

Waimakariri 0.05m Urban Aerial Photos (2021)

Metadata

File Identifier

40f428f3-e4a1-02fa-89c4-263680be1b8c

Language

eng

Character Set

Character Set Code

utf8

Hierarchy Level

Scope Code

dataset

Hierarchy Level Name

dataset

Contact

Responsible Party

Organisation Name

Toitū Te Whenua Land Information New Zealand

Position Name

National Imagery Manager

Contact Info

Contact

Phone

Telephone

Voice

04 4600110

Address

Address

Delivery Point

155 The Terrace

City

Wellington

Postal Code

6011

Country

New Zealand

Electronic Mail Address

customersupport@linz.govt.nz

Role

Role Code

resourceProvider

Date Stamp

Date

2021-10-26

Metadata Standard Name

ANZLIC Metadata Profile: An Australian/New Zealand Profile of AS/NZS ISO 19115:2005, Geographic information - Metadata

Metadata Standard Version

1.1

Reference System Info

Reference System

Reference System Identifier

Identifier

Code

2193

Identification Info

Data Identification

Citation

Citation

Title

Waimakariri 0.05m Urban Aerial Photos (2021)

Date

Abstract

Orthophotography within the Canterbury Region captured in January and February 2021 totalling approximately 193km². Coverage encompasses urban areas in the Waimakariri District, including Rangiora, Kaiapoi, Pegasus, Woodend, Oxford, and Mandeville North. Imagery was captured for Waimakariri District Council by Aerial Surveys Ltd, Unit A1, 8 Saturn Place, Albany 0632, New Zealand. Data comprises:

- 2437 ortho-rectified RGB GeoTIFF images in NZTM projection, tiled into the LINZ Standard 1:500 tile layout
- Tile layout in NZTM projection containing relevant information. The supplied imagery is in terms of New Zealand Transverse Mercator (NZTM) map projection. Please refer to the tile index layer for specific details, naming conventions, etc. Imagery supplied as 5cm pixel resolution (0.05m GSD), 3-band (RGB) uncompressed GeoTIFF. The final spatial accuracy is $\pm 0.1\text{m}$ at 0.95 confidence level in clear flat areas. Index tiles for this dataset are available as layer [Waimakariri 0.05m Urban Aerial Photos Index Tiles (2021)] (<http://data.linz.govt.nz/layer/106374>)

Status

Progress Code

completed

Point Of Contact

Responsible Party

Organisation Name

Toitū Te Whenua Land Information New Zealand

Position Name

National Imagery Manager

Contact Info

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Role
Role Code
pointOfContact

Resource Maintenance
Maintenance Information
Maintenance And Update Frequency
Maintenance Frequency Code
notPlanned

Resource Format
Format
Name
*.xml
Version
Unknown

Resource Constraints
Legal Constraints
Use Limitation
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Use Constraints
Restriction Code
license

Resource Constraints
Security Constraints
Classification
Classification Code
unclassified

Spatial Representation Type Code
grid

Representative Fraction
Denominator
Integer
500

Language
eng

Character Set
Character Set Code
utf8

Topic Category Code
imageryBaseMapsEarthCover

Extent
EX_ Extent
Geographic Element
EX_ Geographic Description
Identifier
Authority
Citation
Title
ANZMet Lite Country codelist
Date
Edition
Version 1.0
Edition Date
Date
2009-03-31
Identifier
Identifier
Code
<http://asdd.ga.gov.au/asdd/profileinfo/anzlic-country.xml#Country>
Cited Responsible Party
Responsible Party
Organisation Name
ANZLIC the Spatial Information Council
Role
Role Code
custodian

Code

nzl

Extent

EX_ Extent

Geographic Element

EX_ Geographic Bounding Box

172.144687969172.736796139-43.413144432-43.257729331

Distribution Info

Distribution

Transfer Options

Digital Transfer Options

On Line

Online Resource

Linkage

URL

<https://data.linz.govt.nz/layer/106371-waimakariri-005m-urban-aerial-photos-2021/>

