



Project Report

Acquisition of LiDAR, Imagery and derived products for Tasmania Coastal Regions

Geoscience Australia

Project Contract Number: CMC G4196

17 May 2014

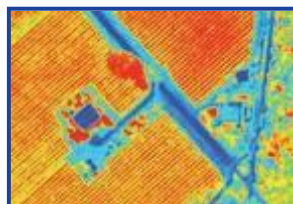


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Background and Project Contacts

The objective of this project was to acquire airborne LiDAR over a number of priority areas of Tasmania's coast, and to produce a number of seamless products which meet National ICSM LiDAR Product Specifications. The products will be used within the Australian Government's Urban DEM (UDEM) project, and will contribute to the ongoing development of the National Elevation Data Framework (NEDF).

Please contact us if there is anything you wish to discuss in further detail.

Project Manager: Thomas Wilson | Production Manager

Project Area

For project covered three regions as shown in Figure 1.

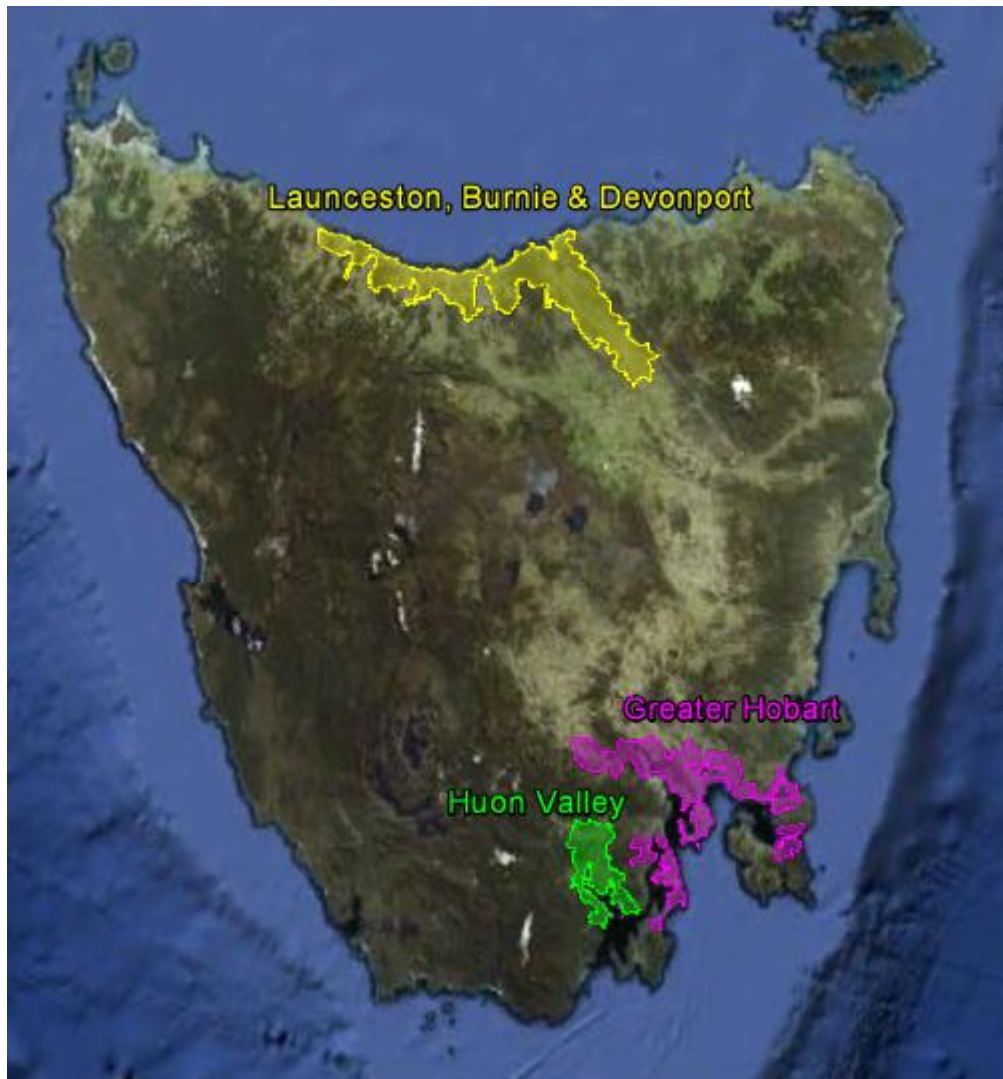


Figure 1. The three regions that comprise the project area
 Yellow = Launceston, Burnie and Devonport;
 Pink = Greater Hobart
 Green = Huon Valley

Region	Area (square km)
Greater Hobart	1283
Huon Valley	460
Launceston, Burnie & Devonport	1612
TOTAL	3355

Equipment and Software

The Airborne Laser Scanning system used for the project is the Trimble Harrier 68i/G1 system. It consists of the following instruments

- Riegl LiDAR scanning instrument,
- Rollie 39 mega-pixel camera and
- H68-POS/AV 510 IMU14.

LiDAR Scanner Specifications

Laser instrument:	Riegl LMS-Q680
Beam deflection:	Pyramid. Polygon Mirror
Field of view:	$\pm 22,5$ degrees to ± 30.0 degrees
Measurement rate:	266,000 Hz
Operating altitude:	50 m – 2,500 m AGL
Beam divergence:	0.5 mrad
Detection Method:	Full wave form processing
Intensity capture:	16 bit
Eye safe:	Class 1
Swath width:	83 % of altitude (45 deg) 115 % of altitude (60 deg)
Range resolution:	0.04 m

Rollei AIC Digital Camera

The Harrier 68i includes a Rollei AIC, 39 mega pixel medium format camera capable of 16 bit RGB and colour infra-red modes. The specifications are as follows:

Model:	Rollei AIC
Operating altitude:	0 - 6,000 m
Field of view:	45 degrees or 60 degrees
Array size:	39M pixel
Channels:	Four (RGB or IGB)
Bit depth:	16 bit
Max. Exp. rate:	2.5 sec.
Image pixel size:	Down to 0.03 m
Image scale:	1:250 to 1:10,000
Position accuracy:	Down to 0.03 m
Calibration:	Radiometric, Geometric

System Calibration

As part of our established quality assurance process the LiDAR sensor is regularly calibrated as per the manufacturer's recommendations. The date of the last calibration prior to the survey was 13/10/2011.

Applanix Positioning and Attitude System

The Harrier 68i LiDAR system incorporates the H68-POS/AV 510 IMU14. The instrument specifications are:

- IMU sampling rate: 300 Hz
- IMU accuracy: 0.008/0.008/0.015 (roll/pitch/heading)
- IMU accuracy: 0.005 (velocity)
- GPS: 12 channel dual frequency, low noise, 10 Hz raw data

Software

- Toposys 'TopPIT' software is an integrated LiDAR data and digital photography processing tool that is used for; GPS and IMU processing, laser point processing and rectification and mosaicing of Rollei images.
- Terrascan is a LiDAR processing and analysis tool used for importing the processed LiDAR data from TopIT to produce the final LiDAR products for delivery.
- Microimages TNTmips is a GIS tool used to carry out value add work on the LiDAR data and Photography, e.g. finding the density of vegetation. RPS has developed its own specialized software tools with in TNTmips to automate the majority of value add processing and analysis work.
- Inpho Orthovista: a digital orthophotography production tool used for colour balancing, contrast adjustment and tiling of the photography ready for delivery.
- In house software was developed to generate the derivatives from the classified point clouds, perform hydro-flattening of the DEM and outputting all the deliverables with ICSM compliant data structures, formats and file naming. The scripts also re-import the project deliverables to verify the data. ArcGIS was used to generate ESRI binary grids from ASCII grids.

LiDAR and Aerial Photography Capture

The 68i LiDAR full waveform Harrier system collected the data for this project with the following parameters:

Parameter	Value	Unit
Scanning Angle	60	degrees
Flight Speed	234	km/h
Flight Height	1000	metres
Scan Rate	95	Hz
Pulse Rate	240	kHz
Swath Width	1155	metres
Swath Overlap	37	%
Along Track Point Spacing	0.68	m (along track)
Across Track Point Spacing	0.69	m (across track)
Outgoing Pulse Density	2.13	per square m
Cumulative Pulse Density	3.71	total per square m
Calculated Spot Footprint	0.50	metres

Due to the rapidly changing terrain and strong turbulence, a few areas were recaptured to fill small gaps in the LiDAR data.

Medium format digital photography was captured simultaneously with the LiDAR. It is important to note that the imagery was captured when conditions were suitable for LiDAR capture. As a consequence, the imagery was affected by cloud shadow, but does not include actual clouds. The photography was ortho-rectified and provided as a digital ortho-photo mosaic with a ground pixel spacing of 12.5cm. Note that the ortho-mosaic is not a seamless mosaic of photogrammetric quality and no manual editing of seam lines was applied but it will provide an accurate, high resolution image base suitable for feature mapping.

Parameter	Value	Unit
Image ground pixel spacing	0.132	metres
Image side overlap	23	%
Image forward overlap	30	%

Due to a camera failure some areas were recaptured to fill missing strips of photography.

Figures 2 and 3 show the flight trajectories of the LiDAR that was captured and processed. These flight trajectories are also provided as a deliverable in ESRI shape format.

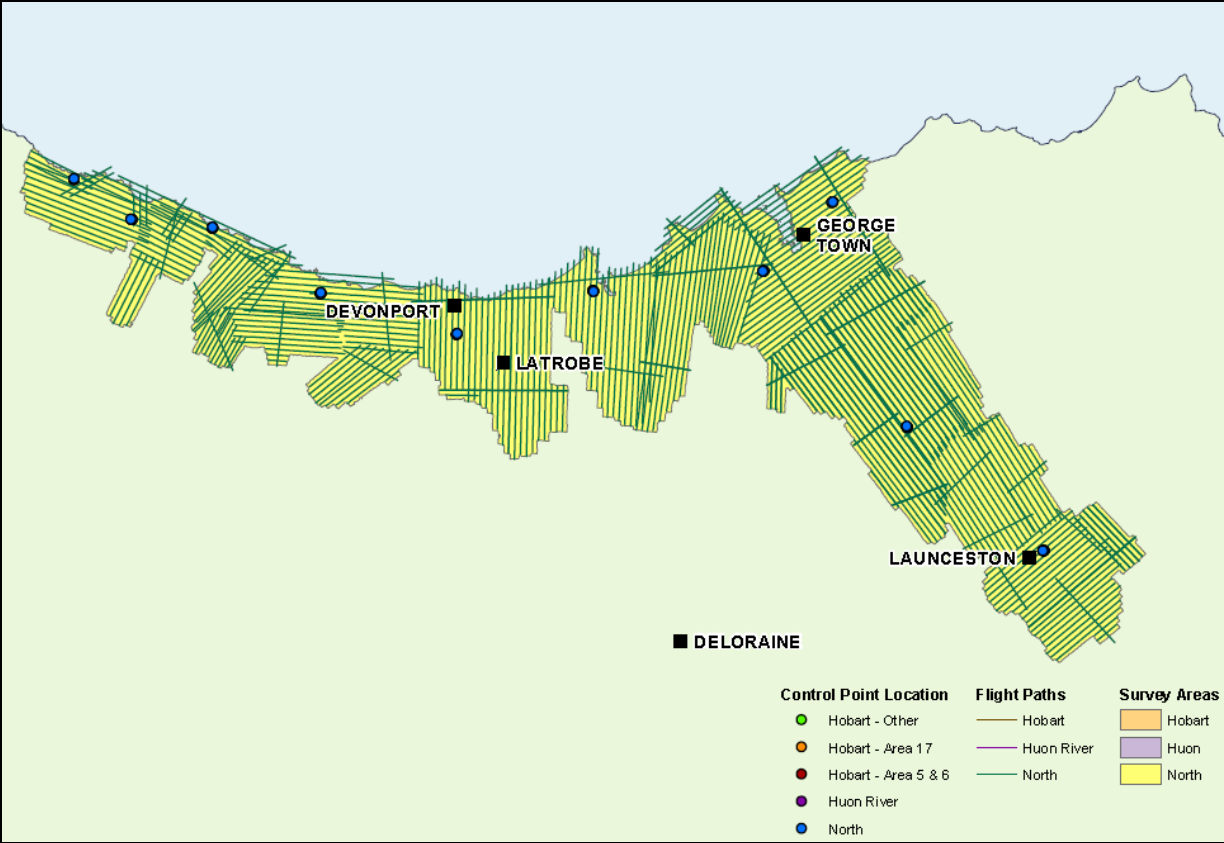


Figure 2. Flight trajectories – Burnie, Devonport, and Launceston region.

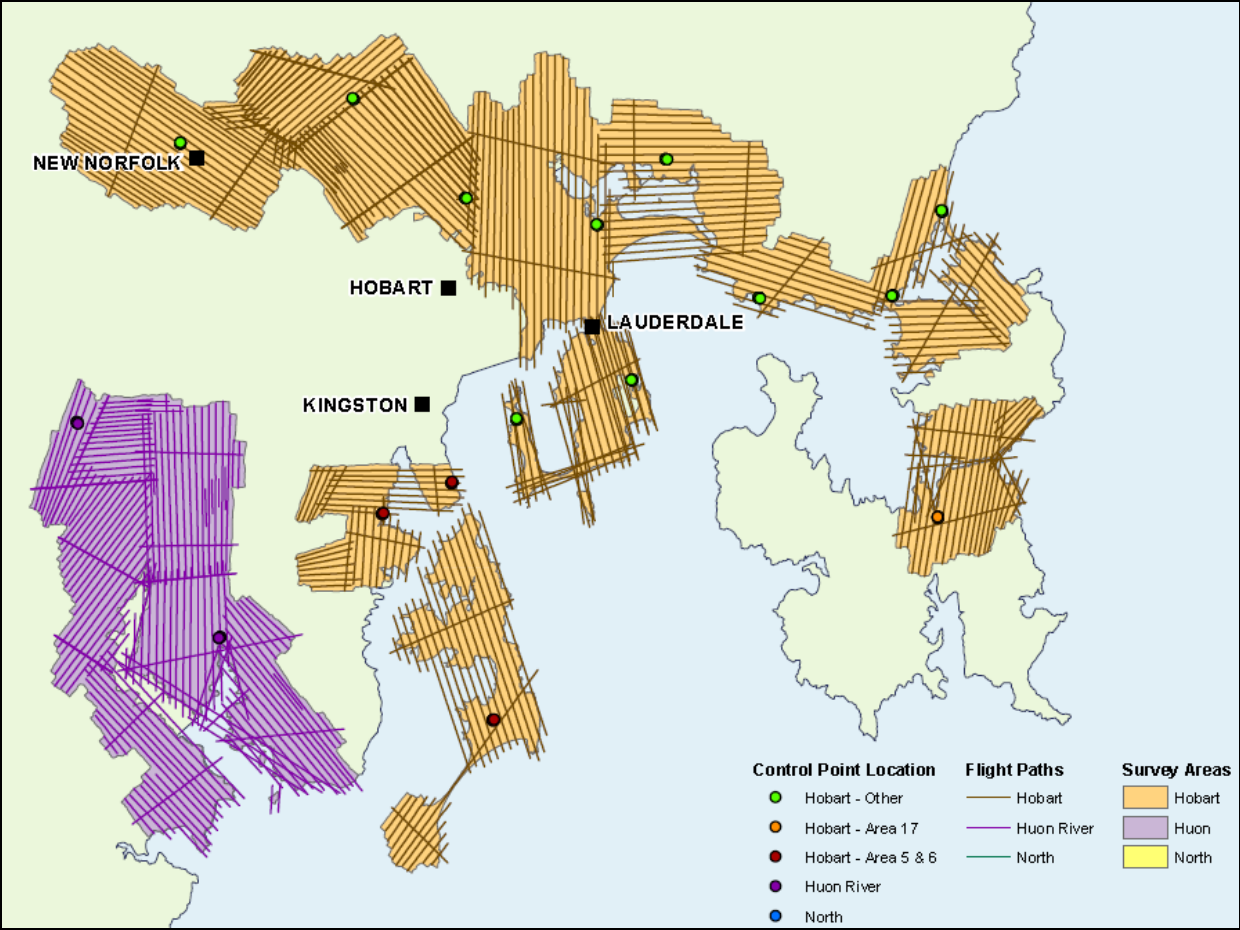


Figure 3. Flight trajectories Greater Hobart and Huon River Valley regions.

LiDAR Processing

For each strip the LiDAR point cloud was generated from the LiDAR full wave form instrument data and post processed GPS/IMU logs. Each sortie was validated at the start and end using check points to quantify residual errors.

Cross strips form networks of overlapping LiDAR strips. TerraScan software was used to level the LiDAR strips to establish internal integrity. The survey strips were adjusted to the control strips in increments of 1cm, while viewed in profile. Several profiles were measured in each intersecting block and adjustments were averaged along the strip. The process confirmed the internal integrity of LiDAR heights and GPS/IMU data. No automatic strip adjustments were applied as this can introduce errors and allow exiting errors to avoid notice.

A 1km x 1km grid was generated and the LiDAR point cloud was cut to the 1km x 1km tiles. Tiles were automatically classified to separate ground and non-ground points (Classes 2 and 1, respectively). In this stage data was transformed from the ellipsoid to Ausgeoid09. No adjustment to control was applied.

LiDAR data was further classified to ICSM Level 2 specifications using TerraScan software. Ground classification involves either reclassifying points from or to the Ground class, so that only actual ground points were in the Ground class. This was done with the point cloud displayed in profile view and the terrain surface (TIN) and ortho-photography in plan view.

In house software was developed to generate all of the LiDAR derived deliverables; the raster surfaces, intensity images and contours to ICSM specification. This process also performs hydro-flattening using water line vectors.

Ortho-photography Processing

Because the LiDAR and photography were captured simultaneously, both raw data sets have the same orientations. The following work-flow was used to generate the ortho-photo mosaic:

- Calculate exterior orientations of photographic images from adjusted GPS and IMU (smoothed best estimate trajectories).
- Ortho rectify images; horizontal adjustments determined from LiDAR are applied to the imagery.
- QA to check misalignment on seams and colour mismatch.
- QA to check horizontal displacements against ground check points.
- Resample imagery to the resolution of 20cm.
- Produce image mosaics.
- Export imagery to ECW and 1km x 1km.
- Generate metadata.
- Final QA.

Deliverables

The following deliverables were produced:

- Unclassified Point Cloud as strips (untiled) - LAS 1.2
- Level 2 classified LiDAR Point Cloud as 1km x 1km tiles - LAS 1.2
- First Return LiDAR Intensity Image - ECW Mosaic and Geotiff tiles
- Last Return LiDAR Intensity Image - ECW Mosaic and Geotiff tiles
- 1 metre Digital Elevation Model (DEM) - ESRI Binary grid
- 1 metre Digital Surface Model (DSM) - ESRI Binary grid
- 2 metre Canopy Height Model (CHM) - ESRI Binary grid
- 10 metre Foliage Cover Model (FCM) - ESRI Binary grid
- 0.25 metre contours - ESRI Shape
- Aerial Photography Mosaic 20cm pixels spacing - ECW
- Aerial Photography 1km x 1km tiles 20cm pixel spacing - Geotiff
- Flight trajectories - ESRI shape
- Break lines – ESRI shape
- This Project Report.

Description

A brief description of the deliverables follows:

Unclassified Point Cloud

The IMU and post processed airborne GPS logs were used to generate the LiDAR point cloud from the waveform instrument data. Raw LiDAR strips were levelled to establish internal consistency, merged and 1km x 1km tiles in LAS v1.2 format were created. An automatic classification algorithm was applied in TerraScan software to produce an initial classification of ground (2) and unclassified (1). High and low point noise where there was a ground classification was improved manually. This was achieved by visually scanning the ground surface and reassigning points from ground to unclassified to remove spikes, and by assigning unclassified points to ground where the ground surface lacked sufficient detail to describe the terrain (i.e. large TIN triangles).

Level 2 Classified LiDAR Point Data

The IMU and post processed airborne GPS logs were used to generate the LiDAR point cloud from the waveform instrument data. Raw LiDAR strips were levelled to establish internal consistency, merged and 1km x 1km tiles in LAS v1.2 format were created. An automatic classification algorithm was applied in TerraScan software to produce an initial classification of ground (2) and unclassified (1). High and low point noise where there was a ground classification was improved manually. This was achieved by visually scanning the ground surface and reassigning points from ground to unclassified to remove spikes, and by assigning unclassified points to ground where the ground surface lacked sufficient detail to describe the terrain (i.e. large TIN triangles).

On completion of the ground classification automatic algorithms were used to classify unclassified points to low vegetation (3), medium vegetation (4), high vegetation (5) and buildings (10).

The workflow and quality assurance processes were designed to achieve the Level 2 requirement for “removal of significant anomalies” which remain in the ground class (2) and achieve a ground point misclassification rate of 2% or less. The classification accuracy was not measured.

