	100s of birds working. 1x 2m-3m shark. 0852 ½ way. 2xfish boilers.
31	08.59:15	Turning. 4 large fish boilers close to track.
30	09.01:30	Sun glare across gas platform 2/10 tolerable. 0910:30 ½ way. 2xfish.
29	09.18:30	Turning. No mammal obs. 2x immense fish schools – kahawai?
28	09.20:30	Sighting conditions perfect. Massive flocks birds. 0938:30 ½ way.
27	09.26:30	Birds only. Turning.
26	09.38:38	0939 big fish school. 0940 (Luke) 6-8 common dolphins hdg NE. Turned off track to verify, seen by all on board. Resumed track. 0952 ½ way.
25	10.00:00	Turning
24	10.02:20	1006:00 2 lg fish boilers. 1010:30 ½ way. No further obs. this track.
23	10.17:50	Turn
22	10.19:40	10 common dolphins (Luke); same area/pod as before? 1 breezer. This track inside gas platform. 1029:15 ½ way.
21	10.37:10	Turn
20	10.39:00	1047 ½ way No obs.
19	10.54:30	Turn. Shark. NW swell 0.5-1.0m.
18	10.56:20	1103 ½ way no other obs.
17	11.12:17	Turn
16	11.13:20	4 large flocks sea birds. 1122 ½ way
15	11.17:50	Turn
14	11.29:42	No obs. 1137 ½ way. Very marked tide line and silt plume from rivers.
13	11.44:00	No obs. this transect. Heading for Wanganui, fuel and coffee break
~~	12.00:00	Landed Wanganui.
~~	12.38:00	Take off Wanganui hdg. for WPT 12.
12	12.50:35	Silt plume extends 4-5nm offshore. 1259:00 ½ way. 2 fish breezers. 1 breezer. 1303 6-8 common dolphins resting. Same pod ?
11	13.09:50	Turn
10	13.10:00	1315 1 NZ fur seal. 1318 ½ way
9	13.25:00	Turn
8	13.26:50	No obs. On this track
7	13.40:38	Turn
6	13.41:20	1348:30 ½ way. No obs.
5	13.55:05	Turn
4	13.55:20	No obs. 1402 ½ way. No further obs this track.
3	14.09:20	Turn
2	14.10:20	WPT on land abeam.

1 14.20:00 WPT abeam
Survey finished
14.43:00 Landed Wanganui

Flight Summary

Personnel:

Conditions:

Total flight time: 5hrs 45min

Total Survey Time: 4hrs 32min

Total Flight miles Approx. 545

Total Survey Miles:

Altitude:

Speed:

Sightings Summary

Marine mammals: 10 common dolphin, 1 NZ fur seal

Fish: 13 fish boilers, 2 unidentified sharks

Birds: Black-backed gulls, red-billed gulls, whitecapped albatross, prions, 1 gannet,
 pintado petrels

Fauna:

Vessels:

Other:

