Monitoring of Chinese White Dolphins in Southwest Lantau Waters

26th Monthly Progress Report (May 2017)
submitted to Environmental Project Office for the HZMB HKLR, HZMB HKBCF and TM-CLKL – Investigation

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1 June 2017

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 can 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 26th monthly progress report under this dolphin monitoring study submitted to the Environmental Project Office, summarizing the survey findings during the month of May 2017.

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 18 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 Mark II 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 May 10th 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 May 8th (with lines no. SWL001, SWL003 and SWL005 covered), May 12th (with lines no. SWL004, SWL006, SWL008 and SWL010 covered) and May 23rd (with lines no. SWL005, SWL007 and SWL009 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 70.37 km of survey effort was collected from 11:05 to 16:37 (i.e. 5 hours and 32 minutes of survey time) on May 10th, 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 53.64 km and 16.73 km respectively.

3.1.4. For the combined monitoring dataset from both the present study and AFCD monitoring study, a total of 157.98 km of survey effort was collected in SWL waters in May 2017.

3.1.5. During this monitoring month, seven groups of 12 Chinese White Dolphins were sighted from the survey of the present study as well as one of the three AFCD monitoring surveys respectively (Appendix III). All seven dolphin groups were sighted during on-effort search, and none of them was associated with any operating fishing vessel.

3.1.6. Notably, 11 groups of 33 finless porpoises were also sighted in SWL survey area during the surveys conducted in May, with seven groups of 22 porpoises sighted during the survey from the present study.

3.1.7. Distribution of the seven dolphin sightings made in May 2017 is shown in Figure 3. Five groups were evenly spread in the inshore waters, while two other groups were sighted along the southern territorial boundary (Figure 3). Besides these sightings, the dolphins were mostly absent from the eastern portion of the survey area during this monitoring month, where finless porpoises occurred frequently.

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 May 2017 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 May 2015 and May 2016 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 May 2017 (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 the same month in 2015 and 2016 as well as the 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 (May 2017)	7.46	8.53	13.05	15.63
Combined data (May 2017)	3.88	4.00	6.80	7.33
Combined data (May 2016)	2.89	2.72	2.89	2.72
Combined data (May 2015)	2.62	2.06	7.87	6.17
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 both the number of dolphin sightings (ER(STG)) and total number of dolphins (ER(ANI)) deduced in May 2017 in SWL waters were higher than the ones in May 2016 but similar to the ones in May 2015. Both encounter rates were also much higher than the ones recorded during the spring months of 2005-14 (Table 2).

3.1.10. The average group size of Chinese White Dolphins sighted during the SWL monitoring surveys in May 2017 was 1.7 animal per group, which was lower than the average group size recorded 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 SWL surveys conducted in May 2017.

3.2.2. Among the 12 dolphins sighted during this month's surveys, only two individual dolphins (SL60 and WL91) were identified and re-sighted once (Appendices IV and V). Both individuals were not accompanied by any young calves.

3.2.3. Notably, the locations where these individuals (SL60 and WL91) were re-sighted were well within their past home ranges in Southwest Lantau waters.

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.

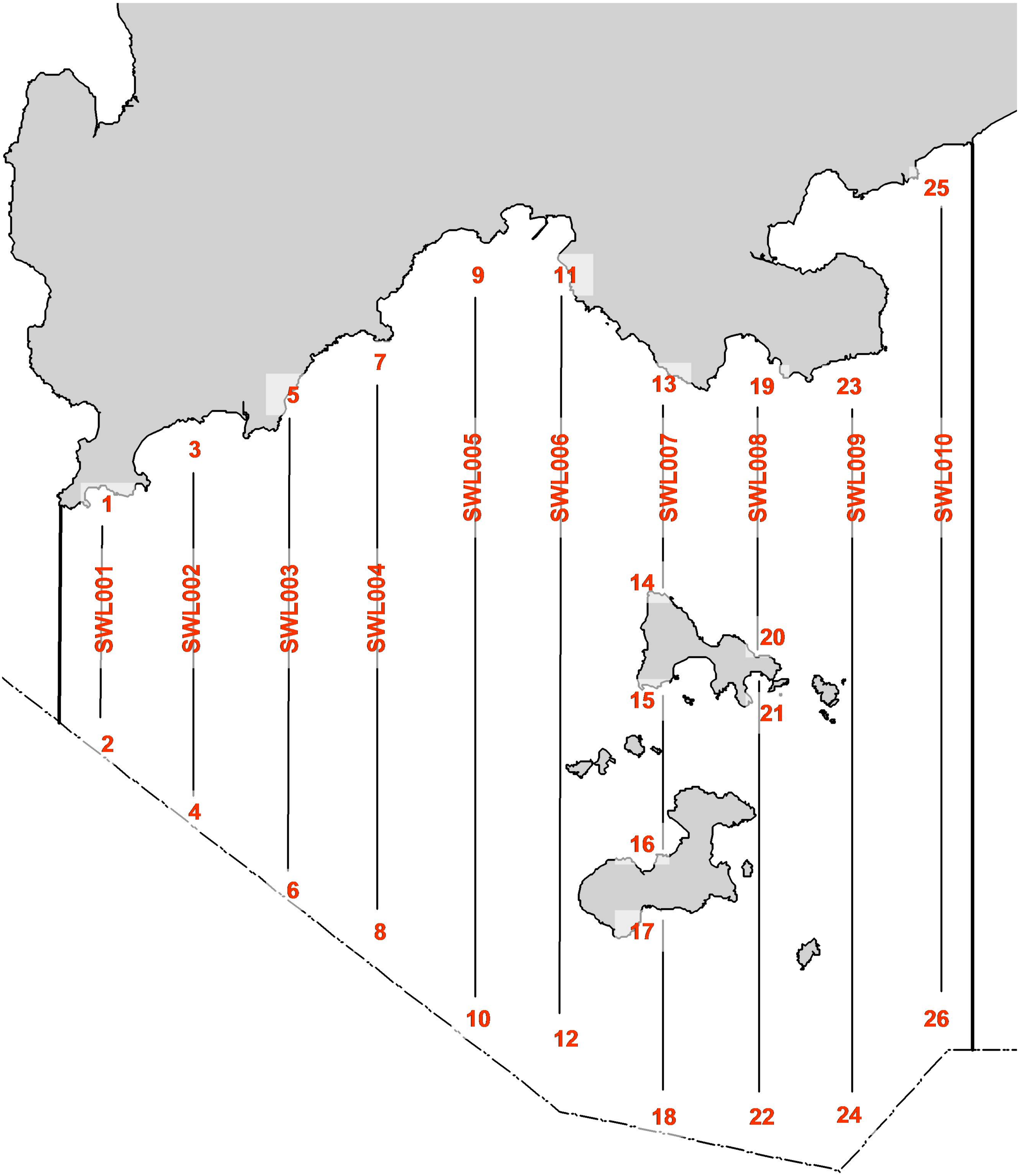

Figure 1. Survey Lines and associated coordinates in Southwest Lantau survey area

0 1 2 3 Kilometers

N

Transect Lines
Primary Lines
Secondary Lines

Figure 2. Survey Route on May 10th, 2017 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

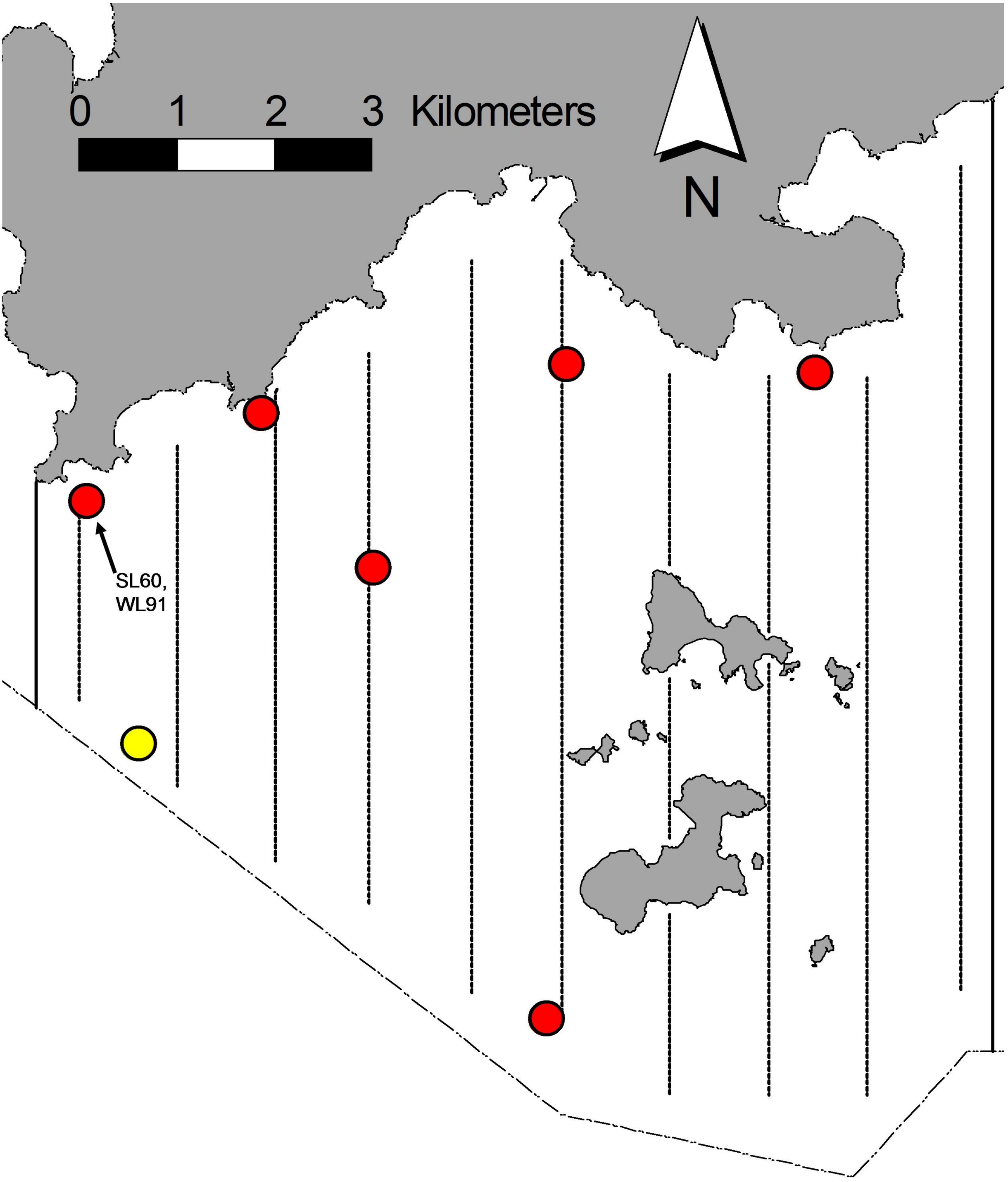

Figure 3. Distribution of Chinese White Dolphin sightings during May 2017 monitoring surveys in Southwest Lantau survey area, with identified individuals indicated for their corresponding sightings (red dot: HYD-HZMB sighting; yellow dot: AFCD sighting)