LiDAR Intensity Image

Intensity images with a ground pixel spacing of one metre were generated from the LiDAR point cloud using an RPS algorithm that calculates the intensity image as the mean intensity of the first return points or last return points falling on each pixel. Both first and last return images were produced. The intensity images were converted to ECW using ERMapper software and also exported as 1km x 1km tiles in GeoTIFF format.

Digital Elevation Model (DEM)

A DEM with a ground pixel spacing of one metre was generated from the LiDAR ground points. The method of deriving the height for each grid point is by triangulation between the three nearest LiDAR ground points. Hydro flattening was applied using waterlines (break lines) that were manually digitised using the LiDAR and ortho-photography as reference for areas of non-tidal water greater than 625 square metres and watercourses nominally greater than 30 metres in width.

The DEM was exported to ESRI Binary grid as 1km by 1km tiles in accordance with ICSM specifications (December 2012).

The DEM accuracy will be limited by the spatial accuracy of the LiDAR point data and will contain some additional error due to interpolation, particularly in areas of dense vegetation where ground points are sparse. There may also be a small amount of error due to ground point misclassification.

Digital Surface Model (DSM)

A DSM with a ground pixel spacing of one metre was generated from the LiDAR ground points. Height is assigned as the highest non-ground point falling on each pixel. Pixels which have no LiDAR points falling on them are assigned a height value from the interpolated DEM.

The DSM was exported to ESRI Binary grid as 1km by 1km tiles in accordance with ICSM specifications (in December 2012).

The DSM accuracy will be limited by the spatial accuracy of the LiDAR point data. Pixels upon which no LiDAR points fall are assigned from the interpolated DEM and therefore include an interpolation error.

Canopy Height Model (CHM)

The CHM (height above ground) surface was produced by subtracting the DEM from the DSM. The CHM was resampled from one to two metres.

The CHM was exported to ESRI Binary grid as 1km by 1km tiles in accordance with ICSM specifications.

Foliage Cover Model (FCM)

A FCM with a ground pixel spacing of 10 metres was generated by calculating the number of medium and high vegetation points as a percentage of the total number of points falling on each pixel.

The FCM was exported to ESRI Binary grid as 1km by 1km tiles in accordance with ICSM specifications (in December 2012).

Contours

Contours were generated with a vertical interval of 0.25 metres. A bilinear interpolation method using a moving window of 5x5 DEM pixels was used to generate the contours with an appropriate level of generalisation.

The contours are attributed with Altitude and Type (Major, Minor, Basic).

The contours were exported to ESRI shape format as 1km by 1km tiles in accordance with ICSM specifications (in December 2012).

Break lines

Break lines representing waterlines of waterbodies greater than 625 square metres and watercourses greater than 30 metres were captured by manual interpretation of DEMs generated from the automatically classified (unedited) LiDAR point cloud. The break lines are provided in ESRI shape format.

Flight trajectories

Smoothed Best Estimate Trajectories are calculated from the corrected airborne GPS and IMU logs. These data are provided as ESRI shape files and include the date of capture, local start time, local end time, reference station used and tide height for those flight trajectories that crossed the coastline in metres at start of run.

Ortho-Photography

Medium format digital photography was captured using the Rollie TAC AICPro 45 Megapixel camera that is integrated within the Harrier 68i Airborne LiDAR System. The images were oriented using reduced best fit trajectory from the IMU and differentially processed airborne GPS. The images were ortho-rectified against the LiDAR 1 metre DEM and automatically colour balanced and mosaicked. The ortho-photomosaic was exported to ECW and 1km x 1km tiles in GeoTIFF

The photography was captured simultaneously with the LiDAR whenever conditions were suitable for LiDAR capture. As a consequence, the imagery may be affected by cloud shadow (but will not include actual clouds) and low sun angles (i.e. long shadows). The ortho-mosaic is a seamless mosaic of photogrammetric quality and no manual colour matching or manual editing of seam lines has been applied.

File Naming

File naming for all deliverables is as specified in the ICSM specifications and the Statement of Requirements for the project.

Coordinate System

Projection:	MGA
Zone:	55
Horizontal Datum:	GDA94
Vertical Datum:	AHD71 (Ausgeoid 09)

File Structure

Two copies of the products have been delivered (Disk 1 and Disk 2 are mirrors of each other) in the following folder structure:

Ancillary

\Report\	Contains this report and the post accuracy report
\Report\Field Survey\	Field Survey data
\Control\	vertical control shapefile

Each of the three areas is represented by identical directory trees:

BurnieDevonportLaunceston	Data for the Burnie, Devonport and Launceston area
GreaterHobart	Data for the Greater Hobart areas
HuonRiverValley	Data for the Huon River Valley area
\z55	
\Ancillary\Breaklines	Watercourses and Waterbodies ESRI shape
\Ancillary\Flight_Lines	Flight trajectories ESRI shape
\Ancillary\Metadata	XML metadata documents
\Ancillary\Tile_Index	Tile indexes for all tiled deliverables ESRI shape
..\CHM\ESRI_GRID\Mosaic	CHM mosaic
..\CHM\ ESRI_GRID\Tiles	CHM tiles
..\Contours	0.25 metre contours, ESRI shape
..\DEM\ ESRI_GRID\Mosaic	DEM mosaic
..\DEM\ ESRI_GRID\Tiles	DEM Tiles
..\DSM\ ESRI_GRID\Tiles	DSM Tiles
..\DSM\ ESRI_GRID\Mosaic	DSM mosaic
..\FCM\ ESRI_GRID\Tiles	FCM tiles
..\FCM\ ESRI_GRID\Mosaic	FCM mosaic

..\Imagery\Mosaic_ECW	Ortho-photo mosaic
..\Imagery\ Tiles_Geotiff	Ortho-photo tiles
..\Intensity\First_Returns\Mosaic_ECW	1 st return Intensity mosaic
..\Intensity\First_Returns\Tiled_Geotiff	1 st return Intensity tiles
..\Intensity\Last_Returns\Mosaic_ECW	last return Intensity mosaic
..\Intensity\Last_Returns\Tiled_Geotiff	last return Intensity tiles
..\LAS\Classified_Tiles\Ellipsoidal	Classified Point cloud, ellipsoidal heights
..\LAS\Classified_Tiles\Orthometric	Classified Point cloud, orthometric heights
..\LAS\Model_Key_Points\Ellipsoidal	Model Key Points, ellipsoidal heights
..\LAS\Model_Key_Points\Orthometric	Model Key Points, orthometric heights
..\LAS\Unclassified_Swaths	Unclassified swaths

Accuracy Assessment

LiDAR Classification Accuracy.

A three stage QA process was adopted to ensure the data meet ICSM Level 2 standard:

1. The LiDAR was initially classified using an automated algorithm in TerraScan.
2. The LiDAR classification was then refined to ICSM level 2 standards by manual editing. This involved scanning the entire dataset in profile and plan view, and reassigning points to the ground or unclassified class wherever points were observed to be misclassified.
3. The project manager checked each tile to ensure that the required level of classification accuracy had been achieved.

Ground Control Accuracy

Fundamental Vertical Accuracy of $\leq \pm 10\text{cm}$ at 95% confidence level (1.96 x RMSE) and Fundamental Horizontal Accuracy of $\leq \pm 10\text{cm}$ at 95% confidence level (1.96 x RMSE).

LiDAR Spatial Accuracy

Fundamental Vertical Accuracy better than $\pm 30\text{cm}$ at 95% confidence level (1.96 x RMSE) and Fundamental Horizontal Accuracy better than $\pm 80\text{cm}$ at 95% confidence level (1.96 x RMSE).

After the LiDAR was levelled, to establish internal consistency between flight swaths, the residual differences between the interpolated terrain surface were calculated with respect to each vertical control point. Horizontal residual differences were measured as the distance between the horizontal control points and the vertical structure from which the control point was taken. Residual error reports are provided below.

If the residual error of the levelled LiDAR exceeded 0.15 RMSE (29.4cm at 95% confidence) the LiDAR was adjusted vertically, as a block, by the mean error.

Notes on Expected Accuracy

- “Derived points” are those interpolated from terrain model.
- “Measured points” are those observed directly.
- Accuracy estimates for terrain modelling refer to the terrain on hard flat surface unobstructed by vegetation or overhanging features. Ground definition in vegetated terrain may contain localised areas with systematic errors or outliers which fall outside this accuracy estimate.
- Laser strikes have been classified into “ground” and “non-ground” using automated algorithms preparatory to manual editing to achieve Level 2 classification accuracy. Tailored upon inputs from localised sampling of the project area taking into account terrain, vegetation and feature combinations within the project area. Additional manual quality checks have been undertaken to minimize the effect of isolated areas of terrain/vegetation combinations.

Ground Control

The Burnie, Devonport and Launceston areas (referred to as North for simplicity in Figure 4) Greater Hobart, and Huon River were surveyed by conventional methods, with the Hobart area broken up into 3 smaller sub sections. A total of 299 ground control points were surveyed over 27 sites, of which they were broken up into 263 vertical points and 36 horizontal points.

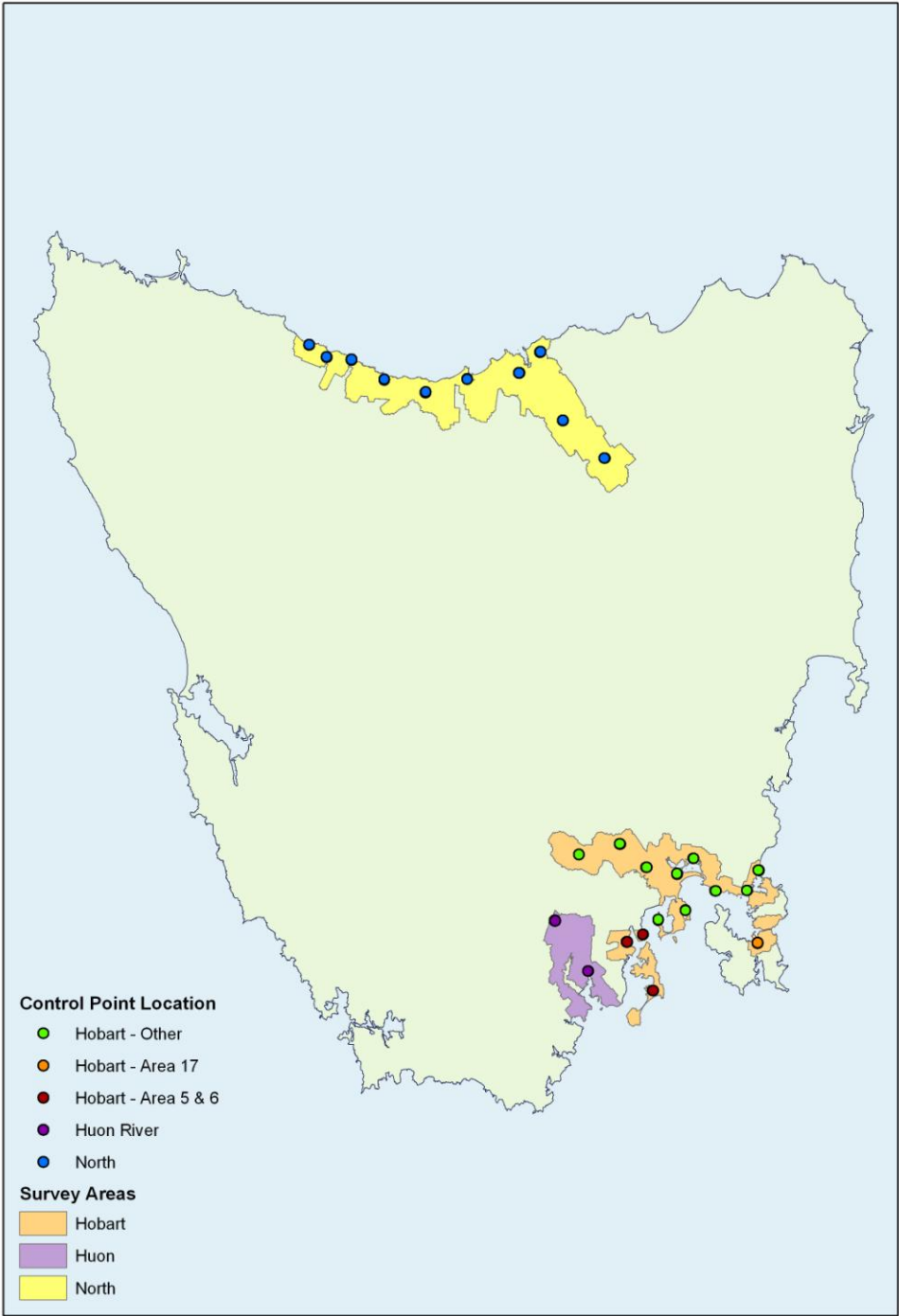


Figure 4: Survey areas and control points.

Residual Error Reports

Hobart Areas 5 and 6 - Before Correction

Number	Easting	Northing	Known Z	Laser Z	Dz
32	521199.70	5232055.76	3.557	3.47	-0.087
33	521214.76	5232065.84	2.755	2.66	-0.095
34	521229.56	5232075.51	2.346	2.23	-0.116
35	521245.51	5232085.85	2.177	2.07	-0.107
36	521260.69	5232095.93	2.163	2.05	-0.113
37	521277.80	5232106.91	2.2	2.08	-0.12
38	521292.90	5232117.34	2.218	2.11	-0.108
39	521308.46	5232127.49	2.29	2.18	-0.11
40	521324.43	5232138.64	2.268	2.15	-0.118
41	521340.34	5232149.25	2.378	2.25	-0.128
224	527355.95	5234765.11	42.727	42.6	-0.127
225	527371.59	5234776.91	44.803	44.64	-0.163
226	527384.33	5234790.62	46.183	46.02	-0.163
227	527389.90	5234807.45	46.783	46.64	-0.143
228	527390.66	5234825.93	47.122	46.95	-0.172
229	527390.66	5234844.30	47.506	47.33	-0.176
230	527390.63	5234863.25	48.384	48.19	-0.194
231	527390.50	5234882.68	50.056	49.88	-0.176
232	527390.33	5234901.72	51.719	51.53	-0.189
233	527389.39	5234921.00	52.808	52.61	-0.198
234	531002.97	5213808.01	10.223	10.13	-0.093
235	531005.66	5213826.88	10.145	10.05	-0.095
236	531007.42	5213846.17	10.068	9.96	-0.108
237	531008.14	5213865.93	9.92	9.81	-0.11
238	531035.94	5213866.32	10.698	10.59	-0.108
239	531054.49	5213868.61	10.956	10.86	-0.096
240	531072.86	5213874.08	11.018	10.92	-0.098
241	531089.23	5213883.61	11.024	10.94	-0.084
242	531104.73	5213894.12	11.307	11.21	-0.097
243	531121.72	5213904.27	11.933	11.84	-0.093

Average dz -0.126
 Minimum dz -0.198
 Maximum dz -0.084
 Average magnitude 0.126
 Root mean square 0.131
 Std deviation 0.035

Hobart Areas 5 and 6 – After Correction

Number	Easting	Northing	Known Z	Laser Z	dZ
32	521199.7	5232055.76	3.557	3.59	0.033
33	521214.76	5232065.84	2.755	2.78	0.025
34	521229.56	5232075.51	2.346	2.35	0.004
35	521245.51	5232085.85	2.177	2.19	0.013
36	521260.69	5232095.93	2.163	2.17	0.007
37	521277.8	5232106.91	2.2	2.2	0
38	521292.9	5232117.34	2.218	2.23	0.012
39	521308.46	5232127.49	2.29	2.3	0.01
40	521324.43	5232138.64	2.268	2.27	0.002
41	521340.34	5232149.25	2.378	2.37	-0.008
224	527355.95	5234765.11	42.727	42.72	-0.007
225	527371.59	5234776.91	44.803	44.76	-0.043
226	527384.33	5234790.62	46.183	46.14	-0.043
227	527389.9	5234807.45	46.783	46.76	-0.023
228	527390.66	5234825.93	47.122	47.07	-0.052
229	527390.66	5234844.3	47.506	47.45	-0.056
230	527390.63	5234863.25	48.384	48.31	-0.074
231	527390.5	5234882.68	50.056	50	-0.056
232	527390.33	5234901.72	51.719	51.65	-0.069
233	527389.39	5234921	52.808	52.73	-0.078
234	531002.972	5213808.005	10.223	10.25	0.027
235	531005.655	5213826.882	10.145	10.17	0.025
236	531007.419	5213846.168	10.068	10.08	0.012
237	531008.137	5213865.927	9.92	9.93	0.01
238	531035.938	5213866.323	10.698	10.71	0.012
239	531054.494	5213868.608	10.956	10.98	0.024
240	531072.859	5213874.076	11.018	11.04	0.022
241	531089.228	5213883.612	11.024	11.06	0.036
242	531104.725	5213894.122	11.307	11.33	0.023
243	531121.72	5213904.273	11.933	11.96	0.027

Average dz	-0.006
Minimum dz	-0.078
Maximum dz	+0.036
Average magnitude	0.028
Root mean square	0.035
Std deviation	0.035

Hobart Area 17 (no correction applied)

Number	Easting	Northing	Known Z	Laser Z	Dz
214	570371.5	5231703	16.623	16.73	0.107
215	570373.5	5231723	16.297	16.39	0.093
216	570375.6	5231743	16.054	16.13	0.076
217	570377.7	5231763	15.847	15.96	0.113
218	570379.7	5231782	15.736	15.84	0.104
219	570381.8	5231802	15.486	15.61	0.124
220	570382.8	5231812	15.359	15.47	0.111
221	570372.1	5231814	15.123	15.22	0.097
222	570353.6	5231819	14.485	14.57	0.085
223	570336.1	5231825	13.897	13.98	0.083

Average dz	+0.099
Minimum dz	+0.076
Maximum dz	+0.124
Average magnitude	0.099
Root mean square	0.100
Std deviation	0.015

Hobart North (no correction applied)

Number	Easting	Northing	Known Z	Laser Z	Dz
1	430312	5442736	14.649	14.57	-0.079
2	430314.3	5442753	14.492	14.39	-0.102
3	430317.4	5442771	14.309	14.22	-0.089
4	430320.5	5442789	14.137	14.06	-0.077
5	430323.6	5442807	13.915	13.84	-0.075
6	430326.4	5442825	13.651	13.59	-0.061
7	430329.4	5442842	13.434	13.36	-0.074
8	430332.5	5442860	13.219	13.11	-0.109
9	430335.7	5442878	13.021	12.92	-0.101
10	430338.7	5442896	12.856	12.78	-0.076
11	430342	5442915	12.629	12.55	-0.079
12	513001.9	5413384	3.324	3.27	-0.054
13	512980.4	5413384	3.102	3.05	-0.052
14	512962.3	5413384	2.923	2.86	-0.063
15	512943.8	5413383	2.724	2.62	-0.104
16	512925.5	5413382	2.63	2.56	-0.07
17	512906.1	5413382	2.544	2.48	-0.064
18	512887.7	5413381	2.587	2.53	-0.057
19	512868.9	5413381	2.695	2.63	-0.065
20	512849.8	5413380	3.068	3.01	-0.058
21	512830.7	5413380	3.467	3.4	-0.067
42	402134.8	5455826	13.374	13.31	-0.064
43	402137.5	5455843	12.41	12.34	-0.07
44	402138.4	5455849	12.342	12.27	-0.072
45	402138.4	5455855	12.042	11.98	-0.062
46	402142.1	5455878	10.763	10.68	-0.083
47	402145.1	5455896	10.265	10.19	-0.075
48	402147.7	5455913	9.827	9.75	-0.077
49	402150.5	5455931	9.467	9.39	-0.077

