Aerial Surveys
SmartPhotos SmartForests

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Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 1

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project
An Airborne Laser Scanner survey was conducted over the Marlborough areas of interest totalling approximately 11,015 km^2. The area is located in the Marlborough Region of the South 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Hadley Mills (Ph. (03) 768 0466)
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

A map showing this area of interest is included in Appendix A.

Capture Dates
The LiDAR survey was captured on the following dates:
22, 30 June 2020

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 Positions: 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 0.041 m; a RMS of 0.041 m and the average difference is 0.001 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
	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-121. Data was couriered to Hadley Mills, West Coast Regional Council, on 16 February 2021.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.
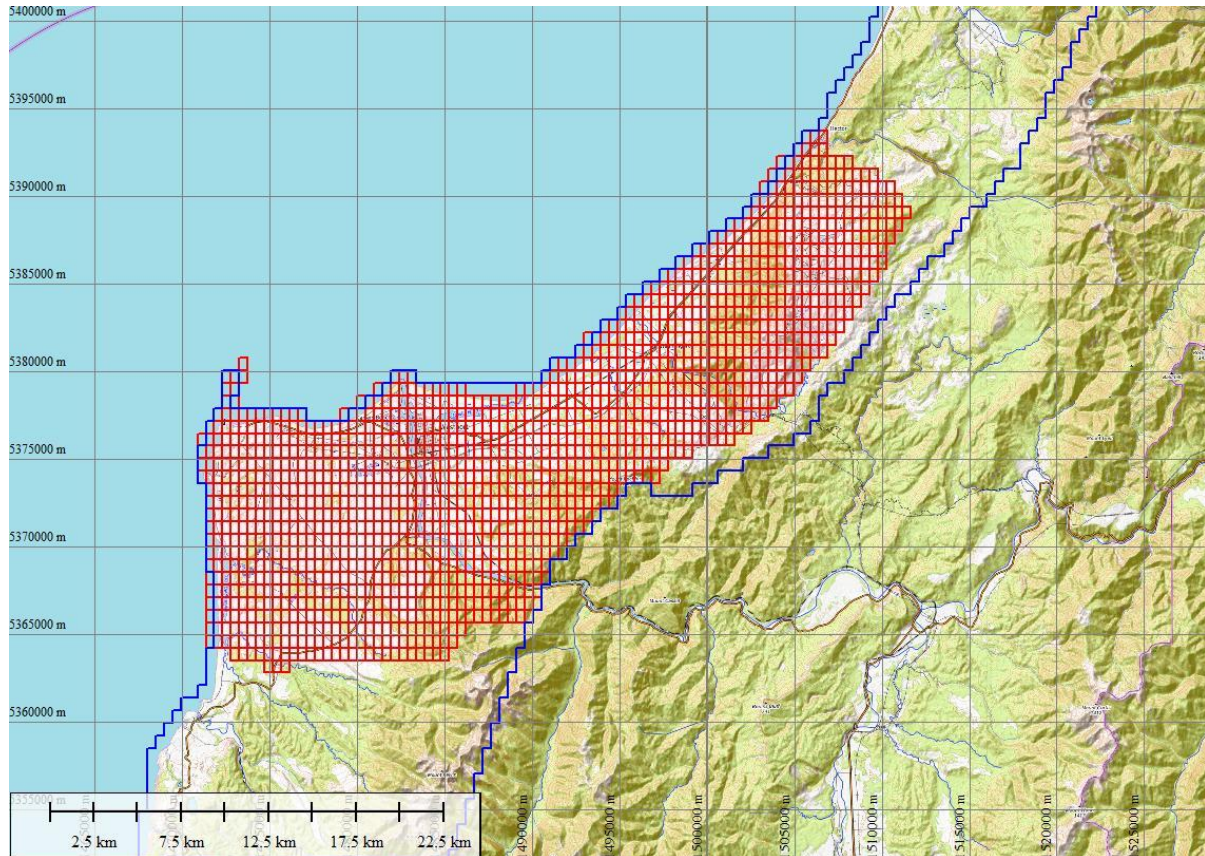
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West Coast Regional Council intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.
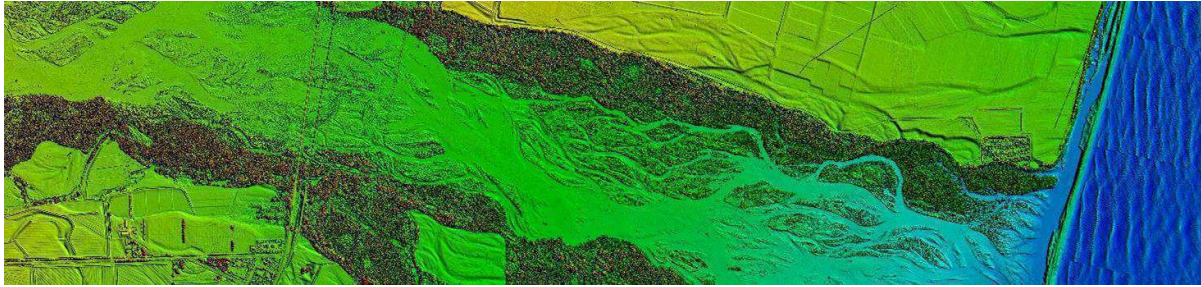
Appendix A: Project Area

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

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Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 2 Part 1

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 24,118 km^2. The area is located in the West Coast Region of the South Island.

This supply covers 4207.3 sq km.

Data

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

- Data Extents
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Index
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Hadley Mills (Ph. (03) 768 0466)
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:
16 May 2020,27 May 2020, 30 May 2020, 31 May 2020, 1 June 2020, 2 June 2020, 22 June 2020, 23 June 2020, 24 June 2020, 30 June 2020, 2 July 2020, 15 October 2020, 7 May 2021, 22 May 2021, 23 May 2021, 30 June 2021, 13 July 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 FOV: 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 Positions: 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 0.037 m; a RMS of 0.037 m and the average difference is 0.001 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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

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:

Data Extents:	Extent is the limit of the project area
	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 Index:	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 via AZURE. Data was uploaded to Hadley Mills, West Coast Regional Council, on 31 August 2021.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.
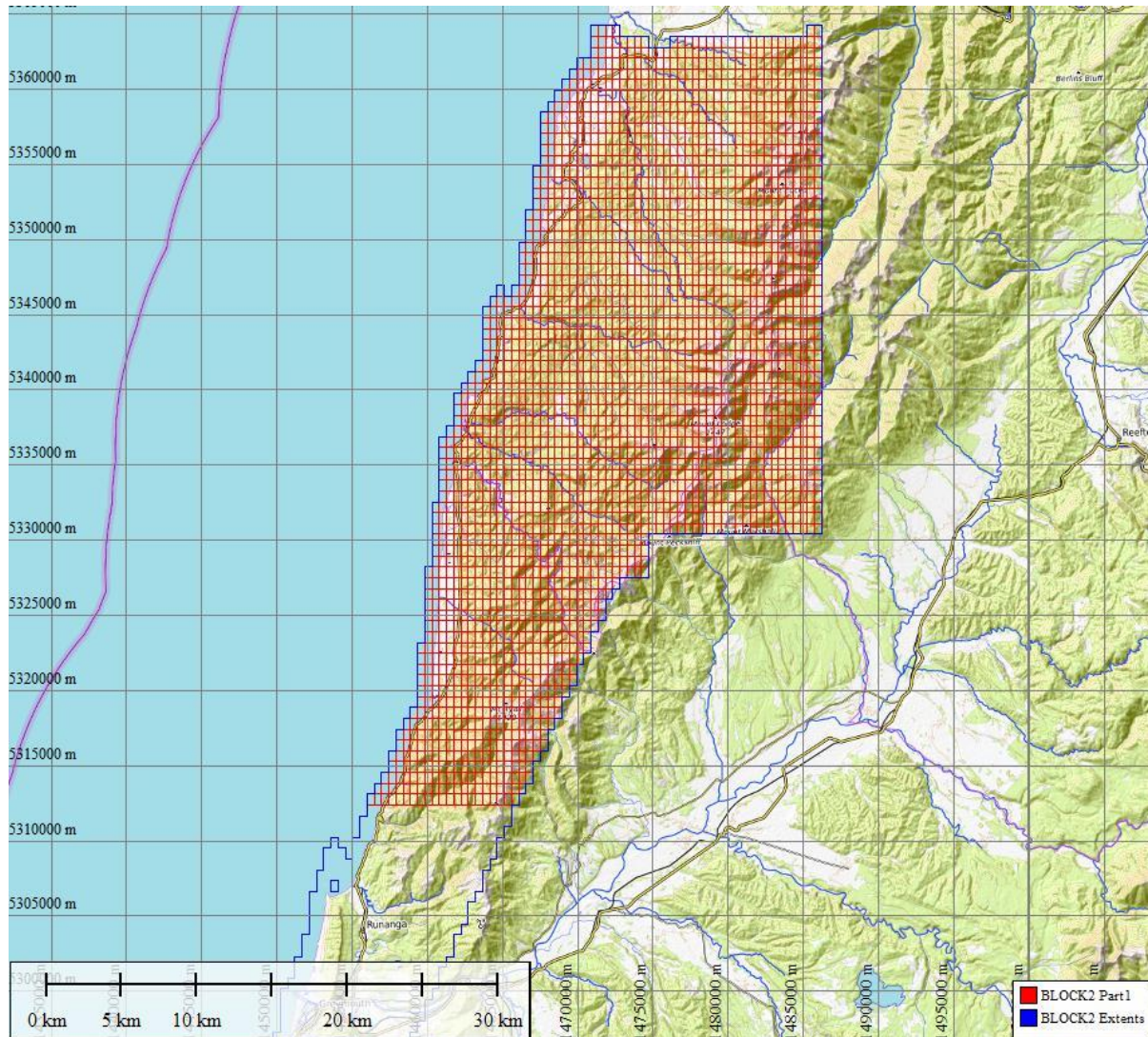
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West Coast Regional Council intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