20 February 2013 7th Aerial Survey ex Wanganui

WPT #	Time	Comments
	06.38:00	Take off Wanganui. Conditions calm, wind ≤5kts, sea B1 slight ripple.
	06.50:00	Sunrise ☀.
32	06.56:00	B2. Overcast ceiling abt. 600'. Swell 0.5- 1.0m. 0702 ½ way. 1 fish boiler, 1 gull this leg.
31	07.14:00	Off effort (OE) turning.
30	07.16:00	On effort (E). Observing conditions optimum. 0725 ½ way. No obs.
29	07.32:00	(OE) Obs 1 gull only. Turning.
28	07.35:00	(E) No obs. 0744 ½ way conds. excellent. 1 gannet only this leg
27	07.51:00	(OE) turning
26	07.53:00	(E)Oil/gas platform abeam port side ≈ 1.5miles. 0804:30 boiler stbd side.
25	08.10:00	(OE) Sea breeze dropping
24	08.12:00	(E) TTR drill vessel operating nearby. 0821 ½ way. No obs. this leg.
23	08.27:00	(OE) Sea breeze decreasing, observing conds. perfect.
22	08.30:00	(E) Conds optimal. No obs. 0836 ½ way. No obs. this leg.
21	08.45:00	(OE) 1 small o/board boat at 1nm.
20	08.47:00	(E) 1flock of 16 unidentified seabirds. 0856:30 ½ way. No further obs.
19	09.03:00	(OE) Turning
18	09.05:00	(E) No obs. 0912 ½ way. No obs second half of this leg.
17	09.20:00	(OE) Many small rec.fishing boats in area.
16	09.22:00	(E) No bio obs 1st ½ . 0928:30 ½ way. 15 rec fishing boats inside box.
15	09.36:00	(OE) Turning. Breeze ≤4kn. Sea calm, swell reducing.
14	09.39:00	(E) No obs. 0945 ½ way. 7 small rec fisher boats + 1 commercial boat.
13	09.53:00	(OE) Heading for Wanganui to refuel etc.
	10.08:00	Touch down Wanganui.
	10.27:00	Take off Wanganui – 13 mins to Wpt #12
12	10.40:00	(E) Conditions optimal. Rec boats in area 7, a few sitting birds on water.
11	10.53:00	(OE) Conds B0, cloud 1/8 , bright ☀
10	10.54:00	(E) 1055 poss basking shark. 1102 ½ way. Seabreeze increasing.
9	11.09:00	(OE) Nil obs 2nd ½ last leg.
8	11.11:00	(E) No obs. 1121 ½ way. No obs. 4 rec fishing vvl.
7	11.25:00	(OE)
6	11.25:30	(E) Glassy calm, bright ☀ , 1/8 cloud. No obs.
5	11.31:00	(OE) Turning, very light seabreeze, 11 small rec fishing vessels in area.
4	11.40:00	(E) Over turbid water from river mouths. 1145 ½ way. No obs.
3	11.53:00	(OE) Turning over land to pick up transect over water.
2	11.54:00	(E) No obs.
1	12.00:00	(OE) Survey finished. Heading for Wanganui
	12.15:00	Touchdown Wanganui (Following refuel aircraft proc to Wellington via Paraparaumu)

Flight Summary

Personnel:

Conditions:

Total flight time: 5hrs 18min

Total Survey Time: 4hrs 17min

Total Flight miles

Total Survey Miles:

Altitude:

Speed:

Sightings Summary

Marine mammals:

Fish: 3 fish boilers, 1 possible basking shark

Birds: 40 Unidentified gulls, 1 gannet

Fauna:

Vessels: 19 RFBs, 1 CFB

Other: 1 coil of Polypropylene rope, 1 ~8m pine pole

22 March 2013 8th Aerial Survey ex Wanganui

(NB. Satellite time 60min behind NZST)

WPT #	Time	Comments
	08.16:38	Take off Wanganui. Conditions perfect. Many boilers Large fish, poss. tuna or kingfish, attacking from beneath
32	08.38:13	Conds. offshore perfect, slight ripple, v.low W'ly swell. Flying at std speed (100kts) and altitude (500').
	08.32:25	2 meatballs of jma with 3x 2m sharks (poss bronze whalers) attacking from below
	08.45:00	2 " " " or JMA. 1 BRTM 4nm westward.
	08.46:25	½ way. 8 boilers. 1 Sealord BRTM (trawler) seaward 2nm of 1st vessel.
31	08.55:25	Turning
30	08.57:33	Sun glare 3.5 – 4.0 (5).
	09.02:00	Gas platform abeam to port
	09.06:00	½ way along transect. 47 jma meatballs and/or boilers.
29	09.14:10	Turn Oily calm. Zero wind, bird flocks sitting on water.
28	09.16:10	17 boilers
	09.24:00	½ way
	09.32:00	many reddish plankton blooms. Luke 23 boilers.
27	09.33:12	Turning
26	09.34:53	4 boilers
	09.39:00	Gas platform about 1.5nm to port
	09.42:40	½ way. Luke 6 boilers.
25	09.51:00	Turning
24	09.53:00	Many flocks of gulls and petrels all sitting.
	10.01:00	½ way. 1 boiler.
23	10.08:56	Turning
22	10.10:54	
	10.15:29	gas platform abeam starboard appx 1.0nm
	10.18:32	½ way No further sightings this leg.
21	10.26:19	Turning 1 rec. fishing power boat
20	10.29:19	All birds sitting. Zero wind. Conds perfect. ✱ no problem.
	10.36:52	½ way. No further sightings this leg.
19	10.45:00	Turning
18	10.46:21	1 boiler. 1 small commercial boat. 2 small rec. boats.
17	11.01:10	Turned for Wanganui 1 boiler
~~	11.16:08	Landed Wanganui – fuel and food
~~	12.02:15	Took off, heading for Wpt 16
16	12.16:00	Conds A+++, ✱ angle 50, oily calm, all birds sitting.

