Monitoring of Chinese White Dolphins in Southwest Lantau Waters

14th Monthly Progress Report (April 2016)
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 14th monthly progress report under this dolphin monitoring study submitted to the Environmental Project Office, summarizing the survey findings during the month of April 2016.

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° and 90° (in relation to the bow, which is defined as 0°). 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 April 22nd to cover all transect lines in SWL survey area once. The route and track log of this survey are presented in Figure 2 and Appendix I respectively).

3.1.2. In addition, three line-transect surveys were also conducted under the AFCD long-term marine mammal monitoring programme in SWL survey area on April 7th (with lines no. SWL002 and SWL004 covered), April 20th (with lines no. SWL001, SWL003 and SWL005 covered) and April 27th (with lines no. 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 70.12 km of survey effort was collected from 10:56 to 16:18 (i.e. 5 hours and 22 minutes of survey time) on April 22nd, 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 53.89 km and 16.23 km respectively.

3.1.4. For the combined monitoring dataset from both the present study and AFCD monitoring study, a total of 131.26 km of survey effort was collected in SWL waters in April 2016.

3.1.5. During this month, only one group of six Chinese White Dolphins were sighted from an AFCD monitoring survey conducted in SWL survey area on April 20th (Appendix III). This dolphin group was sighted during off-effort search, which was not associated with any operating fishing vessel. The rare occurrence of dolphins in SWL waters was probably related to the seasonal variation in dolphin usage of this area, as the historical data also indicated that they usually occurred much less frequently during spring months in the past decade.

3.1.6. Notably, seven groups of 18 finless porpoises were also sighted in SWL survey area during this monitoring month.

3.1.7. Distribution of the lone dolphin sighting made in April 2016 is shown in Figure 3. The group of six dolphins was sighted near Fan Lau (Figure 3).

3.1.8. 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 April 2016 are shown in Table 2. Comparison of encounter rates was also made to the one deduced in spring months (March-May) in the past decade (2005-14), as well as in April 2015 under the present study (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 April 2016 (primary lines only, as well as both primary lines and secondary lines were used) in SWL survey area in comparison to the ones deduced during spring months (March-May 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 (April 2016)	0.00	0.00	0.00	0.00
Combined data (April 2016)	0.00	0.00	0.00	0.00
Combined data (April 2015)	2.03	3.68	4.07	5.88
Historical Data (Spring 2005-14)		1.54		4.14

3.1.9. From the combined data of HYD-HZMB and AFCD monitoring surveys, the overall encounter rates based on the number of dolphin sightings (ER(STG)) and the total number of dolphins (ER(ANI)) deduced in April 2016 in SWL waters were lower than the ones deduced from the historical data during the spring months of 2005-14 as well as in April 2015, since only one off-effort dolphin sighting was made during the month of April 2016 (Table 2).

3.1.10. The size of the lone Chinese White Dolphin group was six animals, which was much higher than the average group size in spring months of 2005-14 (2.7).

3.2. Photo-identification Work

3.2.1. Attempts were made to photograph the dolphins sighted during all surveys conducted in April 2016.

3.2.2. Among the six dolphins sighted during this month's surveys, five individual dolphins were identified and re-sighted five times in total (Appendices IV and V). None of these individuals was accompanied by a young calf.

3.2.3. The locations where four of the five individuals being re-sighted were well within their past home ranges in SWL and WL waters. The only exception was WL259, as this animal was sighted in SWL waters for the first time, probably due to the fact that this

animal was a newly-identified individual in Hong Kong waters and was recently added to the photo-identification catalogue

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.

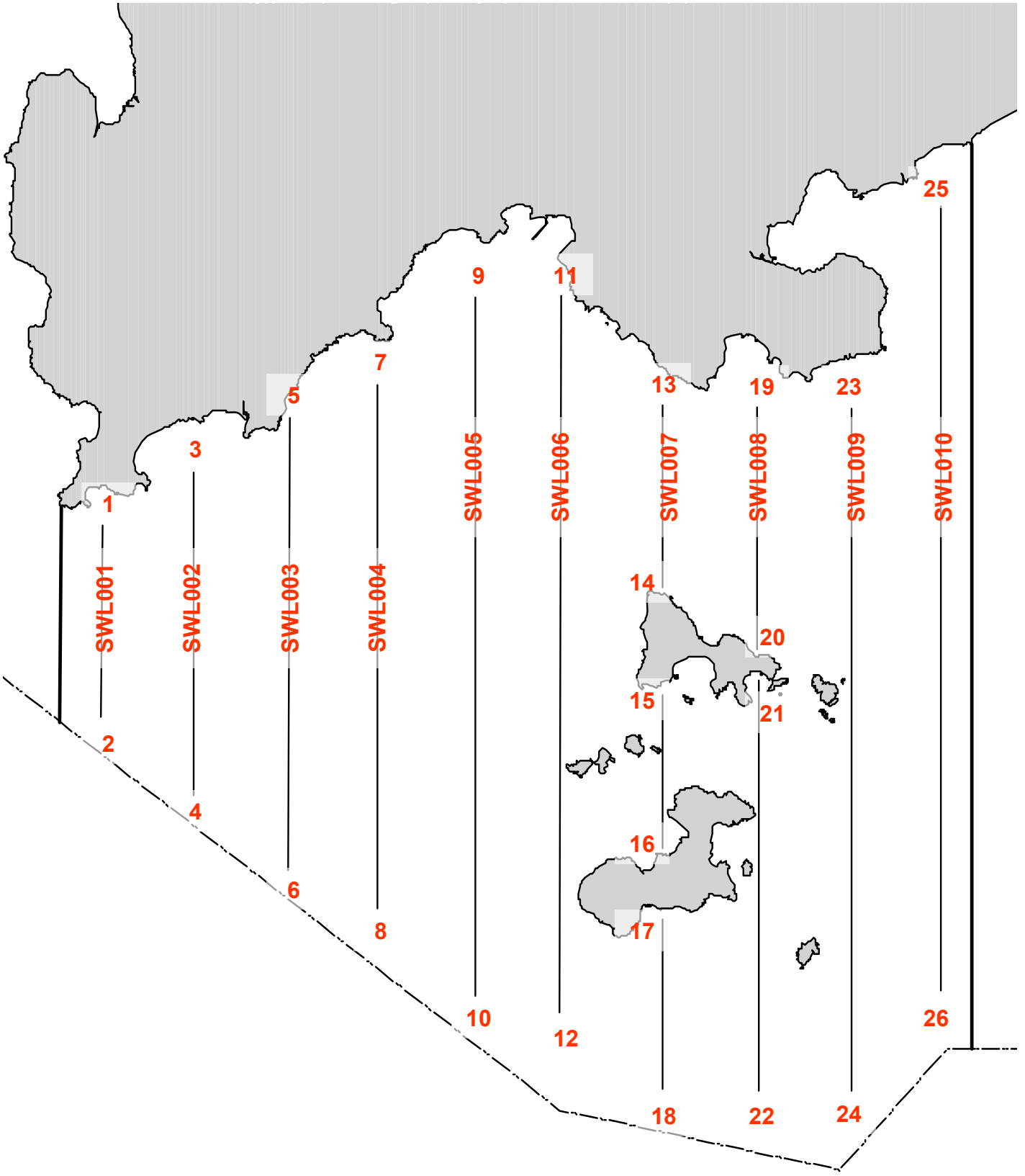

Figure 1. Survey Lines and associated coordinates in Southwest Lantau survey area

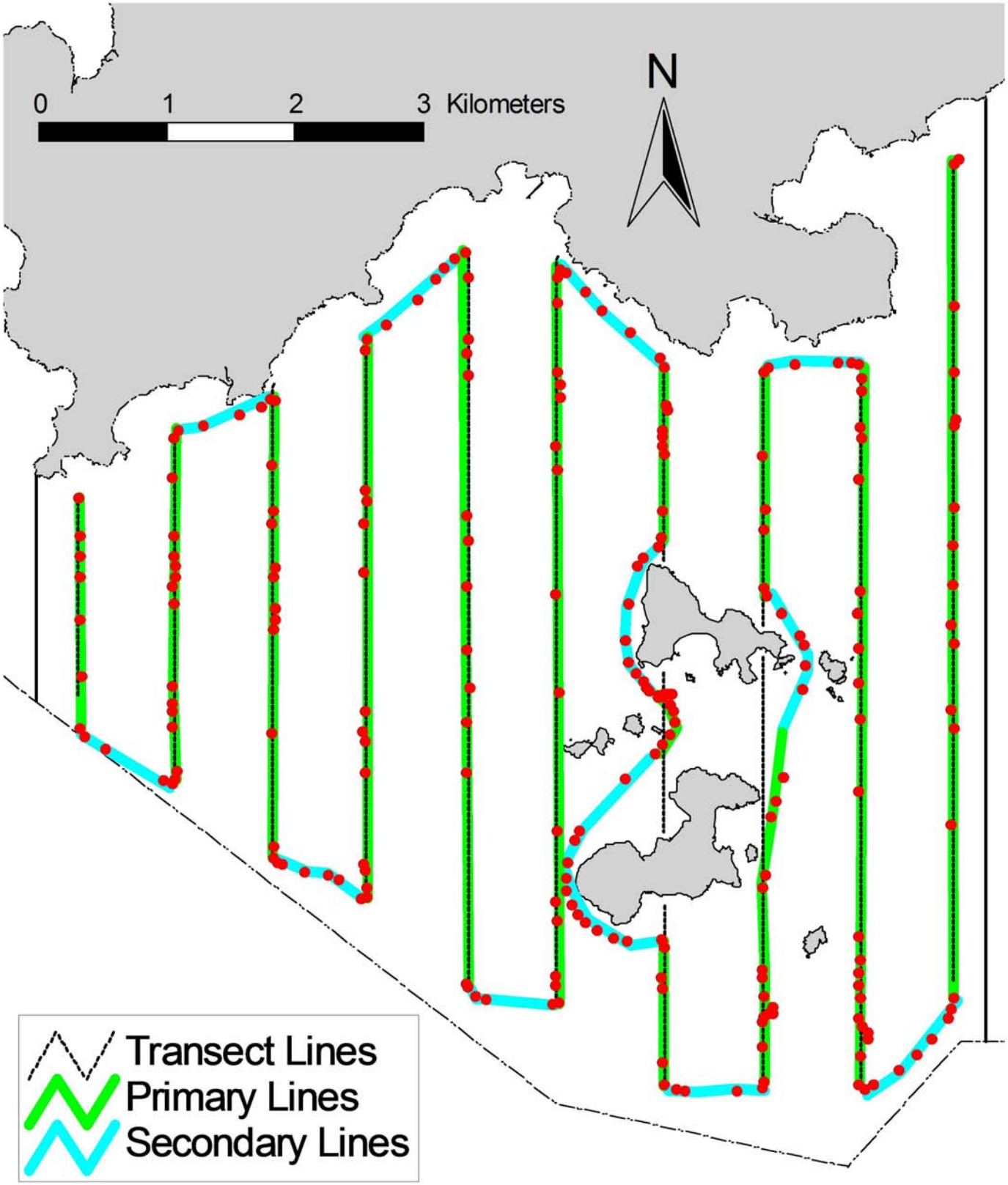

Figure 2. Survey Route on April 22nd, 2016 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

