

# BROOME - CAPE LEVEQUE ROAD UPGRADE PROJECT

**PROJECT** Broome to Cape Leveque Road Upgrade Project | Kimberley WA

**CLIENT** Main Roads Western Australia

## THE SITE

Cape Leveque is the northern most part of the Dampier Peninsula located north of Broome Western Australia. Sparsely populated, the Dampier Peninsula is home to a number of Aboriginal communities including Beagle Bay, Bobiedin, Djarindjin, Ardyaloon (One Arm Point), Ngardalargin and Lombadina.

## THE CHALLENGE

Access to the communities is by the 200km Broome Cape Leveque Road, which has been described as one of the roughest roads in Australia. Running through the Pindan Woodland on the Peninsula the unsealed section of the road is often impassable during the wet season and can remain closed for weeks. However, that's changed with the final 90km upgraded to an all-weather 8m wide sealed highway. The \$65m project was jointly funded by the Australian and Western Australian Governments under the Northern Australian Roads Program.

## THE SOLUTION

MNG initially commenced work in 2017 to supply detailed survey information for the design phase of the project. MNG utilised Stratus-1, a highly accurate, low elevation Airborne Laser Scanning (ALS) system, to capture detailed survey information and high resolution imagery along the length of the road. A Digital Elevation Model (DEM), and true rectified orthomosaic map were produced for Main

Roads' design team. Ground control survey points were established along the length of the road upgrade section to validate the ALS and provide ongoing survey control for the project.

Following the successful delivery of the survey information for the design phase, MNG was engaged as the Project Surveyor responsible for the bulk earthworks construction phase. A significant emphasis of the project is to employ local Aboriginal people to build a skills base and work collaboratively with local business and training organisations ensuring opportunities exist for local people. As a local business in Broome, MNG has been committed over the past two years to provide local personnel for construction pegging, volumes and managing grade control systems.



REMOTELY PILOTED AIRCRAFT SYSTEM

# CASE STUDY

## THE OUTCOME

A fundamental requirement of the construction phase of the project was to determine the quantities of material used in the road bases. MNG opted to use its DJI Phantom4 Remotely Piloted Aircraft System (RPAS) drone to undertake surveys of the road base stockpiles.

Audit surveys of the stockpiles were conducted on a monthly basis and the results proved highly accurate. It also provided a safe working environment for the survey team as they did not need to access the tall cone stockpiles of crushed road base material.

The final digital ground survey model is a combination of manually surveyed features and automated ALS ground mesh.

Project deliverables including a point cloud derived from photogrammetry, model key point ground surface, orthomosaic aerial imagery and various reporting outputs were successfully issued to Main Roads.

The project has been a great success, providing road users with all weather access and a far safer commute. This will be of substantial benefit to both the local community and the increasing number of tourists who visit the region.



STRATUS-1 AERIAL LASER SCANNER



ESTABLISHING GROUND CONTROL SURVEY POINTS

A KEY BENEFIT TO THE CLIENT WAS BEING ABLE TO INTEGRATE ALS AND THE MLS TOGETHER IN A SINGLE HOMOGENOUS POINT CLOUD.

MNG PROVIDE INNOVATIVE  
AND PERSONALISED SOLUTIONS  
FOR ALL PROJECTS

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