



ENGINEERING

Civil Assessment Brief

Mid-Murray Growth Strategies

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Introduction and Scope

FMG Engineering has been engaged to undertake a high-level review of existing infrastructure and possible constraints when considering strategic growth within the Mid Murray region. A short paragraph summary on the existing infrastructure capacity and feasibility of supporting additional growth within the key services and infrastructure has been outlined for each of the following townships;

- Blanchetown
- Cadell
- Cambrai
- Keyneton
- Mannum
- Morgan
- Palmer
- Sedan
- Swan Reach
- Truro
- Tungkillo

Commentary regarding the capacity of existing Potable Water, Wastewater, Communications, Electricity and Transport services has been provided following a review of available authority data on existing infrastructure. Service Authorities have been contacted for comment, however no formal response has been provided. This is typical for high level investigations of this nature, as service capacity analysis and investigations can be quite intricate and interlinked (i.e. development in one township may affect infrastructure requirements in downstream/upstream township).

Methodology

FMG has undertaken the following methodology to collate this report.

- Review online Council GIS mapping to determine which townships are serviced by formal CWMS networks.
- Smaller townships will be assumed to be managed via onsite wastewater disposal or similar other individual lot basis
- Contact Council and request information regarding identified CWMS networks and their relevant capacities for accepting additional flows.
- Review the South Australian Property and Planning Atlas (SAPPA) or WaterConnect to determine whether flood risk or flood hazard overlays are observed within the subject Townships or Settlements to determine any known risks or flood zones which may preclude development. (Refer Appendix A)
- Review SA Water Aquamaps and LocationSA for presence of potable water networks. Note sizes of distribution mains and areas currently serviced within all townships, presence or not only within settlements. (Refer Appendix A)
- Review NBNco's online portal review servicing arrangements to each township and settlements (Refer Appendix A).
- Review the Waterconnect River Murray Inundation Mapping and make comment on the 1956 flood extents with respect to developable area
- Review SAPN website including Network Visualisation Portal (Rosetta Data Portal) and Distribution Annual Planning Report (DAPR) to determine presence of Low and High voltage SAPN infrastructure and assess the potential capacity of existing networks. (Refer Appendix B)

Note: The available import capacity values are derived based on a simplified network assessment approach and provides an indication of the maximum additional load that the identified feeder could support, assuming the load is connecting within 1km along the feeder backbone, from the zone substation feeder exit. The available import capacity considers the forward planning period, as specified in SA Power Networks latest DAPR. The values specified shall be treated as a guide only as they are highly indicative and may change once a detailed assessment is completed (where required) based on SA Power Networks assessment process. There is limited or no consideration of upstream network constraints or backup limitations that may reduce the available import capacity on the specified feeder. Similarly, individual feeder capacity does not necessarily reflect the available upstream import capacity.

- Review LocationSA to determine presence of Low and High voltage SAPN infrastructure and prepare a table outlining the presence of each. (Refer Appendix B)

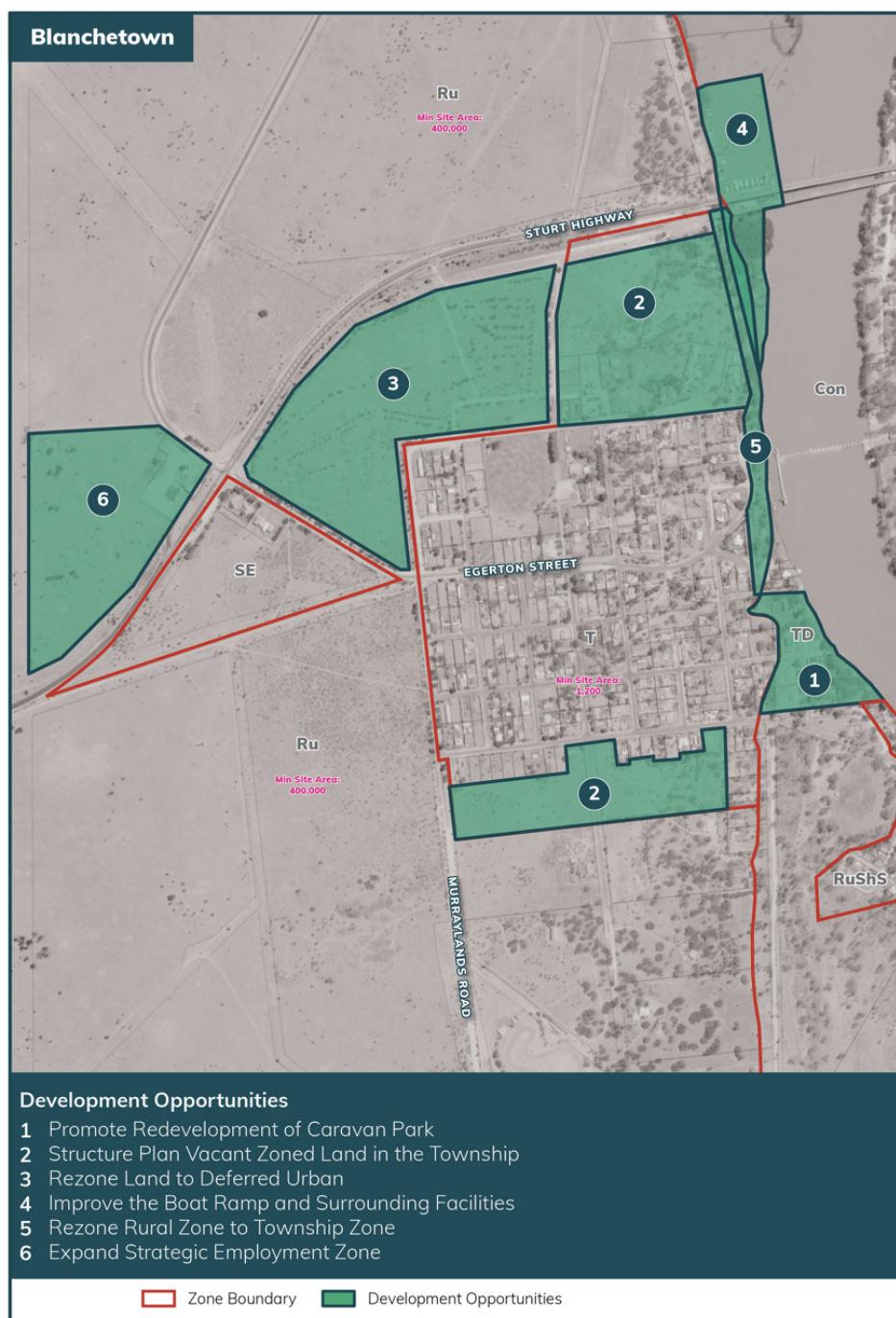
Ongoing lines of enquiry we are awaiting feedback on include;

- Request for information from SA Water and Council on potable water and CWMS WWTP respective capacities.

Infrastructure Summaries

Blanchetown

Infrastructure	Requirements
Potable Water	There is SA Water potable network in this township, and based on SA Water Aquamaps it is limited to the developed area of the main township only. There is no SA Water infrastructure for the shacks / dwellings located southeast of the town (i.e. Page Drive). Reticulation sizing within the township (DN100-DN200) appears commensurate with the volume of development currently in the town, if not larger than what would be typically observed. Based on a visual assessment of the demand compared to the infrastructure Developed area has adequate infrastructure (as shown in Appendix A). Areas beyond the current town limits (for instance along Murraylands Rd to the west, along South Tce to the south and North Tce to the north) may require further augmentation to be developed, possibly from the existing water source point (150CICS). Major growth in areas other than areas mentioned above, may require significant augmentation from the existing mains subject to capacity of the services.
Wastewater	There is no SA Water sewer network in this township. Onsite Wastewater systems are used. There is an existing CWMS network that services the Shack areas. Council has nominated the CWMS system is to be upgraded to service the township. It is unknown the extent of upgrades required and whether this is in reticulation of WWTP capacity. Conservatively, proposed developments could rely on on-site wastewater systems – which typically requires a 1,200m² minimum lot size for surface / subsurface disposal. This would mitigate any risks associated with CWMS network capacity and availability subject to the proximity of the River floodplain.
Communication	Not very well serviced by NBN – the coverage in town is variable and considered poor coverage is available along the river but not enough coverage to the west/east of the developed township. There are some remote areas with lack of service.
Electricity	High voltage assets are observed mostly along the eastern edge of the township with a mix of above and below ground infrastructure. Low voltage assets are observed within the developed area only (town and houses). A single substation is observed near the border of McBean Pound and Blanchetown, located between Murraylands Rd and Poultry Farmlands. Growth to the south-west or west of town would be required. Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	The 1956 flood extents broadly aligns with Sunset Boulevard, and remains east of The Parade along the riverfront. Based on the recent data from Council, some shacks were inundated during the recent flood events. New development east of Sunset Boulevard may be precluded or will require elevated footings and offsets to safely convey flood waters through the subject land. Coincidentally, FMG undertook Forensic studies in 2023-2024 following the large flood event, noting that the majority of the properties (as above) along Page Drive and McPhee Avenue have been inundated during the flood event.
Transport	Quick / convenient access to Sturt Highway – appropriate asset for supporting growth Access to north and south from Murraylands Rd along the River Murry Nil access to eastern side of Murray from within the township boundary. No infrastructure for other regions There is limited existing public transport.



Infrastructure Opportunities

With respect to Infrastructure, the Opportunities highlighted within the URPS report reflect key infrastructure actions to unlock effective development outcomes in the future. FMG has provided feedback to ensure these opportunities align with the existing infrastructure, and provide the following supporting information with a growth mindset;

Opportunity 1 & 4

A large risk at this site is flooding, given the low lying nature of the area. Council should seek guidance from SA Water on appropriate peak flow levels in the Murray River to set future development above, and investigate opportunities to provide a consolidated plan for this site and others along the river frontage for flood resilience (i.e. flood levys or similar other infrastructure).

Cadell

Infrastructure	Requirements
Potable Water	There is SA Water network in this township and based on SA Water Aquamaps it is limited to the developed area of the township with a 100PVCm to the south up to Hedge Rd. There are also SA Water mains at Oxford Landing Rd and Ramco School Rd to the south of the township. Other areas of the township are not serviced by SA Water. For areas around the developed town (for instance along Gordon Rd, Cadell Valley Rd, River Tce, and Dearden TCE) may require further augmentation, possibly from the existing water source point (150CICS). Major growth in areas other than areas mentioned above, may require extension/ augmentation from the existing mains subject to capacity of the services. There is also a potable water transfer station in this township.
Wastewater	There is no SA Water sewer or CWMS network in this township. Allotments within the township are using on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use on site wastewater disposal.
Communication	There are some remote areas within the township which does not have NBN coverage. Remote properties on outskirts of towns rely on NBN Satellite / Fixed Wireless technology.
Electricity	High voltage assets are observed mostly along the riverside edge of the township with a mix of above and below ground infrastructure. There is also a high voltage overhead lines parallel to the alignment of the Oxford Landing Rd and Ramco School Rd. Low voltage assets are mostly observed within the developed area. A single substation is observed near the north-eastern border of township. Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	The 1956 flood extent remains outside the main township bounds, generally on the river side of River Terrace / Dalzell Road. Based on the recent data from Council, the Cadell campground were washed out by the recent flood events It is unlikely that any development within the Township will be significantly affected by Flood levels.
Transport	Access to Goyder Highway north of Cadell is by Ferry located at Cadell Valley Road. The nearest flood resilient crossing of the River Murray is at Blanchetown, approximately 45 kilometres away. Road access to the town is via the A20 and the Morgan-Cadell Road. There is no existing public transport.