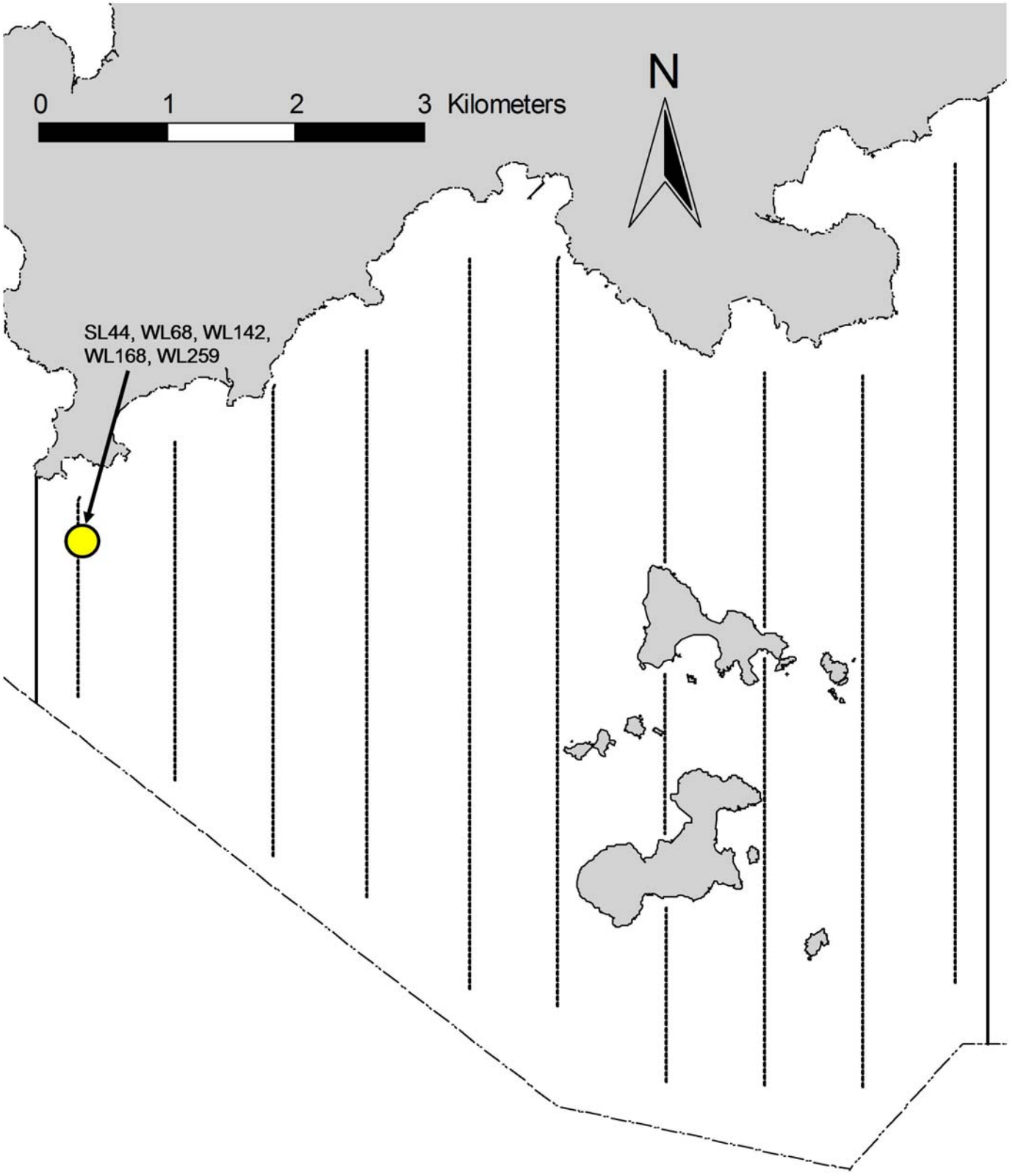

Figure 3. Distribution of Chinese White Dolphin sightings during April 2016 monitoring surveys in Southwest Lantau survey area, with identified individuals indicated for their corresponding sightings (red dot: HYD-HZMB sighting; yellow dot: AFCD sighting)

