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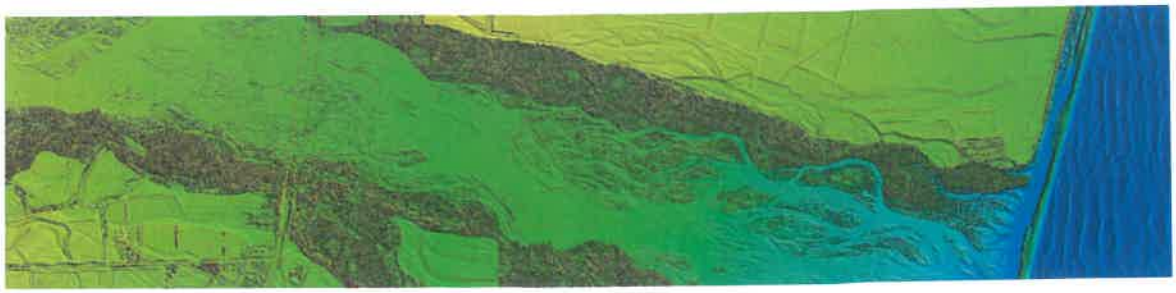

Metadata

BOPLASS LTD

BAY OF PLENTY – 2019-25 PGF LiDAR SURVEY

BLOCK1 Part1

AERIAL SURVEYS PROJECT №: FPFA1263

Summary

Project

An Airborne Laser Scanner survey was conducted over the Bay of Plenty areas of interest totalling approximately 12,771 km^2. The area is located in the Bay of Plenty Region of the North Island.

Data

The data was processed into various digital map data products. The products included for this dispatch contain:

- AOI
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Layout
- File Listing
- Metadata Report (this report)

Project Report

Safety: No safety Incidents were reported during the project.

Acquisition: Airborne Laser Scanner (ALS) data was acquired from a fixed wing aircraft.

Ground Support: GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points were acquired by Sounds Surveying Ltd.

Data Processing: Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using auto algorithms across the project area.

Data Presentation: The data provided on this volume has been supplied in accordance with a specification agreed with BOPLASS Ltd.

Project Contacts:
Bay of Plenty RC Geospatial Team Leader: Glen Clarkin (Ph. (07) 922 3390)
Aerial Surveys Business Development Manager: Steve Smith (Ph. (09) 415 3101)

Data Acquisition

The project area is that shown in the shapefile 'LiDARmetadata_BOP_2019-25_Fpfa1263_Block1_Part1.shp' that accompanies the dataset. A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:
12-13 March 2020, 15-16 May 2020, 18-21 May 2020, 10-11 July 2020, 5 October 2020, 25-26 January 2021

LiDAR survey was collected using Aerial Surveys Optech Orion Galaxy PRIME system.

Survey Specification:

- Scanner: Optech Galaxy PRIME
- Flying Height: 2,925 m AMGL
- Scan Angle: ±52.0 degrees
- Scan Frequency: 45 Hz
- Pulse Rate: 400 kHz
- Swath Overlap: 55%
- Swath Points Per M^2: 4

Sounds Surveying Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

Data Processing

The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSPac software.

Base Station : PP-RTX

The POS data was combined with the LiDAR range files and used to generate LIDAR point clouds in NZTM and ellipsoidal heights. This process was undertaken using Optech LMS LiDAR processing software. The data was checked for completeness of coverage. The relative fit of data in the overlap between strips was also checked.

The height accuracy of the ground classified LiDAR points was checked using open land-cover survey check site data collected by Sounds Surveying Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints. The standard deviation statistic is 0.05 m; a RMS of 0.05 m and the average difference is 0.004 m. LiDAR is relative to the control check points.

The positional accuracy of the LiDAR data has been checked by overlaying Sounds Surveying Ltd surveyed data over the LiDAR data displayed coded by intensity. The data was found to fit well in position.

The point cloud data was then classified with TerraSolid LiDAR processing software into ground and above ground returns using automated routines tailored to the project land cover and terrain.

Product Deliverables

All spatial data for this project provided in terms of New Zealand Transverse Mercator 2000 (NZTM2000) horizontal and New Zealand Vertical Datum (NZVD2016). The data was converted from NZGD2000 ellipsoidal heights into the orthometric height system using the LINZ NZGeoid16 separation model. The products are tiled into NZTopo50 map sheet tiles as noted below.

The following details the folder contents:

AOI: Extent is the limit of the project area for Block 1 Part1
This dataset is supplied in SHP format

Raw Point Cloud: Contains the unclassified LiDAR point cloud points as they were prior to being classified
This dataset is supplied in ASPRS LAS v1.4 format

Classified Point Cloud: Contains the LiDAR point cloud points that have been classified
This dataset is supplied in ASPRS LAS v1.4 format

Surface Type	Classification	Point Class
Raw	1	Unclassified
Ground	2	Ground
Above Ground	3	Low Vegetation
Above Ground	4	Medium Vegetation
Above Ground	5	High Vegetation
Above Ground	6	Buildings
Above Ground	7	Low Noise
Above Ground	9	Water
Above Ground	18	High Noise

Gridded DEM: Contains the gridded ground surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Gridded DSM: Contains the gridded top of surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Breaklines: Breaklines representing all hydro-flattened features
This dataset is supplied in SHP format

Tile Layout: Tiles is the tile layout for the project area
Tile size: 1:1,000 sheet layout (480 x 720 m)
Tile dataset is supplied in SHP format

File Listing: Supplied in TXT format

Metadata Report: Supplied in PDF format

All digital data supplied on 1 e-HDD. Data was couriered to Glen Clarkin, Bay of Plenty Regional Council, on 26 February 2021