50	402153.8	5455948	9.184	9.11	-0.074
51	402156.3	5455966	8.966	8.91	-0.056
52	408785.8	5451287	109.237	109.17	-0.067
53	408782.7	5451278	109.584	109.52	-0.064
54	408774.7	5451273	110.146	110.09	-0.056
55	408763	5451275	110.987	110.93	-0.057
56	408744.1	5451279	112.524	112.46	-0.064
57	408725.6	5451283	114.16	114.09	-0.07
58	408707.1	5451287	115.958	115.89	-0.068
59	408688.1	5451291	117.888	117.83	-0.058
60	408669.8	5451295	119.773	119.69	-0.083
61	408650.8	5451300	121.727	121.64	-0.087
62	417974.7	5450396	6.785	6.71	-0.075
63	417952.6	5450252	8.854	8.78	-0.074
64	417957.4	5450264	8.645	8.58	-0.065
65	417959.7	5450277	8.406	8.34	-0.066
66	417961.9	5450294	8.157	8.09	-0.067
67	417963.8	5450311	7.876	7.82	-0.056
68	417966	5450328	7.626	7.57	-0.056
69	417968.3	5450345	7.422	7.36	-0.062
70	417970.5	5450362	7.171	7.12	-0.051
71	417972.6	5450379	6.99	6.93	-0.06
72	417974.7	5450396	6.782	6.71	-0.072
73	445913.6	5438225	8.109	8.02	-0.089
74	445818	5438099	8.897	8.75	-0.147
75	445834.8	5438103	8.533	8.43	-0.103
76	445850.9	5438111	8.16	8.06	-0.1
77	445861.4	5438127	7.923	7.82	-0.103
78	445869.9	5438143	7.845	7.74	-0.105
79	445878.2	5438160	7.948	7.84	-0.108
80	445886.6	5438176	8.034	7.94	-0.094
81	445895.8	5438192	8.13	8.01	-0.12
82	445905.2	5438208	8.105	8.03	-0.075
83	461414.7	5443141	8.297	8.17	-0.127
84	461427	5443132	8.034	7.92	-0.114
85	461439.6	5443120	7.73	7.61	-0.12
86	461451	5443105	7.345	7.25	-0.095
87	461463.6	5443092	6.813	6.71	-0.103
88	461477.7	5443080	6.23	6.1	-0.13
89	461493.2	5443068	6.02	5.91	-0.11
90	461496.5	5443057	6.052	5.96	-0.092
91	461492.3	5443044	6.196	6.1	-0.096
92	461485.7	5443026	6.242	6.14	-0.102
93	480826	5445358	47.712	47.58	-0.132
94	480990.6	5445389	50.911	50.81	-0.101
95	480971.2	5445383	50.273	50.18	-0.093
96	480953.6	5445378	49.969	49.88	-0.089
97	480935.5	5445374	49.802	49.71	-0.092
98	480917.3	5445369	49.672	49.6	-0.072
99	480898.8	5445365	49.587	49.49	-0.097
100	480880.5	5445361	49.356	49.26	-0.096
101	480862.4	5445359	48.88	48.77	-0.11
102	480844.2	5445358	48.28	48.19	-0.09
103	488857.2	5453295	29.387	29.32	-0.067
104	488713.6	5453207	32.72	32.7	-0.02

105	488728.9	5453218	31.931	31.89	-0.041
106	488744.4	5453228	31.678	31.63	-0.048
107	488760.1	5453239	31.755	31.69	-0.065
108	488775.7	5453249	31.843	31.79	-0.053
109	488791.6	5453260	31.433	31.38	-0.053
110	488806.9	5453270	30.785	30.74	-0.045
111	488822.6	5453280	30.228	30.18	-0.048
112	488839.1	5453289	29.856	29.78	-0.076
113	497341.1	5427451	11.799	11.71	-0.089
114	497334.6	5427469	13.268	13.15	-0.118
115	497327.5	5427486	14.7	14.59	-0.11
116	497320.9	5427502	16.099	15.97	-0.129
117	497314.4	5427519	17.387	17.28	-0.107
118	497307.8	5427535	18.499	18.42	-0.079
119	497297.4	5427560	20.251	20.17	-0.081
120	497290.7	5427577	21.563	21.46	-0.103
121	497283.8	5427594	23.179	23.1	-0.079
122	497277.3	5427610	24.893	24.79	-0.103

Average dz -0.081
 Minimum dz -0.147
 Maximum dz -0.02
 Average magnitude 0.081
 Root mean square 0.084
 Std deviation 0.023

Hobart Other Areas - Before Correction

Number	Easting	Northing	Known Z	Laser Z	Dz
22	528551.09	5260013.04	49.865	49.58	-0.285
23	528568.11	5260006.73	49.95	49.68	-0.27
24	528585.17	5260000.37	50.035	49.77	-0.265
25	528602.26	5259993.93	50.152	49.89	-0.262
26	528619.44	5259988.03	50.147	49.89	-0.257
27	528637.53	5259984.45	49.733	49.49	-0.243
28	528655.24	5259983.58	48.882	48.62	-0.262
29	528672.93	5259982.65	47.719	47.47	-0.249
30	528690.75	5259981.97	46.527	46.26	-0.267
31	528708.73	5259981.17	45.082	44.84	-0.242
123	503387.24	5264833.7	34.833	34.64	-0.193
124	503366.18	5264836.15	34.897	34.7	-0.197
125	503370.31	5264788.75	34.148	33.96	-0.188
126	503371.44	5264799.19	34.419	34.24	-0.179
127	503373.29	5264817.32	34.649	34.48	-0.169
128	503375.39	5264835.61	34.869	34.69	-0.179
129	503377.84	5264846.49	35.007	34.83	-0.177
130	503381.8	5264864.67	35.314	35.13	-0.184
131	503385.97	5264883.05	35.721	35.55	-0.171
132	503390.19	5264901.8	36.107	35.92	-0.187
133	503393.95	5264920.56	36.251	36.08	-0.171
134	518717.26	5268707.34	11.454	11.26	-0.194
135	518710.5	5268724.33	10.895	10.71	-0.185
136	518699.34	5268739.57	11.002	10.81	-0.192
137	518684.25	5268752.4	12.067	11.89	-0.177
138	518667.75	5268763.73	13.827	13.67	-0.157
139	518652.11	5268775.29	14.763	14.61	-0.153
140	518637.87	5268787.74	14.73	14.57	-0.16
141	518623.81	5268801.26	14.292	14.12	-0.172
142	518610.04	5268814.56	14.046	13.88	-0.166
143	518595.12	5268826.57	14.014	13.84	-0.174
144	540291.04	5257620.73	3.76	3.58	-0.18
145	540278.13	5257606.44	3.679	3.47	-0.209
146	540264.49	5257591.5	3.6	3.4	-0.2
147	540247.71	5257605.42	3.232	3.05	-0.182
148	540231.79	5257617.42	3.266	3.07	-0.196
149	540215.69	5257629.38	3.317	3.14	-0.177
150	540200.92	5257640.22	3.387	3.21	-0.177
151	540186.58	5257651.86	3.489	3.31	-0.179
152	540177.16	5257667.79	3.539	3.33	-0.209
153	533111.55	5240378.32	20.599	20.37	-0.229
154	533127.34	5240388.47	20.744	20.52	-0.224
155	533126.42	5240395.99	20.517	20.29	-0.227
156	533123.34	5240414.27	19.603	19.36	-0.243
157	533120.12	5240433.11	19.153	18.94	-0.213
158	533116.94	5240451.89	19.743	19.53	-0.213
159	533114.11	5240469.49	19.392	19.15	-0.242
160	533111.02	5240487.8	18.762	18.54	-0.222
161	533107.62	5240507.34	18.591	18.36	-0.231
162	533105.08	5240525.59	18.481	18.26	-0.221
163	543360.13	5243958.25	2.3	2.02	-0.28
164	543358.61	5243940.05	2.19	1.93	-0.26

165	543356.85	5243921.92	2.1	1.82	-0.28
166	543355.02	5243902.44	2.03	1.72	-0.31
167	543347.57	5243903.39	2.03	1.72	-0.31
168	543328.29	5243904.84	2.05	1.74	-0.31
169	543309.43	5243906.36	1.99	1.68	-0.31
170	543290.23	5243907.89	1.92	1.62	-0.3
171	543271.58	5243909.31	1.86	1.58	-0.28
172	543252.4	5243910.88	1.8	1.49	-0.31
173	546272.95	5263443.71	16.924	16.61	-0.314
174	546291.11	5263440.04	16.752	16.45	-0.302
175	546309.88	5263436.23	16.585	16.26	-0.325
176	546329.18	5263432.28	16.46	16.12	-0.34
177	546348.03	5263428.38	16.56	16.25	-0.31
178	546366.41	5263424.28	16.674	16.34	-0.334
179	546384.89	5263420.53	16.84	16.52	-0.32
180	546403.78	5263416.67	16.964	16.64	-0.324
181	546422.16	5263412.99	17.094	16.76	-0.334
182	546441.34	5263409.2	17.421	17.11	-0.311
183	554499.67	5251200.13	3.49	3.25	-0.24
184	554518.23	5251194.36	3.495	3.25	-0.245
185	554512.19	5251167.73	3.003	2.77	-0.233
186	554522.01	5251182.44	2.984	2.75	-0.234
187	554533.55	5251187.75	3.468	3.21	-0.258
188	554551.38	5251180.64	3.456	3.23	-0.226
189	554569.29	5251171.47	3.51	3.26	-0.25
190	554586.94	5251162.33	3.602	3.36	-0.242
191	554604.2	5251153.1	3.683	3.44	-0.243
192	554619.93	5251143.95	3.824	3.58	-0.244
193	554637.43	5251135.95	4.105	3.87	-0.235
194	570746.86	5258779.22	1.63	1.34	-0.29
195	570739.63	5258796.22	1.621	1.3	-0.321
196	570732.76	5258812.53	1.611	1.27	-0.341
197	570724.05	5258829.1	1.609	1.31	-0.299
198	570715.05	5258845.73	1.636	1.3	-0.336
199	570706.11	5258861.7	1.558	1.25	-0.308
200	570696.83	5258878.99	1.513	1.18	-0.333
201	570688.62	5258895.85	1.453	1.16	-0.293
202	570678.2	5258911.47	1.532	1.23	-0.302
203	570670.14	5258917.34	1.563	1.26	-0.303
204	566273.29	5251347.36	10.431	10.15	-0.281
205	566433.6	5251379.92	9.199	8.92	-0.279
206	566416.38	5251376.56	9.585	9.32	-0.265
207	566398.95	5251373.27	9.951	9.67	-0.281
208	566380.73	5251369.52	10.271	10	-0.271
209	566362.69	5251365.76	10.477	10.19	-0.287
210	566345.14	5251362.19	10.43	10.14	-0.29
211	566327.97	5251358.73	10.379	10.1	-0.279
212	566309.5	5251354.93	10.361	10.09	-0.271
213	566291.38	5251350.97	10.374	10.09	-0.284

Average dz	-0.248
Minimum dz	-0.341
Maximum dz	-0.153
Average magnitude	0.248
Root mean square	0.253
Std deviation	0.053

Hobart Other Areas – After Correction

Number	Easting	Northing	Known Z	Laser Z	Dz
22	528551.1	5260013	49.865	49.82	-0.045
23	528568.1	5260007	49.95	49.92	-0.03
24	528585.2	5260000	50.035	50.01	-0.025
25	528602.3	5259994	50.152	50.13	-0.022
26	528619.4	5259988	50.147	50.13	-0.017
27	528637.5	5259984	49.733	49.73	-0.003
28	528655.2	5259984	48.882	48.86	-0.022
29	528672.9	5259983	47.719	47.71	-0.009
30	528690.8	5259982	46.527	46.5	-0.027
31	528708.7	5259981	45.082	45.08	-0.002
123	503387.2	5264834	34.833	34.88	0.047
124	503366.2	5264836	34.897	34.94	0.043
125	503370.3	5264789	34.148	34.2	0.052
126	503371.4	5264799	34.419	34.48	0.061
127	503373.3	5264817	34.649	34.72	0.071
128	503375.4	5264836	34.869	34.93	0.061
129	503377.8	5264846	35.007	35.07	0.063
130	503381.8	5264865	35.314	35.37	0.056
131	503386	5264883	35.721	35.79	0.069
132	503390.2	5264902	36.107	36.16	0.053
133	503394	5264921	36.251	36.32	0.069
134	518717.3	5268707	11.454	11.5	0.046
135	518710.5	5268724	10.895	10.95	0.055
136	518699.3	5268740	11.002	11.05	0.048
137	518684.3	5268752	12.067	12.13	0.063
138	518667.8	5268764	13.827	13.91	0.083
139	518652.1	5268775	14.763	14.85	0.087
140	518637.9	5268788	14.73	14.81	0.08
141	518623.8	5268801	14.292	14.36	0.068
142	518610	5268815	14.046	14.12	0.074
143	518595.1	5268827	14.014	14.08	0.066
144	540291	5257621	3.76	3.82	0.06
145	540278.1	5257606	3.679	3.71	0.031
146	540264.5	5257592	3.6	3.64	0.04
147	540247.7	5257605	3.232	3.29	0.058
148	540231.8	5257617	3.266	3.31	0.044
149	540215.7	5257629	3.317	3.38	0.063
150	540200.9	5257640	3.387	3.45	0.063
151	540186.6	5257652	3.489	3.55	0.061
152	540177.2	5257668	3.539	3.57	0.031
153	533111.6	5240378	20.599	20.61	0.011
154	533127.3	5240388	20.744	20.76	0.016
155	533126.4	5240396	20.517	20.53	0.013
156	533123.3	5240414	19.603	19.6	-0.003
157	533120.1	5240433	19.153	19.18	0.027
158	533116.9	5240452	19.743	19.77	0.027
159	533114.1	5240469	19.392	19.39	-0.002
160	533111	5240488	18.762	18.78	0.018
161	533107.6	5240507	18.591	18.6	0.009
162	533105.1	5240526	18.481	18.5	0.019
163	543360.1	5243958	2.3	2.26	-0.04

164	543358.6	5243940	2.19	2.17	-0.02
165	543356.9	5243922	2.1	2.06	-0.04
166	543355	5243902	2.03	1.96	-0.07
167	543347.6	5243903	2.03	1.96	-0.07
168	543328.3	5243905	2.05	1.98	-0.07
169	543309.4	5243906	1.99	1.92	-0.07
170	543290.2	5243908	1.92	1.86	-0.06
171	543271.6	5243909	1.86	1.82	-0.04
172	543252.4	5243911	1.8	1.73	-0.07
173	546273	5263444	16.924	16.85	-0.074
174	546291.1	5263440	16.752	16.69	-0.062
175	546309.9	5263436	16.585	16.5	-0.085
176	546329.2	5263432	16.46	16.36	-0.1
177	546348	5263428	16.56	16.49	-0.07
178	546366.4	5263424	16.674	16.58	-0.094
179	546384.9	5263421	16.84	16.76	-0.08
180	546403.8	5263417	16.964	16.88	-0.084
181	546422.2	5263413	17.094	17	-0.094
182	546441.3	5263409	17.421	17.35	-0.071
183	554499.7	5251200	3.49	3.49	0
184	554518.2	5251194	3.495	3.49	-0.005
185	554512.2	5251168	3.003	3.01	0.007
186	554522	5251182	2.984	2.99	0.006
187	554533.6	5251188	3.468	3.45	-0.018
188	554551.4	5251181	3.456	3.47	0.014
189	554569.3	5251171	3.51	3.5	-0.01
190	554586.9	5251162	3.602	3.6	-0.002
191	554604.2	5251153	3.683	3.68	-0.003
192	554619.9	5251144	3.824	3.82	-0.004
193	554637.4	5251136	4.105	4.11	0.005
194	570746.9	5258779	1.63	1.58	-0.05
195	570739.6	5258796	1.621	1.54	-0.081
196	570732.8	5258813	1.611	1.51	-0.101
197	570724.1	5258829	1.609	1.55	-0.059
198	570715.1	5258846	1.636	1.54	-0.096
199	570706.1	5258862	1.558	1.49	-0.068
200	570696.8	5258879	1.513	1.42	-0.093
201	570688.6	5258896	1.453	1.4	-0.053
202	570678.2	5258911	1.532	1.47	-0.062
203	570670.1	5258917	1.563	1.5	-0.063
204	566273.3	5251347	10.431	10.39	-0.041
205	566433.6	5251380	9.199	9.16	-0.039
206	566416.4	5251377	9.585	9.56	-0.025
207	566399	5251373	9.951	9.91	-0.041
208	566380.7	5251370	10.271	10.24	-0.031
209	566362.7	5251366	10.477	10.43	-0.047
210	566345.1	5251362	10.43	10.38	-0.05
211	566328	5251359	10.379	10.34	-0.039
212	566309.5	5251355	10.361	10.33	-0.031
213	566291.4	5251351	10.374	10.33	-0.044
Average dz			-0.008		
Minimum dz			-0.101		
Maximum dz			+0.087		
Average magnitude			0.046		
Root mean square			0.054		
Std deviation			0.053		

Huon River Vertical Check Points (No correction applied)

Number	Easting	Northing	Known Z	Laser Z	Dz
244	506930.43	5221195.6	10.543	10.58	0.037
245	506913.49	5221186.13	10.35	10.38	0.03
246	506895.92	5221176.46	10.195	10.23	0.035
247	506878.76	5221166.71	9.921	9.97	0.049
248	506860.29	5221156.59	9.581	9.62	0.039
249	506842.89	5221146.86	9.161	9.21	0.049
250	506825.49	5221137.16	8.393	8.45	0.057
251	506807.14	5221127.18	7.653	7.71	0.057
252	506788.91	5221117.37	6.888	6.92	0.032
253	506770.36	5221107.19	5.969	6.03	0.061
254	494213.37	5240208.68	48.514	48.53	0.016
255	494226.05	5240194.09	48.492	48.51	0.018
256	494238.80	5240179.59	48.32	48.36	0.04
257	494251.19	5240165.19	48.147	48.16	0.013
258	494263.36	5240151.22	47.749	47.76	0.011
259	494276.26	5240136.5	47.14	47.16	0.02
260	494289.20	5240122.29	46.312	46.32	0.008
261	494316.69	5240096.19	44.906	44.93	0.024
262	494329.73	5240083.78	44.821	44.85	0.029
263	494340.83	5240069.28	44.92	44.95	0.03

Average dz 0.033
 Minimum dz 0.008
 Maximum dz 0.061
 Average magnitude 0.033
 Root mean square 0.036
 Std deviation 0.016

Listing of Check Point Coordinates

All Check Point Co-ordinates

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid al Height	Easting	Northing	Elevati on	Desc.
HV	003	Ulverstone	33	h	-41.16205	146.16991		430358.74	5442921.93		RC
HV	003	Ulverstone	34	h	-41.16206	146.17002		430368.26	5442920.37		RC
HV	003	Ulverstone	35	h	-41.16201	146.17003		430369.14	5442925.68		RC
HV	003	Ulverstone	36	h	-41.16200	146.16992		430359.59	5442927.27		RC
HV	003	Ulverstone	22	v	-41.16372	146.16933	13.250	430311.98	5442735.63	14.649	CL
HV	003	Ulverstone	23	v	-41.16357	146.16936	13.093	430314.31	5442752.87	14.492	CL
HV	003	Ulverstone	24	v	-41.16341	146.16940	12.910	430317.44	5442770.70	14.309	CL
HV	003	Ulverstone	25	v	-41.16324	146.16943	12.737	430320.46	5442788.68	14.137	CL
HV	003	Ulverstone	26	v	-41.16308	146.16947	12.515	430323.56	5442806.75	13.915	CL
HV	003	Ulverstone	27	v	-41.16292	146.16951	12.251	430326.43	5442824.57	13.651	CL
HV	003	Ulverstone	28	v	-41.16276	146.16955	12.033	430329.38	5442842.45	13.434	CL
HV	003	Ulverstone	29	v	-41.16260	146.16959	11.818	430332.52	5442860.23	13.219	CL
HV	003	Ulverstone	30	v	-41.16244	146.16963	11.620	430335.72	5442878.42	13.021	CL
HV	003	Ulverstone	31	v	-41.16228	146.16966	11.455	430338.69	5442896.27	12.856	CL
HV	003	Ulverstone	32	v	-41.16211	146.16971	11.227	430342.01	5442914.68	12.629	CL
HV	004	Launceston	107	h	-41.42873	147.14757		512329.95	5413637.16		RC
HV	004	Launceston	108	h	-41.42875	147.14756		512329.49	5413634.90		RC
HV	004	Launceston	109	h	-41.42874	147.14745		512319.75	5413636.92		RC
HV	004	Launceston	110	h	-41.42872	147.14745		512320.21	5413639.19		RC
HV	004	Launceston	111	h	-41.43142	147.15368		512839.88	5413338.30		RC
HV	004	Launceston	112	h	-41.43127	147.15342		512818.58	5413354.88		RC
HV	004	Launceston	113	h	-41.43151	147.15359		512832.39	5413328.32		RC
HV	004	Launceston	114	h	-41.43136	147.15333		512810.95	5413344.97		RC
HV	004	Launceston	97	v	-41.43100	147.15562	2.545	513001.90	5413384.39	3.324	CL
HV	004	Launceston	98	v	-41.43100	147.15536	2.323	512980.42	5413384.08	3.102	CL
HV	004	Launceston	99	v	-41.43101	147.15514	2.143	512962.28	5413383.81	2.923	CL
HV	004	Launceston	100	v	-41.43101	147.15492	1.944	512943.76	5413383.02	2.724	CL
HV	004	Launceston	101	v	-41.43102	147.15470	1.849	512925.51	5413382.28	2.630	CL
HV	004	Launceston	102	v	-41.43103	147.15447	1.763	512906.11	5413381.75	2.544	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
HV	004	Launceston	103	v	-41.43103	147.15425	1.805	512887.72	5413381.47	2.587	CL
HV	004	Launceston	104	v	-41.43103	147.15402	1.913	512868.85	5413380.76	2.695	CL
HV	004	Launceston	105	v	-41.43104	147.15380	2.285	512849.82	5413380.02	3.068	CL
HV	004	Launceston	106	v	-41.43105	147.15357	2.684	512830.70	5413379.63	3.467	CL
HV	005	Risdon	122	h	-42.81159	147.35190		528770.40	5260047.14		RC
HV	005	Risdon	123	h	-42.81165	147.35181		528763.24	5260040.78		RC
HV	005	Risdon	124	h	-42.81179	147.35199		528777.47	5260024.69		RC
HV	005	Risdon	125	h	-42.81174	147.35208		528784.66	5260031.04		RC
HV	005	Risdon	112	v	-42.81191	147.34922	46.298	528551.09	5260013.04	49.865	CL
HV	005	Risdon	113	v	-42.81196	147.34943	46.383	528568.11	5260006.73	49.950	CL
HV	005	Risdon	114	v	-42.81202	147.34964	46.467	528585.17	5260000.37	50.035	CL
HV	005	Risdon	115	v	-42.81208	147.34985	46.584	528602.26	5259993.93	50.152	CL
HV	005	Risdon	116	v	-42.81213	147.35006	46.579	528619.44	5259988.03	50.147	CL
HV	005	Risdon	117	v	-42.81216	147.35028	46.165	528637.53	5259984.45	49.733	CL
HV	005	Risdon	118	v	-42.81217	147.35050	45.314	528655.24	5259983.58	48.882	CL
HV	005	Risdon	119	v	-42.81218	147.35071	44.151	528672.93	5259982.65	47.719	CL
HV	005	Risdon	120	v	-42.81218	147.35093	42.959	528690.75	5259981.97	46.527	CL
HV	005	Risdon	121	v	-42.81219	147.35115	41.514	528708.73	5259981.17	45.082	CL
HV	006	Snug	121	h	-43.06271	147.26129		521275.84	5232188.51		RC
HV	006	Snug	122	h	-43.06267	147.26130		521276.88	5232192.97		RC
HV	006	Snug	123	h	-43.06267	147.26134		521280.04	5232192.24		RC
HV	006	Snug	124	h	-43.06265	147.26135		521280.70	5232195.16		RC
HV	006	Snug	125	h	-43.06264	147.26131		521277.55	5232195.89		RC
HV	006	Snug	126	h	-43.06260	147.26133		521278.67	5232200.67		RC
HV	006	Snug	127	h	-43.06258	147.26123		521270.68	5232202.57		RC
HV	006	Snug	128	h	-43.06255	147.26124		521271.56	5232206.34		RC
HV	006	Snug	129	h	-43.06253	147.26113		521263.06	5232208.31		RC
HV	006	Snug	130	h	-43.06256	147.26112		521262.20	5232204.54		RC
HV	006	Snug	131	h	-43.06255	147.26105		521256.42	5232205.89		RC
HV	006	Snug	132	h	-43.06257	147.26105		521255.99	5232204.01		RC
HV	006	Snug	133	h	-43.06256	147.26101		521253.29	5232204.62		RC
HV	006	Snug	134	h	-43.06266	147.26099		521250.91	5232194.33		RC
HV	006	Snug	135	h	-43.06128	147.26177		521315.09	5232346.90		RC
HV	006	Snug	136	h	-43.06128	147.26176		521314.66	5232346.52		RC



Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
HV	006	Snug	137	h	-43.06139	147.26189		521324.80	5232335.16		RC
HV	006	Snug	138	h	-43.06130	147.26201		521334.79	5232344.13		RC
HV	006	Snug	139	h	-43.06118	147.26185		521321.98	5232358.38		RC
HV	006	Snug	140	h	-43.06125	147.26174		521312.48	5232349.81		RC
HV	006	Snug	21	v	-43.06306	147.26209	-1.880	521340.34	5232149.25	2.378	CL
HV	006	Snug	22	v	-43.06315	147.26189	-1.990	521324.43	5232138.64	2.268	CL
HV	006	Snug	23	v	-43.06326	147.26170	-1.967	521308.46	5232127.49	2.290	CL
HV	006	Snug	24	v	-43.06335	147.26150	-2.039	521292.90	5232117.34	2.218	CL
HV	006	Snug	25	v	-43.06344	147.26132	-2.057	521277.80	5232106.91	2.200	CL
HV	006	Snug	26	v	-43.06354	147.26111	-2.094	521260.69	5232095.93	2.163	CL
HV	006	Snug	27	v	-43.06363	147.26092	-2.080	521245.51	5232085.85	2.177	CL
HV	006	Snug	28	v	-43.06373	147.26073	-1.911	521229.56	5232075.51	2.346	CL
HV	006	Snug	29	v	-43.06381	147.26055	-1.501	521214.76	5232065.84	2.755	CL
HV	006	Snug	30	v	-43.06390	147.26036	-0.699	521199.70	5232055.76	3.557	CL
V	012	Burnie	GPS0001	v	-41.04165	145.83588	7.523	402156.27	5455966.34	8.966	CL
V	012	Burnie	GPS0002	v	-41.04182	145.83585	7.741	402153.75	5455948.27	9.184	CL
V	012	Burnie	GPS0003	v	-41.04197	145.83580	8.024	402150.5	5455930.61	9.467	CL
V	012	Burnie	GPS0004	v	-41.04213	145.83577	8.384	402147.66	5455913.28	9.827	CL
V	012	Burnie	GPS0005	v	-41.04229	145.83573	8.822	402145.07	5455896.01	10.265	CL
V	012	Burnie	GPS0006	v	-41.04245	145.83570	9.320	402142.1	5455878.08	10.763	CL
V	012	Burnie	GPS0007	v	-41.04265	145.83565	10.599	402138.39	5455854.87	12.042	CL
V	012	Burnie	GPS0008	v	-41.04271	145.83565	10.899	402138.37	5455848.71	12.342	CL
V	012	Burnie	GPS0009	v	-41.04276	145.83564	10.967	402137.51	5455843.2	12.41	CL
V	012	Burnie	GPS0010	v	-41.04291	145.83560	11.931	402134.81	5455826.12	13.374	CL
V	013	Havenview	3	v	-41.08457	145.91405	107.792	408785.82	5451287.19	109.23	CL
V	013	Havenview	4	v	-41.08464	145.91401	108.139	408782.66	5451278.43	109.58	CL
V	013	Havenview	5	v	-41.08469	145.91391	108.701	408774.67	5451273.23	110.14	CL
V	013	Havenview	6	v	-41.08468	145.91377	109.542	408762.96	5451274.72	110.98	CL
V	013	Havenview	7	v	-41.08464	145.91355	111.080	408744.08	5451278.95	112.52	CL
V	013	Havenview	8	v	-41.08460	145.91333	112.716	408725.62	5451283.08	114.16	CL
V	013	Havenview	9	v	-41.08456	145.91311	114.514	408707.05	5451287.21	115.95	CL
V	013	Havenview	10	v	-41.08452	145.91289	116.445	408688.15	5451291.38	117.88	CL



Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	013	Havenview	11	v	-41.08448	145.91267	118.330	408669.77	5451295.47	119.77	CL
V	013	Havenview	12	v	-41.08444	145.91244	120.284	408650.82	5451299.77	121.72	CL
V	014	Sulphur	14	v	-41.09357	146.02331	5.324	417974.73	5450396.28	6.785	CL
V	014	Sulphur	15	v	-41.09487	146.02303	7.394	417952.64	5450251.69	8.854	CL
V	014	Sulphur	16	v	-41.09476	146.02309	7.185	417957.37	5450263.52	8.645	CL
V	014	Sulphur	17	v	-41.09464	146.02312	6.946	417959.74	5450277.13	8.406	CL
V	014	Sulphur	18	v	-41.09449	146.02315	6.697	417961.90	5450294.03	8.157	CL
V	014	Sulphur	19	v	-41.09434	146.02317	6.416	417963.83	5450310.84	7.876	CL
V	014	Sulphur	20	v	-41.09418	146.02320	6.166	417965.98	5450328.26	7.626	CL
V	014	Sulphur	21	v	-41.09403	146.02323	5.962	417968.34	5450345.46	7.422	CL
V	014	Sulphur	22	v	-41.09388	146.02326	5.710	417970.48	5450362.02	7.171	CL
V	014	Sulphur	23	v	-41.09373	146.02328	5.529	417972.58	5450378.75	6.990	CL
V	014	Sulphur	24	v	-41.09357	146.02331	5.321	417974.72	5450396.27	6.782	CL
V	015	Spreyton	38	v	-41.20554	146.35489	6.840	445913.62	5438224.72	8.109	CL
V	015	Spreyton	39	v	-41.20667	146.35373	7.628	445818.04	5438099.16	8.897	CL
V	015	Spreyton	40	v	-41.20663	146.35393	7.264	445834.77	5438103.34	8.533	CL
V	015	Spreyton	41	v	-41.20656	146.35413	6.891	445850.94	5438111.15	8.160	CL
V	015	Spreyton	42	v	-41.20642	146.35425	6.654	445861.39	5438126.55	7.923	CL
V	015	Spreyton	43	v	-41.20628	146.35436	6.576	445869.93	5438143.03	7.845	CL
V	015	Spreyton	44	v	-41.20613	146.35446	6.679	445878.22	5438159.68	7.948	CL
V	015	Spreyton	45	v	-41.20598	146.35456	6.765	445886.61	5438176.02	8.034	CL
V	015	Spreyton	46	v	-41.20584	146.35467	6.861	445895.75	5438192.11	8.130	CL
V	015	Spreyton	47	v	-41.20570	146.35478	6.836	445905.22	5438207.56	8.105	CL
V	016	Port Sorell	50	v	-41.16215	146.54008	7.209	461414.71	5443140.98	8.297	CL
V	016	Port Sorell	51	v	-41.16223	146.54022	6.946	461426.95	5443132.28	8.034	CL
V	016	Port Sorell	52	v	-41.16234	146.54037	6.642	461439.64	5443119.70	7.730	CL
V	016	Port Sorell	53	v	-41.16247	146.54051	6.257	461451.03	5443105.02	7.345	CL
V	016	Port Sorell	54	v	-41.16259	146.54066	5.725	461463.63	5443091.51	6.813	CL
V	016	Port Sorell	55	v	-41.16270	146.54082	5.143	461477.70	5443080.32	6.230	CL
V	016	Port Sorell	56	v	-41.16281	146.54101	4.933	461493.19	5443068.21	6.020	CL
V	016	Port Sorell	57	v	-41.16291	146.54105	4.965	461496.47	5443057.01	6.052	CL
V	016	Port Sorell	58	v	-41.16302	146.54100	5.109	461492.28	5443044.18	6.196	CL



Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	016	Port Sorell	59	v	-41.16318	146.54092	5.154	461485.66	5443026.43	6.242	CL
V	017	Kelso	61	v	-41.14287	146.77152	46.785	480825.96	5445357.73	47.712	CL
V	017	Kelso	62	v	-41.14259	146.77348	49.984	480990.55	5445388.64	50.911	CL
V	017	Kelso	63	v	-41.14265	146.77325	49.346	480971.23	5445382.73	50.273	CL
V	017	Kelso	64	v	-41.14269	146.77304	49.042	480953.60	5445378.14	49.969	CL
V	017	Kelso	65	v	-41.14273	146.77282	48.875	480935.45	5445373.86	49.802	CL
V	017	Kelso	66	v	-41.14277	146.77261	48.745	480917.30	5445369.34	49.672	CL
V	017	Kelso	67	v	-41.14281	146.77239	48.660	480898.76	5445364.89	49.587	CL
V	017	Kelso	68	v	-41.14284	146.77217	48.429	480880.53	5445361.36	49.356	CL
V	017	Kelso	69	v	-41.14286	146.77195	47.953	480862.40	5445359.06	48.880	CL
V	017	Kelso	70	v	-41.14287	146.77174	47.353	480844.21	5445358.00	48.280	CL
V	018	Georgetown	73	v	-41.07152	146.86736	28.608	488857.17	5453295.31	29.387	CL
V	018	Georgetown	74	v	-41.07231	146.86565	31.937	488713.55	5453207.02	32.720	CL
V	018	Georgetown	75	v	-41.07222	146.86584	31.148	488728.88	5453217.56	31.931	CL
V	018	Georgetown	76	v	-41.07212	146.86602	30.896	488744.38	5453228.07	31.678	CL
V	018	Georgetown	77	v	-41.07203	146.86621	30.973	488760.05	5453238.72	31.755	CL
V	018	Georgetown	78	v	-41.07193	146.86639	31.062	488775.74	5453249.33	31.843	CL
V	018	Georgetown	79	v	-41.07183	146.86658	30.652	488791.56	5453260.04	31.433	CL
V	018	Georgetown	80	v	-41.07174	146.86677	30.004	488806.90	5453270.20	30.785	CL
V	018	Georgetown	81	v	-41.07166	146.86695	29.448	488822.60	5453279.88	30.228	CL
V	018	Georgetown	82	v	-41.07158	146.86715	29.076	488839.06	5453288.59	29.856	CL
V	019	Gravelly	85	v	-41.30439	146.96824	10.870	497341.08	5427451.42	11.799	CL
V	019	Gravelly	86	v	-41.30423	146.96816	12.339	497334.56	5427468.94	13.268	CL
V	019	Gravelly	87	v	-41.30408	146.96808	13.771	497327.54	5427485.66	14.700	CL
V	019	Gravelly	88	v	-41.30393	146.96800	15.170	497320.87	5427502.40	16.099	CL
V	019	Gravelly	89	v	-41.30378	146.96792	16.458	497314.37	5427518.78	17.387	CL
V	019	Gravelly	90	v	-41.30364	146.96784	17.570	497307.82	5427534.92	18.499	CL
V	019	Gravelly	91	v	-41.30341	146.96772	19.322	497297.39	5427559.97	20.251	CL
V	019	Gravelly	92	v	-41.30326	146.96764	20.633	497290.66	5427576.59	21.563	CL
V	019	Gravelly	93	v	-41.30311	146.96755	22.249	497283.76	5427593.53	23.179	CL
V	019	Gravelly	94	v	-41.30296	146.96748	23.963	497277.25	5427610.12	24.893	CL
V	020	New Norfolk	77	v	-42.76902	147.04140	31.555	503387.24	5264833.70	34.833	CL



Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	020	New Norfolk	78	v	-42.76900	147.04114	31.619	503366.18	5264836.15	34.897	CL
V	020	New Norfolk	79	v	-42.76943	147.04120	30.870	503370.31	5264788.75	34.148	CL
V	020	New Norfolk	80	v	-42.76933	147.04121	31.141	503371.44	5264799.19	34.419	CL
V	020	New Norfolk	81	v	-42.76917	147.04123	31.371	503373.29	5264817.32	34.649	CL
V	020	New Norfolk	82	v	-42.76900	147.04126	31.591	503375.39	5264835.61	34.869	CL
V	020	New Norfolk	83	v	-42.76891	147.04129	31.729	503377.84	5264846.49	35.007	CL
V	020	New Norfolk	84	v	-42.76874	147.04134	32.037	503381.80	5264864.67	35.314	CL
V	020	New Norfolk	85	v	-42.76858	147.04139	32.444	503385.97	5264883.05	35.721	CL
V	020	New Norfolk	86	v	-42.76841	147.04144	32.830	503390.19	5264901.80	36.107	CL
V	020	New Norfolk	87	v	-42.76824	147.04148	32.974	503393.95	5264920.56	36.251	CL
V	021	Bridgewater	2	v	-42.73392	147.22865	8.131	518717.26	5268707.34	11.454	CL
V	021	Bridgewater	3	v	-42.73376	147.22857	7.573	518710.50	5268724.33	10.895	CL
V	021	Bridgewater	4	v	-42.73363	147.22843	7.680	518699.34	5268739.57	11.002	CL
V	021	Bridgewater	5	v	-42.73351	147.22825	8.746	518684.25	5268752.40	12.067	CL
V	021	Bridgewater	6	v	-42.73341	147.22805	10.506	518667.75	5268763.73	13.827	CL
V	021	Bridgewater	7	v	-42.73331	147.22785	11.442	518652.11	5268775.29	14.763	CL
V	021	Bridgewater	8	v	-42.73319	147.22768	11.410	518637.87	5268787.74	14.730	CL
V	021	Bridgewater	9	v	-42.73307	147.22751	10.972	518623.81	5268801.26	14.292	CL
V	021	Bridgewater	10	v	-42.73295	147.22734	10.727	518610.04	5268814.56	14.046	CL
V	021	Bridgewater	11	v	-42.73285	147.22716	10.695	518595.12	5268826.57	14.014	CL
V	021	Opossum	89	v	-42.98854	147.40616	16.384	533111.55	5240378.32	20.599	CL
V	021	Opossum	90	v	-42.98844	147.40635	16.529	533127.34	5240388.47	20.744	CL
V	021	Opossum	91	v	-42.98838	147.40634	16.302	533126.42	5240395.99	20.517	CL
V	021	Opossum	92	v	-42.98821	147.40630	15.389	533123.34	5240414.27	19.603	CL
V	021	Opossum	93	v	-42.98804	147.40626	14.940	533120.12	5240433.11	19.153	CL
V	021	Opossum	94	v	-42.98787	147.40622	15.530	533116.94	5240451.89	19.743	CL
V	021	Opossum	95	v	-42.98771	147.40619	15.180	533114.11	5240469.49	19.392	CL
V	021	Opossum	96	v	-42.98755	147.40615	14.550	533111.02	5240487.80	18.762	CL
V	021	Opossum	97	v	-42.98737	147.40610	14.380	533107.62	5240507.34	18.591	CL
V	021	Opossum	98	v	-42.98721	147.40607	14.271	533105.08	5240525.59	18.481	CL
V	022	Cambridge	23	v	-42.83292	147.49298	-0.002	540291.04	5257620.73	3.760	CL
V	022	Cambridge	24	v	-42.83305	147.49283	-0.084	540278.13	5257606.44	3.679	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	022	Cambridge	25	v	-42.83319	147.49266	-0.163	540264.49	5257591.50	3.600	CL
V	022	Cambridge	26	v	-42.83306	147.49245	-0.530	540247.71	5257605.42	3.232	CL
V	022	Cambridge	27	v	-42.83296	147.49226	-0.496	540231.79	5257617.42	3.266	CL
V	022	Cambridge	28	v	-42.83285	147.49206	-0.444	540215.69	5257629.38	3.317	CL
V	022	Cambridge	29	v	-42.83275	147.49188	-0.374	540200.92	5257640.22	3.387	CL
V	022	Cambridge	30	v	-42.83265	147.49170	-0.271	540186.58	5257651.86	3.489	CL
V	022	Cambridge	31	v	-42.83250	147.49159	-0.220	540177.16	5257667.79	3.539	CL
V	024	Cremorne	GPS0001	v	-42.95622	147.53027	-2.380	543252.40	5243910.88	1.80	CL
V	024	Cremorne	GPS0002	v	-42.95623	147.53051	-2.318	543271.58	5243909.31	1.86	CL
V	024	Cremorne	GPS0003	v	-42.95624	147.53074	-2.258	543290.23	5243907.89	1.92	CL
V	024	Cremorne	GPS0004	v	-42.95625	147.53097	-2.198	543309.43	5243906.36	1.99	CL
V	024	Cremorne	GPS0005	v	-42.95627	147.53120	-2.129	543328.29	5243904.84	2.05	CL
V	024	Cremorne	GPS0006	v	-42.95628	147.53144	-2.152	543347.57	5243903.39	2.03	CL
V	024	Cremorne	GPS0007	v	-42.95629	147.53153	-2.151	543355.02	5243902.44	2.03	CL
V	024	Cremorne	GPS0008	v	-42.95611	147.53155	-2.085	543356.85	5243921.92	2.10	CL
V	024	Cremorne	GPS0009	v	-42.95595	147.53157	-1.993	543358.61	5243940.05	2.19	CL
V	024	Cremorne	GPS0010	v	-42.95578	147.53159	-1.881	543360.13	5243958.25	2.30	CL
V	025	Sorell	143	v	-42.78015	147.56569	13.329	546272.95	5263443.71	16.924	CL
V	025	Sorell	144	v	-42.78018	147.56592	13.156	546291.11	5263440.04	16.752	CL
V	025	Sorell	145	v	-42.78021	147.56615	12.989	546309.88	5263436.23	16.585	CL
V	025	Sorell	146	v	-42.78025	147.56638	12.864	546329.18	5263432.28	16.460	CL
V	025	Sorell	147	v	-42.78028	147.56661	12.964	546348.03	5263428.38	16.560	CL
V	025	Sorell	148	v	-42.78032	147.56684	13.078	546366.41	5263424.28	16.674	CL
V	025	Sorell	149	v	-42.78035	147.56707	13.244	546384.89	5263420.53	16.840	CL
V	025	Sorell	150	v	-42.78038	147.56730	13.368	546403.78	5263416.67	16.964	CL
V	025	Sorell	151	v	-42.78042	147.56752	13.497	546422.16	5263412.99	17.094	CL
V	025	Sorell	152	v	-42.78045	147.56776	13.824	546441.34	5263409.20	17.421	CL
V	026	Primrose	101	v	-42.88986	147.66745	-0.523	554499.67	5251200.13	3.490	CL
V	026	Primrose	102	v	-42.88991	147.66767	-0.518	554518.23	5251194.36	3.495	CL
V	026	Primrose	103	v	-42.89015	147.66760	-1.011	554512.19	5251167.73	3.003	CL
V	026	Primrose	104	v	-42.89002	147.66772	-1.029	554522.01	5251182.44	2.984	CL
V	026	Primrose	105	v	-42.88997	147.66786	-0.545	554533.55	5251187.75	3.468	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	026	Primrose	106	v	-42.89003	147.66808	-0.557	554551.38	5251180.64	3.456	CL
V	026	Primrose	107	v	-42.89011	147.66830	-0.504	554569.29	5251171.47	3.510	CL
V	026	Primrose	108	v	-42.89019	147.66852	-0.412	554586.94	5251162.33	3.602	CL
V	026	Primrose	109	v	-42.89027	147.66873	-0.331	554604.20	5251153.10	3.683	CL
V	026	Primrose	110	v	-42.89036	147.66893	-0.191	554619.93	5251143.95	3.824	CL
V	026	Primrose	111	v	-42.89043	147.66914	0.090	554637.43	5251135.95	4.105	CL
V	027	Marion	66	v	-42.82028	147.86545	-2.424	570746.86	5258779.22	1.630	CL
V	027	Marion	67	v	-42.82013	147.86536	-2.432	570739.63	5258796.22	1.621	CL
V	027	Marion	68	v	-42.81998	147.86527	-2.442	570732.76	5258812.53	1.611	CL
V	027	Marion	69	v	-42.81983	147.86516	-2.443	570724.05	5258829.10	1.609	CL
V	027	Marion	70	v	-42.81968	147.86505	-2.415	570715.05	5258845.73	1.636	CL
V	027	Marion	71	v	-42.81954	147.86494	-2.492	570706.11	5258861.70	1.558	CL
V	027	Marion	72	v	-42.81939	147.86483	-2.536	570696.83	5258878.99	1.513	CL
V	027	Marion	73	v	-42.81924	147.86472	-2.595	570688.62	5258895.85	1.453	CL
V	027	Marion	74	v	-42.81910	147.86459	-2.516	570678.20	5258911.47	1.532	CL
V	027	Marion	75	v	-42.81904	147.86449	-2.484	570670.14	5258917.34	1.563	CL
V	028	Dunalley	43	v	-42.88760	147.81161	6.275	566273.29	5251347.36	10.431	CL
V	028	Dunalley	44	v	-42.88729	147.81357	5.040	566433.60	5251379.92	9.199	CL
V	028	Dunalley	45	v	-42.88733	147.81335	5.426	566416.38	5251376.56	9.585	CL
V	028	Dunalley	46	v	-42.88736	147.81314	5.793	566398.95	5251373.27	9.951	CL
V	028	Dunalley	47	v	-42.88739	147.81292	6.113	566380.73	5251369.52	10.271	CL
V	028	Dunalley	48	v	-42.88743	147.81270	6.319	566362.69	5251365.76	10.477	CL
V	028	Dunalley	49	v	-42.88746	147.81248	6.272	566345.14	5251362.19	10.430	CL
V	028	Dunalley	50	v	-42.88749	147.81227	6.222	566327.97	5251358.73	10.379	CL
V	028	Dunalley	51	v	-42.88753	147.81205	6.204	566309.50	5251354.93	10.361	CL
V	028	Dunalley	52	v	-42.88757	147.81183	6.217	566291.38	5251350.97	10.374	CL
V	029	Taranna	154	v	-43.06412	147.86426	11.938	570371.51	5231702.82	16.623	CL
V	029	Taranna	155	v	-43.06394	147.86429	11.612	570373.55	5231722.84	16.297	CL
V	029	Taranna	156	v	-43.06376	147.86431	11.370	570375.58	5231742.75	16.054	CL
V	029	Taranna	157	v	-43.06358	147.86433	11.163	570377.72	5231762.54	15.847	CL
V	029	Taranna	158	v	-43.06340	147.86435	11.052	570379.71	5231782.31	15.736	CL
V	029	Taranna	159	v	-43.06322	147.86438	10.803	570381.76	5231802.14	15.486	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	029	Taranna	160	v	-43.06313	147.86439	10.676	570382.77	5231811.95	15.359	CL
V	029	Taranna	161	v	-43.06312	147.86426	10.440	570372.08	5231813.60	15.123	CL
V	029	Taranna	162	v	-43.06307	147.86403	9.802	570353.58	5231818.81	14.485	CL
V	029	Taranna	163	v	-43.06302	147.86381	9.215	570336.12	5231825.36	13.897	CL
V	030	Tinderbox	164	v	-43.03931	147.33584	38.412	527355.95	5234765.11	42.727	CL
V	030	Tinderbox	165	v	-43.03920	147.33603	40.488	527371.59	5234776.91	44.803	CL
V	030	Tinderbox	166	v	-43.03908	147.33618	41.868	527384.33	5234790.62	46.183	CL
V	030	Tinderbox	167	v	-43.03893	147.33625	42.468	527389.90	5234807.45	46.783	CL
V	030	Tinderbox	168	v	-43.03876	147.33626	42.808	527390.66	5234825.93	47.122	CL
V	030	Tinderbox	169	v	-43.03860	147.33626	43.193	527390.66	5234844.30	47.506	CL
V	030	Tinderbox	170	v	-43.03843	147.33626	44.071	527390.63	5234863.25	48.384	CL
V	030	Tinderbox	171	v	-43.03825	147.33625	45.744	527390.50	5234882.68	50.056	CL
V	030	Tinderbox	172	v	-43.03808	147.33625	47.407	527390.33	5234901.72	51.719	CL
V	030	Tinderbox	173	v	-43.03791	147.33624	48.497	527389.39	5234921.00	52.808	CL
V	031	Bruny	12	v	-43.22788	147.38178	5.270	531002.97	5213808.00	10.223	CL
V	031	Bruny	13	v	-43.22771	147.38181	5.192	531005.66	5213826.88	10.145	CL
V	031	Bruny	14	v	-43.22754	147.38183	5.116	531007.42	5213846.16	10.068	CL
V	031	Bruny	15	v	-43.22736	147.38184	4.969	531008.14	5213865.92	9.920	CL
V	031	Bruny	16	v	-43.22736	147.38218	5.746	531035.94	5213866.32	10.698	CL
V	031	Bruny	17	v	-43.22733	147.38241	6.004	531054.49	5213868.60	10.956	CL
V	031	Bruny	18	v	-43.22728	147.38264	6.066	531072.86	5213874.07	11.018	CL
V	031	Bruny	19	v	-43.22720	147.38284	6.072	531089.23	5213883.61	11.024	CL
V	031	Bruny	20	v	-43.22710	147.38303	6.355	531104.73	5213894.12	11.307	CL
V	031	Bruny	21	v	-43.22701	147.38324	6.982	531121.72	5213904.27	11.933	CL
V	032	Cygnnet	33	v	-43.16196	147.08525	6.025	506930.43	5221195.60	10.543	CL
V	032	Cygnnet	34	v	-43.16205	147.08504	5.831	506913.49	5221186.13	10.350	CL
V	032	Cygnnet	35	v	-43.16214	147.08483	5.675	506895.92	5221176.46	10.195	CL
V	032	Cygnnet	36	v	-43.16222	147.08462	5.401	506878.76	5221166.71	9.921	CL
V	032	Cygnnet	37	v	-43.16232	147.08439	5.060	506860.29	5221156.59	9.581	CL
V	032	Cygnnet	38	v	-43.16240	147.08418	4.639	506842.89	5221146.86	9.161	CL
V	032	Cygnnet	39	v	-43.16249	147.08396	3.871	506825.49	5221137.16	8.393	CL
V	032	Cygnnet	40	v	-43.16258	147.08374	3.130	506807.14	5221127.18	7.653	CL



Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	032	Cygnet	41	v	-43.16267	147.08351	2.364	506788.91	5221117.37	6.888	CL
V	032	Cygnet	42	v	-43.16276	147.08328	1.445	506770.36	5221107.19	5.969	CL
V	033	Judbury	56	v	-42.99076	146.92902	44.737	494213.37	5240208.68	48.514	CL
V	033	Judbury	57	v	-42.99089	146.92917	44.714	494226.05	5240194.09	48.492	CL
V	033	Judbury	58	v	-42.99102	146.92933	44.541	494238.80	5240179.59	48.320	CL
V	033	Judbury	59	v	-42.99115	146.92948	44.367	494251.19	5240165.19	48.147	CL
V	033	Judbury	60	v	-42.99128	146.92963	43.969	494263.36	5240151.22	47.749	CL
V	033	Judbury	61	v	-42.99141	146.92979	43.359	494276.26	5240136.50	47.140	CL
V	033	Judbury	62	v	-42.99154	146.92995	42.530	494289.20	5240122.29	46.312	CL
V	033	Judbury	63	v	-42.99178	146.93028	41.123	494316.69	5240096.19	44.906	CL
V	033	Judbury	64	v	-42.99189	146.93044	41.037	494329.73	5240083.78	44.821	CL
V	033	Judbury	65	v	-42.99202	146.93058	41.135	494340.83	5240069.28	44.920	CL



Permanent Survey Markers

PM Number	Locality	Survey Easting	Survey Northing	Survey Elev	SMES Easting	SMES Northing	SMES Elev	MGA Zone	DX	DY	DZ
CCC0902	Risdon	528715.833	5259826.696	51.464	528715.815	5259826.713	51.514	55	0.02	-0.02	-0.05
LCC1113 49	Launceston	511650.493	5413374.909	4.287	511650.481	5413374.925	4.268	55	0.01	-0.02	0.02
SPM2369	Ulverstone	430000.781	5443067.252	10.917	430000.772	5443067.231	10.906	55	0.01	0.02	0.01
SMP9614	Snug	521015.675	5232225.774	1.201	521015.67	5232225.80	1.16	55	0.01	-0.02	0.04
SPM327	Sulphur	418003.799	5450497.388	3.427	418003.801	5450497.378	3.459	55	0.00	0.01	-0.03
SPM10309	Havenview	407616.088	5450664.624	173.948	407616.10	5450664.63	173.949	55	-0.01	-0.01	0.00
SPM10355	Burnie	401934.508	5455908.281	13.718	401934.504	5455908.278	13.684	55	0.00	0.00	0.03
SPM7448	Kelso	480589.681	5445307.125	41.021	480589.678	5445307.178	41.123	55	0.00	-0.05	-0.10
SPM10292	Port Sorell	461446.277	5443435.328	7.979	461446.296	5443435.347	7.928	55	-0.02	-0.02	0.05
SPM10725	Spreyton	445615.168	5438288.126	9.526	445615.175	5438288.125	9.508	55	-0.01	0.00	0.02
SPM185	Bridgewater	518635.051	5268414.311	15.052	518635.032	5268414.356	15.083	55	0.02	-0.04	-0.03
SPM9931	Bridgewater	518167.08	5268428.80	4.233	518167.063	5268428.843	4.273	55	0.01	-0.04	-0.04
SPM5625	New Norfolk	503727.329	5264397.168	36.23	503727.305	5264397.212	36.226	55	0.02	-0.04	0.00
SPM9853	Gravelly	497590.953	5427504.687	3.112	497590.956	5427504.687	3.088	55	0.00	0.00	0.02
SPM2320/1	Georgetown	485737.2	5451243.3	31.587	485737.221	5451243.326	31.593	55	-0.02	-0.03	-0.01
SPM9921	Sorell	546292.98	5263638.352	20.555	546292.97	5263638.368	20.614	55	0.01	-0.02	-0.06
SPM9817	Cremorne	543370.943	5244120.621	5.14	543370.972	5244120.615	5.218	55	-0.03	0.01	-0.08
SPM9616	Opossum	533110.241	5240402.525	20.345	533110.251	5240402.493	20.402	55	-0.01	0.03	-0.06
SPM11191	Cambridge	540267.991	5257606.212	3.524	540267.993	5257606.22	3.545	55	0.00	-0.01	-0.02
SPM7958	Taranna	570393.91	5231956.73	13.303	570393.94	5231956.70	13.618	55	-0.03	0.03	-0.32
SPM8900	Taranna	570358.30	5231521.27	20.165	570358.33	5231521.25	20.494	55	-0.03	0.02	-0.33
SPM296/900	Dunalley	567206.405	5252398.02	13.767	567206.472	5252398.013	13.895	55	-0.07	0.01	-0.13
SPM296/800	Dunalley	566525.17	5251773.442	14.716	566525.226	5251773.431	14.816	55	-0.06	0.01	-0.10
SPM10167	Marion	565406.693	5258885.641	83.905	565406.746	5258885.624	83.979	55	-0.05	0.02	-0.07
SPM10113	Primrose	554692.672	5251288.223	6.792	554692.713	5251288.218	6.847	55	-0.04	0.00	-0.06
SPM9697	Judbury	494143.034	5239199.632	21.706	494143.00	5239199.66	21.706	55	0.03	-0.03	0.00
SPM3948	Judbury	494085.137	5238894.384	34.459	494085.10	5238894.39	34.461	55	0.03	-0.01	0.00
SPM9873	Cygnet	506949.739	5221428.471	25.077	506949.725	5221428.457	25.087	55	0.01	0.01	-0.01
SPM7509	Cygnet	506710.967	5221080.029	2.348	506710.957	5221080.03	2.337	55	0.01	0.00	0.01



PM Number	Locality	Survey Easting	Survey Northing	Survey Elev	SMES Easting	SMES Northing	SMES Elev	MGA Zone	DX	DY	DZ
ST1105	Bruny	531149.759	5217059.166	1.336	531149.77	5217059.168	1.292	55	-0.01	0.00	0.04
SPM7443	Tinderbox	527864.769	5233483.277	85.017	527864.774	5233483.277	84.99	55	-0.01	0.00	0.03

Important note for SPM7958 & SPM8900:

Lester Franks has previously conducted work in this area and connections have been made to these SPMs via static GPS from primary control mark ST1102. Elevation comparisons have been made to the published elevations for SPM7958 and SPM8900.

Post Survey Accuracy Report

RFTA 2012/5601 - Acquisition of LiDAR, Imagery and Derived products for Tasmania

17 May 2013

This report presents the ground control data and accuracy assessment of the LiDAR captured in Tasmania in March and April 2013.

In summary, ground control was collected and used to achieve and verify the fundamental accuracy of the LiDAR within project specifications.

Definitions

Ground Control Accuracy

Fundamental Vertical Accuracy of $\leq \pm 10\text{cm}$ at 95% confidence level (1.96 x RMSE) and Fundamental Horizontal Accuracy of $\leq \pm 10\text{cm}$ at 95% confidence level (1.96 x RMSE).

LiDAR Accuracy

Fundamental Vertical Accuracy better than $\pm 30\text{cm}$ at 95% confidence level (1.96 x RMSE) and Fundamental Horizontal Accuracy better than $\pm 80\text{cm}$ at 95% confidence level (1.96 x RMSE).

After the LiDAR was levelled, to establish internal consistency between flight swaths, the residual differences between the interpolated terrain surface were calculated with respect to each vertical control point. Horizontal residual differences were measured as the distance between the horizontal control points and the vertical structure from which the control point was taken. Residual error reports are provided below.

If the residual error of the levelled LiDAR exceeded 0.15 RMSE (29.4cm at 95% confidence) the LiDAR was adjusted vertically, as a block, by the mean error.

Notes on Expected Accuracy

- “Derived points” are those interpolated from terrain model.
- “Measured points” are those observed directly.
- Accuracy estimates for terrain modelling refer to the terrain on hard flat surface unobstructed by vegetation or overhanging features. Ground definition in vegetated terrain may contain localised areas with systematic errors or outliers which fall outside this accuracy estimate.
- Laser strikes have been classified into “ground” and “non-ground” using automated algorithms preparatory to manual editing to achieve Level 3 classification accuracy tailored upon inputs from localised sampling of the project area taking into account terrain, vegetation and feature combinations within the project area. Additional manual quality checks have been undertaken to minimize the effect of isolated areas of terrain/vegetation combinations,

Ground Control

Hobart, Huon River and the North were the sites surveyed by conventional methods, with the Hobart area broken up into 3 smaller sub sections. In total there were 299 points, 263 vertical and 36 horizontal clustered within 27 sites.

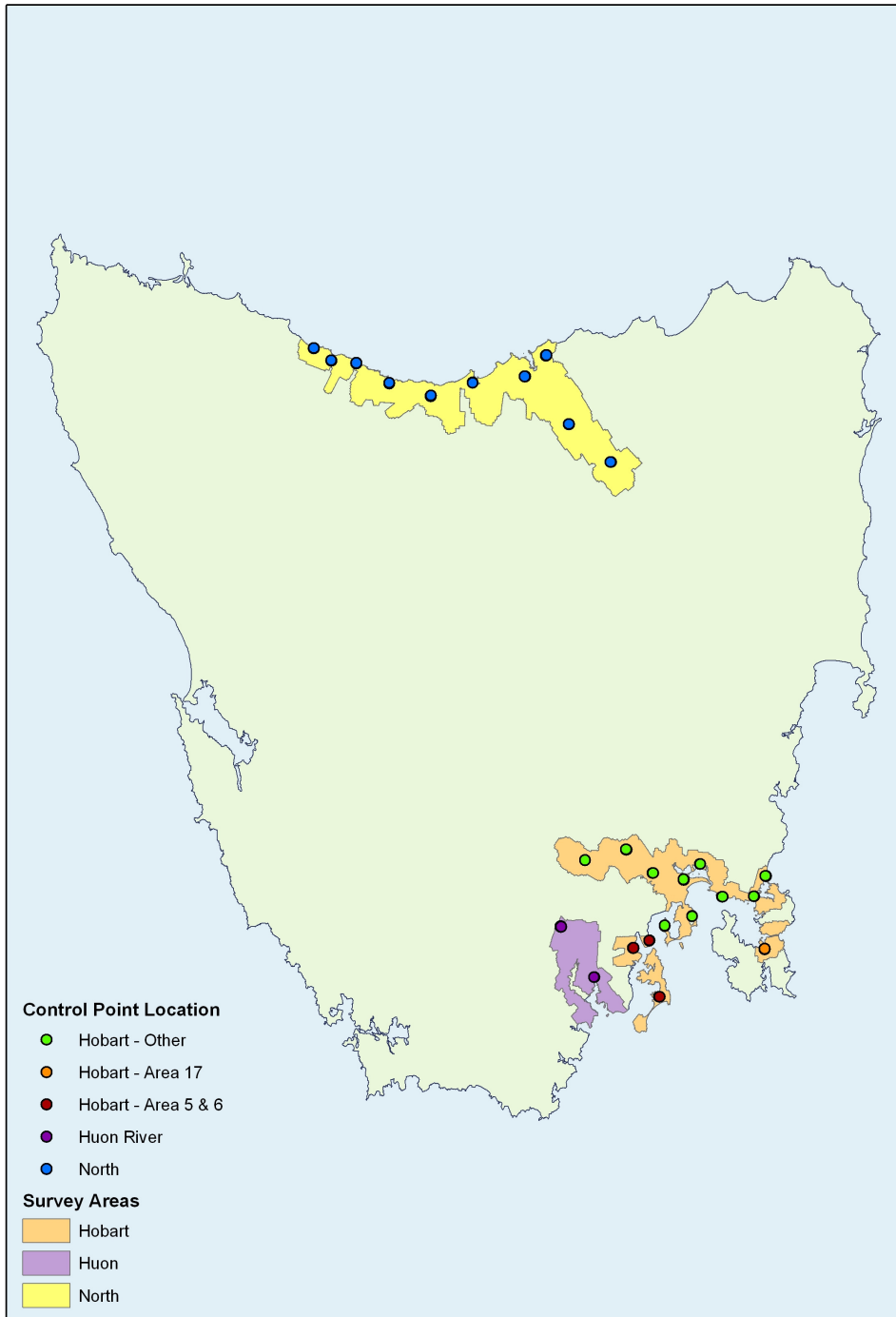


Figure 1: Survey areas and control points

Residual Error Reports

Hobart Areas 5 and 6 - Before Correction

Number	Easting	Northing	Known Z	Laser Z	Dz
32	521199.70	5232055.76	3.557	3.47	-0.087
33	521214.76	5232065.84	2.755	2.66	-0.095
34	521229.56	5232075.51	2.346	2.23	-0.116
35	521245.51	5232085.85	2.177	2.07	-0.107
36	521260.69	5232095.93	2.163	2.05	-0.113
37	521277.80	5232106.91	2.2	2.08	-0.12
38	521292.90	5232117.34	2.218	2.11	-0.108
39	521308.46	5232127.49	2.29	2.18	-0.11
40	521324.43	5232138.64	2.268	2.15	-0.118
41	521340.34	5232149.25	2.378	2.25	-0.128
224	527355.95	5234765.11	42.727	42.6	-0.127
225	527371.59	5234776.91	44.803	44.64	-0.163
226	527384.33	5234790.62	46.183	46.02	-0.163
227	527389.90	5234807.45	46.783	46.64	-0.143
228	527390.66	5234825.93	47.122	46.95	-0.172
229	527390.66	5234844.30	47.506	47.33	-0.176
230	527390.63	5234863.25	48.384	48.19	-0.194
231	527390.50	5234882.68	50.056	49.88	-0.176
232	527390.33	5234901.72	51.719	51.53	-0.189
233	527389.39	5234921.00	52.808	52.61	-0.198
234	531002.97	5213808.01	10.223	10.13	-0.093
235	531005.66	5213826.88	10.145	10.05	-0.095
236	531007.42	5213846.17	10.068	9.96	-0.108
237	531008.14	5213865.93	9.92	9.81	-0.11
238	531035.94	5213866.32	10.698	10.59	-0.108
239	531054.49	5213868.61	10.956	10.86	-0.096
240	531072.86	5213874.08	11.018	10.92	-0.098
241	531089.23	5213883.61	11.024	10.94	-0.084
242	531104.73	5213894.12	11.307	11.21	-0.097
243	531121.72	5213904.27	11.933	11.84	-0.093