Appendix I. Track Log of Southwest Lantau Survey on April 22nd, 2016

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 10:56	ON	N22.19364 E113.84953			
22/4/2016 10:57	ON	N22.19282 E113.84962	92 m	0:00:23	14 kph
22/4/2016 10:57	ON	N22.19206 E113.84960	84 m	0:00:21	14 kph
22/4/2016 10:57	ON	N22.19121 E113.84958	95 m	0:00:23	15 kph
22/4/2016 10:58	ON	N22.19034 E113.84961	97 m	0:00:23	15 kph
22/4/2016 10:58	ON	N22.18945 E113.84962	98 m	0:00:23	15 kph
22/4/2016 10:58	ON	N22.18848 E113.84963	108 m	0:00:25	16 kph
22/4/2016 10:59	ON	N22.18772 E113.84958	85 m	0:00:20	15 kph
22/4/2016 10:59	ON	N22.18673 E113.84957	109 m	0:00:25	16 kph
22/4/2016 11:00	ON	N22.18574 E113.84958	111 m	0:00:25	16 kph
22/4/2016 11:00	ON	N22.18478 E113.84958	106 m	0:00:24	16 kph
22/4/2016 11:00	ON	N22.18401 E113.84957	85 m	0:00:19	16 kph
22/4/2016 11:01	ON	N22.18295 E113.84955	118 m	0:00:26	16 kph
22/4/2016 11:01	ON	N22.18201 E113.84960	106 m	0:00:23	17 kph
22/4/2016 11:02	ON	N22.18106 E113.84965	105 m	0:00:23	16 kph
22/4/2016 11:02	ON	N22.18082 E113.84966	27 m	0:00:06	16 kph
22/4/2016 11:02	ON	N22.17989 E113.84964	103 m	0:00:23	16 kph
22/4/2016 11:02	ON	N22.17887 E113.84964	113 m	0:00:25	16 kph
22/4/2016 11:03	ON	N22.17794 E113.84971	104 m	0:00:23	16 kph
22/4/2016 11:03	ON	N22.17714 E113.84964	89 m	0:00:20	16 kph
22/4/2016 11:04	ON	N22.17621 E113.84961	103 m	0:00:23	16 kph
22/4/2016 11:04	ON	N22.17552 E113.84962	77 m	0:00:17	16 kph
22/4/2016 11:04	ON	N22.17500 E113.84960	58 m	0:00:13	16 kph
22/4/2016 11:04	ON	N22.17386 E113.84959	126 m	0:00:28	16 kph
22/4/2016 11:05	ON	N22.17354 E113.84958	36 m	0:00:08	16 kph
22/4/2016 11:05	ON	N22.17342 E113.84958	14 m	0:00:03	16 kph
22/4/2016 11:05	ON	N22.17274 E113.85009	91 m	0:00:21	16 kph
22/4/2016 11:05	ON	N22.17216 E113.85106	119 m	0:00:26	17 kph
22/4/2016 11:06	ON	N22.17157 E113.85211	127 m	0:00:27	17 kph
22/4/2016 11:06	ON	N22.17103 E113.85333	139 m	0:00:30	17 kph
22/4/2016 11:07	ON	N22.17050 E113.85456	140 m	0:00:30	17 kph
22/4/2016 11:07	ON	N22.16994 E113.85570	133 m	0:00:28	17 kph
22/4/2016 11:08	ON	N22.16933 E113.85690	142 m	0:00:30	17 kph
22/4/2016 11:08	ON	N22.16885 E113.85797	122 m	0:00:26	17 kph
22/4/2016 11:09	ON	N22.16854 E113.85890	101 m	0:00:23	16 kph
22/4/2016 11:09	ON	N22.16895 E113.85923	57 m	0:00:18	11 kph
22/4/2016 11:09	ON	N22.16966 E113.85927	79 m	0:00:23	12 kph
22/4/2016 11:10	ON	N22.17039 E113.85918	82 m	0:00:24	12 kph
22/4/2016 11:10	ON	N22.17113 E113.85910	83 m	0:00:24	12 kph
22/4/2016 11:11	ON	N22.17199 E113.85898	97 m	0:00:28	13 kph
22/4/2016 11:11	ON	N22.17271 E113.85892	80 m	0:00:23	12 kph
22/4/2016 11:11	ON	N22.17350 E113.85892	88 m	0:00:25	13 kph
22/4/2016 11:12	ON	N22.17420 E113.85892	78 m	0:00:22	13 kph
22/4/2016 11:12	ON	N22.17489 E113.85893	77 m	0:00:22	13 kph
22/4/2016 11:13	ON	N22.17563 E113.85878	84 m	0:00:25	12 kph
22/4/2016 11:13	ON	N22.17644 E113.85886	90 m	0:00:25	13 kph
22/4/2016 11:13	ON	N22.17711 E113.85891	75 m	0:00:21	13 kph
22/4/2016 11:14	ON	N22.17779 E113.85892	75 m	0:00:21	13 kph
22/4/2016 11:14	ON	N22.17858 E113.85887	88 m	0:00:25	13 kph
22/4/2016 11:15	ON	N22.17935 E113.85886	86 m	0:00:24	13 kph
22/4/2016 11:15	ON	N22.18017 E113.85895	92 m	0:00:25	13 kph
22/4/2016 11:15	ON	N22.18108 E113.85890	101 m	0:00:28	13 kph
22/4/2016 11:16	ON	N22.18197 E113.85891	99 m	0:00:27	13 kph
22/4/2016 11:16	ON	N22.18272 E113.85890	84 m	0:00:23	13 kph
22/4/2016 11:17	ON	N22.18363 E113.85892	101 m	0:00:27	13 kph
22/4/2016 11:17	ON	N22.18437 E113.85898	83 m	0:00:22	14 kph
22/4/2016 11:17	ON	N22.18507 E113.85888	78 m	0:00:22	13 kph
22/4/2016 11:18	ON	N22.18584 E113.85879	86 m	0:00:24	13 kph
22/4/2016 11:18	ON	N22.18673 E113.85910	105 m	0:00:26	15 kph
22/4/2016 11:19	ON	N22.18768 E113.85911	106 m	0:00:28	14 kph
22/4/2016 11:19	ON	N22.18852 E113.85892	95 m	0:00:26	13 kph
22/4/2016 11:20	ON	N22.18938 E113.85885	96 m	0:00:25	14 kph
22/4/2016 11:20	ON	N22.19034 E113.85888	107 m	0:00:27	14 kph
22/4/2016 11:21	ON	N22.19136 E113.85884	114 m	0:00:29	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 11:21	ON	N22.19227 E113.85893	102 m	0:00:25	15 kph
22/4/2016 11:21	ON	N22.19334 E113.85890	119 m	0:00:30	14 kph
22/4/2016 11:22	ON	N22.19441 E113.85884	119 m	0:00:30	14 kph
22/4/2016 11:22	ON	N22.19539 E113.85880	109 m	0:00:27	15 kph
22/4/2016 11:23	ON	N22.19661 E113.85887	136 m	0:00:32	15 kph
22/4/2016 11:23	ON	N22.19767 E113.85888	119 m	0:00:28	15 kph
22/4/2016 11:24	ON	N22.19889 E113.85891	136 m	0:00:32	15 kph
22/4/2016 11:24	ON	N22.19950 E113.85943	86 m	0:00:22	14 kph
22/4/2016 11:25	ON	N22.19973 E113.86066	129 m	0:00:30	15 kph
22/4/2016 11:25	ON	N22.20000 E113.86187	129 m	0:00:30	15 kph
22/4/2016 11:26	ON	N22.20031 E113.86307	129 m	0:00:30	15 kph
22/4/2016 11:26	ON	N22.20045 E113.86359	55 m	0:00:13	15 kph
22/4/2016 11:26	ON	N22.20066 E113.86426	73 m	0:00:17	16 kph
22/4/2016 11:27	ON	N22.20103 E113.86549	133 m	0:00:30	16 kph
22/4/2016 11:27	ON	N22.20136 E113.86668	128 m	0:00:29	16 kph
22/4/2016 11:28	ON	N22.20174 E113.86769	112 m	0:00:25	16 kph
22/4/2016 11:28	ON	N22.20229 E113.86857	109 m	0:00:24	16 kph
22/4/2016 11:28	ON	N22.20223 E113.86904	49 m	0:00:17	10 kph
22/4/2016 11:29	ON	N22.20161 E113.86902	69 m	0:00:21	12 kph
22/4/2016 11:29	ON	N22.20082 E113.86895	88 m	0:00:24	13 kph
22/4/2016 11:30	ON	N22.19985 E113.86893	108 m	0:00:29	13 kph
22/4/2016 11:30	ON	N22.19877 E113.86891	121 m	0:00:33	13 kph
22/4/2016 11:31	ON	N22.19772 E113.86883	117 m	0:00:32	13 kph
22/4/2016 11:31	ON	N22.19664 E113.86882	120 m	0:00:33	13 kph
22/4/2016 11:32	ON	N22.19563 E113.86885	112 m	0:00:30	13 kph
22/4/2016 11:32	ON	N22.19450 E113.86880	126 m	0:00:34	13 kph
22/4/2016 11:33	ON	N22.19349 E113.86894	113 m	0:00:29	14 kph
22/4/2016 11:33	ON	N22.19250 E113.86892	111 m	0:00:29	14 kph
22/4/2016 11:34	ON	N22.19141 E113.86878	122 m	0:00:32	14 kph
22/4/2016 11:34	ON	N22.19044 E113.86880	108 m	0:00:27	14 kph
22/4/2016 11:35	ON	N22.18933 E113.86882	124 m	0:00:31	14 kph
22/4/2016 11:35	ON	N22.18825 E113.86893	121 m	0:00:30	14 kph
22/4/2016 11:36	ON	N22.18759 E113.86902	74 m	0:00:18	15 kph
22/4/2016 11:36	ON	N22.18674 E113.86889	96 m	0:00:25	14 kph
22/4/2016 11:36	ON	N22.18588 E113.86892	96 m	0:00:24	14 kph
22/4/2016 11:37	ON	N22.18490 E113.86895	109 m	0:00:27	14 kph
22/4/2016 11:37	ON	N22.18398 E113.86906	104 m	0:00:25	15 kph
22/4/2016 11:38	ON	N22.18302 E113.86908	107 m	0:00:27	14 kph
22/4/2016 11:38	ON	N22.18221 E113.86895	91 m	0:00:23	14 kph
22/4/2016 11:39	ON	N22.18125 E113.86894	107 m	0:00:26	15 kph
22/4/2016 11:39	ON	N22.18033 E113.86893	102 m	0:00:25	15 kph
22/4/2016 11:39	ON	N22.17937 E113.86897	107 m	0:00:26	15 kph
22/4/2016 11:40	ON	N22.17859 E113.86896	86 m	0:00:21	15 kph
22/4/2016 11:40	ON	N22.17782 E113.86891	86 m	0:00:21	15 kph
22/4/2016 11:40	ON	N22.17712 E113.86894	78 m	0:00:19	15 kph
22/4/2016 11:41	ON	N22.17658 E113.86895	61 m	0:00:15	15 kph
22/4/2016 11:41	ON	N22.17586 E113.86891	80 m	0:00:20	14 kph
22/4/2016 11:41	ON	N22.17532 E113.86889	60 m	0:00:15	14 kph
22/4/2016 11:41	ON	N22.17473 E113.86889	65 m	0:00:16	15 kph
22/4/2016 11:42	ON	N22.17392 E113.86882	91 m	0:00:22	15 kph
22/4/2016 11:42	ON	N22.17296 E113.86880	106 m	0:00:25	15 kph
22/4/2016 11:43	ON	N22.17191 E113.86889	117 m	0:00:27	16 kph
22/4/2016 11:43	ON	N22.17090 E113.86892	113 m	0:00:26	16 kph
22/4/2016 11:44	ON	N22.17002 E113.86890	98 m	0:00:23	15 kph
22/4/2016 11:44	ON	N22.16901 E113.86885	112 m	0:00:26	15 kph
22/4/2016 11:44	ON	N22.16784 E113.86887	131 m	0:00:30	16 kph
22/4/2016 11:45	ON	N22.16690 E113.86889	105 m	0:00:24	16 kph
22/4/2016 11:45	ON	N22.16588 E113.86886	113 m	0:00:26	16 kph
22/4/2016 11:46	ON	N22.16494 E113.86888	105 m	0:00:24	16 kph
22/4/2016 11:46	ON	N22.16398 E113.86891	106 m	0:00:24	16 kph
22/4/2016 11:46	ON	N22.16303 E113.86891	106 m	0:00:24	16 kph
22/4/2016 11:47	ON	N22.16214 E113.86890	100 m	0:00:23	16 kph
22/4/2016 11:47	ON	N22.16167 E113.86944	76 m	0:00:18	15 kph
22/4/2016 11:47	ON	N22.16157 E113.86963	23 m	0:00:05	17 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 11:47	ON	N22.16146 E113.86988	28 m	0:00:06	17 kph
22/4/2016 11:48	ON	N22.16107 E113.87108	132 m	0:00:28	17 kph
22/4/2016 11:48	ON	N22.16085 E113.87214	111 m	0:00:24	17 kph
22/4/2016 11:49	ON	N22.16068 E113.87334	126 m	0:00:27	17 kph
22/4/2016 11:49	ON	N22.16057 E113.87446	115 m	0:00:25	17 kph
22/4/2016 11:50	ON	N22.16009 E113.87546	117 m	0:00:25	17 kph
22/4/2016 11:50	ON	N22.15945 E113.87643	123 m	0:00:26	17 kph
22/4/2016 11:50	ON	N22.15876 E113.87730	118 m	0:00:25	17 kph
22/4/2016 11:51	ON	N22.15853 E113.87773	52 m	0:00:11	17 kph
22/4/2016 11:51	ON	N22.15870 E113.87826	58 m	0:00:18	12 kph
22/4/2016 11:51	ON	N22.15941 E113.87839	80 m	0:00:23	13 kph
22/4/2016 11:52	ON	N22.16025 E113.87826	95 m	0:00:27	13 kph
22/4/2016 11:52	ON	N22.16098 E113.87819	81 m	0:00:23	13 kph
22/4/2016 11:52	ON	N22.16158 E113.87798	71 m	0:00:21	12 kph
22/4/2016 11:53	ON	N22.16242 E113.87806	94 m	0:00:26	13 kph
22/4/2016 11:53	ON	N22.16326 E113.87806	93 m	0:00:26	13 kph
22/4/2016 11:54	ON	N22.16414 E113.87809	98 m	0:00:27	13 kph
22/4/2016 11:54	ON	N22.16503 E113.87803	100 m	0:00:28	13 kph
22/4/2016 11:55	ON	N22.16594 E113.87810	102 m	0:00:28	13 kph
22/4/2016 11:55	ON	N22.16674 E113.87804	89 m	0:00:25	13 kph
22/4/2016 11:55	ON	N22.16746 E113.87809	80 m	0:00:22	13 kph
