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A Proposed Gibson Desert Highway from Port Hedland to Alice Springs

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A Proposed Gibson Desert Highway

EXECUTIVE SUMMARY

Recent floods destroyed the road bridge at Fitzroy Crossing and access along the Great Northern Highway in the far north of Western Australia, violently disrupting road transport of vital supplies and tourist travel in an extremely remote area. The bridge is likely to take years to repair.

This has highlighted a strategic vulnerability in Australia's road network between Western Australia and the central and eastern States and Territories, where coastal highways are frequently cut by river systems draining to the coast from the higher elevation Central Plateau which is 300m to 500m above sea level in the middle of WA.

There are currently only two sealed highway routes from the resource-rich Pilbara region of WA to the eastern States – a northern route (Great Northern Highway) around the northern coastline via Broome, Kununurra and Fitzroy Crossing, and a southern route (North West Coastal Highway and Eyre Highway) via Norseman and the Nullarbor Plain.

It is proposed that a third sealed highway be constructed in the centre of WA across the Gibson Desert connecting Port Hedland to Alice Springs. The existing road is good bitumen from Port Hedland to Marble Bar and there is some 1,700 km of existing well-formed gravel roads servicing remote communities between Marble Bar and Alice Springs.

In times of war, the Highway would also allow rapid ground transport of heavy defence weapons and troops from Central Australia direct to the ports closest to Southeast Asia (Broome, Dampier and Port Hedland) and most at risk of strategic damage to our economy if exports from these ports were to be disrupted.

The route proposed involves upgrading existing roads and tracks as much as possible to minimize new exploratory road pathways.

The proposed route avoids most of the main river drainage basins that currently cause road closures in cyclone and high rainfall events.

The proposal empowers the local indigenous population by the proposed granting freehold title to Unallocated State Land and Commonwealth land currently under Native Title grant or claim. Freehold title provides real estate that can be sold or

mortgaged to borrow funds to set up businesses along the route such as roadhouses every 100 to 200 kilometres providing food, fuel and accommodation opportunities.

The local indigenous population can also be trained in the skills associated with highway construction.

Assuming the initial construction will be to rural arterial standards (\$3.8 million per lane kilometre), the road will be two lanes for 100% of its length and 10% will be three lanes for overtaking lanes, the cost is roughly estimated at \$13.6 billion.

The *Joint Select Committee on Northern Australia* is currently conducting an inquiry into [workforce development](#).

The terms of reference are as follows:

The Joint Select Committee on Northern Australia shall inquire into and report on workforce development in Northern Australia, considering the impediments to building the economic and social infrastructure and workforce needed to support economic development, with particular reference to:

- a. trends in Northern Australia that influence economic development and industry investment including population growth, economic and business growth, workforce development, infrastructure development, and Indigenous economic participation;*
- b. impediments to building the economic and social infrastructure required to support industry and business to expand and create regional jobs;*
- c. challenges to attracting and retaining a skilled workforce across Northern Australia; and*
- d. empowering and upskilling the local Indigenous population.*

This proposal is submitted to provide background information on this major highway concept and address the terms of reference of the Committee in relation to “*workforce development in Northern Australia, considering the impediments to building the economic and social infrastructure and workforce needed to support economic development.*”

Introduction

Recent floods destroyed the road bridge at Fitzroy Crossing and access along the Great Northern Highway in the far north of Western Australia, violently disrupting road transport of vital supplies and tourist travel in an extremely remote area. The bridge is likely to take years to repair.

This has highlighted a strategic vulnerability in Australia's road network between Western Australia and the central and eastern States and Territories, where coastal highways are frequently cut by river systems draining to the coast from the higher elevation Central Plateau which is 300m to 500m above sea level in the middle of WA.

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Current Road Access From Western Australia To The Eastern States

The current major roads from Western Australia to the eastern States are shown below in Figure 1.

The proposed link from Port Hedland to Alice Springs is shown in red. This route crosses the central Australian plateau avoiding the river drainage basins that frequently cut the existing roads in heavy rain.



Figure 1. Current major roads from Western Australia to the eastern States are shown in brown. The proposed link from Port Hedland to Alice Springs is shown in red. This route crosses the North Western Plateau avoiding the river drainage basins that frequently cut the existing coastal roads in heavy rain.

The major river drainage basins are shown below in Figure 2.

The proposed road would cross the elevated plateaux of the Sandy Desert and Mackay basins. The mean elevation of the Gibson Desert area is 464 metres above sea level. Water sheds from the basins towards the coast. Some restricted drainage areas create salt lakes by trapping runoff and evaporation.

