Monitoring of Chinese White Dolphins in Southwest Lantau Waters

8th Monthly Progress Report (October 2015)
submitted to Environmental Project Office for the HZMB HKLR, HZMB HKBCF and TM-CLKL – Investigation

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1. Introduction

1.1. In March 2015, Hong Kong Cetacean Research Project (HKCRP) was appointed by the Environmental Project Office for the HZMB Hong Kong Projects to undertake a monitoring study of Chinese White Dolphins in Southwest Lantau (SWL) waters.

1.2. The objectives of the monitoring study are to quantify the abundance and density of Chinese White Dolphins in SWL waters, to identify individuals during the monitoring surveys, and to analyze their range use and movement patterns in Hong Kong and the wider Pearl River Estuary waters.

1.3. The monitoring study will supplement the on-going EM&A monitoring results of the HZMB Hong Kong Projects in North and West Lantau waters, and provide a more complete picture of dolphin usage and movements between different survey areas in western Hong Kong waters.

1.4. The present report is the eighth monthly progress report under this dolphin monitoring study submitted to the Environmental Project Office, summarizing the results of the surveys findings during the month of October 2015.

2. Monitoring Methodology

2.1. Vessel-based Line-transect Survey

2.1.1. According to the requirement of the technical proposal submitted to the Environmental

Project Office, dolphin monitoring programme should cover all transect lines in SWL survey area (see Figure 1) once per month upon instruction. The co-ordinates of all transect lines conducted during the dolphin monitoring survey are shown in Table 1.

Table 1. Co-ordinates of transect lines in SWL survey area (corresponding to transect line layout as shown in Figure 1)

Line #		Northing	Easting		Line #		Northing	Easting
SWL001	1	806180	802510		SWL007	13	807380	808520
	2	804250	802510			14	805600	808520
SWL002	3	806710	803480			15	804400	808520
	4	803450	803480			16	803000	808520
SWL003	5	807270	804500			17	802100	808520
	6	802690	804500			18	800470	808520
SWL004	7	807590	805450		SWL008	19	807380	809550
	8	802295	805450			20	805050	809550
SWL005	9	808490	806500			21	804400	809550
	10	801410	806500			22	800470	809550
SWL006	11	808500	807430		SWL009	23	807380	810550
	12	801250	807430			24	800470	810550
					SWL010	25	809410	811510
						26	801470	811510

2.1.2. The HKCRP survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the last 17 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2014). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

2.1.3. Two experienced observers from HKCRP (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a

constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins and porpoises continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). One to two additional experienced observer was available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and identifying local cetacean species.

2.1.4. During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (*Garmin eTrex Legend*).

2.1.5. Data including time, position and vessel speed were also automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.

2.1.6. When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line was later calculated from the initial sighting distance and angle.

2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as “primary” survey effort, while the survey effort conducted along the connecting lines between parallel lines as well as the section around the Soko Islands was labeled as “secondary” survey effort. Both primary and secondary survey effort were presented as on-effort survey effort in this report.

2.1.8. Encounter rates of Chinese White Dolphins (number of on-effort sightings per 100 km of survey effort and number of dolphins from all on-effort sightings per 100 km of survey effort) were calculated in SWL survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. Dolphin encounter rates were calculated using the combined survey effort from both primary and secondary lines for comparison to the historical data collected by HKCRP in this survey area. For the historical data, the encounter rates were calculated by pooling all relevant survey effort

and dolphin sightings to calculate a single index.

2.2. Photo-identification Work

2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.

2.2.2. A professional digital camera (*Canon* EOS 7D model), equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

2.2.3. All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995. For individual dolphins that are not readily identifiable from the catalogue but have distinct features on their bodies, they will be placed in a pool of "potential new individuals", with decision being made at the end of each year on whether any of them should be incorporated into the photo-ID catalogue.

2.2.4. Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).

2.2.5. All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

3. Monitoring Results

3.1. Vessel-based Line-transect Survey

3.1.1. One set of systematic line-transect vessel survey was conducted under the present

monitoring study on October 16th, 2015, to cover all transect lines in SWL survey area once (the survey route and track log are presented in Figure 2 and Appendix I respectively).

3.1.2. In addition, two line-transect surveys were also conducted under the AFCD long-term marine mammal monitoring programme in SWL survey area on October 20th (with lines no. SWL003, SWL005, SWL007, and SWL009 covered) and October 23rd (with lines no. SWL002, SWL004, SWL006, SWL008 and SWL010 covered). Such monitoring data were also incorporated into the present study for various analyses.

3.1.3. For the present study alone, a total of 70.02 km of survey effort was collected from 10:56 to 16:18 (i.e. 5 hours and 22 minutes of survey time) on October 16th, with 100% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) (Appendix II). The total survey effort conducted on primary and secondary lines were 53.37 km and 16.65 km respectively.

3.1.4. For the combined monitoring dataset from both the present study and AFCD monitoring study, a total of 139.12 km of survey effort was collected SWL waters in October 2015.

3.1.5. During this month, four groups of 10 Chinese White Dolphins were sighted from the present study's survey and AFCD monitoring surveys conducted in SWL survey area (Appendix III). Three of the four dolphin sightings were made during on-effort search, and all three on-effort sightings were made on primary lines. None of these dolphin groups was associated with an operating fishing vessel.

3.1.6. Distribution of dolphin sightings made in October 2015 is shown in Figure 3. The four dolphin groups were mainly distributed in the nearshore waters near the SWL coastline with no particular concentration (Figure 3).

3.1.7. Encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) in October 2015 are shown in Table 2. Comparison of encounter rates was also made to the one deduced in autumn months (September-November) in the past decade (2005-14) (Table 2).

3.1.8. From the combined data of HYD-HZMB and AFCD monitoring surveys, the overall dolphin encounter rates deduced in October 2015 in SWL waters were much lower than the ones deduced from the historical data during the autumn months of 2004-15 (Table 2).

Table 2. Overall dolphin encounter rates (sightings per 100 km of survey effort) from the present monitoring survey and combined database with AFCD monitoring survey conducted in October 2015 (primary lines only, as well as both primary lines and secondary lines were used) in Southwest Lantau survey area in comparison to the ones deduced during autumn months (September-November 2005-14) in the past decade

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		**Encounter rate (ANI)** (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
HYD-HZMB data (October 2015)	5.62	4.28	9.37	7.14
Combined data (October 2015)	2.98	2.16	4.96	3.59
Historical Data (Autumn 2005-14)		4.29		17.05

3.1.9. The average group size of Chinese White Dolphins in October 2015 was 2.5 individuals per group, which was much lower than the average group size in autumn months of 2005-14 (4.0). Three of the four dolphin groups were very small (with only 1-2 animals), while the other dolphin group was medium in size with five animals.

3.2. Photo-identification Work

3.2.1. Attempts were made to photograph the dolphins sighted during all surveys conducted in October 2015.

3.2.2. Among the ten dolphins sighted during this month's surveys, six individual dolphins were identified and re-sighted six times in total (Appendices IV and V). One of these individuals (WL250) was accompanied by her young calf.

3.2.3. The locations where four individuals (SL53, WL123, WL180 and WL250) were re-sighted were well within their past home ranges in Southwest and West Lantau waters. However, two individuals (NL120 and NL226) were primarily sighted in North Lantau waters in the past, but have shown up in SWL survey area during this month's surveys. Notably, both individuals were also sighted in previous month's surveys in SWL waters, and NL226 has even shown up consistently in SWL waters but not elsewhere in the past consecutive months since June 2015.

4. References

Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.

Hung, S. K. 2014. Monitoring of Marine Mammals in Hong Kong waters: final report (2013-14). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department, 231 pp.

Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. Wildlife Monographs 144:1-65.

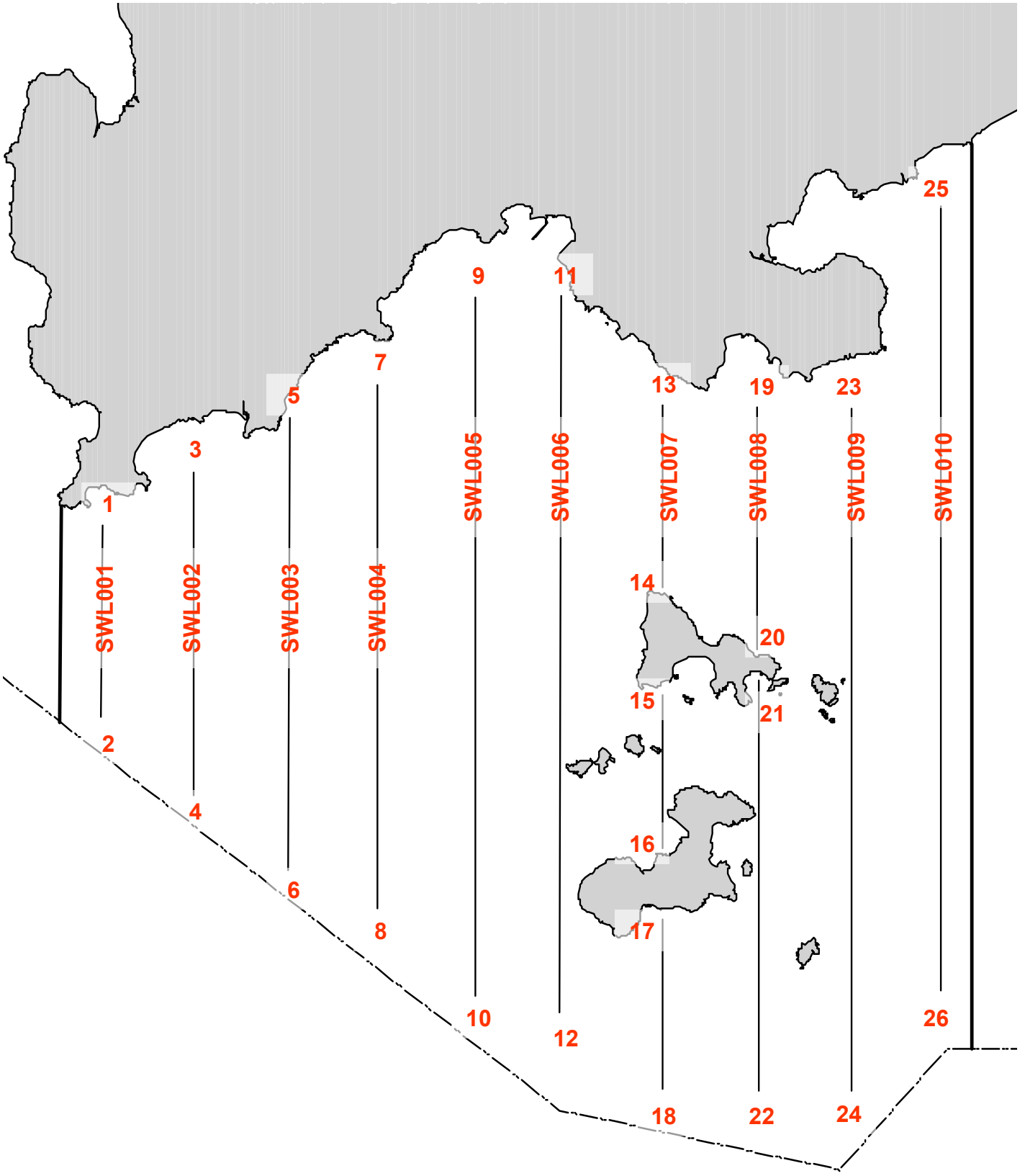

Figure 1. Survey Lines and associated coordinates in Southwest Lantau survey area