22/4/2016 11:56	ON	N22.16841 E113.87808	106 m	0:00:29	13 kph
22/4/2016 11:56	ON	N22.16950 E113.87812	122 m	0:00:33	13 kph
22/4/2016 11:57	ON	N22.17040 E113.87805	100 m	0:00:28	13 kph
22/4/2016 11:57	ON	N22.17130 E113.87803	100 m	0:00:27	13 kph
22/4/2016 11:58	ON	N22.17226 E113.87806	107 m	0:00:29	13 kph
22/4/2016 11:58	ON	N22.17311 E113.87789	97 m	0:00:28	12 kph
22/4/2016 11:59	ON	N22.17398 E113.87808	99 m	0:00:26	14 kph
22/4/2016 11:59	ON	N22.17486 E113.87818	98 m	0:00:26	14 kph
22/4/2016 12:00	ON	N22.17571 E113.87811	95 m	0:00:26	13 kph
22/4/2016 12:00	ON	N22.17660 E113.87807	100 m	0:00:27	13 kph
22/4/2016 12:01	ON	N22.17753 E113.87812	103 m	0:00:27	14 kph
22/4/2016 12:01	ON	N22.17849 E113.87805	107 m	0:00:29	13 kph
22/4/2016 12:01	ON	N22.17939 E113.87811	100 m	0:00:26	14 kph
22/4/2016 12:02	ON	N22.18014 E113.87812	84 m	0:00:22	14 kph
22/4/2016 12:02	ON	N22.18095 E113.87807	90 m	0:00:24	14 kph
22/4/2016 12:03	ON	N22.18177 E113.87807	91 m	0:00:24	14 kph
22/4/2016 12:03	ON	N22.18264 E113.87810	97 m	0:00:25	14 kph
22/4/2016 12:03	ON	N22.18346 E113.87808	92 m	0:00:24	14 kph
22/4/2016 12:04	ON	N22.18428 E113.87806	91 m	0:00:24	14 kph
22/4/2016 12:04	ON	N22.18531 E113.87807	115 m	0:00:29	14 kph
22/4/2016 12:05	ON	N22.18628 E113.87810	108 m	0:00:27	14 kph
22/4/2016 12:05	ON	N22.18714 E113.87799	97 m	0:00:25	14 kph
22/4/2016 12:05	ON	N22.18777 E113.87800	70 m	0:00:18	14 kph
22/4/2016 12:06	ON	N22.18868 E113.87809	102 m	0:00:25	15 kph
22/4/2016 12:06	ON	N22.18951 E113.87807	93 m	0:00:23	15 kph
22/4/2016 12:07	ON	N22.19050 E113.87801	109 m	0:00:27	15 kph
22/4/2016 12:07	ON	N22.19140 E113.87801	101 m	0:00:25	15 kph
22/4/2016 12:08	ON	N22.19228 E113.87809	98 m	0:00:24	15 kph
22/4/2016 12:08	ON	N22.19335 E113.87817	120 m	0:00:30	14 kph
22/4/2016 12:09	ON	N22.19442 E113.87806	119 m	0:00:30	14 kph
22/4/2016 12:09	ON	N22.19549 E113.87802	119 m	0:00:29	15 kph
22/4/2016 12:09	ON	N22.19636 E113.87811	97 m	0:00:23	15 kph
22/4/2016 12:10	ON	N22.19740 E113.87810	116 m	0:00:28	15 kph
22/4/2016 12:10	ON	N22.19853 E113.87813	126 m	0:00:30	15 kph
22/4/2016 12:11	ON	N22.19966 E113.87811	125 m	0:00:30	15 kph
22/4/2016 12:11	ON	N22.20079 E113.87804	127 m	0:00:31	15 kph
22/4/2016 12:12	ON	N22.20199 E113.87810	133 m	0:00:32	15 kph
22/4/2016 12:13	ON	N22.20326 E113.87808	141 m	0:00:34	15 kph
22/4/2016 12:13	ON	N22.20445 E113.87807	133 m	0:00:32	15 kph
22/4/2016 12:14	ON	N22.20563 E113.87812	131 m	0:00:31	15 kph
22/4/2016 12:14	ON	N22.20670 E113.87810	119 m	0:00:28	15 kph
22/4/2016 12:14	ON	N22.20761 E113.87834	104 m	0:00:26	14 kph
22/4/2016 12:15	ON	N22.20803 E113.87896	79 m	0:00:18	16 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 12:15	ON	N22.20826 E113.87933	45 m	0:00:10	16 kph
22/4/2016 12:15	ON	N22.20831 E113.87940	9 m	0:00:02	16 kph
22/4/2016 12:15	ON	N22.20840 E113.87954	18 m	0:00:04	16 kph
22/4/2016 12:15	ON	N22.20886 E113.88021	86 m	0:00:19	16 kph
22/4/2016 12:16	ON	N22.20952 E113.88107	115 m	0:00:26	16 kph
22/4/2016 12:16	ON	N22.20984 E113.88154	60 m	0:00:21	10 kph
22/4/2016 12:16	OFF	N22.21007 E113.88182	38 m	0:00:20	7 kph
22/4/2016 12:17	OFF	N22.21030 E113.88210	39 m	0:00:27	5 kph
22/4/2016 12:17	OFF	N22.21044 E113.88227	24 m	0:00:23	4 kph
22/4/2016 12:18	OFF	N22.21061 E113.88247	28 m	0:00:30	3 kph
22/4/2016 12:18	OFF	N22.21076 E113.88268	27 m	0:00:32	3 kph
22/4/2016 12:19	OFF	N22.21087 E113.88284	21 m	0:00:29	3 kph
22/4/2016 12:19	OFF	N22.21097 E113.88298	18 m	0:00:27	2 kph
22/4/2016 12:20	OFF	N22.21106 E113.88313	18 m	0:00:29	2 kph
22/4/2016 12:20	OFF	N22.21114 E113.88325	15 m	0:00:25	2 kph
22/4/2016 12:20	OFF	N22.21140 E113.88347	37 m	0:00:20	7 kph
22/4/2016 12:21	ON	N22.21214 E113.88429	118 m	0:00:27	16 kph
22/4/2016 12:21	ON	N22.21292 E113.88513	122 m	0:00:27	16 kph
22/4/2016 12:22	ON	N22.21392 E113.88602	145 m	0:00:32	16 kph
22/4/2016 12:22	ON	N22.21468 E113.88696	129 m	0:00:29	16 kph
22/4/2016 12:23	ON	N22.21522 E113.88807	129 m	0:00:31	15 kph
22/4/2016 12:23	ON	N22.21478 E113.88819	51 m	0:00:19	10 kph
22/4/2016 12:24	ON	N22.21399 E113.88821	88 m	0:00:24	13 kph
22/4/2016 12:24	ON	N22.21295 E113.88830	116 m	0:00:31	13 kph
22/4/2016 12:25	ON	N22.21211 E113.88830	94 m	0:00:25	13 kph
22/4/2016 12:25	ON	N22.21117 E113.88834	106 m	0:00:28	14 kph
22/4/2016 12:25	ON	N22.21033 E113.88830	93 m	0:00:25	13 kph
22/4/2016 12:26	ON	N22.20946 E113.88827	97 m	0:00:26	13 kph
22/4/2016 12:26	ON	N22.20862 E113.88827	93 m	0:00:25	13 kph
22/4/2016 12:27	ON	N22.20760 E113.88835	114 m	0:00:30	14 kph
22/4/2016 12:27	ON	N22.20643 E113.88824	131 m	0:00:35	13 kph
22/4/2016 12:28	ON	N22.20541 E113.88829	114 m	0:00:30	14 kph
22/4/2016 12:28	ON	N22.20448 E113.88835	103 m	0:00:27	14 kph
22/4/2016 12:29	ON	N22.20360 E113.88836	97 m	0:00:26	13 kph
22/4/2016 12:29	ON	N22.20260 E113.88831	112 m	0:00:30	13 kph
22/4/2016 12:30	ON	N22.20161 E113.88839	110 m	0:00:29	14 kph
22/4/2016 12:30	ON	N22.20049 E113.88837	125 m	0:00:33	14 kph
22/4/2016 12:31	ON	N22.19936 E113.88832	126 m	0:00:33	14 kph
22/4/2016 12:31	ON	N22.19814 E113.88835	136 m	0:00:35	14 kph
22/4/2016 12:32	ON	N22.19708 E113.88830	118 m	0:00:31	14 kph
22/4/2016 12:32	ON	N22.19615 E113.88830	104 m	0:00:27	14 kph
22/4/2016 12:33	ON	N22.19508 E113.88828	119 m	0:00:31	14 kph
22/4/2016 12:33	ON	N22.19405 E113.88829	114 m	0:00:30	14 kph
22/4/2016 12:34	ON	N22.19313 E113.88833	102 m	0:00:26	14 kph
22/4/2016 12:34	ON	N22.19214 E113.88826	111 m	0:00:29	14 kph
22/4/2016 12:35	ON	N22.19113 E113.88838	112 m	0:00:28	14 kph
22/4/2016 12:35	ON	N22.19004 E113.88844	122 m	0:00:31	14 kph
22/4/2016 12:36	ON	N22.18912 E113.88830	104 m	0:00:28	13 kph
22/4/2016 12:36	ON	N22.18806 E113.88830	117 m	0:00:31	14 kph
22/4/2016 12:37	ON	N22.18701 E113.88828	117 m	0:00:31	14 kph
22/4/2016 12:37	ON	N22.18589 E113.88823	125 m	0:00:33	14 kph
22/4/2016 12:38	ON	N22.18480 E113.88829	121 m	0:00:31	14 kph
22/4/2016 12:38	ON	N22.18377 E113.88826	115 m	0:00:30	14 kph
22/4/2016 12:39	ON	N22.18260 E113.88828	130 m	0:00:33	14 kph
22/4/2016 12:39	ON	N22.18152 E113.88823	121 m	0:00:31	14 kph
22/4/2016 12:40	ON	N22.18035 E113.88824	130 m	0:00:33	14 kph
22/4/2016 12:41	ON	N22.17916 E113.88831	133 m	0:00:33	14 kph
22/4/2016 12:41	ON	N22.17818 E113.88833	109 m	0:00:27	15 kph
22/4/2016 12:42	ON	N22.17700 E113.88848	132 m	0:00:32	15 kph
22/4/2016 12:42	ON	N22.17609 E113.88847	101 m	0:00:25	15 kph
22/4/2016 12:42	ON	N22.17500 E113.88833	123 m	0:00:31	14 kph
22/4/2016 12:43	ON	N22.17395 E113.88825	117 m	0:00:29	15 kph
22/4/2016 12:44	ON	N22.17273 E113.88827	136 m	0:00:33	15 kph
22/4/2016 12:44	ON	N22.17178 E113.88824	106 m	0:00:26	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 12:44	ON	N22.17072 E113.88826	118 m	0:00:28	15 kph
22/4/2016 12:45	ON	N22.16963 E113.88829	122 m	0:00:29	15 kph
22/4/2016 12:45	ON	N22.16849 E113.88831	127 m	0:00:30	15 kph
22/4/2016 12:46	ON	N22.16732 E113.88827	131 m	0:00:31	15 kph
22/4/2016 12:46	ON	N22.16610 E113.88828	136 m	0:00:32	15 kph
22/4/2016 12:47	ON	N22.16498 E113.88829	124 m	0:00:29	15 kph
22/4/2016 12:47	ON	N22.16383 E113.88827	128 m	0:00:30	15 kph
22/4/2016 12:48	ON	N22.16267 E113.88828	129 m	0:00:30	15 kph
22/4/2016 12:48	ON	N22.16171 E113.88828	108 m	0:00:25	16 kph
22/4/2016 12:49	ON	N22.16058 E113.88829	125 m	0:00:29	16 kph
22/4/2016 12:49	ON	N22.15962 E113.88829	108 m	0:00:25	16 kph
22/4/2016 12:50	ON	N22.15860 E113.88829	113 m	0:00:26	16 kph
22/4/2016 12:50	ON	N22.15763 E113.88825	108 m	0:00:25	16 kph
22/4/2016 12:50	ON	N22.15677 E113.88830	96 m	0:00:22	16 kph
22/4/2016 12:51	ON	N22.15575 E113.88829	113 m	0:00:26	16 kph
22/4/2016 12:51	ON	N22.15479 E113.88823	108 m	0:00:25	15 kph
22/4/2016 12:52	ON	N22.15381 E113.88824	109 m	0:00:25	16 kph
22/4/2016 12:52	ON	N22.15292 E113.88825	100 m	0:00:23	16 kph
22/4/2016 12:53	ON	N22.15199 E113.88828	104 m	0:00:24	16 kph
22/4/2016 12:53	ON	N22.15113 E113.88833	96 m	0:00:22	16 kph
22/4/2016 12:53	ON	N22.15081 E113.88838	36 m	0:00:08	16 kph
22/4/2016 12:53	ON	N22.15070 E113.88843	14 m	0:00:03	16 kph
22/4/2016 12:53	ON	N22.14995 E113.88920	115 m	0:00:25	17 kph
22/4/2016 12:54	ON	N22.14967 E113.89034	121 m	0:00:26	17 kph
22/4/2016 12:54	ON	N22.14952 E113.89160	132 m	0:00:28	17 kph
22/4/2016 12:55	ON	N22.14944 E113.89270	113 m	0:00:24	17 kph
22/4/2016 12:55	ON	N22.14942 E113.89315	46 m	0:00:10	17 kph
22/4/2016 12:55	ON	N22.14938 E113.89419	107 m	0:00:23	17 kph
22/4/2016 12:56	ON	N22.14933 E113.89534	118 m	0:00:25	17 kph
22/4/2016 12:56	ON	N22.14925 E113.89644	114 m	0:00:24	17 kph
22/4/2016 12:56	ON	N22.14919 E113.89699	57 m	0:00:12	17 kph
22/4/2016 12:57	ON	N22.14943 E113.89746	55 m	0:00:17	12 kph
22/4/2016 12:57	ON	N22.15019 E113.89739	85 m	0:00:26	12 kph
22/4/2016 12:57	ON	N22.15091 E113.89729	80 m	0:00:23	13 kph
22/4/2016 12:58	ON	N22.15181 E113.89724	100 m	0:00:28	13 kph
22/4/2016 12:58	ON	N22.15257 E113.89723	85 m	0:00:24	13 kph
22/4/2016 12:59	ON	N22.15336 E113.89725	88 m	0:00:24	13 kph
22/4/2016 12:59	ON	N22.15415 E113.89734	88 m	0:00:24	13 kph
22/4/2016 12:59	ON	N22.15487 E113.89731	81 m	0:00:23	13 kph
22/4/2016 13:00	ON	N22.15565 E113.89728	87 m	0:00:25	13 kph
22/4/2016 13:00	ON	N22.15659 E113.89739	104 m	0:00:29	13 kph
22/4/2016 13:01	ON	N22.15741 E113.89728	93 m	0:00:27	12 kph
22/4/2016 13:01	ON	N22.15818 E113.89720	85 m	0:00:25	12 kph