Appendix I. Track Log of SW Lantau Survey on May 10th, 2017

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 11:05	ON	N22.19459 E113.84911			
10/5/2017 11:06	ON	N22.19446 E113.84954	47 m	0:00:13	13 kph
10/5/2017 11:06	ON	N22.19396 E113.84986	64 m	0:00:19	12 kph
10/5/2017 11:06	OFF	N22.19371 E113.85001	32 m	0:00:15	8 kph
10/5/2017 11:06	OFF	N22.19355 E113.85018	24 m	0:00:18	5 kph
10/5/2017 11:07	OFF	N22.19338 E113.85029	22 m	0:00:15	5 kph
10/5/2017 11:07	OFF	N22.19312 E113.85014	33 m	0:00:16	7 kph
10/5/2017 11:07	OFF	N22.19286 E113.84969	55 m	0:00:23	9 kph
10/5/2017 11:08	OFF	N22.19272 E113.84943	31 m	0:00:21	5 kph
10/5/2017 11:08	OFF	N22.19260 E113.84926	22 m	0:00:19	4 kph
10/5/2017 11:08	OFF	N22.19253 E113.84904	24 m	0:00:16	5 kph
10/5/2017 11:08	OFF	N22.19247 E113.84888	19 m	0:00:15	4 kph
10/5/2017 11:09	OFF	N22.19238 E113.84879	14 m	0:00:19	3 kph
10/5/2017 11:09	OFF	N22.19228 E113.84871	14 m	0:00:19	3 kph
10/5/2017 11:09	OFF	N22.19223 E113.84870	6 m	0:00:14	1.5 kph
10/5/2017 11:10	OFF	N22.19218 E113.84871	5 m	0:00:11	2 kph
10/5/2017 11:10	OFF	N22.19206 E113.84868	14 m	0:00:20	2 kph
10/5/2017 11:10	OFF	N22.19196 E113.84867	11 m	0:00:20	2 kph
10/5/2017 11:10	OFF	N22.19195 E113.84857	11 m	0:00:17	2 kph
10/5/2017 11:11	OFF	N22.19199 E113.84855	5 m	0:00:04	4 kph
10/5/2017 11:11	OFF	N22.19211 E113.84865	17 m	0:00:16	4 kph
10/5/2017 11:11	OFF	N22.19214 E113.84887	22 m	0:00:16	5 kph
10/5/2017 11:11	OFF	N22.19219 E113.84915	30 m	0:00:16	7 kph
10/5/2017 11:12	OFF	N22.19219 E113.84955	41 m	0:00:15	10 kph
10/5/2017 11:12	OFF	N22.19202 E113.85006	56 m	0:00:19	11 kph
10/5/2017 11:12	ON	N22.19184 E113.85025			
10/5/2017 11:12	ON	N22.19147 E113.85045	46 m	0:00:15	11 kph
10/5/2017 11:13	ON	N22.19104 E113.85058	49 m	0:00:14	13 kph
10/5/2017 11:13	ON	N22.19052 E113.85064	59 m	0:00:15	14 kph
10/5/2017 11:13	ON	N22.18997 E113.85057	61 m	0:00:16	14 kph
10/5/2017 11:13	ON	N22.18933 E113.85049	71 m	0:00:18	14 kph
10/5/2017 11:14	ON	N22.18870 E113.85036	72 m	0:00:18	14 kph
10/5/2017 11:14	ON	N22.18806 E113.85021	72 m	0:00:18	14 kph
10/5/2017 11:14	ON	N22.18726 E113.85009	91 m	0:00:22	15 kph
10/5/2017 11:15	ON	N22.18663 E113.84988	73 m	0:00:18	15 kph
10/5/2017 11:15	ON	N22.18595 E113.84974	77 m	0:00:19	15 kph
10/5/2017 11:15	ON	N22.18503 E113.84986	104 m	0:00:24	16 kph
10/5/2017 11:16	ON	N22.18429 E113.84987	82 m	0:00:19	15 kph
10/5/2017 11:16	ON	N22.18336 E113.84980	104 m	0:00:24	16 kph
10/5/2017 11:16	ON	N22.18251 E113.84970	96 m	0:00:22	16 kph
10/5/2017 11:17	ON	N22.18185 E113.84961	74 m	0:00:17	16 kph
10/5/2017 11:17	ON	N22.18095 E113.84955	100 m	0:00:23	16 kph
10/5/2017 11:17	ON	N22.18005 E113.84947	100 m	0:00:23	16 kph
10/5/2017 11:18	ON	N22.17915 E113.84950	100 m	0:00:23	16 kph
10/5/2017 11:18	ON	N22.17820 E113.84964	107 m	0:00:24	16 kph
10/5/2017 11:19	ON	N22.17733 E113.84974	98 m	0:00:22	16 kph
10/5/2017 11:19	ON	N22.17654 E113.84986	89 m	0:00:20	16 kph
10/5/2017 11:19	ON	N22.17602 E113.85025	71 m	0:00:17	15 kph
10/5/2017 11:20	ON	N22.17547 E113.85102	100 m	0:00:23	16 kph
10/5/2017 11:20	ON	N22.17493 E113.85161	85 m	0:00:19	16 kph
10/5/2017 11:20	ON	N22.17423 E113.85228	104 m	0:00:23	16 kph
10/5/2017 11:21	ON	N22.17350 E113.85296	108 m	0:00:24	16 kph
10/5/2017 11:21	ON	N22.17274 E113.85357	104 m	0:00:23	16 kph
10/5/2017 11:21	ON	N22.17218 E113.85419	90 m	0:00:20	16 kph
10/5/2017 11:22	ON	N22.17156 E113.85500	108 m	0:00:24	16 kph
10/5/2017 11:22	ON	N22.17088 E113.85574	108 m	0:00:24	16 kph
10/5/2017 11:23	ON	N22.17018 E113.85634	100 m	0:00:22	16 kph
10/5/2017 11:23	ON	N22.16953 E113.85695	95 m	0:00:21	16 kph
10/5/2017 11:23	ON	N22.16892 E113.85755	91 m	0:00:20	16 kph
10/5/2017 11:24	ON	N22.16838 E113.85829	98 m	0:00:22	16 kph
10/5/2017 11:24	ON	N22.16836 E113.85882	55 m	0:00:15	13 kph
10/5/2017 11:24	ON	N22.16861 E113.85894	30 m	0:00:12	9 kph
10/5/2017 11:24	ON	N22.16877 E113.85864	36 m	0:00:15	9 kph
10/5/2017 11:25	ON	N22.16886 E113.85809	57 m	0:00:18	11 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 11:25	ON	N22.16922 E113.85760	65 m	0:00:21	11 kph
10/5/2017 11:25	ON	N22.16978 E113.85736	66 m	0:00:21	11 kph
10/5/2017 11:26	ON	N22.17025 E113.85748	54 m	0:00:16	12 kph
10/5/2017 11:26	ON	N22.17064 E113.85764	46 m	0:00:13	13 kph
10/5/2017 11:26	ON	N22.17103 E113.85779	46 m	0:00:13	13 kph
10/5/2017 11:26	ON	N22.17161 E113.85810	72 m	0:00:20	13 kph
10/5/2017 11:27	ON	N22.17221 E113.85850	78 m	0:00:21	13 kph
10/5/2017 11:27	ON	N22.17270 E113.85861	56 m	0:00:17	12 kph
10/5/2017 11:27	ON	N22.17334 E113.85857	71 m	0:00:21	12 kph
10/5/2017 11:28	ON	N22.17402 E113.85862	76 m	0:00:22	12 kph
10/5/2017 11:28	ON	N22.17455 E113.85865	59 m	0:00:17	13 kph
10/5/2017 11:28	ON	N22.17509 E113.85870	60 m	0:00:17	13 kph
10/5/2017 11:29	ON	N22.17570 E113.85880	68 m	0:00:19	13 kph
10/5/2017 11:29	ON	N22.17630 E113.85889	68 m	0:00:19	13 kph
10/5/2017 11:29	ON	N22.17685 E113.85882	62 m	0:00:18	12 kph
10/5/2017 11:30	ON	N22.17746 E113.85873	68 m	0:00:19	13 kph
10/5/2017 11:30	ON	N22.17801 E113.85873	62 m	0:00:17	13 kph
10/5/2017 11:30	ON	N22.17872 E113.85879	79 m	0:00:21	13 kph
10/5/2017 11:30	ON	N22.17929 E113.85884	63 m	0:00:17	13 kph
10/5/2017 11:31	ON	N22.17992 E113.85893	72 m	0:00:19	14 kph
10/5/2017 11:31	ON	N22.18050 E113.85898	64 m	0:00:17	14 kph
10/5/2017 11:31	ON	N22.18108 E113.85903	65 m	0:00:17	14 kph
10/5/2017 11:32	ON	N22.18170 E113.85909	69 m	0:00:18	14 kph
10/5/2017 11:32	ON	N22.18230 E113.85910	68 m	0:00:18	14 kph
10/5/2017 11:32	ON	N22.18307 E113.85915	86 m	0:00:23	13 kph
10/5/2017 11:33	ON	N22.18374 E113.85915	75 m	0:00:20	13 kph
10/5/2017 11:33	ON	N22.18435 E113.85915	67 m	0:00:18	13 kph
10/5/2017 11:33	ON	N22.18493 E113.85916	64 m	0:00:17	14 kph
10/5/2017 11:34	ON	N22.18554 E113.85915	69 m	0:00:18	14 kph
10/5/2017 11:34	ON	N22.18627 E113.85914	81 m	0:00:21	14 kph
10/5/2017 11:34	ON	N22.18689 E113.85907	69 m	0:00:18	14 kph
10/5/2017 11:35	ON	N22.18769 E113.85907	89 m	0:00:23	14 kph
10/5/2017 11:35	ON	N22.18839 E113.85908	78 m	0:00:20	14 kph
10/5/2017 11:35	ON	N22.18923 E113.85903	94 m	0:00:24	14 kph
10/5/2017 11:36	ON	N22.18979 E113.85901	62 m	0:00:16	14 kph
10/5/2017 11:36	ON	N22.19042 E113.85894	70 m	0:00:18	14 kph
10/5/2017 11:36	ON	N22.19097 E113.85888	62 m	0:00:16	14 kph
10/5/2017 11:36	ON	N22.19148 E113.85881	58 m	0:00:15	14 kph
10/5/2017 11:37	ON	N22.19201 E113.85878	58 m	0:00:15	14 kph
10/5/2017 11:37	ON	N22.19258 E113.85878	64 m	0:00:16	14 kph
10/5/2017 11:37	ON	N22.19310 E113.85873	58 m	0:00:15	14 kph
10/5/2017 11:38	ON	N22.19382 E113.85878	81 m	0:00:20	15 kph
10/5/2017 11:38	ON	N22.19455 E113.85882	81 m	0:00:20	15 kph
10/5/2017 11:38	ON	N22.19510 E113.85871	62 m	0:00:16	14 kph
10/5/2017 11:38	ON	N22.19583 E113.85867	81 m	0:00:20	15 kph
10/5/2017 11:39	ON	N22.19647 E113.85866	71 m	0:00:17	15 kph
10/5/2017 11:39	ON	N22.19720 E113.85855	82 m	0:00:20	15 kph
10/5/2017 11:39	ON	N22.19785 E113.85853	72 m	0:00:17	15 kph
10/5/2017 11:40	ON	N22.19850 E113.85858	73 m	0:00:17	15 kph
10/5/2017 11:40	ON	N22.19927 E113.85876	88 m	0:00:21	15 kph
10/5/2017 11:40	ON	N22.20002 E113.85881	83 m	0:00:21	14 kph
10/5/2017 11:41	ON	N22.20084 E113.85874	91 m	0:00:24	14 kph
10/5/2017 11:41	ON	N22.20133 E113.85892	58 m	0:00:17	12 kph
10/5/2017 11:41	ON	N22.20145 E113.85941	52 m	0:00:16	12 kph
10/5/2017 11:42	ON	N22.20145 E113.86020	81 m	0:00:22	13 kph
10/5/2017 11:42	ON	N22.20152 E113.86082	64 m	0:00:17	14 kph
10/5/2017 11:42	ON	N22.20159 E113.86153	74 m	0:00:19	14 kph
10/5/2017 11:43	ON	N22.20161 E113.86222	72 m	0:00:18	14 kph
10/5/2017 11:43	ON	N22.20154 E113.86292	72 m	0:00:18	14 kph
10/5/2017 11:43	ON	N22.20147 E113.86354	65 m	0:00:16	15 kph
10/5/2017 11:43	ON	N22.20136 E113.86413	62 m	0:00:15	15 kph
10/5/2017 11:44	ON	N22.20129 E113.86465	54 m	0:00:13	15 kph
10/5/2017 11:44	ON	N22.20130 E113.86539	76 m	0:00:18	15 kph
10/5/2017 11:44	ON	N22.20137 E113.86597	60 m	0:00:14	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 11:44	ON	N22.20145 E113.86670	77 m	0:00:18	15 kph
10/5/2017 11:45	ON	N22.20150 E113.86712	43 m	0:00:13	12 kph
10/5/2017 11:45	OFF	N22.20158 E113.86757	47 m	0:00:21	8 kph
10/5/2017 11:45	OFF	N22.20163 E113.86781	25 m	0:00:18	5 kph
10/5/2017 11:46	OFF	N22.20169 E113.86804	24 m	0:00:21	4 kph
10/5/2017 11:46	OFF	N22.20176 E113.86822	21 m	0:00:17	4 kph
10/5/2017 11:46	OFF	N22.20185 E113.86850	31 m	0:00:14	8 kph
10/5/2017 11:46	OFF	N22.20199 E113.86891	45 m	0:00:18	9 kph
10/5/2017 11:47	OFF	N22.20210 E113.86924	36 m	0:00:14	9 kph
10/5/2017 11:47	OFF	N22.20230 E113.86992	73 m	0:00:19	14 kph
10/5/2017 11:47	OFF	N22.20252 E113.87064	79 m	0:00:19	15 kph
10/5/2017 11:48	OFF	N22.20283 E113.87150	95 m	0:00:23	15 kph
10/5/2017 11:48	OFF	N22.20303 E113.87200	57 m	0:00:19	11 kph
10/5/2017 11:48	OFF	N22.20322 E113.87242	48 m	0:00:22	8 kph
10/5/2017 11:49	OFF	N22.20337 E113.87276	38 m	0:00:22	6 kph
10/5/2017 11:49	OFF	N22.20349 E113.87299	27 m	0:00:18	5 kph
10/5/2017 11:49	OFF	N22.20356 E113.87312	16 m	0:00:12	5 kph
10/5/2017 11:49	OFF	N22.20364 E113.87325	16 m	0:00:14	4 kph
10/5/2017 11:50	OFF	N22.20366 E113.87330	6 m	0:00:05	4 kph
10/5/2017 11:50	OFF	N22.20372 E113.87342	13 m	0:00:12	4 kph
10/5/2017 11:50	OFF	N22.20378 E113.87353	14 m	0:00:13	4 kph
10/5/2017 11:50	OFF	N22.20383 E113.87363	12 m	0:00:12	4 kph
10/5/2017 11:50	OFF	N22.20384 E113.87365	2 m	0:00:02	4 kph
10/5/2017 11:50	OFF	N22.20389 E113.87377	14 m	0:00:15	3 kph
10/5/2017 11:51	OFF	N22.20392 E113.87384	7 m	0:00:08	3 kph
10/5/2017 11:51	OFF	N22.20396 E113.87393	10 m	0:00:07	5 kph
10/5/2017 11:51	OFF	N22.20419 E113.87416	35 m	0:00:14	9 kph
10/5/2017 11:51	OFF	N22.20454 E113.87404	41 m	0:00:14	11 kph
10/5/2017 11:51	OFF	N22.20457 E113.87369	36 m	0:00:13	10 kph
10/5/2017 11:52	OFF	N22.20436 E113.87321	55 m	0:00:17	12 kph
10/5/2017 11:52	OFF	N22.20402 E113.87260	74 m	0:00:21	13 kph
10/5/2017 11:52	OFF	N22.20370 E113.87192	79 m	0:00:22	13 kph
10/5/2017 11:53	OFF	N22.20328 E113.87117	90 m	0:00:24	14 kph
10/5/2017 11:53	ON	N22.20289 E113.87043			
10/5/2017 11:53	ON	N22.20235 E113.87019	64 m	0:00:17	14 kph
10/5/2017 11:54	ON	N22.20173 E113.87028	70 m	0:00:17	15 kph
10/5/2017 11:54	ON	N22.20112 E113.87028	68 m	0:00:17	14 kph
10/5/2017 11:54	ON	N22.20046 E113.87007	78 m	0:00:20	14 kph
10/5/2017 11:55	ON	N22.19963 E113.86988	94 m	0:00:24	14 kph
10/5/2017 11:55	ON	N22.19900 E113.86972	73 m	0:00:19	14 kph
10/5/2017 11:55	ON	N22.19846 E113.86968	60 m	0:00:15	14 kph
10/5/2017 11:56	ON	N22.19776 E113.86967	77 m	0:00:19	15 kph
10/5/2017 11:56	ON	N22.19679 E113.86960	108 m	0:00:27	14 kph
10/5/2017 11:56	ON	N22.19593 E113.86947	96 m	0:00:24	14 kph
10/5/2017 11:57	ON	N22.19500 E113.86944	104 m	0:00:25	15 kph
10/5/2017 11:57	ON	N22.19414 E113.86936	95 m	0:00:23	15 kph
10/5/2017 11:58	ON	N22.19347 E113.86933	75 m	0:00:18	15 kph
10/5/2017 11:58	ON	N22.19272 E113.86940	84 m	0:00:20	15 kph
10/5/2017 11:58	ON	N22.19194 E113.86939	87 m	0:00:21	15 kph
10/5/2017 11:59	ON	N22.19108 E113.86947	96 m	0:00:23	15 kph
10/5/2017 11:59	ON	N22.19008 E113.86946	111 m	0:00:27	15 kph
10/5/2017 11:59	ON	N22.18928 E113.86954	89 m	0:00:21	15 kph
10/5/2017 12:00	ON	N22.18853 E113.86947	84 m	0:00:21	14 kph
10/5/2017 12:00	ON	N22.18791 E113.86939	69 m	0:00:17	15 kph
10/5/2017 12:00	ON	N22.18723 E113.86931	76 m	0:00:19	14 kph
10/5/2017 12:01	ON	N22.18643 E113.86920	90 m	0:00:22	15 kph
10/5/2017 12:01	ON	N22.18560 E113.86905	94 m	0:00:23	15 kph
10/5/2017 12:02	ON	N22.18476 E113.86908	93 m	0:00:22	15 kph
10/5/2017 12:02	ON	N22.18390 E113.86897	96 m	0:00:24	14 kph
10/5/2017 12:02	ON	N22.18298 E113.86890	104 m	0:00:25	15 kph
10/5/2017 12:03	ON	N22.18187 E113.86893	123 m	0:00:29	15 kph
10/5/2017 12:03	ON	N22.18083 E113.86900	116 m	0:00:27	15 kph
10/5/2017 12:04	ON	N22.17975 E113.86931	124 m	0:00:28	16 kph
10/5/2017 12:04	ON	N22.17894 E113.86936	90 m	0:00:21	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 12:04	ON	N22.17812 E113.86942	91 m	0:00:21	16 kph
10/5/2017 12:05	ON	N22.17724 E113.86953	99 m	0:00:24	15 kph
10/5/2017 12:05	ON	N22.17624 E113.86956	111 m	0:00:28	14 kph
10/5/2017 12:06	ON	N22.17554 E113.86957	79 m	0:00:20	14 kph
10/5/2017 12:06	ON	N22.17458 E113.86962	107 m	0:00:27	14 kph
10/5/2017 12:06	ON	N22.17380 E113.86949	88 m	0:00:23	14 kph
10/5/2017 12:07	ON	N22.17301 E113.86937	88 m	0:00:23	14 kph
10/5/2017 12:07	ON	N22.17226 E113.86930	84 m	0:00:21	14 kph
10/5/2017 12:08	ON	N22.17138 E113.86921	99 m	0:00:25	14 kph