	12.23:14	½ way. 2 boilers. 2 rec boats
15	12.30:33	Turning.
14	12.32:30	No sightings 1st half of leg.
	12.41:40	½ way Tuna or kingfish feeding on 3 meat balls of small fish. Sea surface glass calm.
12	12.46:40	Turning.
12	12.47:50	2 Rec boats no further obs this leg.
11	13.01:01	Turning.
10	13.03:15	Gannet working fish school.
	13.13:40	1 rec.boat
9	13.17:03	Turning.
8	13.18:19	No obs 1st half of leg.
	13.25:14	½ way. No sightings rest of this leg.
7	13.32:17	Turning.
6	13.33:18	No sightings 1st half
	13.39:46	½ way
5	13.46:55	Turning.
4	13.47:38	Flying parallel to coastline
	13.53:53	Back on transect, 1 rec. boat.
3	14.01:28	Flying overland
2	14.02:20	
1	14.09:19	Counting cows. Survey finished Hdg. To Wanganui.
	14.28:45	Landed Wanganui

Flight Summary

Personnel:	William. Hayman (Pilot), Luke Gowing, Martin Cawthorn		
Conditions:			
Total flight time:	5hrs 26min	Total Survey Time:	4hrs 16min
Total Flight miles	543 (apprx.)	Total Survey Miles:	
Altitude:	100ft	Speed:	500kts

Sightings Summary

Marine mammals:	
Fish:	116 fish boilers, 3 bronze whalers, Tuna or Kingfish or Albacore
Birds:	Black backed gulls, Red backed gulls, Gannets, Petrels, Mollymawks, Terns
Fauna:	Numerous reddish plankton blooms
Vessels:	8 RFBs, 3 CFBs (1 inshore, 2 large BRTMs outside the TTR area trawling for jack mackerel)
Other:	

13 May 2013

9th Aerial Survey ex Wanganui

WPT #	Time	Comments
	07.52:00	Take off Wanganui en route for Wpt 32 offshore
32	08.12:36	At 500 ft airspeed 100 kts. Wind about 12 kts, no swell, no whitecaps, lg cloudbank, ceiling appx. 800ft. Conds 8/10
	08.23:00	½ way 1 small recreational fishing boat (srb).
31	08.29:38	Turn (T)
30	08.31:42	Glare port (east) side 2/10
	08.45:10	½ way
29	08.48:20	T 1 blackback gull. No other obs.
28	08.50:35	Conditions improving
	08.59:00	5 boilers to stbd
27	09.07:05	Nil obs this leg.
26	09.09:00	T Boilers 7
	09.17:02	Boilers 6, many birds assoc with each boiler. Cloud ceiling 800'
25	09.25:20	Wind increasing, sct whitecaps (w/cs). No sightings this leg.
24	09.27:18	Wind est 15kts, v few w/cs.
	09.35:38	½ way, 4 boilers, 1pr prions, Luke 9 boilers.
23	09.43:00	T.
22	09.50:07	Glare 2/10. Conditions 9/10 near optimum.
	09.49:30	Gas platform abm 1nm. 1 srb 2nm portside. 4 boilers
	09.53:00	0953:00 ½ way. 1 small rec boat 2 nm portside, 9 boilers.
21	10.00:26	T
20	10.02:35	1srb at anchor, conds Beaufort 2 (B2), v few w/cs. 30 Albatross sitting near 2 sets of craypot buoys. 1 flock ≈ 100 redbilled gulls near 3 boilers. 1 flock petrels following 1 boiler.
	10.10:59	½ way. Gas platform abeam 2nm. 3 srb, 8 jma boilers.
19	10.18:00	T
18	10.19:43	1 boiler, 2 srb. No other observations.
17	10.34:00	T
16	10.36:15	1 srb.
	10.44:28	½ way. No further obs.
15	10.51:00	T
14	10.52:53	1100:00 2 srb no further obs.
	11.01:50	½ way 2 srb no further obs.
13	11.07:04	T
12	11.08:22	1 gannet, 1 srb. No other obs.
11	11.22:32	T
10	11.23:34	1130:59 1 srb no other obs.