22/4/2016 13:02	ON	N22.15896 E113.89727	87 m	0:00:25	13 kph
22/4/2016 13:02	ON	N22.15984 E113.89726	98 m	0:00:28	13 kph
22/4/2016 13:03	ON	N22.16085 E113.89724	112 m	0:00:32	13 kph
22/4/2016 13:03	ON	N22.16173 E113.89724	98 m	0:00:28	13 kph
22/4/2016 13:04	ON	N22.16255 E113.89724	92 m	0:00:26	13 kph
22/4/2016 13:04	ON	N22.16350 E113.89721	106 m	0:00:30	13 kph
22/4/2016 13:05	ON	N22.16449 E113.89726	109 m	0:00:30	13 kph
22/4/2016 13:05	ON	N22.16514 E113.89726	72 m	0:00:20	13 kph
22/4/2016 13:05	ON	N22.16599 E113.89721	95 m	0:00:26	13 kph
22/4/2016 13:06	ON	N22.16697 E113.89725	109 m	0:00:29	14 kph
22/4/2016 13:06	ON	N22.16795 E113.89727	109 m	0:00:29	14 kph
22/4/2016 13:07	ON	N22.16896 E113.89726	112 m	0:00:30	13 kph
22/4/2016 13:07	ON	N22.17003 E113.89727	120 m	0:00:32	13 kph
22/4/2016 13:08	ON	N22.17129 E113.89725	140 m	0:00:38	13 kph
22/4/2016 13:08	ON	N22.17229 E113.89727	111 m	0:00:30	13 kph
22/4/2016 13:09	ON	N22.17322 E113.89741	104 m	0:00:27	14 kph
22/4/2016 13:09	ON	N22.17407 E113.89739	95 m	0:00:25	14 kph
22/4/2016 13:10	ON	N22.17480 E113.89730	82 m	0:00:22	13 kph
22/4/2016 13:10	ON	N22.17583 E113.89735	115 m	0:00:30	14 kph
22/4/2016 13:11	ON	N22.17669 E113.89738	96 m	0:00:25	14 kph
22/4/2016 13:11	ON	N22.17772 E113.89732	115 m	0:00:30	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 13:12	ON	N22.17870 E113.89733	109 m	0:00:28	14 kph
22/4/2016 13:12	ON	N22.17939 E113.89731	77 m	0:00:20	14 kph
22/4/2016 13:12	ON	N22.18037 E113.89732	109 m	0:00:28	14 kph
22/4/2016 13:13	ON	N22.18124 E113.89734	97 m	0:00:25	14 kph
22/4/2016 13:13	ON	N22.18211 E113.89730	97 m	0:00:25	14 kph
22/4/2016 13:14	ON	N22.18296 E113.89733	94 m	0:00:24	14 kph
22/4/2016 13:14	ON	N22.18369 E113.89734	81 m	0:00:21	14 kph
22/4/2016 13:14	ON	N22.18437 E113.89728	77 m	0:00:20	14 kph
22/4/2016 13:15	ON	N22.18515 E113.89723	87 m	0:00:22	14 kph
22/4/2016 13:15	ON	N22.18599 E113.89727	93 m	0:00:23	15 kph
22/4/2016 13:15	ON	N22.18690 E113.89726	101 m	0:00:25	15 kph
22/4/2016 13:16	ON	N22.18805 E113.89722	128 m	0:00:32	14 kph
22/4/2016 13:17	ON	N22.18915 E113.89723	122 m	0:00:30	15 kph
22/4/2016 13:17	ON	N22.19015 E113.89723	112 m	0:00:28	14 kph
22/4/2016 13:17	ON	N22.19109 E113.89728	104 m	0:00:26	14 kph
22/4/2016 13:18	ON	N22.19205 E113.89724	107 m	0:00:27	14 kph
22/4/2016 13:18	ON	N22.19307 E113.89726	113 m	0:00:28	15 kph
22/4/2016 13:19	ON	N22.19409 E113.89731	114 m	0:00:28	15 kph
22/4/2016 13:19	ON	N22.19508 E113.89727	110 m	0:00:28	14 kph
22/4/2016 13:20	ON	N22.19620 E113.89727	125 m	0:00:31	15 kph
22/4/2016 13:20	ON	N22.19695 E113.89719	83 m	0:00:21	14 kph
22/4/2016 13:20	ON	N22.19768 E113.89718	82 m	0:00:20	15 kph
22/4/2016 13:21	ON	N22.19826 E113.89718	64 m	0:00:16	14 kph
22/4/2016 13:21	ON	N22.19928 E113.89723	114 m	0:00:28	15 kph
22/4/2016 13:22	ON	N22.20040 E113.89725	125 m	0:00:31	15 kph
22/4/2016 13:22	ON	N22.20151 E113.89733	123 m	0:00:30	15 kph
22/4/2016 13:23	ON	N22.20262 E113.89746	125 m	0:00:30	15 kph
22/4/2016 13:23	ON	N22.20370 E113.89750	120 m	0:00:29	15 kph
22/4/2016 13:24	ON	N22.20474 E113.89730	118 m	0:00:30	14 kph
22/4/2016 13:24	ON	N22.20562 E113.89733	98 m	0:00:24	15 kph
22/4/2016 13:25	ON	N22.20684 E113.89735	135 m	0:00:33	15 kph
22/4/2016 13:25	ON	N22.20815 E113.89737	146 m	0:00:36	15 kph
22/4/2016 13:26	ON	N22.20955 E113.89728	155 m	0:00:39	14 kph
22/4/2016 13:26	ON	N22.21079 E113.89727	139 m	0:00:35	14 kph
22/4/2016 13:27	ON	N22.21193 E113.89730	127 m	0:00:33	14 kph
22/4/2016 13:28	ON	N22.21304 E113.89734	124 m	0:00:32	14 kph
22/4/2016 13:28	ON	N22.21374 E113.89762	83 m	0:00:25	12 kph
22/4/2016 13:28	ON	N22.21348 E113.89816	63 m	0:00:18	13 kph
22/4/2016 13:29	ON	N22.21289 E113.89883	95 m	0:00:23	15 kph
22/4/2016 13:29	ON	N22.21242 E113.89937	77 m	0:00:18	15 kph
22/4/2016 13:29	ON	N22.21179 E113.90014	107 m	0:00:25	15 kph
22/4/2016 13:30	ON	N22.21111 E113.90086	105 m	0:00:25	15 kph
22/4/2016 13:30	ON	N22.21022 E113.90169	131 m	0:00:31	15 kph
22/4/2016 13:31	ON	N22.20963 E113.90260	115 m	0:00:27	15 kph
22/4/2016 13:31	ON	N22.20898 E113.90365	129 m	0:00:30	16 kph
22/4/2016 13:32	ON	N22.20826 E113.90464	130 m	0:00:30	16 kph
22/4/2016 13:32	ON	N22.20759 E113.90552	118 m	0:00:27	16 kph
22/4/2016 13:33	ON	N22.20697 E113.90628	104 m	0:00:24	16 kph
22/4/2016 13:33	ON	N22.20640 E113.90699	97 m	0:00:22	16 kph
22/4/2016 13:33	ON	N22.20617 E113.90729	41 m	0:00:09	16 kph
22/4/2016 13:33	ON	N22.20599 E113.90747	27 m	0:00:06	16 kph
22/4/2016 13:34	ON	N22.20524 E113.90790	95 m	0:00:22	16 kph
22/4/2016 13:34	ON	N22.20456 E113.90799	76 m	0:00:19	14 kph
22/4/2016 13:34	ON	N22.20370 E113.90795	96 m	0:00:25	14 kph
22/4/2016 13:35	ON	N22.20273 E113.90805	109 m	0:00:27	14 kph
22/4/2016 13:35	ON	N22.20194 E113.90806	88 m	0:00:26	12 kph
22/4/2016 13:36	ON	N22.20151 E113.90825	51 m	0:00:30	6 kph
22/4/2016 13:36	ON	N22.20101 E113.90813	57 m	0:00:25	8 kph
22/4/2016 13:36	ON	N22.20039 E113.90793	72 m	0:00:21	12 kph
22/4/2016 13:37	ON	N22.19956 E113.90783	93 m	0:00:25	13 kph
22/4/2016 13:37	ON	N22.19905 E113.90780	56 m	0:00:16	13 kph
22/4/2016 13:38	ON	N22.19843 E113.90783	70 m	0:00:25	10 kph
22/4/2016 13:38	ON	N22.19829 E113.90794	18 m	0:00:09	7 kph
22/4/2016 13:38	ON	N22.19763 E113.90802	75 m	0:00:22	12 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 13:39	ON	N22.19671 E113.90791	103 m	0:00:27	14 kph
22/4/2016 13:39	ON	N22.19574 E113.90786	108 m	0:00:28	14 kph
22/4/2016 13:39	ON	N22.19477 E113.90784	108 m	0:00:28	14 kph
22/4/2016 13:40	ON	N22.19365 E113.90781	125 m	0:00:32	14 kph
22/4/2016 13:41	ON	N22.19260 E113.90778	117 m	0:00:30	14 kph
22/4/2016 13:41	ON	N22.19145 E113.90782	128 m	0:00:33	14 kph
22/4/2016 13:42	ON	N22.19020 E113.90773	140 m	0:00:39	13 kph
22/4/2016 13:42	ON	N22.18943 E113.90737	93 m	0:00:28	12 kph
22/4/2016 13:43	ON	N22.18900 E113.90660	93 m	0:00:30	11 kph
22/4/2016 13:43	ON	N22.18849 E113.90590	91 m	0:00:28	12 kph
22/4/2016 13:44	ON	N22.18765 E113.90533	110 m	0:00:33	12 kph
22/4/2016 13:44	ON	N22.18696 E113.90512	81 m	0:00:33	9 kph
22/4/2016 13:45	ON	N22.18616 E113.90482	94 m	0:00:33	10 kph
22/4/2016 13:45	ON	N22.18529 E113.90462	99 m	0:00:34	11 kph
22/4/2016 13:46	ON	N22.18437 E113.90437	105 m	0:00:35	11 kph
22/4/2016 13:47	ON	N22.18329 E113.90426	121 m	0:00:40	11 kph
22/4/2016 13:47	ON	N22.18227 E113.90418	114 m	0:00:36	11 kph
22/4/2016 13:48	ON	N22.18119 E113.90416	120 m	0:00:36	12 kph
22/4/2016 13:48	ON	N22.18033 E113.90426	97 m	0:00:28	12 kph
22/4/2016 13:49	ON	N22.17927 E113.90449	120 m	0:00:33	13 kph
22/4/2016 13:49	ON	N22.17835 E113.90516	124 m	0:00:34	13 kph
22/4/2016 13:50	ON	N22.17774 E113.90590	101 m	0:00:36	10 kph
22/4/2016 13:50	OFF	N22.17726 E113.90622	63 m	0:00:27	8 kph
22/4/2016 13:51	OFF	N22.17707 E113.90629	23 m	0:00:24	3 kph
22/4/2016 13:51	OFF	N22.17694 E113.90643	20 m	0:00:29	2 kph
22/4/2016 13:52	OFF	N22.17689 E113.90653	12 m	0:00:18	2 kph
22/4/2016 13:52	OFF	N22.17682 E113.90664	14 m	0:00:21	2 kph
22/4/2016 13:53	OFF	N22.17670 E113.90687	27 m	0:00:37	3 kph
22/4/2016 13:53	OFF	N22.17659 E113.90712	28 m	0:00:33	3 kph
22/4/2016 13:53	OFF	N22.17657 E113.90716	5 m	0:00:05	4 kph
22/4/2016 13:54	OFF	N22.17644 E113.90746	34 m	0:00:34	4 kph
22/4/2016 13:54	OFF	N22.17633 E113.90753	14 m	0:00:21	2 kph
22/4/2016 13:55	OFF	N22.17624 E113.90777	26 m	0:00:39	2 kph
22/4/2016 13:55	OFF	N22.17619 E113.90794	18 m	0:00:30	2 kph
22/4/2016 13:56	OFF	N22.17617 E113.90787	7 m	0:00:21	1.2 kph
22/4/2016 13:56	OFF	N22.17623 E113.90784	7 m	0:00:08	3 kph
22/4/2016 13:56	OFF	N22.17649 E113.90783	29 m	0:00:32	3 kph
22/4/2016 13:57	OFF	N22.17662 E113.90795	19 m	0:00:31	2 kph
22/4/2016 13:57	OFF	N22.17668 E113.90812	19 m	0:00:31	2 kph
22/4/2016 13:58	OFF	N22.17669 E113.90827	15 m	0:00:36	2 kph
22/4/2016 13:59	OFF	N22.17667 E113.90846	20 m	0:00:34	2 kph
22/4/2016 13:59	OFF	N22.17665 E113.90867	22 m	0:00:36	2 kph
22/4/2016 14:00	OFF	N22.17663 E113.90871	5 m	0:00:37	0.5 kph
22/4/2016 14:00	OFF	N22.17660 E113.90857	14 m	0:00:41	1.2 kph
22/4/2016 14:01	OFF	N22.17649 E113.90852	13 m	0:00:27	2 kph
22/4/2016 14:02	OFF	N22.17652 E113.90845	8 m	0:01:29	0.3 kph
22/4/2016 14:03	OFF	N22.17652 E113.90843	2 m	0:00:47	0.2 kph
22/4/2016 14:03	ON	N22.17652 E113.90843	1 m	0:00:11	0.2 kph
22/4/2016 14:04	ON	N22.17657 E113.90845	6 m	0:00:20	1.0 kph
22/4/2016 14:04	ON	N22.17660 E113.90841	5 m	0:00:26	0.7 kph
22/4/2016 14:04	ON	N22.17661 E113.90839	2 m	0:00:01	7 kph
22/4/2016 14:04	ON	N22.17664 E113.90830	10 m	0:00:14	3 kph
22/4/2016 14:04	ON	N22.17659 E113.90823	9 m	0:00:07	5 kph
22/4/2016 14:05	ON	N22.17604 E113.90834	62 m	0:00:26	9 kph
22/4/2016 14:05	ON	N22.17563 E113.90856	51 m	0:00:15	12 kph
22/4/2016 14:06	ON	N22.17500 E113.90892	80 m	0:00:24	12 kph
22/4/2016 14:06	ON	N22.17411 E113.90902	100 m	0:00:30	12 kph
22/4/2016 14:07	ON	N22.17304 E113.90861	126 m	0:00:34	13 kph
22/4/2016 14:07	ON	N22.17210 E113.90791	127 m	0:00:34	13 kph
22/4/2016 14:08	ON	N22.17130 E113.90708	123 m	0:00:33	13 kph
22/4/2016 14:08	ON	N22.17066 E113.90631	107 m	0:00:28	14 kph
22/4/2016 14:09	ON	N22.16995 E113.90519	140 m	0:00:37	14 kph
22/4/2016 14:09	ON	N22.16909 E113.90416	143 m	0:00:36	14 kph
22/4/2016 14:10	ON	N22.16815 E113.90319	145 m	0:00:37	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 14:10	ON	N22.16742 E113.90254	106 m	0:00:29	13 kph