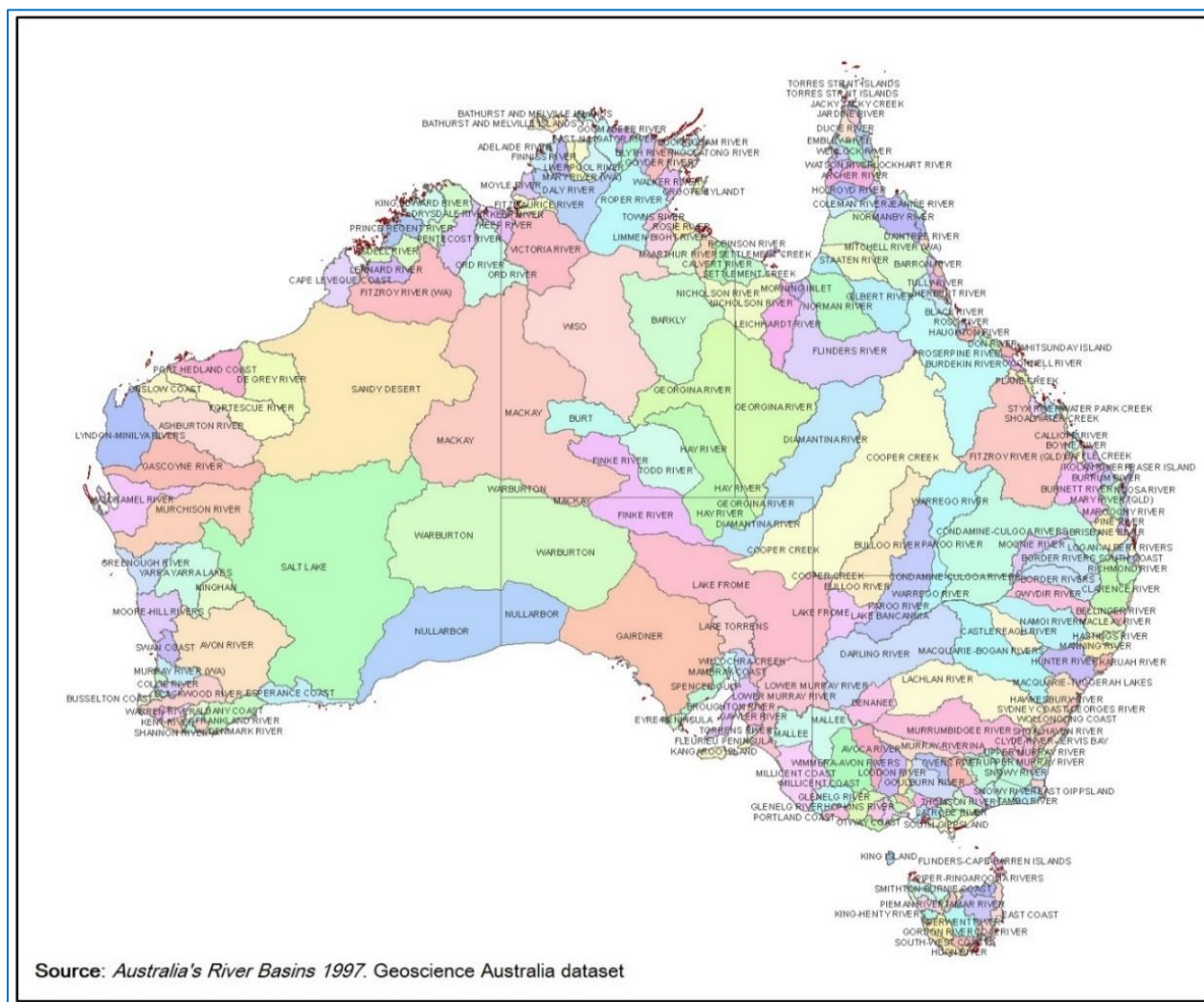


Figure 2. Major river drainage basins of Australia. The proposed road would cross the elevated plateaux of the Sandy Desert and Mackay basins. The mean elevation of the Gibson Desert area is 464 metres above sea level.

