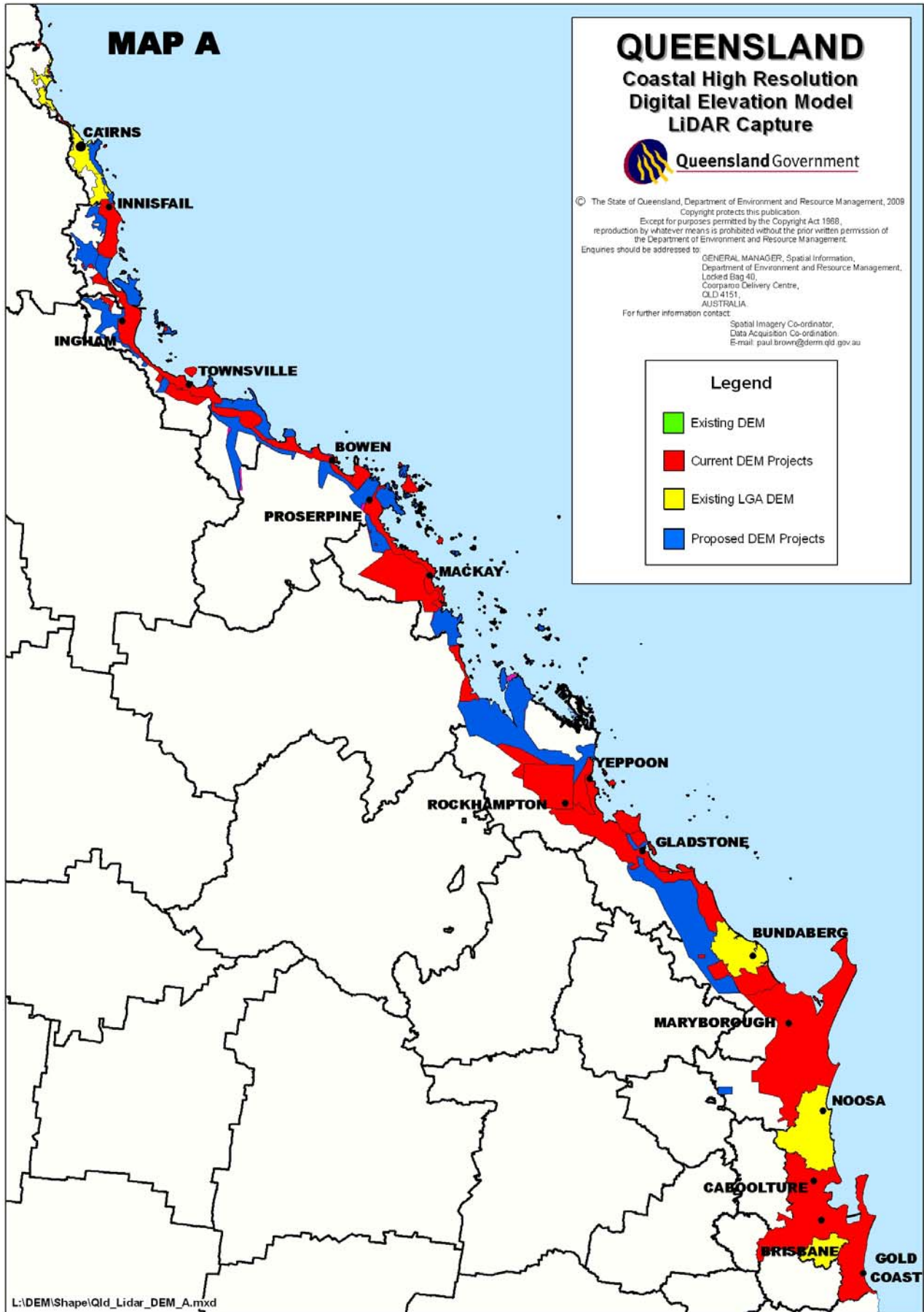


QUEENSLAND COASTAL LIDAR PROJECTS



GENERAL PROJECT REQUIREMENTS

- Provision of ground points from airborne Lidar scanning.
- Provision of a 1m resolution bare earth DEM from airborne LiDAR scanning
- Provision of 0.25 metre contours.

See Appendix A for a list of all required deliverables

DATUM, CONTROL and GROUND TRUTHING

Horizontal and vertical positioning must be controlled by reference to existing approved permanent survey marks established with GDA94 coordinates and accurate AHD levels.