22/4/2016 14:11	ON	N22.16668 E113.90178	113 m	0:00:33	12 kph
22/4/2016 14:12	ON	N22.16600 E113.90110	103 m	0:00:30	12 kph
22/4/2016 14:12	ON	N22.16521 E113.90036	117 m	0:00:34	12 kph
22/4/2016 14:13	ON	N22.16447 E113.89962	112 m	0:00:32	13 kph
22/4/2016 14:13	ON	N22.16367 E113.89911	103 m	0:00:28	13 kph
22/4/2016 14:14	ON	N22.16270 E113.89875	115 m	0:00:29	14 kph
22/4/2016 14:14	ON	N22.16172 E113.89843	113 m	0:00:27	15 kph
22/4/2016 14:15	ON	N22.16046 E113.89828	141 m	0:00:32	16 kph
22/4/2016 14:15	ON	N22.16042 E113.89827	4 m	0:00:01	16 kph
22/4/2016 14:15	ON	N22.15957 E113.89822	95 m	0:00:21	16 kph
22/4/2016 14:15	ON	N22.15919 E113.89830	43 m	0:00:09	17 kph
22/4/2016 14:15	ON	N22.15820 E113.89873	119 m	0:00:24	18 kph
22/4/2016 14:16	ON	N22.15800 E113.89886	26 m	0:00:05	19 kph
22/4/2016 14:16	ON	N22.15713 E113.89952	118 m	0:00:23	19 kph
22/4/2016 14:16	ON	N22.15699 E113.89964	20 m	0:00:04	18 kph
22/4/2016 14:16	ON	N22.15673 E113.89992	41 m	0:00:08	18 kph
22/4/2016 14:16	ON	N22.15653 E113.90018	35 m	0:00:07	18 kph
22/4/2016 14:17	ON	N22.15596 E113.90097	103 m	0:00:20	19 kph
22/4/2016 14:17	ON	N22.15573 E113.90135	47 m	0:00:09	19 kph
22/4/2016 14:17	ON	N22.15562 E113.90173	41 m	0:00:08	18 kph
22/4/2016 14:17	ON	N22.15507 E113.90297	142 m	0:00:27	19 kph
22/4/2016 14:18	ON	N22.15482 E113.90427	137 m	0:00:27	18 kph
22/4/2016 14:18	ON	N22.15482 E113.90565	142 m	0:00:29	18 kph
22/4/2016 14:19	ON	N22.15489 E113.90705	145 m	0:00:30	17 kph
22/4/2016 14:19	ON	N22.15490 E113.90743	38 m	0:00:08	17 kph
22/4/2016 14:19	ON	N22.15489 E113.90761	19 m	0:00:04	17 kph
22/4/2016 14:19	ON	N22.15486 E113.90774	14 m	0:00:03	16 kph
22/4/2016 14:19	ON	N22.15478 E113.90788	17 m	0:00:04	16 kph
22/4/2016 14:19	ON	N22.15419 E113.90804	68 m	0:00:19	13 kph
22/4/2016 14:20	ON	N22.15331 E113.90788	99 m	0:00:25	14 kph
22/4/2016 14:20	ON	N22.15252 E113.90788	88 m	0:00:21	15 kph
22/4/2016 14:21	ON	N22.15160 E113.90782	103 m	0:00:24	15 kph
22/4/2016 14:21	ON	N22.15072 E113.90785	97 m	0:00:22	16 kph
22/4/2016 14:21	ON	N22.14973 E113.90787	110 m	0:00:25	16 kph
22/4/2016 14:22	ON	N22.14878 E113.90790	106 m	0:00:24	16 kph
22/4/2016 14:22	ON	N22.14788 E113.90793	100 m	0:00:23	16 kph
22/4/2016 14:23	ON	N22.14688 E113.90790	111 m	0:00:26	15 kph
22/4/2016 14:23	ON	N22.14603 E113.90788	95 m	0:00:22	16 kph
22/4/2016 14:23	ON	N22.14512 E113.90792	101 m	0:00:23	16 kph
22/4/2016 14:24	ON	N22.14413 E113.90789	110 m	0:00:25	16 kph
22/4/2016 14:24	ON	N22.14300 E113.90797	126 m	0:00:28	16 kph
22/4/2016 14:25	ON	N22.14227 E113.90805	82 m	0:00:20	15 kph
22/4/2016 14:25	ON	N22.14218 E113.90814	13 m	0:00:03	16 kph
22/4/2016 14:25	ON	N22.14177 E113.90927	125 m	0:00:26	17 kph
22/4/2016 14:25	ON	N22.14164 E113.91012	89 m	0:00:18	18 kph
22/4/2016 14:26	ON	N22.14159 E113.91130	122 m	0:00:25	18 kph
22/4/2016 14:26	ON	N22.14171 E113.91263	138 m	0:00:29	17 kph
22/4/2016 14:27	ON	N22.14170 E113.91395	136 m	0:00:28	18 kph
22/4/2016 14:27	ON	N22.14174 E113.91529	138 m	0:00:29	17 kph
22/4/2016 14:28	ON	N22.14179 E113.91662	137 m	0:00:29	17 kph
22/4/2016 14:28	ON	N22.14196 E113.91786	129 m	0:00:29	16 kph
22/4/2016 14:28	ON	N22.14247 E113.91797	58 m	0:00:18	12 kph
22/4/2016 14:29	ON	N22.14326 E113.91794	88 m	0:00:24	13 kph
22/4/2016 14:29	ON	N22.14398 E113.91789	81 m	0:00:22	13 kph
22/4/2016 14:30	ON	N22.14477 E113.91789	87 m	0:00:24	13 kph
22/4/2016 14:30	ON	N22.14556 E113.91790	88 m	0:00:24	13 kph
22/4/2016 14:30	ON	N22.14619 E113.91784	71 m	0:00:20	13 kph
22/4/2016 14:31	ON	N22.14692 E113.91788	81 m	0:00:22	13 kph
22/4/2016 14:31	ON	N22.14772 E113.91788	90 m	0:00:26	12 kph
22/4/2016 14:31	OFF	N22.14796 E113.91794	27 m	0:00:15	7 kph
22/4/2016 14:32	OFF	N22.14821 E113.91808	31 m	0:00:27	4 kph
22/4/2016 14:32	OFF	N22.14835 E113.91827	25 m	0:00:28	3 kph
22/4/2016 14:33	OFF	N22.14843 E113.91845	21 m	0:00:25	3 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 14:33	OFF	N22.14847 E113.91867	23 m	0:00:27	3 kph
22/4/2016 14:34	OFF	N22.14849 E113.91888	21 m	0:00:23	3 kph
22/4/2016 14:34	OFF	N22.14852 E113.91900	13 m	0:00:14	3 kph
22/4/2016 14:34	ON	N22.14896 E113.91894	50 m	0:00:22	8 kph
22/4/2016 14:35	ON	N22.14948 E113.91852	72 m	0:00:23	11 kph
22/4/2016 14:35	ON	N22.14998 E113.91806	73 m	0:00:22	12 kph
22/4/2016 14:35	ON	N22.15070 E113.91804	80 m	0:00:21	14 kph
22/4/2016 14:36	ON	N22.15163 E113.91788	105 m	0:00:27	14 kph
22/4/2016 14:36	ON	N22.15237 E113.91791	82 m	0:00:20	15 kph
22/4/2016 14:36	ON	N22.15328 E113.91789	102 m	0:00:25	15 kph
22/4/2016 14:37	ON	N22.15472 E113.91797	161 m	0:00:39	15 kph
22/4/2016 14:38	ON	N22.15580 E113.91782	121 m	0:00:30	14 kph
22/4/2016 14:38	ON	N22.15712 E113.91778	147 m	0:00:36	15 kph
22/4/2016 14:39	ON	N22.15835 E113.91777	138 m	0:00:35	14 kph
22/4/2016 14:39	ON	N22.15948 E113.91784	126 m	0:00:32	14 kph
22/4/2016 14:40	ON	N22.16073 E113.91818	143 m	0:00:37	14 kph
22/4/2016 14:41	ON	N22.16217 E113.91838	161 m	0:00:40	14 kph
22/4/2016 14:41	ON	N22.16327 E113.91847	123 m	0:00:30	15 kph
22/4/2016 14:42	ON	N22.16453 E113.91859	141 m	0:00:34	15 kph
22/4/2016 14:42	ON	N22.16584 E113.91881	147 m	0:00:35	15 kph
22/4/2016 14:43	ON	N22.16713 E113.91917	149 m	0:00:35	15 kph
22/4/2016 14:43	ON	N22.16823 E113.91961	130 m	0:00:33	14 kph
22/4/2016 14:44	ON	N22.16920 E113.91988	112 m	0:00:29	14 kph
22/4/2016 14:44	ON	N22.17038 E113.92018	134 m	0:00:34	14 kph
22/4/2016 14:45	ON	N22.17131 E113.92038	106 m	0:00:27	14 kph
22/4/2016 14:45	ON	N22.17243 E113.92062	127 m	0:00:31	15 kph
22/4/2016 14:46	ON	N22.17361 E113.92093	136 m	0:00:33	15 kph
22/4/2016 14:46	ON	N22.17469 E113.92120	123 m	0:00:30	15 kph
22/4/2016 14:47	ON	N22.17528 E113.92137	68 m	0:00:16	15 kph
22/4/2016 14:47	ON	N22.17617 E113.92160	102 m	0:00:24	15 kph
22/4/2016 14:47	ON	N22.17696 E113.92177	90 m	0:00:21	16 kph
22/4/2016 14:48	ON	N22.17792 E113.92197	108 m	0:00:25	16 kph
22/4/2016 14:48	ON	N22.17897 E113.92212	118 m	0:00:27	16 kph
22/4/2016 14:49	ON	N22.17983 E113.92212	96 m	0:00:22	16 kph
22/4/2016 14:49	ON	N22.18075 E113.92198	103 m	0:00:23	16 kph
22/4/2016 14:50	ON	N22.18168 E113.92154	112 m	0:00:25	16 kph
22/4/2016 14:50	ON	N22.18261 E113.92075	132 m	0:00:30	16 kph
22/4/2016 14:51	ON	N22.18356 E113.91983	142 m	0:00:32	16 kph
22/4/2016 14:51	ON	N22.18439 E113.91898	127 m	0:00:29	16 kph
22/4/2016 14:51	ON	N22.18515 E113.91823	115 m	0:00:26	16 kph
22/4/2016 14:52	ON	N22.18589 E113.91785	91 m	0:00:22	15 kph
22/4/2016 14:52	ON	N22.18692 E113.91784	115 m	0:00:27	15 kph
22/4/2016 14:53	ON	N22.18816 E113.91785	138 m	0:00:32	15 kph
22/4/2016 14:53	ON	N22.18914 E113.91789	109 m	0:00:25	16 kph
22/4/2016 14:54	ON	N22.19015 E113.91788	113 m	0:00:26	16 kph
22/4/2016 14:54	ON	N22.19100 E113.91790	95 m	0:00:22	15 kph
22/4/2016 14:54	ON	N22.19192 E113.91798	102 m	0:00:24	15 kph
22/4/2016 14:55	ON	N22.19283 E113.91808	102 m	0:00:25	15 kph
22/4/2016 14:55	ON	N22.19367 E113.91797	95 m	0:00:24	14 kph
22/4/2016 14:56	ON	N22.19455 E113.91796	98 m	0:00:24	15 kph
22/4/2016 14:56	ON	N22.19561 E113.91789	118 m	0:00:29	15 kph
22/4/2016 14:57	ON	N22.19651 E113.91787	101 m	0:00:24	15 kph
22/4/2016 14:57	ON	N22.19743 E113.91784	102 m	0:00:25	15 kph
22/4/2016 14:57	ON	N22.19823 E113.91783	89 m	0:00:22	15 kph
22/4/2016 14:58	ON	N22.19901 E113.91786	87 m	0:00:21	15 kph
22/4/2016 14:58	ON	N22.19986 E113.91782	94 m	0:00:23	15 kph
22/4/2016 14:58	ON	N22.20063 E113.91784	86 m	0:00:21	15 kph
22/4/2016 14:59	ON	N22.20134 E113.91789	79 m	0:00:20	14 kph
22/4/2016 14:59	ON	N22.20208 E113.91787	82 m	0:00:21	14 kph
22/4/2016 14:59	ON	N22.20291 E113.91787	93 m	0:00:24	14 kph
22/4/2016 15:00	ON	N22.20382 E113.91787	100 m	0:00:25	14 kph
22/4/2016 15:00	ON	N22.20484 E113.91785	114 m	0:00:29	14 kph
22/4/2016 15:01	ON	N22.20520 E113.91835	65 m	0:00:18	13 kph
22/4/2016 15:01	ON	N22.20530 E113.91900	68 m	0:00:16	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 15:01	ON	N22.20540 E113.92000	104 m	0:00:24	16 kph
22/4/2016 15:02	ON	N22.20550 E113.92097	100 m	0:00:23	16 kph
22/4/2016 15:02	ON	N22.20556 E113.92220	127 m	0:00:29	16 kph
22/4/2016 15:03	ON	N22.20561 E113.92333	116 m	0:00:27	16 kph
22/4/2016 15:03	ON	N22.20564 E113.92395	65 m	0:00:15	16 kph
22/4/2016 15:03	ON	N22.20565 E113.92424	30 m	0:00:07	16 kph
22/4/2016 15:03	ON	N22.20567 E113.92526	104 m	0:00:24	16 kph
22/4/2016 15:04	ON	N22.20567 E113.92581	57 m	0:00:13	16 kph
22/4/2016 15:04	ON	N22.20567 E113.92672	94 m	0:00:22	15 kph
22/4/2016 15:04	ON	N22.20552 E113.92744	76 m	0:00:19	14 kph
22/4/2016 15:05	ON	N22.20481 E113.92761	81 m	0:00:21	14 kph
22/4/2016 15:05	ON	N22.20415 E113.92771	74 m	0:00:18	15 kph
22/4/2016 15:05	ON	N22.20306 E113.92772	121 m	0:00:29	15 kph
22/4/2016 15:06	ON	N22.20215 E113.92773	100 m	0:00:24	15 kph
22/4/2016 15:06	ON	N22.20103 E113.92766	125 m	0:00:30	15 kph
22/4/2016 15:07	ON	N22.20002 E113.92756	113 m	0:00:27	15 kph
22/4/2016 15:07	ON	N22.19903 E113.92768	111 m	0:00:26	15 kph
22/4/2016 15:08	ON	N22.19816 E113.92769	97 m	0:00:23	15 kph
22/4/2016 15:08	ON	N22.19714 E113.92762	113 m	0:00:28	15 kph
22/4/2016 15:08	ON	N22.19629 E113.92758	94 m	0:00:24	14 kph
22/4/2016 15:09	ON	N22.19538 E113.92753	102 m	0:00:26	14 kph
22/4/2016 15:09	ON	N22.19428 E113.92753	122 m	0:00:30	15 kph
22/4/2016 15:10	ON	N22.19332 E113.92758	108 m	0:00:26	15 kph