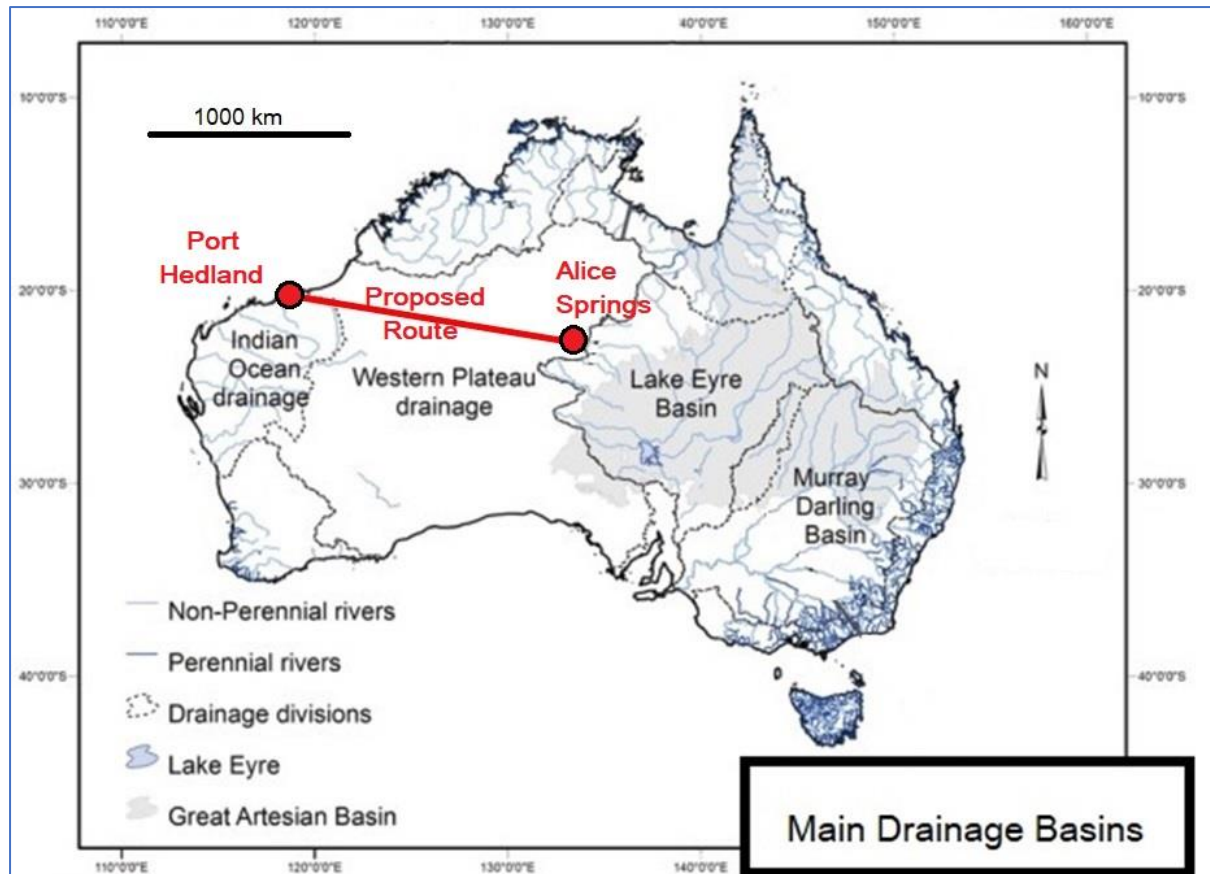


Figure 3. The proposed road route crosses the Western Plateau, avoiding the rivers systems draining to the coast.