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

Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 2 Part 2 & Part 3

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 24,118 km^2. The area is located in the West Coast Region of the South Island.

This supply covers 2104.7 sq km.

Data

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

- Data Extents
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Tile Index
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Hadley Mills (Ph. (03) 768 0466)
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

A map showing this area of interest is included in Appendix A.

Capture Dates
The LiDAR survey was captured on the following dates:
16 May 2020,27 May 2020, 30 May 2020, 31 May 2020, 1 June 2020, 2 June 2020, 22 June 2020, 23 June 2020, 24 June 2020, 30 June 2020, 2 July 2020, 15 October 2020, 7 May 2021, 22 May 2021, 23 May 2021, 30 June 2021, 13 July 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 FOV: 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 Positions: 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 0.037 m; a RMS of 0.037 m and the average difference is 0.001 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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

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:

Data Extents:	Extent is the limit of the project area
	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 LAZ 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 Index:	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 via AZURE. Data was uploaded to Hadley Mills, West Coast Regional Council, on 30 September 2021.

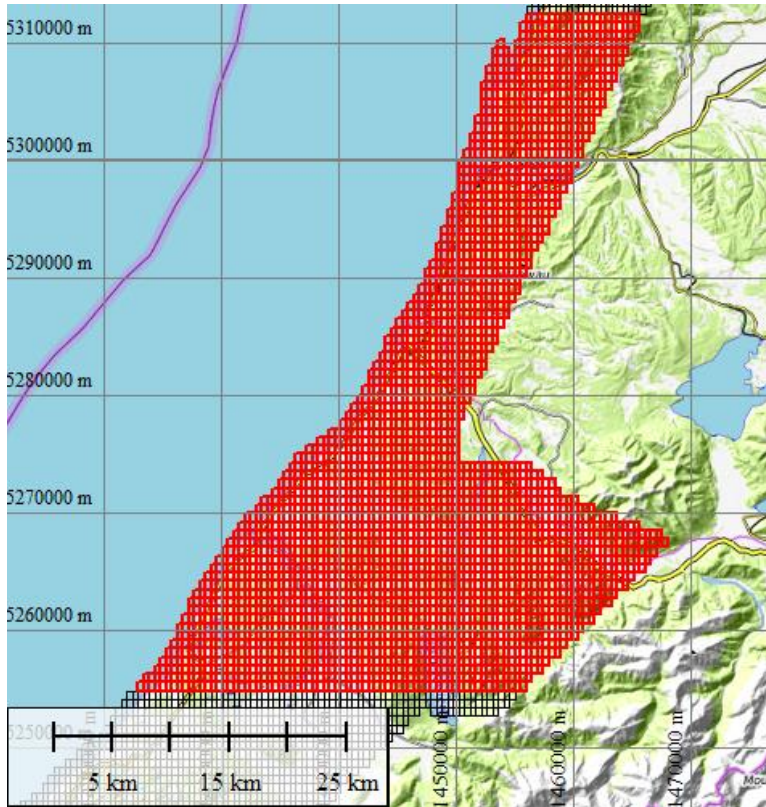If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.

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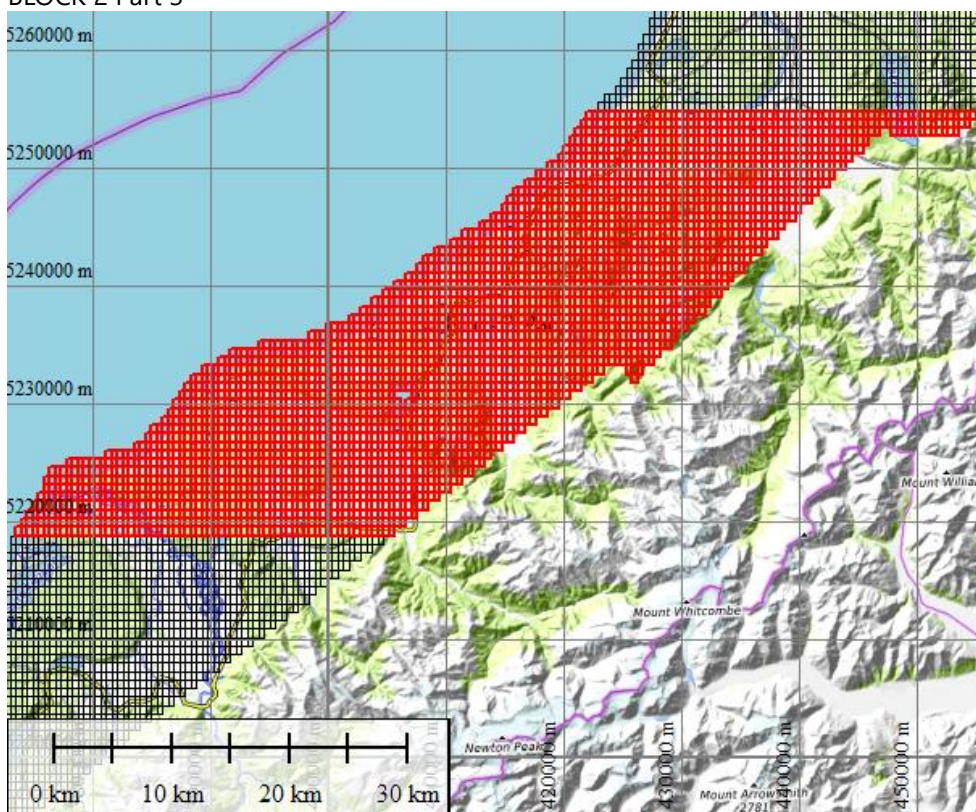
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Appendix A: Project Area

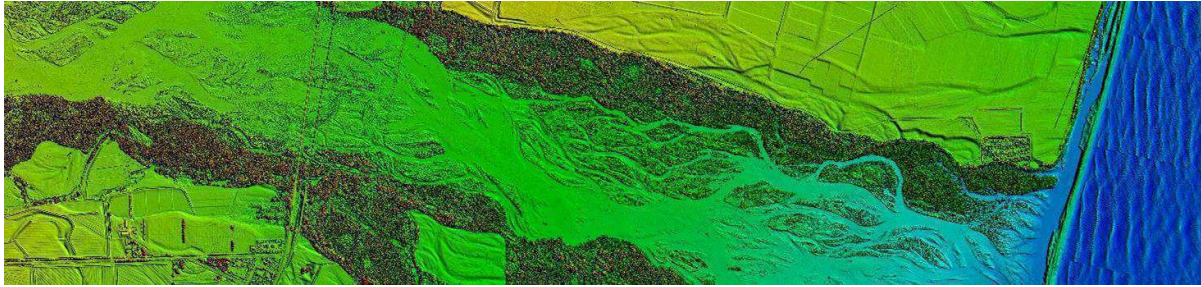The tile layout is shown in red.
BLOCK 2 Part 2

The tile layout is shown in red.
BLOCK 2 Part 3

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Web: www.aerialsurveys.co.nz

Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 2 Part 4

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 24,118 km^2. The area is located in the West Coast Region of the South Island.

