



# Options for improving telecommunications across northern Australia for a connected beef industry

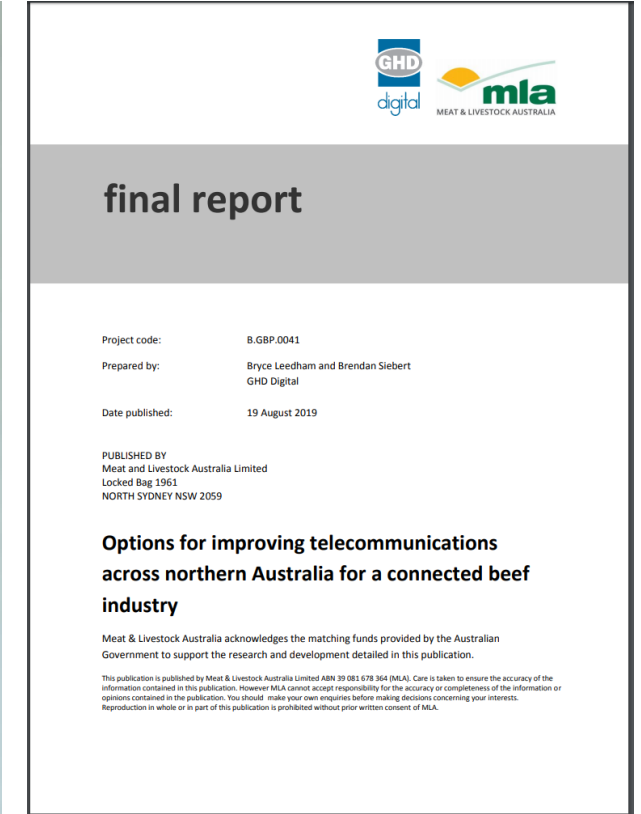
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# Report Team

## Project Team

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<https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Options-for-improving-telecommunications-across-northern-Australia-for-a-connected-beef-industry/4326#>

# One size doesn't fit all: implementing a technology mix

## Access

connections between devices that exist within the property boundary

Wi-Fi

UHF

LPWAN /  
Internet of  
Things

LTE

Fibre

## Backhaul

connection to the outside world

Satellite









3G / 4G

MW  
Radio





# Report Findings

Technology Option	Technology Indicative Cost Range	Suitability to Northern Australia	Rating
<b>Build (with per hectare cost)</b>			
Private LTE Network	\$70.00	Whilst providing the best connectivity options covering all requirements, this option is cost prohibitive.	
Install a privately owned 4GX-lite Tower	\$25.00	Whilst on a \$ / Ha basis this seems competitive providing the best connectivity options, this up front capital cost is considered prohibitive and requires ongoing maintenance. If Mobile Black Spot Program can continue this option may have future merit on a smaller scale	
Wireless Mesh	\$20.00	Wi-Fi's limited coverage range requires many devices to cover complete property. Requires large number of poles / towers to support the mesh antennas. Limited backhaul connection options may constrain internet Wi-Fi network capabilities.	
Digital Mobile Radio	\$4.50	Largely for voice / text and whilst acceptable on a \$ / ha basis does not address data transfer.	
LoRaWAN	\$0.75	Data only (i.e. existing voice comms to be maintained) and requires up front purchase of end devices (sensors). Requires build of gateway devices to collect sensor data.	
<b>Subscribe (with annual cost)</b>			
NarrowBand-IoT	\$1,200 per gateway \$60 per sensor	Data only (i.e. existing voice comms to be maintained) and requires up front purchase of end devices (sensors). Lack of network availability in remote regions (largely follows 4G network with extended range).	
NBN SM+ Satellite subscription	\$2,160	Available at all locations, service is improving over time. Performance is reasonable in terms of data caps and transmission speeds.	
4G mobile network subscription	\$960	Best performing option, but limited footprint of coverage in the remote areas in question.	

# NBN Business Satellite

Since the report was published, NBN has launched its Business Satellite Service.

Refer <https://www.nbnco.com.au/business/product-and-technical-information/business-satellite-service>

Characteristic	Consumer	Business
Max Speed	25 Mbps (down) 5 Mbps (up)	30 Mbps (down) <i>up to 50 Mbps burst</i> 13 Mbps (up)
Data Limits	150 GB	Up to 1,000 GB per month (then 100 GB top-ups at additional cost)
Internet of Things	None	Cheaper IoT specific plans available Redundant (dual) connectivity
Network Availability	Best effort (unguaranteed)	99.7%
Features	None	Voice over IP priority Bandwidth on Demand Data pooling across premises Dedicated NBN support service
Typical Monthly Cost	\$75	\$649

# Internet of Things

Low cost, low power, occasional small data (think short SMS) sensors and transmitters connected to “the Cloud”

**Fleet**

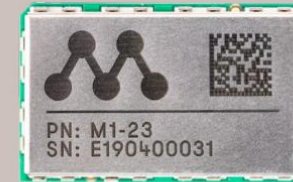


THE PORTAL

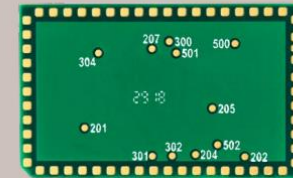
**All in one satellite IoT**

The Portal is a plug-and-play Edge Server, LoRaWAN™ Gateway, Satellite Modem and antenna all wrapped into one. It provides satellite connectivity to 1000 sensors within 15km range.

