FACT SHEET:

SMART SHIRES NETWORK

GOLDEN PLAINS SHIRE

In 2022, Golden Plains Shire led a consortium with Moorabool & Hepburn Shire Councils with a submission to the State Government's Rural Council Transformation Program Round 2 funding program. The funding approved was to deliver a LoRaWAN IoT network across the 3 shires to enable the deployment of sensors to gather data on the utilisation and status of assets. This allows improved visibility management and planning of our assets using real time data.

What Golden Plains Shire also highlighted in our funding submission was to extend the use and availability of the network into the community. We particularly saw the agricultural sector as potential users of the network.

WHAT IS LORAWAN?

LoRaWAN stands for Long-Range Wide Area Network, using the frequencies of 915 and 923 Mhz. The network facilitates the deployment and connection of Internet of Things (IoT) sensors.

These small, inexpensive sensors can have a battery life of over five years using batteries as small as AA size. The data from the sensors can then be used to alert owners of potential problems or tracked using *The Things Network* (TTN) into mobile apps or dashboards.
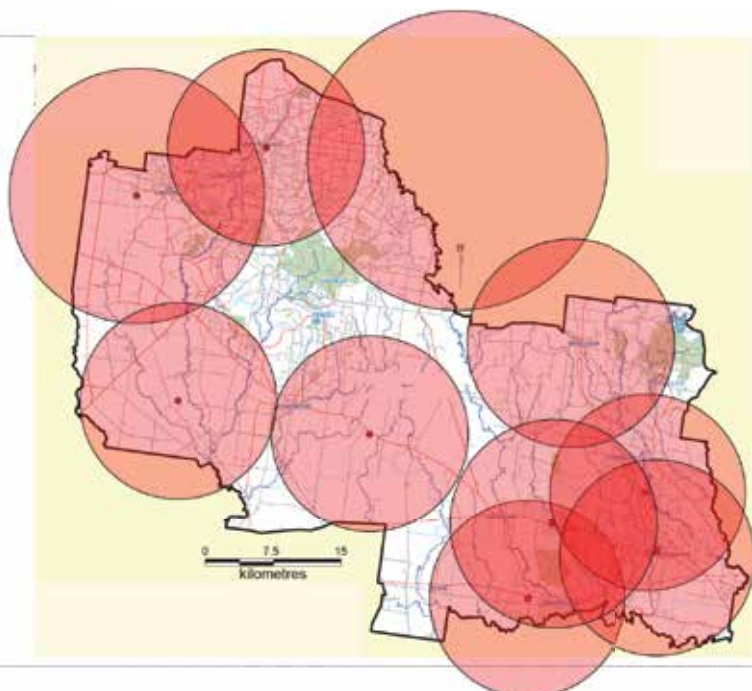
GATEWAY LOCATIONS

Golden Plains has deployed seven gateways across the Shire with aim of providing full coverage to all areas. The map below shows the current gateway locations and potential coverage from each point.

Gateway installations are best placed on geographical highpoints and fantastic partnerships have been created with a group of businesses to co-locate on their assets around the Shire to ensure better coverage.

Agricultural use cases

- Stock water monitoring
- Electric Fence monitoring
- Gate access
- Vehicle traffic
- Rainfall/weather monitoring
- Salinity/soil moisture monitoring

● Gateway Location   ● Nominal coverage area

CASE STUDY: CAMERON
LOCATION: WERNETH

Cameron runs a mixed farming business in Werneth, with around 50 cattle and 2000 sheep along with cropping. The farm is watered by dams and a single bore, reticulated through approximately 12km of piping. During floods in 2022, one of the pipes running across the creek was severed, resulting in the stock water bore pumping needlessly into the creek for some time.

In early 2024, a smart water flow meter was installed at the bore, linked to Cameron's phone so that he now gets alerted via email and SMS when more than a defined amount of water is pumped from the bore in a 24-hour period.

Three days after the flow meter was installed, Cameron received an alert that more than 2000 litres had passed through the meter in the last 24 hours. He was able to find the leak quickly, which was due to cattle nudging a gate valve open. Had Cameron not been alerted to the leakage, it may have gone unnoticed for a long time, leading to water wastage and premature failure of the bore pump.

Other potential use case study:

- A farmer that has a remote property away from their main farming enterprise. If that farmer has stock on that property, a reliable water supply is crucial for those animals to survive.

- A tank or trough IoT sensor can monitor, report and alert the farmer when issues arise. Time usually spent travelling to and from the remote property for "water runs" could be used for more productive purposes

- Safety and wellbeing of stock is in a better position. Some cattle are selling at over $1000/head currently. A fully grown steer may only last 1-2 days without drinking water before compromising its health – even less time in hotter conditions.

Example savings:

- 40km travel x 7 days a week = 280km saved in travel per week.

- 45 minutes of staff time x 7 days a week = 5.25 hours of staff time

- $35 per hour staff time x 5.25 hours = $183.75 saved per week in wages.

TERMS OF USE

The Smart Shires gateway network can be utilised by any farmer or agricultural group. Golden Plains Shire monitors and maintains the network for its own internal use via best efforts, but does not warrant 24/7 operation or any availability targets.

Due to the nature of low-power radio communications, there will be areas of poor LoRaWAN coverage throughout the Shire, especially in densely wooded areas, gullies and valleys. Before purchasing LoRaWAN sensor equipment, please check with the supplier for advice. Council is also able to assist with on-farm LoRaWAN signal strength assessments.

COSTS

The use of and connection to the Gateway network is free. Sensors and associated subscriptions are purchased from external vendors and allow the display of the information collected by the sensors. Sensors usually range in costs from $400 to $700 range with more sophisticated units available for over $1000. Subscriptions are typically in the order of $100-200 per sensor per annum

CONTACT DETAILS

For further information on LoRaWAN (Long-Range Wide Area Network), contact Peter Fisher, ICT Project Officer, Golden Plains Shire Council, Phone: (03) 5220 7189 or email **pete.fisher@gplains.vic.gov.au**

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