This supply covers 1186.4 sq km.

Data

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

- Data Extents
- Raw Point Cloud
- Classified Point Cloud
- Gridded DEM
- Gridded DSM
- Hydro-Flattening Breaklines
- Ground Control
- Tile Index
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Neil Selman
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

A map showing this area of interest is included in Appendix A.

Capture Dates
The LiDAR survey was captured on the following dates:
16 May 2020,27 May 2020, 30 May 2020, 31 May 2020, 1 June 2020, 2 June 2020, 22 June 2020, 23 June 2020, 24 June 2020, 30 June 2020, 2 July 2020, 15 October 2020, 7 May 2021, 22 May 2021, 23 May 2021, 30 June 2021, 13 July 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 FOV: 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 Positions: 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 0.037 m; a RMS of 0.037 m and the average difference is 0.001 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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

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:

Data Extents:	Extent is the limit of the project area
	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 LAZ 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 Index:	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
Ground Control:	Latest updated control files with survey report
File Listing:	Supplied in TXT format
Metadata Report:	Supplied in PDF format

All digital data supplied via AZURE. Data was uploaded to Neil Selman, West Coast Regional Council, on 18 October 2021.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.
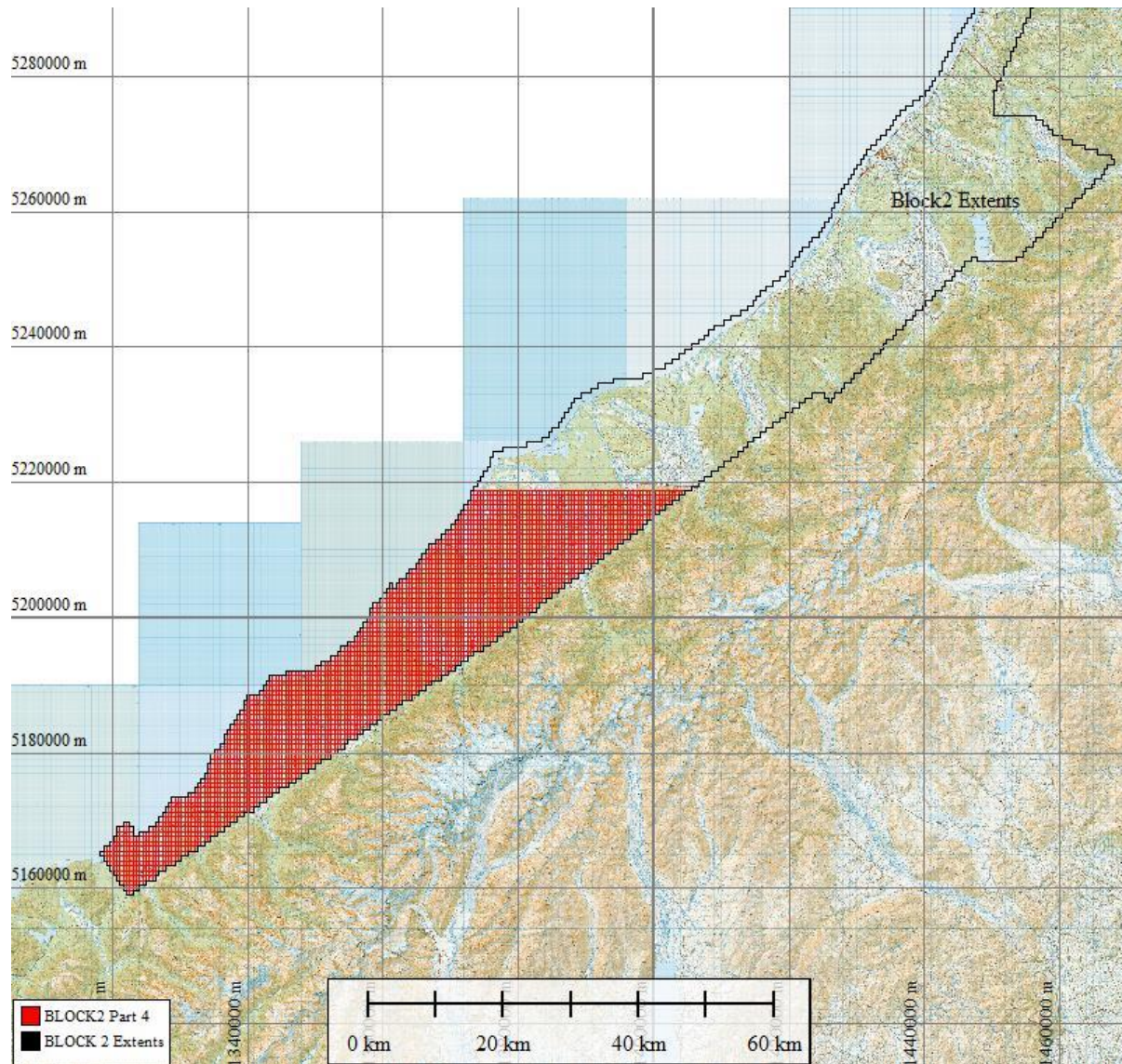
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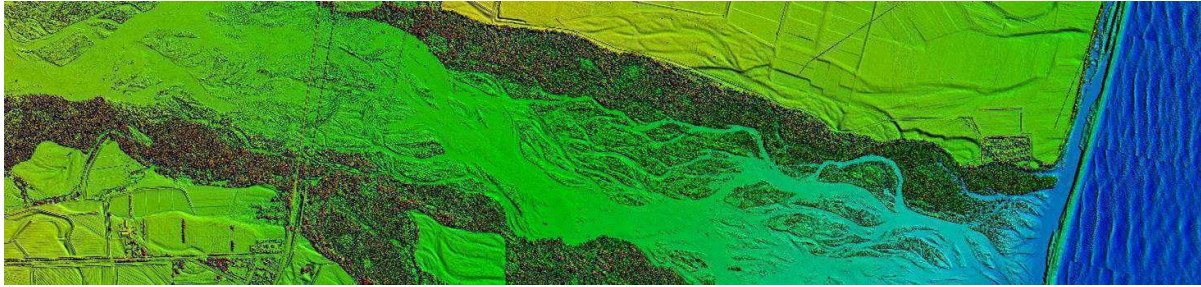
West Coast Regional Council intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The tile layout is shown in red.
BLOCK 2 Part 4

Aerial Surveys
SmartPhotos SmartForests

Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 3

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 24,118 km^2. The area is located in the West Coast Region of the South Island.

This supply covers 1336.8 sq km.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Rachel Vaughan
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

A map showing this area of interest is included in Appendix A.

Capture Dates
The LiDAR survey was captured on the following dates:
25 May 2021, 26 May 2021, 23 October 2021, 13 January 2022, 7 February 2022, 14 February 2022

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 FOV: 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 Positions: 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 0.032 m; a RMS of 0.028 m and the average difference is -0.006 m. LiDAR is relative to the control check points. C195 is 0.075

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

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
	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 via AZURE. Data was uploaded to Neil Selman, West Coast Regional Council, on 29 Jun 2022.