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

License/Copyright

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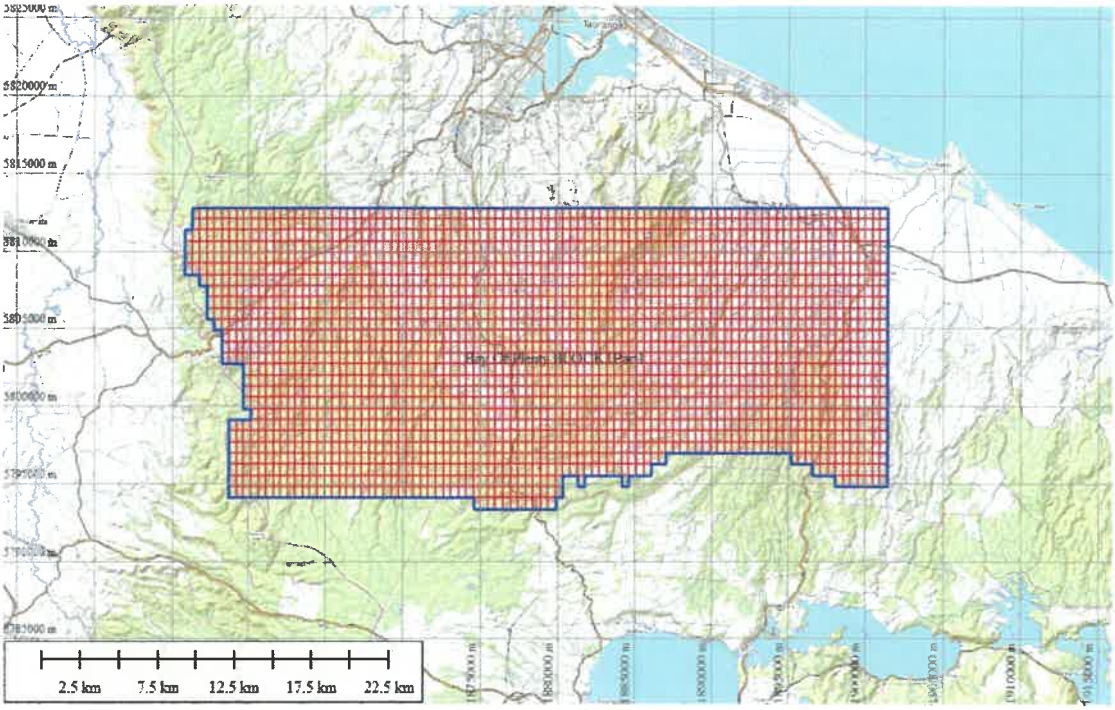
BOPLASS Ltd intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The tile layout is shown in red.
The project extent area is shown in blue.



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Metadata

BOPLASS LTD

BAY OF PLENTY – 2019-25 PGF LiDAR SURVEY

BLOCK1 Part2

AERIAL SURVEYS PROJECT №: FPFA1263

Summary

Project

An Airborne Laser Scanner survey was conducted over the Bay of Plenty areas of interest totalling approximately 12,771 km^2. The area is located in the Bay of Plenty Region of the North Island.

Data

The data was processed into various digital map data products. The products included for this dispatch contain:

- AOI
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Layout
- File Listing
- Metadata Report (this report)

Project Report

Safety: No safety Incidents were reported during the project.

Acquisition: Airborne Laser Scanner (ALS) data was acquired from a fixed wing aircraft.

Ground Support: GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points were acquired by Sounds Surveying Ltd.

Data Processing: Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using auto algorithms across the project area.

Data Presentation: The data provided on this volume has been supplied in accordance with a specification agreed with BOPLASS Ltd.

Project Contacts:
Bay of Plenty RC Geospatial Team Leader: Glen Clarkin (Ph. (07) 922 3390)
Aerial Surveys Business Development Manager: Steve Smith (Ph. (09) 415 3101)

Data Acquisition

The project area is that shown in the shapefile 'LiDARmetadata_BOP_2019-25_Fpfa1263_Block1_Part2.shp' that accompanies the dataset. A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:
12-13 March 2020, 15-16 May 2020, 18-21 May 2020, 10-11 July 2020, 5 October 2020, 25-26 January 2021

LiDAR survey was collected using Aerial Surveys Optech Orion Galaxy PRIME system.

Survey Specification:

- Scanner: Optech Galaxy PRIME
- Flying Height: 2,925 m AMGL
- Scan Angle: ±52.0 degrees
- Scan Frequency: 45 Hz
- Pulse Rate: 400 kHz
- Swath Overlap: 55%
- Swath Points Per M^2: 4

Sounds Surveying Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

Data Processing

The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSPac software.

Base Station : PP-RTX

The POS data was combined with the LiDAR range files and used to generate LIDAR point clouds in NZTM and ellipsoidal heights. This process was undertaken using Optech LMS LiDAR processing software. The data was checked for completeness of coverage. The relative fit of data in the overlap between strips was also checked.

The height accuracy of the ground classified LiDAR points was checked using open land-cover survey check site data collected by Sounds Surveying Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints. The standard deviation statistic is 0.05 m; a RMS of 0.05 m and the average difference is 0.004 m. LiDAR is relative to the control check points.

The positional accuracy of the LiDAR data has been checked by overlaying Sounds Surveying Ltd surveyed data over the LiDAR data displayed coded by intensity. The data was found to fit well in position.

The point cloud data was then classified with TerraSolid LiDAR processing software into ground and above ground returns using automated routines tailored to the project land cover and terrain.

Product Deliverables

All spatial data for this project provided in terms of New Zealand Transverse Mercator 2000 (NZTM2000) horizontal and New Zealand Vertical Datum (NZVD2016). The data was converted from NZGD2000 ellipsoidal heights into the orthometric height system using the LINZ NZGeoid16 separation model. The products are tiled into NZTopo50 map sheet tiles as noted below.