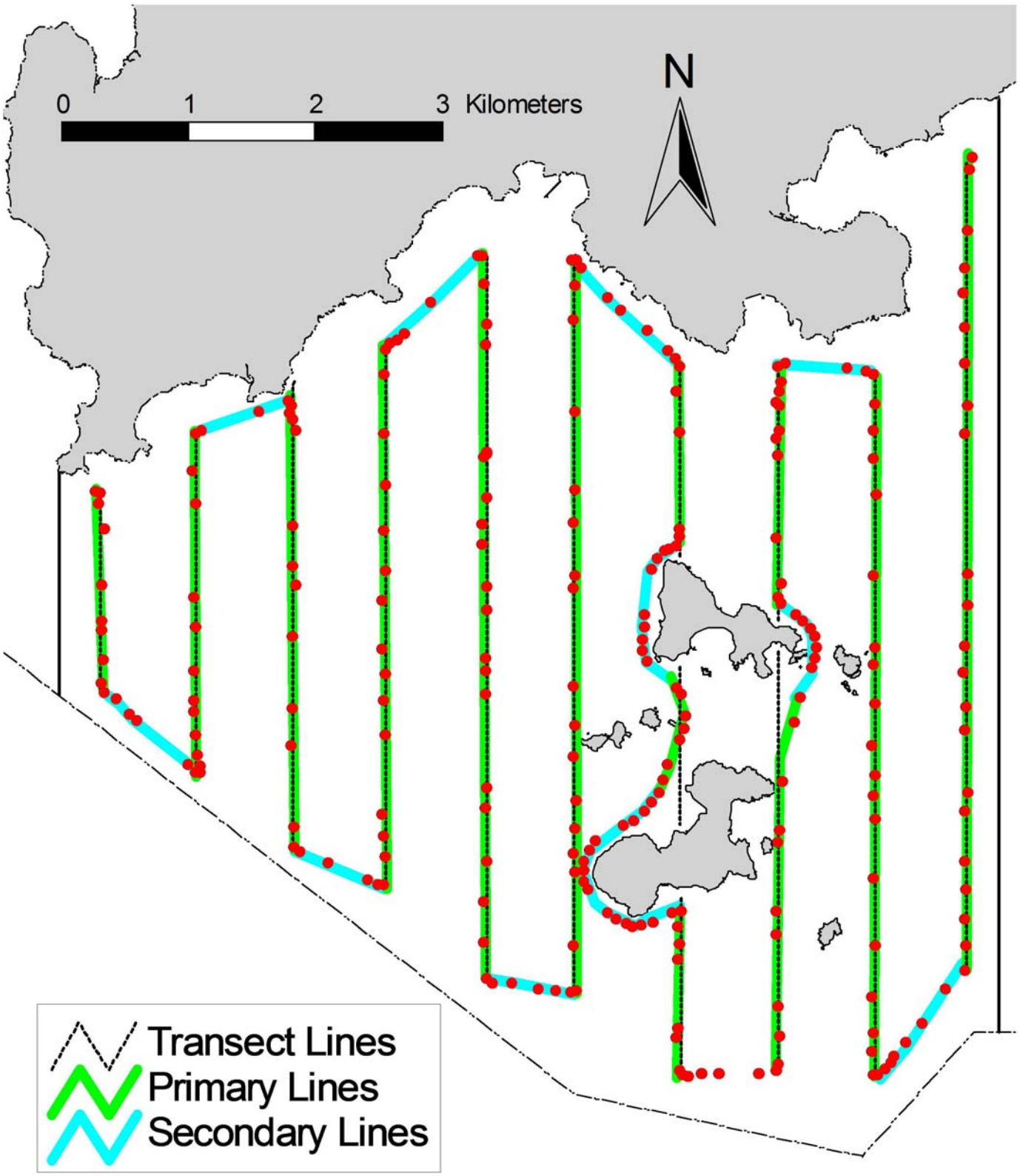

Figure 2. Survey Route on October 16th, 2015 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

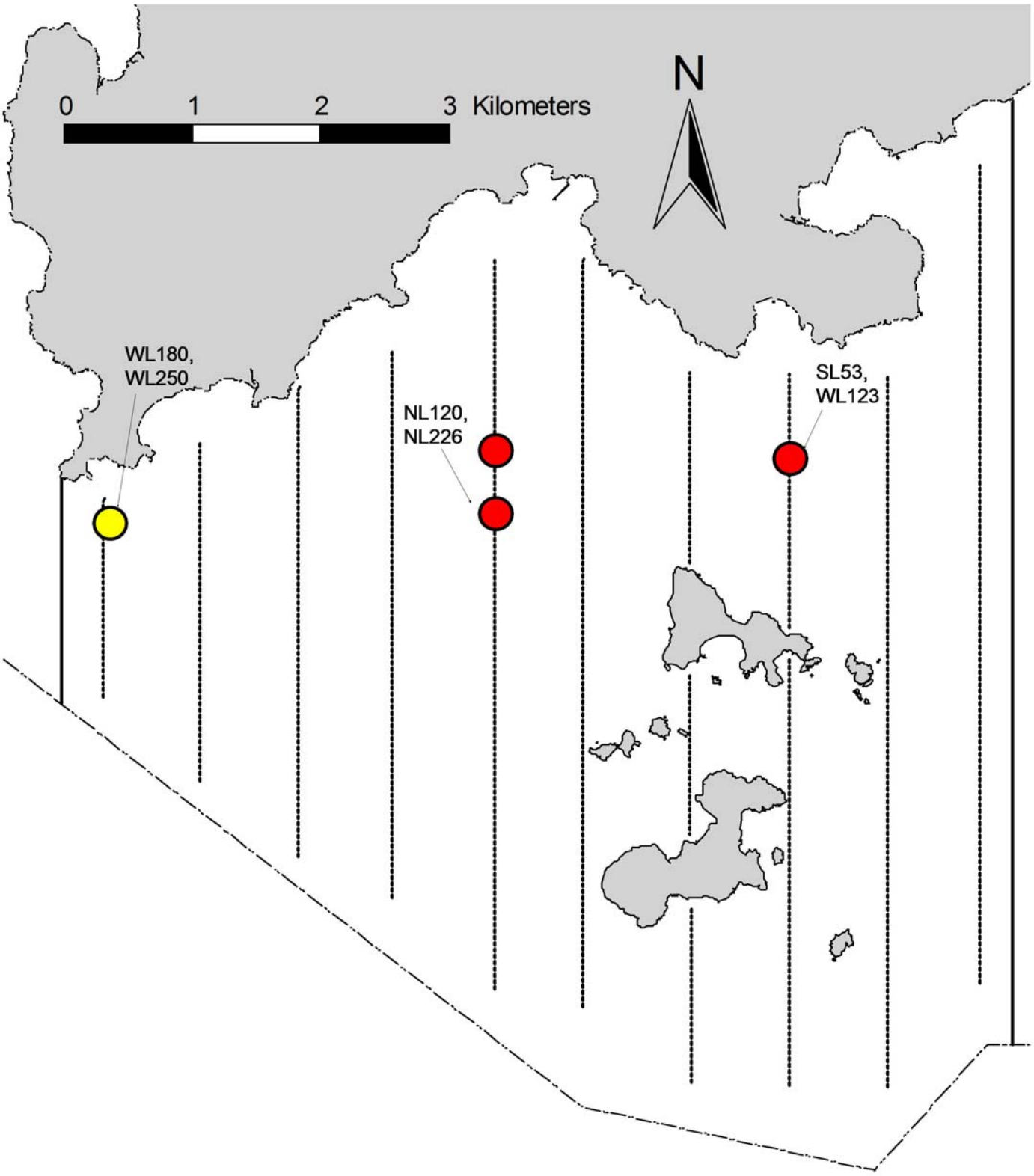

Figure 3. Distribution of Chinese White Dolphin sightings during October 2015 monitoring surveys in Southwest Lantau survey area, with identified individuals indicated for their corresponding sightings (red dot: HYD-HZMB sighting; yellow dot: AFCD sighting)