Average dz -0.126
 Minimum dz -0.198
 Maximum dz -0.084
 Average magnitude 0.126
 Root mean square 0.131
 Std deviation 0.035

Hobart Areas 5 and 6 – After Correction

Number	Easting	Northing	Known Z	Laser Z	dZ
32	521199.7	5232055.76	3.557	3.59	0.033
33	521214.76	5232065.84	2.755	2.78	0.025
34	521229.56	5232075.51	2.346	2.35	0.004
35	521245.51	5232085.85	2.177	2.19	0.013
36	521260.69	5232095.93	2.163	2.17	0.007
37	521277.8	5232106.91	2.2	2.2	0
38	521292.9	5232117.34	2.218	2.23	0.012
39	521308.46	5232127.49	2.29	2.3	0.01
40	521324.43	5232138.64	2.268	2.27	0.002
41	521340.34	5232149.25	2.378	2.37	-0.008
224	527355.95	5234765.11	42.727	42.72	-0.007

225	527371.59	5234776.91	44.803	44.76	-0.043
226	527384.33	5234790.62	46.183	46.14	-0.043
227	527389.9	5234807.45	46.783	46.76	-0.023
228	527390.66	5234825.93	47.122	47.07	-0.052
229	527390.66	5234844.3	47.506	47.45	-0.056
230	527390.63	5234863.25	48.384	48.31	-0.074
231	527390.5	5234882.68	50.056	50	-0.056
232	527390.33	5234901.72	51.719	51.65	-0.069
233	527389.39	5234921	52.808	52.73	-0.078
234	531002.972	5213808.005	10.223	10.25	0.027
235	531005.655	5213826.882	10.145	10.17	0.025
236	531007.419	5213846.168	10.068	10.08	0.012
237	531008.137	5213865.927	9.92	9.93	0.01
238	531035.938	5213866.323	10.698	10.71	0.012
239	531054.494	5213868.608	10.956	10.98	0.024
240	531072.859	5213874.076	11.018	11.04	0.022
241	531089.228	5213883.612	11.024	11.06	0.036
242	531104.725	5213894.122	11.307	11.33	0.023
243	531121.72	5213904.273	11.933	11.96	0.027

Average dz -0.006
 Minimum dz -0.078
 Maximum dz +0.036
 Average magnitude 0.028
 Root mean square 0.035
 Std deviation 0.035

Hobart Area 17 (no correction applied)

Number	Easting	Northing	Known Z	Laser Z	Dz
214	570371.5	5231703	16.623	16.73	0.107
215	570373.5	5231723	16.297	16.39	0.093
216	570375.6	5231743	16.054	16.13	0.076
217	570377.7	5231763	15.847	15.96	0.113
218	570379.7	5231782	15.736	15.84	0.104
219	570381.8	5231802	15.486	15.61	0.124
220	570382.8	5231812	15.359	15.47	0.111
221	570372.1	5231814	15.123	15.22	0.097
222	570353.6	5231819	14.485	14.57	0.085
223	570336.1	5231825	13.897	13.98	0.083

Average dz +0.099
 Minimum dz +0.076
 Maximum dz +0.124
 Average magnitude 0.099
 Root mean square 0.100
 Std deviation 0.015

Hobart North (no correction applied)

Number	Easting	Northing	Known Z	Laser Z	Dz
1	430312	5442736	14.649	14.57	-0.079
2	430314.3	5442753	14.492	14.39	-0.102
3	430317.4	5442771	14.309	14.22	-0.089
4	430320.5	5442789	14.137	14.06	-0.077
5	430323.6	5442807	13.915	13.84	-0.075
6	430326.4	5442825	13.651	13.59	-0.061
7	430329.4	5442842	13.434	13.36	-0.074
8	430332.5	5442860	13.219	13.11	-0.109
9	430335.7	5442878	13.021	12.92	-0.101
10	430338.7	5442896	12.856	12.78	-0.076
11	430342	5442915	12.629	12.55	-0.079
12	513001.9	5413384	3.324	3.27	-0.054
13	512980.4	5413384	3.102	3.05	-0.052
14	512962.3	5413384	2.923	2.86	-0.063
15	512943.8	5413383	2.724	2.62	-0.104
16	512925.5	5413382	2.63	2.56	-0.07
17	512906.1	5413382	2.544	2.48	-0.064
18	512887.7	5413381	2.587	2.53	-0.057
19	512868.9	5413381	2.695	2.63	-0.065
20	512849.8	5413380	3.068	3.01	-0.058
21	512830.7	5413380	3.467	3.4	-0.067
42	402134.8	5455826	13.374	13.31	-0.064
43	402137.5	5455843	12.41	12.34	-0.07
44	402138.4	5455849	12.342	12.27	-0.072
45	402138.4	5455855	12.042	11.98	-0.062
46	402142.1	5455878	10.763	10.68	-0.083
47	402145.1	5455896	10.265	10.19	-0.075
48	402147.7	5455913	9.827	9.75	-0.077
49	402150.5	5455931	9.467	9.39	-0.077
50	402153.8	5455948	9.184	9.11	-0.074
51	402156.3	5455966	8.966	8.91	-0.056
52	408785.8	5451287	109.237	109.17	-0.067
53	408782.7	5451278	109.584	109.52	-0.064
54	408774.7	5451273	110.146	110.09	-0.056
55	408763	5451275	110.987	110.93	-0.057
56	408744.1	5451279	112.524	112.46	-0.064
57	408725.6	5451283	114.16	114.09	-0.07
58	408707.1	5451287	115.958	115.89	-0.068
59	408688.1	5451291	117.888	117.83	-0.058
60	408669.8	5451295	119.773	119.69	-0.083
61	408650.8	5451300	121.727	121.64	-0.087
62	417974.7	5450396	6.785	6.71	-0.075
63	417952.6	5450252	8.854	8.78	-0.074
64	417957.4	5450264	8.645	8.58	-0.065
65	417959.7	5450277	8.406	8.34	-0.066
66	417961.9	5450294	8.157	8.09	-0.067
67	417963.8	5450311	7.876	7.82	-0.056
68	417966	5450328	7.626	7.57	-0.056
69	417968.3	5450345	7.422	7.36	-0.062
70	417970.5	5450362	7.171	7.12	-0.051
71	417972.6	5450379	6.99	6.93	-0.06
72	417974.7	5450396	6.782	6.71	-0.072

73	445913.6	5438225	8.109	8.02	-0.089
74	445818	5438099	8.897	8.75	-0.147
75	445834.8	5438103	8.533	8.43	-0.103
76	445850.9	5438111	8.16	8.06	-0.1
77	445861.4	5438127	7.923	7.82	-0.103
78	445869.9	5438143	7.845	7.74	-0.105
79	445878.2	5438160	7.948	7.84	-0.108
80	445886.6	5438176	8.034	7.94	-0.094
81	445895.8	5438192	8.13	8.01	-0.12
82	445905.2	5438208	8.105	8.03	-0.075
83	461414.7	5443141	8.297	8.17	-0.127
84	461427	5443132	8.034	7.92	-0.114
85	461439.6	5443120	7.73	7.61	-0.12
86	461451	5443105	7.345	7.25	-0.095
87	461463.6	5443092	6.813	6.71	-0.103
88	461477.7	5443080	6.23	6.1	-0.13
89	461493.2	5443068	6.02	5.91	-0.11
90	461496.5	5443057	6.052	5.96	-0.092
91	461492.3	5443044	6.196	6.1	-0.096
92	461485.7	5443026	6.242	6.14	-0.102
93	480826	5445358	47.712	47.58	-0.132
94	480990.6	5445389	50.911	50.81	-0.101
95	480971.2	5445383	50.273	50.18	-0.093
96	480953.6	5445378	49.969	49.88	-0.089
97	480935.5	5445374	49.802	49.71	-0.092
98	480917.3	5445369	49.672	49.6	-0.072
99	480898.8	5445365	49.587	49.49	-0.097
100	480880.5	5445361	49.356	49.26	-0.096
101	480862.4	5445359	48.88	48.77	-0.11
102	480844.2	5445358	48.28	48.19	-0.09
103	488857.2	5453295	29.387	29.32	-0.067
104	488713.6	5453207	32.72	32.7	-0.02
105	488728.9	5453218	31.931	31.89	-0.041
106	488744.4	5453228	31.678	31.63	-0.048
107	488760.1	5453239	31.755	31.69	-0.065
108	488775.7	5453249	31.843	31.79	-0.053
109	488791.6	5453260	31.433	31.38	-0.053
110	488806.9	5453270	30.785	30.74	-0.045
111	488822.6	5453280	30.228	30.18	-0.048
112	488839.1	5453289	29.856	29.78	-0.076
113	497341.1	5427451	11.799	11.71	-0.089
114	497334.6	5427469	13.268	13.15	-0.118
115	497327.5	5427486	14.7	14.59	-0.11
116	497320.9	5427502	16.099	15.97	-0.129
117	497314.4	5427519	17.387	17.28	-0.107
118	497307.8	5427535	18.499	18.42	-0.079
119	497297.4	5427560	20.251	20.17	-0.081
120	497290.7	5427577	21.563	21.46	-0.103
121	497283.8	5427594	23.179	23.1	-0.079
122	497277.3	5427610	24.893	24.79	-0.103
Average dz			-0.081		
Minimum dz			-0.147		
Maximum dz			-0.02		
Average magnitude			0.081		
Root mean square			0.084		
Std deviation			0.023		

Hobart Other Areas - Before Correction

Number	Easting	Northing	Known Z	Laser Z	Dz
22	528551.09	5260013.04	49.865	49.58	-0.285
23	528568.11	5260006.73	49.95	49.68	-0.27
24	528585.17	5260000.37	50.035	49.77	-0.265
25	528602.26	5259993.93	50.152	49.89	-0.262
26	528619.44	5259988.03	50.147	49.89	-0.257
27	528637.53	5259984.45	49.733	49.49	-0.243
28	528655.24	5259983.58	48.882	48.62	-0.262
29	528672.93	5259982.65	47.719	47.47	-0.249
30	528690.75	5259981.97	46.527	46.26	-0.267
31	528708.73	5259981.17	45.082	44.84	-0.242
123	503387.24	5264833.7	34.833	34.64	-0.193
124	503366.18	5264836.15	34.897	34.7	-0.197
125	503370.31	5264788.75	34.148	33.96	-0.188
126	503371.44	5264799.19	34.419	34.24	-0.179
127	503373.29	5264817.32	34.649	34.48	-0.169
128	503375.39	5264835.61	34.869	34.69	-0.179
129	503377.84	5264846.49	35.007	34.83	-0.177
130	503381.8	5264864.67	35.314	35.13	-0.184
131	503385.97	5264883.05	35.721	35.55	-0.171
132	503390.19	5264901.8	36.107	35.92	-0.187
133	503393.95	5264920.56	36.251	36.08	-0.171
134	518717.26	5268707.34	11.454	11.26	-0.194
135	518710.5	5268724.33	10.895	10.71	-0.185
136	518699.34	5268739.57	11.002	10.81	-0.192
137	518684.25	5268752.4	12.067	11.89	-0.177
138	518667.75	5268763.73	13.827	13.67	-0.157
139	518652.11	5268775.29	14.763	14.61	-0.153
140	518637.87	5268787.74	14.73	14.57	-0.16
141	518623.81	5268801.26	14.292	14.12	-0.172
142	518610.04	5268814.56	14.046	13.88	-0.166
143	518595.12	5268826.57	14.014	13.84	-0.174
144	540291.04	5257620.73	3.76	3.58	-0.18
145	540278.13	5257606.44	3.679	3.47	-0.209
146	540264.49	5257591.5	3.6	3.4	-0.2
147	540247.71	5257605.42	3.232	3.05	-0.182
148	540231.79	5257617.42	3.266	3.07	-0.196
149	540215.69	5257629.38	3.317	3.14	-0.177
150	540200.92	5257640.22	3.387	3.21	-0.177
151	540186.58	5257651.86	3.489	3.31	-0.179
152	540177.16	5257667.79	3.539	3.33	-0.209
153	533111.55	5240378.32	20.599	20.37	-0.229
154	533127.34	5240388.47	20.744	20.52	-0.224
155	533126.42	5240395.99	20.517	20.29	-0.227
156	533123.34	5240414.27	19.603	19.36	-0.243
157	533120.12	5240433.11	19.153	18.94	-0.213
158	533116.94	5240451.89	19.743	19.53	-0.213
159	533114.11	5240469.49	19.392	19.15	-0.242
160	533111.02	5240487.8	18.762	18.54	-0.222
161	533107.62	5240507.34	18.591	18.36	-0.231
162	533105.08	5240525.59	18.481	18.26	-0.221
163	543360.13	5243958.25	2.3	2.02	-0.28

164	543358.61	5243940.05	2.19	1.93	-0.26
165	543356.85	5243921.92	2.1	1.82	-0.28
166	543355.02	5243902.44	2.03	1.72	-0.31
167	543347.57	5243903.39	2.03	1.72	-0.31
168	543328.29	5243904.84	2.05	1.74	-0.31
169	543309.43	5243906.36	1.99	1.68	-0.31
170	543290.23	5243907.89	1.92	1.62	-0.3
171	543271.58	5243909.31	1.86	1.58	-0.28
172	543252.4	5243910.88	1.8	1.49	-0.31
173	546272.95	5263443.71	16.924	16.61	-0.314
174	546291.11	5263440.04	16.752	16.45	-0.302
175	546309.88	5263436.23	16.585	16.26	-0.325
176	546329.18	5263432.28	16.46	16.12	-0.34
177	546348.03	5263428.38	16.56	16.25	-0.31
178	546366.41	5263424.28	16.674	16.34	-0.334
179	546384.89	5263420.53	16.84	16.52	-0.32
180	546403.78	5263416.67	16.964	16.64	-0.324
181	546422.16	5263412.99	17.094	16.76	-0.334
182	546441.34	5263409.2	17.421	17.11	-0.311
183	554499.67	5251200.13	3.49	3.25	-0.24
184	554518.23	5251194.36	3.495	3.25	-0.245
185	554512.19	5251167.73	3.003	2.77	-0.233
186	554522.01	5251182.44	2.984	2.75	-0.234
187	554533.55	5251187.75	3.468	3.21	-0.258
188	554551.38	5251180.64	3.456	3.23	-0.226
189	554569.29	5251171.47	3.51	3.26	-0.25
190	554586.94	5251162.33	3.602	3.36	-0.242
191	554604.2	5251153.1	3.683	3.44	-0.243
192	554619.93	5251143.95	3.824	3.58	-0.244
193	554637.43	5251135.95	4.105	3.87	-0.235
194	570746.86	5258779.22	1.63	1.34	-0.29
195	570739.63	5258796.22	1.621	1.3	-0.321
196	570732.76	5258812.53	1.611	1.27	-0.341
197	570724.05	5258829.1	1.609	1.31	-0.299
198	570715.05	5258845.73	1.636	1.3	-0.336
199	570706.11	5258861.7	1.558	1.25	-0.308
200	570696.83	5258878.99	1.513	1.18	-0.333
201	570688.62	5258895.85	1.453	1.16	-0.293
202	570678.2	5258911.47	1.532	1.23	-0.302
203	570670.14	5258917.34	1.563	1.26	-0.303
204	566273.29	5251347.36	10.431	10.15	-0.281
205	566433.6	5251379.92	9.199	8.92	-0.279
206	566416.38	5251376.56	9.585	9.32	-0.265
207	566398.95	5251373.27	9.951	9.67	-0.281
208	566380.73	5251369.52	10.271	10	-0.271
209	566362.69	5251365.76	10.477	10.19	-0.287
210	566345.14	5251362.19	10.43	10.14	-0.29
211	566327.97	5251358.73	10.379	10.1	-0.279
212	566309.5	5251354.93	10.361	10.09	-0.271
213	566291.38	5251350.97	10.374	10.09	-0.284
Average dz			-0.248		
Minimum dz			-0.341		
Maximum dz			-0.153		
Average magnitude			0.248		
Root mean square			0.253		
Std deviation			0.053		

Hobart Other Areas – After Correction

Number	Easting	Northing	Known Z	Laser Z	Dz
22	528551.1	5260013	49.865	49.82	-0.045
23	528568.1	5260007	49.95	49.92	-0.03
24	528585.2	5260000	50.035	50.01	-0.025
25	528602.3	5259994	50.152	50.13	-0.022
26	528619.4	5259988	50.147	50.13	-0.017
27	528637.5	5259984	49.733	49.73	-0.003
28	528655.2	5259984	48.882	48.86	-0.022
29	528672.9	5259983	47.719	47.71	-0.009
30	528690.8	5259982	46.527	46.5	-0.027
31	528708.7	5259981	45.082	45.08	-0.002
123	503387.2	5264834	34.833	34.88	0.047
124	503366.2	5264836	34.897	34.94	0.043
125	503370.3	5264789	34.148	34.2	0.052
126	503371.4	5264799	34.419	34.48	0.061
127	503373.3	5264817	34.649	34.72	0.071
128	503375.4	5264836	34.869	34.93	0.061
129	503377.8	5264846	35.007	35.07	0.063
130	503381.8	5264865	35.314	35.37	0.056
131	503386	5264883	35.721	35.79	0.069
132	503390.2	5264902	36.107	36.16	0.053
133	503394	5264921	36.251	36.32	0.069
134	518717.3	5268707	11.454	11.5	0.046
135	518710.5	5268724	10.895	10.95	0.055
136	518699.3	5268740	11.002	11.05	0.048
137	518684.3	5268752	12.067	12.13	0.063
138	518667.8	5268764	13.827	13.91	0.083
139	518652.1	5268775	14.763	14.85	0.087
140	518637.9	5268788	14.73	14.81	0.08
141	518623.8	5268801	14.292	14.36	0.068
142	518610	5268815	14.046	14.12	0.074
143	518595.1	5268827	14.014	14.08	0.066
144	540291	5257621	3.76	3.82	0.06
145	540278.1	5257606	3.679	3.71	0.031
146	540264.5	5257592	3.6	3.64	0.04
147	540247.7	5257605	3.232	3.29	0.058
148	540231.8	5257617	3.266	3.31	0.044
149	540215.7	5257629	3.317	3.38	0.063
150	540200.9	5257640	3.387	3.45	0.063
151	540186.6	5257652	3.489	3.55	0.061
152	540177.2	5257668	3.539	3.57	0.031
153	533111.6	5240378	20.599	20.61	0.011
154	533127.3	5240388	20.744	20.76	0.016
155	533126.4	5240396	20.517	20.53	0.013
156	533123.3	5240414	19.603	19.6	-0.003
157	533120.1	5240433	19.153	19.18	0.027
158	533116.9	5240452	19.743	19.77	0.027
159	533114.1	5240469	19.392	19.39	-0.002
160	533111	5240488	18.762	18.78	0.018
161	533107.6	5240507	18.591	18.6	0.009
162	533105.1	5240526	18.481	18.5	0.019
163	543360.1	5243958	2.3	2.26	-0.04
164	543358.6	5243940	2.19	2.17	-0.02