10/5/2017 12:08	ON	N22.17049 E113.86912	99 m	0:00:25	14 kph
10/5/2017 12:08	ON	N22.16970 E113.86905	88 m	0:00:22	14 kph
10/5/2017 12:09	ON	N22.16904 E113.86908	74 m	0:00:18	15 kph
10/5/2017 12:09	ON	N22.16831 E113.86909	81 m	0:00:20	15 kph
10/5/2017 12:09	ON	N22.16745 E113.86903	97 m	0:00:24	14 kph
10/5/2017 12:10	ON	N22.16661 E113.86903	94 m	0:00:23	15 kph
10/5/2017 12:10	ON	N22.16583 E113.86904	86 m	0:00:21	15 kph
10/5/2017 12:11	ON	N22.16498 E113.86904	95 m	0:00:23	15 kph
10/5/2017 12:11	ON	N22.16419 E113.86904	88 m	0:00:21	15 kph
10/5/2017 12:11	ON	N22.16351 E113.86916	77 m	0:00:18	15 kph
10/5/2017 12:12	ON	N22.16279 E113.86933	82 m	0:00:19	16 kph
10/5/2017 12:12	ON	N22.16203 E113.86947	86 m	0:00:20	15 kph
10/5/2017 12:12	ON	N22.16132 E113.86951	78 m	0:00:19	15 kph
10/5/2017 12:12	ON	N22.16086 E113.86986	62 m	0:00:16	14 kph
10/5/2017 12:13	ON	N22.16072 E113.87053	71 m	0:00:18	14 kph
10/5/2017 12:13	ON	N22.16053 E113.87128	81 m	0:00:19	15 kph
10/5/2017 12:13	ON	N22.16013 E113.87212	97 m	0:00:22	16 kph
10/5/2017 12:14	ON	N22.15973 E113.87306	107 m	0:00:24	16 kph
10/5/2017 12:14	ON	N22.15954 E113.87393	92 m	0:00:21	16 kph
10/5/2017 12:15	ON	N22.15925 E113.87481	96 m	0:00:22	16 kph
10/5/2017 12:15	ON	N22.15877 E113.87581	116 m	0:00:26	16 kph
10/5/2017 12:15	ON	N22.15836 E113.87671	104 m	0:00:23	16 kph
10/5/2017 12:16	ON	N22.15799 E113.87753	94 m	0:00:21	16 kph
10/5/2017 12:16	ON	N22.15772 E113.87835	89 m	0:00:21	15 kph
10/5/2017 12:16	ON	N22.15786 E113.87883	52 m	0:00:15	12 kph
10/5/2017 12:17	ON	N22.15813 E113.87909	41 m	0:00:13	11 kph
10/5/2017 12:17	ON	N22.15854 E113.87913	46 m	0:00:17	10 kph
10/5/2017 12:17	ON	N22.15885 E113.87899	37 m	0:00:14	10 kph
10/5/2017 12:17	ON	N22.15933 E113.87893	54 m	0:00:18	11 kph
10/5/2017 12:18	ON	N22.15990 E113.87911	66 m	0:00:19	12 kph
10/5/2017 12:18	ON	N22.16042 E113.87927	61 m	0:00:17	13 kph
10/5/2017 12:18	ON	N22.16108 E113.87944	75 m	0:00:21	13 kph
10/5/2017 12:19	ON	N22.16168 E113.87950	67 m	0:00:19	13 kph
10/5/2017 12:19	ON	N22.16236 E113.87945	76 m	0:00:22	12 kph
10/5/2017 12:19	ON	N22.16309 E113.87956	82 m	0:00:22	13 kph
10/5/2017 12:20	ON	N22.16378 E113.87956	77 m	0:00:21	13 kph
10/5/2017 12:20	ON	N22.16446 E113.87951	76 m	0:00:21	13 kph
10/5/2017 12:20	ON	N22.16516 E113.87954	78 m	0:00:21	13 kph
10/5/2017 12:21	ON	N22.16577 E113.87940	70 m	0:00:20	13 kph
10/5/2017 12:21	ON	N22.16652 E113.87934	83 m	0:00:23	13 kph
10/5/2017 12:21	ON	N22.16716 E113.87935	71 m	0:00:19	13 kph
10/5/2017 12:22	ON	N22.16799 E113.87930	92 m	0:00:25	13 kph
10/5/2017 12:22	ON	N22.16873 E113.87927	83 m	0:00:22	14 kph
10/5/2017 12:23	ON	N22.16944 E113.87924	79 m	0:00:21	14 kph
10/5/2017 12:23	ON	N22.17013 E113.87914	77 m	0:00:21	13 kph
10/5/2017 12:23	ON	N22.17084 E113.87910	79 m	0:00:21	14 kph
10/5/2017 12:24	ON	N22.17149 E113.87903	74 m	0:00:20	13 kph
10/5/2017 12:24	ON	N22.17216 E113.87896	74 m	0:00:20	13 kph
10/5/2017 12:24	ON	N22.17293 E113.87888	86 m	0:00:23	13 kph
10/5/2017 12:25	ON	N22.17369 E113.87887	84 m	0:00:22	14 kph
10/5/2017 12:25	ON	N22.17459 E113.87877	102 m	0:00:27	14 kph
10/5/2017 12:26	ON	N22.17554 E113.87878	105 m	0:00:27	14 kph
10/5/2017 12:26	ON	N22.17628 E113.87877	82 m	0:00:21	14 kph
10/5/2017 12:26	ON	N22.17705 E113.87880	86 m	0:00:22	14 kph
10/5/2017 12:27	ON	N22.17793 E113.87892	100 m	0:00:25	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 12:27	ON	N22.17871 E113.87880	87 m	0:00:23	14 kph
10/5/2017 12:27	ON	N22.17941 E113.87874	78 m	0:00:20	14 kph
10/5/2017 12:28	ON	N22.18020 E113.87880	89 m	0:00:22	14 kph
10/5/2017 12:28	ON	N22.18092 E113.87875	80 m	0:00:20	14 kph
10/5/2017 12:28	ON	N22.18160 E113.87873	76 m	0:00:19	14 kph
10/5/2017 12:29	ON	N22.18207 E113.87878	53 m	0:00:13	15 kph
10/5/2017 12:29	ON	N22.18258 E113.87891	58 m	0:00:14	15 kph
10/5/2017 12:29	ON	N22.18333 E113.87898	83 m	0:00:20	15 kph
10/5/2017 12:30	ON	N22.18419 E113.87898	97 m	0:00:24	14 kph
10/5/2017 12:30	ON	N22.18506 E113.87889	97 m	0:00:24	15 kph
10/5/2017 12:30	ON	N22.18592 E113.87872	97 m	0:00:24	15 kph
10/5/2017 12:31	ON	N22.18697 E113.87849	120 m	0:00:30	14 kph
10/5/2017 12:31	ON	N22.18791 E113.87841	105 m	0:00:26	15 kph
10/5/2017 12:32	OFF	N22.18834 E113.87840	49 m	0:00:17	10 kph
10/5/2017 12:32	OFF	N22.18859 E113.87847	29 m	0:00:18	6 kph
10/5/2017 12:32	OFF	N22.18879 E113.87858	25 m	0:00:21	4 kph
10/5/2017 12:33	OFF	N22.18894 E113.87871	21 m	0:00:23	3 kph
10/5/2017 12:33	OFF	N22.18914 E113.87881	25 m	0:00:17	5 kph
10/5/2017 12:33	OFF	N22.18930 E113.87914	38 m	0:00:14	10 kph
10/5/2017 12:33	OFF	N22.18959 E113.87967	63 m	0:00:18	13 kph
10/5/2017 12:34	OFF	N22.18987 E113.87965	32 m	0:00:15	8 kph
10/5/2017 12:34	OFF	N22.18991 E113.87938	28 m	0:00:15	7 kph
10/5/2017 12:34	OFF	N22.18989 E113.87926	13 m	0:00:16	3 kph
10/5/2017 12:35	OFF	N22.18991 E113.87914	12 m	0:00:17	3 kph
10/5/2017 12:35	OFF	N22.19013 E113.87901	28 m	0:00:19	5 kph
10/5/2017 12:35	OFF	N22.19051 E113.87901	42 m	0:00:21	7 kph
10/5/2017 12:36	OFF	N22.19083 E113.87919	40 m	0:00:22	7 kph
10/5/2017 12:36	OFF	N22.19102 E113.87937	28 m	0:00:19	5 kph
10/5/2017 12:36	OFF	N22.19120 E113.87958	29 m	0:00:22	5 kph
10/5/2017 12:37	OFF	N22.19157 E113.87966	42 m	0:00:15	10 kph
10/5/2017 12:37	OFF	N22.19206 E113.87954	56 m	0:00:18	11 kph
10/5/2017 12:37	OFF	N22.19248 E113.87910	65 m	0:00:22	11 kph
10/5/2017 12:37	OFF	N22.19299 E113.87881	65 m	0:00:19	12 kph
10/5/2017 12:38	OFF	N22.19306 E113.87879			
10/5/2017 12:38	ON	N22.19382 E113.87853	88 m	0:00:23	14 kph
10/5/2017 12:38	ON	N22.19422 E113.87843	46 m	0:00:12	14 kph
10/5/2017 12:38	ON	N22.19498 E113.87835	85 m	0:00:21	15 kph
10/5/2017 12:39	ON	N22.19576 E113.87831	87 m	0:00:21	15 kph
10/5/2017 12:39	ON	N22.19650 E113.87827	83 m	0:00:20	15 kph
10/5/2017 12:40	ON	N22.19731 E113.87820	90 m	0:00:22	15 kph
10/5/2017 12:40	ON	N22.19806 E113.87819	84 m	0:00:20	15 kph
10/5/2017 12:40	ON	N22.19888 E113.87812	91 m	0:00:22	15 kph
10/5/2017 12:41	ON	N22.19961 E113.87803	82 m	0:00:20	15 kph
10/5/2017 12:41	ON	N22.20054 E113.87798	103 m	0:00:25	15 kph
10/5/2017 12:41	ON	N22.20137 E113.87795	92 m	0:00:22	15 kph
10/5/2017 12:42	ON	N22.20208 E113.87801	80 m	0:00:19	15 kph
10/5/2017 12:42	ON	N22.20297 E113.87803	100 m	0:00:23	16 kph
10/5/2017 12:42	ON	N22.20379 E113.87801	90 m	0:00:21	15 kph
10/5/2017 12:43	ON	N22.20449 E113.87799	79 m	0:00:18	16 kph
10/5/2017 12:43	ON	N22.20544 E113.87795	105 m	0:00:25	15 kph
10/5/2017 12:43	ON	N22.20625 E113.87795	90 m	0:00:22	15 kph
10/5/2017 12:44	ON	N22.20708 E113.87791	93 m	0:00:22	15 kph
10/5/2017 12:44	ON	N22.20790 E113.87788	92 m	0:00:22	15 kph
10/5/2017 12:44	ON	N22.20848 E113.87806	67 m	0:00:17	14 kph
10/5/2017 12:45	ON	N22.20889 E113.87859	71 m	0:00:18	14 kph
10/5/2017 12:45	ON	N22.20920 E113.87921	73 m	0:00:18	15 kph
10/5/2017 12:45	ON	N22.20956 E113.87988	80 m	0:00:20	14 kph
10/5/2017 12:46	ON	N22.21005 E113.88055	88 m	0:00:22	14 kph
10/5/2017 12:46	ON	N22.21054 E113.88108	77 m	0:00:19	15 kph
10/5/2017 12:46	ON	N22.21104 E113.88168	82 m	0:00:20	15 kph
10/5/2017 12:47	ON	N22.21162 E113.88235	95 m	0:00:23	15 kph
10/5/2017 12:47	ON	N22.21210 E113.88308	92 m	0:00:22	15 kph
10/5/2017 12:48	ON	N22.21259 E113.88381	93 m	0:00:22	15 kph
10/5/2017 12:48	ON	N22.21305 E113.88447	85 m	0:00:20	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 12:48	ON	N22.21339 E113.88512	76 m	0:00:18	15 kph
10/5/2017 12:48	ON	N22.21362 E113.88578	73 m	0:00:17	15 kph
10/5/2017 12:49	ON	N22.21382 E113.88631	60 m	0:00:14	15 kph
10/5/2017 12:49	ON	N22.21405 E113.88689	64 m	0:00:15	15 kph
10/5/2017 12:49	ON	N22.21430 E113.88749	68 m	0:00:16	15 kph
10/5/2017 12:49	ON	N22.21420 E113.88791	45 m	0:00:13	12 kph
10/5/2017 12:50	ON	N22.21374 E113.88814	57 m	0:00:17	12 kph
10/5/2017 12:50	ON	N22.21315 E113.88822	67 m	0:00:18	13 kph
10/5/2017 12:50	ON	N22.21240 E113.88828	83 m	0:00:22	14 kph
10/5/2017 12:51	ON	N22.21167 E113.88823	82 m	0:00:22	13 kph
10/5/2017 12:51	ON	N22.21100 E113.88815	75 m	0:00:20	13 kph
10/5/2017 12:51	ON	N22.21026 E113.88805	83 m	0:00:22	14 kph
10/5/2017 12:52	ON	N22.20958 E113.88802	76 m	0:00:20	14 kph
10/5/2017 12:52	ON	N22.20879 E113.88808	88 m	0:00:23	14 kph
10/5/2017 12:52	ON	N22.20814 E113.88810	73 m	0:00:19	14 kph
10/5/2017 12:53	ON	N22.20739 E113.88817	83 m	0:00:22	14 kph
10/5/2017 12:53	ON	N22.20679 E113.88818	67 m	0:00:18	13 kph
10/5/2017 12:53	ON	N22.20619 E113.88818	67 m	0:00:18	13 kph
10/5/2017 12:54	ON	N22.20549 E113.88815	77 m	0:00:21	13 kph
10/5/2017 12:54	ON	N22.20483 E113.88814	74 m	0:00:20	13 kph
10/5/2017 12:54	ON	N22.20413 E113.88818	78 m	0:00:21	13 kph
10/5/2017 12:55	ON	N22.20343 E113.88819	78 m	0:00:21	13 kph
10/5/2017 12:55	ON	N22.20275 E113.88819	75 m	0:00:20	14 kph
10/5/2017 12:56	ON	N22.20197 E113.88826	88 m	0:00:23	14 kph
10/5/2017 12:56	ON	N22.20124 E113.88818	81 m	0:00:22	13 kph
10/5/2017 12:56	ON	N22.20048 E113.88808	85 m	0:00:23	13 kph
10/5/2017 12:57	ON	N22.19972 E113.88811	85 m	0:00:22	14 kph
10/5/2017 12:57	ON	N22.19895 E113.88821	87 m	0:00:22	14 kph
10/5/2017 12:57	ON	N22.19826 E113.88822	76 m	0:00:20	14 kph
10/5/2017 12:58	ON	N22.19766 E113.88819	67 m	0:00:18	13 kph
10/5/2017 12:58	ON	N22.19696 E113.88814	78 m	0:00:21	13 kph
10/5/2017 12:58	ON	N22.19629 E113.88807	74 m	0:00:20	13 kph
10/5/2017 12:59	ON	N22.19556 E113.88804	82 m	0:00:22	13 kph
10/5/2017 12:59	ON	N22.19477 E113.88809	89 m	0:00:23	14 kph
10/5/2017 12:59	ON	N22.19405 E113.88809	79 m	0:00:21	14 kph
10/5/2017 13:00	ON	N22.19343 E113.88810	70 m	0:00:18	14 kph
10/5/2017 13:00	ON	N22.19278 E113.88806	72 m	0:00:19	14 kph
10/5/2017 13:00	ON	N22.19223 E113.88809	61 m	0:00:16	14 kph
10/5/2017 13:01	ON	N22.19164 E113.88813	67 m	0:00:17	14 kph
10/5/2017 13:01	ON	N22.19103 E113.88809	68 m	0:00:18	14 kph
10/5/2017 13:01	ON	N22.19037 E113.88799	74 m	0:00:20	13 kph
10/5/2017 13:01	ON	N22.18993 E113.88794	49 m	0:00:13	14 kph
10/5/2017 13:02	ON	N22.18944 E113.88792	54 m	0:00:14	14 kph
10/5/2017 13:02	ON	N22.18887 E113.88788	64 m	0:00:17	14 kph
10/5/2017 13:02	ON	N22.18832 E113.88788	61 m	0:00:16	14 kph
10/5/2017 13:03	ON	N22.18764 E113.88798	76 m	0:00:19	14 kph
10/5/2017 13:03	ON	N22.18704 E113.88808	68 m	0:00:17	14 kph
10/5/2017 13:03	ON	N22.18634 E113.88819	79 m	0:00:20	14 kph
10/5/2017 13:03	ON	N22.18585 E113.88813	55 m	0:00:15	13 kph
10/5/2017 13:04	ON	N22.18536 E113.88802	56 m	0:00:15	13 kph
10/5/2017 13:04	ON	N22.18494 E113.88799	46 m	0:00:12	14 kph
10/5/2017 13:04	ON	N22.18442 E113.88797	58 m	0:00:15	14 kph
10/5/2017 13:04	ON	N22.18389 E113.88788	61 m	0:00:16	14 kph
10/5/2017 13:05	ON	N22.18329 E113.88785	66 m	0:00:17	14 kph
10/5/2017 13:05	ON	N22.18287 E113.88785	47 m	0:00:12	14 kph
10/5/2017 13:05	ON	N22.18230 E113.88785	64 m	0:00:16	14 kph
10/5/2017 13:05	ON	N22.18172 E113.88788	65 m	0:00:16	15 kph
10/5/2017 13:06	ON	N22.18107 E113.88792	73 m	0:00:18	15 kph
10/5/2017 13:06	ON	N22.18050 E113.88790	63 m	0:00:16	14 kph
10/5/2017 13:06	ON	N22.17982 E113.88792	76 m	0:00:19	14 kph
10/5/2017 13:07	ON	N22.17890 E113.88800	102 m	0:00:25	15 kph
10/5/2017 13:07	ON	N22.17802 E113.88808	99 m	0:00:24	15 kph
10/5/2017 13:08	ON	N22.17713 E113.88816	99 m	0:00:24	15 kph
10/5/2017 13:08	ON	N22.17625 E113.88821	99 m	0:00:24	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 13:08	ON	N22.17531 E113.88822	104 m	0:00:25	15 kph
10/5/2017 13:09	ON	N22.17449 E113.88816	92 m	0:00:23	14 kph
10/5/2017 13:09	ON	N22.17365 E113.88812	93 m	0:00:23	15 kph
10/5/2017 13:09	ON	N22.17296 E113.88814	77 m	0:00:19	15 kph
10/5/2017 13:10	ON	N22.17217 E113.88818	88 m	0:00:21	15 kph
10/5/2017 13:10	ON	N22.17149 E113.88820	76 m	0:00:18	15 kph
10/5/2017 13:10	ON	N22.17070 E113.88822	89 m	0:00:21	15 kph
10/5/2017 13:11	ON	N22.16987 E113.88821	92 m	0:00:22	15 kph
10/5/2017 13:11	ON	N22.16905 E113.88818	91 m	0:00:22	15 kph
10/5/2017 13:12	ON	N22.16817 E113.88813	99 m	0:00:24	15 kph
10/5/2017 13:12	ON	N22.16738 E113.88809	88 m	0:00:21	15 kph
10/5/2017 13:12	ON	N22.16666 E113.88806	80 m	0:00:19	15 kph
10/5/2017 13:13	ON	N22.16598 E113.88804	76 m	0:00:18	15 kph
10/5/2017 13:13	ON	N22.16526 E113.88802	80 m	0:00:19	15 kph
10/5/2017 13:13	ON	N22.16449 E113.88801	85 m	0:00:20	15 kph
10/5/2017 13:14	ON	N22.16353 E113.88800	107 m	0:00:25	15 kph
10/5/2017 13:14	ON	N22.16283 E113.88800	78 m	0:00:18	16 kph
10/5/2017 13:14	ON	N22.16213 E113.88799	78 m	0:00:18	16 kph
10/5/2017 13:15	ON	N22.16114 E113.88789	111 m	0:00:26	15 kph