Appendix I. Track Log of Southwest Lantau Survey on Oct. 16th, 2015

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 10:56	ON	N22.19389 E113.84885			
16/10/2015 10:56	ON	N22.19365 E113.84931	55 m	0:00:20	10 kph
16/10/2015 10:56	ON	N22.19281 E113.84922	94 m	0:00:24	14 kph
16/10/2015 10:57	ON	N22.19205 E113.84942	87 m	0:00:23	14 kph
16/10/2015 10:57	ON	N22.19138 E113.84966	78 m	0:00:21	13 kph
16/10/2015 10:57	ON	N22.19053 E113.84980	96 m	0:00:26	13 kph
16/10/2015 10:58	ON	N22.18964 E113.84975	100 m	0:00:27	13 kph
16/10/2015 10:58	ON	N22.18872 E113.84974	102 m	0:00:27	14 kph
16/10/2015 10:59	ON	N22.18783 E113.84965	100 m	0:00:26	14 kph
16/10/2015 10:59	ON	N22.18719 E113.84959	72 m	0:00:19	14 kph
16/10/2015 11:00	ON	N22.18636 E113.84950	93 m	0:00:24	14 kph
16/10/2015 11:00	ON	N22.18560 E113.84941	85 m	0:00:22	14 kph
16/10/2015 11:00	ON	N22.18474 E113.84945	96 m	0:00:25	14 kph
16/10/2015 11:01	ON	N22.18387 E113.84950	97 m	0:00:25	14 kph
16/10/2015 11:01	ON	N22.18311 E113.84948	85 m	0:00:22	14 kph
16/10/2015 11:01	ON	N22.18236 E113.84941	85 m	0:00:22	14 kph
16/10/2015 11:02	ON	N22.18161 E113.84943	83 m	0:00:22	14 kph
16/10/2015 11:02	ON	N22.18099 E113.84945	69 m	0:00:18	14 kph
16/10/2015 11:02	ON	N22.18042 E113.84947	64 m	0:00:17	14 kph
16/10/2015 11:03	ON	N22.17956 E113.84956	95 m	0:00:25	14 kph
16/10/2015 11:03	ON	N22.17891 E113.84959	72 m	0:00:19	14 kph
16/10/2015 11:04	ON	N22.17812 E113.84957	88 m	0:00:23	14 kph
16/10/2015 11:04	ON	N22.17746 E113.84952	73 m	0:00:19	14 kph
16/10/2015 11:04	ON	N22.17678 E113.84953	76 m	0:00:20	14 kph
16/10/2015 11:05	ON	N22.17597 E113.84967	91 m	0:00:24	14 kph
16/10/2015 11:05	ON	N22.17570 E113.85025	67 m	0:00:19	13 kph
16/10/2015 11:05	ON	N22.17545 E113.85096	78 m	0:00:20	14 kph
16/10/2015 11:06	ON	N22.17480 E113.85159	97 m	0:00:25	14 kph
16/10/2015 11:06	ON	N22.17406 E113.85231	111 m	0:00:28	14 kph
16/10/2015 11:07	ON	N22.17345 E113.85309	105 m	0:00:26	15 kph
16/10/2015 11:07	ON	N22.17288 E113.85390	105 m	0:00:26	15 kph
16/10/2015 11:07	ON	N22.17227 E113.85472	108 m	0:00:27	14 kph
16/10/2015 11:08	ON	N22.17169 E113.85541	96 m	0:00:24	14 kph
16/10/2015 11:08	ON	N22.17095 E113.85640	131 m	0:00:32	15 kph
16/10/2015 11:09	ON	N22.17029 E113.85733	121 m	0:00:30	14 kph
16/10/2015 11:09	ON	N22.16970 E113.85816	107 m	0:00:27	14 kph
16/10/2015 11:10	ON	N22.16903 E113.85901	116 m	0:00:29	14 kph
16/10/2015 11:10	ON	N22.16902 E113.85947	47 m	0:00:17	10 kph
16/10/2015 11:10	ON	N22.16963 E113.85943	69 m	0:00:21	12 kph
16/10/2015 11:11	ON	N22.17054 E113.85905	108 m	0:00:28	14 kph
16/10/2015 11:11	ON	N22.17146 E113.85910	104 m	0:00:26	14 kph
16/10/2015 11:12	ON	N22.17228 E113.85899	92 m	0:00:23	14 kph
16/10/2015 11:12	ON	N22.17340 E113.85884	125 m	0:00:31	15 kph
16/10/2015 11:13	ON	N22.17443 E113.85881	115 m	0:00:28	15 kph
16/10/2015 11:13	ON	N22.17531 E113.85890	98 m	0:00:24	15 kph
16/10/2015 11:13	ON	N22.17607 E113.85891	85 m	0:00:21	15 kph
16/10/2015 11:14	ON	N22.17701 E113.85888	105 m	0:00:26	15 kph
16/10/2015 11:14	ON	N22.17796 E113.85882	106 m	0:00:26	15 kph
16/10/2015 11:15	ON	N22.17891 E113.85883	106 m	0:00:26	15 kph
16/10/2015 11:15	ON	N22.17990 E113.85897	111 m	0:00:27	15 kph
16/10/2015 11:16	ON	N22.18095 E113.85896	117 m	0:00:29	15 kph
16/10/2015 11:16	ON	N22.18190 E113.85896	105 m	0:00:26	15 kph
16/10/2015 11:16	ON	N22.18273 E113.85891	93 m	0:00:23	15 kph
16/10/2015 11:17	ON	N22.18356 E113.85886	93 m	0:00:23	15 kph
16/10/2015 11:17	ON	N22.18453 E113.85880	107 m	0:00:27	14 kph
16/10/2015 11:18	ON	N22.18561 E113.85881	121 m	0:00:30	15 kph
16/10/2015 11:18	ON	N22.18664 E113.85881	114 m	0:00:28	15 kph
16/10/2015 11:19	ON	N22.18761 E113.85882	109 m	0:00:28	14 kph
16/10/2015 11:19	ON	N22.18852 E113.85882	101 m	0:00:26	14 kph
16/10/2015 11:20	ON	N22.18969 E113.85886	130 m	0:00:34	14 kph
16/10/2015 11:20	ON	N22.19077 E113.85884	120 m	0:00:31	14 kph
16/10/2015 11:21	ON	N22.19178 E113.85890	112 m	0:00:29	14 kph
16/10/2015 11:21	ON	N22.19282 E113.85888	116 m	0:00:30	14 kph
16/10/2015 11:22	ON	N22.19388 E113.85879	118 m	0:00:30	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 11:22	ON	N22.19471 E113.85875	93 m	0:00:24	14 kph
16/10/2015 11:23	ON	N22.19568 E113.85874	107 m	0:00:28	14 kph
16/10/2015 11:23	ON	N22.19688 E113.85883	135 m	0:00:35	14 kph
16/10/2015 11:24	ON	N22.19789 E113.85893	112 m	0:00:30	13 kph
16/10/2015 11:24	ON	N22.19896 E113.85897	119 m	0:00:31	14 kph
16/10/2015 11:25	ON	N22.19932 E113.85948	66 m	0:00:19	13 kph
16/10/2015 11:25	ON	N22.19958 E113.86061	120 m	0:00:31	14 kph
16/10/2015 11:25	ON	N22.19984 E113.86148	95 m	0:00:24	14 kph
16/10/2015 11:26	ON	N22.20015 E113.86239	100 m	0:00:26	14 kph
16/10/2015 11:26	ON	N22.20041 E113.86346	114 m	0:00:30	14 kph
16/10/2015 11:27	ON	N22.20064 E113.86443	103 m	0:00:28	13 kph
16/10/2015 11:27	ON	N22.20087 E113.86534	98 m	0:00:27	13 kph
16/10/2015 11:28	ON	N22.20121 E113.86649	124 m	0:00:35	13 kph
16/10/2015 11:28	ON	N22.20158 E113.86748	110 m	0:00:31	13 kph
16/10/2015 11:29	ON	N22.20186 E113.86831	91 m	0:00:26	13 kph
16/10/2015 11:29	ON	N22.20154 E113.86857	45 m	0:00:16	10 kph
16/10/2015 11:29	ON	N22.20094 E113.86850	67 m	0:00:18	13 kph
16/10/2015 11:30	ON	N22.20028 E113.86869	76 m	0:00:20	14 kph
16/10/2015 11:30	ON	N22.19934 E113.86895	107 m	0:00:28	14 kph
16/10/2015 11:31	ON	N22.19861 E113.86893	82 m	0:00:21	14 kph
16/10/2015 11:31	ON	N22.19770 E113.86886	102 m	0:00:26	14 kph
16/10/2015 11:31	ON	N22.19670 E113.86890	111 m	0:00:28	14 kph
16/10/2015 11:32	ON	N22.19574 E113.86896	107 m	0:00:27	14 kph
16/10/2015 11:32	ON	N22.19482 E113.86890	103 m	0:00:26	14 kph
16/10/2015 11:33	ON	N22.19414 E113.86888	76 m	0:00:19	14 kph
16/10/2015 11:33	ON	N22.19324 E113.86890	100 m	0:00:25	14 kph
16/10/2015 11:33	ON	N22.19237 E113.86888	97 m	0:00:24	15 kph
16/10/2015 11:34	ON	N22.19157 E113.86884	89 m	0:00:22	15 kph
16/10/2015 11:34	ON	N22.19094 E113.86883	71 m	0:00:18	14 kph
16/10/2015 11:35	ON	N22.19006 E113.86888	98 m	0:00:25	14 kph
16/10/2015 11:35	ON	N22.18913 E113.86887	104 m	0:00:26	14 kph
16/10/2015 11:35	ON	N22.18819 E113.86881	104 m	0:00:26	14 kph
16/10/2015 11:36	ON	N22.18729 E113.86879	100 m	0:00:25	14 kph
16/10/2015 11:36	ON	N22.18640 E113.86886	99 m	0:00:25	14 kph
16/10/2015 11:37	ON	N22.18556 E113.86895	95 m	0:00:24	14 kph
16/10/2015 11:37	ON	N22.18467 E113.86890	99 m	0:00:25	14 kph
16/10/2015 11:37	ON	N22.18377 E113.86883	100 m	0:00:25	14 kph
16/10/2015 11:38	ON	N22.18297 E113.86883	90 m	0:00:23	14 kph
16/10/2015 11:38	ON	N22.18201 E113.86881	106 m	0:00:28	14 kph
16/10/2015 11:39	ON	N22.18113 E113.86875	99 m	0:00:26	14 kph
16/10/2015 11:39	ON	N22.18015 E113.86874	109 m	0:00:28	14 kph
16/10/2015 11:40	ON	N22.17922 E113.86874	104 m	0:00:27	14 kph
16/10/2015 11:40	ON	N22.17828 E113.86872	105 m	0:00:27	14 kph
16/10/2015 11:41	ON	N22.17733 E113.86878	105 m	0:00:27	14 kph
16/10/2015 11:41	ON	N22.17649 E113.86883	94 m	0:00:24	14 kph
16/10/2015 11:41	ON	N22.17553 E113.86876	107 m	0:00:28	14 kph
16/10/2015 11:42	ON	N22.17462 E113.86884	102 m	0:00:26	14 kph
16/10/2015 11:42	ON	N22.17372 E113.86881	100 m	0:00:26	14 kph
16/10/2015 11:43	ON	N22.17297 E113.86870	85 m	0:00:22	14 kph
16/10/2015 11:43	ON	N22.17211 E113.86869	95 m	0:00:24	14 kph
16/10/2015 11:43	ON	N22.17126 E113.86868	95 m	0:00:24	14 kph
16/10/2015 11:44	ON	N22.17038 E113.86871	98 m	0:00:25	14 kph
16/10/2015 11:44	ON	N22.16951 E113.86875	98 m	0:00:25	14 kph
16/10/2015 11:45	ON	N22.16855 E113.86879	106 m	0:00:27	14 kph
16/10/2015 11:45	ON	N22.16765 E113.86885	101 m	0:00:26	14 kph
16/10/2015 11:46	ON	N22.16679 E113.86886	95 m	0:00:24	14 kph
16/10/2015 11:46	ON	N22.16587 E113.86889	102 m	0:00:26	14 kph
16/10/2015 11:46	ON	N22.16494 E113.86892	103 m	0:00:26	14 kph
16/10/2015 11:47	ON	N22.16408 E113.86895	96 m	0:00:24	14 kph
16/10/2015 11:47	ON	N22.16315 E113.86894	104 m	0:00:26	14 kph
16/10/2015 11:48	ON	N22.16228 E113.86897	97 m	0:00:25	14 kph
16/10/2015 11:48	ON	N22.16195 E113.86963	77 m	0:00:21	13 kph
16/10/2015 11:48	ON	N22.16166 E113.87057	103 m	0:00:25	15 kph
16/10/2015 11:49	ON	N22.16137 E113.87146	97 m	0:00:24	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 11:49	ON	N22.16104 E113.87239	103 m	0:00:25	15 kph
16/10/2015 11:50	ON	N22.16065 E113.87335	107 m	0:00:26	15 kph
16/10/2015 11:50	ON	N22.16024 E113.87437	115 m	0:00:28	15 kph
16/10/2015 11:51	ON	N22.15979 E113.87542	120 m	0:00:29	15 kph
16/10/2015 11:51	ON	N22.15938 E113.87640	111 m	0:00:27	15 kph
16/10/2015 11:52	ON	N22.15895 E113.87750	123 m	0:00:30	15 kph
16/10/2015 11:52	ON	N22.15899 E113.87814	66 m	0:00:20	12 kph
16/10/2015 11:52	ON	N22.15972 E113.87821	81 m	0:00:23	13 kph
16/10/2015 11:53	ON	N22.16064 E113.87812	103 m	0:00:26	14 kph
16/10/2015 11:53	ON	N22.16149 E113.87820	95 m	0:00:24	14 kph
16/10/2015 11:54	ON	N22.16244 E113.87812	105 m	0:00:27	14 kph
16/10/2015 11:54	ON	N22.16339 E113.87801	106 m	0:00:27	14 kph
16/10/2015 11:55	ON	N22.16436 E113.87794	109 m	0:00:27	15 kph
16/10/2015 11:55	ON	N22.16533 E113.87791	108 m	0:00:27	14 kph
16/10/2015 11:55	ON	N22.16628 E113.87798	105 m	0:00:27	14 kph
16/10/2015 11:56	ON	N22.16731 E113.87796	115 m	0:00:30	14 kph
16/10/2015 11:56	ON	N22.16833 E113.87793	113 m	0:00:29	14 kph
16/10/2015 11:57	ON	N22.16938 E113.87792	117 m	0:00:30	14 kph
16/10/2015 11:57	ON	N22.17038 E113.87801	111 m	0:00:28	14 kph
16/10/2015 11:58	ON	N22.17121 E113.87803	93 m	0:00:24	14 kph
16/10/2015 11:58	ON	N22.17227 E113.87807	118 m	0:00:30	14 kph
16/10/2015 11:59	ON	N22.17329 E113.87806	113 m	0:00:29	14 kph
16/10/2015 11:59	ON	N22.17436 E113.87799	120 m	0:00:30	14 kph
16/10/2015 12:00	ON	N22.17544 E113.87799	119 m	0:00:30	14 kph
16/10/2015 12:00	ON	N22.17667 E113.87808	138 m	0:00:34	15 kph
16/10/2015 12:01	ON	N22.17782 E113.87816	128 m	0:00:32	14 kph
16/10/2015 12:01	ON	N22.17899 E113.87804	130 m	0:00:32	15 kph
16/10/2015 12:02	ON	N22.18004 E113.87792	118 m	0:00:29	15 kph
16/10/2015 12:02	ON	N22.18114 E113.87790	122 m	0:00:30	15 kph
16/10/2015 12:03	ON	N22.18236 E113.87788	135 m	0:00:33	15 kph
16/10/2015 12:03	ON	N22.18334 E113.87787	110 m	0:00:27	15 kph
16/10/2015 12:04	ON	N22.18432 E113.87793	109 m	0:00:27	15 kph
16/10/2015 12:04	ON	N22.18550 E113.87797	131 m	0:00:32	15 kph
16/10/2015 12:05	ON	N22.18675 E113.87808	141 m	0:00:35	14 kph
16/10/2015 12:05	ON	N22.18765 E113.87809	100 m	0:00:25	14 kph
16/10/2015 12:06	ON	N22.18877 E113.87807	124 m	0:00:31	14 kph
16/10/2015 12:06	ON	N22.18983 E113.87804	118 m	0:00:29	15 kph
16/10/2015 12:07	ON	N22.19052 E113.87802	76 m	0:00:19	14 kph
16/10/2015 12:07	ON	N22.19156 E113.87802	116 m	0:00:29	14 kph
16/10/2015 12:08	ON	N22.19250 E113.87804	104 m	0:00:26	14 kph
16/10/2015 12:08	ON	N22.19337 E113.87811	97 m	0:00:24	15 kph
16/10/2015 12:09	ON	N22.19448 E113.87813	124 m	0:00:31	14 kph
16/10/2015 12:09	ON	N22.19562 E113.87807	127 m	0:00:31	15 kph
16/10/2015 12:10	ON	N22.19683 E113.87800	135 m	0:00:34	14 kph
16/10/2015 12:10	ON	N22.19789 E113.87797	117 m	0:00:29	15 kph
16/10/2015 12:11	ON	N22.19897 E113.87794	120 m	0:00:30	14 kph
16/10/2015 12:11	ON	N22.20015 E113.87798	132 m	0:00:33	14 kph
16/10/2015 12:12	ON	N22.20110 E113.87802	105 m	0:00:26	15 kph
16/10/2015 12:12	ON	N22.20229 E113.87804	132 m	0:00:33	14 kph
16/10/2015 12:13	ON	N22.20329 E113.87803	112 m	0:00:28	14 kph
16/10/2015 12:13	ON	N22.20425 E113.87801	106 m	0:00:26	15 kph
16/10/2015 12:14	ON	N22.20535 E113.87802	122 m	0:00:30	15 kph
16/10/2015 12:14	ON	N22.20645 E113.87809	124 m	0:00:30	15 kph
16/10/2015 12:14	ON	N22.20712 E113.87856	89 m	0:00:23	14 kph
16/10/2015 12:15	ON	N22.20744 E113.87931	85 m	0:00:22	14 kph
16/10/2015 12:15	ON	N22.20792 E113.87997	86 m	0:00:22	14 kph
16/10/2015 12:16	ON	N22.20865 E113.88069	111 m	0:00:28	14 kph
16/10/2015 12:16	ON	N22.20933 E113.88133	100 m	0:00:25	14 kph
16/10/2015 12:16	ON	N22.21003 E113.88203	107 m	0:00:27	14 kph
16/10/2015 12:17	ON	N22.21072 E113.88271	104 m	0:00:26	14 kph
16/10/2015 12:17	ON	N22.21132 E113.88337	95 m	0:00:24	14 kph
16/10/2015 12:18	ON	N22.21184 E113.88400	87 m	0:00:22	14 kph
16/10/2015 12:18	ON	N22.21224 E113.88447	66 m	0:00:17	14 kph
16/10/2015 12:18	ON	N22.21293 E113.88525	111 m	0:00:28	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 12:19	ON	N22.21357 E113.88597	103 m	0:00:26	14 kph
16/10/2015 12:19	ON	N22.21424 E113.88672	107 m	0:00:27	14 kph
16/10/2015 12:20	ON	N22.21487 E113.88744	103 m	0:00:26	14 kph