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

License/Copyright

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West Coast Regional Council 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.
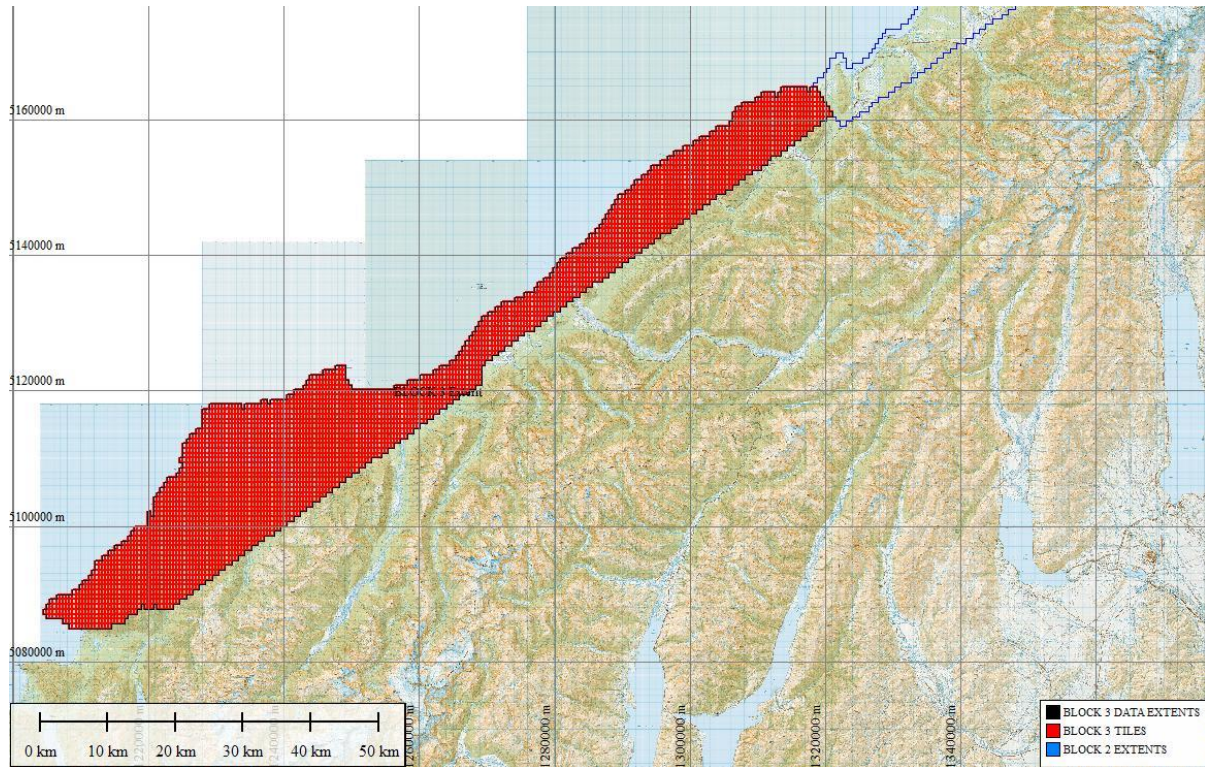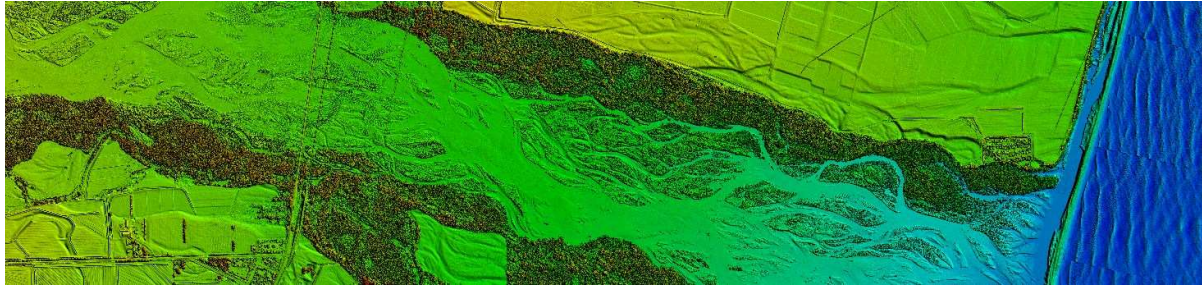
Appendix A: Project Area

The block 3 tile layout is shown in red.
The block 3 extent area is shown in black.
The block 2 abutting extent area is shown in blue.

Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 4

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 24,118 km^2. The delivery covers 3219.6 km^2 in the northern part of West Coast.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Alex Ching
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

A map showing this area of interest is included in Appendix A.

Capture Dates

The LiDAR survey was captured on the following dates:

30/04/2020	2/07/2020	7/04/2021	15/10/2021
6/05/2020	12/08/2020	20/05/2021	22/10/2021
9/05/2020	22/10/2020	24/05/2021	8/12/2021
15/05/2020	23/10/2020	8/06/2021	3/01/2022
22/06/2020	24/10/2020	9/06/2021	22/01/2022
23/06/2020	1/12/2020	4/08/2021	30/01/2022
30/06/2020	16/01/2021	14/10/2021	

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 FOV: 52.0 degrees
- Scan Frequency: 65 Hz
- Pulse Rate: 400 kHz
- Swath Overlap: 55%
- Swath Points Per M^2:   2
- Project Points per M2:   4

These are approximate specifications and for greater detail please check the Flight trajectory shapefile accompanying this delivery.

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 Positions: 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 0.032 m; a RMS of 0.028 m and the average difference is -0.006 m. LiDAR is relative to the control check points. C195 is 0.075

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

Alpine areas were filtered using a polygon generated from contour data, land cover data, and aerial imagery. Areas within the polygon were classified as no or low vegetation to prevent the misclassification of boulder and rock formations.

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
	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 via AZURE. Data was uploaded to Neil Selman, West Coast Regional Council, on 29 Jun 2022.

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

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Appendix A: Project Area

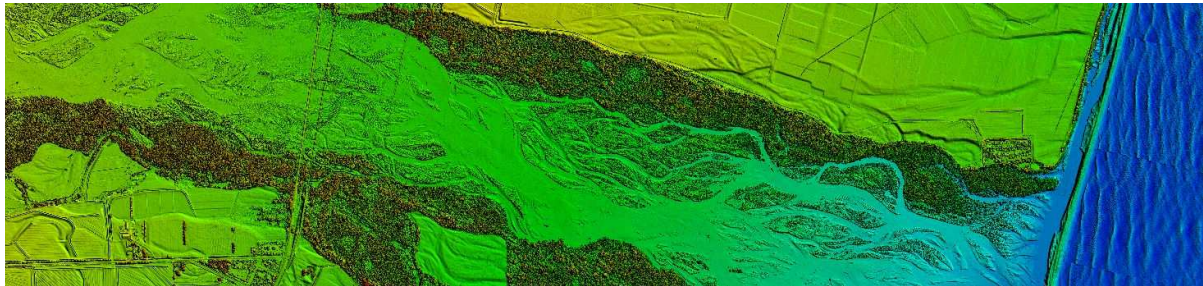The Block 4 tile layout is shown in red. Block 1 is in black.

Unit A1, 8 Saturn Place, Rosedale 0632
PO Box 302072, North Harbour 0751
Auckland, New Zealand
Phone: +64 9 415 3101
Fax: +64 9 414 0090
E-mail: info@aerialsurveys.co.nz
Web: www.aerialsurveys.co.nz
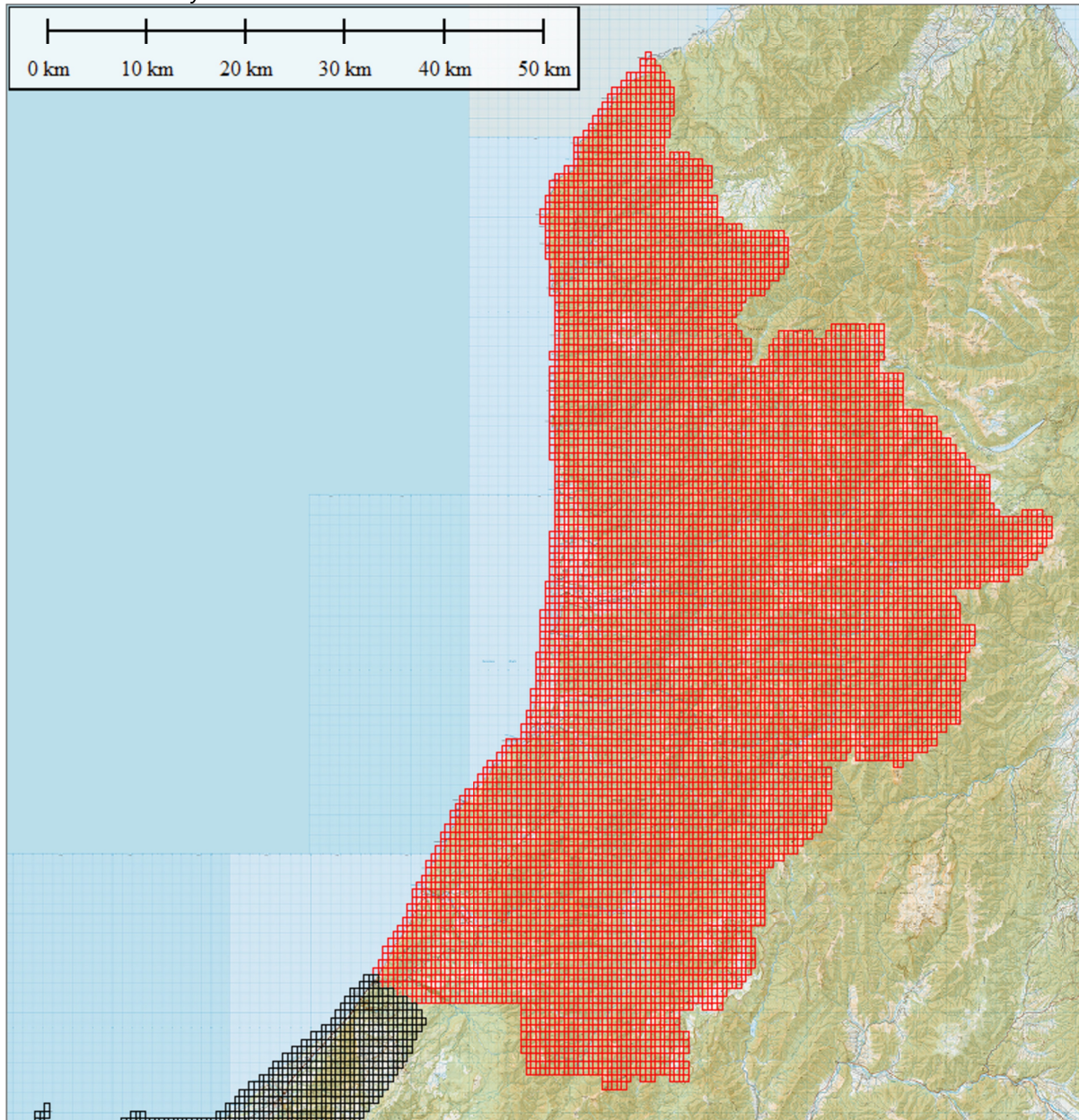
Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 5_part 1

