Christmas Island Roads & Crab Crossings

Jim McNeill
Christmas Island is an Australian owned territory in the Indian Ocean

- Closer to Indonesia than Australia
- Rich in wildlife
- 60 million land red crabs
- Sea bird breeding colony
- Home to “rugby ball” sized robber crabs
- Rich in phosphate
- In more recent time houses an Immigration Centre
When driving, please note that sealed roads & formed, unsealed roads are suitable for two wheel drive cars (2WD), however, 2WD’s should not use unsealed 4 wheel drive tracks (4WD).

All vehicles should avoid roads marked as unused 4WD tracks (dotted lines) as they generally lead to mine waste areas, rehabilitation areas, or sometimes, the tracks are simply so overgrown they are inaccessible.

All roads are used by mine haulage vehicles which create huge dust clouds so slow down if you see one.

Likewise, in migration season, please adhere to all signs regarding red crab movements.
Background

The roads between the Settlement and the Immigration Detention Centre have had a marked increase in traffic. Roads unsealed and the Regional Australian commissioned GHD to undertake a feasibility study to investigate the best sealed route.

Objectives:

• Reduce long term maintenance

• Improve ride

• Vehicle & travel saving

• Reduce dust & improve safety

• Improve environmental outcomes

• Value for money
Site Description

- Settlement located on NE point of Island
- Immigration Detention Centre located on the NW point of the Island
- Unsealed road except for some traction seals
- Formation of chalk/ limestone
- Roads pass through rainforest & National Parks
  - The fishing is also good
Environmental

• Several species of crab

• The red crab is an endemic land crab on CI
  • - large crab about 40mm across
  • - land crab
• Migration season roads are closed for periods (October to November)

• Crab crossings on some roads
Crab Crossings & Migration Gates

Christmas Island National Park (CINP) - Grid Crossings, Migration Gates and Crab Fencing

- Immigration Detention Centre
- Flying Fish Cove
- Central Area Workshop
- The Blowholes
- Airport

Legend:
- Migration Gates - 18
- Grid Crossings - 41
- Crab Fencing - 30km's
- Murray Rd. & Rnt-West Point Rd.
- RAMSAR Wetland Zones
- CINP Marine Zones
- CINP Territorial Zones
- Nineleaze & CINRP
- Roads & Tracks
Robber Crabs – huge!

Parks survey mortality rate

- Majority on Murray Road (again)
- Why?

Resulted in public advertising campaign and signs installed

The size of a football
Robber Crab Road Kills
(not red crabs)
Crabs heavily impacted by traffic

- Crab migration – road closed intermittently (October to November)
- Direct correlation HCV = crab kills
- Highest on Murray Road (north side of CI)
- Parks – migration generally to north side of CI
Constraints

- Increasing traffic

Road users – B doubles (truck + trailer) and articulated vehicles carrying 20 ft containers

- Services

Crab migration – road closed intermittently (October to November)

Mining haul roads – 16% of total red migrating crabs killed

- Direct correlation HCV = crab kills

- Highest on Murray Road
**Major Intersections**

- Large sweeping free flow
- To suit mining traffic
- Visual layout confusing
**Land** Ownership; speed; condition

- **Park**
- **Managed by the Shire of CI**

- **Speed Limit**
  - 90 km/hr (but majority of vehicles travel at 80km/hr)

- **No cyclist nor pedestrians**

- **Road condition- chalk/ limestone – dust, does pothole, slippery**
Options

Option A:
• Most direct route, 11km but closed for up to 8 week

Option B:
• Alternative – lower LoS, unattractive for users, 13 km

Option C:
• Alternative – even lower LoS, unattractive for users, 19 km

Subjective Evaluation framework used
Preferred Option

Option A:
• Most direct route and level

• But two alternatives
  - install crab crossings (50 required)
    allows road to be open 24/7
  - no crab crossings

• Pavement 250 mm basecourse and double double seal

• Intersections – formalise

• Services - accommodate
Cost Estimates

Crab Crossings – two types:
- under – basically modified cattle stop
- over - like a pedestrian bridge

- Parks has refined the design and maintenance of the crab crossings over many years
- Cost – each $100k * 50 = $5.0M
- Client requires 24 hours access
- So only option to install crab crossings
Crab Crossing Types

Crab Crossings – Bridge
Crab Crossing Drawing

Christmas Island
Crab Crossing Drawing

TYPICAL PANEL (3200)
1:25

FOR END PANELS, TRIM OR EXTEND RAIL SECTIONS AS REQUIRED (REFER TO 611222107-C04)
Crab Crossing Drawing

- 90 x 10 EA cast in full length of each abutment.
- 2-N16 anchor bars 300 long welded to angle.
- PROVIDE 5 RAD. EDGE

- M20 HD GALV. HOLD DOWN BOLTS
- 600 LONG, 70 THREAD - 2 PER BEARER.
- 2/M20 NUTS EACH BOLT WITH CLAMP PLATE (REFER DETAIL)
- 50 COVER
- 22kg/m RAIL

- 300 HIGH x 3 THK ALUMINIUM SHEET
- FIXED TO ENTIRE LENGTH OF BOTH WALLS WITH M6 GALV. ANCHORS AT 500 CRS TOP AND BOTTOM.
- 50 COVER
- 65 COVER

- L81 MESH
- 50 TOP COVER

- 5-N24
- WPM

- 75 COVER

- Varies 450 mm

- DETAIL 1:10

- WEBFORGE NOT SHOWN FOR CLARITY

Christmas Island
Crab Crossing Maintenance

Christmas Island

Remove covers, clean with Bobcat

Maintenance gang of four - $3k per clean
Summary

- Project started as a standard study to seal a LVR

- As study progressed environmental and island residents concerns became the main focus

- Option changed to improve the environmental impacts and the residents concerns

- Crabs crossings recommended to be installed
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