10/5/2017 13:15	ON	N22.16035 E113.88788	87 m	0:00:20	16 kph
10/5/2017 13:15	ON	N22.15957 E113.88791	87 m	0:00:20	16 kph
10/5/2017 13:16	ON	N22.15886 E113.88792	79 m	0:00:18	16 kph
10/5/2017 13:16	ON	N22.15800 E113.88795	96 m	0:00:22	16 kph
10/5/2017 13:16	ON	N22.15712 E113.88796	97 m	0:00:22	16 kph
10/5/2017 13:17	ON	N22.15623 E113.88809	101 m	0:00:22	17 kph
10/5/2017 13:17	ON	N22.15534 E113.88823	100 m	0:00:22	16 kph
10/5/2017 13:17	ON	N22.15462 E113.88837	81 m	0:00:18	16 kph
10/5/2017 13:18	ON	N22.15365 E113.88842	109 m	0:00:25	16 kph
10/5/2017 13:18	ON	N22.15294 E113.88847	79 m	0:00:18	16 kph
10/5/2017 13:18	ON	N22.15203 E113.88860	102 m	0:00:23	16 kph
10/5/2017 13:19	ON	N22.15131 E113.88868	80 m	0:00:18	16 kph
10/5/2017 13:19	ON	N22.15057 E113.88872	83 m	0:00:19	16 kph
10/5/2017 13:19	ON	N22.15005 E113.88903	66 m	0:00:15	16 kph
10/5/2017 13:20	ON	N22.14968 E113.88962	73 m	0:00:16	16 kph
10/5/2017 13:20	ON	N22.14947 E113.89052	96 m	0:00:21	16 kph
10/5/2017 13:20	ON	N22.14940 E113.89150	101 m	0:00:22	16 kph
10/5/2017 13:21	ON	N22.14928 E113.89275	130 m	0:00:28	17 kph
10/5/2017 13:21	ON	N22.14922 E113.89355	83 m	0:00:18	17 kph
10/5/2017 13:21	ON	N22.14911 E113.89461	110 m	0:00:24	17 kph
10/5/2017 13:22	ON	N22.14899 E113.89530	73 m	0:00:18	15 kph
10/5/2017 13:22	ON	N22.14891 E113.89577	49 m	0:00:18	10 kph
10/5/2017 13:22	OFF	N22.14886 E113.89616	41 m	0:00:20	7 kph
10/5/2017 13:23	OFF	N22.14877 E113.89634	21 m	0:00:19	4 kph
10/5/2017 13:23	OFF	N22.14868 E113.89646	16 m	0:00:19	3 kph
10/5/2017 13:23	OFF	N22.14860 E113.89658	16 m	0:00:20	3 kph
10/5/2017 13:24	OFF	N22.14851 E113.89673	18 m	0:00:22	3 kph
10/5/2017 13:24	OFF	N22.14843 E113.89685	15 m	0:00:18	3 kph
10/5/2017 13:24	OFF	N22.14836 E113.89693	11 m	0:00:14	3 kph
10/5/2017 13:25	OFF	N22.14827 E113.89700	13 m	0:00:16	3 kph
10/5/2017 13:25	OFF	N22.14820 E113.89707	11 m	0:00:14	3 kph
10/5/2017 13:25	OFF	N22.14813 E113.89714	11 m	0:00:14	3 kph
10/5/2017 13:25	OFF	N22.14804 E113.89723	13 m	0:00:17	3 kph
10/5/2017 13:26	OFF	N22.14795 E113.89735	16 m	0:00:19	3 kph
10/5/2017 13:26	OFF	N22.14785 E113.89748	18 m	0:00:21	3 kph
10/5/2017 13:26	OFF	N22.14776 E113.89760	16 m	0:00:18	3 kph
10/5/2017 13:26	OFF	N22.14775 E113.89773			
10/5/2017 13:27	OFF	N22.14790 E113.89797	29 m	0:00:15	7 kph
10/5/2017 13:27	OFF	N22.14817 E113.89791			
10/5/2017 13:27	OFF	N22.14844 E113.89763	42 m	0:00:18	8 kph
10/5/2017 13:28	OFF	N22.14871 E113.89740	38 m	0:00:17	8 kph
10/5/2017 13:28	OFF	N22.14902 E113.89720	41 m	0:00:20	7 kph
10/5/2017 13:28	OFF	N22.14931 E113.89705	35 m	0:00:20	6 kph
10/5/2017 13:28	OFF	N22.14944 E113.89699			
10/5/2017 13:29	OFF	N22.14975 E113.89689	35 m	0:00:19	7 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 13:29	ON	N22.15012 E113.89685	42 m	0:00:19	8 kph
10/5/2017 13:29	ON	N22.15072 E113.89687	67 m	0:00:20	12 kph
10/5/2017 13:29	ON	N22.15106 E113.89692	39 m	0:00:11	13 kph
10/5/2017 13:30	ON	N22.15163 E113.89695	63 m	0:00:18	13 kph
10/5/2017 13:30	ON	N22.15233 E113.89697	78 m	0:00:22	13 kph
10/5/2017 13:31	ON	N22.15300 E113.89706	76 m	0:00:21	13 kph
10/5/2017 13:31	ON	N22.15361 E113.89710	67 m	0:00:19	13 kph
10/5/2017 13:31	ON	N22.15416 E113.89689	65 m	0:00:20	12 kph
10/5/2017 13:31	ON	N22.15472 E113.89671	65 m	0:00:20	12 kph
10/5/2017 13:32	ON	N22.15538 E113.89677	74 m	0:00:21	13 kph
10/5/2017 13:32	ON	N22.15604 E113.89670	74 m	0:00:21	13 kph
10/5/2017 13:33	ON	N22.15673 E113.89681	78 m	0:00:22	13 kph
10/5/2017 13:33	ON	N22.15739 E113.89705	77 m	0:00:20	14 kph
10/5/2017 13:33	ON	N22.15821 E113.89720	92 m	0:00:24	14 kph
10/5/2017 13:34	ON	N22.15904 E113.89723	92 m	0:00:25	13 kph
10/5/2017 13:34	ON	N22.15976 E113.89726	81 m	0:00:22	13 kph
10/5/2017 13:34	ON	N22.16044 E113.89744	77 m	0:00:20	14 kph
10/5/2017 13:35	ON	N22.16125 E113.89760	92 m	0:00:24	14 kph
10/5/2017 13:35	ON	N22.16192 E113.89747	77 m	0:00:21	13 kph
10/5/2017 13:36	ON	N22.16273 E113.89734	91 m	0:00:24	14 kph
10/5/2017 13:36	ON	N22.16350 E113.89743	86 m	0:00:22	14 kph
10/5/2017 13:36	ON	N22.16436 E113.89738	97 m	0:00:25	14 kph
10/5/2017 13:37	ON	N22.16516 E113.89724	90 m	0:00:23	14 kph
10/5/2017 13:37	ON	N22.16596 E113.89729	89 m	0:00:22	15 kph
10/5/2017 13:37	ON	N22.16684 E113.89741	99 m	0:00:24	15 kph
10/5/2017 13:38	ON	N22.16769 E113.89749	95 m	0:00:23	15 kph
10/5/2017 13:38	ON	N22.16850 E113.89756	90 m	0:00:22	15 kph
10/5/2017 13:39	ON	N22.16937 E113.89753	97 m	0:00:24	15 kph
10/5/2017 13:39	ON	N22.17037 E113.89746	112 m	0:00:28	14 kph
10/5/2017 13:40	ON	N22.17122 E113.89740	95 m	0:00:24	14 kph
10/5/2017 13:40	ON	N22.17198 E113.89744	84 m	0:00:21	14 kph
10/5/2017 13:40	ON	N22.17281 E113.89772	97 m	0:00:23	15 kph
10/5/2017 13:41	ON	N22.17344 E113.89794	74 m	0:00:17	16 kph
10/5/2017 13:41	ON	N22.17410 E113.89797	74 m	0:00:18	15 kph
10/5/2017 13:41	ON	N22.17482 E113.89777	84 m	0:00:21	14 kph
10/5/2017 13:41	ON	N22.17549 E113.89761	76 m	0:00:19	14 kph
10/5/2017 13:42	ON	N22.17616 E113.89760	74 m	0:00:18	15 kph
10/5/2017 13:42	ON	N22.17699 E113.89754	93 m	0:00:23	15 kph
10/5/2017 13:42	ON	N22.17762 E113.89741	71 m	0:00:18	14 kph
10/5/2017 13:43	ON	N22.17837 E113.89741	84 m	0:00:20	15 kph
10/5/2017 13:43	ON	N22.17925 E113.89729	99 m	0:00:24	15 kph
10/5/2017 13:44	ON	N22.18013 E113.89724	99 m	0:00:24	15 kph
10/5/2017 13:44	ON	N22.18093 E113.89729	88 m	0:00:21	15 kph
10/5/2017 13:44	ON	N22.18176 E113.89726	92 m	0:00:22	15 kph
10/5/2017 13:45	ON	N22.18260 E113.89721	95 m	0:00:23	15 kph
10/5/2017 13:45	ON	N22.18332 E113.89716	80 m	0:00:20	14 kph
10/5/2017 13:45	ON	N22.18415 E113.89705	92 m	0:00:23	14 kph
10/5/2017 13:46	ON	N22.18491 E113.89697	85 m	0:00:21	15 kph
10/5/2017 13:46	ON	N22.18567 E113.89697	84 m	0:00:20	15 kph
10/5/2017 13:46	ON	N22.18654 E113.89697	98 m	0:00:23	15 kph
10/5/2017 13:47	ON	N22.18756 E113.89695	113 m	0:00:27	15 kph
10/5/2017 13:47	ON	N22.18861 E113.89698	117 m	0:00:28	15 kph
10/5/2017 13:48	ON	N22.18939 E113.89705	87 m	0:00:21	15 kph
10/5/2017 13:48	ON	N22.19017 E113.89704	87 m	0:00:22	14 kph
10/5/2017 13:49	ON	N22.19106 E113.89686	101 m	0:00:27	13 kph
10/5/2017 13:49	ON	N22.19190 E113.89683	94 m	0:00:24	14 kph
10/5/2017 13:49	ON	N22.19284 E113.89692	105 m	0:00:26	15 kph
10/5/2017 13:50	ON	N22.19378 E113.89703	105 m	0:00:26	15 kph
10/5/2017 13:50	ON	N22.19464 E113.89704	95 m	0:00:24	14 kph
10/5/2017 13:51	ON	N22.19553 E113.89710	100 m	0:00:25	14 kph
10/5/2017 13:51	ON	N22.19613 E113.89712	67 m	0:00:17	14 kph
10/5/2017 13:51	ON	N22.19668 E113.89712	62 m	0:00:16	14 kph
10/5/2017 13:52	ON	N22.19746 E113.89718	86 m	0:00:22	14 kph
10/5/2017 13:52	ON	N22.19827 E113.89724	91 m	0:00:23	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 13:52	ON	N22.19905 E113.89727	86 m	0:00:22	14 kph
10/5/2017 13:53	ON	N22.19981 E113.89729	85 m	0:00:22	14 kph
10/5/2017 13:53	ON	N22.20065 E113.89736	93 m	0:00:24	14 kph
10/5/2017 13:54	ON	N22.20168 E113.89740	114 m	0:00:29	14 kph
10/5/2017 13:54	ON	N22.20242 E113.89743	83 m	0:00:21	14 kph
10/5/2017 13:54	ON	N22.20316 E113.89744	83 m	0:00:21	14 kph
10/5/2017 13:55	ON	N22.20398 E113.89745	91 m	0:00:23	14 kph
10/5/2017 13:55	ON	N22.20487 E113.89750	99 m	0:00:25	14 kph
10/5/2017 13:55	ON	N22.20562 E113.89752	84 m	0:00:22	14 kph
10/5/2017 13:56	OFF	N22.20592 E113.89755	33 m	0:00:15	8 kph
10/5/2017 13:56	OFF	N22.20620 E113.89766	34 m	0:00:25	5 kph
10/5/2017 13:56	OFF	N22.20633 E113.89774	17 m	0:00:16	4 kph
10/5/2017 13:57	OFF	N22.20646 E113.89781	16 m	0:00:19	3 kph
10/5/2017 13:57	OFF	N22.20657 E113.89793	18 m	0:00:24	3 kph
10/5/2017 13:57	OFF	N22.20664 E113.89804	14 m	0:00:20	2 kph
10/5/2017 13:58	OFF	N22.20671 E113.89815	14 m	0:00:20	2 kph
10/5/2017 13:58	OFF	N22.20677 E113.89827	14 m	0:00:21	2 kph
10/5/2017 13:58	OFF	N22.20684 E113.89839	15 m	0:00:22	2 kph
10/5/2017 13:59	OFF	N22.20691 E113.89852	15 m	0:00:23	2 kph
10/5/2017 13:59	OFF	N22.20694 E113.89856	5 m	0:00:06	3 kph
10/5/2017 13:59	OFF	N22.20727 E113.89866	38 m	0:00:17	8 kph
10/5/2017 14:00	OFF	N22.20769 E113.89851	50 m	0:00:16	11 kph
10/5/2017 14:00	OFF	N22.20785 E113.89808	48 m	0:00:16	11 kph
10/5/2017 14:00	OFF	N22.20796 E113.89729	82 m	0:00:24	12 kph
10/5/2017 14:00	ON	N22.20797 E113.89722			
10/5/2017 14:00	ON	N22.20834 E113.89687	55 m	0:00:16	12 kph
10/5/2017 14:01	ON	N22.20911 E113.89678	86 m	0:00:21	15 kph
10/5/2017 14:01	ON	N22.20998 E113.89680	97 m	0:00:23	15 kph
10/5/2017 14:02	ON	N22.21069 E113.89676	79 m	0:00:20	14 kph
10/5/2017 14:02	ON	N22.21166 E113.89675	108 m	0:00:27	14 kph
10/5/2017 14:02	ON	N22.21266 E113.89676	112 m	0:00:28	14 kph
10/5/2017 14:03	ON	N22.21328 E113.89700	73 m	0:00:20	13 kph
10/5/2017 14:03	ON	N22.21339 E113.89746	49 m	0:00:14	13 kph
10/5/2017 14:03	ON	N22.21313 E113.89795	57 m	0:00:16	13 kph
10/5/2017 14:04	ON	N22.21260 E113.89858	88 m	0:00:22	14 kph
10/5/2017 14:04	ON	N22.21198 E113.89928	100 m	0:00:25	14 kph
10/5/2017 14:04	ON	N22.21145 E113.89991	87 m	0:00:22	14 kph
10/5/2017 14:05	ON	N22.21103 E113.90042	71 m	0:00:18	14 kph
10/5/2017 14:05	ON	N22.21053 E113.90099	80 m	0:00:20	14 kph
10/5/2017 14:05	ON	N22.21012 E113.90154	73 m	0:00:18	15 kph
10/5/2017 14:06	ON	N22.20971 E113.90214	77 m	0:00:19	15 kph
10/5/2017 14:06	ON	N22.20937 E113.90260	61 m	0:00:15	15 kph
10/5/2017 14:06	ON	N22.20885 E113.90329	92 m	0:00:23	14 kph
10/5/2017 14:07	ON	N22.20847 E113.90387	73 m	0:00:18	15 kph
10/5/2017 14:07	ON	N22.20811 E113.90452	78 m	0:00:19	15 kph
10/5/2017 14:07	ON	N22.20769 E113.90526	89 m	0:00:22	15 kph
10/5/2017 14:08	ON	N22.20726 E113.90603	94 m	0:00:23	15 kph
10/5/2017 14:08	ON	N22.20668 E113.90708	125 m	0:00:30	15 kph
10/5/2017 14:09	ON	N22.20623 E113.90774	84 m	0:00:20	15 kph
10/5/2017 14:09	ON	N22.20571 E113.90825	78 m	0:00:20	14 kph
10/5/2017 14:09	ON	N22.20512 E113.90833	66 m	0:00:18	13 kph
10/5/2017 14:10	ON	N22.20441 E113.90832	80 m	0:00:21	14 kph
10/5/2017 14:10	ON	N22.20367 E113.90826	83 m	0:00:22	14 kph
10/5/2017 14:10	ON	N22.20298 E113.90821	76 m	0:00:21	13 kph
10/5/2017 14:10	ON	N22.20250 E113.90817	54 m	0:00:15	13 kph
10/5/2017 14:11	ON	N22.20185 E113.90814	72 m	0:00:20	13 kph
10/5/2017 14:11	ON	N22.20126 E113.90809	66 m	0:00:18	13 kph
10/5/2017 14:11	ON	N22.20075 E113.90803	57 m	0:00:16	13 kph
10/5/2017 14:12	ON	N22.20014 E113.90787	69 m	0:00:20	12 kph
10/5/2017 14:12	ON	N22.19955 E113.90754	74 m	0:00:22	12 kph
10/5/2017 14:12	ON	N22.19900 E113.90728	67 m	0:00:20	12 kph
10/5/2017 14:13	ON	N22.19830 E113.90717	80 m	0:00:22	13 kph
10/5/2017 14:13	ON	N22.19771 E113.90711	65 m	0:00:18	13 kph
10/5/2017 14:13	ON	N22.19694 E113.90702	87 m	0:00:24	13 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 14:14	ON	N22.19626 E113.90683	78 m	0:00:23	12 kph
10/5/2017 14:14	ON	N22.19550 E113.90673	85 m	0:00:24	13 kph
10/5/2017 14:15	ON	N22.19482 E113.90671	76 m	0:00:21	13 kph
10/5/2017 14:15	ON	N22.19403 E113.90675	87 m	0:00:24	13 kph
10/5/2017 14:15	ON	N22.19311 E113.90676	103 m	0:00:28	13 kph
10/5/2017 14:16	ON	N22.19243 E113.90676	76 m	0:00:21	13 kph
10/5/2017 14:16	ON	N22.19182 E113.90675	68 m	0:00:19	13 kph
10/5/2017 14:16	ON	N22.19115 E113.90672	74 m	0:00:21	13 kph
10/5/2017 14:17	ON	N22.19053 E113.90668	70 m	0:00:20	13 kph
10/5/2017 14:17	ON	N22.18984 E113.90652	78 m	0:00:24	12 kph
10/5/2017 14:18	ON	N22.18910 E113.90609	93 m	0:00:29	12 kph
10/5/2017 14:18	ON	N22.18846 E113.90575	80 m	0:00:24	12 kph
10/5/2017 14:19	ON	N22.18783 E113.90538	80 m	0:00:24	12 kph
10/5/2017 14:19	ON	N22.18716 E113.90513	79 m	0:00:24	12 kph
10/5/2017 14:19	ON	N22.18649 E113.90493	77 m	0:00:22	13 kph
10/5/2017 14:20	ON	N22.18580 E113.90477	78 m	0:00:22	13 kph
10/5/2017 14:20	ON	N22.18505 E113.90453	88 m	0:00:25	13 kph
10/5/2017 14:20	ON	N22.18425 E113.90428	92 m	0:00:26	13 kph
10/5/2017 14:21	ON	N22.18346 E113.90406	91 m	0:00:25	13 kph
10/5/2017 14:21	ON	N22.18281 E113.90397	74 m	0:00:20	13 kph
10/5/2017 14:22	ON	N22.18206 E113.90390	83 m	0:00:22	14 kph
10/5/2017 14:22	ON	N22.18116 E113.90385	100 m	0:00:26	14 kph
10/5/2017 14:22	ON	N22.18037 E113.90392	89 m	0:00:22	15 kph
10/5/2017 14:23	ON	N22.17951 E113.90410	97 m	0:00:23	15 kph
10/5/2017 14:23	ON	N22.17865 E113.90440	101 m	0:00:23	16 kph
10/5/2017 14:24	ON	N22.17801 E113.90493	90 m	0:00:20	16 kph
10/5/2017 14:24	ON	N22.17728 E113.90561	108 m	0:00:23	17 kph
10/5/2017 14:24	ON	N22.17665 E113.90635	103 m	0:00:22	17 kph
10/5/2017 14:25	ON	N22.17581 E113.90719	128 m	0:00:28	16 kph