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 10,812 km^2. The delivery covers 3886 km^2 of that area, consisting of 5,637 tiles as a part 1 of block 5.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Alex Ching
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

The project area is that shown in the shapefile 'LiDARTiles_WestCoast2019-25_Fpfa1266-Block1011_A.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:

26/5/2021	27/4/2022	26/11/2023	29/1/2024	26/5/2021
23/10/2021	28/4/2022	8/12/2023	30/1/2024	23/10/2021
13/1/2022	10/5/2022	19/12/2023	31/1/2024	13/1/2022
7/2/2022	12/1/2023	8/1/2024	11/2/2024	7/2/2022
8/2/2022	21/1/2023	12/1/2024	20/2/2024	8/2/2022
14/2/2022	29/1/2023	13/1/2024	21/2/2024	14/2/2022
27/3/2022	15/2/2023	15/1/2024	23/2/2024	27/3/2022
30/3/2022	16/2/2023	16/1/2024	25/2/2024	30/3/2022

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 FOV: 52.0 degrees
- Scan Frequency: 65 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 Positions: 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.

Type	StDev_DZ	Mean_DZ	RMSE_DZ	CI95_DZ
Check	0.05	0.008	0.05	0.098
Control	0.052	-0.007	0.053	0.104

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

Alpine areas were filtered using a polygon generated from contour data, land cover data, and aerial imagery. Areas within the polygon were classified as no or low vegetation to prevent the misclassification of boulder and rock formations.

Areas of snow have been identified and a proprietary method used to correctly classify those areas.

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

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 uploaded to the LINZ-AWS S3 bucket via sFTP. Notification was sent to Neil Selman, West Coast Regional Council, on 25 June 2024.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.
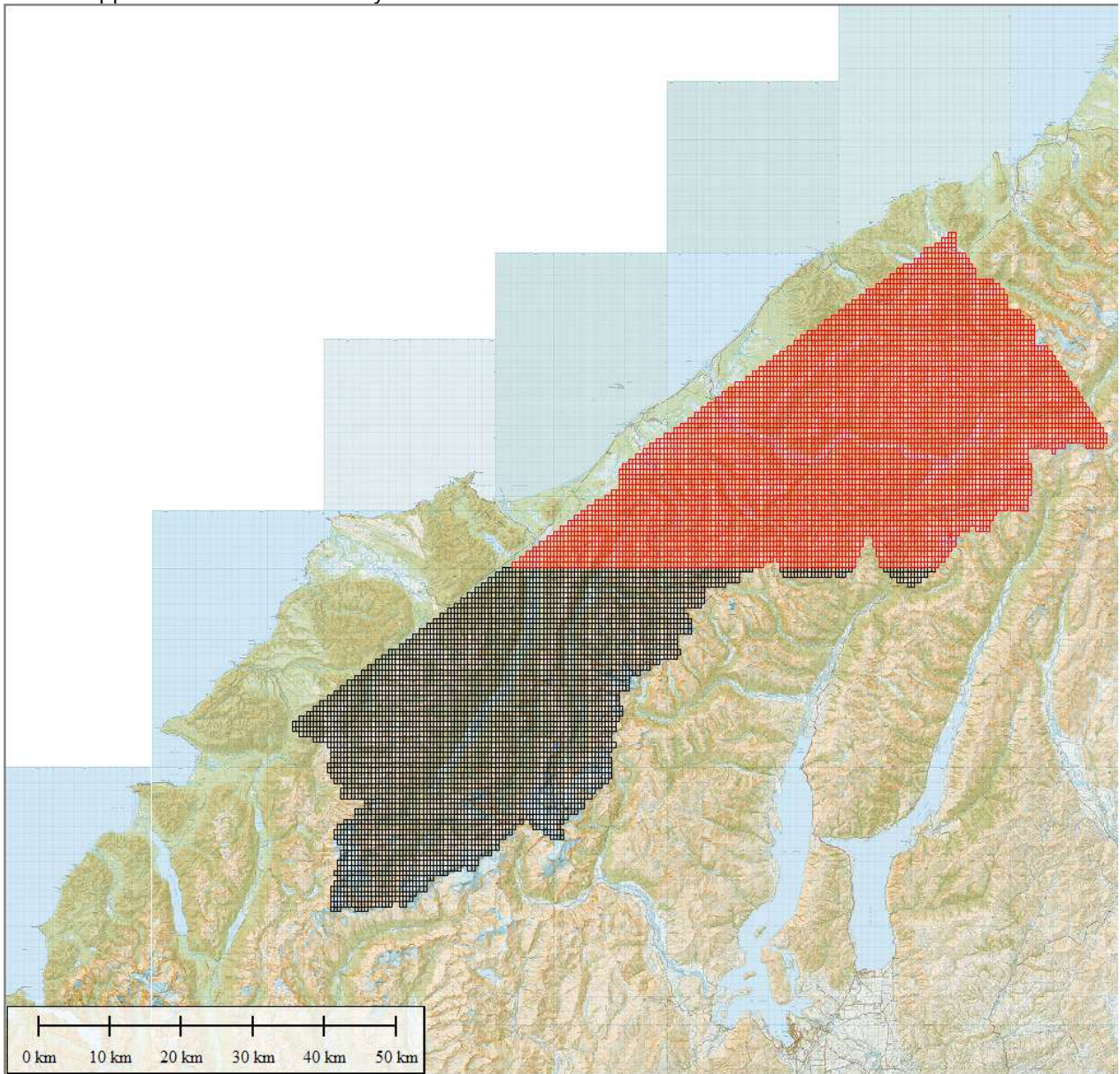
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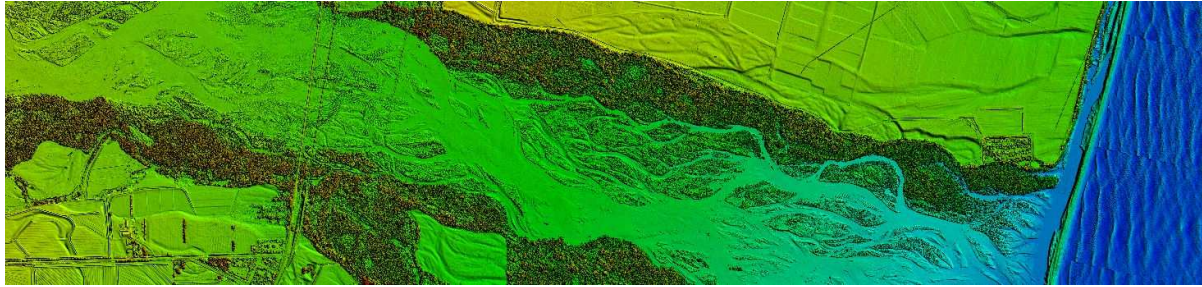
West Coast Regional Council intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The supplied Block 5 Part 1 tile layout is shown in red. Block 5 Part 2 is in black.

Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 5_part 2

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 10,812 km^2. The delivery covers 4330 km^2 of that area, consisting of 4,623 tiles as a part 2 of block 5.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Alex Ching
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

The project area is that shown in the shapefile 'LiDARTiles_WestCoast2019-25_Fpfa1266-Block5_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:

26/5/2021	27/4/2022	26/11/2023	29/1/2024	26/5/2021
23/10/2021	28/4/2022	8/12/2023	30/1/2024	23/10/2021
13/1/2022	10/5/2022	19/12/2023	31/1/2024	13/1/2022
7/2/2022	12/1/2023	8/1/2024	11/2/2024	7/2/2022
8/2/2022	21/1/2023	12/1/2024	20/2/2024	8/2/2022
14/2/2022	29/1/2023	13/1/2024	21/2/2024	14/2/2022
27/3/2022	15/2/2023	15/1/2024	23/2/2024	27/3/2022
30/3/2022	16/2/2023	16/1/2024	25/2/2024	30/3/2022

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 FOV: 52.0 degrees
- Scan Frequency: 65 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 Positions: 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.

Type	StDev_DZ	Mean_DZ	RMSE_DZ	CI95_DZ
Check	0.05	0.008	0.05	0.098
Control	0.052	-0.007	0.053	0.104

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

Alpine areas were filtered using a polygon generated from contour data, land cover data, and aerial imagery. Areas within the polygon were classified as no or low vegetation to prevent the misclassification of boulder and rock formations.

Areas of snow have been identified and a proprietary method used to correctly classify those areas.

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
	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 uploaded to the LINZ-AWS S3 bucket via sFTP. Notification was sent to Neil Selman, West Coast Regional Council, on 25 June 2024.

If you have requirements for the data in other file formats, map projections please contact Aerial Surveys.
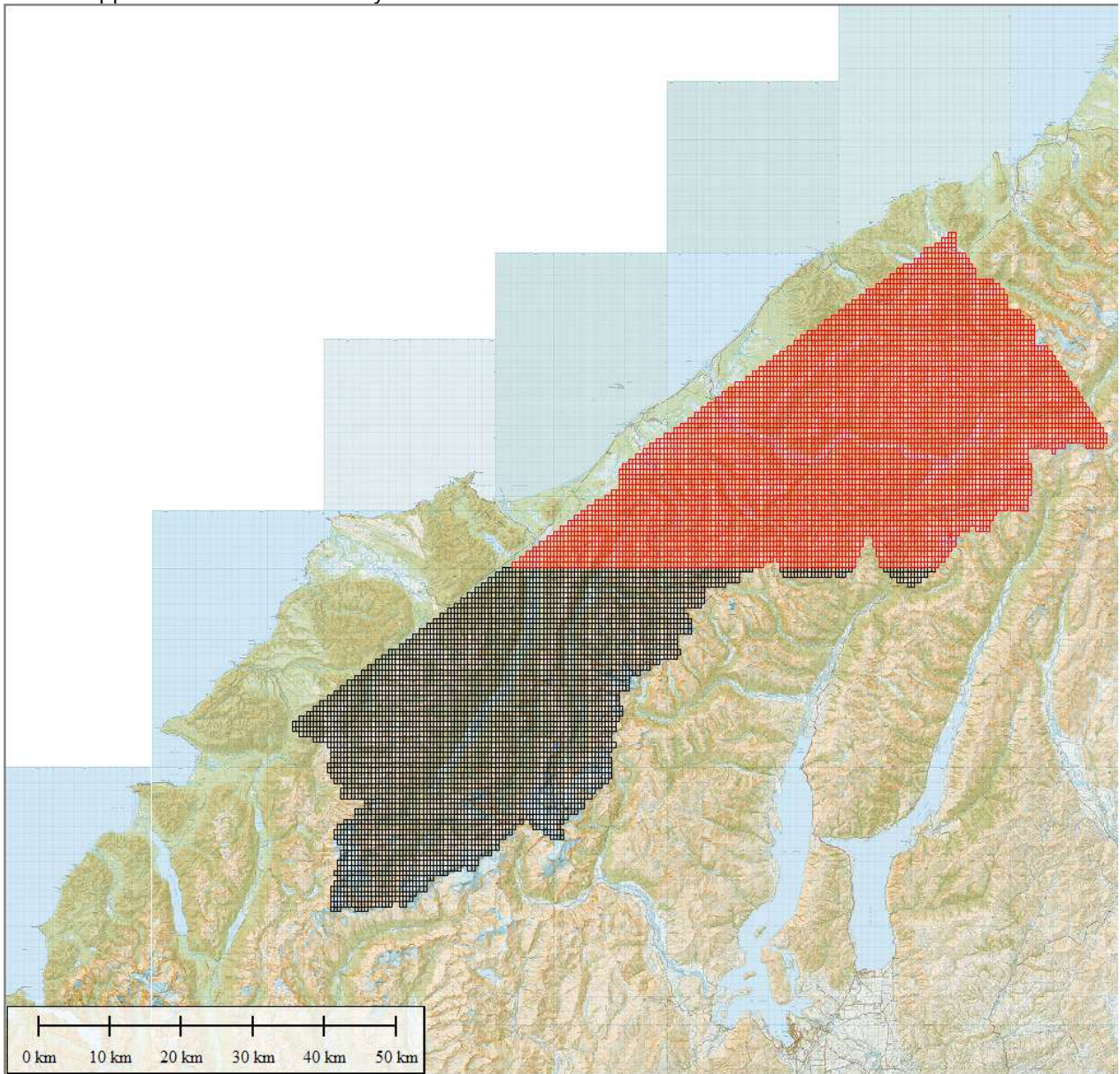
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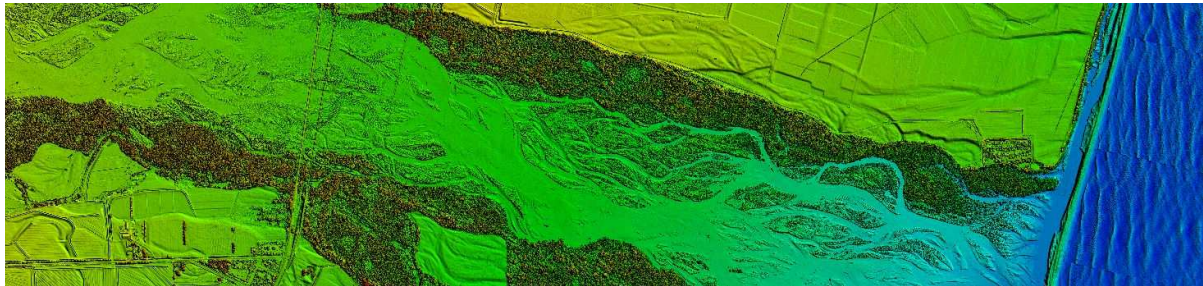
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The supplied Block 5 Part 1 tile layout is shown in red. Block 5 Part 2 is in black.

Unit A1, 8 Saturn Place, Rosedale 0632
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Auckland, New Zealand
Phone: +64 9 415 3101
Fax: +64 9 414 0090
E-mail: info@aerialsurveys.co.nz
Web: www.aerialsurveys.co.nz

Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 10/11A

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 19,616 km². The delivery covers 7261 km² of that area, consisting of 10,367 tiles as a part A of block 10/11.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Alex Ching
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

The project area is that shown in the shapefile 'LiDARTiles_WestCoast2019-25_Fpfa1266-Block1011_A.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:

27-5-2020	01-12-2020	22-10-2021	15-3-2022	10-1-2023
31-5-2020	28-12-2020	22-1-2022	03-4-2022	25-2-2023
22-6-2020	16-1-2021	31-1-2022	04-4-2022	06-3-2023
23-6-2020	07-4-2021	08-2-2022	07-4-2022	07-6-2023
24-6-2020	07-5-2021	21-2-2022	07-10-2022	28-7-2023
30-6-2020	11-7-2021	02-3-2022	10-11-2022	
02-7-2020	13-7-2021	08-3-2022	11-11-2022	
15-10-2020	14-10-2021	09-3-2022	31-12-2022	

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 FOV: 52.0 degrees
- Scan Frequency: 65 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 Positions: 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.