22/4/2016 15:10	ON	N22.19219 E113.92761	126 m	0:00:30	15 kph
22/4/2016 15:11	ON	N22.19119 E113.92756	111 m	0:00:27	15 kph
22/4/2016 15:11	ON	N22.19022 E113.92755	109 m	0:00:28	14 kph
22/4/2016 15:12	ON	N22.18923 E113.92764	110 m	0:00:27	15 kph
22/4/2016 15:12	ON	N22.18834 E113.92761	99 m	0:00:25	14 kph
22/4/2016 15:13	ON	N22.18749 E113.92759	95 m	0:00:24	14 kph
22/4/2016 15:13	ON	N22.18657 E113.92761	102 m	0:00:26	14 kph
22/4/2016 15:13	ON	N22.18560 E113.92759	109 m	0:00:28	14 kph
22/4/2016 15:14	ON	N22.18454 E113.92748	118 m	0:00:30	14 kph
22/4/2016 15:14	ON	N22.18365 E113.92743	100 m	0:00:25	14 kph
22/4/2016 15:15	ON	N22.18281 E113.92746	93 m	0:00:23	15 kph
22/4/2016 15:15	ON	N22.18162 E113.92755	133 m	0:00:33	14 kph
22/4/2016 15:16	ON	N22.18063 E113.92752	110 m	0:00:27	15 kph
22/4/2016 15:16	ON	N22.17964 E113.92755	111 m	0:00:27	15 kph
22/4/2016 15:17	ON	N22.17866 E113.92749	109 m	0:00:26	15 kph
22/4/2016 15:17	ON	N22.17751 E113.92745	128 m	0:00:31	15 kph
22/4/2016 15:18	ON	N22.17628 E113.92757	137 m	0:00:33	15 kph
22/4/2016 15:18	ON	N22.17534 E113.92759	104 m	0:00:25	15 kph
22/4/2016 15:19	ON	N22.17430 E113.92764	117 m	0:00:28	15 kph
22/4/2016 15:19	ON	N22.17331 E113.92758	110 m	0:00:26	15 kph
22/4/2016 15:19	ON	N22.17225 E113.92757	118 m	0:00:27	16 kph
22/4/2016 15:20	ON	N22.17113 E113.92755	124 m	0:00:28	16 kph
22/4/2016 15:20	ON	N22.17000 E113.92755	126 m	0:00:29	16 kph
22/4/2016 15:21	ON	N22.16902 E113.92753	109 m	0:00:25	16 kph
22/4/2016 15:21	ON	N22.16795 E113.92751	119 m	0:00:27	16 kph
22/4/2016 15:22	ON	N22.16677 E113.92760	132 m	0:00:30	16 kph
22/4/2016 15:22	ON	N22.16579 E113.92760	109 m	0:00:25	16 kph
22/4/2016 15:23	ON	N22.16479 E113.92759	110 m	0:00:25	16 kph
22/4/2016 15:23	ON	N22.16362 E113.92760	130 m	0:00:30	16 kph
22/4/2016 15:24	ON	N22.16256 E113.92758	118 m	0:00:27	16 kph
22/4/2016 15:24	ON	N22.16144 E113.92754	125 m	0:00:29	16 kph
22/4/2016 15:25	ON	N22.16032 E113.92751	124 m	0:00:29	15 kph
22/4/2016 15:25	ON	N22.15935 E113.92749	109 m	0:00:27	14 kph
22/4/2016 15:25	ON	N22.15834 E113.92751	112 m	0:00:28	14 kph
22/4/2016 15:26	ON	N22.15744 E113.92747	101 m	0:00:26	14 kph
22/4/2016 15:26	ON	N22.15636 E113.92756	121 m	0:00:31	14 kph
22/4/2016 15:27	ON	N22.15523 E113.92753	126 m	0:00:31	15 kph
22/4/2016 15:27	ON	N22.15419 E113.92762	117 m	0:00:28	15 kph
22/4/2016 15:28	ON	N22.15323 E113.92767	106 m	0:00:26	15 kph
22/4/2016 15:28	ON	N22.15207 E113.92753	130 m	0:00:32	15 kph
22/4/2016 15:29	ON	N22.15094 E113.92753	127 m	0:00:31	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 15:29	ON	N22.14988 E113.92768	119 m	0:00:29	15 kph
22/4/2016 15:30	ON	N22.14897 E113.92765	101 m	0:00:25	15 kph
22/4/2016 15:30	ON	N22.14813 E113.92753	95 m	0:00:25	14 kph
22/4/2016 15:31	ON	N22.14762 E113.92763	57 m	0:00:26	8 kph
22/4/2016 15:31	OFF	N22.14735 E113.92777	34 m	0:00:24	5 kph
22/4/2016 15:31	OFF	N22.14718 E113.92791	23 m	0:00:20	4 kph
22/4/2016 15:32	OFF	N22.14702 E113.92809	26 m	0:00:23	4 kph
22/4/2016 15:32	OFF	N22.14691 E113.92825	21 m	0:00:21	4 kph
22/4/2016 15:32	OFF	N22.14681 E113.92844	23 m	0:00:23	4 kph
22/4/2016 15:33	OFF	N22.14679 E113.92847	4 m	0:00:03	4 kph
22/4/2016 15:33	OFF	N22.14634 E113.92849	51 m	0:00:20	9 kph
22/4/2016 15:33	ON	N22.14561 E113.92813	89 m	0:00:26	12 kph
22/4/2016 15:34	ON	N22.14480 E113.92772	100 m	0:00:27	13 kph
22/4/2016 15:34	ON	N22.14407 E113.92762	81 m	0:00:22	13 kph
22/4/2016 15:35	ON	N22.14306 E113.92762	112 m	0:00:27	15 kph
22/4/2016 15:35	ON	N22.14221 E113.92758	95 m	0:00:23	15 kph
22/4/2016 15:35	ON	N22.14190 E113.92807	62 m	0:00:16	14 kph
22/4/2016 15:36	ON	N22.14215 E113.92900	99 m	0:00:21	17 kph
22/4/2016 15:36	ON	N22.14246 E113.92972	82 m	0:00:17	17 kph
22/4/2016 15:36	ON	N22.14299 E113.93058	106 m	0:00:23	17 kph
22/4/2016 15:37	ON	N22.14353 E113.93152	114 m	0:00:24	17 kph
22/4/2016 15:37	ON	N22.14421 E113.93241	120 m	0:00:26	17 kph
22/4/2016 15:37	ON	N22.14489 E113.93327	117 m	0:00:25	17 kph
22/4/2016 15:38	ON	N22.14570 E113.93418	130 m	0:00:28	17 kph
22/4/2016 15:38	ON	N22.14634 E113.93489	103 m	0:00:22	17 kph
22/4/2016 15:39	ON	N22.14714 E113.93567	120 m	0:00:26	17 kph
22/4/2016 15:39	ON	N22.14808 E113.93643	131 m	0:00:29	16 kph
22/4/2016 15:40	ON	N22.14892 E113.93679	100 m	0:00:23	16 kph
22/4/2016 15:40	ON	N22.14976 E113.93703	97 m	0:00:23	15 kph
22/4/2016 15:40	ON	N22.15066 E113.93705	100 m	0:00:25	14 kph
22/4/2016 15:41	ON	N22.15162 E113.93701	107 m	0:00:27	14 kph
22/4/2016 15:41	ON	N22.15264 E113.93692	114 m	0:00:29	14 kph
22/4/2016 15:42	ON	N22.15395 E113.93698	145 m	0:00:35	15 kph
22/4/2016 15:42	ON	N22.15516 E113.93689	135 m	0:00:32	15 kph
22/4/2016 15:43	ON	N22.15629 E113.93692	126 m	0:00:31	15 kph
22/4/2016 15:43	ON	N22.15726 E113.93696	108 m	0:00:27	14 kph
22/4/2016 15:44	ON	N22.15839 E113.93690	126 m	0:00:32	14 kph
22/4/2016 15:44	ON	N22.15942 E113.93690	114 m	0:00:29	14 kph
22/4/2016 15:45	ON	N22.16053 E113.93696	124 m	0:00:32	14 kph
22/4/2016 15:45	ON	N22.16124 E113.93695	79 m	0:00:21	14 kph
22/4/2016 15:46	ON	N22.16229 E113.93685	118 m	0:00:31	14 kph
22/4/2016 15:46	ON	N22.16330 E113.93684	112 m	0:00:29	14 kph
22/4/2016 15:47	ON	N22.16415 E113.93686	96 m	0:00:25	14 kph
22/4/2016 15:47	ON	N22.16505 E113.93683	99 m	0:00:26	14 kph
22/4/2016 15:48	ON	N22.16604 E113.93686	111 m	0:00:29	14 kph
22/4/2016 15:48	ON	N22.16711 E113.93684	119 m	0:00:31	14 kph
22/4/2016 15:49	ON	N22.16819 E113.93685	120 m	0:00:31	14 kph
22/4/2016 15:49	ON	N22.16910 E113.93688	101 m	0:00:26	14 kph
22/4/2016 15:49	ON	N22.16986 E113.93685	85 m	0:00:22	14 kph
22/4/2016 15:50	ON	N22.17085 E113.93690	110 m	0:00:28	14 kph
22/4/2016 15:50	ON	N22.17161 E113.93694	84 m	0:00:22	14 kph
22/4/2016 15:51	ON	N22.17255 E113.93697	105 m	0:00:27	14 kph
22/4/2016 15:51	ON	N22.17346 E113.93697	101 m	0:00:25	14 kph
22/4/2016 15:52	ON	N22.17425 E113.93688	89 m	0:00:22	15 kph
22/4/2016 15:52	ON	N22.17521 E113.93671	108 m	0:00:26	15 kph
22/4/2016 15:52	ON	N22.17623 E113.93674	114 m	0:00:27	15 kph
22/4/2016 15:53	ON	N22.17741 E113.93685	132 m	0:00:31	15 kph
22/4/2016 15:53	ON	N22.17860 E113.93692	132 m	0:00:31	15 kph
22/4/2016 15:54	ON	N22.17986 E113.93693	141 m	0:00:33	15 kph
22/4/2016 15:55	ON	N22.18100 E113.93696	126 m	0:00:31	15 kph
22/4/2016 15:55	OFF	N22.18157 E113.93691	63 m	0:00:29	8 kph
22/4/2016 15:55	OFF	N22.18187 E113.93686	34 m	0:00:26	5 kph
22/4/2016 15:56	OFF	N22.18207 E113.93682	22 m	0:00:23	3 kph
22/4/2016 15:56	OFF	N22.18225 E113.93677	21 m	0:00:29	3 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/4/2016 15:57	OFF	N22.18273 E113.93669	54 m	0:00:25	8 kph
22/4/2016 15:57	ON	N22.18382 E113.93681	121 m	0:00:29	15 kph
22/4/2016 15:58	ON	N22.18504 E113.93685	136 m	0:00:32	15 kph
22/4/2016 15:58	ON	N22.18615 E113.93693	124 m	0:00:29	15 kph
22/4/2016 15:59	ON	N22.18737 E113.93692	136 m	0:00:32	15 kph
22/4/2016 15:59	ON	N22.18844 E113.93688	119 m	0:00:29	15 kph
22/4/2016 16:00	ON	N22.18956 E113.93691	124 m	0:00:30	15 kph
22/4/2016 16:00	ON	N22.19060 E113.93691	116 m	0:00:28	15 kph
22/4/2016 16:01	ON	N22.19181 E113.93692	134 m	0:00:32	15 kph
22/4/2016 16:01	ON	N22.19290 E113.93690	122 m	0:00:29	15 kph
22/4/2016 16:02	ON	N22.19403 E113.93696	126 m	0:00:30	15 kph
22/4/2016 16:02	ON	N22.19499 E113.93699	107 m	0:00:26	15 kph
22/4/2016 16:03	ON	N22.19586 E113.93696	97 m	0:00:24	15 kph
22/4/2016 16:03	ON	N22.19687 E113.93693	113 m	0:00:28	15 kph
22/4/2016 16:04	ON	N22.19810 E113.93689	137 m	0:00:34	15 kph
22/4/2016 16:04	ON	N22.19890 E113.93689	89 m	0:00:22	15 kph
22/4/2016 16:04	OFF	N22.19972 E113.93694	92 m	0:00:27	12 kph
22/4/2016 16:05	OFF	N22.20012 E113.93695	45 m	0:00:28	6 kph
22/4/2016 16:05	OFF	N22.20034 E113.93697	25 m	0:00:25	4 kph
22/4/2016 16:06	OFF	N22.20051 E113.93699	18 m	0:00:30	2 kph
22/4/2016 16:06	OFF	N22.20057 E113.93702	8 m	0:00:27	1.0 kph
22/4/2016 16:07	OFF	N22.20061 E113.93703	4 m	0:00:24	0.6 kph
22/4/2016 16:07	OFF	N22.20065 E113.93706	6 m	0:00:22	1.0 kph
22/4/2016 16:07	OFF	N22.20073 E113.93706	9 m	0:00:06	5 kph
22/4/2016 16:07	ON	N22.20133 E113.93699	67 m	0:00:21	11 kph
22/4/2016 16:08	ON	N22.20221 E113.93706	99 m	0:00:25	14 kph
22/4/2016 16:08	ON	N22.20301 E113.93695	89 m	0:00:22	15 kph
22/4/2016 16:09	ON	N22.20381 E113.93691	89 m	0:00:22	15 kph
22/4/2016 16:09	ON	N22.20480 E113.93688	111 m	0:00:27	15 kph
22/4/2016 16:10	ON	N22.20597 E113.93689	130 m	0:00:31	15 kph
22/4/2016 16:10	ON	N22.20704 E113.93692	119 m	0:00:29	15 kph
22/4/2016 16:11	ON	N22.20825 E113.93689	135 m	0:00:33	15 kph
22/4/2016 16:11	ON	N22.20948 E113.93690	137 m	0:00:34	15 kph
22/4/2016 16:12	ON	N22.21074 E113.93688	140 m	0:00:35	14 kph
22/4/2016 16:12	ON	N22.21191 E113.93687	130 m	0:00:33	14 kph
22/4/2016 16:13	ON	N22.21309 E113.93683	132 m	0:00:33	14 kph
22/4/2016 16:13	ON	N22.21430 E113.93695	135 m	0:00:34	14 kph
22/4/2016 16:14	ON	N22.21540 E113.93695	122 m	0:00:31	14 kph
22/4/2016 16:15	ON	N22.21682 E113.93692	158 m	0:00:40	14 kph
22/4/2016 16:15	ON	N22.21799 E113.93689	131 m	0:00:33	14 kph
22/4/2016 16:16	ON	N22.21944 E113.93687	161 m	0:00:40	15 kph
22/4/2016 16:16	ON	N22.22084 E113.93692	156 m	0:00:39	14 kph
22/4/2016 16:17	ON	N22.22190 E113.93690	118 m	0:00:29	15 kph
22/4/2016 16:18	ON	N22.22309 E113.93690	132 m	0:00:33	14 kph
22/4/2016 16:18	ON	N22.22352 E113.93728	62 m	0:00:19	12 kph