Cambrai

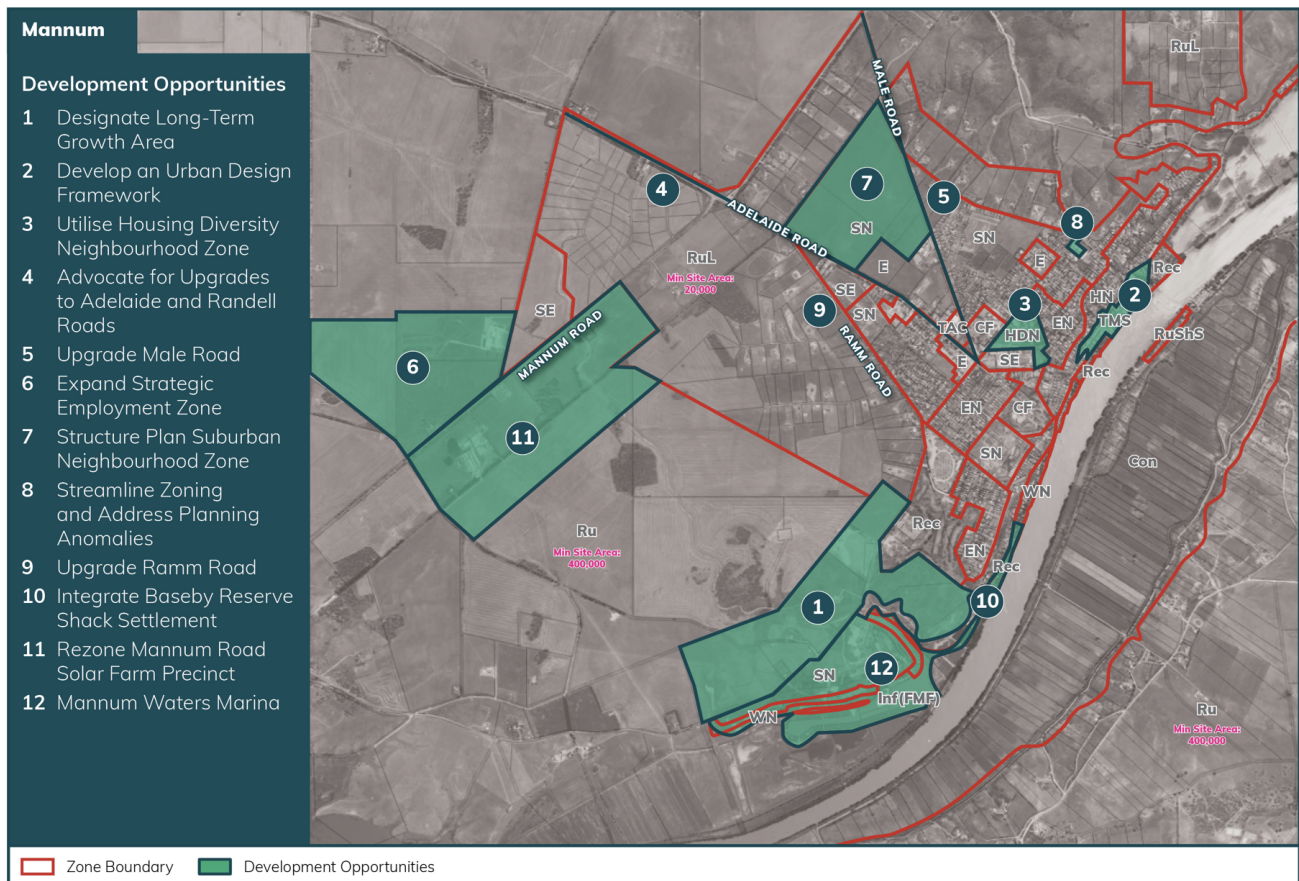
Infrastructure	Requirements
Potable Water	There is SA Water network in this township and based on SA Water Aquamaps, it is limited to the developed area of the township only. Specifically, reticulation is available in the Northeastern corner. Any development in other areas of the town will likely require extension of existing mains and augmentation. It is noted an existing development application (710/D0005/94) is lodged to the west of the township, which if eventuated, may undertake some of the augmentation efforts to unlock further development to the west. The main supply is via a 150AC from Sedan (Ridley Rd to the north), there is a possibility of potable water connection for future developments along this main supply subject to SA Water confirmation on capacity Other areas of the Cambrai township are not serviced by SA Water. .
Waste Water	There is no SA Water sewer or CWMS network in this township. Allotments within the township use on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use onsite wastewater disposal
Communication	Generally serviced by NBN wireless systems. There are some remote areas within the entire township which does not have NBN coverage. Council Note: Mobile network blackspot leads to poor coverage for the telecommunication network.
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses). • 11kV above ground feeders available (from north of town along Ridley Rd up to Redbank Rd) • 19kV SWER above ground feeders available in different part of town (mostly along Black Hill Rd) • 33kV sub-transmission line available along Sanderston Road • 66kV not available • No Substation in Town • Available Import Capacity: 0-0.5 MVA – along Ridley Rd (11kV) Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth. Given the limited HV infrastructure it is probable that augmentation would be required to support any meaningful development (i.e. > 10 dwellings)
Flooding/Stormwater	Based on Council's comment, Marne River (approximately 1km south of the Township centre) is subject to possible flooding. New development within this area may be precluded or will require additional land to safely convey flood waters through the subject land.
Transport	Quick / convenient access to Stott Highway – appropriate asset for supporting growth. Access to north and south from Murraylands Rd along the Murry River There is no existing public transport.

Keyneton

Infrastructure	Requirements
Potable Water	There is SA Water network in this township and based on SA Water Aquamaps, it is limited to the developed area of the township only. A 150AC enters the township from Moculta (Keyneton Rd to north), there is a possibility of potable water connection for future developments along this pipe subject to SA Water confirmation on capacity and further potential augmentation from the existing water source point 150DICL and 100AC. There is also a 100AC along Stott Hwy toward the east. Based on Council's experience of the township, water supply is a concern for the town. For instance, Henschke Winery to the northwest have raised concerns about water. Other areas of township are not serviced by SA Water. Major growth in areas other than areas mentioned above, may require significant augmentation from the existing mains subject to capacity of the services.
Waste Water	There is no SA Water sewer network or CWMS in this township. Allotments within the township use on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use onsite wastewater disposal. There are numerous water courses surrounding the township and consideration should be given to this with any future expansion.
Communication	Generally serviced by NBN fixed wireless
Electricity	• Low voltage assets are mostly observed in developed areas only (along Keyneton road). • 11kV above ground feeders available (mostly west and south of the township) • 19kV SWER above ground feeders not available • 33kV sub-transmission line not available • 66kV not available • No Substation in Town • Available Import Capacity: no data Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	SAPPA and Water Connect flooding map does not suggest any flooding concerns within this township however there are watercourses within this township which may need to be assessed for flood risk during major storm events.
Transport	Quick / convenient access on the Stott Highway – appropriate asset for supporting growth No infrastructure for other regions There is no existing public transport.

Mannum

Infrastructure	Requirements
Potable Water	There is SA Water network in this township and based on SA Water Aquamaps, the township is well serviced. A 1450MSCL raw water system transfers raw water from River Murray (Pump Station) to western townships. Limited service to the North-east of Mannum Town. Sufficient reticulation appears available to the south and south west of town. Water supply is likely not a concern for the growth subject to augmentations required for service connections of future developments. Council Note: Mannum Waters – Stage7 (which would see development of the remaining standard allotments on the high ground) is currently underway. The development has progressed much faster post COVID.
Waste Water	There is existing SA Water sewer network in this township (only town in Council area connected to mains sewer). Majority of the developed township is connected to the SA Water sewer network. Some of town still retain the use of onsite wastewater systems on their own allotments. Further growth can likely connect to existing SA Water sewer mains subject to capacity and augmentations for future connections. Otherwise on-site wastewater disposal is the only other option. Council Note: SA Water have indicated they have no interest in expanding sewer network in Mannum
Communication	Generally serviced by NBN Fixed Line (i.e. Fibre / Copper / Coax) No communications blackspots reported by Council
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses) and also within Port Mannum region. • 7.5kV feeders available along the river from south (including township) and along Purnong Rd up to Underwood Hill Rd • 19kV SWER above ground feeders available in some part of town • 33kV sub-transmission line available along Randell Road and Ridley Rd • 66kV not available • Available Import Capacity: no data Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	Limited stormwater infrastructure has been reported by Council. The town has experienced recent growth. Therefore, it is Council's expectation that the existing stormwater Infrastructure may require augmentation to mitigate both increased imperviousness and manage flood risk. Accordingly, there may be a need for increased detention/retention storages for future developments. The 1956 flood extent mostly impacts the eastern portion of the town, especially east of the first road along the riverfront, (i.e. River Lane, Wattle Street and Randell Street. There would be little impact to future development west or southwest of Mannum.
Transport	Mannum is accessible via the B36 from Palmer or near Murray Bridge. There is a ferry crossing in Mannum providing access to dwellings located on the other side of the River Murray. There is no existing public transport.



Infrastructure Opportunities

With respect to Infrastructure, the Opportunities highlighted within the URPS report reflect key infrastructure actions to unlock effective development outcomes in the future. FMG has provided feedback to ensure these opportunities align with the existing infrastructure, and provide the following supporting information with a growth mindset;

Opportunity 1

Well serviced for potable water by an existing DN250 potable mains (capacity to be confirmed by SA Water). Correspondence with South Australian Power Networks should be commenced to understand future high voltage connections to this area and what Council can do to facilitate this infrastructure. The standard of Belvedere road is currently fit for purpose as a Rural connector, however would benefit from investigations into upgrades to facilitate cycling access, footpath links and widening for overtaking and intersections to support greater density on the town fringe.

Opportunity 3

High quality development opportunity with suitable diameter infrastructure bounding the opportunity area ready for development. Investigations into geotechnical and environmental conditions would be valuable to understand any residual risk.

Opportunity 7

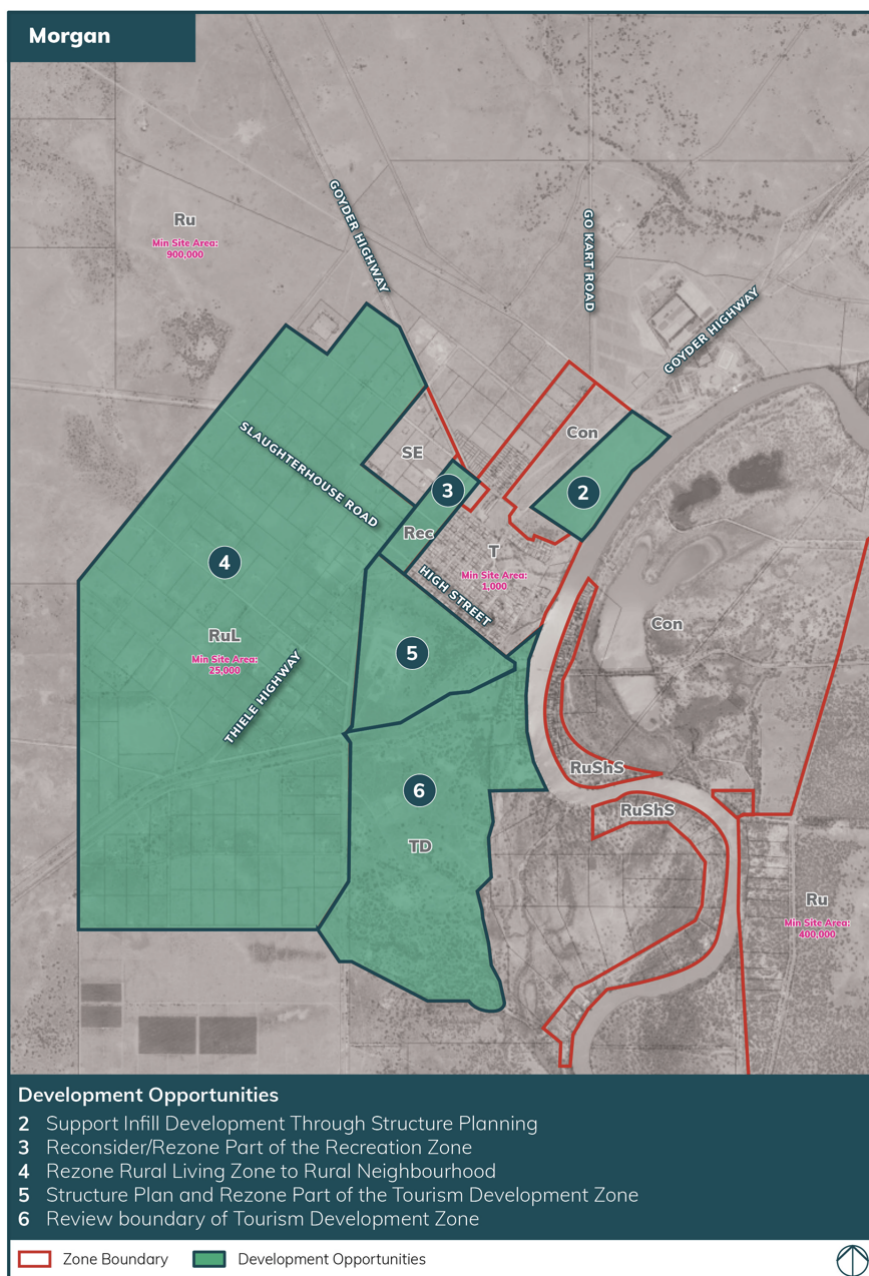
If development is to be encouraged here, A site specific infrastructure assessment should be undertaken for this site to map out the required headworks to support a reasonable density suburban neighbourhood zone. This would reduce risk for potential developers, and support the advocacy to the State Government for upgrades to Adelaide and Male roads which would help in unlocking this site.