Type	StDev_DZ	Mean_DZ	RMSE_DZ	CI95_DZ
Check	0.059	0.001	0.059	0.116
Control	0.055	-0.001	0.055	0.108

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

Alpine areas were filtered using a polygon generated from contour data, land cover data, and aerial imagery. Areas within the polygon were classified as no or low vegetation to prevent the misclassification of boulder and rock formations.

Areas of snow have been identified and a proprietary method used to correctly classify those areas.

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

                                      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 uploaded to the LINZ-AWS S3 bucket via sFTP. Notification was sent to Neil Selman, West Coast Regional Council, on 21 Dec 2023.

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

License/Copyright

All copyright and other intellectual property rights ('Rights') in the products delivered to West Coast Regional Council are jointly owned. West Coast Regional Council and Aerial Surveys Ltd grant each other an unrestricted royalty free license to use the Rights in such products for any purpose. All raw data (raw LiDAR data, ground control, GNSS & IMU data) remain the sole property of Aerial Surveys, consistent with our standard terms of engagement.
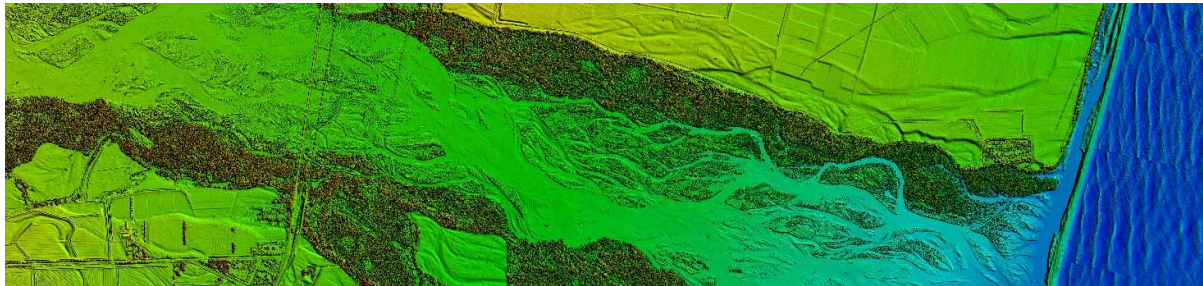
West Coast Regional Council intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

The supplied Block 10/11A tile layout is shown in red. Block 10/11B is in black.

![Aerial Surveys logo — SmartPhotos SmartForests]
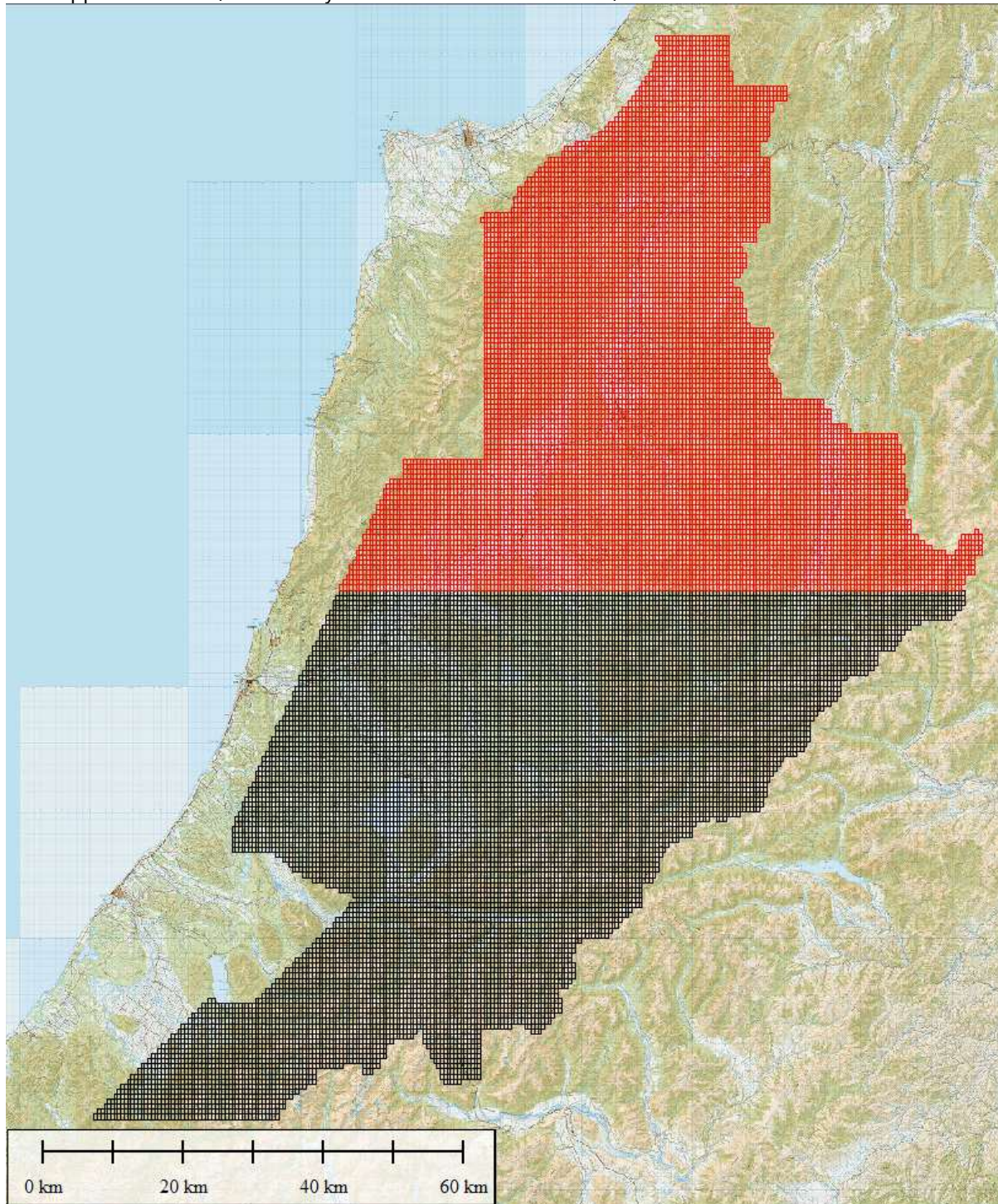
Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 10/11B

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey was conducted over the West Coast areas of interest totalling approximately 19,616 km^2. The delivery covers 4440.6 km^2 of that area, consisting of 12,849 tiles as a part B of block 10/11.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Alex Ching
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

The project area is that shown in the shapefile 'LiDARTiles_WestCoast2019-25_Fpfa1266-Block1011_B.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:

27-5-2020	01-12-2020	22-10-2021	15-3-2022	10-1-2023
31-5-2020	28-12-2020	22-1-2022	03-4-2022	25-2-2023
22-6-2020	16-1-2021	31-1-2022	04-4-2022	06-3-2023
23-6-2020	07-4-2021	08-2-2022	07-4-2022	07-6-2023
24-6-2020	07-5-2021	21-2-2022	07-10-2022	28-7-2023
30-6-2020	11-7-2021	02-3-2022	10-11-2022	
02-7-2020	13-7-2021	08-3-2022	11-11-2022	
15-10-2020	14-10-2021	09-3-2022	31-12-2022	

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 FOV: 52.0 degrees
- Scan Frequency: 65 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 Positions: 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.

Type	StDev_DZ	Mean_DZ	RMSE_DZ	CI95_DZ
Check	0.059	0.001	0.059	0.116
Control	0.055	-0.001	0.055	0.108

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

Alpine areas were filtered using a polygon generated from contour data, land cover data, and aerial imagery. Areas within the polygon were classified as no or low vegetation to prevent the misclassification of boulder and rock formations.

Areas of snow have been identified and a proprietary method used to correctly classify those areas.

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
	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 uploaded to the LINZ-AWS S3 bucket via sFTP. Notification was sent to Neil Selman, West Coast Regional Council, on 21 Dec 2023.