10/5/2017 14:25	ON	N22.17516 E113.90769	89 m	0:00:20	16 kph
10/5/2017 14:26	ON	N22.17421 E113.90813	115 m	0:00:27	15 kph
10/5/2017 14:26	ON	N22.17323 E113.90837	112 m	0:00:27	15 kph
10/5/2017 14:26	ON	N22.17248 E113.90843	84 m	0:00:22	14 kph
10/5/2017 14:27	ON	N22.17185 E113.90806	79 m	0:00:22	13 kph
10/5/2017 14:27	ON	N22.17133 E113.90753	80 m	0:00:21	14 kph
10/5/2017 14:27	ON	N22.17089 E113.90704	70 m	0:00:18	14 kph
10/5/2017 14:28	ON	N22.17033 E113.90639	92 m	0:00:23	14 kph
10/5/2017 14:28	ON	N22.16968 E113.90574	98 m	0:00:24	15 kph
10/5/2017 14:29	ON	N22.16892 E113.90508	109 m	0:00:29	14 kph
10/5/2017 14:29	ON	N22.16833 E113.90449	89 m	0:00:25	13 kph
10/5/2017 14:29	ON	N22.16775 E113.90395	86 m	0:00:24	13 kph
10/5/2017 14:30	ON	N22.16726 E113.90343	77 m	0:00:22	13 kph
10/5/2017 14:30	ON	N22.16680 E113.90284	79 m	0:00:23	12 kph
10/5/2017 14:31	ON	N22.16641 E113.90227	73 m	0:00:21	13 kph
10/5/2017 14:31	ON	N22.16607 E113.90183	59 m	0:00:17	13 kph
10/5/2017 14:31	ON	N22.16579 E113.90155	42 m	0:00:12	13 kph
10/5/2017 14:31	ON	N22.16539 E113.90117	60 m	0:00:17	13 kph
10/5/2017 14:32	ON	N22.16510 E113.90087	46 m	0:00:13	13 kph
10/5/2017 14:32	ON	N22.16479 E113.90058	45 m	0:00:13	12 kph
10/5/2017 14:32	ON	N22.16432 E113.90020	66 m	0:00:18	13 kph
10/5/2017 14:32	ON	N22.16385 E113.89981	66 m	0:00:18	13 kph
10/5/2017 14:33	ON	N22.16348 E113.89946	55 m	0:00:15	13 kph
10/5/2017 14:33	ON	N22.16309 E113.89910	57 m	0:00:15	14 kph
10/5/2017 14:33	ON	N22.16264 E113.89874	63 m	0:00:16	14 kph
10/5/2017 14:33	ON	N22.16216 E113.89847	60 m	0:00:15	14 kph
10/5/2017 14:34	ON	N22.16157 E113.89821	71 m	0:00:17	15 kph
10/5/2017 14:34	ON	N22.16127 E113.89812	35 m	0:00:08	16 kph
10/5/2017 14:34	ON	N22.16070 E113.89806	63 m	0:00:14	16 kph
10/5/2017 14:34	ON	N22.16003 E113.89807	75 m	0:00:16	17 kph
10/5/2017 14:34	ON	N22.15944 E113.89817	66 m	0:00:14	17 kph
10/5/2017 14:35	ON	N22.15924 E113.89825	24 m	0:00:05	18 kph
10/5/2017 14:35	ON	N22.15855 E113.89879	95 m	0:00:19	18 kph
10/5/2017 14:35	ON	N22.15797 E113.89927	81 m	0:00:16	18 kph
10/5/2017 14:35	ON	N22.15790 E113.89933	10 m	0:00:02	18 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 14:35	ON	N22.15779 E113.89942	15 m	0:00:03	18 kph
10/5/2017 14:35	ON	N22.15769 E113.89951	15 m	0:00:03	18 kph
10/5/2017 14:35	ON	N22.15734 E113.89989	56 m	0:00:11	18 kph
10/5/2017 14:36	ON	N22.15724 E113.90000	15 m	0:00:03	18 kph
10/5/2017 14:36	ON	N22.15718 E113.90007	10 m	0:00:02	18 kph
10/5/2017 14:36	ON	N22.15669 E113.90065	81 m	0:00:16	18 kph
10/5/2017 14:36	ON	N22.15645 E113.90094	40 m	0:00:08	18 kph
10/5/2017 14:36	ON	N22.15630 E113.90111	25 m	0:00:05	18 kph
10/5/2017 14:36	ON	N22.15615 E113.90129	25 m	0:00:05	18 kph
10/5/2017 14:36	ON	N22.15606 E113.90140	15 m	0:00:03	18 kph
10/5/2017 14:36	ON	N22.15591 E113.90158	25 m	0:00:05	18 kph
10/5/2017 14:37	ON	N22.15551 E113.90220	78 m	0:00:16	18 kph
10/5/2017 14:37	ON	N22.15510 E113.90311	104 m	0:00:21	18 kph
10/5/2017 14:37	ON	N22.15490 E113.90402	96 m	0:00:20	17 kph
10/5/2017 14:38	ON	N22.15506 E113.90502	105 m	0:00:22	17 kph
10/5/2017 14:38	ON	N22.15552 E113.90596	110 m	0:00:24	16 kph
10/5/2017 14:38	ON	N22.15603 E113.90671	96 m	0:00:22	16 kph
10/5/2017 14:39	ON	N22.15636 E113.90736	77 m	0:00:19	15 kph
10/5/2017 14:39	ON	N22.15623 E113.90785	52 m	0:00:15	12 kph
10/5/2017 14:39	ON	N22.15581 E113.90804	51 m	0:00:14	13 kph
10/5/2017 14:39	ON	N22.15526 E113.90820	64 m	0:00:16	14 kph
10/5/2017 14:40	ON	N22.15461 E113.90831	73 m	0:00:18	15 kph
10/5/2017 14:40	ON	N22.15392 E113.90830	77 m	0:00:19	15 kph
10/5/2017 14:40	ON	N22.15324 E113.90821	76 m	0:00:19	14 kph
10/5/2017 14:41	ON	N22.15252 E113.90800	83 m	0:00:21	14 kph
10/5/2017 14:41	ON	N22.15186 E113.90772	79 m	0:00:20	14 kph
10/5/2017 14:41	ON	N22.15109 E113.90744	90 m	0:00:22	15 kph
10/5/2017 14:42	ON	N22.15043 E113.90736	74 m	0:00:17	16 kph
10/5/2017 14:42	ON	N22.14967 E113.90747	86 m	0:00:18	17 kph
10/5/2017 14:42	ON	N22.14876 E113.90763	103 m	0:00:21	18 kph
10/5/2017 14:43	ON	N22.14778 E113.90772	109 m	0:00:23	17 kph
10/5/2017 14:43	ON	N22.14696 E113.90767	92 m	0:00:21	16 kph
10/5/2017 14:43	ON	N22.14633 E113.90760	70 m	0:00:18	14 kph
10/5/2017 14:44	ON	N22.14574 E113.90754	66 m	0:00:19	13 kph
10/5/2017 14:44	ON	N22.14512 E113.90742	70 m	0:00:21	12 kph
10/5/2017 14:44	ON	N22.14463 E113.90739	54 m	0:00:13	15 kph
10/5/2017 14:45	ON	N22.14389 E113.90758	85 m	0:00:18	17 kph
10/5/2017 14:45	ON	N22.14344 E113.90773	53 m	0:00:11	17 kph
10/5/2017 14:45	ON	N22.14324 E113.90782	24 m	0:00:05	17 kph
10/5/2017 14:45	ON	N22.14290 E113.90805	44 m	0:00:09	18 kph
10/5/2017 14:45	ON	N22.14258 E113.90870	77 m	0:00:16	17 kph
10/5/2017 14:46	ON	N22.14252 E113.90969	102 m	0:00:21	17 kph
10/5/2017 14:46	ON	N22.14254 E113.91063	97 m	0:00:20	17 kph
10/5/2017 14:46	ON	N22.14251 E113.91154	94 m	0:00:19	18 kph
10/5/2017 14:47	ON	N22.14240 E113.91260	110 m	0:00:22	18 kph
10/5/2017 14:47	ON	N22.14228 E113.91357	101 m	0:00:20	18 kph
10/5/2017 14:47	ON	N22.14218 E113.91468	115 m	0:00:23	18 kph
10/5/2017 14:48	ON	N22.14223 E113.91553	87 m	0:00:18	17 kph
10/5/2017 14:48	ON	N22.14231 E113.91655	106 m	0:00:22	17 kph
10/5/2017 14:48	ON	N22.14234 E113.91758	105 m	0:00:22	17 kph
10/5/2017 14:49	ON	N22.14266 E113.91787	47 m	0:00:14	12 kph
10/5/2017 14:49	ON	N22.14323 E113.91793	63 m	0:00:19	12 kph
10/5/2017 14:49	ON	N22.14386 E113.91792	71 m	0:00:21	12 kph
10/5/2017 14:50	ON	N22.14470 E113.91796	94 m	0:00:27	13 kph
10/5/2017 14:50	ON	N22.14520 E113.91798	56 m	0:00:16	13 kph
10/5/2017 14:50	ON	N22.14567 E113.91797	52 m	0:00:15	12 kph
10/5/2017 14:51	ON	N22.14632 E113.91793	73 m	0:00:21	13 kph
10/5/2017 14:51	ON	N22.14703 E113.91790	78 m	0:00:22	13 kph
10/5/2017 14:51	ON	N22.14773 E113.91788	79 m	0:00:22	13 kph
10/5/2017 14:52	ON	N22.14847 E113.91780	82 m	0:00:23	13 kph
10/5/2017 14:52	ON	N22.14917 E113.91766	80 m	0:00:22	13 kph
10/5/2017 14:52	ON	N22.14987 E113.91759	78 m	0:00:21	13 kph
10/5/2017 14:53	ON	N22.15056 E113.91758	77 m	0:00:20	14 kph
10/5/2017 14:53	ON	N22.15133 E113.91761	86 m	0:00:22	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 14:54	ON	N22.15220 E113.91756	97 m	0:00:25	14 kph
10/5/2017 14:54	ON	N22.15309 E113.91755	99 m	0:00:25	14 kph
10/5/2017 14:54	ON	N22.15405 E113.91755	106 m	0:00:26	15 kph
10/5/2017 14:55	ON	N22.15506 E113.91756	112 m	0:00:27	15 kph
10/5/2017 14:55	ON	N22.15595 E113.91761	100 m	0:00:24	15 kph
10/5/2017 14:56	ON	N22.15698 E113.91768	115 m	0:00:28	15 kph
10/5/2017 14:56	ON	N22.15791 E113.91785	104 m	0:00:26	14 kph
10/5/2017 14:57	ON	N22.15890 E113.91800	112 m	0:00:28	14 kph
10/5/2017 14:57	ON	N22.15957 E113.91815	76 m	0:00:19	14 kph
10/5/2017 14:57	ON	N22.16052 E113.91840	109 m	0:00:27	15 kph
10/5/2017 14:58	ON	N22.16158 E113.91866	122 m	0:00:31	14 kph
10/5/2017 14:58	ON	N22.16235 E113.91881	87 m	0:00:22	14 kph
10/5/2017 14:59	ON	N22.16322 E113.91890	98 m	0:00:24	15 kph
10/5/2017 14:59	ON	N22.16380 E113.91897	65 m	0:00:16	15 kph
10/5/2017 14:59	ON	N22.16438 E113.91906	66 m	0:00:16	15 kph
10/5/2017 15:00	ON	N22.16529 E113.91928	104 m	0:00:25	15 kph
10/5/2017 15:00	ON	N22.16605 E113.91951	88 m	0:00:21	15 kph
10/5/2017 15:00	ON	N22.16691 E113.91978	100 m	0:00:24	15 kph
10/5/2017 15:01	ON	N22.16748 E113.91995	65 m	0:00:16	15 kph
10/5/2017 15:01	ON	N22.16837 E113.92017	103 m	0:00:26	14 kph
10/5/2017 15:01	ON	N22.16922 E113.92041	98 m	0:00:25	14 kph
10/5/2017 15:02	OFF	N22.16982 E113.92068	72 m	0:00:20	13 kph
10/5/2017 15:02	OFF	N22.17015 E113.92089	42 m	0:00:20	8 kph
10/5/2017 15:02	OFF	N22.17029 E113.92105	23 m	0:00:20	4 kph
10/5/2017 15:03	OFF	N22.17038 E113.92119	18 m	0:00:22	3 kph
10/5/2017 15:03	OFF	N22.17044 E113.92133	15 m	0:00:22	3 kph
10/5/2017 15:04	OFF	N22.17047 E113.92147	15 m	0:00:24	2 kph
10/5/2017 15:04	OFF	N22.17049 E113.92159	13 m	0:00:20	2 kph
10/5/2017 15:04	OFF	N22.17049 E113.92170	11 m	0:00:18	2 kph
10/5/2017 15:05	OFF	N22.17051 E113.92183	13 m	0:00:21	2 kph
10/5/2017 15:05	OFF	N22.17055 E113.92192	11 m	0:00:20	2 kph
10/5/2017 15:05	OFF	N22.17060 E113.92201	10 m	0:00:22	2 kph
10/5/2017 15:05	OFF	N22.17062 E113.92202	2 m	0:00:03	3 kph
10/5/2017 15:06	OFF	N22.17096 E113.92199	38 m	0:00:18	8 kph
10/5/2017 15:06	OFF	N22.17145 E113.92194	55 m	0:00:16	12 kph
10/5/2017 15:06	OFF	N22.17213 E113.92182	76 m	0:00:20	14 kph
10/5/2017 15:07	OFF	N22.17293 E113.92150	95 m	0:00:25	14 kph
10/5/2017 15:07	ON	N22.17382 E113.92099			
10/5/2017 15:07	ON	N22.17452 E113.92080	80 m	0:00:21	14 kph
10/5/2017 15:08	ON	N22.17526 E113.92070	83 m	0:00:21	14 kph
10/5/2017 15:08	ON	N22.17606 E113.92088	91 m	0:00:22	15 kph
10/5/2017 15:09	ON	N22.17703 E113.92129	116 m	0:00:26	16 kph
10/5/2017 15:09	ON	N22.17794 E113.92170	110 m	0:00:24	16 kph
10/5/2017 15:09	ON	N22.17887 E113.92203	109 m	0:00:24	16 kph
10/5/2017 15:10	ON	N22.17971 E113.92212	94 m	0:00:21	16 kph
10/5/2017 15:10	ON	N22.18031 E113.92198	68 m	0:00:16	15 kph
10/5/2017 15:10	ON	N22.18081 E113.92182	59 m	0:00:14	15 kph
10/5/2017 15:11	ON	N22.18142 E113.92155	73 m	0:00:17	15 kph
10/5/2017 15:11	ON	N22.18204 E113.92108	84 m	0:00:20	15 kph
10/5/2017 15:11	ON	N22.18251 E113.92063	71 m	0:00:17	15 kph
10/5/2017 15:11	ON	N22.18300 E113.92014	74 m	0:00:18	15 kph
10/5/2017 15:12	ON	N22.18342 E113.91968	66 m	0:00:16	15 kph
10/5/2017 15:12	ON	N22.18385 E113.91917	71 m	0:00:17	15 kph
10/5/2017 15:12	ON	N22.18431 E113.91863	76 m	0:00:18	15 kph
10/5/2017 15:13	ON	N22.18480 E113.91826	66 m	0:00:16	15 kph
10/5/2017 15:13	ON	N22.18535 E113.91807	64 m	0:00:16	14 kph
10/5/2017 15:13	ON	N22.18597 E113.91802	70 m	0:00:18	14 kph
10/5/2017 15:13	ON	N22.18664 E113.91803	74 m	0:00:19	14 kph
10/5/2017 15:14	ON	N22.18739 E113.91807	84 m	0:00:21	14 kph
10/5/2017 15:14	ON	N22.18822 E113.91807	92 m	0:00:23	14 kph
10/5/2017 15:15	ON	N22.18893 E113.91811	80 m	0:00:20	14 kph
10/5/2017 15:15	ON	N22.18973 E113.91818	90 m	0:00:22	15 kph
10/5/2017 15:15	ON	N22.19039 E113.91820	73 m	0:00:18	15 kph
10/5/2017 15:16	ON	N22.19107 E113.91813	77 m	0:00:19	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 15:16	ON	N22.19186 E113.91799	89 m	0:00:22	15 kph
10/5/2017 15:16	ON	N22.19264 E113.91784	89 m	0:00:22	15 kph
10/5/2017 15:17	ON	N22.19341 E113.91774	85 m	0:00:21	15 kph
10/5/2017 15:17	ON	N22.19415 E113.91770	83 m	0:00:20	15 kph
10/5/2017 15:17	ON	N22.19494 E113.91776	88 m	0:00:21	15 kph
10/5/2017 15:18	ON	N22.19575 E113.91782	90 m	0:00:22	15 kph
10/5/2017 15:18	ON	N22.19635 E113.91785	68 m	0:00:17	14 kph
10/5/2017 15:18	ON	N22.19697 E113.91793	69 m	0:00:17	15 kph
10/5/2017 15:19	ON	N22.19777 E113.91809	91 m	0:00:22	15 kph
10/5/2017 15:19	ON	N22.19861 E113.91816	94 m	0:00:23	15 kph
10/5/2017 15:19	ON	N22.19955 E113.91819	105 m	0:00:27	14 kph
10/5/2017 15:20	ON	N22.20019 E113.91809	72 m	0:00:19	14 kph
10/5/2017 15:20	ON	N22.20099 E113.91791	91 m	0:00:25	13 kph
10/5/2017 15:21	ON	N22.20178 E113.91775	89 m	0:00:24	13 kph
10/5/2017 15:21	ON	N22.20260 E113.91757	93 m	0:00:25	13 kph
10/5/2017 15:21	ON	N22.20326 E113.91744	75 m	0:00:20	14 kph
10/5/2017 15:22	ON	N22.20385 E113.91746	66 m	0:00:18	13 kph
10/5/2017 15:22	ON	N22.20422 E113.91788	60 m	0:00:17	13 kph
10/5/2017 15:22	ON	N22.20448 E113.91866	85 m	0:00:21	15 kph
10/5/2017 15:23	ON	N22.20473 E113.91968	108 m	0:00:26	15 kph
10/5/2017 15:23	ON	N22.20493 E113.92052	90 m	0:00:22	15 kph
10/5/2017 15:23	ON	N22.20509 E113.92135	87 m	0:00:21	15 kph
10/5/2017 15:24	ON	N22.20524 E113.92204	73 m	0:00:22	12 kph
10/5/2017 15:24	ON	N22.20533 E113.92239	37 m	0:00:19	7 kph
10/5/2017 15:24	ON	N22.20538 E113.92260	23 m	0:00:21	4 kph
10/5/2017 15:25	OFF	N22.20550 E113.92295	38 m	0:00:18	8 kph
10/5/2017 15:25	OFF	N22.20563 E113.92346	55 m	0:00:21	9 kph
10/5/2017 15:25	OFF	N22.20575 E113.92407	65 m	0:00:21	11 kph
10/5/2017 15:25	OFF	N22.20575 E113.92410			
10/5/2017 15:26	ON	N22.20580 E113.92478	70 m	0:00:18	14 kph
10/5/2017 15:26	ON	N22.20583 E113.92554	78 m	0:00:19	15 kph
10/5/2017 15:26	ON	N22.20585 E113.92654	103 m	0:00:25	15 kph
10/5/2017 15:27	ON	N22.20593 E113.92750	99 m	0:00:24	15 kph
10/5/2017 15:27	ON	N22.20590 E113.92802	53 m	0:00:14	14 kph
10/5/2017 15:27	ON	N22.20557 E113.92838	52 m	0:00:15	13 kph
10/5/2017 15:28	ON	N22.20507 E113.92842	56 m	0:00:16	13 kph
10/5/2017 15:28	ON	N22.20435 E113.92831	80 m	0:00:21	14 kph
10/5/2017 15:28	ON	N22.20353 E113.92834	92 m	0:00:23	14 kph
10/5/2017 15:29	ON	N22.20288 E113.92839	72 m	0:00:18	14 kph