All spatial data is to be in MGA Zone 55 or 56 which ever is applicable and on AHD (Ausgeoid98) system. Tiles covering both zones need to be supplied in the two MGA zones.

LIDAR SCANNING

LiDAR data acquisition in tidal areas is to be captured at times when the sea water surface is lower than Mean Sea Level. Capture extents along the coast will extend to the sea water's edge.

LiDAR scanning processing will provide a Bare Earth DEM that represents the ground with a vertical accuracy of +/-0.15metre RMSE. That is, 68% of elevations will have an absolute accuracy +/-0.15metre in areas of clear open and flat features. Absolute horizontal accuracy will be +/-0.45metre RMSE at 68% confidence level in clear, open flat terrain.

BARE EARTH DEM

LiDAR ground points will be used to generate the bare earth DEM. The bare earth DEM representing the ground will have a grid spacing of 1 metre and placed on the **1m grid value**. Contours with an interval 0.25m will be generated from the bare earth DEM.

The bare earth DEM should include all significant visible constructed features if they appear to sit on the earth or at ground level, eg roads built on embankments (including over pipe culverts). Small structures and all structures built above the ground will be removed, eg bridges, solid concrete road dividers. The bare earth DEM with significant gaps due to buildings etc will be interpolated from the surrounding LiDAR ground points.

A file of "all returns" with intensity value will be supplied consisting of classified ground points and non-ground points in .LAS, ASPRS version 1.1 format.

See Appendix A (1).

APPENDIX A: LIDAR PROJECT DELIVERABLES

All data is to be supplied on the contractor's external hard-drive/s at a size suitable to requirements.

1 Deliverables for LIDAR Data

- 1.1 The 1m resolution Bare Earth DEM, **on the 1m grid value** supplied in ASCII XYZ format, containing Easting, Northing and Height in MGA, and AHD (Ausgeiod98), in 2kmx2km tiles.

Tile naming convention will incorporate the north western corner of the tile.

Eg. 426000_7243000_2k_1m_DEM.xyz

- 1.2 LIDAR "all returns" auto classified in **ASPRS LAS format** v1.1 in 2kmx2km tiles including, Generating Software, Date of Flight, Year, GPS time, Intensity value, **classification of ground points used for Bare Earth DEM**, non-ground points, buildings, point source ID (unique flight path ID), view or scan angle etc.

Tile naming convention will incorporate the north western corner of the tile.

Eg. 426000_7243000_2k_class_.las

- 1.3 Tile key in Mapinfo Tab and Shape file formats.

2 Deliverables for Contours

- 2.1 Contours will be generated from the Bare Earth DEM at an interval of 0.25 metre and supplied In ESRI Shape file with contour elevations as a column called "elevation".

Tile naming convention will incorporate the north western corner of the tile.

Eg. 426000_7243000_2k_cont.shp

3. Deliverables for Quality and Accuracy

- 3.1 Documentation reporting adhering to project specifications including check point residuals.
- 3.2 Information regarding referencing to the Horizontal (GDA 94) and Vertical (AHD) datums including PSM Number, Order, Class (degree of uncertainty) and date of use.
- 3.3 Check point coordinates and diagrams.

4. Deliverable for Meta Data

4.1 Meta data for LiDAR data should state as a minimum:

Metadata Element	Details
Company Name	
Acquisition Start Date	
Acquisition End Date	
LiDAR Sensor	
Flying Height (AGL)	
INS/IMU Used	
Number of Runs	
Number of Cross Runs	
Swath Width	
Side Overlap	
Horizontal Datum	
Vertical Datum	
Map Projection	
Spatial Accuracy – Horizontal	
Spatial Accuracy – Vertical	
Average Point Spacing	
Laser Return Types	
Data Thinning	
Laser Footprint Size	
Limitations of the Data	

5. Other Deliverables

5.1 System Calibration reports

6 Optional Deliverables

6.1 ASCII XYZ ground classified only. Tiling and naming convention as 1.1 above.

Tile naming convention will incorporate the north western corner of the tile.

Eg. 426000_7243000_2k_GND.xyz

6.2 The 1m resolution Bare Earth DEM, **on the 1m grid value**. Supplied in ESRI ASCII GRID (not binary) format, in MGA, and AHD (Ausgeiod98). In 2km x 2km tiles.

Tile naming convention will incorporate the north western corner of the tile.

Eg. 426000_7243000_2k_1m_DEM_ESRI.asc