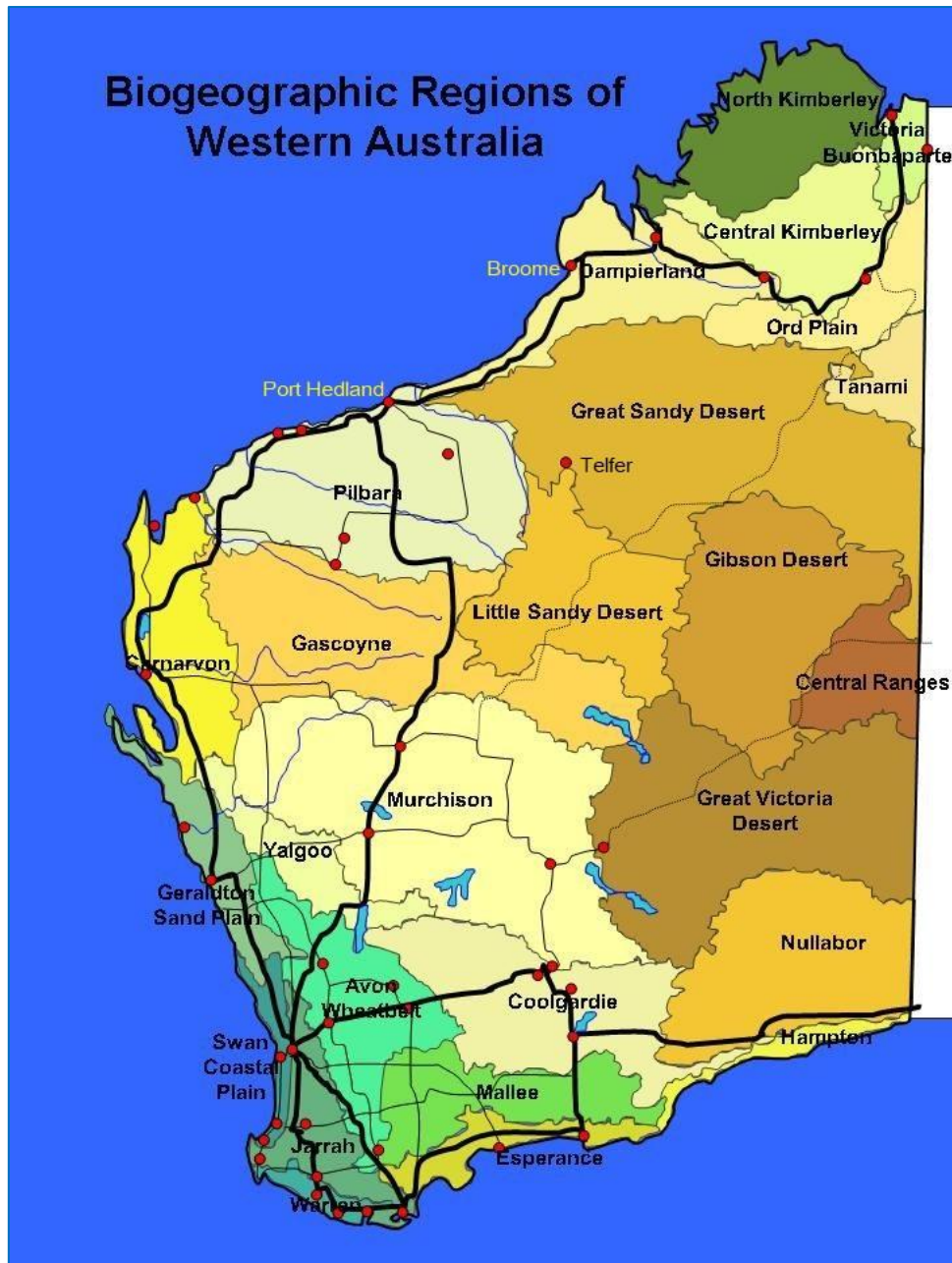


Figure 4. Biogeographic regions of Western Australia. The proposed road would cross the State from Telfer, crossing the southern edge of the Great Sandy Desert and the centre of the Gibson Desert avoiding the difficult terrain of the Central Ranges.

The Proposed Gibson Desert Highway

It is proposed that a highway be constructed across the Gibson Desert connecting Port Hedland to Alice Springs. The current existing road is good bitumen from Port Hedland to Marble Bar and there is some 1,700 km of existing well-formed gravel roads servicing remote communities between Marble Bar and Alice Springs.

The route proposed involves upgrading existing roads and tracks as much as possible to minimize new exploratory road pathways.

The proposed route avoids most of the main river drainage basins that currently cause road closures in cyclone and high rainfall events.

The proposed road would cross the State from Telfer, crossing the southern edge of the Great Sandy Desert and the centre of the Gibson Desert avoiding the difficult terrain of the Central Ranges.

The distance from Marble Bar to Telfer Mine is 234 km of which about 130 km is unsealed.

Marble Bar to Alice Springs 1,688 km.

Two routes were considered, a northern route to Papunya and then direct to Alice Springs, and a second southern route to the Giles Weather Station and then east to Uluru (Ayers Rock).

Detailed study of the available tracks on 1:1000,000 topographic maps favours the northern route.



Figure 5. Existing major roads in Western Australia. The proposed road would run east-southeast from Telfer, north of Lake Auld and south of Lake Mackay salt lakes

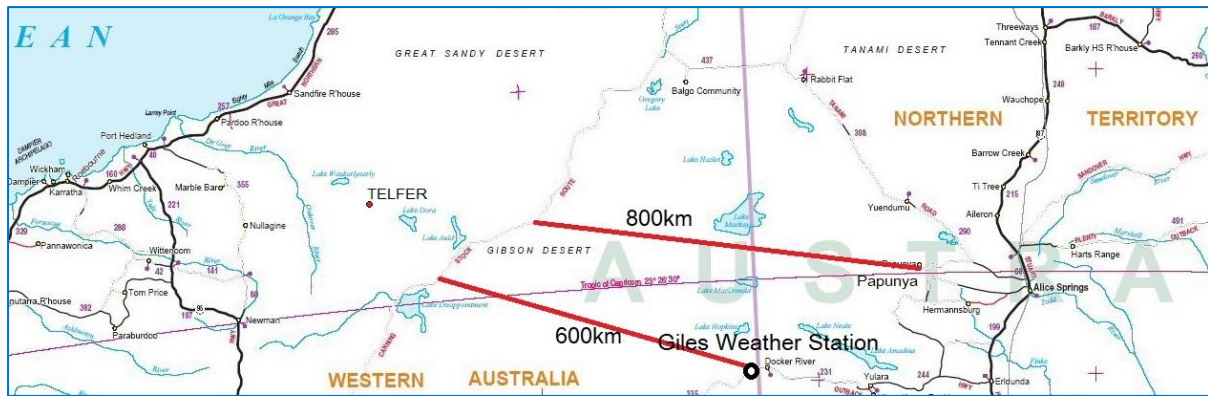


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Road Conditions, Permits and Fuel

The author has lived in Port Hedland and driven the bitumen-sealed road to Marble Bar and the gravel road to Telfer, and the mainly gravel Tanami Road from Alice Springs to the Granites gold mine well north of Papunya. There is a major gold mine at Telfer with a small resident community for mine workers and the gravel section of the road from Marble Bar to Telfer is usually kept in good condition for the multiple road trains that service the mine. Telfer Gold Mine has no public access. This means *no fuel, supplies or accommodation is available*.