Wastewater constraints

As a general note, SAW and Trility should be liaised with in further detail to confirm the capacity of the WW treatment plant. The plants appear physically constrained by the Murray and other existing development, and may hamper larger scale growth within the town.

Morgan

Infrastructure	Requirements
Potable Water	There is SA Water network in this township and based on SA Water Aquamaps the township is well serviced. Despite the extensive gridded road network provided to the north-west of the Township, there is no potable water, or services in general within this area. The SA Water Pump station for the Morgan to Whyalla is located in Morgan Township. A 1050MSCL and 750MSCL network is transferring potable water from River Murray (Pump Station) to northwestern townships. Limited service to the North and South of developed Township. Water supply is likely not a concern for the growth subject to augmentations required for service connections of future developments.
Waste Water	There is no SA Water sewer network or CWMS in this township. Allotments within the township use on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use onsite wastewater disposal.
Communication	Generally serviced by NBN Fixed Wireless service No communications blackspots reported by Council
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses). • 11kV above ground feeders available (township and along the river) • 19kV SWER above ground feeders not available • 33kV sub-transmission line not available • 66kV available along Murraylands Rd and Goyder Hwy • Substation in Town • Available Import Capacity: between 0-0.5 MVA – only at the vicinity of developed Township (11kV) and zero along the river. Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth. Given the HV infrastructure available it is probable that minimal augmentation would be required to support smaller development.
Flooding	Limitation stormwater infrastructure has been reported by Council The stormwater infrastructure for future growth may require augmentation to mitigate both increased imperviousness and also flooding. Accordingly, there may be a need for more strict detention/retention storage requirements for future developments.
Transport	There is a ferry in Morgan which provides access to Morgan Cadell Road. The nearest flood resilient access over the River Murray is in Blanchetown, approximately 35km away. Access to the town is via the B81 (Thiele Highway) from Eudunda. There is no existing public transport.



Infrastructure Opportunities

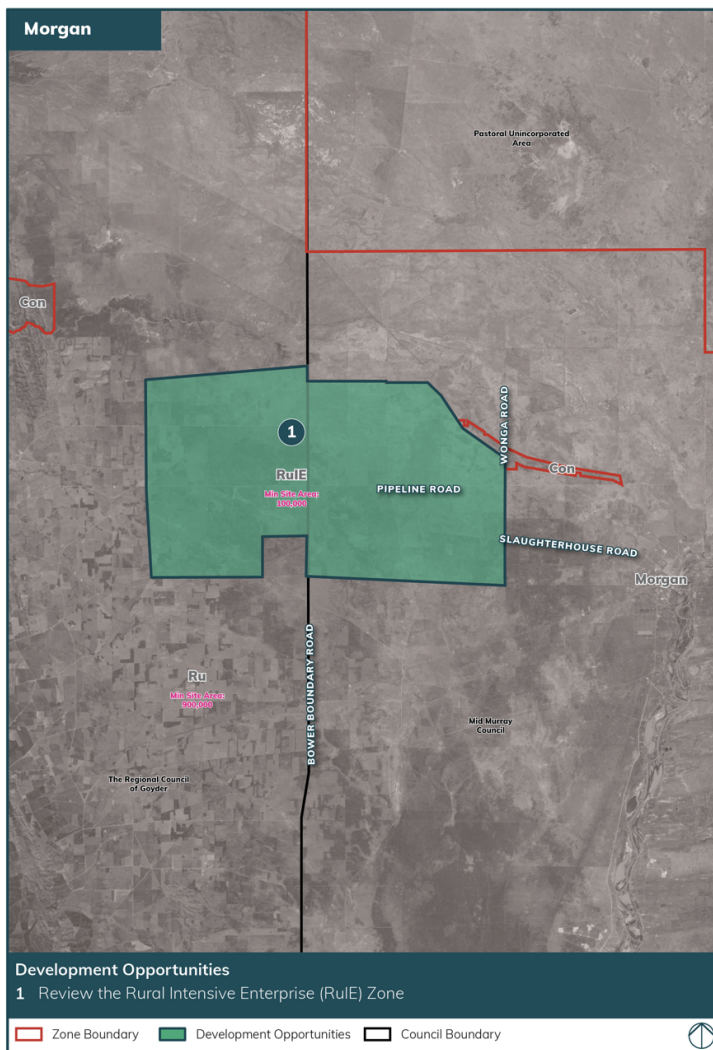
With respect to Infrastructure, the Opportunities highlighted within the URPS report reflect key infrastructure actions to unlock effective development outcomes in the future. FMG has provided feedback to ensure these opportunities align with the existing infrastructure, and provide the following supporting information with a growth mindset;

Opportunity 2

Town water supply, High Voltage cabling and sewerage mains are conveyed along the Goyder Highway adjacent, presenting a unique opportunity to undertake development with little headworks (subject to treatment plant capacities). A large risk at this site is flooding, given the low lying nature of the area. Council should seek guidance from SA Water on appropriate peak flow levels in the Murray River to set future development above, and investigate opportunities to provide a consolidated plan for this site and others along the river frontage for flood resilience (i.e. flood levys or similar other infrastructure).

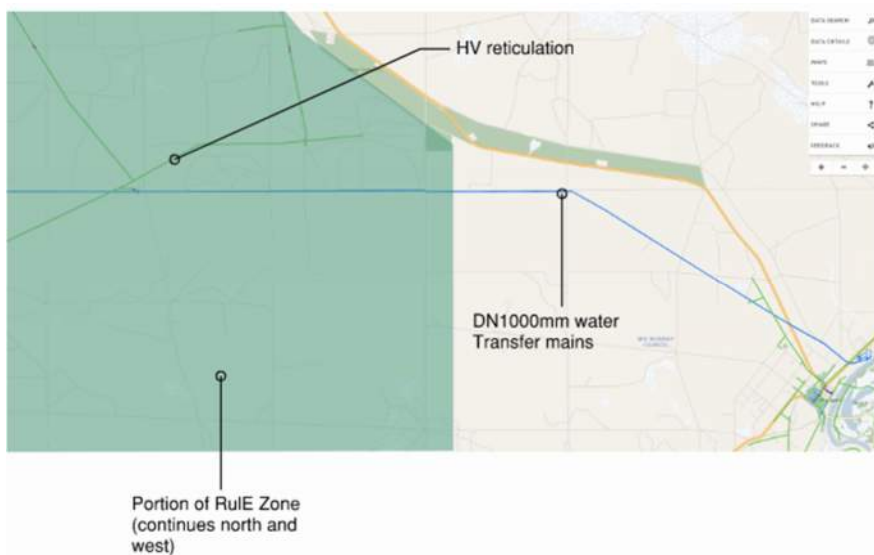
Opportunities 3,4,5

Opportunities in these areas are limited by the lack of potable water infrastructure. A coordinated infrastructure plan should be developed in liaison with SA Water to map out a concept for additional infrastructure, and identify staging / release priorities to avoid abortive or illogical development.



Beyond the township of Morgan, a large zone exists which is currently under utilised. This land is not well serviced throughout its large area, however does have two key pieces of infrastructure (Water transfer mains and above ground HV) present running east west through the centre of the site (along Pipeline road). This presents a unique opportunity to “tap in” and unlock large supply for this area, which is likely to require intensive resources should it realise its potential.

Further advocacy by Council to SAW and SAPN on servicing this land could be undertaken to de-risk the zone.



Palmer

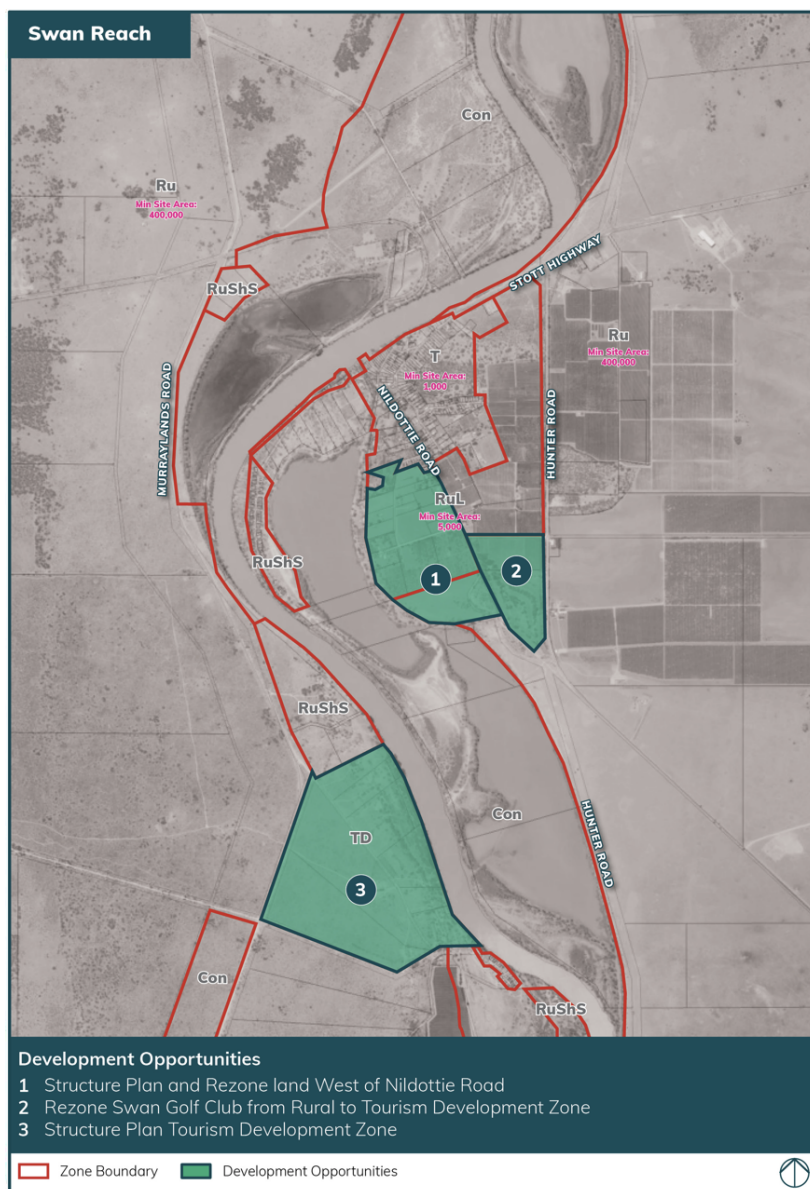
Infrastructure	Requirements
Potable Water	There is SA Water network in this township. There is a SA Water Pump station transferring raw water from Mannum to Adelaide. Limited service to the North and South of developed Township. Water supply is likely not a concern for the growth subject to augmentations required for service connections of future developments.
Waste Water	There is no SA Water sewer network or CWMS in this township. Allotments within the township use on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use onsite wastewater disposal.
Communication	Generally serviced by NBN Fixed Wireless. There are some remote areas within the entire township which does not have NBN coverage. Council Note: Communications blackspot which means poor coverage for telecommunication network.
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses). • 11kV above ground feeders available along Reedy Creek Rd (approximately 1km south of Adelaide Rd) • 19kV SWER above ground feeders available in different part of town (mostly along Reedy Creek Rd) • 33kV sub-transmission line available along Randell Road • 66kV not available • No Substation in Town • Available Import Capacity: 0-0.5 MVA – for (11kV) line Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	SAPPA and Water Connect flooding map does not suggest any flooding concern within this township however there are watercourses within this township which may be flood during great storm events. No comment from Council on Flooding
Transport	Palmer is located on the B35, at the intersection of Randell Road and Reedy Creek Road. There is no existing public transport.