	11.31:29	½ way	No other obs.
9	11.37:20	T	
8	11.38:45	srb	Now flying over green inshore water.
	11.45:40	½ way	1 srb. No other obs this leg.
7	11.52:40	T	
6	11.53:47	No obs.	
	12.02:55	½ way	No further obs.
5	12.07:15	T	
4	12.08:15	Wpt abm on beach	
3	12.21:55	T	
2	12.22:55	Wpt abm in village onshore.	This track 200m parallel to cliffs
	12.25:45	on track 200m offshore.	
1	12.29:35	Survey finished.	Conditions 9/10 near optimal
	12.52:00	Landed Wanganui	

Flight Summary

Personnel:	William. Hayman (Pilot), Luke Gowing, Martin Cawthorn		
Conditions:			
Total flight time:	5hrs	Total Survey Time:	4hrs 17min
Total Flight miles		Total Survey Miles:	
Altitude:	500ft	Speed:	100kts

Sightings Summary

Marine mammals:	
Fish:	57 fish boilers (Jack Mackerel)
Birds:	Black backed gulls, Red billed gulls, Prions, Petrels, Albatross
Fauna:	
Vessels:	18 SRBs
Other:	

7 June 2013

10th Aerial Survey ex Wanganui

WPT #	Time	Comments
	06.45:00	To Wanganui Airport
	07.31:00	Take off, hdg for Wpt 32. Conditions ≈5kts NEly decreasing.
32	07.52:00	24 nm offshore. Alt 500' Speed 100kts.Few scattered whitecaps
	08.01:40	½ way. Conds 8-9/10 sunrise glare ok.
31	08.09:13	Turn
30	08.11:30	wind ≈ Ely 10kts no whitecaps, swell 0.5m
	08.20:36	½ way. 2 gps 12 Blackback (blbk)gulls
29	08.28:20	Turn
28	08.30:24	Wind decreasing at southern end of block, o/wise conds 9/10;
	08.39:11	½ way, small groups of blbks sitting on all transects so far.
27	08.46:50	Turn 1 BRTM trawler on horizon 6m+ away to NW
26	08.48:46	Ely sun glare 5/10, conds 9/10 , gas platform abm @1.8nm;
	08.48:46	½ way, conds 10/10
25	09.04:50	Turn 5 boilers, 5 white headed mollymawks
24	09.07:03	8 boilers, 2 red billed gulls
23	09.14:53	Turn 4 boilers, 3 groups blbks.
22	09.24:36	0930 oil platform abm 1nm. Wind 0-5kts, sea 0-1
	09.32:50	½ way 1 whiteheaded mollymawk (Transects 2 nm apart)
21	09.42:16	Turn 9 boilers, 14 seabirds.
20	09.42:16	3 boilers
	09.51:05	½ way 2 blbks 1 rec fishing boat (RFB)
19	09.57:13	Turn
18	09.59:20	3 boilers, 1 blbk,
	10.06:45	½ way; 3 boilers, 1 gp 20 Cape Pigeons, 1gp red bill gulls
17	10.14:08	Turn Return to Wanganui for fuel, eye-break etc.
~~	10.31:00	Landed Wanganui (44mins on ground)
~~	11.15:00	Take off Wanganui, survey to resume at wpt# 16
16	11.28:30	Conds 10/10. 1 x 1m floating log, birds alongside.
	11.35:40	½ way 1 boiler, 1 rec.fishing boat (RFB)
15	11.43:14	Turn
14	11.44:52	1145:37 2 fur seals
	11.52:06	½ way No further sightings.
13	11.59.13	Turn
12	12.00:31	Conds 10/10, 2 RFBs
	12.07:41	½ way 2 small boilers
11	12.14:39	Turn Sea state zero. Brown sediment in suspension.
10	12.15:48	No observations .