The following discussion on travel requirements and road conditions is taken from the website operated by Andrew Murray and his wife Peta trading as Top Wire Traveller, and was current on 12 October 2020. The information is copyright to Top Wire Traveller.

See their website at [Gary Junction To Marble Bar, Western Australia | A New Adventure \(topwiretraveller.com\)](http://topwiretraveller.com)

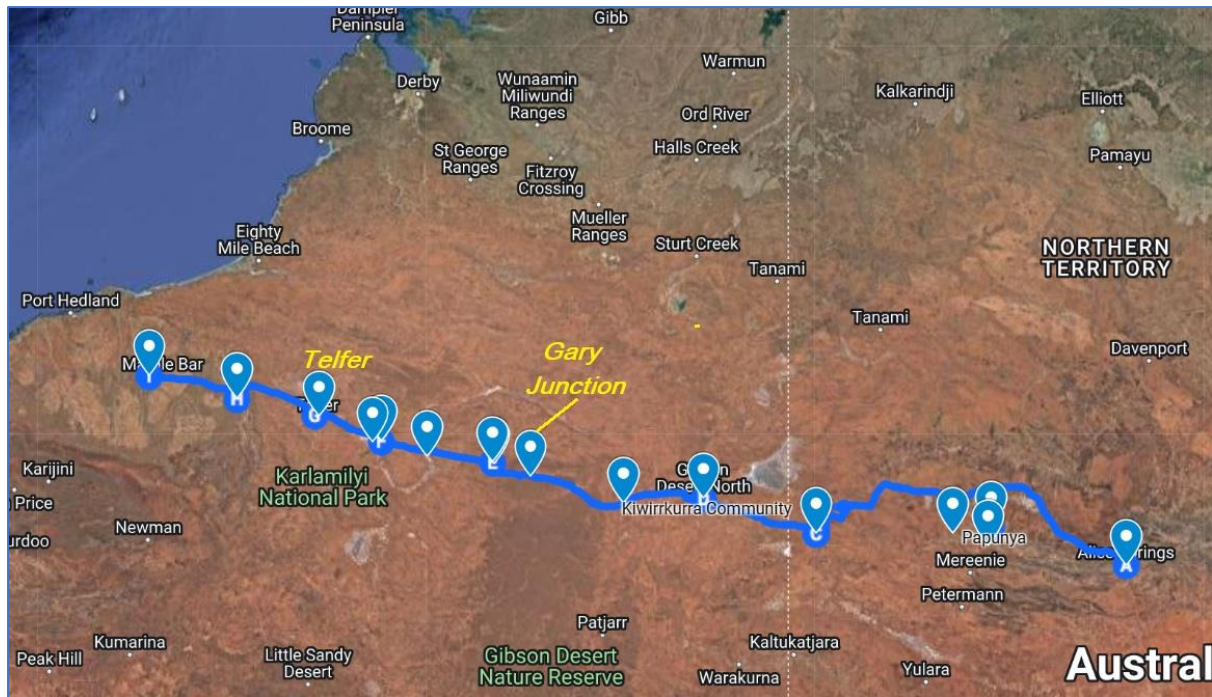


Figure 7. The route travelled by Andrew & Peta Murray from Alice Springs to Marble Bar. Image modified slightly from their website. They travelled a slightly different route in the Northern Territory, travelling north of Papunya but their route is not shown on the 1:1000,000 maps. The proposed route follows well-marked tracks and roads from the 1:1,000,000 maps.

Transit Permits

Two Transit Permits are required to travel through Aboriginal land. They are:

- Permit to Transit Aboriginal Land for PAPUNYA TO WA BORDER TOWARDS KIWIRRKURRA. [Go here to apply.](#)
- Permit for 17614 NGAANYATJARRA CENTRAL RESERVE. This allows you to travel through Kiwirrkurra country and enter the community for fuel and supplies. [Go here to apply.](#)

All of these are free and easy to obtain online. **Be aware** - The permits last for three days only.

And if you think you won't bother with permits, you might want to have a re-think. Our permit was checked at the office in Kiwirrkurra. If we didn't have a permit, we wouldn't have been allowed into the community to buy fuel.

Fuel and Supplies

Fuel is available at Papunya, Mt Liebig, Kintore, Kiwirrkurra, Kunawarritji and Punmu. Be aware they all have unusual opening times and they close at lunchtime. Weekends, they are only open for a few hours.

Check opening times before you leave. All quality maps should have contact numbers. So you can call before you leave, to double-check opening times.

Be aware - Kiwirrkurra is in Western Australia, however the operates on Northern Territory time.

Fuel is expensive out here. Being only 4km from the Canning Stock Route, the fuel at Kunawarritji is up to \$1 per litre more expensive than the next most expensive fuel along the Gary Junction Road.

Basic supplies are available wherever you can buy fuel. Keep in mind though, their supplies are solely reliant on the delivery truck arriving on schedule. And out here, a delivery truck can easily be delayed by several days. Therefore you shouldn't rely on these stores.