The following details the folder contents:

AOI: Extent is the limit of the project area for Block 1 Part1
This dataset is supplied in SHP format

Raw Point Cloud: Contains the unclassified LiDAR point cloud points as they were prior to being classified
This dataset is supplied in ASPRS LAS v1.4 format

Classified Point Cloud: Contains the LiDAR point cloud points that have been classified
This dataset is supplied in ASPRS LAS v1.4 format

Surface Type	Classification	Point Class
Raw	1	Unclassified
Ground	2	Ground
Above Ground	3	Low Vegetation
Above Ground	4	Medium Vegetation
Above Ground	5	High Vegetation
Above Ground	6	Buildings
Above Ground	7	Low Noise
Above Ground	9	Water
Above Ground	18	High Noise

Gridded DEM: Contains the gridded ground surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Gridded DSM: Contains the gridded top of surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Breaklines: Breaklines representing all hydro-flattened features
This dataset is supplied in SHP format

Tile Layout: Tiles is the tile layout for the project area
Tile size: 1:1,000 sheet layout (480 x 720 m)
Tile dataset is supplied in SHP format

File Listing: Supplied in TXT format

Metadata Report: Supplied in PDF format

All digital data supplied on e-HDD-97. Data was couriered to Glen Clarkin, Bay of Plenty Regional Council, on 3 March 2021

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

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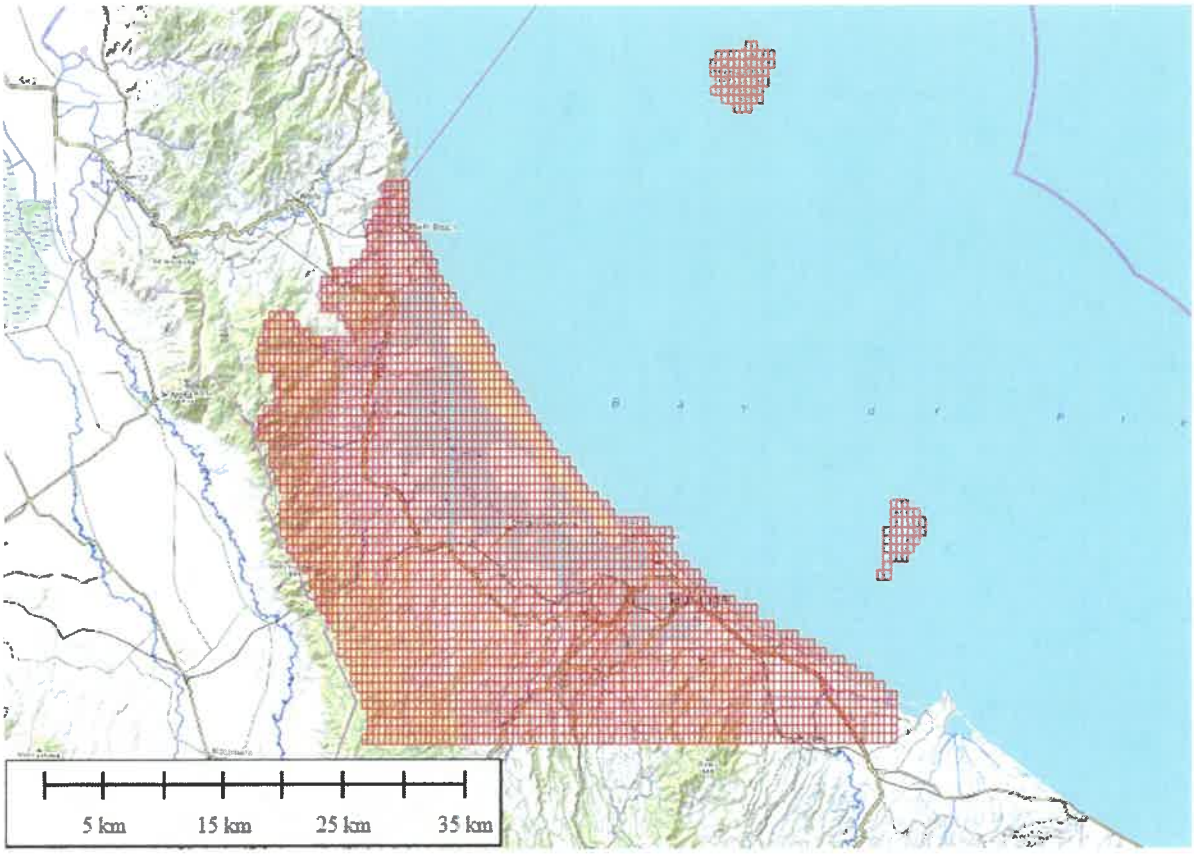
BOPLASS Ltd intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The tile layout is shown in red.
The project extent area is shown in blue.



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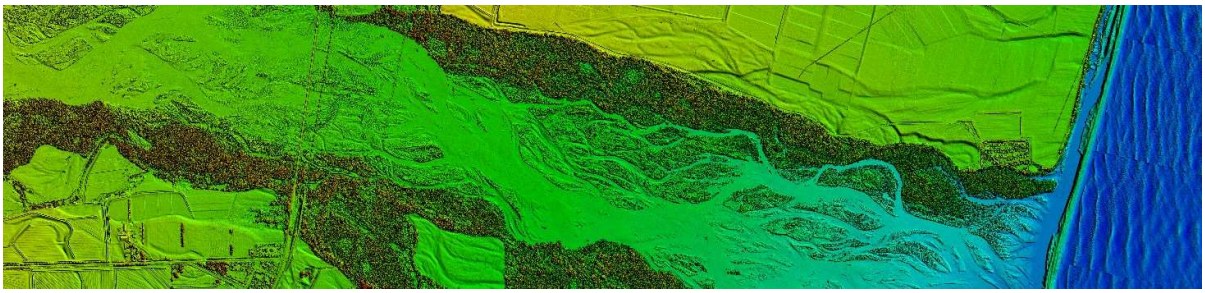

Metadata

BOPLASS LTD

BAY OF PLENTY – 2019-25 PGF LiDAR SURVEY

BLOCK2

AERIAL SURVEYS PROJECT №: FPFA1263

Summary

Project

An Airborne Laser Scanner survey was conducted over the Bay of Plenty areas of interest totalling approximately 5217 km^2. The area is located in the Bay of Plenty Region of the North Island.