Sedan

Infrastructure	Requirements
Potable Water	There is SA Water network in the developed area of township. Potential available connections for future growth from Stott Hwy, Ridley Rd, and Halfway House Rd, and Bank Rd around the developed township subject to capacity and augmentations. Limited service to the east, west, north, and south of developed Township.
Waste Water	There is no SA Water sewer network or CWMS in this township. Allotments within the township use on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use onsite wastewater disposal.
Communication	Not very well serviced by NBN Fixed Wireless, some areas lack service, including within the township.
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses) • 11kV above ground feeders available along Reedly Rd and part of Bank Rd • 19kV SWER above ground feeders available in different part of town • 33kV sub-transmission line not available • 66kV not available • No infrastructure in east and southeast • Substation in Pipeline Rd at the border of Towitta Town • Available Import Capacity: 0-0.5 MVA – for (11kV) line Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	SAPPA and Water Connect flooding map does not suggest any flooding concern within this township however there are watercourses within this township which may flood during great storm events.
Transport	Sedan is well-located at the intersection of the Stott Highway, Ridley Road, Half Way House Road, and Bank Road. There is no existing public transport.

Swan Reach

Infrastructure	Requirements
Potable Water	The developed Township is well-served by the SA Water network. Limited service to the other areas of township (other than developed Township). SA Water Transfer station for Raw Water is located in Township. Water supply is likely not a concern for the growth subject to augmentations required for service connections of future developments.
Waste Water	There is no SA Water sewer network in this township. CWMS available in the shack area. Council is currently investigating the feasibility of installing a CWMS to service the township. In the event that this does not proceed, allotments within the township will continue to use on site wastewater disposal to meet their wastewater requirements.
Communication	Not very well serviced by NBN. Coverage available along the river but not enough coverage to the west/east of the township There are some remote areas with lack of service. Also coverage in vicinity of township varies which means there are some areas with poor service.
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses) • 11kV above ground feeders available around township • 19kV SWER above ground feeders available in different part of town (mostly along Scott Hwy) • 33kV sub-transmission line only available along Murraylands Rd • 66kV not available • No infrastructure in east, west and northeast of greater town • Substation at the intersection of Scott Hwy and Murraylands Rd • Available Import Capacity: greater than 1.5MVA – for (11kV) line Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	Flooding issue along the River Murray as shown in Appendices (Water Connect) Flooding is of particular concern in the southern part of the township The 1956 flood extents line enters the township following Victoria Street, continuing southerly. Development West of Connors Road would be subject to further review of flood levels. Council note: Stormwater infrastructure for future growth may need augmentation to mitigate both increased imperviousness and flood risk. Accordingly, there may be a need for more strict detention/retention storages for future developments.
Transport	The ferry connects the town from Angaston to Loxton Road, providing access to Stott Highway. Access from Adelaide is via. Blanchetown There is no existing public transport.



Infrastructure Opportunities

With respect to Infrastructure, the Opportunities highlighted within the URPS report reflect key infrastructure actions to unlock effective development outcomes in the future. FMG has provided feedback to ensure these opportunities align with the existing infrastructure, and provide the following supporting information with a growth mindset;

Opportunity 1 & 2

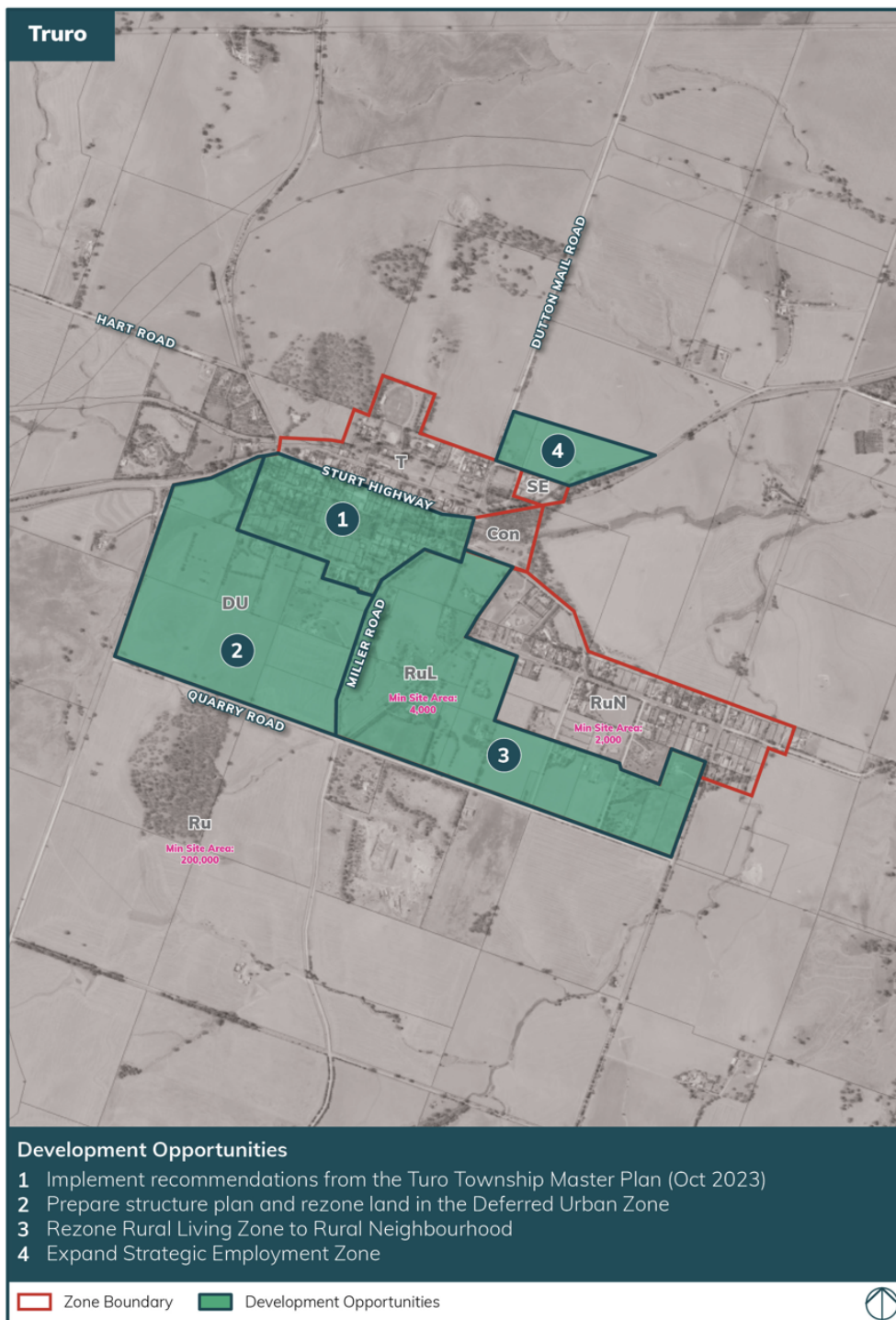
This site is beyond the extents of potable water mains in the town. A large water mains extension would be required for development to occur in this area. Development targeting this area should liaise with SAW to clarify the remaining capacity of the water treatment station, costs associated with extending the mains, and ensuring adequate pressure can be maintained for the higher elevation areas. High Voltage power is present throughout and should not provide a significant constraint on development.

Opportunity 3

Very little infrastructure is available to support Development in this area. Significant augmentation, or off-the-grid solutions would need to be developed for water, wastewater and extensions would be required for power.

Truro

Infrastructure	Requirements
Potable Water	There is SA Water network available in this township and based on SA water Aquamaps, developed area of township is well serviced. Limited service to other areas of town Water supply is likely not a concern for the growth subject to augmentations required for service connections of future developments.
Waste Water	There is no SA Water sewer network in this township. Township is using CWMS system for wastewater management which is pumped to the Barroosa Council CWMS network. Wastewater disposal management for future growth need to be assessed by Council (Mid-Murray & Barossa) for capacity. Further growth can likely use onsite wastewater systems if the existing CWMS does not have capacity
Communication	Generally serviced by NBN Fibre Areas away from the developed township has poor coverage No blackspot reported by Council
Electricity	• Low voltage assets are observed within the developed area only (existing township and houses) • 11kV above ground feeders available around township and along Sturt Hwy to the west of township • 19kV SWER above ground feeders available in different part of town • 33kV sub-transmission line not available • 66kV not available • Minor infrastructure to the east, northeast, and southeast • No Substation near township • Available Import Capacity: greater than 1.5MVA – for (11kV) line Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	SAPPA and Water Connect flooding map does not suggest any flooding concern within this township however there are watercourses within this township which their vicinity may be flood plain during great storm events. No comment from Council on flooding.
Transport	Truro is located near the boundary of the Barossa Valley, and is approximately 15km from Nurioopta along the A20 (Stott highway). It is well-placed for potential growth. There is no existing public transport.



Infrastructure Opportunities

With respect to Infrastructure, the Opportunities highlighted within the URPS report reflect key infrastructure actions to unlock effective development outcomes in the future. FMG has provided feedback to ensure these opportunities align with the existing infrastructure, and provide the following supporting information with a growth mindset;

Opportunity 2 & 4

Development in this area may be limited by existing small diameter (80mm) SA Water Potable Water supply. Council led discussions with SA Water may be required to facilitate the zone expansion, rezoning proposal, and ensure viability.