10/5/2017 15:29	ON	N22.20208 E113.92846	89 m	0:00:22	15 kph
10/5/2017 15:29	ON	N22.20120 E113.92847	98 m	0:00:24	15 kph
10/5/2017 15:30	ON	N22.20039 E113.92851	90 m	0:00:22	15 kph
10/5/2017 15:30	ON	N22.19966 E113.92853	81 m	0:00:20	15 kph
10/5/2017 15:31	ON	N22.19885 E113.92851	90 m	0:00:22	15 kph
10/5/2017 15:31	ON	N22.19811 E113.92848	82 m	0:00:20	15 kph
10/5/2017 15:31	ON	N22.19733 E113.92846	88 m	0:00:22	14 kph
10/5/2017 15:32	ON	N22.19663 E113.92841	78 m	0:00:20	14 kph
10/5/2017 15:32	ON	N22.19603 E113.92835	67 m	0:00:17	14 kph
10/5/2017 15:32	ON	N22.19521 E113.92830	91 m	0:00:23	14 kph
10/5/2017 15:33	ON	N22.19433 E113.92832	98 m	0:00:25	14 kph
10/5/2017 15:33	ON	N22.19366 E113.92832	75 m	0:00:19	14 kph
10/5/2017 15:33	ON	N22.19295 E113.92833	79 m	0:00:20	14 kph
10/5/2017 15:34	ON	N22.19206 E113.92830	99 m	0:00:25	14 kph
10/5/2017 15:34	ON	N22.19132 E113.92825	83 m	0:00:21	14 kph
10/5/2017 15:34	ON	N22.19059 E113.92820	81 m	0:00:21	14 kph
10/5/2017 15:35	ON	N22.18980 E113.92815	89 m	0:00:23	14 kph
10/5/2017 15:35	ON	N22.18912 E113.92811	75 m	0:00:20	14 kph
10/5/2017 15:35	ON	N22.18833 E113.92812	88 m	0:00:23	14 kph
10/5/2017 15:36	ON	N22.18768 E113.92810	73 m	0:00:19	14 kph
10/5/2017 15:36	ON	N22.18693 E113.92804	84 m	0:00:22	14 kph
10/5/2017 15:37	ON	N22.18613 E113.92800	88 m	0:00:23	14 kph
10/5/2017 15:37	ON	N22.18535 E113.92797	88 m	0:00:23	14 kph
10/5/2017 15:37	ON	N22.18459 E113.92792	85 m	0:00:22	14 kph
10/5/2017 15:38	ON	N22.18373 E113.92794	95 m	0:00:24	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 15:38	ON	N22.18287 E113.92793	96 m	0:00:25	14 kph
10/5/2017 15:39	ON	N22.18202 E113.92789	95 m	0:00:25	14 kph
10/5/2017 15:39	ON	N22.18133 E113.92783	77 m	0:00:20	14 kph
10/5/2017 15:39	ON	N22.18057 E113.92776	85 m	0:00:22	14 kph
10/5/2017 15:40	ON	N22.17985 E113.92767	80 m	0:00:20	14 kph
10/5/2017 15:40	ON	N22.17892 E113.92751	104 m	0:00:26	14 kph
10/5/2017 15:40	ON	N22.17819 E113.92739	83 m	0:00:20	15 kph
10/5/2017 15:41	ON	N22.17748 E113.92734	80 m	0:00:19	15 kph
10/5/2017 15:41	ON	N22.17656 E113.92729	102 m	0:00:25	15 kph
10/5/2017 15:41	ON	N22.17573 E113.92711	95 m	0:00:24	14 kph
10/5/2017 15:42	ON	N22.17502 E113.92697	80 m	0:00:21	14 kph
10/5/2017 15:42	ON	N22.17423 E113.92679	90 m	0:00:23	14 kph
10/5/2017 15:43	ON	N22.17341 E113.92666	92 m	0:00:23	14 kph
10/5/2017 15:43	ON	N22.17276 E113.92665	73 m	0:00:18	15 kph
10/5/2017 15:43	ON	N22.17198 E113.92670	86 m	0:00:21	15 kph
10/5/2017 15:44	ON	N22.17136 E113.92669	70 m	0:00:17	15 kph
10/5/2017 15:44	ON	N22.17066 E113.92666	78 m	0:00:19	15 kph
10/5/2017 15:44	ON	N22.16991 E113.92672	83 m	0:00:20	15 kph
10/5/2017 15:44	ON	N22.16930 E113.92684	70 m	0:00:17	15 kph
10/5/2017 15:45	ON	N22.16849 E113.92693	90 m	0:00:22	15 kph
10/5/2017 15:45	ON	N22.16783 E113.92690	74 m	0:00:18	15 kph
10/5/2017 15:45	ON	N22.16720 E113.92685	71 m	0:00:17	15 kph
10/5/2017 15:46	ON	N22.16652 E113.92684	76 m	0:00:18	15 kph
10/5/2017 15:46	ON	N22.16572 E113.92686	89 m	0:00:21	15 kph
10/5/2017 15:46	ON	N22.16494 E113.92692	87 m	0:00:21	15 kph
10/5/2017 15:47	ON	N22.16421 E113.92695	81 m	0:00:20	15 kph
10/5/2017 15:47	ON	N22.16341 E113.92689	88 m	0:00:22	14 kph
10/5/2017 15:47	ON	N22.16267 E113.92682	83 m	0:00:20	15 kph
10/5/2017 15:48	ON	N22.16192 E113.92692	84 m	0:00:21	14 kph
10/5/2017 15:48	ON	N22.16121 E113.92698	80 m	0:00:20	14 kph
10/5/2017 15:48	ON	N22.16048 E113.92685	83 m	0:00:21	14 kph
10/5/2017 15:49	ON	N22.15973 E113.92672	85 m	0:00:22	14 kph
10/5/2017 15:49	ON	N22.15915 E113.92667	64 m	0:00:17	14 kph
10/5/2017 15:49	ON	N22.15851 E113.92664	72 m	0:00:19	14 kph
10/5/2017 15:50	ON	N22.15795 E113.92663	62 m	0:00:16	14 kph
10/5/2017 15:50	ON	N22.15715 E113.92659	89 m	0:00:23	14 kph
10/5/2017 15:50	ON	N22.15656 E113.92650	67 m	0:00:17	14 kph
10/5/2017 15:51	ON	N22.15589 E113.92634	76 m	0:00:19	14 kph
10/5/2017 15:51	ON	N22.15510 E113.92620	90 m	0:00:23	14 kph
10/5/2017 15:51	ON	N22.15454 E113.92623	63 m	0:00:16	14 kph
10/5/2017 15:52	ON	N22.15390 E113.92632	71 m	0:00:18	14 kph
10/5/2017 15:52	ON	N22.15325 E113.92651	75 m	0:00:19	14 kph
10/5/2017 15:52	ON	N22.15262 E113.92660	71 m	0:00:18	14 kph
10/5/2017 15:53	ON	N22.15197 E113.92662	72 m	0:00:18	14 kph
10/5/2017 15:53	ON	N22.15119 E113.92679	89 m	0:00:22	15 kph
10/5/2017 15:53	ON	N22.15042 E113.92678	86 m	0:00:21	15 kph
10/5/2017 15:54	ON	N22.14971 E113.92682	79 m	0:00:19	15 kph
10/5/2017 15:54	ON	N22.14901 E113.92689	79 m	0:00:19	15 kph
10/5/2017 15:54	ON	N22.14835 E113.92693	73 m	0:00:18	15 kph
10/5/2017 15:55	ON	N22.14757 E113.92693	87 m	0:00:22	14 kph
10/5/2017 15:55	ON	N22.14682 E113.92702	84 m	0:00:21	14 kph
10/5/2017 15:55	ON	N22.14611 E113.92721	81 m	0:00:20	15 kph
10/5/2017 15:56	ON	N22.14537 E113.92720	81 m	0:00:21	14 kph
10/5/2017 15:56	ON	N22.14476 E113.92711	69 m	0:00:18	14 kph
10/5/2017 15:56	ON	N22.14431 E113.92708	50 m	0:00:13	14 kph
10/5/2017 15:56	ON	N22.14373 E113.92699	65 m	0:00:17	14 kph
10/5/2017 15:57	ON	N22.14319 E113.92681	63 m	0:00:17	13 kph
10/5/2017 15:57	ON	N22.14264 E113.92671	62 m	0:00:17	13 kph
10/5/2017 15:57	ON	N22.14221 E113.92681	49 m	0:00:12	15 kph
10/5/2017 15:57	ON	N22.14167 E113.92703	65 m	0:00:15	16 kph
10/5/2017 15:58	ON	N22.14094 E113.92729	86 m	0:00:20	15 kph
10/5/2017 15:58	ON	N22.14058 E113.92771	59 m	0:00:14	15 kph
10/5/2017 15:58	ON	N22.14061 E113.92832	63 m	0:00:15	15 kph
10/5/2017 15:59	ON	N22.14091 E113.92895	73 m	0:00:17	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 15:59	ON	N22.14126 E113.92973	89 m	0:00:20	16 kph
10/5/2017 15:59	ON	N22.14169 E113.93037	82 m	0:00:19	16 kph
10/5/2017 15:59	ON	N22.14215 E113.93075	64 m	0:00:16	14 kph
10/5/2017 16:00	ON	N22.14274 E113.93126	84 m	0:00:20	15 kph
10/5/2017 16:00	ON	N22.14321 E113.93159	62 m	0:00:15	15 kph
10/5/2017 16:00	ON	N22.14383 E113.93205	84 m	0:00:20	15 kph
10/5/2017 16:01	ON	N22.14429 E113.93241	63 m	0:00:15	15 kph
10/5/2017 16:01	ON	N22.14491 E113.93288	85 m	0:00:20	15 kph
10/5/2017 16:01	ON	N22.14553 E113.93336	85 m	0:00:20	15 kph
10/5/2017 16:02	ON	N22.14604 E113.93381	73 m	0:00:17	15 kph
10/5/2017 16:02	ON	N22.14668 E113.93444	96 m	0:00:22	16 kph
10/5/2017 16:02	ON	N22.14722 E113.93490	77 m	0:00:18	15 kph
10/5/2017 16:03	ON	N22.14787 E113.93541	90 m	0:00:21	15 kph
10/5/2017 16:03	ON	N22.14843 E113.93584	76 m	0:00:18	15 kph
10/5/2017 16:03	ON	N22.14899 E113.93625	75 m	0:00:18	15 kph
10/5/2017 16:03	ON	N22.14959 E113.93657	75 m	0:00:19	14 kph
10/5/2017 16:04	ON	N22.15009 E113.93651	56 m	0:00:15	13 kph
10/5/2017 16:04	ON	N22.15096 E113.93647	97 m	0:00:25	14 kph
10/5/2017 16:05	ON	N22.15173 E113.93658	86 m	0:00:22	14 kph
10/5/2017 16:05	ON	N22.15240 E113.93673	77 m	0:00:20	14 kph
10/5/2017 16:05	ON	N22.15312 E113.93697	84 m	0:00:22	14 kph
10/5/2017 16:06	ON	N22.15390 E113.93712	88 m	0:00:23	14 kph
10/5/2017 16:06	ON	N22.15473 E113.93700	93 m	0:00:24	14 kph
10/5/2017 16:06	ON	N22.15558 E113.93696	94 m	0:00:24	14 kph
10/5/2017 16:07	ON	N22.15633 E113.93688	84 m	0:00:22	14 kph
10/5/2017 16:07	ON	N22.15715 E113.93683	91 m	0:00:23	14 kph
10/5/2017 16:07	ON	N22.15782 E113.93685	75 m	0:00:19	14 kph
10/5/2017 16:08	ON	N22.15848 E113.93688	74 m	0:00:19	14 kph
10/5/2017 16:08	ON	N22.15933 E113.93692	94 m	0:00:24	14 kph
10/5/2017 16:09	ON	N22.16013 E113.93699	89 m	0:00:23	14 kph
10/5/2017 16:09	ON	N22.16098 E113.93704	95 m	0:00:25	14 kph
10/5/2017 16:09	ON	N22.16166 E113.93703	75 m	0:00:20	14 kph
10/5/2017 16:10	ON	N22.16237 E113.93698	79 m	0:00:21	14 kph
10/5/2017 16:10	ON	N22.16304 E113.93690	75 m	0:00:20	14 kph
10/5/2017 16:10	ON	N22.16381 E113.93674	88 m	0:00:23	14 kph
10/5/2017 16:11	ON	N22.16452 E113.93657	81 m	0:00:21	14 kph
10/5/2017 16:11	ON	N22.16518 E113.93645	75 m	0:00:20	14 kph
10/5/2017 16:11	ON	N22.16563 E113.93643	50 m	0:00:13	14 kph
10/5/2017 16:12	ON	N22.16618 E113.93645	62 m	0:00:16	14 kph
10/5/2017 16:12	ON	N22.16675 E113.93648	63 m	0:00:16	14 kph
10/5/2017 16:12	ON	N22.16752 E113.93652	86 m	0:00:22	14 kph
10/5/2017 16:13	ON	N22.16843 E113.93660	102 m	0:00:26	14 kph
10/5/2017 16:13	ON	N22.16903 E113.93662	67 m	0:00:17	14 kph
10/5/2017 16:13	ON	N22.16981 E113.93665	86 m	0:00:22	14 kph
10/5/2017 16:14	ON	N22.17051 E113.93664	78 m	0:00:20	14 kph
10/5/2017 16:14	ON	N22.17107 E113.93661	63 m	0:00:16	14 kph
10/5/2017 16:14	ON	N22.17154 E113.93661	52 m	0:00:13	14 kph
10/5/2017 16:14	ON	N22.17228 E113.93667	83 m	0:00:21	14 kph
10/5/2017 16:15	ON	N22.17293 E113.93671	72 m	0:00:18	14 kph
10/5/2017 16:15	ON	N22.17352 E113.93669	66 m	0:00:17	14 kph
10/5/2017 16:15	ON	N22.17416 E113.93663	71 m	0:00:18	14 kph
10/5/2017 16:16	ON	N22.17488 E113.93662	80 m	0:00:20	14 kph
10/5/2017 16:16	ON	N22.17563 E113.93673	85 m	0:00:21	15 kph
10/5/2017 16:16	ON	N22.17622 E113.93684	67 m	0:00:16	15 kph
10/5/2017 16:17	ON	N22.17707 E113.93690	94 m	0:00:23	15 kph
10/5/2017 16:17	ON	N22.17784 E113.93698	86 m	0:00:21	15 kph
10/5/2017 16:17	ON	N22.17866 E113.93697	91 m	0:00:22	15 kph
10/5/2017 16:18	ON	N22.17947 E113.93682	92 m	0:00:22	15 kph
10/5/2017 16:18	ON	N22.18020 E113.93661	84 m	0:00:20	15 kph
10/5/2017 16:18	ON	N22.18090 E113.93649	79 m	0:00:19	15 kph
10/5/2017 16:19	ON	N22.18172 E113.93647	90 m	0:00:22	15 kph
10/5/2017 16:19	ON	N22.18247 E113.93643	84 m	0:00:20	15 kph
10/5/2017 16:19	ON	N22.18307 E113.93643	67 m	0:00:16	15 kph
10/5/2017 16:20	ON	N22.18351 E113.93659	52 m	0:00:13	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
10/5/2017 16:20	ON	N22.18398 E113.93693	63 m	0:00:16	14 kph
10/5/2017 16:20	ON	N22.18441 E113.93728	60 m	0:00:15	14 kph
10/5/2017 16:20	ON	N22.18496 E113.93748	65 m	0:00:16	15 kph
10/5/2017 16:21	ON	N22.18565 E113.93747	77 m	0:00:19	15 kph
10/5/2017 16:21	ON	N22.18627 E113.93742	69 m	0:00:17	15 kph
10/5/2017 16:21	ON	N22.18697 E113.93737	78 m	0:00:19	15 kph
10/5/2017 16:22	ON	N22.18772 E113.93726	85 m	0:00:21	15 kph
10/5/2017 16:22	ON	N22.18840 E113.93714	76 m	0:00:19	14 kph
10/5/2017 16:22	ON	N22.18903 E113.93703	72 m	0:00:18	14 kph
10/5/2017 16:23	ON	N22.18971 E113.93693	76 m	0:00:19	14 kph
10/5/2017 16:23	ON	N22.19043 E113.93689	80 m	0:00:20	14 kph
10/5/2017 16:23	ON	N22.19123 E113.93691	89 m	0:00:22	15 kph
10/5/2017 16:24	ON	N22.19209 E113.93691	97 m	0:00:24	15 kph
10/5/2017 16:24	ON	N22.19288 E113.93690	88 m	0:00:22	14 kph
10/5/2017 16:24	ON	N22.19364 E113.93685	84 m	0:00:21	14 kph
10/5/2017 16:25	ON	N22.19443 E113.93687	87 m	0:00:22	14 kph
10/5/2017 16:25	ON	N22.19517 E113.93679	83 m	0:00:21	14 kph
10/5/2017 16:25	ON	N22.19591 E113.93666	84 m	0:00:22	14 kph
10/5/2017 16:26	ON	N22.19657 E113.93662	74 m	0:00:19	14 kph
10/5/2017 16:26	ON	N22.19727 E113.93656	78 m	0:00:20	14 kph
10/5/2017 16:26	ON	N22.19793 E113.93652	74 m	0:00:19	14 kph
10/5/2017 16:27	ON	N22.19868 E113.93662	84 m	0:00:21	14 kph
10/5/2017 16:27	ON	N22.19951 E113.93673	93 m	0:00:23	15 kph
10/5/2017 16:27	ON	N22.20005 E113.93681	60 m	0:00:15	14 kph
10/5/2017 16:28	ON	N22.20072 E113.93694	76 m	0:00:19	14 kph
10/5/2017 16:28	ON	N22.20145 E113.93702	81 m	0:00:20	15 kph
10/5/2017 16:28	ON	N22.20224 E113.93705	89 m	0:00:22	15 kph
10/5/2017 16:29	ON	N22.20299 E113.93700	83 m	0:00:23	13 kph
10/5/2017 16:29	ON	N22.20379 E113.93685	91 m	0:00:23	14 kph
10/5/2017 16:29	ON	N22.20419 E113.93675	45 m	0:00:14	12 kph
10/5/2017 16:30	ON	N22.20488 E113.93678	76 m	0:00:20	14 kph
10/5/2017 16:30	ON	N22.20574 E113.93684	96 m	0:00:24	14 kph
10/5/2017 16:31	ON	N22.20653 E113.93684	88 m	0:00:22	14 kph
10/5/2017 16:31	ON	N22.20732 E113.93676	89 m	0:00:22	15 kph
10/5/2017 16:31	ON	N22.20808 E113.93662	86 m	0:00:22	14 kph
10/5/2017 16:32	ON	N22.20885 E113.93662	85 m	0:00:22	14 kph
10/5/2017 16:32	ON	N22.20973 E113.93670	99 m	0:00:25	14 kph
10/5/2017 16:32	ON	N22.21064 E113.93672	101 m	0:00:26	14 kph
10/5/2017 16:33	ON	N22.21155 E113.93678	101 m	0:00:26	14 kph
10/5/2017 16:33	ON	N22.21234 E113.93677	88 m	0:00:22	14 kph
10/5/2017 16:34	ON	N22.21331 E113.93674	108 m	0:00:27	14 kph
10/5/2017 16:34	ON	N22.21439 E113.93673	120 m	0:00:30	14 kph
10/5/2017 16:35	ON	N22.21516 E113.93668	86 m	0:00:21	15 kph
10/5/2017 16:35	ON	N22.21604 E113.93662	99 m	0:00:25	14 kph
10/5/2017 16:35	ON	N22.21693 E113.93668	98 m	0:00:25	14 kph
10/5/2017 16:36	ON	N22.21764 E113.93665	79 m	0:00:20	14 kph
10/5/2017 16:36	ON	N22.21861 E113.93670	108 m	0:00:27	14 kph
10/5/2017 16:37	ON	N22.21965 E113.93672	116 m	0:00:29	14 kph
10/5/2017 16:37	ON	N22.22069 E113.93675	115 m	0:00:29	14 kph