16/10/2015 12:20	ON	N22.21475 E113.88785	45 m	0:00:17	10 kph
16/10/2015 12:20	ON	N22.21412 E113.88780	70 m	0:00:20	13 kph
16/10/2015 12:21	ON	N22.21333 E113.88784	88 m	0:00:23	14 kph
16/10/2015 12:21	ON	N22.21241 E113.88795	103 m	0:00:27	14 kph
16/10/2015 12:22	ON	N22.21150 E113.88814	103 m	0:00:27	14 kph
16/10/2015 12:22	ON	N22.21061 E113.88815	99 m	0:00:26	14 kph
16/10/2015 12:23	ON	N22.20960 E113.88830	113 m	0:00:30	14 kph
16/10/2015 12:23	ON	N22.20881 E113.88836	88 m	0:00:23	14 kph
16/10/2015 12:23	ON	N22.20784 E113.88827	109 m	0:00:29	14 kph
16/10/2015 12:24	ON	N22.20698 E113.88822	96 m	0:00:25	14 kph
16/10/2015 12:24	ON	N22.20629 E113.88824	77 m	0:00:20	14 kph
16/10/2015 12:25	ON	N22.20532 E113.88829	108 m	0:00:28	14 kph
16/10/2015 12:25	ON	N22.20432 E113.88827	112 m	0:00:29	14 kph
16/10/2015 12:26	ON	N22.20334 E113.88825	110 m	0:00:28	14 kph
16/10/2015 12:26	ON	N22.20253 E113.88827	90 m	0:00:23	14 kph
16/10/2015 12:26	ON	N22.20155 E113.88833	109 m	0:00:28	14 kph
16/10/2015 12:27	ON	N22.20061 E113.88840	105 m	0:00:27	14 kph
16/10/2015 12:27	ON	N22.19981 E113.88842	89 m	0:00:23	14 kph
16/10/2015 12:28	ON	N22.19887 E113.88834	105 m	0:00:27	14 kph
16/10/2015 12:28	OFF	N22.19819 E113.88830	75 m	0:00:25	11 kph
16/10/2015 12:29	OFF	N22.19787 E113.88831	36 m	0:00:25	5 kph
16/10/2015 12:29	OFF	N22.19768 E113.88832	21 m	0:00:25	3 kph
16/10/2015 12:29	OFF	N22.19760 E113.88834	10 m	0:00:19	2 kph
16/10/2015 12:30	OFF	N22.19756 E113.88835	5 m	0:00:23	0.7 kph
16/10/2015 12:30	OFF	N22.19753 E113.88835	3 m	0:00:18	0.5 kph
16/10/2015 12:30	OFF	N22.19749 E113.88837	5 m	0:00:16	1.0 kph
16/10/2015 12:31	OFF	N22.19742 E113.88841	9 m	0:00:19	2 kph
16/10/2015 12:31	OFF	N22.19731 E113.88841	12 m	0:00:31	1.4 kph
16/10/2015 12:32	OFF	N22.19721 E113.88837	13 m	0:00:30	2 kph
16/10/2015 12:32	OFF	N22.19719 E113.88833	5 m	0:00:19	0.9 kph
16/10/2015 12:32	OFF	N22.19718 E113.88829	4 m	0:00:22	0.7 kph
16/10/2015 12:33	OFF	N22.19717 E113.88824	5 m	0:00:17	1.2 kph
16/10/2015 12:33	OFF	N22.19704 E113.88809	21 m	0:00:13	6 kph
16/10/2015 12:33	ON	N22.19632 E113.88807	80 m	0:00:24	12 kph
16/10/2015 12:34	ON	N22.19545 E113.88817	97 m	0:00:25	14 kph
16/10/2015 12:34	ON	N22.19484 E113.88817	69 m	0:00:18	14 kph
16/10/2015 12:34	ON	N22.19410 E113.88825	82 m	0:00:22	13 kph
16/10/2015 12:35	ON	N22.19341 E113.88826	77 m	0:00:20	14 kph
16/10/2015 12:35	ON	N22.19286 E113.88829	61 m	0:00:21	11 kph
16/10/2015 12:35	ON	N22.19258 E113.88829	30 m	0:00:19	6 kph
16/10/2015 12:35	OFF	N22.19245 E113.88829	15 m	0:00:14	4 kph
16/10/2015 12:36	OFF	N22.19240 E113.88830	6 m	0:00:05	4 kph
16/10/2015 12:36	OFF	N22.19221 E113.88859	36 m	0:00:24	5 kph
16/10/2015 12:36	OFF	N22.19214 E113.88901	44 m	0:00:25	6 kph
16/10/2015 12:37	OFF	N22.19214 E113.88927	27 m	0:00:24	4 kph
16/10/2015 12:37	OFF	N22.19216 E113.88942	17 m	0:00:24	2 kph
16/10/2015 12:38	OFF	N22.19218 E113.88951	9 m	0:00:21	2 kph
16/10/2015 12:38	OFF	N22.19218 E113.88954	3 m	0:00:15	0.8 kph
16/10/2015 12:38	OFF	N22.19217 E113.88954	0 m	0:00:24	0.1 kph
16/10/2015 12:39	OFF	N22.19217 E113.88954	0 m	0:00:25	0 kph
16/10/2015 12:39	OFF	N22.19217 E113.88955	1 m	0:00:25	0.1 kph
16/10/2015 12:39	OFF	N22.19223 E113.88968	16 m	0:00:16	4 kph
16/10/2015 12:40	OFF	N22.19257 E113.88966	39 m	0:00:21	7 kph
16/10/2015 12:40	OFF	N22.19283 E113.88915	59 m	0:00:21	10 kph
16/10/2015 12:40	OFF	N22.19303 E113.88868	53 m	0:00:26	7 kph
16/10/2015 12:41	OFF	N22.19308 E113.88859	11 m	0:00:08	5 kph
16/10/2015 12:41	OFF	N22.19318 E113.88839	24 m	0:00:23	4 kph
16/10/2015 12:41	OFF	N22.19323 E113.88828	12 m	0:00:17	3 kph
16/10/2015 12:42	OFF	N22.19328 E113.88819	11 m	0:00:21	2 kph
16/10/2015 12:42	OFF	N22.19332 E113.88811	9 m	0:00:18	2 kph
16/10/2015 12:42	OFF	N22.19337 E113.88790	23 m	0:00:26	3 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 12:43	OFF	N22.19308 E113.88768	39 m	0:00:28	5 kph
16/10/2015 12:43	OFF	N22.19267 E113.88741	53 m	0:00:25	8 kph
16/10/2015 12:44	OFF	N22.19231 E113.88709	53 m	0:00:26	7 kph
16/10/2015 12:44	OFF	N22.19204 E113.88679	43 m	0:00:25	6 kph
16/10/2015 12:45	OFF	N22.19186 E113.88655	31 m	0:00:31	4 kph
16/10/2015 12:45	OFF	N22.19178 E113.88640	18 m	0:00:28	2 kph
16/10/2015 12:45	OFF	N22.19174 E113.88627	14 m	0:00:27	2 kph
16/10/2015 12:46	OFF	N22.19169 E113.88614	14 m	0:00:22	2 kph
16/10/2015 12:46	OFF	N22.19142 E113.88635	36 m	0:00:22	6 kph
16/10/2015 12:47	OFF	N22.19133 E113.88735	104 m	0:00:28	13 kph
16/10/2015 12:47	OFF	N22.19102 E113.88798	74 m	0:00:23	12 kph
16/10/2015 12:47	OFF	N22.19022 E113.88800	89 m	0:00:24	13 kph
16/10/2015 12:48	ON	N22.18929 E113.88804	104 m	0:00:27	14 kph
16/10/2015 12:48	ON	N22.18841 E113.88813	98 m	0:00:25	14 kph
16/10/2015 12:49	ON	N22.18736 E113.88821	117 m	0:00:30	14 kph
16/10/2015 12:49	ON	N22.18641 E113.88823	106 m	0:00:27	14 kph
16/10/2015 12:50	ON	N22.18551 E113.88835	100 m	0:00:25	14 kph
16/10/2015 12:50	ON	N22.18448 E113.88830	115 m	0:00:29	14 kph
16/10/2015 12:51	ON	N22.18338 E113.88836	122 m	0:00:30	15 kph
16/10/2015 12:51	ON	N22.18229 E113.88833	121 m	0:00:30	15 kph
16/10/2015 12:52	ON	N22.18120 E113.88828	121 m	0:00:30	15 kph
16/10/2015 12:52	ON	N22.18017 E113.88830	115 m	0:00:28	15 kph
16/10/2015 12:53	ON	N22.17915 E113.88831	113 m	0:00:28	15 kph
16/10/2015 12:53	ON	N22.17813 E113.88817	115 m	0:00:29	14 kph
16/10/2015 12:54	ON	N22.17715 E113.88816	109 m	0:00:28	14 kph
16/10/2015 12:54	ON	N22.17601 E113.88816	127 m	0:00:32	14 kph
16/10/2015 12:55	ON	N22.17492 E113.88819	121 m	0:00:30	15 kph
16/10/2015 12:55	ON	N22.17376 E113.88823	130 m	0:00:32	15 kph
16/10/2015 12:56	ON	N22.17268 E113.88819	120 m	0:00:30	14 kph
16/10/2015 12:56	ON	N22.17160 E113.88829	120 m	0:00:29	15 kph
16/10/2015 12:57	ON	N22.17063 E113.88836	109 m	0:00:27	14 kph
16/10/2015 12:57	ON	N22.16965 E113.88834	108 m	0:00:27	14 kph
16/10/2015 12:57	ON	N22.16868 E113.88840	109 m	0:00:27	15 kph
16/10/2015 12:58	ON	N22.16761 E113.88842	118 m	0:00:29	15 kph
16/10/2015 12:58	ON	N22.16677 E113.88837	94 m	0:00:23	15 kph
16/10/2015 12:59	ON	N22.16578 E113.88829	110 m	0:00:27	15 kph
16/10/2015 12:59	ON	N22.16477 E113.88827	113 m	0:00:28	15 kph
16/10/2015 13:00	ON	N22.16380 E113.88825	108 m	0:00:27	14 kph
16/10/2015 13:00	ON	N22.16291 E113.88828	99 m	0:00:25	14 kph
16/10/2015 13:01	ON	N22.16195 E113.88830	107 m	0:00:27	14 kph
16/10/2015 13:01	ON	N22.16112 E113.88841	92 m	0:00:23	14 kph
16/10/2015 13:01	ON	N22.16015 E113.88838	109 m	0:00:27	14 kph
16/10/2015 13:02	ON	N22.15914 E113.88833	112 m	0:00:28	14 kph
16/10/2015 13:02	ON	N22.15833 E113.88826	90 m	0:00:23	14 kph
16/10/2015 13:03	ON	N22.15756 E113.88822	86 m	0:00:22	14 kph
16/10/2015 13:03	ON	N22.15693 E113.88824	71 m	0:00:18	14 kph
16/10/2015 13:03	ON	N22.15611 E113.88827	91 m	0:00:23	14 kph
16/10/2015 13:04	ON	N22.15546 E113.88833	73 m	0:00:18	15 kph
16/10/2015 13:04	ON	N22.15467 E113.88830	88 m	0:00:22	14 kph
16/10/2015 13:04	ON	N22.15393 E113.88824	83 m	0:00:21	14 kph
16/10/2015 13:05	ON	N22.15317 E113.88825	84 m	0:00:21	14 kph
16/10/2015 13:05	ON	N22.15249 E113.88828	76 m	0:00:19	14 kph
16/10/2015 13:05	ON	N22.15155 E113.88835	105 m	0:00:26	15 kph
16/10/2015 13:06	ON	N22.15083 E113.88843	80 m	0:00:20	14 kph
16/10/2015 13:06	ON	N22.15042 E113.88896	72 m	0:00:19	14 kph
16/10/2015 13:06	ON	N22.15033 E113.88989	96 m	0:00:23	15 kph
16/10/2015 13:06	ON	N22.15032 E113.89006	17 m	0:00:04	16 kph
16/10/2015 13:07	ON	N22.15026 E113.89102	99 m	0:00:23	16 kph
16/10/2015 13:07	ON	N22.15013 E113.89198	100 m	0:00:23	16 kph
16/10/2015 13:08	ON	N22.14992 E113.89291	99 m	0:00:23	15 kph
16/10/2015 13:08	ON	N22.14975 E113.89367	81 m	0:00:19	15 kph
16/10/2015 13:08	ON	N22.14967 E113.89458	94 m	0:00:22	15 kph
16/10/2015 13:09	ON	N22.14963 E113.89540	85 m	0:00:20	15 kph
16/10/2015 13:09	ON	N22.14959 E113.89623	85 m	0:00:20	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 13:09	ON	N22.14949 E113.89692	73 m	0:00:17	15 kph
16/10/2015 13:10	ON	N22.14968 E113.89750	62 m	0:00:18	12 kph
16/10/2015 13:10	ON	N22.15034 E113.89748	73 m	0:00:21	13 kph
16/10/2015 13:10	ON	N22.15116 E113.89733	93 m	0:00:24	14 kph
16/10/2015 13:11	ON	N22.15211 E113.89736	106 m	0:00:28	14 kph
16/10/2015 13:11	ON	N22.15284 E113.89730	81 m	0:00:22	13 kph
16/10/2015 13:12	ON	N22.15367 E113.89717	93 m	0:00:25	13 kph
16/10/2015 13:12	ON	N22.15450 E113.89718	93 m	0:00:25	13 kph
16/10/2015 13:12	ON	N22.15523 E113.89718	81 m	0:00:22	13 kph
16/10/2015 13:13	ON	N22.15596 E113.89719	81 m	0:00:22	13 kph
16/10/2015 13:13	ON	N22.15681 E113.89718	94 m	0:00:25	14 kph
16/10/2015 13:14	ON	N22.15757 E113.89721	85 m	0:00:23	13 kph
16/10/2015 13:14	ON	N22.15848 E113.89721	101 m	0:00:27	14 kph
16/10/2015 13:14	ON	N22.15922 E113.89726	82 m	0:00:22	13 kph
16/10/2015 13:15	ON	N22.16016 E113.89728	105 m	0:00:28	13 kph
16/10/2015 13:15	ON	N22.16098 E113.89722	91 m	0:00:24	14 kph
16/10/2015 13:16	ON	N22.16180 E113.89716	92 m	0:00:24	14 kph
16/10/2015 13:16	ON	N22.16255 E113.89720	83 m	0:00:22	14 kph
16/10/2015 13:16	ON	N22.16322 E113.89727	76 m	0:00:20	14 kph
16/10/2015 13:17	ON	N22.16396 E113.89733	82 m	0:00:22	13 kph
16/10/2015 13:17	ON	N22.16478 E113.89741	92 m	0:00:25	13 kph
16/10/2015 13:18	ON	N22.16571 E113.89747	104 m	0:00:28	13 kph
16/10/2015 13:18	ON	N22.16661 E113.89747	100 m	0:00:27	13 kph
16/10/2015 13:18	ON	N22.16756 E113.89742	105 m	0:00:28	14 kph
16/10/2015 13:19	ON	N22.16857 E113.89738	113 m	0:00:30	14 kph
16/10/2015 13:19	ON	N22.16954 E113.89731	109 m	0:00:29	13 kph
16/10/2015 13:20	ON	N22.17041 E113.89723	97 m	0:00:26	13 kph
16/10/2015 13:20	ON	N22.17130 E113.89725	99 m	0:00:26	14 kph
16/10/2015 13:21	ON	N22.17233 E113.89726	114 m	0:00:30	14 kph
16/10/2015 13:21	ON	N22.17322 E113.89733	99 m	0:00:26	14 kph
16/10/2015 13:22	ON	N22.17439 E113.89732	131 m	0:00:34	14 kph
16/10/2015 13:22	ON	N22.17554 E113.89726	128 m	0:00:33	14 kph
16/10/2015 13:23	ON	N22.17658 E113.89718	116 m	0:00:30	14 kph
16/10/2015 13:23	ON	N22.17766 E113.89721	120 m	0:00:31	14 kph
16/10/2015 13:24	ON	N22.17892 E113.89722	140 m	0:00:36	14 kph
16/10/2015 13:25	ON	N22.18006 E113.89726	127 m	0:00:33	14 kph
16/10/2015 13:25	ON	N22.18122 E113.89726	129 m	0:00:34	14 kph
16/10/2015 13:26	ON	N22.18238 E113.89724	129 m	0:00:34	14 kph
16/10/2015 13:26	ON	N22.18320 E113.89723	91 m	0:00:24	14 kph
16/10/2015 13:27	ON	N22.18427 E113.89727	120 m	0:00:31	14 kph
16/10/2015 13:27	ON	N22.18540 E113.89724	126 m	0:00:33	14 kph
16/10/2015 13:28	ON	N22.18651 E113.89732	124 m	0:00:32	14 kph
16/10/2015 13:28	ON	N22.18771 E113.89728	134 m	0:00:34	14 kph
16/10/2015 13:29	ON	N22.18873 E113.89716	114 m	0:00:29	14 kph
16/10/2015 13:29	ON	N22.18987 E113.89716	127 m	0:00:32	14 kph
16/10/2015 13:30	ON	N22.19116 E113.89712	144 m	0:00:36	14 kph
16/10/2015 13:30	ON	N22.19210 E113.89720	105 m	0:00:26	15 kph
16/10/2015 13:31	ON	N22.19318 E113.89727	120 m	0:00:30	14 kph
16/10/2015 13:31	ON	N22.19411 E113.89729	104 m	0:00:26	14 kph
16/10/2015 13:32	ON	N22.19500 E113.89725	99 m	0:00:25	14 kph
16/10/2015 13:32	ON	N22.19624 E113.89725	138 m	0:00:35	14 kph
16/10/2015 13:33	ON	N22.19727 E113.89731	116 m	0:00:29	14 kph
16/10/2015 13:33	ON	N22.19827 E113.89735	111 m	0:00:28	14 kph
16/10/2015 13:34	ON	N22.19927 E113.89736	111 m	0:00:28	14 kph
16/10/2015 13:34	ON	N22.20019 E113.89728	103 m	0:00:26	14 kph
16/10/2015 13:34	ON	N22.20096 E113.89727	85 m	0:00:22	14 kph
16/10/2015 13:35	ON	N22.20204 E113.89725	121 m	0:00:30	14 kph
16/10/2015 13:35	ON	N22.20315 E113.89714	123 m	0:00:30	15 kph
16/10/2015 13:36	ON	N22.20430 E113.89719	128 m	0:00:32	14 kph
16/10/2015 13:36	ON	N22.20535 E113.89721	117 m	0:00:29	15 kph
16/10/2015 13:37	ON	N22.20662 E113.89716	141 m	0:00:35	15 kph
16/10/2015 13:38	ON	N22.20780 E113.89713	132 m	0:00:33	14 kph
16/10/2015 13:38	ON	N22.20915 E113.89710	150 m	0:00:38	14 kph
16/10/2015 13:39	ON	N22.21018 E113.89716	114 m	0:00:29	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 13:39	ON	N22.21114 E113.89713	108 m	0:00:27	14 kph
16/10/2015 13:40	ON	N22.21230 E113.89724	130 m	0:00:33	14 kph
16/10/2015 13:40	ON	N22.21331 E113.89710	113 m	0:00:29	14 kph
16/10/2015 13:41	ON	N22.21442 E113.89704	123 m	0:00:33	13 kph
16/10/2015 13:41	ON	N22.21442 E113.89739	36 m	0:00:16	8 kph
16/10/2015 13:41	ON	N22.21369 E113.89779	91 m	0:00:24	14 kph
16/10/2015 13:42	ON	N22.21300 E113.89847	105 m	0:00:25	15 kph