Appendix II. Survey Effort Database in SWL (April 2016)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
7-Apr-16	SW LANTAU	2	3.67	SPRING	STANDARD31516	HKCRP	P
7-Apr-16	SW LANTAU	3	4.16	SPRING	STANDARD31516	HKCRP	P
7-Apr-16	SW LANTAU	2	2.27	SPRING	STANDARD31516	HKCRP	S
20-Apr-16	SW LANTAU	2	6.30	SPRING	STANDARD31516	HKCRP	P
20-Apr-16	SW LANTAU	3	4.88	SPRING	STANDARD31516	HKCRP	P
20-Apr-16	SW LANTAU	4	2.01	SPRING	STANDARD31516	HKCRP	P
20-Apr-16	SW LANTAU	2	4.19	SPRING	STANDARD31516	HKCRP	S
20-Apr-16	SW LANTAU	3	6.42	SPRING	STANDARD31516	HKCRP	S
22-Apr-16	SW LANTAU	0	0.50	SPRING	STANDARD31516	HYD-HZMB	P
22-Apr-16	SW LANTAU	1	21.16	SPRING	STANDARD31516	HYD-HZMB	P
22-Apr-16	SW LANTAU	2	32.23	SPRING	STANDARD31516	HYD-HZMB	P
22-Apr-16	SW LANTAU	1	2.59	SPRING	STANDARD31516	HYD-HZMB	S
22-Apr-16	SW LANTAU	2	11.10	SPRING	STANDARD31516	HYD-HZMB	S
22-Apr-16	SW LANTAU	3	2.54	SPRING	STANDARD31516	HYD-HZMB	S
27-Apr-16	SW LANTAU	2	18.35	SPRING	STANDARD31516	HKCRP	P
27-Apr-16	SW LANTAU	3	0.85	SPRING	STANDARD31516	HKCRP	P
27-Apr-16	SW LANTAU	2	8.04	SPRING	STANDARD31516	HKCRP	S

Appendix III. Chinese White Dolphin Sighting Database in SWL (April 2016)

(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
20-Apr-16	2	1359	6	SW LANTAU	3	ND	OFF	HKCRP	805762	802507	SPRING	NONE	

Appendix IV. Individual dolphins identified during HYD-HZMB and AFCD monitoring surveys in SWL waters in April 2016

ID#	DATE	STG#	TYPE	AREA
SL44	20/04/16	2	HKCRP	SW LANTAU
WL68	20/04/16	2	HKCRP	SW LANTAU
WL142	20/04/16	2	HKCRP	SW LANTAU
WL168	20/04/16	2	HKCRP	SW LANTAU
WL259	20/04/16	2	HKCRP	SW LANTAU

Appendix V. Photographs of Identified Individual Dolphins in April 2016 in SWL waters