	12.23:34	½ way No further sightings
9	12.29:48	Turn
8	12.31:04	flying over green-brown sediment in suspension.
	12.37:30	½ way No further observations
7	12.44:58	Turn
6	12.46:09	No observations
	12.53:4	½ way, all seabed sediment appears to be in suspension. No further observations.
5	12.59:54	Turn
4	13.00:53	No observations. Sighting conds optimal.
3	13.14:30	Turn
2	13.15:21	200metres off coast following coastline. 15 blbks
1	13.22:33	Survey finished
	13.42:00	Landed Wanganui

Flight Summary

Personnel:	William. Hayman (Pilot), Luke Gowing, Martin Cawthorn		
Conditions:			
Total flight time:	5hrs 27min	Total Survey Time:	4hrs 16min
Total Flight miles	545 (apprx.)	Total Survey Miles:	
Altitude:	500ft	Speed:	100kts

Sightings Summary

Marine mammals:	2 Fur seals
Fish:	38 fish boilers
Birds:	Black backed gulls, Red billed gulls, Cape pigeons, Unid. Seabirds
Fauna:	
Vessels:	4 RFBs, 1 CFB
Other:	

2 Sept 2013

11th Aerial Survey ex Wanganui

WPT #	Time	Comments
	09.23:00	Take off
32	0941:29	Scattered whitecaps, 4/8 cloud, small flocks of prions and petrels
	0950:00	½way, more whitecaps
	0955:00	large flock of seabirds working very large schoolfish boiler
31	0958:18	Windy at northern end B4-5
30	1000:30	1005:00 Gas platform abeam 3.5 – 4.0 nm
	1008:00	½way. Conds easier downwind
29	1017:00	No sightings so far
28	1019:10	Conditions improving continuously
27	1035:30	Scattered seabirds, `whitecaps decreasing
26	1037:30	Whitecaps declining at northern end
	1042:07	Gas platform abeam 2nm., slight turbulence, 5/8 overcast, no glare
	1045:45	½way. Conds. good, wind-rippled sea surface.
	1047:45	2 large schoolfish boilers
25	1053:42	Sea state B1
24	1055:42	Sea/wind B1
	1104:00	½way,
23	1111:28	Nil observations so far
22	1113:18	
	1117:00	windier and a little choppy but still ≤B3
	1121:24	½way
	1127:05	2 very large jack mackerel boilers with birds
21	1128:50	
20	1130:55	1134:31 windy patch B3 flying north.
	1138:52	½way
	1141:00	gas platform abeam port 2.5nm
19	1145:55	
18	1148:04	Wind north of platform about B5
	1151:00	increased wind and sea
	1155:30	½way
17	1203:02	
16	1204:50	Wind not abating. Scattered flocks of prions
	1211:49	½ way
	1214:23	gas platform abeam – flying N, sea calmer fewer whitecaps
15	1219:12	
14	1221:09	1224:00 B4
	1228:00	½way

		1231:00 into clear water
13	1235:00	Hdg for Wanganui
		1251:00 Landed Wanganui
		1351:00 Take off Wanganui on course to Wpt 12
12	1404:05	1411:02 ½ way
11	1418:00	Wind has definitely eased B3
10	1419:11	Flying south. 1 small recreational fishing boat
		1426:38 ½ way
9	1433:00	Large amounts of green-brown peaty silt in water off river mouths
8	1434:20	1441:10 ½ way
7	1448:12	3 small rec boats
6	1449:24	1.5nm off foot of cliffs
		1456:20 ½ way
5	1503:09	No sightings to this time. Conds B2
4	1504:07	1510 ½ way, back on track
3	1517:40	Crossing coast at transect end
2	1518:45	Abeam Wpt 2 300m off.
		1521:45 On track
		1525:00 Flying parallel to coast
1	1525:50	Survey finished. No sightings of any marine mammals
	1545:00	Landed Wanganui