16/10/2015 13:42	ON	N22.21228 E113.89922	110 m	0:00:26	15 kph
16/10/2015 13:43	ON	N22.21163 E113.89990	102 m	0:00:24	15 kph
16/10/2015 13:43	ON	N22.21108 E113.90050	87 m	0:00:21	15 kph
16/10/2015 13:43	ON	N22.21053 E113.90114	90 m	0:00:22	15 kph
16/10/2015 13:44	ON	N22.21000 E113.90180	90 m	0:00:22	15 kph
16/10/2015 13:44	ON	N22.20944 E113.90260	104 m	0:00:25	15 kph
16/10/2015 13:45	ON	N22.20880 E113.90357	122 m	0:00:29	15 kph
16/10/2015 13:45	ON	N22.20818 E113.90445	114 m	0:00:27	15 kph
16/10/2015 13:46	ON	N22.20751 E113.90526	112 m	0:00:26	15 kph
16/10/2015 13:46	ON	N22.20684 E113.90606	111 m	0:00:26	15 kph
16/10/2015 13:46	ON	N22.20635 E113.90669	85 m	0:00:20	15 kph
16/10/2015 13:47	ON	N22.20575 E113.90733	94 m	0:00:22	15 kph
16/10/2015 13:47	ON	N22.20513 E113.90779	84 m	0:00:20	15 kph
16/10/2015 13:47	ON	N22.20451 E113.90778	70 m	0:00:18	14 kph
16/10/2015 13:48	ON	N22.20383 E113.90764	77 m	0:00:19	15 kph
16/10/2015 13:48	ON	N22.20293 E113.90753	100 m	0:00:25	14 kph
16/10/2015 13:48	ON	N22.20201 E113.90755	102 m	0:00:25	15 kph
16/10/2015 13:49	ON	N22.20114 E113.90768	98 m	0:00:24	15 kph
16/10/2015 13:49	ON	N22.20019 E113.90776	106 m	0:00:26	15 kph
16/10/2015 13:50	ON	N22.19927 E113.90783	102 m	0:00:25	15 kph
16/10/2015 13:50	ON	N22.19837 E113.90783	101 m	0:00:25	15 kph
16/10/2015 13:51	ON	N22.19744 E113.90783	103 m	0:00:26	14 kph
16/10/2015 13:51	ON	N22.19677 E113.90785	75 m	0:00:19	14 kph
16/10/2015 13:51	ON	N22.19607 E113.90784	78 m	0:00:20	14 kph
16/10/2015 13:52	ON	N22.19520 E113.90783	96 m	0:00:25	14 kph
16/10/2015 13:52	ON	N22.19441 E113.90787	88 m	0:00:23	14 kph
16/10/2015 13:52	ON	N22.19355 E113.90784	95 m	0:00:25	14 kph
16/10/2015 13:53	ON	N22.19278 E113.90781	87 m	0:00:23	14 kph
16/10/2015 13:53	ON	N22.19200 E113.90784	87 m	0:00:23	14 kph
16/10/2015 13:53	ON	N22.19139 E113.90791	69 m	0:00:18	14 kph
16/10/2015 13:54	ON	N22.19067 E113.90790	79 m	0:00:21	14 kph
16/10/2015 13:54	ON	N22.18988 E113.90784	89 m	0:00:24	13 kph
16/10/2015 13:55	ON	N22.18912 E113.90756	89 m	0:00:25	13 kph
16/10/2015 13:55	ON	N22.18889 E113.90678	85 m	0:00:24	13 kph
16/10/2015 13:55	ON	N22.18867 E113.90633	52 m	0:00:15	13 kph
16/10/2015 13:56	ON	N22.18798 E113.90571	99 m	0:00:28	13 kph
16/10/2015 13:56	ON	N22.18708 E113.90508	120 m	0:00:33	13 kph
16/10/2015 13:57	ON	N22.18619 E113.90488	100 m	0:00:27	13 kph
16/10/2015 13:57	ON	N22.18515 E113.90473	117 m	0:00:31	14 kph
16/10/2015 13:58	ON	N22.18413 E113.90453	115 m	0:00:30	14 kph
16/10/2015 13:58	ON	N22.18311 E113.90432	116 m	0:00:30	14 kph
16/10/2015 13:59	ON	N22.18189 E113.90426	136 m	0:00:35	14 kph
16/10/2015 13:59	ON	N22.18082 E113.90415	120 m	0:00:30	14 kph
16/10/2015 14:00	ON	N22.17980 E113.90423	114 m	0:00:28	15 kph
16/10/2015 14:00	ON	N22.17889 E113.90463	109 m	0:00:27	15 kph
16/10/2015 14:01	ON	N22.17826 E113.90535	102 m	0:00:24	15 kph
16/10/2015 14:01	ON	N22.17772 E113.90607	95 m	0:00:22	16 kph
16/10/2015 14:01	ON	N22.17722 E113.90680	94 m	0:00:22	15 kph
16/10/2015 14:02	ON	N22.17662 E113.90763	108 m	0:00:26	15 kph
16/10/2015 14:02	ON	N22.17601 E113.90803	80 m	0:00:20	14 kph
16/10/2015 14:03	ON	N22.17508 E113.90825	105 m	0:00:26	15 kph
16/10/2015 14:03	ON	N22.17410 E113.90837	109 m	0:00:27	15 kph
16/10/2015 14:04	ON	N22.17297 E113.90829	127 m	0:00:32	14 kph
16/10/2015 14:04	ON	N22.17198 E113.90789	117 m	0:00:31	14 kph
16/10/2015 14:05	ON	N22.17088 E113.90719	143 m	0:00:38	14 kph
16/10/2015 14:05	ON	N22.16981 E113.90667	131 m	0:00:35	13 kph
16/10/2015 14:06	ON	N22.16844 E113.90631	157 m	0:00:41	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 14:07	ON	N22.16731 E113.90582	136 m	0:00:36	14 kph
16/10/2015 14:07	ON	N22.16636 E113.90514	126 m	0:00:34	13 kph
16/10/2015 14:08	ON	N22.16556 E113.90436	121 m	0:00:33	13 kph
16/10/2015 14:08	ON	N22.16480 E113.90328	140 m	0:00:39	13 kph
16/10/2015 14:09	ON	N22.16437 E113.90220	121 m	0:00:34	13 kph
16/10/2015 14:09	ON	N22.16393 E113.90131	104 m	0:00:29	13 kph
16/10/2015 14:10	ON	N22.16362 E113.90062	79 m	0:00:22	13 kph
16/10/2015 14:10	ON	N22.16326 E113.89995	80 m	0:00:22	13 kph
16/10/2015 14:10	ON	N22.16287 E113.89937	74 m	0:00:20	13 kph
16/10/2015 14:11	ON	N22.16208 E113.89876	107 m	0:00:28	14 kph
16/10/2015 14:11	ON	N22.16121 E113.89832	108 m	0:00:27	14 kph
16/10/2015 14:12	ON	N22.16034 E113.89816	98 m	0:00:24	15 kph
16/10/2015 14:12	ON	N22.15940 E113.89828	105 m	0:00:25	15 kph
16/10/2015 14:13	ON	N22.15863 E113.89866	94 m	0:00:22	15 kph
16/10/2015 14:13	ON	N22.15795 E113.89932	102 m	0:00:23	16 kph
16/10/2015 14:13	ON	N22.15733 E113.89996	95 m	0:00:21	16 kph
16/10/2015 14:14	ON	N22.15661 E113.90071	112 m	0:00:25	16 kph
16/10/2015 14:14	ON	N22.15604 E113.90146	99 m	0:00:22	16 kph
16/10/2015 14:15	ON	N22.15556 E113.90245	115 m	0:00:26	16 kph
16/10/2015 14:15	ON	N22.15544 E113.90310	69 m	0:00:16	15 kph
16/10/2015 14:15	ON	N22.15551 E113.90398	91 m	0:00:21	16 kph
16/10/2015 14:15	ON	N22.15561 E113.90448	53 m	0:00:12	16 kph
16/10/2015 14:16	ON	N22.15584 E113.90528	86 m	0:00:20	15 kph
16/10/2015 14:16	ON	N22.15621 E113.90628	112 m	0:00:26	15 kph
16/10/2015 14:17	ON	N22.15664 E113.90724	109 m	0:00:26	15 kph
16/10/2015 14:17	ON	N22.15666 E113.90796	75 m	0:00:21	13 kph
16/10/2015 14:17	ON	N22.15618 E113.90792	54 m	0:00:19	10 kph
16/10/2015 14:18	ON	N22.15543 E113.90772	86 m	0:00:24	13 kph
16/10/2015 14:18	ON	N22.15467 E113.90785	86 m	0:00:22	14 kph
16/10/2015 14:18	ON	N22.15386 E113.90787	90 m	0:00:23	14 kph
16/10/2015 14:19	ON	N22.15323 E113.90779	71 m	0:00:18	14 kph
16/10/2015 14:19	ON	N22.15252 E113.90775	80 m	0:00:20	14 kph
16/10/2015 14:19	ON	N22.15182 E113.90776	77 m	0:00:19	15 kph
16/10/2015 14:20	ON	N22.15127 E113.90780	61 m	0:00:15	15 kph
16/10/2015 14:20	ON	N22.15061 E113.90781	74 m	0:00:18	15 kph
16/10/2015 14:20	ON	N22.14989 E113.90783	80 m	0:00:20	14 kph
16/10/2015 14:21	ON	N22.14899 E113.90784	100 m	0:00:25	14 kph
16/10/2015 14:21	ON	N22.14838 E113.90785	68 m	0:00:17	14 kph
16/10/2015 14:21	ON	N22.14767 E113.90784	79 m	0:00:20	14 kph
16/10/2015 14:22	ON	N22.14699 E113.90781	76 m	0:00:19	14 kph
16/10/2015 14:22	ON	N22.14627 E113.90776	80 m	0:00:20	14 kph
16/10/2015 14:22	ON	N22.14553 E113.90769	83 m	0:00:21	14 kph
16/10/2015 14:23	ON	N22.14477 E113.90772	84 m	0:00:21	14 kph
16/10/2015 14:23	ON	N22.14400 E113.90778	86 m	0:00:21	15 kph
16/10/2015 14:23	ON	N22.14396 E113.90778	4 m	0:00:01	14 kph
16/10/2015 14:23	ON	N22.14334 E113.90783	69 m	0:00:17	15 kph
16/10/2015 14:24	ON	N22.14260 E113.90787	83 m	0:00:20	15 kph
16/10/2015 14:24	ON	N22.14218 E113.90820	57 m	0:00:16	13 kph
16/10/2015 14:24	ON	N22.14213 E113.90890	72 m	0:00:18	14 kph
16/10/2015 14:25	ON	N22.14228 E113.90985	100 m	0:00:23	16 kph
16/10/2015 14:25	ON	N22.14231 E113.91006	22 m	0:00:05	16 kph
16/10/2015 14:25	ON	N22.14237 E113.91105	102 m	0:00:23	16 kph
16/10/2015 14:25	ON	N22.14235 E113.91190	88 m	0:00:20	16 kph
16/10/2015 14:26	ON	N22.14232 E113.91283	96 m	0:00:22	16 kph
16/10/2015 14:26	ON	N22.14231 E113.91308	26 m	0:00:06	16 kph
16/10/2015 14:26	ON	N22.14231 E113.91410	105 m	0:00:24	16 kph
16/10/2015 14:27	ON	N22.14233 E113.91499	92 m	0:00:21	16 kph
16/10/2015 14:27	ON	N22.14240 E113.91601	106 m	0:00:24	16 kph
16/10/2015 14:27	ON	N22.14247 E113.91681	83 m	0:00:19	16 kph
16/10/2015 14:28	ON	N22.14262 E113.91770	93 m	0:00:22	15 kph
16/10/2015 14:28	ON	N22.14317 E113.91790	64 m	0:00:19	12 kph
16/10/2015 14:28	ON	N22.14397 E113.91795	89 m	0:00:23	14 kph
16/10/2015 14:29	ON	N22.14480 E113.91796	93 m	0:00:24	14 kph
16/10/2015 14:29	ON	N22.14570 E113.91797	100 m	0:00:26	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 14:30	ON	N22.14659 E113.91798	99 m	0:00:26	14 kph
16/10/2015 14:30	ON	N22.14738 E113.91795	88 m	0:00:23	14 kph
16/10/2015 14:30	ON	N22.14826 E113.91786	99 m	0:00:26	14 kph
16/10/2015 14:31	ON	N22.14906 E113.91784	88 m	0:00:23	14 kph
16/10/2015 14:31	ON	N22.14966 E113.91782	68 m	0:00:18	14 kph
16/10/2015 14:31	ON	N22.15034 E113.91776	75 m	0:00:20	14 kph
16/10/2015 14:32	ON	N22.15107 E113.91778	81 m	0:00:21	14 kph
16/10/2015 14:32	ON	N22.15182 E113.91789	84 m	0:00:22	14 kph
16/10/2015 14:33	ON	N22.15262 E113.91783	90 m	0:00:24	13 kph
16/10/2015 14:33	ON	N22.15364 E113.91778	113 m	0:00:30	14 kph
16/10/2015 14:34	ON	N22.15469 E113.91777	118 m	0:00:31	14 kph
16/10/2015 14:34	ON	N22.15569 E113.91770	111 m	0:00:29	14 kph
16/10/2015 14:35	ON	N22.15671 E113.91769	113 m	0:00:29	14 kph
16/10/2015 14:35	ON	N22.15762 E113.91770	101 m	0:00:26	14 kph
16/10/2015 14:35	ON	N22.15845 E113.91772	93 m	0:00:24	14 kph
16/10/2015 14:36	ON	N22.15933 E113.91777	98 m	0:00:25	14 kph
16/10/2015 14:36	ON	N22.16016 E113.91785	93 m	0:00:24	14 kph
16/10/2015 14:37	ON	N22.16101 E113.91790	94 m	0:00:24	14 kph
16/10/2015 14:37	ON	N22.16195 E113.91789	105 m	0:00:27	14 kph
16/10/2015 14:37	ON	N22.16287 E113.91794	103 m	0:00:26	14 kph
16/10/2015 14:38	ON	N22.16393 E113.91795	118 m	0:00:29	15 kph
16/10/2015 14:38	ON	N22.16496 E113.91799	115 m	0:00:28	15 kph
16/10/2015 14:39	ON	N22.16606 E113.91813	122 m	0:00:30	15 kph
16/10/2015 14:39	ON	N22.16699 E113.91816	104 m	0:00:26	14 kph
16/10/2015 14:40	ON	N22.16816 E113.91825	131 m	0:00:32	15 kph
16/10/2015 14:40	ON	N22.16912 E113.91845	108 m	0:00:28	14 kph
16/10/2015 14:41	ON	N22.16984 E113.91861	83 m	0:00:22	14 kph
16/10/2015 14:41	ON	N22.17071 E113.91876	98 m	0:00:26	14 kph
16/10/2015 14:42	ON	N22.17163 E113.91893	104 m	0:00:27	14 kph
16/10/2015 14:42	ON	N22.17263 E113.91916	114 m	0:00:29	14 kph
16/10/2015 14:43	ON	N22.17353 E113.91945	104 m	0:00:26	14 kph
16/10/2015 14:43	ON	N22.17421 E113.91968	80 m	0:00:20	14 kph
16/10/2015 14:43	ON	N22.17494 E113.91989	84 m	0:00:21	14 kph
16/10/2015 14:44	ON	N22.17573 E113.92013	91 m	0:00:23	14 kph
16/10/2015 14:44	ON	N22.17655 E113.92050	99 m	0:00:24	15 kph
16/10/2015 14:44	ON	N22.17736 E113.92090	99 m	0:00:24	15 kph
16/10/2015 14:45	ON	N22.17827 E113.92129	109 m	0:00:26	15 kph
16/10/2015 14:45	ON	N22.17922 E113.92161	111 m	0:00:27	15 kph
16/10/2015 14:46	ON	N22.18021 E113.92171	111 m	0:00:28	14 kph
16/10/2015 14:46	ON	N22.18112 E113.92156	102 m	0:00:26	14 kph
16/10/2015 14:47	ON	N22.18183 E113.92109	92 m	0:00:25	13 kph
16/10/2015 14:47	ON	N22.18252 E113.92038	106 m	0:00:29	13 kph
16/10/2015 14:48	ON	N22.18312 E113.91963	102 m	0:00:28	13 kph
16/10/2015 14:48	ON	N22.18356 E113.91893	87 m	0:00:24	13 kph
16/10/2015 14:48	ON	N22.18402 E113.91812	98 m	0:00:27	13 kph
16/10/2015 14:49	ON	N22.18456 E113.91777	70 m	0:00:22	11 kph
16/10/2015 14:49	ON	N22.18518 E113.91797	72 m	0:00:19	14 kph
16/10/2015 14:49	ON	N22.18592 E113.91805	83 m	0:00:22	14 kph
16/10/2015 14:50	ON	N22.18682 E113.91797	100 m	0:00:26	14 kph
16/10/2015 14:50	ON	N22.18792 E113.91795	122 m	0:00:32	14 kph
16/10/2015 14:51	ON	N22.18891 E113.91785	111 m	0:00:29	14 kph
16/10/2015 14:51	ON	N22.18983 E113.91771	103 m	0:00:27	14 kph
16/10/2015 14:52	ON	N22.19077 E113.91773	105 m	0:00:27	14 kph
16/10/2015 14:52	ON	N22.19168 E113.91771	101 m	0:00:42	9 kph
16/10/2015 14:53	ON	N22.19241 E113.91778	82 m	0:00:21	14 kph
16/10/2015 14:53	ON	N22.19336 E113.91776	106 m	0:00:28	14 kph
16/10/2015 14:54	ON	N22.19446 E113.91778	123 m	0:00:30	15 kph
16/10/2015 14:54	ON	N22.19550 E113.91780	116 m	0:00:29	14 kph
16/10/2015 14:55	ON	N22.19629 E113.91782	88 m	0:00:22	14 kph
16/10/2015 14:55	ON	N22.19717 E113.91782	98 m	0:00:26	14 kph
16/10/2015 14:55	ON	N22.19760 E113.91779	48 m	0:00:24	7 kph
16/10/2015 14:56	OFF	N22.19785 E113.91774	29 m	0:00:25	4 kph
16/10/2015 14:56	OFF	N22.19803 E113.91769	20 m	0:00:28	3 kph
16/10/2015 14:57	OFF	N22.19813 E113.91770	11 m	0:00:29	1.4 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 14:57	OFF	N22.19815 E113.91770	3 m	0:00:21	0.5 kph
16/10/2015 14:57	OFF	N22.19821 E113.91767	7 m	0:00:12	2 kph
16/10/2015 14:58	OFF	N22.19873 E113.91766	58 m	0:00:24	9 kph
16/10/2015 14:58	OFF	N22.19943 E113.91787	82 m	0:00:28	11 kph
16/10/2015 14:59	OFF	N22.19999 E113.91814	68 m	0:00:25	10 kph
16/10/2015 14:59	OFF	N22.20050 E113.91848	67 m	0:00:23	10 kph
16/10/2015 15:00	OFF	N22.20109 E113.91873	70 m	0:00:28	9 kph
16/10/2015 15:00	OFF	N22.20142 E113.91881	37 m	0:00:23	6 kph
16/10/2015 15:00	OFF	N22.20161 E113.91888	23 m	0:00:22	4 kph
16/10/2015 15:01	OFF	N22.20176 E113.91896	19 m	0:00:24	3 kph
16/10/2015 15:01	OFF	N22.20187 E113.91902	13 m	0:00:09	5 kph
16/10/2015 15:01	OFF	N22.20192 E113.91906	7 m	0:00:20	1.2 kph