Tungkillo

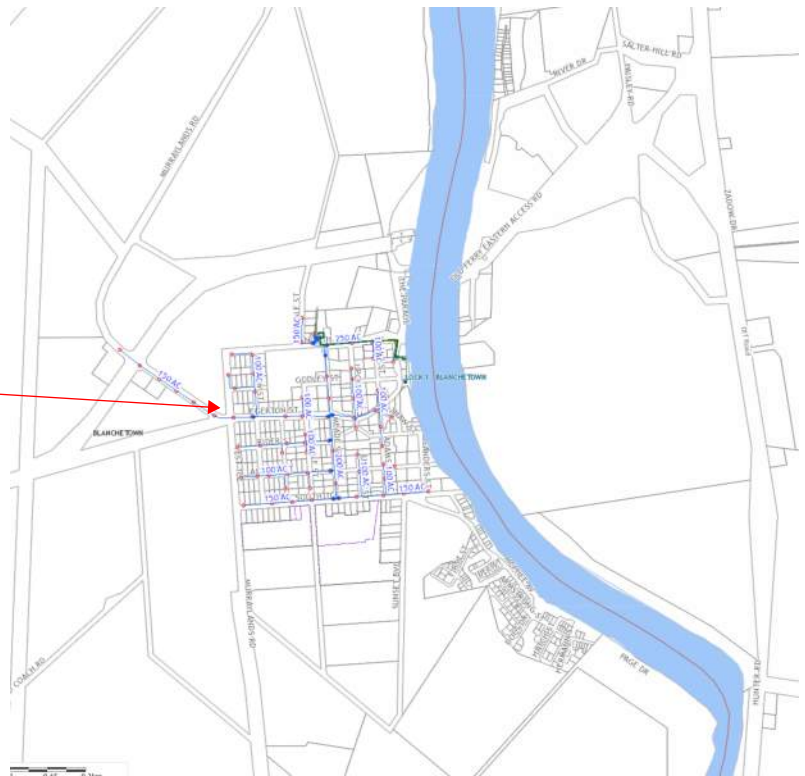
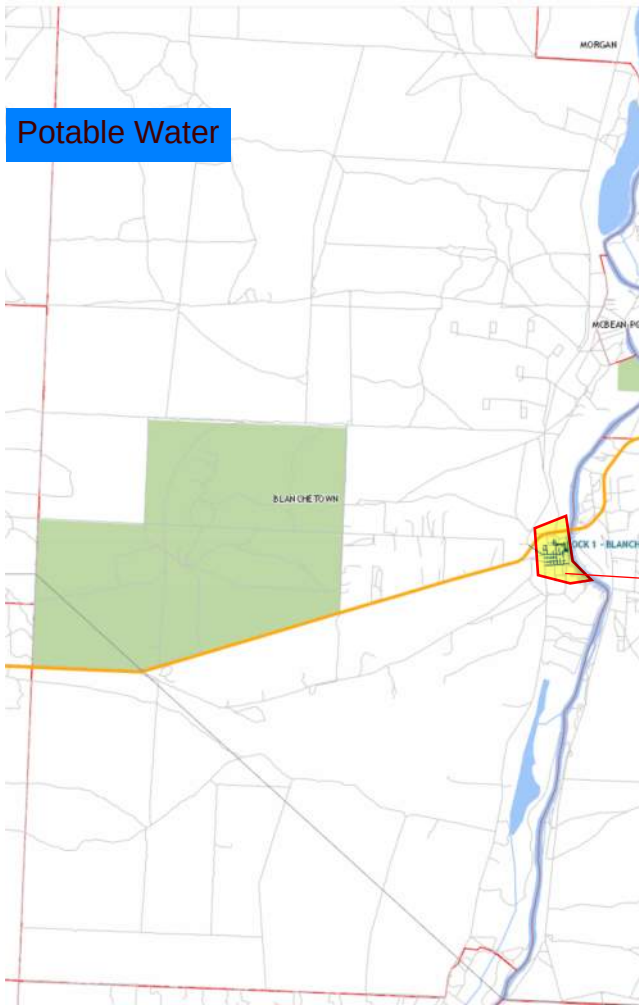
Infrastructure	Requirements
Potable Water	Based on SA water Aquamaps, there is SA Water network available in this township within developed area of township. Limited services to other areas of town. Transfer raw water service through this township from River Murray towards north-western towns.
Waste Water	There is no SA Water sewer network or CWMS in this township. Allotments within the township use on site wastewater disposal to meet their wastewater requirements. It is likely any further development would continue to use onsite wastewater disposal.
Communication	Generally serviced by NBN Fibre No communications blackspot reported by Council
Electricity	• Low voltage assets are observed within the developed area mostly. • 11kV above ground feeders available to the north-west of town • 19kV SWER above ground feeders available in different part of town • 33kV sub-transmission line pass through town from Palmer to Birdwood • 66kV not available • No Substation near township • Available Import Capacity: between 0.5MVA to 1.5MVA – for (11kV) line Further analysis from SAPN on network capacity is required to determine possible infrastructure requirements associated with growth.
Flooding	SAPPA flooding map does not suggest any flooding concern within this township No flooding reported by Council. There are watercourses through properties which may cause local flooding issue for some properties during certain storm events.
Transport	There is no existing public transport. Tungkillo is located on the B35 between Palmer and Mount Pleasant.

Appendix A

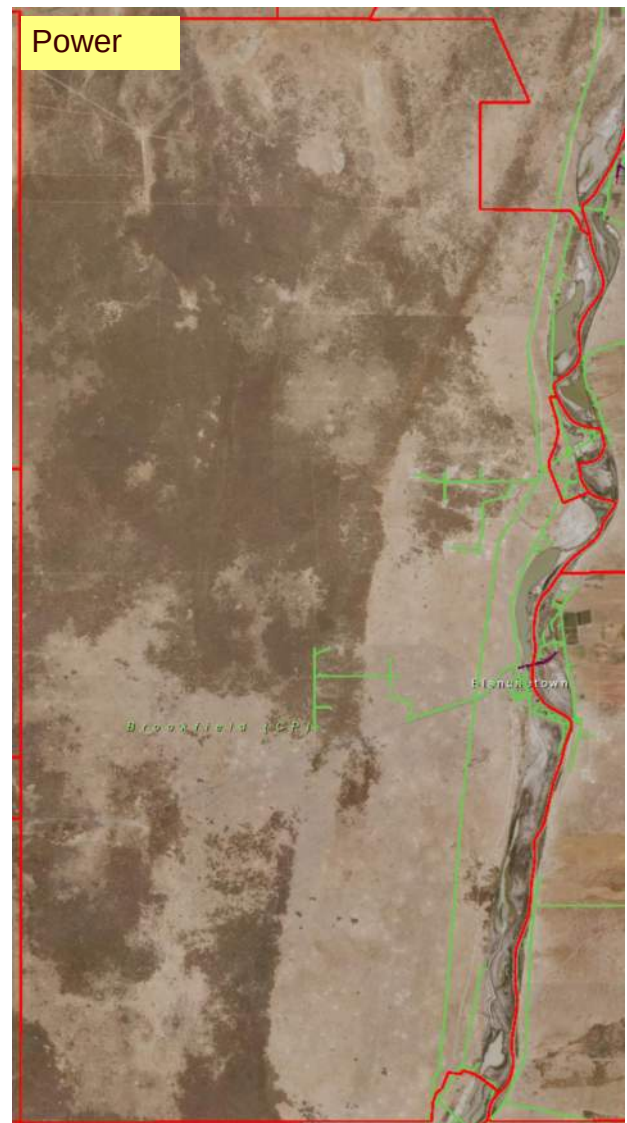
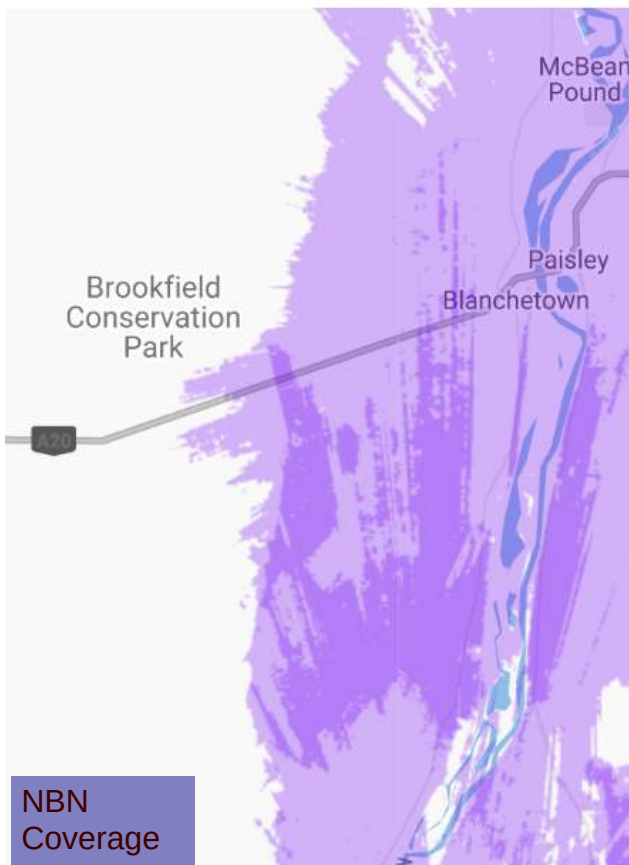
Township Reference Maps
Potable Water
Sewer
Communications
Flooding Map

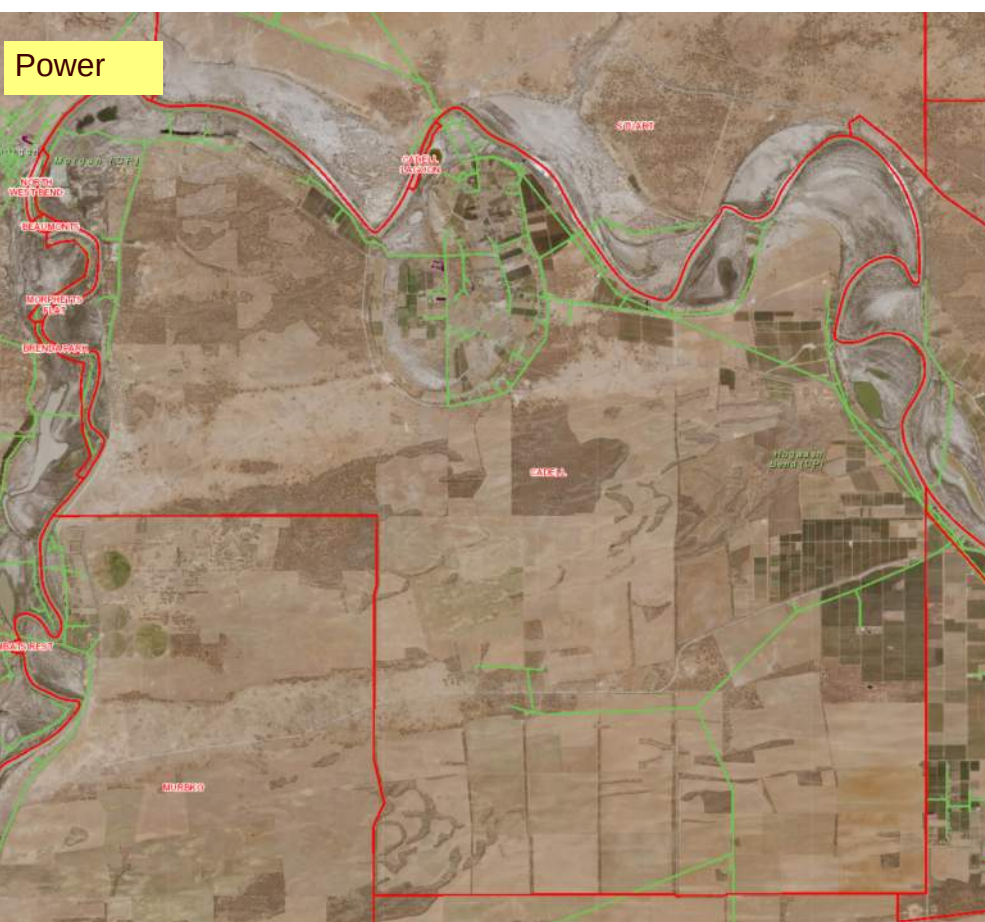
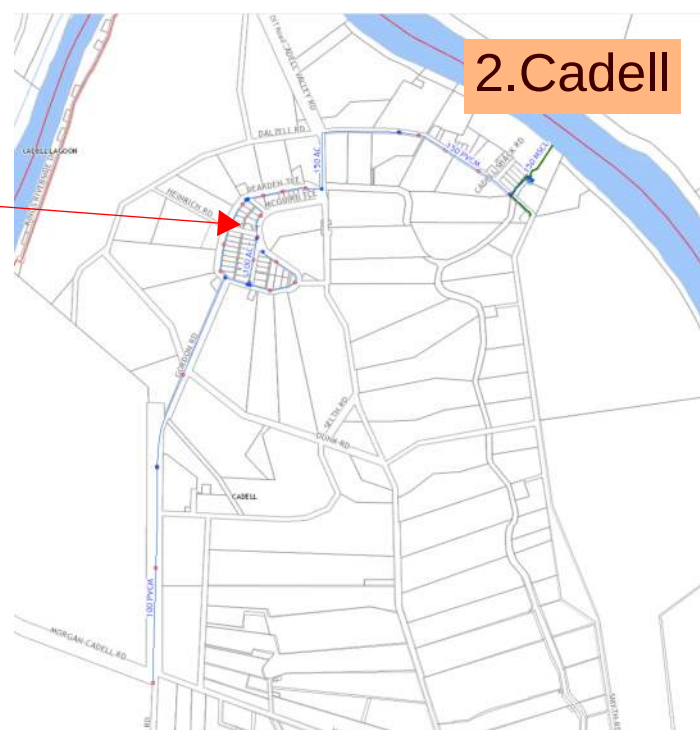
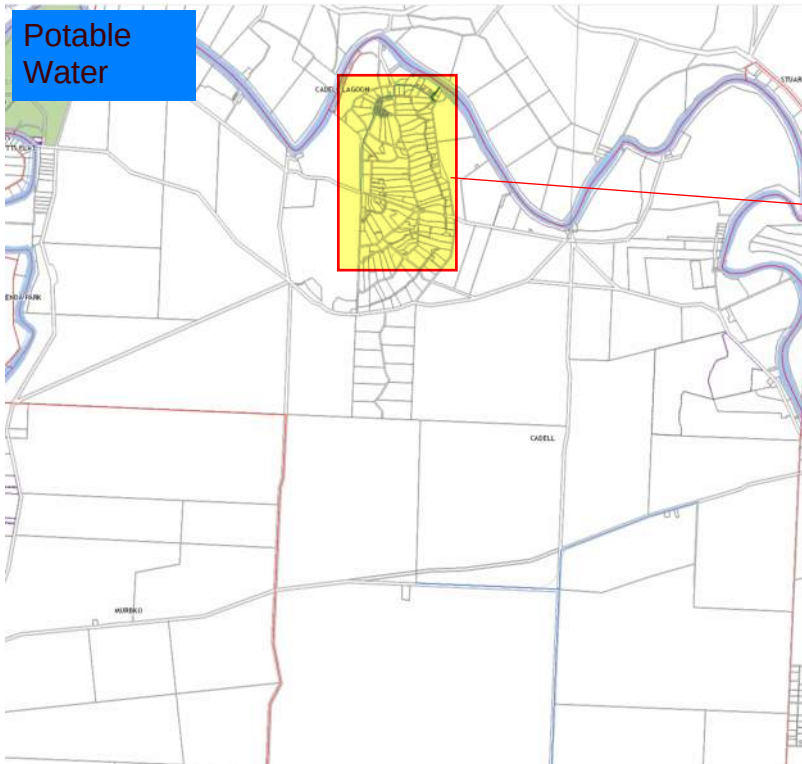
1. Blanchetown