165	543356.9	5243922	2.1	2.06	-0.04
166	543355	5243902	2.03	1.96	-0.07
167	543347.6	5243903	2.03	1.96	-0.07
168	543328.3	5243905	2.05	1.98	-0.07
169	543309.4	5243906	1.99	1.92	-0.07
170	543290.2	5243908	1.92	1.86	-0.06
171	543271.6	5243909	1.86	1.82	-0.04
172	543252.4	5243911	1.8	1.73	-0.07
173	546273	5263444	16.924	16.85	-0.074
174	546291.1	5263440	16.752	16.69	-0.062
175	546309.9	5263436	16.585	16.5	-0.085
176	546329.2	5263432	16.46	16.36	-0.1
177	546348	5263428	16.56	16.49	-0.07
178	546366.4	5263424	16.674	16.58	-0.094
179	546384.9	5263421	16.84	16.76	-0.08
180	546403.8	5263417	16.964	16.88	-0.084
181	546422.2	5263413	17.094	17	-0.094
182	546441.3	5263409	17.421	17.35	-0.071
183	554499.7	5251200	3.49	3.49	0
184	554518.2	5251194	3.495	3.49	-0.005
185	554512.2	5251168	3.003	3.01	0.007
186	554522	5251182	2.984	2.99	0.006
187	554533.6	5251188	3.468	3.45	-0.018
188	554551.4	5251181	3.456	3.47	0.014
189	554569.3	5251171	3.51	3.5	-0.01
190	554586.9	5251162	3.602	3.6	-0.002
191	554604.2	5251153	3.683	3.68	-0.003
192	554619.9	5251144	3.824	3.82	-0.004
193	554637.4	5251136	4.105	4.11	0.005
194	570746.9	5258779	1.63	1.58	-0.05
195	570739.6	5258796	1.621	1.54	-0.081
196	570732.8	5258813	1.611	1.51	-0.101
197	570724.1	5258829	1.609	1.55	-0.059
198	570715.1	5258846	1.636	1.54	-0.096
199	570706.1	5258862	1.558	1.49	-0.068
200	570696.8	5258879	1.513	1.42	-0.093
201	570688.6	5258896	1.453	1.4	-0.053
202	570678.2	5258911	1.532	1.47	-0.062
203	570670.1	5258917	1.563	1.5	-0.063
204	566273.3	5251347	10.431	10.39	-0.041
205	566433.6	5251380	9.199	9.16	-0.039
206	566416.4	5251377	9.585	9.56	-0.025
207	566399	5251373	9.951	9.91	-0.041
208	566380.7	5251370	10.271	10.24	-0.031
209	566362.7	5251366	10.477	10.43	-0.047
210	566345.1	5251362	10.43	10.38	-0.05
211	566328	5251359	10.379	10.34	-0.039
212	566309.5	5251355	10.361	10.33	-0.031
213	566291.4	5251351	10.374	10.33	-0.044

Average dz -0.008
 Minimum dz -0.101
 Maximum dz +0.087
 Average magnitude 0.046
 Root mean square 0.054
 Std deviation 0.053

Huon River Vertical Check Points (No correction applied)

Number	Easting	Northing	Known Z	Laser Z	Dz
244	506930.43	5221195.6	10.543	10.58	0.037
245	506913.49	5221186.13	10.35	10.38	0.03
246	506895.92	5221176.46	10.195	10.23	0.035
247	506878.76	5221166.71	9.921	9.97	0.049
248	506860.29	5221156.59	9.581	9.62	0.039
249	506842.89	5221146.86	9.161	9.21	0.049
250	506825.49	5221137.16	8.393	8.45	0.057
251	506807.14	5221127.18	7.653	7.71	0.057
252	506788.91	5221117.37	6.888	6.92	0.032
253	506770.36	5221107.19	5.969	6.03	0.061
254	494213.37	5240208.68	48.514	48.53	0.016
255	494226.05	5240194.09	48.492	48.51	0.018
256	494238.80	5240179.59	48.32	48.36	0.04
257	494251.19	5240165.19	48.147	48.16	0.013
258	494263.36	5240151.22	47.749	47.76	0.011
259	494276.26	5240136.5	47.14	47.16	0.02
260	494289.20	5240122.29	46.312	46.32	0.008
261	494316.69	5240096.19	44.906	44.93	0.024
262	494329.73	5240083.78	44.821	44.85	0.029
263	494340.83	5240069.28	44.92	44.95	0.03

Average dz 0.033
 Minimum dz 0.008
 Maximum dz 0.061
 Average magnitude 0.033
 Root mean square 0.036
 Std deviation 0.016

Listing of Check Point Coordinates

All Check Point Co-ordinates

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
HV	003	Ulverstone	33	h	-41.16205	146.16991		430358.74	5442921.93		RC
HV	003	Ulverstone	34	h	-41.16206	146.17002		430368.26	5442920.37		RC
HV	003	Ulverstone	35	h	-41.16201	146.17003		430369.14	5442925.68		RC
HV	003	Ulverstone	36	h	-41.16200	146.16992		430359.59	5442927.27		RC
HV	003	Ulverstone	22	v	-41.16372	146.16933	13.250	430311.98	5442735.63	14.649	CL
HV	003	Ulverstone	23	v	-41.16357	146.16936	13.093	430314.31	5442752.87	14.492	CL
HV	003	Ulverstone	24	v	-41.16341	146.16940	12.910	430317.44	5442770.70	14.309	CL
HV	003	Ulverstone	25	v	-41.16324	146.16943	12.737	430320.46	5442788.68	14.137	CL
HV	003	Ulverstone	26	v	-41.16308	146.16947	12.515	430323.56	5442806.75	13.915	CL
HV	003	Ulverstone	27	v	-41.16292	146.16951	12.251	430326.43	5442824.57	13.651	CL
HV	003	Ulverstone	28	v	-41.16276	146.16955	12.033	430329.38	5442842.45	13.434	CL
HV	003	Ulverstone	29	v	-41.16260	146.16959	11.818	430332.52	5442860.23	13.219	CL
HV	003	Ulverstone	30	v	-41.16244	146.16963	11.620	430335.72	5442878.42	13.021	CL
HV	003	Ulverstone	31	v	-41.16228	146.16966	11.455	430338.69	5442896.27	12.856	CL
HV	003	Ulverstone	32	v	-41.16211	146.16971	11.227	430342.01	5442914.68	12.629	CL
HV	004	Launceston	107	h	-41.42873	147.14757		512329.95	5413637.16		RC
HV	004	Launceston	108	h	-41.42875	147.14756		512329.49	5413634.90		RC
HV	004	Launceston	109	h	-41.42874	147.14745		512319.75	5413636.92		RC
HV	004	Launceston	110	h	-41.42872	147.14745		512320.21	5413639.19		RC
HV	004	Launceston	111	h	-41.43142	147.15368		512839.88	5413338.30		RC
HV	004	Launceston	112	h	-41.43127	147.15342		512818.58	5413354.88		RC
HV	004	Launceston	113	h	-41.43151	147.15359		512832.39	5413328.32		RC
HV	004	Launceston	114	h	-41.43136	147.15333		512810.95	5413344.97		RC
HV	004	Launceston	97	v	-41.43100	147.15562	2.545	513001.90	5413384.39	3.324	CL
HV	004	Launceston	98	v	-41.43100	147.15536	2.323	512980.42	5413384.08	3.102	CL
HV	004	Launceston	99	v	-41.43101	147.15514	2.143	512962.28	5413383.81	2.923	CL
HV	004	Launceston	100	v	-41.43101	147.15492	1.944	512943.76	5413383.02	2.724	CL
HV	004	Launceston	101	v	-41.43102	147.15470	1.849	512925.51	5413382.28	2.630	CL
HV	004	Launceston	102	v	-41.43103	147.15447	1.763	512906.11	5413381.75	2.544	CL
HV	004	Launceston	103	v	-41.43103	147.15425	1.805	512887.72	5413381.47	2.587	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
HV	004	Launceston	104	v	-41.43103	147.15402	1.913	512868.85	5413380.76	2.695	CL
HV	004	Launceston	105	v	-41.43104	147.15380	2.285	512849.82	5413380.02	3.068	CL
HV	004	Launceston	106	v	-41.43105	147.15357	2.684	512830.70	5413379.63	3.467	CL
HV	005	Risdon	122	h	-42.81159	147.35190		528770.40	5260047.14		RC
HV	005	Risdon	123	h	-42.81165	147.35181		528763.24	5260040.78		RC
HV	005	Risdon	124	h	-42.81179	147.35199		528777.47	5260024.69		RC
HV	005	Risdon	125	h	-42.81174	147.35208		528784.66	5260031.04		RC
HV	005	Risdon	112	v	-42.81191	147.34922	46.298	528551.09	5260013.04	49.865	CL
HV	005	Risdon	113	v	-42.81196	147.34943	46.383	528568.11	5260006.73	49.950	CL
HV	005	Risdon	114	v	-42.81202	147.34964	46.467	528585.17	5260000.37	50.035	CL
HV	005	Risdon	115	v	-42.81208	147.34985	46.584	528602.26	5259993.93	50.152	CL
HV	005	Risdon	116	v	-42.81213	147.35006	46.579	528619.44	5259988.03	50.147	CL
HV	005	Risdon	117	v	-42.81216	147.35028	46.165	528637.53	5259984.45	49.733	CL
HV	005	Risdon	118	v	-42.81217	147.35050	45.314	528655.24	5259983.58	48.882	CL
HV	005	Risdon	119	v	-42.81218	147.35071	44.151	528672.93	5259982.65	47.719	CL
HV	005	Risdon	120	v	-42.81218	147.35093	42.959	528690.75	5259981.97	46.527	CL
HV	005	Risdon	121	v	-42.81219	147.35115	41.514	528708.73	5259981.17	45.082	CL
HV	006	Snug	121	h	-43.06271	147.26129		521275.84	5232188.51		RC
HV	006	Snug	122	h	-43.06267	147.26130		521276.88	5232192.97		RC
HV	006	Snug	123	h	-43.06267	147.26134		521280.04	5232192.24		RC
HV	006	Snug	124	h	-43.06265	147.26135		521280.70	5232195.16		RC
HV	006	Snug	125	h	-43.06264	147.26131		521277.55	5232195.89		RC
HV	006	Snug	126	h	-43.06260	147.26133		521278.67	5232200.67		RC
HV	006	Snug	127	h	-43.06258	147.26123		521270.68	5232202.57		RC
HV	006	Snug	128	h	-43.06255	147.26124		521271.56	5232206.34		RC
HV	006	Snug	129	h	-43.06253	147.26113		521263.06	5232208.31		RC
HV	006	Snug	130	h	-43.06256	147.26112		521262.20	5232204.54		RC
HV	006	Snug	131	h	-43.06255	147.26105		521256.42	5232205.89		RC
HV	006	Snug	132	h	-43.06257	147.26105		521255.99	5232204.01		RC
HV	006	Snug	133	h	-43.06256	147.26101		521253.29	5232204.62		RC
HV	006	Snug	134	h	-43.06266	147.26099		521250.91	5232194.33		RC
HV	006	Snug	135	h	-43.06128	147.26177		521315.09	5232346.90		RC
HV	006	Snug	136	h	-43.06128	147.26176		521314.66	5232346.52		RC
HV	006	Snug	137	h	-43.06139	147.26189		521324.80	5232335.16		RC
HV	006	Snug	138	h	-43.06130	147.26201		521334.79	5232344.13		RC
HV	006	Snug	139	h	-43.06118	147.26185		521321.98	5232358.38		RC