16/10/2015 15:02	OFF	N22.20200 E113.91913	12 m	0:00:26	2 kph
16/10/2015 15:02	OFF	N22.20202 E113.91913	1 m	0:00:02	3 kph
16/10/2015 15:02	OFF	N22.20206 E113.91907	8 m	0:00:06	5 kph
16/10/2015 15:02	OFF	N22.20190 E113.91857	55 m	0:00:21	9 kph
16/10/2015 15:02	OFF	N22.20156 E113.91790	78 m	0:00:23	12 kph
16/10/2015 15:03	ON	N22.20188 E113.91765	45 m	0:00:18	9 kph
16/10/2015 15:03	ON	N22.20276 E113.91804	106 m	0:00:28	14 kph
16/10/2015 15:04	ON	N22.20367 E113.91810	102 m	0:00:28	13 kph
16/10/2015 15:04	ON	N22.20443 E113.91791	87 m	0:00:24	13 kph
16/10/2015 15:04	ON	N22.20511 E113.91784	76 m	0:00:22	12 kph
16/10/2015 15:05	ON	N22.20525 E113.91850	69 m	0:00:20	12 kph
16/10/2015 15:05	ON	N22.20515 E113.91936	90 m	0:00:21	15 kph
16/10/2015 15:06	ON	N22.20505 E113.92055	123 m	0:00:28	16 kph
16/10/2015 15:06	ON	N22.20501 E113.92171	120 m	0:00:27	16 kph
16/10/2015 15:06	ON	N22.20496 E113.92278	110 m	0:00:25	16 kph
16/10/2015 15:07	ON	N22.20491 E113.92378	104 m	0:00:24	16 kph
16/10/2015 15:07	ON	N22.20486 E113.92475	100 m	0:00:23	16 kph
16/10/2015 15:08	ON	N22.20477 E113.92576	105 m	0:00:24	16 kph
16/10/2015 15:08	ON	N22.20468 E113.92672	99 m	0:00:23	15 kph
16/10/2015 15:08	ON	N22.20437 E113.92743	81 m	0:00:22	13 kph
16/10/2015 15:09	ON	N22.20366 E113.92751	80 m	0:00:22	13 kph
16/10/2015 15:09	ON	N22.20276 E113.92760	101 m	0:00:26	14 kph
16/10/2015 15:10	ON	N22.20179 E113.92763	108 m	0:00:28	14 kph
16/10/2015 15:10	ON	N22.20100 E113.92759	88 m	0:00:23	14 kph
16/10/2015 15:10	ON	N22.20020 E113.92756	89 m	0:00:23	14 kph
16/10/2015 15:11	ON	N22.19941 E113.92752	88 m	0:00:23	14 kph
16/10/2015 15:11	ON	N22.19868 E113.92749	82 m	0:00:21	14 kph
16/10/2015 15:12	ON	N22.19784 E113.92750	93 m	0:00:24	14 kph
16/10/2015 15:12	ON	N22.19689 E113.92749	105 m	0:00:27	14 kph
16/10/2015 15:12	ON	N22.19609 E113.92753	89 m	0:00:23	14 kph
16/10/2015 15:13	ON	N22.19522 E113.92758	97 m	0:00:25	14 kph
16/10/2015 15:13	ON	N22.19447 E113.92766	85 m	0:00:22	14 kph
16/10/2015 15:14	ON	N22.19381 E113.92769	73 m	0:00:19	14 kph
16/10/2015 15:14	ON	N22.19288 E113.92765	103 m	0:00:27	14 kph
16/10/2015 15:14	ON	N22.19206 E113.92761	92 m	0:00:24	14 kph
16/10/2015 15:15	ON	N22.19129 E113.92762	86 m	0:00:22	14 kph
16/10/2015 15:15	ON	N22.19049 E113.92761	89 m	0:00:23	14 kph
16/10/2015 15:15	ON	N22.18975 E113.92759	82 m	0:00:21	14 kph
16/10/2015 15:16	ON	N22.18903 E113.92756	81 m	0:00:21	14 kph
16/10/2015 15:16	ON	N22.18830 E113.92756	82 m	0:00:21	14 kph
16/10/2015 15:17	ON	N22.18747 E113.92752	92 m	0:00:24	14 kph
16/10/2015 15:17	ON	N22.18663 E113.92751	93 m	0:00:24	14 kph
16/10/2015 15:17	ON	N22.18573 E113.92754	101 m	0:00:26	14 kph
16/10/2015 15:18	ON	N22.18503 E113.92755	77 m	0:00:20	14 kph
16/10/2015 15:18	ON	N22.18416 E113.92754	97 m	0:00:25	14 kph
16/10/2015 15:19	ON	N22.18337 E113.92756	89 m	0:00:23	14 kph
16/10/2015 15:19	ON	N22.18266 E113.92755	78 m	0:00:20	14 kph
16/10/2015 15:19	ON	N22.18175 E113.92754	102 m	0:00:26	14 kph
16/10/2015 15:20	ON	N22.18097 E113.92756	87 m	0:00:22	14 kph
16/10/2015 15:20	ON	N22.18015 E113.92760	91 m	0:00:23	14 kph
16/10/2015 15:20	ON	N22.17948 E113.92758	75 m	0:00:19	14 kph
16/10/2015 15:21	ON	N22.17856 E113.92747	103 m	0:00:27	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 15:21	ON	N22.17772 E113.92751	93 m	0:00:25	13 kph
16/10/2015 15:22	ON	N22.17678 E113.92753	105 m	0:00:28	14 kph
16/10/2015 15:22	ON	N22.17600 E113.92753	86 m	0:00:23	14 kph
16/10/2015 15:22	ON	N22.17520 E113.92761	90 m	0:00:24	13 kph
16/10/2015 15:23	ON	N22.17452 E113.92757	76 m	0:00:20	14 kph
16/10/2015 15:23	ON	N22.17369 E113.92756	93 m	0:00:24	14 kph
16/10/2015 15:24	ON	N22.17296 E113.92753	82 m	0:00:21	14 kph
16/10/2015 15:24	ON	N22.17225 E113.92740	79 m	0:00:21	14 kph
16/10/2015 15:24	ON	N22.17145 E113.92736	90 m	0:00:23	14 kph
16/10/2015 15:25	ON	N22.17061 E113.92745	93 m	0:00:23	15 kph
16/10/2015 15:25	ON	N22.16967 E113.92759	106 m	0:00:26	15 kph
16/10/2015 15:25	ON	N22.16883 E113.92765	94 m	0:00:23	15 kph
16/10/2015 15:26	ON	N22.16794 E113.92757	99 m	0:00:25	14 kph
16/10/2015 15:26	ON	N22.16695 E113.92753	111 m	0:00:28	14 kph
16/10/2015 15:27	ON	N22.16602 E113.92761	103 m	0:00:26	14 kph
16/10/2015 15:27	ON	N22.16501 E113.92769	113 m	0:00:28	15 kph
16/10/2015 15:28	ON	N22.16421 E113.92765	89 m	0:00:22	15 kph
16/10/2015 15:28	ON	N22.16337 E113.92762	93 m	0:00:23	15 kph
16/10/2015 15:28	ON	N22.16271 E113.92760	73 m	0:00:18	15 kph
16/10/2015 15:29	ON	N22.16183 E113.92759	98 m	0:00:24	15 kph
16/10/2015 15:29	ON	N22.16107 E113.92754	85 m	0:00:21	15 kph
16/10/2015 15:29	ON	N22.16035 E113.92749	80 m	0:00:20	14 kph
16/10/2015 15:30	ON	N22.15974 E113.92748	68 m	0:00:17	14 kph
16/10/2015 15:30	ON	N22.15878 E113.92752	107 m	0:00:27	14 kph
16/10/2015 15:30	ON	N22.15803 E113.92753	84 m	0:00:21	14 kph
16/10/2015 15:31	ON	N22.15727 E113.92753	84 m	0:00:21	14 kph
16/10/2015 15:31	ON	N22.15653 E113.92761	83 m	0:00:21	14 kph
16/10/2015 15:32	ON	N22.15586 E113.92767	75 m	0:00:19	14 kph
16/10/2015 15:32	ON	N22.15510 E113.92761	85 m	0:00:21	14 kph
16/10/2015 15:32	ON	N22.15438 E113.92761	80 m	0:00:20	14 kph
16/10/2015 15:33	ON	N22.15374 E113.92767	72 m	0:00:19	14 kph
16/10/2015 15:33	ON	N22.15304 E113.92762	78 m	0:00:21	13 kph
16/10/2015 15:33	ON	N22.15231 E113.92753	82 m	0:00:22	13 kph
16/10/2015 15:34	ON	N22.15163 E113.92749	75 m	0:00:20	14 kph
16/10/2015 15:34	ON	N22.15084 E113.92750	88 m	0:00:23	14 kph
16/10/2015 15:34	ON	N22.14998 E113.92747	96 m	0:00:25	14 kph
16/10/2015 15:35	ON	N22.14924 E113.92743	82 m	0:00:21	14 kph
16/10/2015 15:35	ON	N22.14844 E113.92740	90 m	0:00:23	14 kph
16/10/2015 15:36	ON	N22.14755 E113.92741	99 m	0:00:25	14 kph
16/10/2015 15:36	ON	N22.14691 E113.92746	72 m	0:00:18	14 kph
16/10/2015 15:36	ON	N22.14595 E113.92752	107 m	0:00:27	14 kph
16/10/2015 15:37	ON	N22.14511 E113.92744	94 m	0:00:24	14 kph
16/10/2015 15:37	ON	N22.14432 E113.92741	87 m	0:00:22	14 kph
16/10/2015 15:37	ON	N22.14353 E113.92747	89 m	0:00:22	14 kph
16/10/2015 15:38	ON	N22.14289 E113.92744	71 m	0:00:18	14 kph
16/10/2015 15:38	ON	N22.14218 E113.92750	79 m	0:00:22	13 kph
16/10/2015 15:38	ON	N22.14227 E113.92804	56 m	0:00:18	11 kph
16/10/2015 15:39	ON	N22.14276 E113.92867	84 m	0:00:21	14 kph
16/10/2015 15:39	ON	N22.14339 E113.92925	93 m	0:00:23	15 kph
16/10/2015 15:39	ON	N22.14394 E113.92962	72 m	0:00:18	14 kph
16/10/2015 15:40	ON	N22.14451 E113.93013	83 m	0:00:20	15 kph
16/10/2015 15:40	ON	N22.14513 E113.93077	95 m	0:00:23	15 kph
16/10/2015 15:40	ON	N22.14573 E113.93140	93 m	0:00:22	15 kph
16/10/2015 15:41	ON	N22.14632 E113.93203	93 m	0:00:22	15 kph
16/10/2015 15:41	ON	N22.14683 E113.93250	74 m	0:00:18	15 kph
16/10/2015 15:41	ON	N22.14739 E113.93296	78 m	0:00:19	15 kph
16/10/2015 15:42	ON	N22.14808 E113.93350	96 m	0:00:23	15 kph
16/10/2015 15:42	ON	N22.14856 E113.93387	66 m	0:00:16	15 kph
16/10/2015 15:42	ON	N22.14923 E113.93437	90 m	0:00:22	15 kph
16/10/2015 15:43	ON	N22.14980 E113.93481	78 m	0:00:19	15 kph
16/10/2015 15:43	ON	N22.15036 E113.93542	88 m	0:00:21	15 kph
16/10/2015 15:44	ON	N22.15091 E113.93617	98 m	0:00:23	15 kph
16/10/2015 15:44	ON	N22.15146 E113.93672	84 m	0:00:21	14 kph
16/10/2015 15:44	ON	N22.15214 E113.93681	77 m	0:00:21	13 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 15:45	ON	N22.15297 E113.93678	93 m	0:00:24	14 kph
16/10/2015 15:45	ON	N22.15377 E113.93687	89 m	0:00:23	14 kph
16/10/2015 15:45	ON	N22.15450 E113.93686	81 m	0:00:21	14 kph
16/10/2015 15:46	ON	N22.15522 E113.93680	80 m	0:00:21	14 kph
16/10/2015 15:46	ON	N22.15609 E113.93676	97 m	0:00:25	14 kph
16/10/2015 15:47	ON	N22.15705 E113.93680	107 m	0:00:28	14 kph
16/10/2015 15:47	ON	N22.15789 E113.93685	93 m	0:00:24	14 kph
16/10/2015 15:47	ON	N22.15868 E113.93687	89 m	0:00:23	14 kph
16/10/2015 15:48	ON	N22.15960 E113.93686	101 m	0:00:26	14 kph
16/10/2015 15:48	ON	N22.16041 E113.93678	91 m	0:00:24	14 kph
16/10/2015 15:49	ON	N22.16124 E113.93673	93 m	0:00:24	14 kph
16/10/2015 15:49	ON	N22.16207 E113.93675	92 m	0:00:24	14 kph
16/10/2015 15:49	ON	N22.16270 E113.93676	69 m	0:00:18	14 kph
16/10/2015 15:50	ON	N22.16350 E113.93678	90 m	0:00:23	14 kph
16/10/2015 15:50	ON	N22.16423 E113.93679	81 m	0:00:21	14 kph
16/10/2015 15:50	ON	N22.16495 E113.93678	80 m	0:00:21	14 kph
16/10/2015 15:51	ON	N22.16563 E113.93676	76 m	0:00:20	14 kph
16/10/2015 15:51	ON	N22.16649 E113.93684	96 m	0:00:26	13 kph
16/10/2015 15:52	ON	N22.16730 E113.93695	90 m	0:00:24	14 kph
16/10/2015 15:52	ON	N22.16805 E113.93692	84 m	0:00:23	13 kph
16/10/2015 15:52	ON	N22.16883 E113.93684	87 m	0:00:24	13 kph
16/10/2015 15:53	ON	N22.16965 E113.93679	91 m	0:00:25	13 kph
16/10/2015 15:53	ON	N22.17038 E113.93682	82 m	0:00:22	13 kph
16/10/2015 15:54	ON	N22.17124 E113.93683	96 m	0:00:26	13 kph
16/10/2015 15:54	ON	N22.17207 E113.93677	93 m	0:00:25	13 kph
16/10/2015 15:54	ON	N22.17280 E113.93674	81 m	0:00:22	13 kph
16/10/2015 15:55	ON	N22.17337 E113.93678	64 m	0:00:17	14 kph
16/10/2015 15:55	ON	N22.17410 E113.93687	81 m	0:00:21	14 kph
16/10/2015 15:55	ON	N22.17489 E113.93690	88 m	0:00:23	14 kph
16/10/2015 15:56	ON	N22.17554 E113.93686	72 m	0:00:19	14 kph
16/10/2015 15:56	ON	N22.17644 E113.93676	101 m	0:00:26	14 kph
16/10/2015 15:56	ON	N22.17723 E113.93662	89 m	0:00:23	14 kph
16/10/2015 15:57	ON	N22.17800 E113.93653	86 m	0:00:22	14 kph
16/10/2015 15:57	ON	N22.17892 E113.93656	102 m	0:00:26	14 kph
16/10/2015 15:58	ON	N22.17959 E113.93660	75 m	0:00:19	14 kph
16/10/2015 15:58	ON	N22.18026 E113.93666	75 m	0:00:19	14 kph
16/10/2015 15:58	ON	N22.18116 E113.93676	101 m	0:00:26	14 kph
16/10/2015 15:59	ON	N22.18213 E113.93683	108 m	0:00:28	14 kph
16/10/2015 15:59	ON	N22.18303 E113.93689	100 m	0:00:26	14 kph
16/10/2015 16:00	ON	N22.18387 E113.93697	95 m	0:00:24	14 kph
16/10/2015 16:00	ON	N22.18475 E113.93699	97 m	0:00:25	14 kph
16/10/2015 16:01	ON	N22.18567 E113.93700	102 m	0:00:26	14 kph
16/10/2015 16:01	ON	N22.18665 E113.93703	110 m	0:00:28	14 kph
16/10/2015 16:01	ON	N22.18753 E113.93698	98 m	0:00:25	14 kph
16/10/2015 16:02	ON	N22.18844 E113.93692	102 m	0:00:26	14 kph
16/10/2015 16:02	ON	N22.18932 E113.93693	98 m	0:00:25	14 kph
16/10/2015 16:03	ON	N22.19017 E113.93693	95 m	0:00:24	14 kph
16/10/2015 16:03	ON	N22.19115 E113.93695	109 m	0:00:28	14 kph
16/10/2015 16:03	ON	N22.19190 E113.93692	84 m	0:00:22	14 kph
16/10/2015 16:04	ON	N22.19270 E113.93686	88 m	0:00:23	14 kph
16/10/2015 16:04	ON	N22.19360 E113.93683	101 m	0:00:26	14 kph
16/10/2015 16:05	ON	N22.19426 E113.93684	73 m	0:00:19	14 kph
16/10/2015 16:05	ON	N22.19511 E113.93686	95 m	0:00:24	14 kph
16/10/2015 16:05	ON	N22.19610 E113.93684	110 m	0:00:28	14 kph
16/10/2015 16:06	ON	N22.19688 E113.93682	87 m	0:00:23	14 kph
16/10/2015 16:06	ON	N22.19763 E113.93680	83 m	0:00:22	14 kph
16/10/2015 16:07	ON	N22.19838 E113.93675	84 m	0:00:22	14 kph
16/10/2015 16:07	ON	N22.19917 E113.93671	88 m	0:00:23	14 kph
16/10/2015 16:07	ON	N22.20014 E113.93678	108 m	0:00:28	14 kph
16/10/2015 16:08	ON	N22.20079 E113.93689	73 m	0:00:19	14 kph
16/10/2015 16:08	ON	N22.20174 E113.93687	106 m	0:00:28	14 kph
16/10/2015 16:09	ON	N22.20274 E113.93675	112 m	0:00:30	13 kph
16/10/2015 16:09	ON	N22.20356 E113.93668	91 m	0:00:24	14 kph
16/10/2015 16:10	ON	N22.20449 E113.93663	105 m	0:00:27	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
16/10/2015 16:10	ON	N22.20544 E113.93656	105 m	0:00:27	14 kph
16/10/2015 16:11	ON	N22.20650 E113.93653	118 m	0:00:30	14 kph
16/10/2015 16:11	ON	N22.20758 E113.93660	120 m	0:00:30	14 kph
16/10/2015 16:11	ON	N22.20852 E113.93662	104 m	0:00:26	14 kph
16/10/2015 16:12	ON	N22.20948 E113.93652	108 m	0:00:27	14 kph
16/10/2015 16:12	ON	N22.21053 E113.93648	117 m	0:00:29	15 kph
16/10/2015 16:13	ON	N22.21159 E113.93648	118 m	0:00:29	15 kph
16/10/2015 16:13	ON	N22.21273 E113.93657	127 m	0:00:31	15 kph
16/10/2015 16:14	ON	N22.21375 E113.93656	114 m	0:00:28	15 kph
16/10/2015 16:14	ON	N22.21490 E113.93671	129 m	0:00:32	15 kph
16/10/2015 16:15	ON	N22.21590 E113.93688	112 m	0:00:28	14 kph
16/10/2015 16:15	ON	N22.21717 E113.93702	142 m	0:00:35	15 kph
16/10/2015 16:16	ON	N22.21852 E113.93708	151 m	0:00:37	15 kph
16/10/2015 16:17	ON	N22.21984 E113.93710	146 m	0:00:36	15 kph
16/10/2015 16:17	ON	N22.22110 E113.93706	140 m	0:00:35	14 kph
16/10/2015 16:18	ON	N22.22245 E113.93707	150 m	0:00:38	14 kph
16/10/2015 16:18	ON	N22.22356 E113.93728	125 m	0:00:33	14 kph