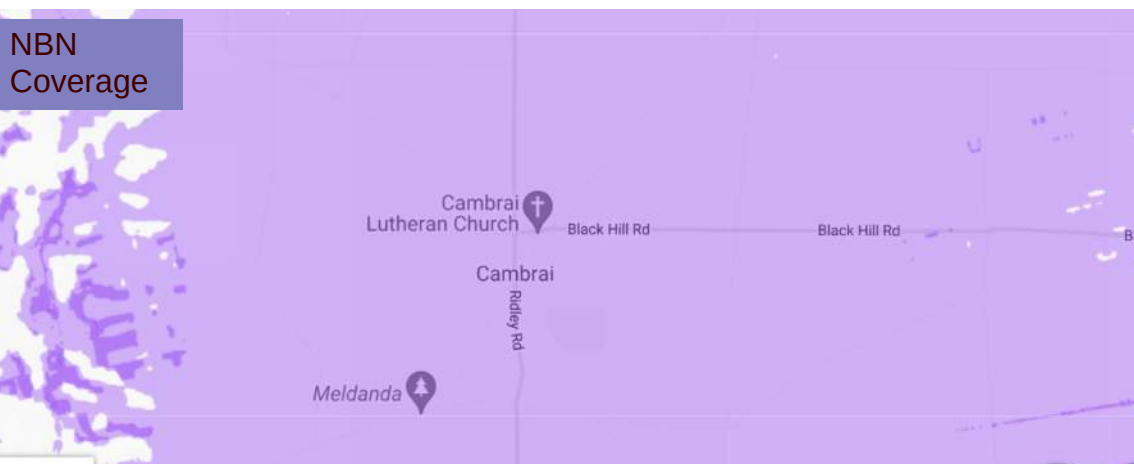
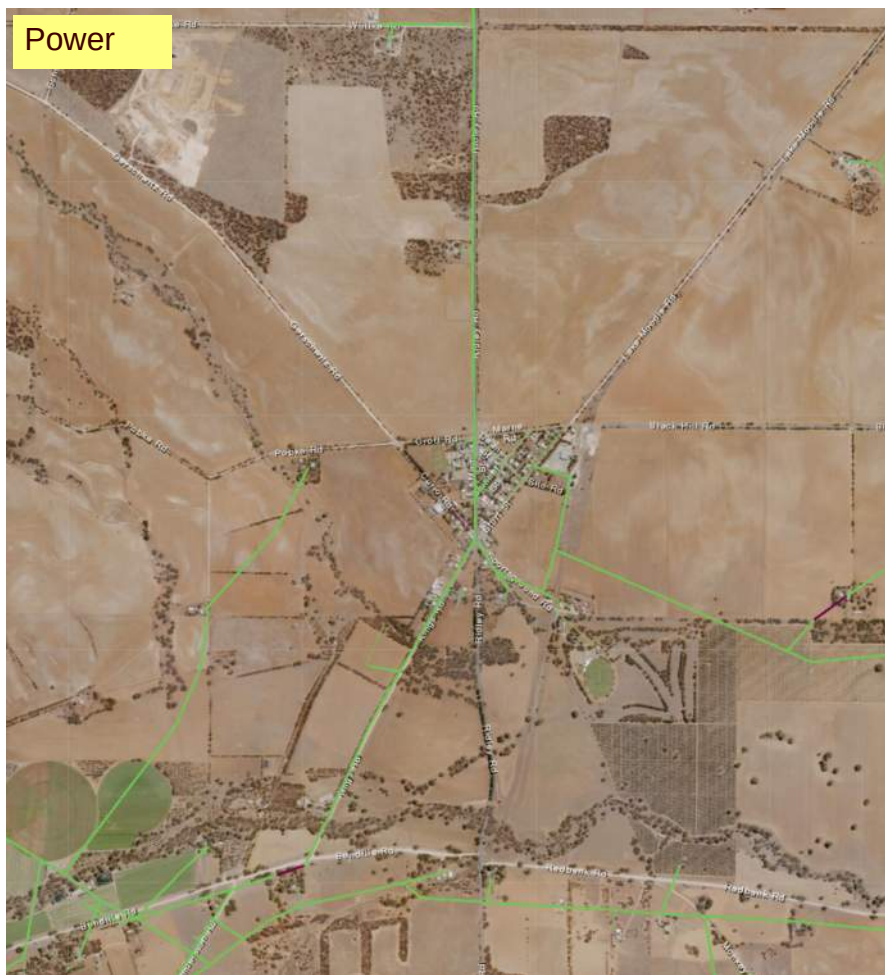
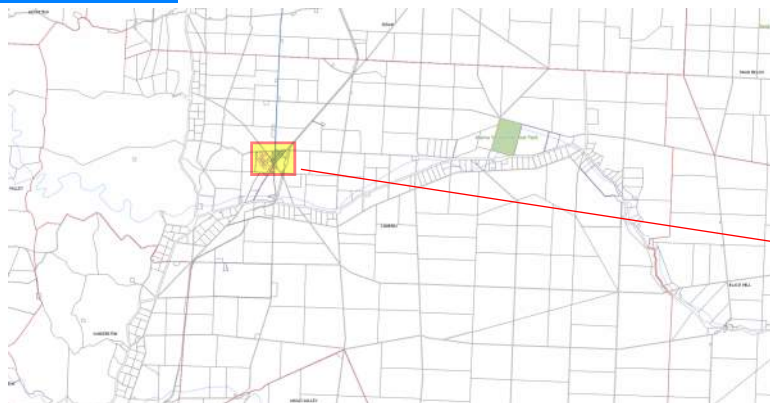
Potable Water



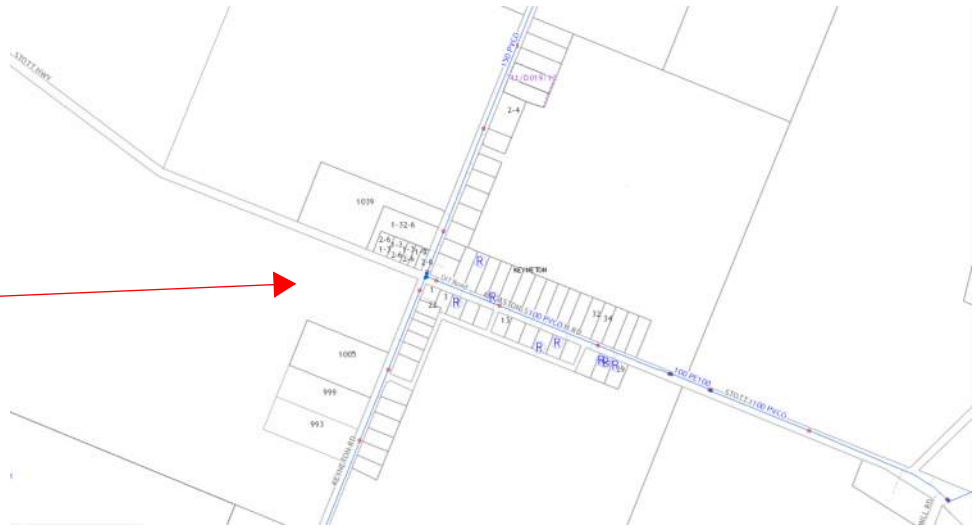
Power



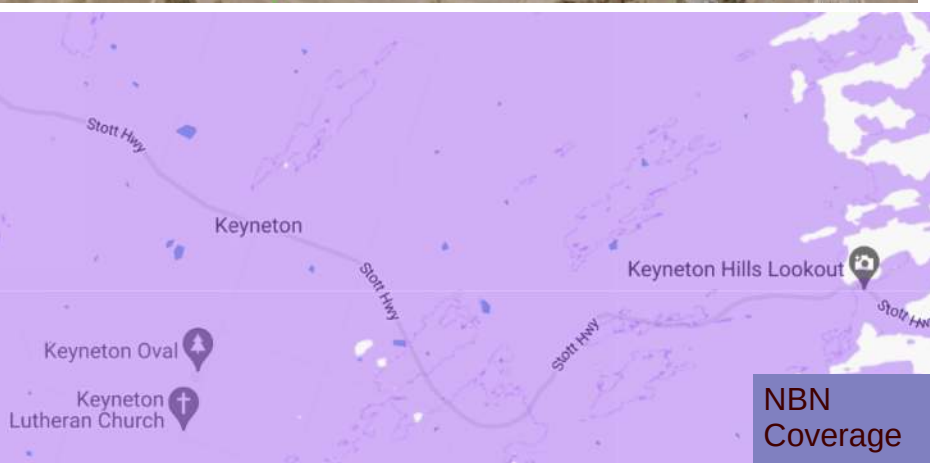
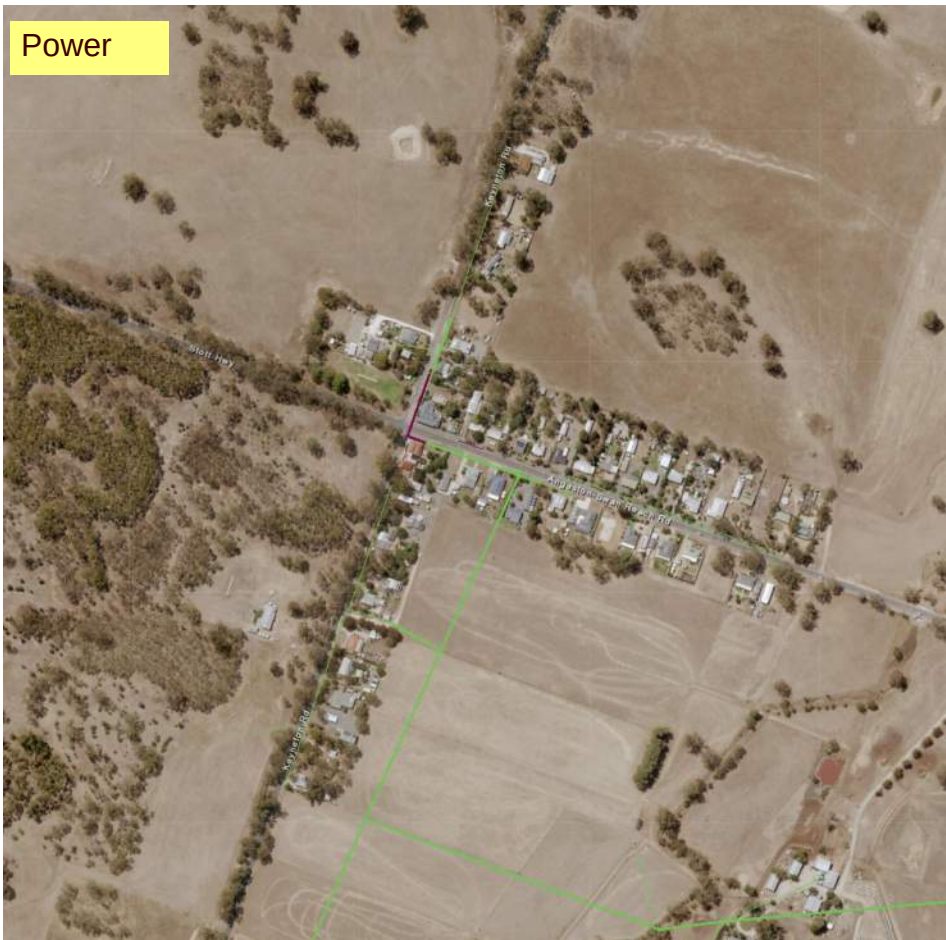