Appendix II. Survey Effort Database in SWL (May 2017)

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
8-May-17	SW LANTAU	3	7.32	SPRING	STANDARD36826	HKCRP	P
8-May-17	SW LANTAU	4	2.96	SPRING	STANDARD36826	HKCRP	P
8-May-17	SW LANTAU	2	1.10	SPRING	STANDARD36826	HKCRP	S
8-May-17	SW LANTAU	3	8.61	SPRING	STANDARD36826	HKCRP	S
8-May-17	SW LANTAU	4	2.19	SPRING	STANDARD36826	HKCRP	S
10-May-17	SW LANTAU	1	37.72	SPRING	STANDARD36826	HYD-HZMB	P
10-May-17	SW LANTAU	2	15.92	SPRING	STANDARD36826	HYD-HZMB	P
10-May-17	SW LANTAU	1	5.91	SPRING	STANDARD36826	HYD-HZMB	S
10-May-17	SW LANTAU	2	9.02	SPRING	STANDARD36826	HYD-HZMB	S
10-May-17	SW LANTAU	3	1.80	SPRING	STANDARD36826	HYD-HZMB	S
12-May-17	SW LANTAU	2	26.28	SPRING	STANDARD36826	HKCRP	P
12-May-17	SW LANTAU	1	3.68	SPRING	STANDARD36826	HKCRP	S
12-May-17	SW LANTAU	2	6.24	SPRING	STANDARD36826	HKCRP	S
12-May-17	SW LANTAU	3	1.80	SPRING	STANDARD36826	HKCRP	S
23-May-17	SW LANTAU	2	5.25	SPRING	STANDARD36826	HKCRP	P
23-May-17	SW LANTAU	3	10.50	SPRING	STANDARD36826	HKCRP	P
23-May-17	SW LANTAU	4	1.91	SPRING	STANDARD36826	HKCRP	P
23-May-17	SW LANTAU	2	7.43	SPRING	STANDARD36826	HKCRP	S
23-May-17	SW LANTAU	3	1.59	SPRING	STANDARD36826	HKCRP	S
23-May-17	SW LANTAU	4	0.75	SPRING	STANDARD36826	HKCRP	S