Appendix II. Survey Effort Database in SWL (October 2015)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
16-Oct-15	SW LANTAU	1	2.06	AUTUMN	STANDARD31516	HYD-HZMB	P
16-Oct-15	SW LANTAU	2	51.31	AUTUMN	STANDARD31516	HYD-HZMB	P
16-Oct-15	SW LANTAU	1	0.89	AUTUMN	STANDARD31516	HYD-HZMB	S
16-Oct-15	SW LANTAU	2	15.76	AUTUMN	STANDARD31516	HYD-HZMB	S
20-Oct-15	SW LANTAU	2	8.56	AUTUMN	STANDARD31516	HKCRP	P
20-Oct-15	SW LANTAU	3	8.37	AUTUMN	STANDARD31516	HKCRP	P
20-Oct-15	SW LANTAU	2	9.56	AUTUMN	STANDARD31516	HKCRP	S
20-Oct-15	SW LANTAU	3	2.01	AUTUMN	STANDARD31516	HKCRP	S
23-Oct-15	SW LANTAU	2	23.03	AUTUMN	STANDARD31516	HKCRP	P
23-Oct-15	SW LANTAU	3	7.50	AUTUMN	STANDARD31516	HKCRP	P
23-Oct-15	SW LANTAU	2	7.87	AUTUMN	STANDARD31516	HKCRP	S
23-Oct-15	SW LANTAU	3	2.20	AUTUMN	STANDARD31516	HKCRP	S