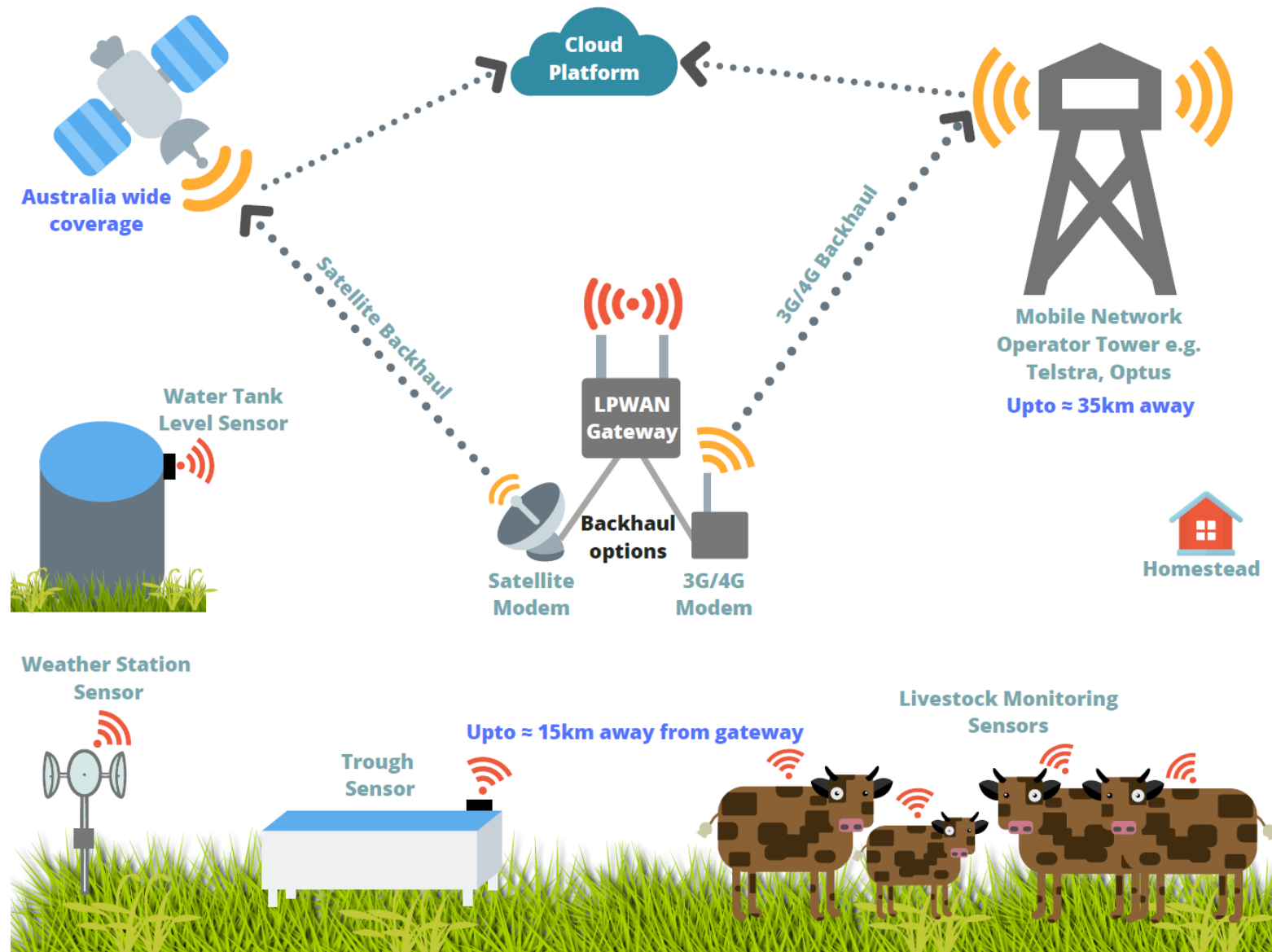
Actual Size



**Myriota**



# Creating “Connected Cattle”



# SpaceX Starlink: The next big (small) thing?

Future Broadband Satellite Systems / “Space Internet” are the potential ‘game changer’ to keep an eye on.

If promises around speed and data can be met, and suitable commercial models are available, these systems will provide an obvious choice for backhaul connectivity to the property.

- ❖ Global coverage
- ❖ Much faster bandwidth (10 Gbps)
- ❖ Low latency / return signal (20 ms)
- ❖ Better reliability than NBN satellite
- ❖ 4 large companies currently building or trialing systems (with more to come) including Tesla (SpaceX), Facebook and Amazon
- ❖ “UFO on a stick” receiver device
- ❖ **Example: Space X**
  - ❖ Current: 360 Nanosatellites in orbit
  - ❖ Late 2020: Commercially available in North America
  - ❖ 2027: Constellation Completion (12,000 satellites)







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