Flight Summary

Personnel:	Pilot Wm.Hayman, Luke Gowing, Martin Cawthorn		
Conditions:	B4 at northern end easing to B2 at latter part of survey		
Total flight time:	5h 22min	Total Survey Time:	4h 34min
Total Flight miles	604± nm	Total Survey Miles:	544 nautical miles
Altitude:	500'	Speed:	100kts

Sightings Summary

Marine mammals:	
Fish:	Numerous schools of jack mackerel and kahawai at the surface
Birds:	Flocks of prions, petrels, blackback gulls
Fauna:	
Vessels:	4 small recreational fishing boats
Other:	

3 Sept 2013

12th Aerial Survey ex Wanganui

WPT #	Time	Comments
	0714	Take off delayed by coastal fog
32	0732:00	Because of time constraints survey speed incr. from 100- 120 knots Conds B1, visibility and sea conditions optimum. Sea birds abundant 0739:40 ½ way. Bright sun, 3/8 cloud around horizon.
31	0746:30	
30	0748:16	Glare tolerable. 0751:57 Gas platform abeam 4nm 0755:46 ½ way. No sightings perfect conditions
29	0802:25	
28	0804:17	1 large schoolfish boiler 3 large flocks mixed spp seabirds.
27	0818:02	Turning, conditions superb, seabirds only, no other sightings.
26	0819:43	0823:32 oil/gas platform abeam port side 2nm 0827:35 ½ way . Sea/wind B0, birds sitting on water.
25	0833:21	Turning N
24	0835:00	0836:02 Large boiler with 1 large flock birds 0843:30 ½ way No sightings 0845:00 Circling over possible whale sighting (LG) (Unid U/water Object) 0851:12 resumed track
23	0853:40	
22	0855:30	0903:41 ½ way, 0908:00 1 recreational fishing boat
21	0908:25	Turning
20	0910:10	Wind zero, Sea glass calm, sky clear, bright sun. 0917:58 ½ way
19	0922:53	Turning No observations
18	0924:32	0930:47 1 small recreational fishing boat 0931:32 ½ way
17	0936:57	No observations
16	0938:36	4 boilers port side, 6 starboard, innumerable breezers. 0943:25 1 small rec boat 0945:18 ½ way, 0947:12 4 small rec boats.
15	0950:50	Turning
14	0958:25	0957:00 1 small rec boat 0958:30 ½ way, 2 rec boats. 1002:18 1 rec boat, 1004:19 1 rec boat.
13	1004:29	1 large schoolfish boiler, 3 rec boats
12	1005:30	1011:30 ½ way. 1015:35 1 boiler.
11	1017:25	2 small rec boats.
10	1018:13	1021:29 1 schoolfish boiler, 1024:03 ½ way

9	1029:54	Flying to Wanganui to refuel etc. No marine mammal sightings 1044:02 Landed 1106:33 Take off for wpt 08
8	1118:40	Water very turbid – sand in suspension. Conds B0, bright sun. 1124:50 ½ way.
7	1130:12	Turning
6	1131:23	Travelling south, 1137:08 ½ way altitude 500ft, speed 120kts. 1140:34 1 rec boat heading for Patea River mouth
5	1142:52	Flying parallel to coast till Wpt 4 abeam 1148:40 back on track, ½ way. Birds sitting on glassy water, no wind.
4	1154:53	Wpt 4 ashore
3	1154:53	As we crossed the coast 1156:15 back on track paralleling coast 300m ± offshore
2	1201:49	
1	1202:00	Survey finished Flying en route to Wellington

Flight Summary

Personnel:	Pilot Wm.Hayman, Luke Gowing, Martin Cawthorn		
Conditions:	Optimum		
Total flight time:	4h 20m	Total Survey Time:	3h 42m
Total Flight miles	604nm	Total Survey Miles:	544nm
Altitude:	500ft	Speed:	120kts

Sightings Summary

Marine mammals:	Nil
Fish:	Boilers 15 + innumerable breezers – all jack mackerel (jma)
Birds:	Bl.bkd gulls, r-b gulls, petrels, mollymawks
Fauna:	
Vessels:	14 small rec. fishing boats
Other:	