Potable Water



Power

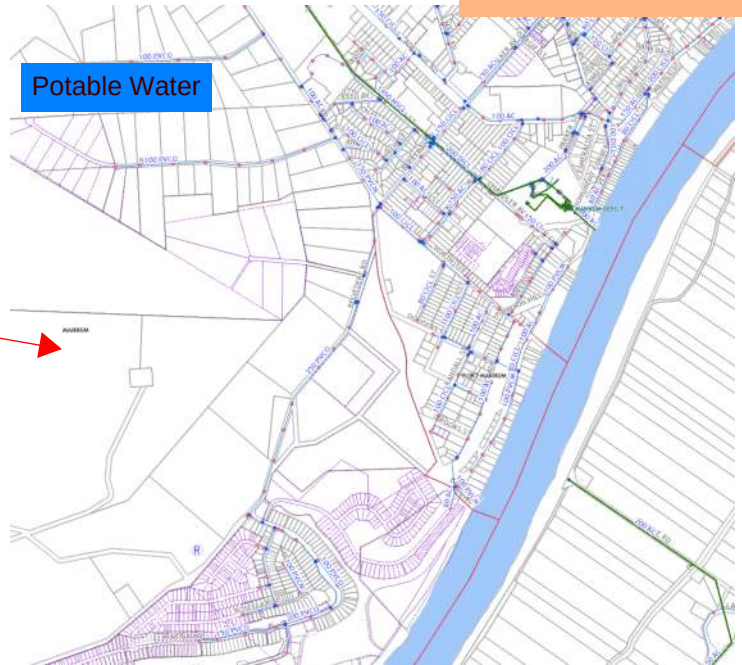


5.Mannum

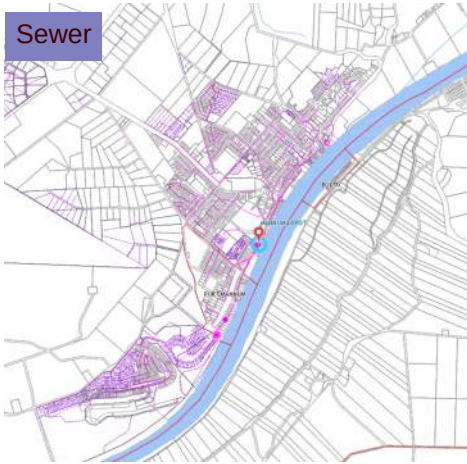
Potable Water



Potable Water



Sewer



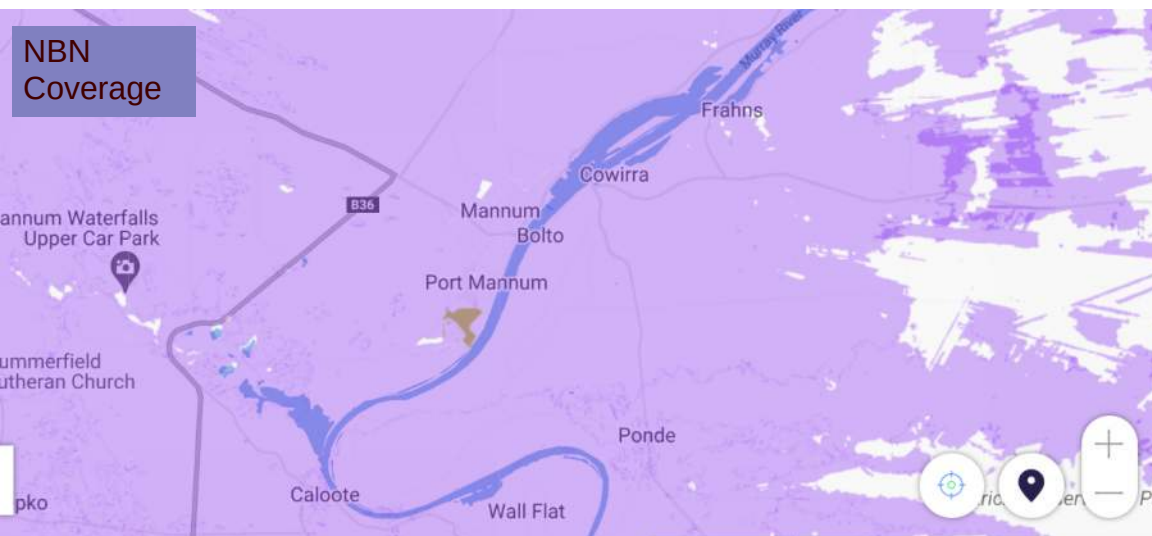
Power



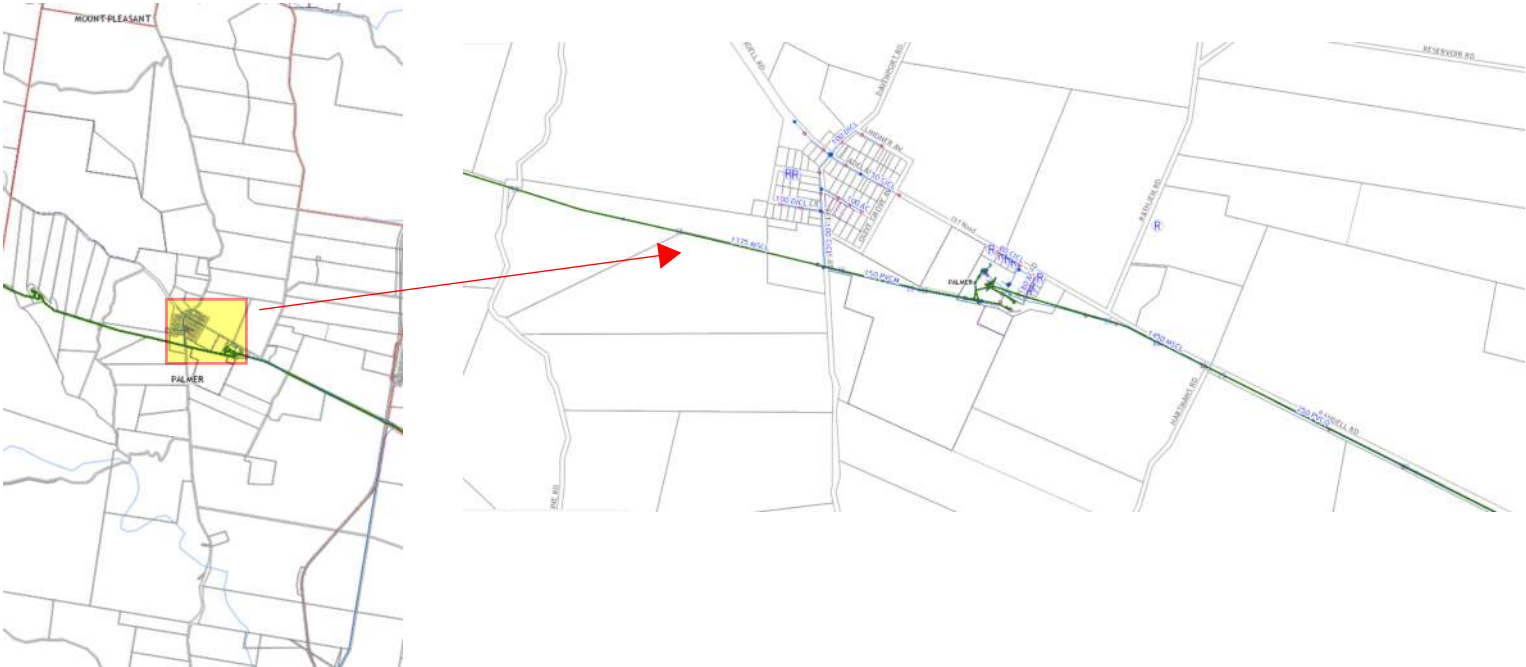
Flood



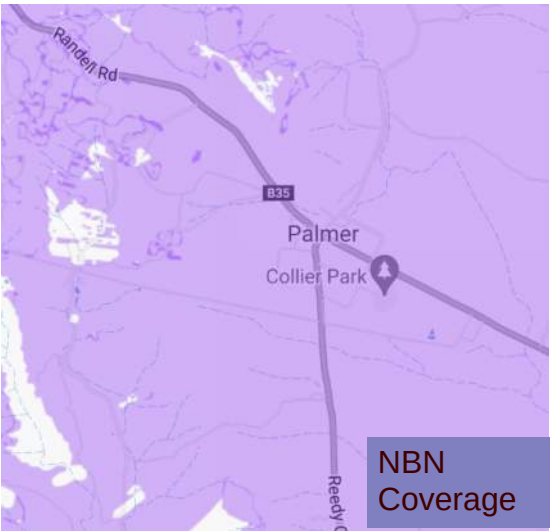
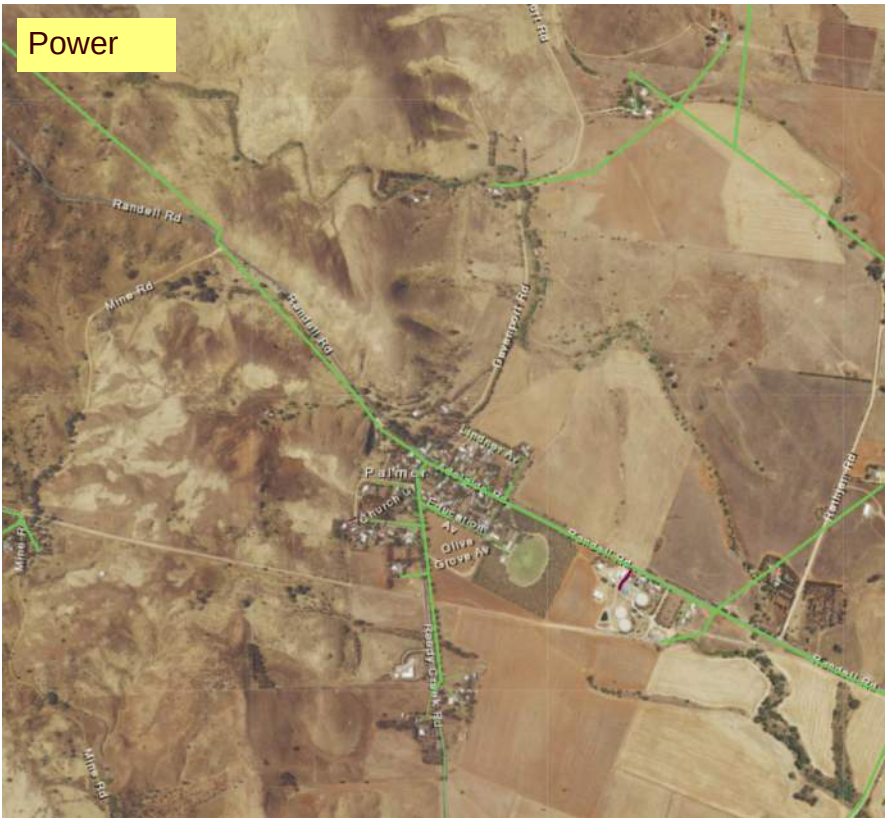
NBN Coverage