Telfer Gold Mine has no public access. This means *no fuel, supplies or accommodation*.

Fuel, supplies and accommodation is available at Marble Bar.

Road Conditions

The total distance from Alice Springs to Marble Bar is 1,690km.

The *Gary Junction Road* was built in 1960 by Len Beadell and his road crew. Len prided himself on building straight roads. In fact, he called his crew the Gunbarrel Construction Party. However, the Gary Junction Road thwarted his plans. He had to duck and weave around numerous mountain ranges and endless sand dunes.

The road starts north-west of Alice Springs, [off the Tanami Road](#). It runs west into the Gibson Desert for 860km until meeting the Gary Highway in Western Australia, at Gary Junction.

Now Gary Junction is just west of the Canning Stock Route and the nearest town is Marble Bar, way up in the north-west of WA. This road is remote, really remote.

The *Gary Junction Road* is a well-formed road and three or four cars wide in most places. it's a service road for several communities. Papunya, Kintore and Kiwirrkurra for example. All of these communities rely on supplies and access to Alice Springs.

Across the border in Western Australia, the road gets even better. There's no doubt, Western Australians know how to build good dirt roads.

Of course there are corrugations, however you can easily get up speed and get on top of them.

In WA after Kiwirrkurra, you'll strike sections of soft sand in the dune country. However there are no corrugations in the sandy sections!

Stretches of the *Gary Junction Road* are soft sand. Clearly the sand is so deep that it's virtually impossible to build a firm base.

The *Gary Highway* south from Gary Junction is a rough track through hundreds of kilometres of desert. The word "Highway" conjures up images of a tar road stretching into the distance. Or at least a well-formed dirt road, like the Tanami Road... or even the Gary Junction Road. The truth is, it's a track.

For this reason, the *Gary Junction Road* is preferred to the southern route to Giles Weather Station and Uluru.



Figure 8. The narrow and overgrown Canning Stock Route, disappearing vaguely South to Wiluna. Image from Andrew & Peta Murray.



Figure 9. Gary Junction Road near Kunawarritji. Image from Andrew & Peta Murray.



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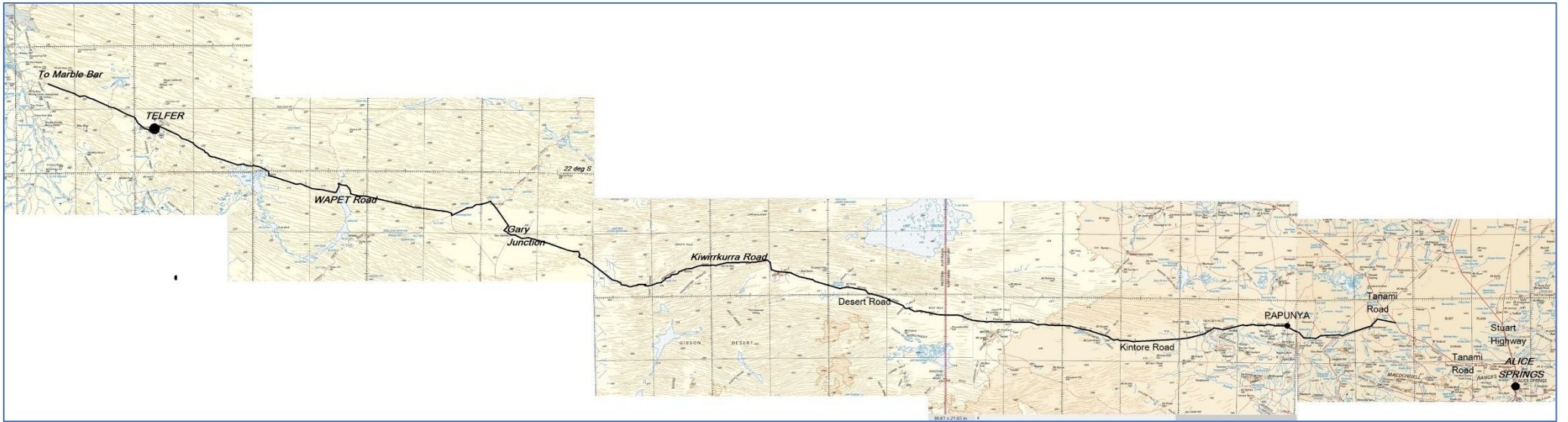