Data

The data was processed into various digital map data products. The products included for this dispatch contain:

- AOI
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Layout
- File Listing
- Metadata Report (this report)

Project Report

Safety: No safety Incidents were reported during the project.

Acquisition: Airborne Laser Scanner (ALS) data was acquired from a fixed wing aircraft.

Ground Support: GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points were acquired by Sounds Surveying Ltd.

Data Processing: Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using auto algorithms across the project area.

Data Presentation: The data provided on this volume has been supplied in accordance with a specification agreed with BOPLASS Ltd.

Project Contacts:
Bay of Plenty RC Geospatial Team Leader: Glen Clarkin (Ph. (07) 922 3390)
Aerial Surveys Business Development Manager: Steve Smith (Ph. (09) 415 3101)

Data Acquisition

The project area is that shown in the shapefile '**LiDAR_Tile_Extent_BayOfPlenty_Block2.shp**' that accompanies the dataset. A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:

24 November 2019	26 January 2021	23 December 2021
23 January 2020	1 February 2021	24 December 2021
12 March 2020	2 February 2021	31 December 2021
15 May 2020	23 June 2021	8 January 2022
16 May 2020	24 June 2021	18 January 2022
19 May 2020	19 December 2021	19 January 2022
21 May 2020	20 December 2021	8 April 2022
10 July 2020	22 December 2021	

Survey Specification:

Swath Points Per m2	**2**	**4**
Scanner	Optech Galaxy PRIME	Optech Galaxy PRIME
Swath sidelap %	55	35
Approx. Capture elevation	3100 m AMGL	2100 AMGL
Scan Angle FOV	40	44
Scan Frequency	47	64
Pulse Rate	350	500

The settings are approximate values only. Please see the trajectory shp file for actual flightline capture specifications.

Sounds Surveying Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

Data Processing

The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSPac software.

Base Station : PP-RTX

The POS data was combined with the LiDAR range files and used to generate LIDAR point clouds in NZTM and ellipsoidal heights. This process was undertaken using Optech LMS LiDAR processing software. The data was checked for completeness of coverage. The relative fit of data in the overlap between strips was also checked.

The height accuracy of the ground classified LiDAR points was checked using open land-cover survey check site data collected by Sounds Surveying Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints.

	StD_Dev	RMS	CI95	Avg_Diff
Control Ground Points	0.048m	0.048m	0.094m	0 m
Check Ground Points	0.067m	0.067m	0.131m	-0.005m

The positional accuracy of the LiDAR data has been checked by overlaying Sounds Surveying Ltd surveyed data over the LiDAR data displayed coded by intensity. The data was found to fit well in position.

The point cloud data was then classified with TerraSolid LiDAR processing software into ground and above ground returns using automated routines tailored to the project land cover and terrain.

Product Deliverables

All spatial data for this project provided in terms of New Zealand Transverse Mercator 2000 (NZTM2000) horizontal and New Zealand Vertical Datum (NZVD2016). The data was converted from NZGD2000 ellipsoidal heights into the orthometric height system using the LINZ NZGeoid16 separation model. The products are tiled into NZTopo50 map sheet tiles as noted below.

The following details the folder contents:

AOI: Extent is the limit of the project area for Block 1 Part1
This dataset is supplied in SHP format

Raw Point Cloud: Contains the unclassified LiDAR point cloud points as they were prior to being classified
This dataset is supplied in ASPRS LAS v1.4 format

Classified Point Cloud: Contains the LiDAR point cloud points that have been classified
This dataset is supplied in ASPRS LAS v1.4 format

Surface Type	Classification	Point Class
Raw	1	Unclassified
Ground	2	Ground
Above Ground	3	Low Vegetation
Above Ground	4	Medium Vegetation
Above Ground	5	High Vegetation
Above Ground	6	Buildings
Above Ground	7	Low Noise
Above Ground	9	Water
Above Ground	18	High Noise

Gridded DEM: Contains the gridded ground surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Gridded DSM: Contains the gridded top of surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Breaklines: Breaklines representing all hydro-flattened features
This dataset is supplied in SHP format

Tile Layout: Tiles is the tile layout for the project area
Tile size: 1:1,000 sheet layout (480 x 720 m)
Tile dataset is supplied in SHP format

File Listing: Supplied in TXT format

Metadata Report: Supplied in PDF format

All digital data supplied on the ECAN Azure cloud. A confirmation email was sent to Glen Clarkin, Bay of Plenty Regional Council, on 22 November 2022.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