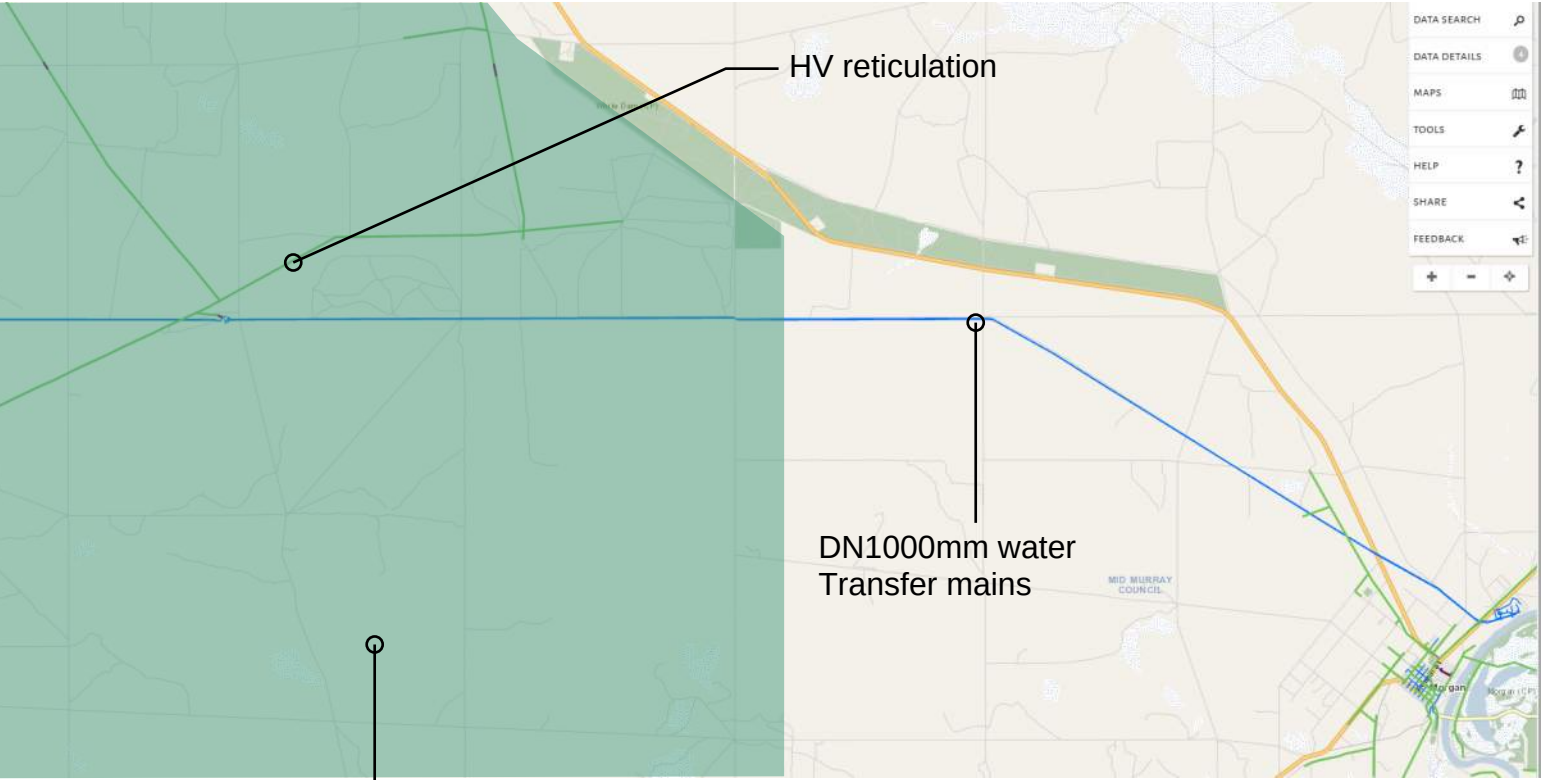
Potable Water



Power



NBN
Coverage

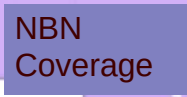


Portion of Rule Zone
(continues north and
west)

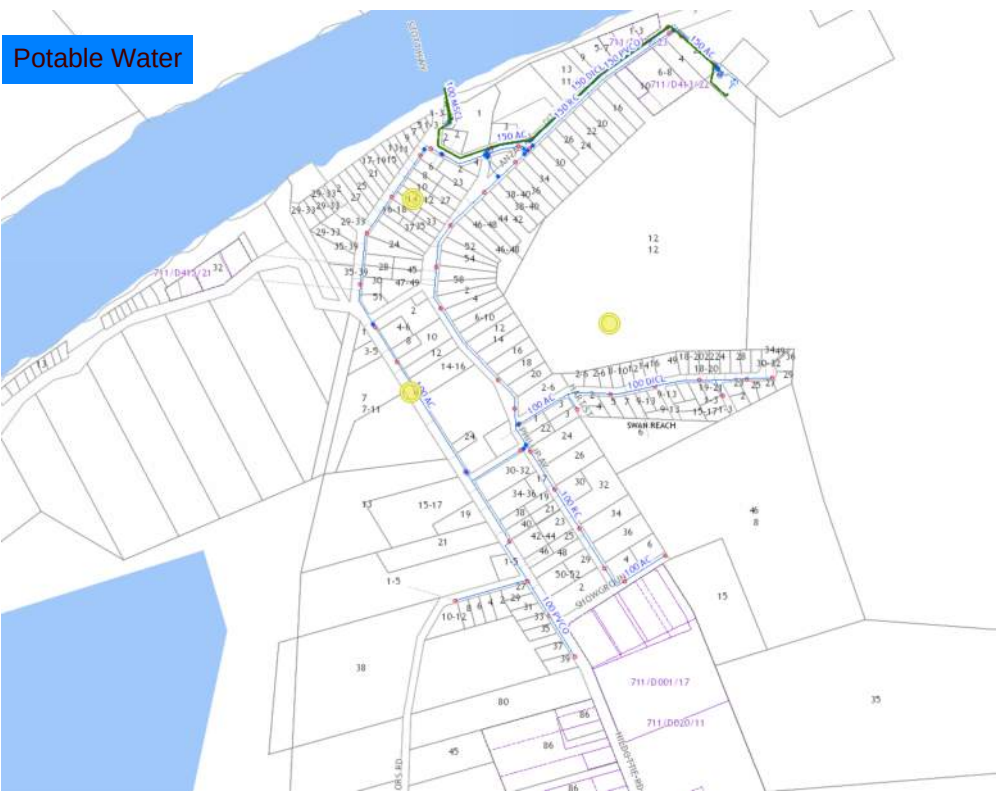
DN1000mm water
Transfer mains

HV reticulation

Potable Water

[illegible]

Potable Water



9.Swan Reach

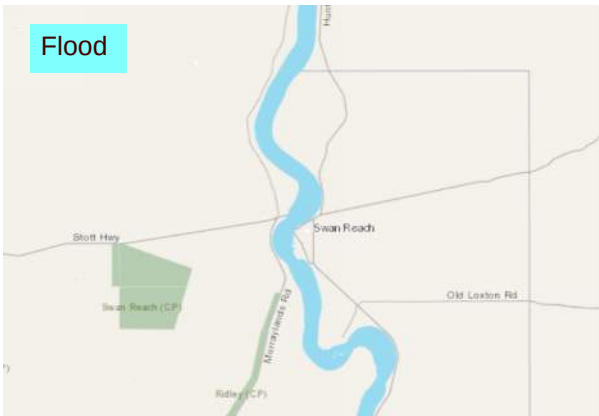
Power



NBN
Coverage

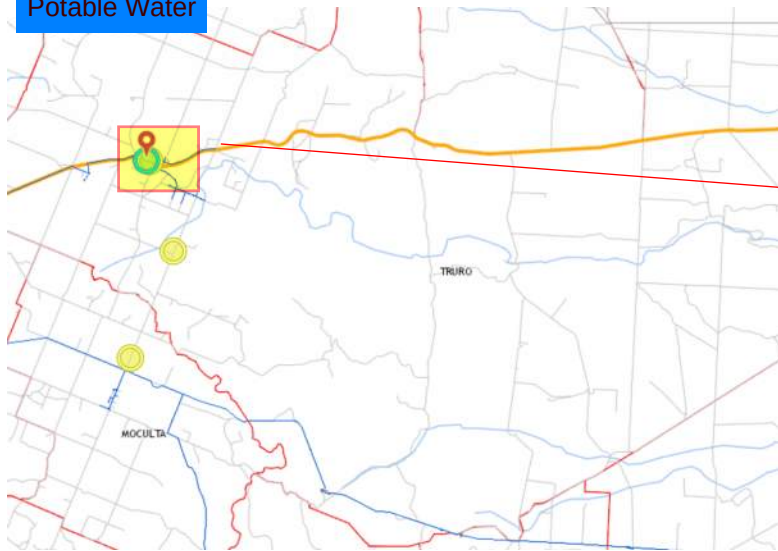


Flood



10. Truro

Potable Water



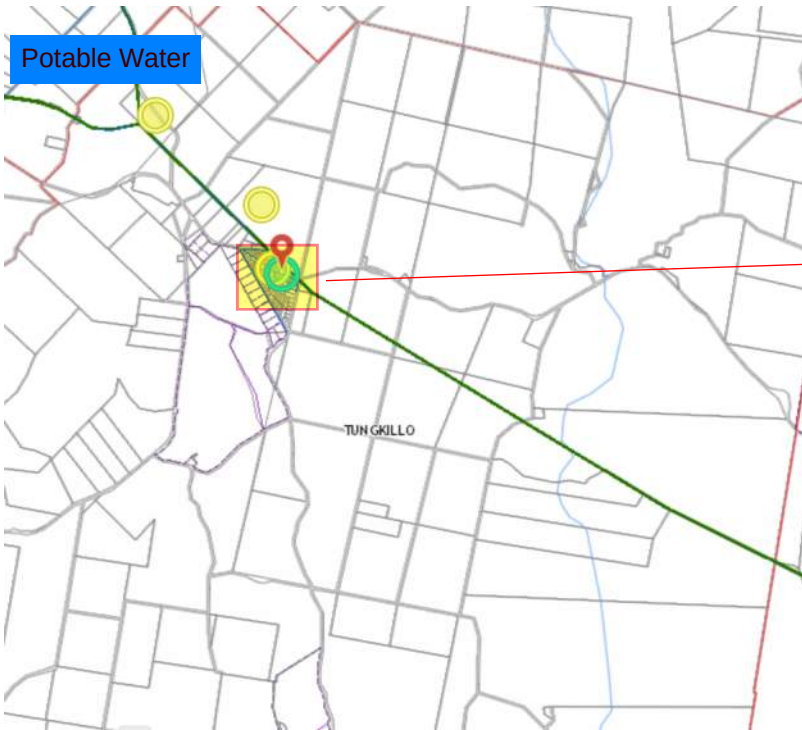
Power



NBN Coverage

11.Tungkillo

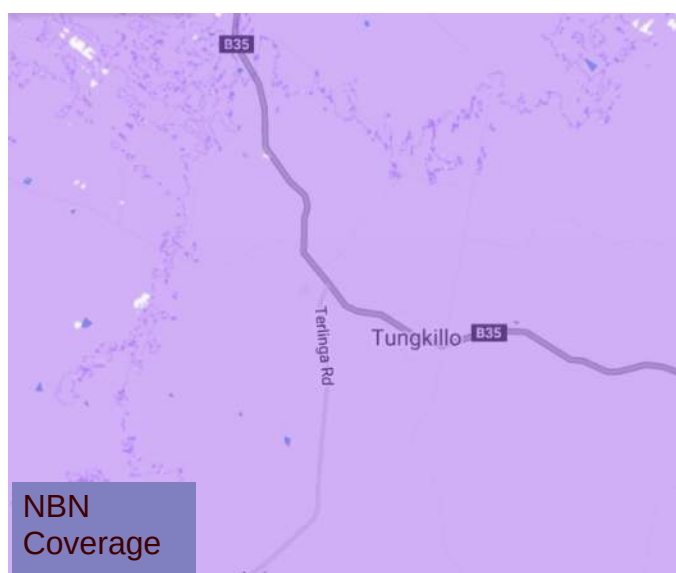
Potable Water

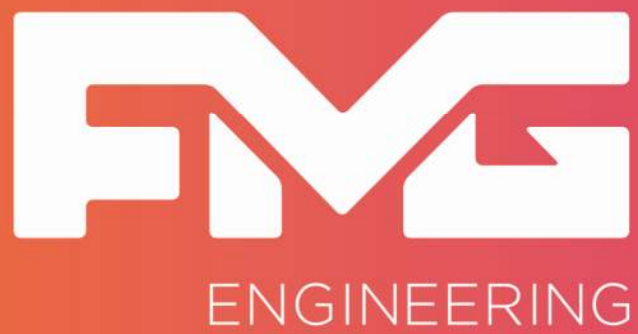


Power



NBN Coverage



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