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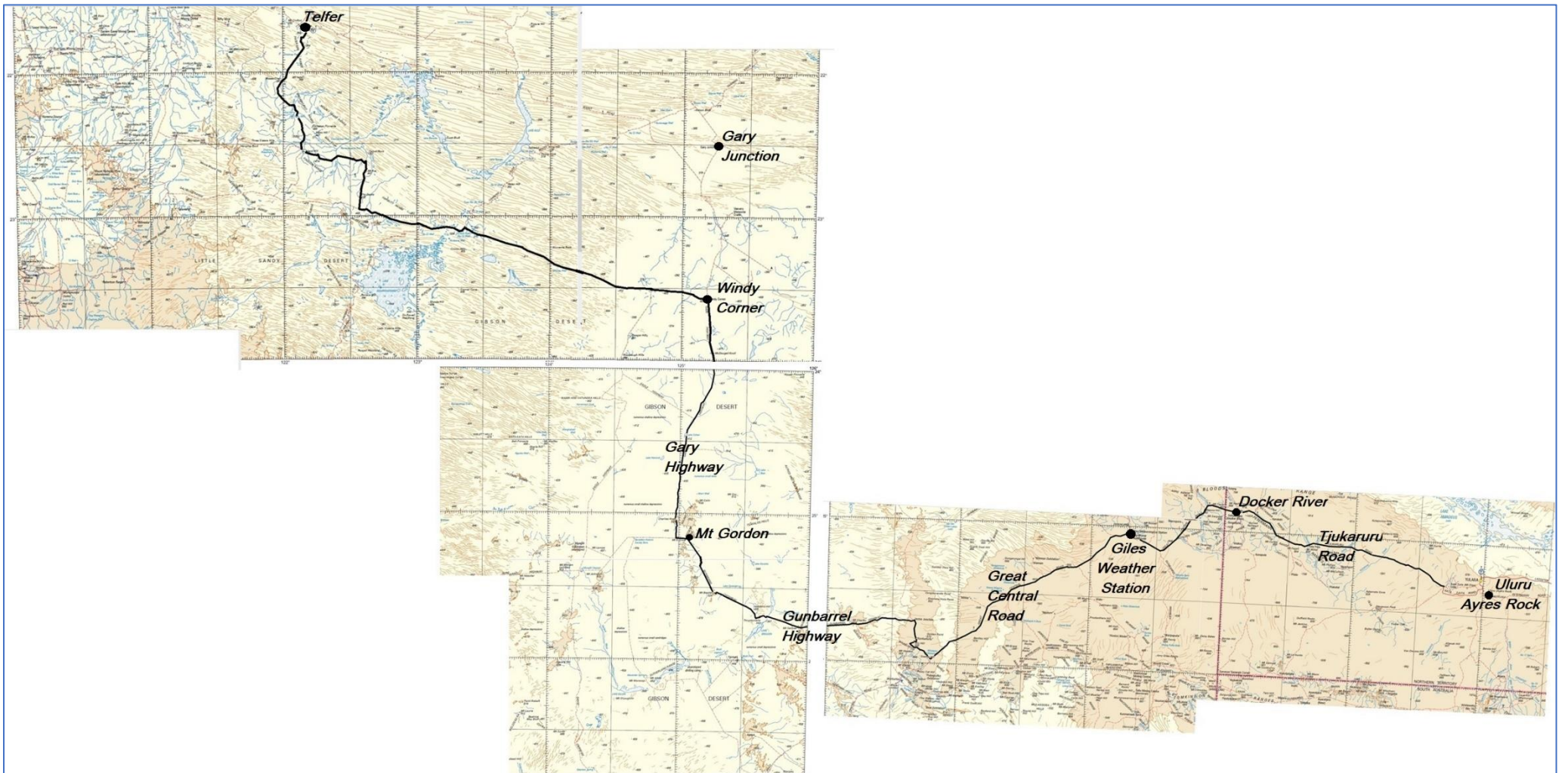


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Meeting the Terms of Reference

1. Trends in Northern Australia that influence economic development and industry investment including population growth, economic and business growth, workforce development, infrastructure development, and Indigenous economic participation;

Economic development and industry investment in the Pilbara and remote Central Australia are driven by mining, cattle grazing and tourism. Further north in the Ord River area is agriculture and cotton production.

What is currently missing is:

- metal refining & shaping,
- cattle abattoirs with fresh & frozen meat production
- farming of food crops and subsequent flour milling to add value to grain products
- clay brick & tile production,
- cement production & concrete supply, and
- manufacturing of value-added products from the metals, sands and gravels.

Mining is transient but intensive when under way. Major world-class mines have mine lives of around 100 to 150 years. Few mines are economic if the mine life is less than 15 years, as investment guidelines usually require a return on investment of 15% or better and see the initial development capital returned at least two to three times during the life of the project. Mine lives less than 15 years are unlikely to generate these returns. Workforces for major mines are a minimum of 80-100 people and 200 to 2,000 employees are common. The workforce is often fly-in fly-out, resident in camps on the mine site and contributing little to the local retail economy.

Cattle grazing employs relatively few workers (20 to 40) compared to mining but often extensive capital investment, and high costs of transport and materials in remote areas, with operations spread over hundreds of square kilometres.

Tourism may require much lower levels of capital investment but are dependent on natural attractions being present, offering reasons for visitors to stay for more than one night. Tourism is often restricted in the Pilbara for three to four months per year due to the Wet Season and cyclones making roads impassable.

Impassable roads also heavily impact mining and agriculture, limiting road train access for deliveries and transport of cattle.