Appendix III. Chinese White Dolphin Sighting Database in SWL (May 2017)

(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
8-May-17	1	1437	1	SW LANTAU	4	298	ON	HKCRP	803834	803080	SPRING	NONE	S
10-May-17	1	1106	3	SW LANTAU	2	141	ON	HYD-HZMB	806172	802549	SPRING	NONE	P
10-May-17	2	1145	1	SW LANTAU	1	71	ON	HYD-HZMB	807021	804335	SPRING	NONE	S
10-May-17	3	1231	1	SW LANTAU	2	315	ON	HYD-HZMB	805535	805487	SPRING	NONE	P
10-May-17	4	1322	2	SW LANTAU	1	66	ON	HYD-HZMB	801190	807252	SPRING	NONE	P
10-May-17	5	1355	1	SW LANTAU	2	225	ON	HYD-HZMB	807491	807460	SPRING	NONE	P
10-May-17	7	1524	3	SW LANTAU	1	81	ON	HYD-HZMB	807420	810007	SPRING	NONE	S

Appendix IV. Individual dolphins identified during HYD-HZMB and AFCD monitoring surveys in SWL waters in May 2017

ID#	DATE	STG#	TYPE	AREA
SL60	10/05/17	1	HYD-HZMB	SW LANTAU
WL91	10/05/17	1	HYD-HZMB	SW LANTAU

Appendix V. Photographs of Identified Individual Dolphins in May 2017 in SWL waters