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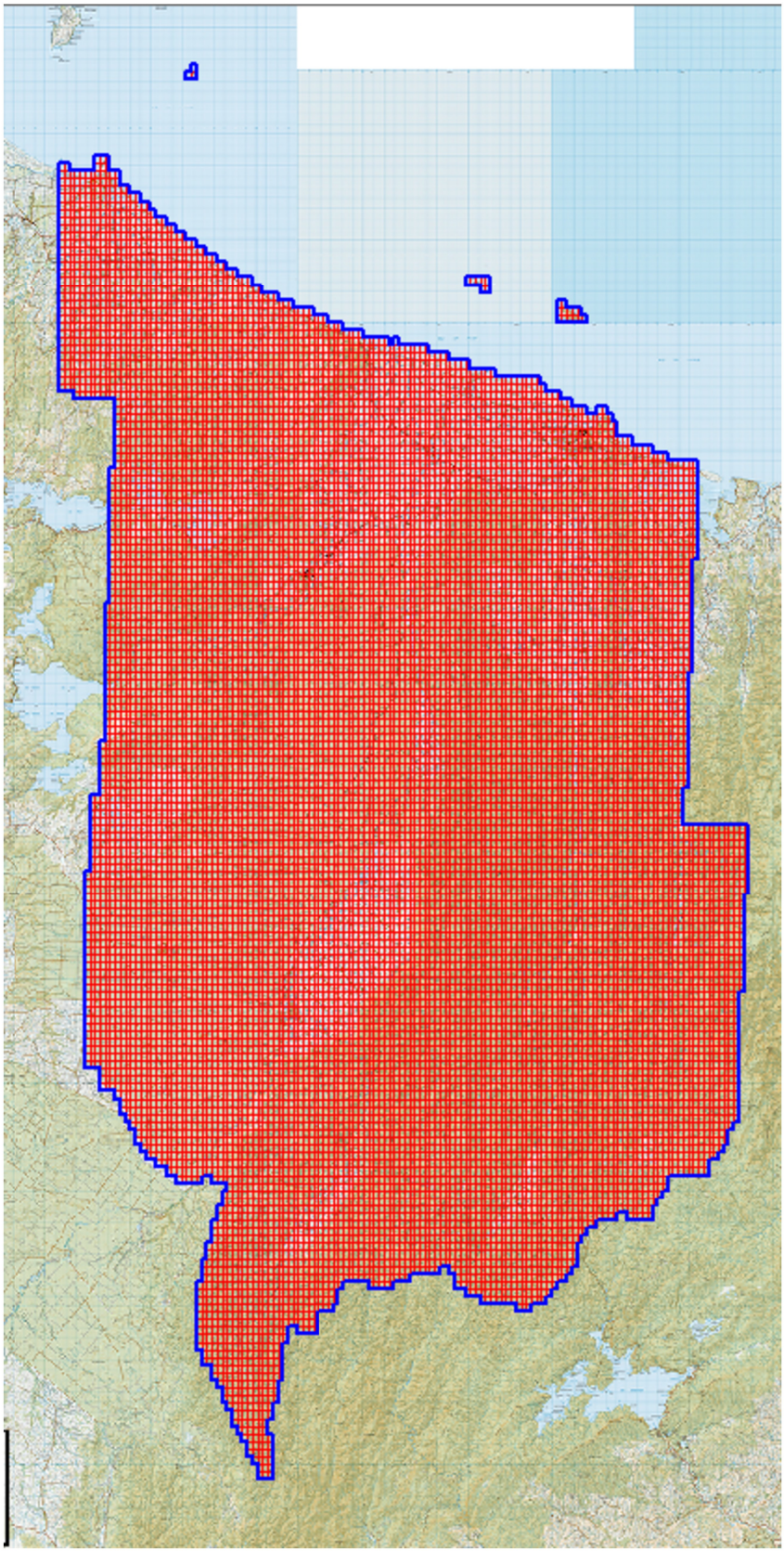
BOPLASS Ltd intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