Appendix III. Chinese White Dolphin Sighting Database in SWL (October 2015)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; ND = Not Determined; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
16-Oct-15	1	1228	1	SW LANTAU	2	45	ON	HYD-HZMB	806651	806510	AUTUMN	NONE	P
16-Oct-15	2	1235	2	SW LANTAU	2	213	ON	HYD-HZMB	806031	806509	AUTUMN	NONE	P
16-Oct-15	3	1455	2	SW LANTAU	2	349	ON	HYD-HZMB	806568	809541	AUTUMN	NONE	P
20-Oct-15	3	1254	5	SW LANTAU	3	ND	OFF	HKCRP	805940	802538	AUTUMN	NONE	

Appendix IV. Individual dolphins identified during HYD-HZMB and AFCD monitoring surveys in SWL waters in October 2015

ID#	DATE	STG#	TYPE	AREA
NL120	16/10/15	2	HYD-HZMB	SW LANTAU
NL226	16/10/15	2	HYD-HZMB	SW LANTAU
SL53	16/10/15	3	HYD-HZMB	SW LANTAU
WL123	16/10/15	3	HYD-HZMB	SW LANTAU
WL180	20/10/15	3	HKCRP	SW LANTAU
WL250	20/10/15	3	HKCRP	SW LANTAU

Appendix V. Photographs of Identified Individual Dolphins in October 2015 in SWL waters