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
HV	006	Snug	140	h	-43.06125	147.26174		521312.48	5232349.81		RC
HV	006	Snug	21	v	-43.06306	147.26209	-1.880	521340.34	5232149.25	2.378	CL
HV	006	Snug	22	v	-43.06315	147.26189	-1.990	521324.43	5232138.64	2.268	CL
HV	006	Snug	23	v	-43.06326	147.26170	-1.967	521308.46	5232127.49	2.290	CL
HV	006	Snug	24	v	-43.06335	147.26150	-2.039	521292.90	5232117.34	2.218	CL
HV	006	Snug	25	v	-43.06344	147.26132	-2.057	521277.80	5232106.91	2.200	CL
HV	006	Snug	26	v	-43.06354	147.26111	-2.094	521260.69	5232095.93	2.163	CL
HV	006	Snug	27	v	-43.06363	147.26092	-2.080	521245.51	5232085.85	2.177	CL
HV	006	Snug	28	v	-43.06373	147.26073	-1.911	521229.56	5232075.51	2.346	CL
HV	006	Snug	29	v	-43.06381	147.26055	-1.501	521214.76	5232065.84	2.755	CL
HV	006	Snug	30	v	-43.06390	147.26036	-0.699	521199.70	5232055.76	3.557	CL
V	012	Burnie	GPS0001	v	-41.04165	145.83588	7.523	402156.27	5455966.34	8.966	CL
V	012	Burnie	GPS0002	v	-41.04182	145.83585	7.741	402153.75	5455948.27	9.184	CL
V	012	Burnie	GPS0003	v	-41.04197	145.83580	8.024	402150.5	5455930.61	9.467	CL
V	012	Burnie	GPS0004	v	-41.04213	145.83577	8.384	402147.66	5455913.28	9.827	CL
V	012	Burnie	GPS0005	v	-41.04229	145.83573	8.822	402145.07	5455896.01	10.265	CL
V	012	Burnie	GPS0006	v	-41.04245	145.83570	9.320	402142.1	5455878.08	10.763	CL
V	012	Burnie	GPS0007	v	-41.04265	145.83565	10.599	402138.39	5455854.87	12.042	CL
V	012	Burnie	GPS0008	v	-41.04271	145.83565	10.899	402138.37	5455848.71	12.342	CL
V	012	Burnie	GPS0009	v	-41.04276	145.83564	10.967	402137.51	5455843.2	12.41	CL
V	012	Burnie	GPS0010	v	-41.04291	145.83560	11.931	402134.81	5455826.12	13.374	CL
V	013	Havenview	3	v	-41.08457	145.91405	107.792	408785.82	5451287.19	109.23	CL
V	013	Havenview	4	v	-41.08464	145.91401	108.139	408782.66	5451278.43	109.58	CL
V	013	Havenview	5	v	-41.08469	145.91391	108.701	408774.67	5451273.23	110.14	CL
V	013	Havenview	6	v	-41.08468	145.91377	109.542	408762.96	5451274.72	110.98	CL
V	013	Havenview	7	v	-41.08464	145.91355	111.080	408744.08	5451278.95	112.52	CL
V	013	Havenview	8	v	-41.08460	145.91333	112.716	408725.62	5451283.08	114.16	CL
V	013	Havenview	9	v	-41.08456	145.91311	114.514	408707.05	5451287.21	115.95	CL
V	013	Havenview	10	v	-41.08452	145.91289	116.445	408688.15	5451291.38	117.88	CL
V	013	Havenview	11	v	-41.08448	145.91267	118.330	408669.77	5451295.47	119.77	CL
V	013	Havenview	12	v	-41.08444	145.91244	120.284	408650.82	5451299.77	121.72	CL
V	014	Sulphur	14	v	-41.09357	146.02331	5.324	417974.73	5450396.28	6.785	CL
V	014	Sulphur	15	v	-41.09487	146.02303	7.394	417952.64	5450251.69	8.854	CL
V	014	Sulphur	16	v	-41.09476	146.02309	7.185	417957.37	5450263.52	8.645	CL
V	014	Sulphur	17	v	-41.09464	146.02312	6.946	417959.74	5450277.13	8.406	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	014	Sulphur	18	v	-41.09449	146.02315	6.697	417961.90	5450294.03	8.157	CL
V	014	Sulphur	19	v	-41.09434	146.02317	6.416	417963.83	5450310.84	7.876	CL
V	014	Sulphur	20	v	-41.09418	146.02320	6.166	417965.98	5450328.26	7.626	CL
V	014	Sulphur	21	v	-41.09403	146.02323	5.962	417968.34	5450345.46	7.422	CL
V	014	Sulphur	22	v	-41.09388	146.02326	5.710	417970.48	5450362.02	7.171	CL
V	014	Sulphur	23	v	-41.09373	146.02328	5.529	417972.58	5450378.75	6.990	CL
V	014	Sulphur	24	v	-41.09357	146.02331	5.321	417974.72	5450396.27	6.782	CL
V	015	Spreyton	38	v	-41.20554	146.35489	6.840	445913.62	5438224.72	8.109	CL
V	015	Spreyton	39	v	-41.20667	146.35373	7.628	445818.04	5438099.16	8.897	CL
V	015	Spreyton	40	v	-41.20663	146.35393	7.264	445834.77	5438103.34	8.533	CL
V	015	Spreyton	41	v	-41.20656	146.35413	6.891	445850.94	5438111.15	8.160	CL
V	015	Spreyton	42	v	-41.20642	146.35425	6.654	445861.39	5438126.55	7.923	CL
V	015	Spreyton	43	v	-41.20628	146.35436	6.576	445869.93	5438143.03	7.845	CL
V	015	Spreyton	44	v	-41.20613	146.35446	6.679	445878.22	5438159.68	7.948	CL
V	015	Spreyton	45	v	-41.20598	146.35456	6.765	445886.61	5438176.02	8.034	CL
V	015	Spreyton	46	v	-41.20584	146.35467	6.861	445895.75	5438192.11	8.130	CL
V	015	Spreyton	47	v	-41.20570	146.35478	6.836	445905.22	5438207.56	8.105	CL
V	016	Port Sorell	50	v	-41.16215	146.54008	7.209	461414.71	5443140.98	8.297	CL
V	016	Port Sorell	51	v	-41.16223	146.54022	6.946	461426.95	5443132.28	8.034	CL
V	016	Port Sorell	52	v	-41.16234	146.54037	6.642	461439.64	5443119.70	7.730	CL
V	016	Port Sorell	53	v	-41.16247	146.54051	6.257	461451.03	5443105.02	7.345	CL
V	016	Port Sorell	54	v	-41.16259	146.54066	5.725	461463.63	5443091.51	6.813	CL
V	016	Port Sorell	55	v	-41.16270	146.54082	5.143	461477.70	5443080.32	6.230	CL
V	016	Port Sorell	56	v	-41.16281	146.54101	4.933	461493.19	5443068.21	6.020	CL
V	016	Port Sorell	57	v	-41.16291	146.54105	4.965	461496.47	5443057.01	6.052	CL
V	016	Port Sorell	58	v	-41.16302	146.54100	5.109	461492.28	5443044.18	6.196	CL
V	016	Port Sorell	59	v	-41.16318	146.54092	5.154	461485.66	5443026.43	6.242	CL
V	017	Kelso	61	v	-41.14287	146.77152	46.785	480825.96	5445357.73	47.712	CL
V	017	Kelso	62	v	-41.14259	146.77348	49.984	480990.55	5445388.64	50.911	CL
V	017	Kelso	63	v	-41.14265	146.77325	49.346	480971.23	5445382.73	50.273	CL
V	017	Kelso	64	v	-41.14269	146.77304	49.042	480953.60	5445378.14	49.969	CL
V	017	Kelso	65	v	-41.14273	146.77282	48.875	480935.45	5445373.86	49.802	CL
V	017	Kelso	66	v	-41.14277	146.77261	48.745	480917.30	5445369.34	49.672	CL
V	017	Kelso	67	v	-41.14281	146.77239	48.660	480898.76	5445364.89	49.587	CL
V	017	Kelso	68	v	-41.14284	146.77217	48.429	480880.53	5445361.36	49.356	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	017	Kelso	69	v	-41.14286	146.77195	47.953	480862.40	5445359.06	48.880	CL
V	017	Kelso	70	v	-41.14287	146.77174	47.353	480844.21	5445358.00	48.280	CL
V	018	Georgetown	73	v	-41.07152	146.86736	28.608	488857.17	5453295.31	29.387	CL
V	018	Georgetown	74	v	-41.07231	146.86565	31.937	488713.55	5453207.02	32.720	CL
V	018	Georgetown	75	v	-41.07222	146.86584	31.148	488728.88	5453217.56	31.931	CL
V	018	Georgetown	76	v	-41.07212	146.86602	30.896	488744.38	5453228.07	31.678	CL
V	018	Georgetown	77	v	-41.07203	146.86621	30.973	488760.05	5453238.72	31.755	CL
V	018	Georgetown	78	v	-41.07193	146.86639	31.062	488775.74	5453249.33	31.843	CL
V	018	Georgetown	79	v	-41.07183	146.86658	30.652	488791.56	5453260.04	31.433	CL
V	018	Georgetown	80	v	-41.07174	146.86677	30.004	488806.90	5453270.20	30.785	CL
V	018	Georgetown	81	v	-41.07166	146.86695	29.448	488822.60	5453279.88	30.228	CL
V	018	Georgetown	82	v	-41.07158	146.86715	29.076	488839.06	5453288.59	29.856	CL
V	019	Gravelly	85	v	-41.30439	146.96824	10.870	497341.08	5427451.42	11.799	CL
V	019	Gravelly	86	v	-41.30423	146.96816	12.339	497334.56	5427468.94	13.268	CL
V	019	Gravelly	87	v	-41.30408	146.96808	13.771	497327.54	5427485.66	14.700	CL
V	019	Gravelly	88	v	-41.30393	146.96800	15.170	497320.87	5427502.40	16.099	CL
V	019	Gravelly	89	v	-41.30378	146.96792	16.458	497314.37	5427518.78	17.387	CL
V	019	Gravelly	90	v	-41.30364	146.96784	17.570	497307.82	5427534.92	18.499	CL
V	019	Gravelly	91	v	-41.30341	146.96772	19.322	497297.39	5427559.97	20.251	CL
V	019	Gravelly	92	v	-41.30326	146.96764	20.633	497290.66	5427576.59	21.563	CL
V	019	Gravelly	93	v	-41.30311	146.96755	22.249	497283.76	5427593.53	23.179	CL
V	019	Gravelly	94	v	-41.30296	146.96748	23.963	497277.25	5427610.12	24.893	CL
V	020	New Norfolk	77	v	-42.76902	147.04140	31.555	503387.24	5264833.70	34.833	CL
V	020	New Norfolk	78	v	-42.76900	147.04114	31.619	503366.18	5264836.15	34.897	CL
V	020	New Norfolk	79	v	-42.76943	147.04120	30.870	503370.31	5264788.75	34.148	CL
V	020	New Norfolk	80	v	-42.76933	147.04121	31.141	503371.44	5264799.19	34.419	CL
V	020	New Norfolk	81	v	-42.76917	147.04123	31.371	503373.29	5264817.32	34.649	CL
V	020	New Norfolk	82	v	-42.76900	147.04126	31.591	503375.39	5264835.61	34.869	CL
V	020	New Norfolk	83	v	-42.76891	147.04129	31.729	503377.84	5264846.49	35.007	CL
V	020	New Norfolk	84	v	-42.76874	147.04134	32.037	503381.80	5264864.67	35.314	CL
V	020	New Norfolk	85	v	-42.76858	147.04139	32.444	503385.97	5264883.05	35.721	CL
V	020	New Norfolk	86	v	-42.76841	147.04144	32.830	503390.19	5264901.80	36.107	CL
V	020	New Norfolk	87	v	-42.76824	147.04148	32.974	503393.95	5264920.56	36.251	CL
V	021	Bridgewater	2	v	-42.73392	147.22865	8.131	518717.26	5268707.34	11.454	CL
V	021	Bridgewater	3	v	-42.73376	147.22857	7.573	518710.50	5268724.33	10.895	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	021	Bridgewater	4	v	-42.73363	147.22843	7.680	518699.34	5268739.57	11.002	CL
V	021	Bridgewater	5	v	-42.73351	147.22825	8.746	518684.25	5268752.40	12.067	CL
V	021	Bridgewater	6	v	-42.73341	147.22805	10.506	518667.75	5268763.73	13.827	CL
V	021	Bridgewater	7	v	-42.73331	147.22785	11.442	518652.11	5268775.29	14.763	CL
V	021	Bridgewater	8	v	-42.73319	147.22768	11.410	518637.87	5268787.74	14.730	CL
V	021	Bridgewater	9	v	-42.73307	147.22751	10.972	518623.81	5268801.26	14.292	CL
V	021	Bridgewater	10	v	-42.73295	147.22734	10.727	518610.04	5268814.56	14.046	CL
V	021	Bridgewater	11	v	-42.73285	147.22716	10.695	518595.12	5268826.57	14.014	CL
V	021	Opossum	89	v	-42.98854	147.40616	16.384	533111.55	5240378.32	20.599	CL
V	021	Opossum	90	v	-42.98844	147.40635	16.529	533127.34	5240388.47	20.744	CL
V	021	Opossum	91	v	-42.98838	147.40634	16.302	533126.42	5240395.99	20.517	CL
V	021	Opossum	92	v	-42.98821	147.40630	15.389	533123.34	5240414.27	19.603	CL
V	021	Opossum	93	v	-42.98804	147.40626	14.940	533120.12	5240433.11	19.153	CL
V	021	Opossum	94	v	-42.98787	147.40622	15.530	533116.94	5240451.89	19.743	CL
V	021	Opossum	95	v	-42.98771	147.40619	15.180	533114.11	5240469.49	19.392	CL
V	021	Opossum	96	v	-42.98755	147.40615	14.550	533111.02	5240487.80	18.762	CL
V	021	Opossum	97	v	-42.98737	147.40610	14.380	533107.62	5240507.34	18.591	CL
V	021	Opossum	98	v	-42.98721	147.40607	14.271	533105.08	5240525.59	18.481	CL
V	022	Cambridge	23	v	-42.83292	147.49298	-0.002	540291.04	5257620.73	3.760	CL
V	022	Cambridge	24	v	-42.83305	147.49283	-0.084	540278.13	5257606.44	3.679	CL
V	022	Cambridge	25	v	-42.83319	147.49266	-0.163	540264.49	5257591.50	3.600	CL
V	022	Cambridge	26	v	-42.83306	147.49245	-0.530	540247.71	5257605.42	3.232	CL
V	022	Cambridge	27	v	-42.83296	147.49226	-0.496	540231.79	5257617.42	3.266	CL
V	022	Cambridge	28	v	-42.83285	147.49206	-0.444	540215.69	5257629.38	3.317	CL
V	022	Cambridge	29	v	-42.83275	147.49188	-0.374	540200.92	5257640.22	3.387	CL
V	022	Cambridge	30	v	-42.83265	147.49170	-0.271	540186.58	5257651.86	3.489	CL
V	022	Cambridge	31	v	-42.83250	147.49159	-0.220	540177.16	5257667.79	3.539	CL
V	024	Cremorne	GPS0001	v	-42.95622	147.53027	-2.380	543252.40	5243910.88	1.80	CL
V	024	Cremorne	GPS0002	v	-42.95623	147.53051	-2.318	543271.58	5243909.31	1.86	CL
V	024	Cremorne	GPS0003	v	-42.95624	147.53074	-2.258	543290.23	5243907.89	1.92	CL
V	024	Cremorne	GPS0004	v	-42.95625	147.53097	-2.198	543309.43	5243906.36	1.99	CL
V	024	Cremorne	GPS0005	v	-42.95627	147.53120	-2.129	543328.29	5243904.84	2.05	CL
V	024	Cremorne	GPS0006	v	-42.95628	147.53144	-2.152	543347.57	5243903.39	2.03	CL
V	024	Cremorne	GPS0007	v	-42.95629	147.53153	-2.151	543355.02	5243902.44	2.03	CL
V	024	Cremorne	GPS0008	v	-42.95611	147.53155	-2.085	543356.85	5243921.92	2.10	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	024	Cremorne	GPS0009	v	-42.95595	147.53157	-1.993	543358.61	5243940.05	2.19	CL
V	024	Cremorne	GPS0010	v	-42.95578	147.53159	-1.881	543360.13	5243958.25	2.30	CL
V	025	Sorell	143	v	-42.78015	147.56569	13.329	546272.95	5263443.71	16.924	CL
V	025	Sorell	144	v	-42.78018	147.56592	13.156	546291.11	5263440.04	16.752	CL
V	025	Sorell	145	v	-42.78021	147.56615	12.989	546309.88	5263436.23	16.585	CL
V	025	Sorell	146	v	-42.78025	147.56638	12.864	546329.18	5263432.28	16.460	CL
V	025	Sorell	147	v	-42.78028	147.56661	12.964	546348.03	5263428.38	16.560	CL
V	025	Sorell	148	v	-42.78032	147.56684	13.078	546366.41	5263424.28	16.674	CL
V	025	Sorell	149	v	-42.78035	147.56707	13.244	546384.89	5263420.53	16.840	CL
V	025	Sorell	150	v	-42.78038	147.56730	13.368	546403.78	5263416.67	16.964	CL
V	025	Sorell	151	v	-42.78042	147.56752	13.497	546422.16	5263412.99	17.094	CL
V	025	Sorell	152	v	-42.78045	147.56776	13.824	546441.34	5263409.20	17.421	CL
V	026	Primrose	101	v	-42.88986	147.66745	-0.523	554499.67	5251200.13	3.490	CL
V	026	Primrose	102	v	-42.88991	147.66767	-0.518	554518.23	5251194.36	3.495	CL
V	026	Primrose	103	v	-42.89015	147.66760	-1.011	554512.19	5251167.73	3.003	CL
V	026	Primrose	104	v	-42.89002	147.66772	-1.029	554522.01	5251182.44	2.984	CL
V	026	Primrose	105	v	-42.88997	147.66786	-0.545	554533.55	5251187.75	3.468	CL
V	026	Primrose	106	v	-42.89003	147.66808	-0.557	554551.38	5251180.64	3.456	CL
V	026	Primrose	107	v	-42.89011	147.66830	-0.504	554569.29	5251171.47	3.510	CL
V	026	Primrose	108	v	-42.89019	147.66852	-0.412	554586.94	5251162.33	3.602	CL
V	026	Primrose	109	v	-42.89027	147.66873	-0.331	554604.20	5251153.10	3.683	CL
V	026	Primrose	110	v	-42.89036	147.66893	-0.191	554619.93	5251143.95	3.824	CL
V	026	Primrose	111	v	-42.89043	147.66914	0.090	554637.43	5251135.95	4.105	CL
V	027	Marion	66	v	-42.82028	147.86545	-2.424	570746.86	5258779.22	1.630	CL
V	027	Marion	67	v	-42.82013	147.86536	-2.432	570739.63	5258796.22	1.621	CL
V	027	Marion	68	v	-42.81998	147.86527	-2.442	570732.76	5258812.53	1.611	CL
V	027	Marion	69	v	-42.81983	147.86516	-2.443	570724.05	5258829.10	1.609	CL
V	027	Marion	70	v	-42.81968	147.86505	-2.415	570715.05	5258845.73	1.636	CL
V	027	Marion	71	v	-42.81954	147.86494	-2.492	570706.11	5258861.70	1.558	CL
V	027	Marion	72	v	-42.81939	147.86483	-2.536	570696.83	5258878.99	1.513	CL
V	027	Marion	73	v	-42.81924	147.86472	-2.595	570688.62	5258895.85	1.453	CL
V	027	Marion	74	v	-42.81910	147.86459	-2.516	570678.20	5258911.47	1.532	CL
V	027	Marion	75	v	-42.81904	147.86449	-2.484	570670.14	5258917.34	1.563	CL
V	028	Dunalley	43	v	-42.88760	147.81161	6.275	566273.29	5251347.36	10.431	CL
V	028	Dunalley	44	v	-42.88729	147.81357	5.040	566433.60	5251379.92	9.199	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	028	Dunalley	45	v	-42.88733	147.81335	5.426	566416.38	5251376.56	9.585	CL
V	028	Dunalley	46	v	-42.88736	147.81314	5.793	566398.95	5251373.27	9.951	CL
V	028	Dunalley	47	v	-42.88739	147.81292	6.113	566380.73	5251369.52	10.271	CL
V	028	Dunalley	48	v	-42.88743	147.81270	6.319	566362.69	5251365.76	10.477	CL
V	028	Dunalley	49	v	-42.88746	147.81248	6.272	566345.14	5251362.19	10.430	CL
V	028	Dunalley	50	v	-42.88749	147.81227	6.222	566327.97	5251358.73	10.379	CL
V	028	Dunalley	51	v	-42.88753	147.81205	6.204	566309.50	5251354.93	10.361	CL
V	028	Dunalley	52	v	-42.88757	147.81183	6.217	566291.38	5251350.97	10.374	CL
V	029	Taranna	154	v	-43.06412	147.86426	11.938	570371.51	5231702.82	16.623	CL
V	029	Taranna	155	v	-43.06394	147.86429	11.612	570373.55	5231722.84	16.297	CL
V	029	Taranna	156	v	-43.06376	147.86431	11.370	570375.58	5231742.75	16.054	CL
V	029	Taranna	157	v	-43.06358	147.86433	11.163	570377.72	5231762.54	15.847	CL
V	029	Taranna	158	v	-43.06340	147.86435	11.052	570379.71	5231782.31	15.736	CL
V	029	Taranna	159	v	-43.06322	147.86438	10.803	570381.76	5231802.14	15.486	CL
V	029	Taranna	160	v	-43.06313	147.86439	10.676	570382.77	5231811.95	15.359	CL
V	029	Taranna	161	v	-43.06312	147.86426	10.440	570372.08	5231813.60	15.123	CL
V	029	Taranna	162	v	-43.06307	147.86403	9.802	570353.58	5231818.81	14.485	CL
V	029	Taranna	163	v	-43.06302	147.86381	9.215	570336.12	5231825.36	13.897	CL
V	030	Tinderbox	164	v	-43.03931	147.33584	38.412	527355.95	5234765.11	42.727	CL
V	030	Tinderbox	165	v	-43.03920	147.33603	40.488	527371.59	5234776.91	44.803	CL
V	030	Tinderbox	166	v	-43.03908	147.33618	41.868	527384.33	5234790.62	46.183	CL
V	030	Tinderbox	167	v	-43.03893	147.33625	42.468	527389.90	5234807.45	46.783	CL
V	030	Tinderbox	168	v	-43.03876	147.33626	42.808	527390.66	5234825.93	47.122	CL
V	030	Tinderbox	169	v	-43.03860	147.33626	43.193	527390.66	5234844.30	47.506	CL
V	030	Tinderbox	170	v	-43.03843	147.33626	44.071	527390.63	5234863.25	48.384	CL
V	030	Tinderbox	171	v	-43.03825	147.33625	45.744	527390.50	5234882.68	50.056	CL
V	030	Tinderbox	172	v	-43.03808	147.33625	47.407	527390.33	5234901.72	51.719	CL
V	030	Tinderbox	173	v	-43.03791	147.33624	48.497	527389.39	5234921.00	52.808	CL
V	031	Bruny	12	v	-43.22788	147.38178	5.270	531002.97	5213808.00	10.223	CL
V	031	Bruny	13	v	-43.22771	147.38181	5.192	531005.66	5213826.88	10.145	CL
V	031	Bruny	14	v	-43.22754	147.38183	5.116	531007.42	5213846.16	10.068	CL
V	031	Bruny	15	v	-43.22736	147.38184	4.969	531008.14	5213865.92	9.920	CL
V	031	Bruny	16	v	-43.22736	147.38218	5.746	531035.94	5213866.32	10.698	CL
V	031	Bruny	17	v	-43.22733	147.38241	6.004	531054.49	5213868.60	10.956	CL
V	031	Bruny	18	v	-43.22728	147.38264	6.066	531072.86	5213874.07	11.018	CL

Site Type	Site ID	Locality	Point Number	Point Type	Latitude	Longitude	Ellipsoid Height	Easting	Northing	Elevation	Desc.
V	031	Bruny	19	v	-43.22720	147.38284	6.072	531089.23	5213883.61	11.024	CL
V	031	Bruny	20	v	-43.22710	147.38303	6.355	531104.73	5213894.12	11.307	CL
V	031	Bruny	21	v	-43.22701	147.38324	6.982	531121.72	5213904.27	11.933	CL
V	032	Cygnet	33	v	-43.16196	147.08525	6.025	506930.43	5221195.60	10.543	CL
V	032	Cygnet	34	v	-43.16205	147.08504	5.831	506913.49	5221186.13	10.350	CL
V	032	Cygnet	35	v	-43.16214	147.08483	5.675	506895.92	5221176.46	10.195	CL
V	032	Cygnet	36	v	-43.16222	147.08462	5.401	506878.76	5221166.71	9.921	CL
V	032	Cygnet	37	v	-43.16232	147.08439	5.060	506860.29	5221156.59	9.581	CL
V	032	Cygnet	38	v	-43.16240	147.08418	4.639	506842.89	5221146.86	9.161	CL
V	032	Cygnet	39	v	-43.16249	147.08396	3.871	506825.49	5221137.16	8.393	CL
V	032	Cygnet	40	v	-43.16258	147.08374	3.130	506807.14	5221127.18	7.653	CL
V	032	Cygnet	41	v	-43.16267	147.08351	2.364	506788.91	5221117.37	6.888	CL
V	032	Cygnet	42	v	-43.16276	147.08328	1.445	506770.36	5221107.19	5.969	CL
V	033	Judbury	56	v	-42.99076	146.92902	44.737	494213.37	5240208.68	48.514	CL
V	033	Judbury	57	v	-42.99089	146.92917	44.714	494226.05	5240194.09	48.492	CL
V	033	Judbury	58	v	-42.99102	146.92933	44.541	494238.80	5240179.59	48.320	CL
V	033	Judbury	59	v	-42.99115	146.92948	44.367	494251.19	5240165.19	48.147	CL
V	033	Judbury	60	v	-42.99128	146.92963	43.969	494263.36	5240151.22	47.749	CL
V	033	Judbury	61	v	-42.99141	146.92979	43.359	494276.26	5240136.50	47.140	CL
V	033	Judbury	62	v	-42.99154	146.92995	42.530	494289.20	5240122.29	46.312	CL
V	033	Judbury	63	v	-42.99178	146.93028	41.123	494316.69	5240096.19	44.906	CL
V	033	Judbury	64	v	-42.99189	146.93044	41.037	494329.73	5240083.78	44.821	CL
V	033	Judbury	65	v	-42.99202	146.93058	41.135	494340.83	5240069.28	44.920	CL

Permanent Survey Markers

PM Number	Locality	Survey Easting	Survey Northing	Survey Elev	SMES Easting	SMES Northing	SMES Elev	MGA Zone	DX	DY	DZ
CCC0902	Risdon	528715.833	5259826.696	51.464	528715.815	5259826.713	51.514	55	0.02	-0.02	-0.05
LCC1113 49	Launceston	511650.493	5413374.909	4.287	511650.481	5413374.925	4.268	55	0.01	-0.02	0.02
SPM2369	Ulverstone	430000.781	5443067.252	10.917	430000.772	5443067.231	10.906	55	0.01	0.02	0.01
SMP9614	Snug	521015.675	5232225.774	1.201	521015.67	5232225.80	1.16	55	0.01	-0.02	0.04
SPM327	Sulphur	418003.799	5450497.388	3.427	418003.801	5450497.378	3.459	55	0.00	0.01	-0.03
SPM10309	Havenview	407616.088	5450664.624	173.948	407616.10	5450664.63	173.949	55	-0.01	-0.01	0.00
SPM10355	Burnie	401934.508	5455908.281	13.718	401934.504	5455908.278	13.684	55	0.00	0.00	0.03
SPM7448	Kelso	480589.681	5445307.125	41.021	480589.678	5445307.178	41.123	55	0.00	-0.05	-0.10
SPM10292	Port Sorell	461446.277	5443435.328	7.979	461446.296	5443435.347	7.928	55	-0.02	-0.02	0.05
SPM10725	Spreyton	445615.168	5438288.126	9.526	445615.175	5438288.125	9.508	55	-0.01	0.00	0.02
SPM185	Bridgewater	518635.051	5268414.311	15.052	518635.032	5268414.356	15.083	55	0.02	-0.04	-0.03
SPM9931	Bridgewater	518167.08	5268428.80	4.233	518167.063	5268428.843	4.273	55	0.01	-0.04	-0.04
SPM5625	New Norfolk	503727.329	5264397.168	36.23	503727.305	5264397.212	36.226	55	0.02	-0.04	0.00
SPM9853	Gravelly	497590.953	5427504.687	3.112	497590.956	5427504.687	3.088	55	0.00	0.00	0.02
SPM2320/1	Georgetown	485737.2	5451243.3	31.587	485737.221	5451243.326	31.593	55	-0.02	-0.03	-0.01
SPM9921	Sorell	546292.98	5263638.352	20.555	546292.97	5263638.368	20.614	55	0.01	-0.02	-0.06
SPM9817	Cremorne	543370.943	5244120.621	5.14	543370.972	5244120.615	5.218	55	-0.03	0.01	-0.08
SPM9616	Opossum	533110.241	5240402.525	20.345	533110.251	5240402.493	20.402	55	-0.01	0.03	-0.06
SPM11191	Cambridge	540267.991	5257606.212	3.524	540267.993	5257606.22	3.545	55	0.00	-0.01	-0.02
SPM7958	Taranna	570393.91	5231956.73	13.303	570393.94	5231956.70	13.618	55	-0.03	0.03	-0.32
SPM8900	Taranna	570358.30	5231521.27	20.165	570358.33	5231521.25	20.494	55	-0.03	0.02	-0.33
SPM296/900	Dunalley	567206.405	5252398.02	13.767	567206.472	5252398.013	13.895	55	-0.07	0.01	-0.13
SPM296/800	Dunalley	566525.17	5251773.442	14.716	566525.226	5251773.431	14.816	55	-0.06	0.01	-0.10
SPM10167	Marion	565406.693	5258885.641	83.905	565406.746	5258885.624	83.979	55	-0.05	0.02	-0.07
SPM10113	Primrose	554692.672	5251288.223	6.792	554692.713	5251288.218	6.847	55	-0.04	0.00	-0.06
SPM9697	Judbury	494143.034	5239199.632	21.706	494143.00	5239199.66	21.706	55	0.03	-0.03	0.00
SPM3948	Judbury	494085.137	5238894.384	34.459	494085.10	5238894.39	34.461	55	0.03	-0.01	0.00
SPM9873	Cygnets	506949.739	5221428.471	25.077	506949.725	5221428.457	25.087	55	0.01	0.01	-0.01
SPM7509	Cygnets	506710.967	5221080.029	2.348	506710.957	5221080.03	2.337	55	0.01	0.00	0.01
ST1105	Bruny	531149.759	5217059.166	1.336	531149.77	5217059.168	1.292	55	-0.01	0.00	0.04
SPM7443	Tinderbox	527864.769	5233483.277	85.017	527864.774	5233483.277	84.99	55	-0.01	0.00	0.03

PM Number	Locality	Survey Easting	Survey Northing	Survey Elev	SMES Easting	SMES Northing	SMES Elev	MGA Zone	DX	DY	DZ
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Important note for SPM7958 & SPM8900:

Lester Franks has previously conducted work in this area and connections have been made to these SPMs via static GPS from primary control mark ST1102. Elevation comparisons have been made to the published elevations for SPM7958 and SPM8900.