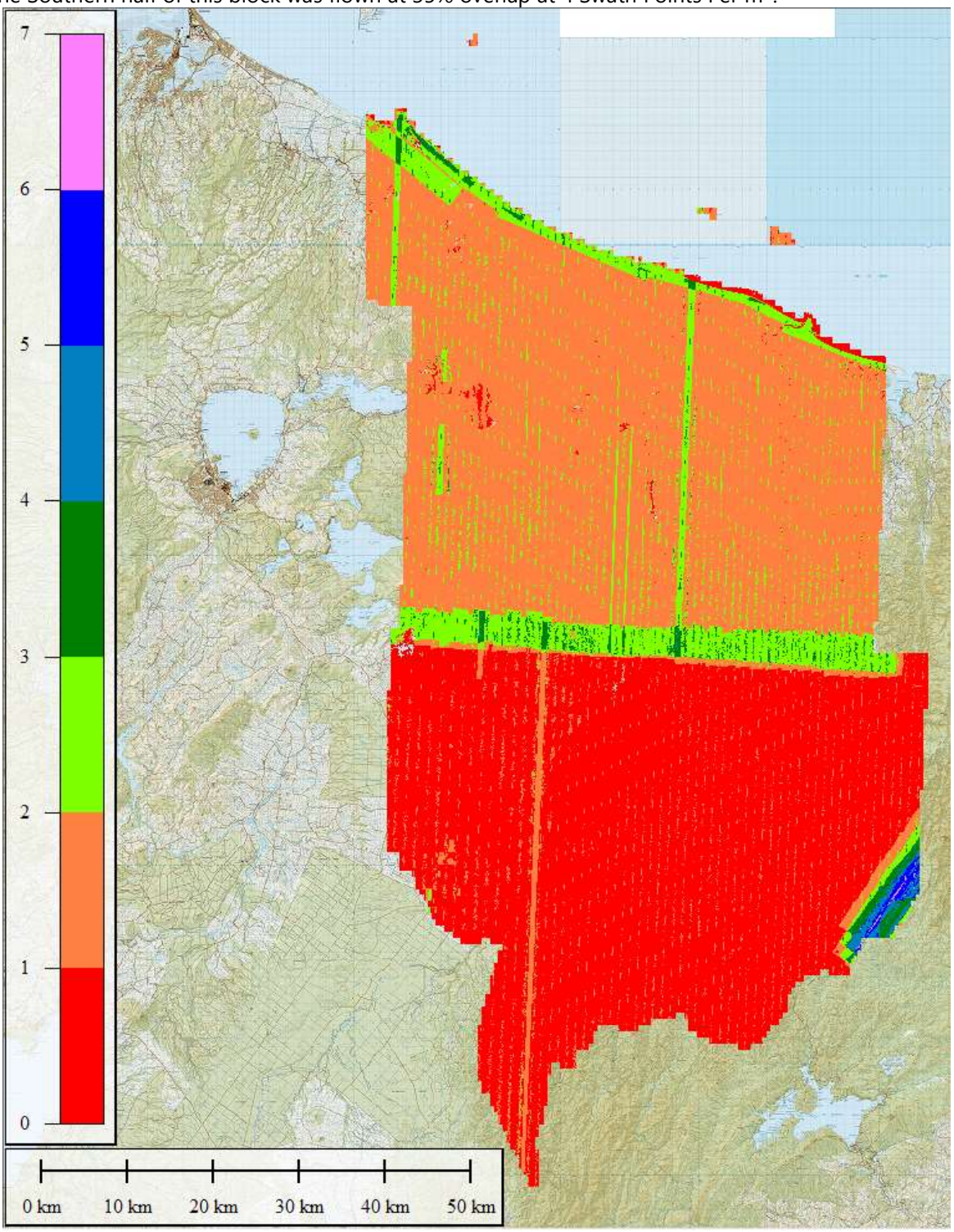
Appendix A: Project Area

The tile layout is shown in red.
The project extent area is shown in blue.



Appendix B: Different Specifications

The Northern half was flown at 55% overlap at 2 Swath Points Per m^2.
The Southern half of this block was flown at 35% overlap at 4 Swath Points Per m^2.



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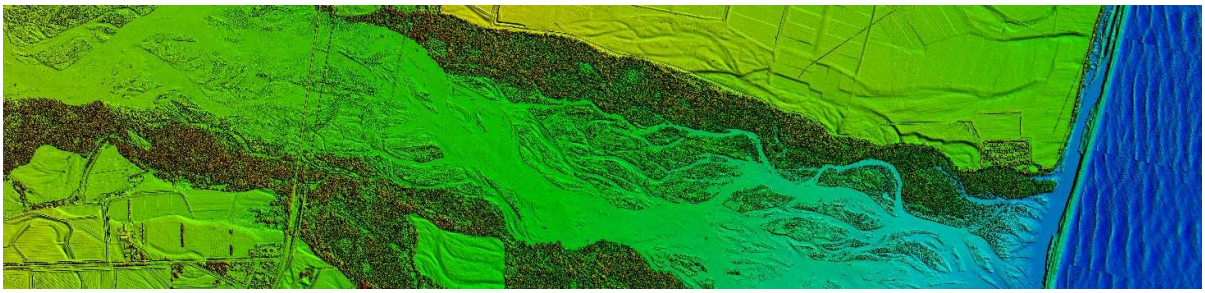

Metadata

BOPLASS LTD

BAY OF PLENTY – 2019-25 PGF LiDAR SURVEY

BLOCK3

AERIAL SURVEYS PROJECT №: FPFA1263

Summary

Project

An Airborne Laser Scanner survey was conducted over the Bay of Plenty areas of interest totalling approximately 5217 km^2. The area is the south-west region, including the Lake Rotorua area

Data

The data was processed into various digital map data products. The products included for this dispatch contain:

- AOI
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Layout
- File Listing
- Metadata Report (this report)

Project Report

Safety: No safety Incidents were reported during the project.

Acquisition: Airborne Laser Scanner (ALS) data was acquired from a fixed wing aircraft.

Ground Support: GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points were acquired by Sounds Surveying Ltd.

Data Processing: Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using auto algorithms across the project area.

Data Presentation: The data provided on this volume has been supplied in accordance with a specification agreed with BOPLASS Ltd.

Project Contacts:
Bay of Plenty RC Geospatial Team Leader: Glen Clarkin (Ph. (07) 922 3390)
Aerial Surveys Business Development Manager: Steve Smith (Ph. (09) 415 3101)

Data Acquisition

The project area is that shown in the shapefile '**BayOfPlentyPGF_2019-25_LiDAR_Block3_TileExtent.shp**' that accompanies the dataset. A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:

12 March 2020	21 May 2020	9 April 2022
15 May 2020	5 October 2020	14 April 2022
18 May 2020	31 December 2021	2 July 2022
19 May 2020	8 January 2022	4 July 2022
20 May 2020	18 January 2022	

Survey Specification:

Swath Points Per m2	**2**
Scanner	Optech Galaxy PRIME
Swath sidelap %	55
Approx. Capture elevation	3100 m AMGL
Scan Angle FOV	46
Scan Frequency	48
Pulse Rate	400

The settings are approximate values only. Please see the trajectory shp file for actual flightline capture specifications.

Sounds Surveying Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

Data Processing

The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSPac software.

Base Station : PP-RTX

The POS data was combined with the LiDAR range files and used to generate LIDAR point clouds in NZTM and ellipsoidal heights. This process was undertaken using Optech LMS LiDAR processing software. The data was checked for completeness of coverage. The relative fit of data in the overlap between strips was also checked.

The height accuracy of the ground classified LiDAR points was checked using open land-cover survey check site data collected by Sounds Surveying Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints.

	StD_Dev	RMS	CI95	Avg_Diff
Control Ground Points	0.06 m	0.06 m	0.118 m	-0.003 m
Check Ground Points	0.077 m	0.077 m	0.151 m	-0.003 m

The positional accuracy of the LiDAR data has been checked by overlaying Sounds Surveying Ltd surveyed data over the LiDAR data displayed coded by intensity. The data was found to fit well in position.

The point cloud data was then classified with TerraSolid LiDAR processing software into ground and above ground returns using automated routines tailored to the project land cover and terrain.

Product Deliverables

All spatial data for this project provided in terms of New Zealand Transverse Mercator 2000 (NZTM2000) horizontal and New Zealand Vertical Datum (NZVD2016). The data was converted from NZGD2000 ellipsoidal heights into the orthometric height system using the LINZ NZGeoid16 separation model. The products are tiled into NZTopo50 map sheet tiles as noted below.