Data Quality Info

DQ_ Data Quality

Scope

DQ_ Scope

Level

Scope Code

dataset

Level Description

Scope Description

Other

dataset

Lineage

LI_ Lineage

Statement

Data Acquisition: The aerial photography for this project was captured within the 2020/21 flying season (September 2020 – April 2021). Camera and Flying Height: All photography was captured using Vexcel's digital UCE camera fitted with the 100 mm lens and flown at an altitude of approximately 3,155 ft (962 m) with the lowest ground GSD set at 0.05 m. Capture Dates: The aerial imagery was captured on 3 January, 4 January 2021, and 7 February 2021. Sun Angle: Imagery captured with a minimum sun angle of +40 degrees. The sun angle of the imagery used for the orthorectification ranged from 46.8 to 68.5 degrees. Flight Planning: The flight survey number for this project is SN14152. The flight plan is named Waimakariri Urban 5cm UCE and comprises 41 runs, 1,267 frames. All imagery captured in stereo: forward overlap 60%, min 54%; side overlap 35%, min 15%. Environmental Specification: Imagery captured with no cloud or cloud shadow within the area of interest. Urban Building Displacement Specification: Urban 0.05 m GSD imagery – using the UCE camera and by flying with 60% forward overlap and with 35% sidelap (standard stereo coverage) will achieve ± 1.1 m building lean per 3 m height in the corners of the imagery used. Tall structures inwards of the corner of the frame will have less lean the closer to the nadir they are. Ground Control: A combination of existing control and LINZ benchmarks were used for aerial triangulation for this project. Data Processing: All aspects of the data processing from imagery processing to DTM creation and ortho production and product deliverables was undertaken in-house by Aerial Surveys staff. Map Projection: All spatial data for this project provided in terms of New Zealand Transverse Mercator 2000 map projection (NZTM2000). The ellipsoidal datum is New Zealand Geodetic Datum 2000 (NZGD2000). The airborne GPS and ground control GPS data was converted from ellipsoidal heights into orthometric heights using the LINZ NZGeoid16 separation model. For this project the orthometric vertical datum is New Zealand Vertical Datum 2016 (NZVD2016). Image Processing: Level-0 to Level-3 image processing carried out using UltraMap software. All imagery has gone through QA checks ensuring there is no cloud cover and cloud shadow.

During aerial acquisition the aircraft on-board GPS navigation data and ground base station data collected and post processed. Level-3 imagery process provides model based colour correctness/radiometry and even tonal balance across each project area. Aerial Triangulation (AT): Aerial triangulation carried out using Intergraph with Hexagon ISAT software. The AT brings together the GPS data and imagery using a two part process which stitches the imagery together using tie point matching for the relative orientation phase and observing ground control points for the absolute orientation phase. A final report is generated to check RMSE values are within specification. AT in the project has been performed to make the expected accuracy of ± 1 pixel in XY and ± 2 pixels in Z. DTM for Ortho Production The digital terrain model used for this project was derived from LiDAR DTM data flown in 2020. Outside the LiDAR DTM a DTM was collected from the 0.05 m GSD stereo imagery using photogrammetric techniques, largely automated pixel matching and autocorrelation process. The DTM data was merged together seamlessly and accuracy checked to meet the ortho imagery specification. The DTM was edited suitable for the ortho production. Ortho Rectification Process Ortho imagery created using Hexagon OrthoPro software. The imagery is orthorectified using the stereo-edited digital terrain model (DTM) to provide a geometric accurate seamless ortho mosaic dataset. The generation of seamlines between frames follow natural physical features such as ridges, valleys, roads and rivers. The seamlines are used for the final ortho mosaic that stitches the imagery together using feather mosaicking techniques. The ortho imagery is extracted aligned to the LINZ 1:500 map sheet tile layout. Minimal colour adjustment was undertaken, generally over water areas and along coastal foreshore for colour matching and to minimise glare. Ortho accuracy was checked by observing a selection of Geodetic marks around the project area and the results are shown below. The ortho accuracy met the expected of +0.1 m @ 95% confidence level in clear flat open areas. The points that were in flat open areas were well within accuracy.

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