The proposed Gibson Desert Highway would offer an alternative route in an area far less prone to flooding.

Strategic Defence Capability

In times of war, the Highway would also allow rapid ground transport of heavy defence weapons and troops from Central Australia direct to the ports closest to Southeast Asia (Broome, Dampier and Port Hedland) and most at risk of strategic damage to our economy if exports from these ports were to be disrupted.

2. Impediments to building the economic and social infrastructure required to support industry and business to expand and create regional jobs;

Transport underpins any new infrastructure construction. Having a secure sealed all-weather highway and its access to ports, rail links, population centres and tourism centres removes one of the major impediments.

With better road access, industries are more likely to set up processing and manufacturing on-site at the mine rather than hauling raw ore to market, export or processing outside the Pilbara and Central Australia.

The mining industry has long craved a vertically integrated business – mine the raw material, concentrate it on-site, refine the metal on-site then manufacture the value-added saleable product that can then be transported at a much attractive and lower cost per tonne-kilometre than raw ore.

3. Challenges to attracting and retaining a skilled workforce across Northern Australia;

Mining and agriculture are regarded by the Gen X and younger workers as epitomising the *Four Ds of Deathly Jobs* – Dangerous, Distant, Dusty and Dull. 4D jobs attract little interest from the current younger workforce.

Attracting people to remote areas requires that infrastructure, industry and job opportunities are similar to those in the urban cities. Cafes, entertainment, schools, medical care, aged & disability care, quality of accommodation and opportunities for interesting spare-time activities have to be on a par with cities, or people will not come.

Reliable affordable water supplies and electricity are essential.

Paying high salaries with fly-in fly-out only works for a year or two before mental pressures on families and spouses not having their partner at home each night takes its toll, and mental illness and suicides result.

The Highway takes away one limitation, being isolated and without essential supplies in the Wet Season.

It also offers a direct route to Alice Springs and the southeast of Australia for vacations and family visits.

4. Empowering and upskilling the local Indigenous population.

The Highway construction itself will provide training and employment opportunities for local indigenous people, and these skills are transferable to other permanent jobs. Heavy plant operators, traineeships, apprenticeships, cooks, cleaners, construction, engineering, mechanical repairs, paramedical, accounting, bookkeeping, management, supervision, computer and IT skills learned during the construction phase are portable skills that can be used locally or for employment elsewhere.

With the Highway in place, roadhouses will be required every 100 to 200 km along the 1,700 km path. Borrowing funds to construct and equip these is a hurdle that can be partially offset by granting freehold title to local indigenous people who hold Native Title over Unallocated State Land or Commonwealth land and reserves.

With freehold title, the land can be mortgaged or used as collateral for borrowing. The basis of capitalism is using other people's money, by borrowing, and that borrowing is required to be secured.

With the roadhouses comes accommodation and tourist attractions such as indigenous cultural centres as well as natural features and guided tours by local indigenous operators, to encourage visitors to stay more than one night.

The skills learned in construction of the Highway are transferrable to the construction, equipping and staffing of the roadhouses, cultural centres and other tourism infrastructure.

Costs

A full feasibility study is needed to determine the cost.

A rough estimate can be made from generalized industry costs.

In 2017 the Bureau of Infrastructure, Transport and Regional Economics (BITRE) produced a report titled *Road Construction Cost and Infrastructure Procurement Benchmarking: 2017 Update*. (BITRE, 2017).

Key findings of the road project cost benchmarking component found:

- average road project costs were around \$5.1 million per lane kilometre in 2017.
- road class remains the most significant factor explaining average project costs—average costs of urban and rural freeways/highways were around \$5.4 million per lane kilometre, while average costs of rural arterials were around \$3.8 million per lane kilometre.

Assuming the initial construction will be to rural arterial standards (\$3.8 million per lane kilometre), the road will be two lanes for 100% of its length and 10% will be three lanes for overtaking lanes, the cost is roughly estimated at:

$$\begin{aligned} & \$3.8\text{M} \times 2 \times 1700\text{km} + \$3.8\text{M} \times 170\text{km (passing lanes)} = \$12,920\text{M} + \$646\text{M} \\ & = \$13.6 \text{ billion dollars.} \end{aligned}$$

CONCLUSION

- The current two highways linking WA to the central and eastern States & Territories are frequently cut by river systems draining from the interior to the coast.
- A third highway linking Port Hedland to Alice Springs would run along the highest parts of the Central Plateau drainage divide and be far less susceptible to flooding and weather disruption.
- Construction of the highway would create jobs during construction and offer business opportunities for roadhouses, tourism and on-site manufacturing and value-adding from existing industries.
- Upgrading the transport link would encourage other businesses to start up and service the growing communities, encouraging decentralisation of the population.
- A rough estimate of cost is \$13.6 billion.

REFERENCES

BITRE, 2017. *Road Construction Cost and Infrastructure Procurement Benchmarking: 2017 Update. Research Report 148.* Bureau of Infrastructure, Transport and Regional Economics (BITRE).