The following details the folder contents:

AOI: Extent is the limit of the project area for Block 3
This dataset is supplied in SHP format

Raw Point Cloud: Contains the unclassified LiDAR point cloud points as they were prior to being classified
This dataset is supplied in ASPRS LAS v1.4 format

Classified Point Cloud: Contains the LiDAR point cloud points that have been classified
This dataset is supplied in ASPRS LAS v1.4 format

Surface Type	Classification	Point Class
Raw	1	Unclassified
Ground	2	Ground
Above Ground	3	Low Vegetation
Above Ground	4	Medium Vegetation
Above Ground	5	High Vegetation
Above Ground	6	Buildings
Above Ground	7	Low Noise
Above Ground	9	Water
Above Ground	18	High Noise

Gridded DEM: Contains the gridded ground surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Gridded DSM: Contains the gridded top of surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Breaklines: Breaklines representing all hydro-flattened features
This dataset is supplied in SHP format

Tile Layout: Tiles is the tile layout for the project area
Tile size: 1:1,000 sheet layout (480 x 720 m)
Tile dataset is supplied in SHP format

File Listing: Supplied in TXT format

Metadata Report: Supplied in PDF format

All digital data supplied on the ECAN Azure cloud. A confirmation email was sent to Glen Clarkin, Bay of Plenty Regional Council, on 28 April 2023.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

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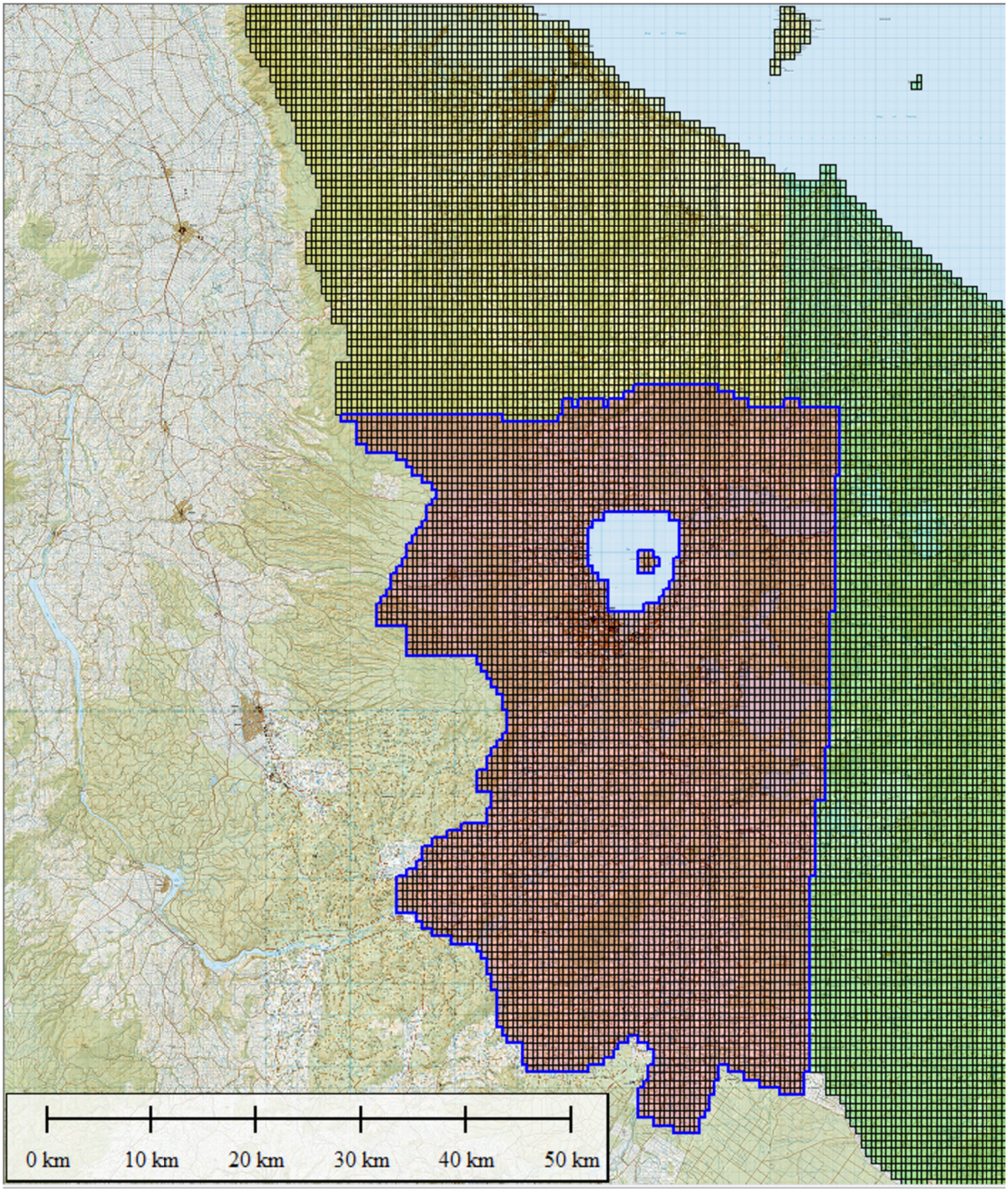
BOPLASS Ltd intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The tile layout is shown in red.
The project extent area is shown in blue.
BOP1 (yellow) and BOP2 (green) are the two adjoining areas.