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

License/Copyright

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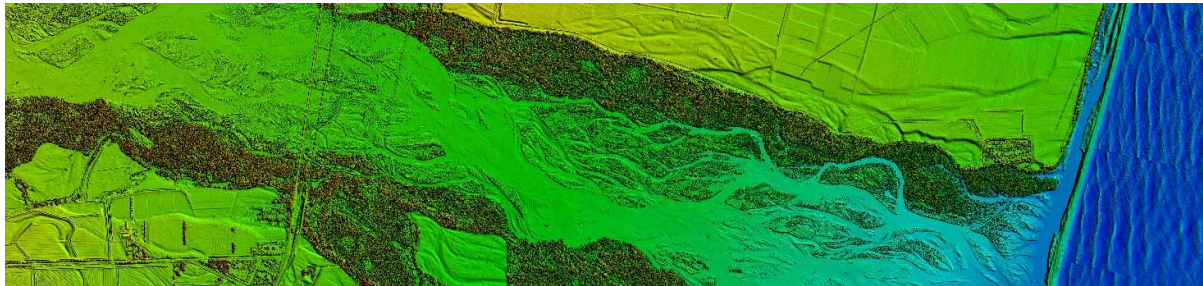
West Coast Regional Council intends to release the data under Creative Commons license (CC BY). In doing so any data that is shared, copied or distributed must have the required acknowledgements and attributions for the ortho imagery and DEM products provided in this project.

Appendix A: Project Area

The supplied Block 10/11B tile layout is shown in black. Block 10/11A is in Red.

Aerial Surveys
SmartPhotos SmartForests
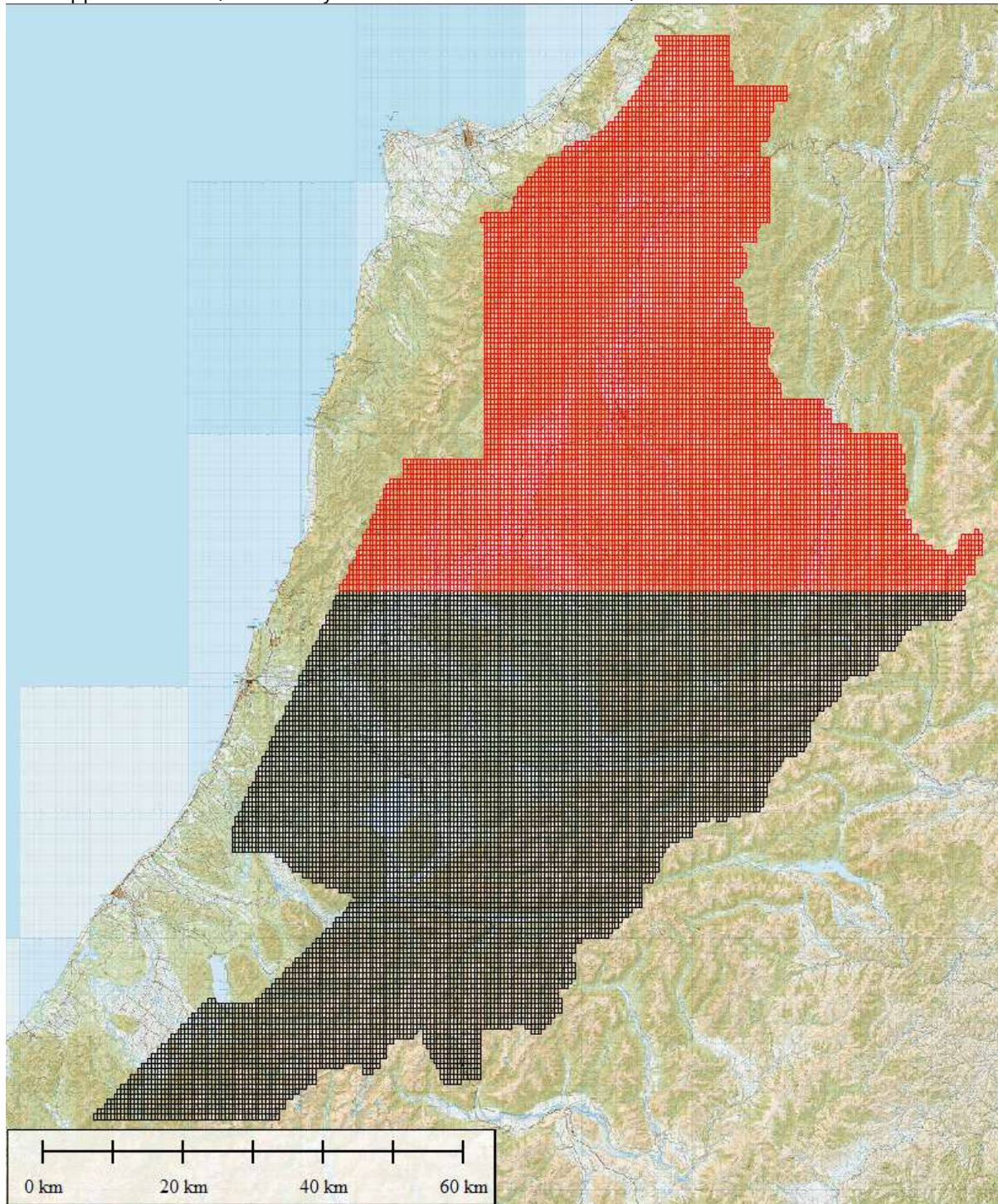
Metadata

WEST COAST REGIONAL COUNCIL

WEST COAST – 2019-25 PGF LiDAR SURVEY

BLOCK 6

AERIAL SURVEYS PROJECT №: FPFA1266

Summary

Project

An Airborne Laser Scanner survey (approx. 12,304 km^2) was conducted over the West Coast areas of interest totalling approximately 1,5189 km^2. The area is located along the boundaries of Canterbury. It is made up of 9,864 tiles.

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
- Survey Report
- 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 West Coast District Council.

Project Contacts:
West Coast RC Project Manager: Alex Ching
Aerial Surveys LiDAR Support Manager: Steve Andrews (Ph. (03) 547 0044)

Data Acquisition

The project area is that shown in the shapefile 'LiDARTiles_WestCoast2019-25_Fpfa1266-Block6.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:

30-05-2020	28-01-2023	23-02-2024
31-05-2020	15-02-2023	25-02-2024
01-06-2020	16-02-2023	21-03-2024
02-07-2020	24-02-2023	22-03-2024
23-05-2021	14-03-2023	16-04-2024
23-10-2021	23-03-2023	17-04-2024
14-02-2022	07-04-2023	18-04-2024
02-03-2022	26-11-2023	20-04-2024
30-03-2022	20-12-2023	21-04-2024
13-04-2022	08-01-2024	22-04-2024
19-04-2022	12-01-2024	23-04-2024
28-04-2022	13-01-2024	03-05-2024
29-04-2022	29-01-2024	23-05-2024
10-05-2022	30-01-2024	26-05-2024
31-12-2022	31-01-2024	27-05-2024
08-01-2023	08-02-2024	03-06-2024
09-01-2023	09-02-2024	04-06-2024
10-01-2023	11-02-2024	05-06-2024
12-01-2023	21-02-2024	11-07-2024
19-01-2023	22-02-2024	

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 FOV: 52.0 degrees
- Scan Frequency: 65 Hz
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- Swath Overlap: 55%
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Sounds Surveying Ltd field surveyed check sites that were used to verify the accuracy of the processed ground dataset.

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Base Station Positions: 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.

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Type	StDev_DZ	Mean_DZ	RMSE_DZ	CI95_DZ
Check	0.056	-0.007	0.056	0.11
Control	0.064	-0.001	0.064	0.125

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 a sparse triangular irregular network (TIN) from the supplied LiDAR points and then classified according to required classes by using automatic iterative process followed by manual correction. Terrascan's inbuilt macros with different parameters were used to classify low points, ground points, buildings, temporary features and finally vegetation.

The Digital Elevation (DEM) was derived using a point to TIN and TIN to Raster process, using a Natural Neighbour interpolation. Hydro flattening was performed as per part 7 of PGF version New Zealand National Aerial Lidar Base Specification Jan 2020.

Alpine areas were filtered using a polygon generated from contour data, land cover data, and aerial imagery. Areas within the polygon were classified as no or low vegetation to prevent the misclassification of boulder and rock formations.

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Product Deliverables

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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)
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Breaklines:	Breaklines representing all hydro-flattened features
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Metadata Report:	Supplied in PDF format

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West Coast Regional Council 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 supplied Block 6 tile layout is shown below.