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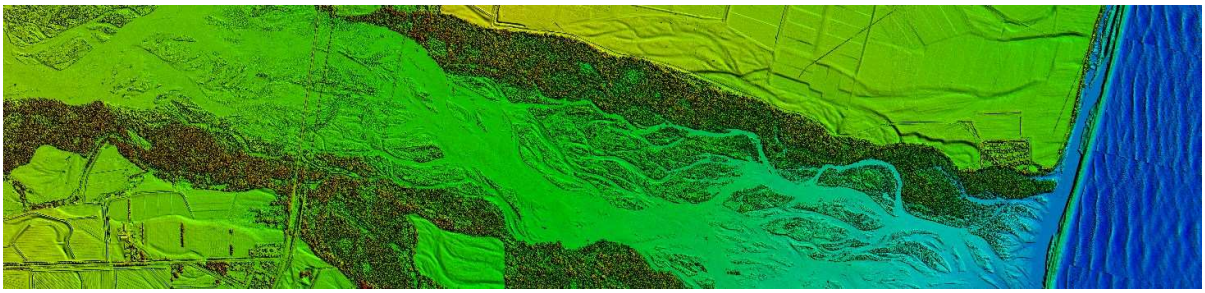

Metadata

BOPLASS LTD

BAY OF PLENTY – 2019-25 PGF LiDAR SURVEY

BLOCK4

AERIAL SURVEYS PROJECT №: FPFA1263

Summary

Project

An Airborne Laser Scanner survey was conducted over the Bay of Plenty areas of interest totalling approximately 5217 km^2. The area is located in the Bay of Plenty Region of the North Island.

Data

The data was processed into various digital map data products. The products included for this dispatch contain:

- AOI
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Layout
- File Listing
- Metadata Report (this report)

Project Report

Safety: No safety Incidents were reported during the project.

Acquisition: Airborne Laser Scanner (ALS) data was acquired from a fixed wing aircraft.

Ground Support: GPS base station data was provided by Global Surveys Ltd and LINZ base stations. The ground check points were acquired by Sounds Surveying Ltd.

Data Processing: Reduction of the ALS data proceeded without any significant problems. Laser strikes were classified into ground and non-ground points using auto algorithms across the project area.

Data Presentation: The data provided on this volume has been supplied in accordance with a specification agreed with BOPLASS Ltd.

Project Contacts:
Bay of Plenty RC Geospatial Team Leader: Glen Clarkin (Ph. (07) 922 3390)
Aerial Surveys Business Development Manager: Steve Smith (Ph. (09) 415 3101)

Data Acquisition

The project area is that shown in the shapefile '**BayOfPlentyPGF_2019-25_LiDAR_Block4_TileExtent.shp**' that accompanies the dataset. A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:

27/10/2019	8/06/2020	23/12/2021	14/08/2022
24/11/2019	9/06/2020	8/01/2022	23/10/2022
13/01/2020	10/06/2020	19/01/2022	24/10/2022
23/01/2020	10/07/2020	4/08/2022	
22/05/2020	11/07/2020	5/08/2022	
23/05/2020	22/12/2021	13/08/2022	

Survey Specification:

Swath Points Per m2	**2**
Scanner	Optech Galaxy PRIME
Swath sidelap %	55
Approx. Capture elevation	3100 m AMGL
Scan Angle FOV	40
Scan Frequency	47
Pulse Rate	350

The settings are approximate values only. Please see the trajectory shp file for actual flightline capture specifications.

Sounds Surveying Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

Data Processing

The LiDAR sensor positioning and orientation (POS) was determined using the collected GPS/IMU datasets and Applanix POSPac software.

Base Station : PP-RTX

The POS data was combined with the LiDAR range files and used to generate LIDAR point clouds in NZTM and ellipsoidal heights. This process was undertaken using Optech LMS LiDAR processing software. The data was checked for completeness of coverage. The relative fit of data in the overlap between strips was also checked.

The height accuracy of the ground classified LiDAR points was checked using open land-cover survey check site data collected by Sounds Surveying Ltd. This was done by calculating height differences statistics between a TIN of the LiDAR ground points and the checkpoints.

	StD_Dev	RMS	CI95	Avg_Diff
Control Ground Points	0.053m	0.053m	0.103m	0 m
Check Ground Points	0.051m	0.051m	0.101m	0.017m

The positional accuracy of the LiDAR data has been checked by overlaying Sounds Surveying Ltd surveyed data over the LiDAR data displayed coded by intensity. The data was found to fit well in position.

The point cloud data was then classified with TerraSolid LiDAR processing software into ground and above ground returns using automated routines tailored to the project land cover and terrain.

Product Deliverables

All spatial data for this project provided in terms of New Zealand Transverse Mercator 2000 (NZTM2000) horizontal and New Zealand Vertical Datum (NZVD2016). The data was converted from NZGD2000 ellipsoidal heights into the orthometric height system using the LINZ NZGeoid16 separation model. The products are tiled into NZTopo50 map sheet tiles as noted below.

The following details the folder contents:

AOI: Extent is the limit of the project area for Block 1 Part1
This dataset is supplied in SHP format

Raw Point Cloud: Contains the unclassified LiDAR point cloud points as they were prior to being classified
This dataset is supplied in ASPRS LAS v1.4 format

Classified Point Cloud: Contains the LiDAR point cloud points that have been classified
This dataset is supplied in ASPRS LAS v1.4 format

Surface Type	Classification	Point Class
Raw	1	Unclassified
Ground	2	Ground
Above Ground	3	Low Vegetation
Above Ground	4	Medium Vegetation
Above Ground	5	High Vegetation
Above Ground	6	Buildings
Above Ground	7	Low Noise
Above Ground	9	Water
Above Ground	18	High Noise

Gridded DEM: Contains the gridded ground surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Gridded DSM: Contains the gridded top of surface (1 m separation grid)
This dataset is supplied in raster GeoTIFF format

Breaklines: Breaklines representing all hydro-flattened features
This dataset is supplied in SHP format

Tile Layout: Tiles is the tile layout for the project area
Tile size: 1:1,000 sheet layout (480 x 720 m)
Tile dataset is supplied in SHP format

File Listing: Supplied in TXT format

Metadata Report: Supplied in PDF format

All digital data supplied on the ECAN Azure cloud. A confirmation email was sent to Glen Clarkin, Bay of Plenty Regional Council, on 21 February 2023.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

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BOPLASS Ltd intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The tile layout is shown in red.
The project extent area is shown in blue.