# pivotel.

connected everywhere

# MEETING UNDER-SERVED MARKETS

- **ABOUT PIVOTEL**
- **USE CASES**
  - **Mobile COWs**
  - **Connected Vehicles**
  - **Connected Communities**
  - **Connected Farms**
- **SUMMARY**
- **CONSIDERATIONS**

# ABOUT PIVOTEL

**Pivotel's focus is on providing integrated wholesale and retail communications services in Australia and New Zealand**

- Delivering connectivity solutions to remote Australian customers since 2003

- Full Carrier Network Infrastructure including 4G / LTE networks used to deliver targeted connectivity solutions in regional Australia and one of only four operating licenced Australian mobile carriers

- Participant in 2021 850/900MHz spectrum auction

- 100,000+ Connected Mobile Satellite Services
    - Over 40,000 satellite voice and data terminals
    - Over 39,000 satellite IOT terminals
    - Approx 25,000 Globalstar Spot services (ongoing royalty payments)

- Only carrier offering service of Iridium, Inmarsat, Thuraya, Globalstar, nbn™, Intelsat and more

- Deployed public and private 4G/LTE/WiFi networks across mining, research and rural communities – 29 4G base stations in-service, 23 in planning

- Deployed trial air-to-ground network in NSW

- Operate two satellite teleports supporting LEO/MEO satellite constellations
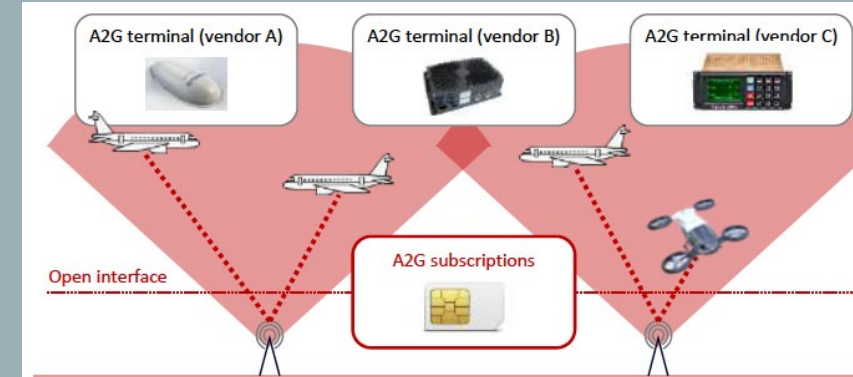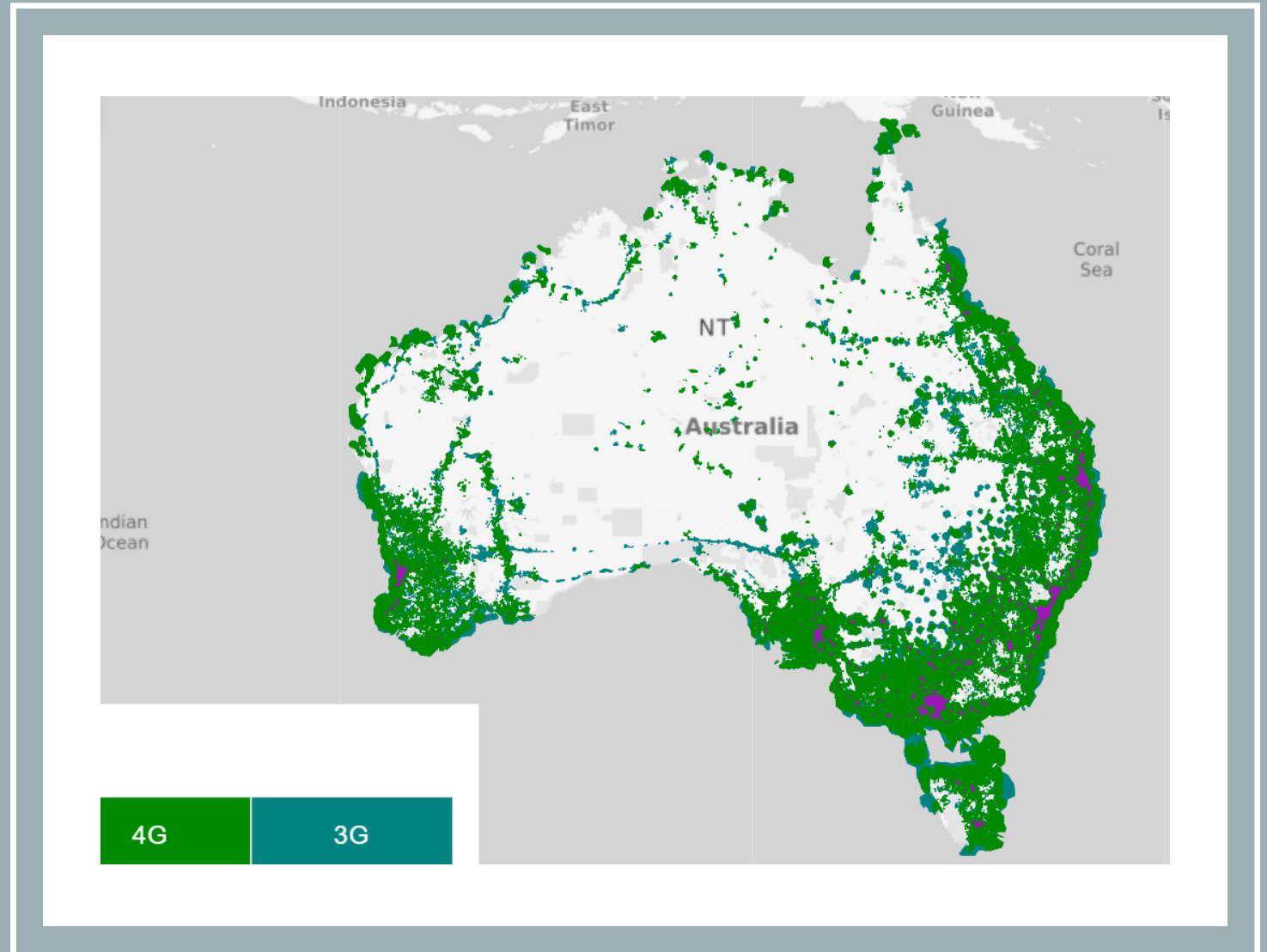
# THE UNDER-SERVED

## MOBILE COVERAGE

2/3rds of Australia has no 3G/4G mobile coverage and virtually all low band licensed spectrum is locked-up by the three national MNOs

Enabling increased connectivity of mobile handsets, data modems and sensors across the "other 2/3rds" must be a priority



4G    3G

# MOBILE COWS

COWs currently restricted to 4W EIRP WiFi connectivity to satellite connected mobile base stations. Range limited to 400M using WiFi 6

Applications:
- Road construction/maintenance
- Research
- Emergency Response
- Exploration
- Aerial Surveilance (Drones)



Temporary Road Construction/Maintenance



Temporarary Connectivity supporting frost research in Whealbelt,

# CONNECTED VEHICLE

Cellular and satellite connected vehicle, acting as a mobile base station, broadcasting a local area network supporting WiFi calling and high speed data connectivity for multiple users inside and outside of the vehicle and capable of penetrating nearby premises
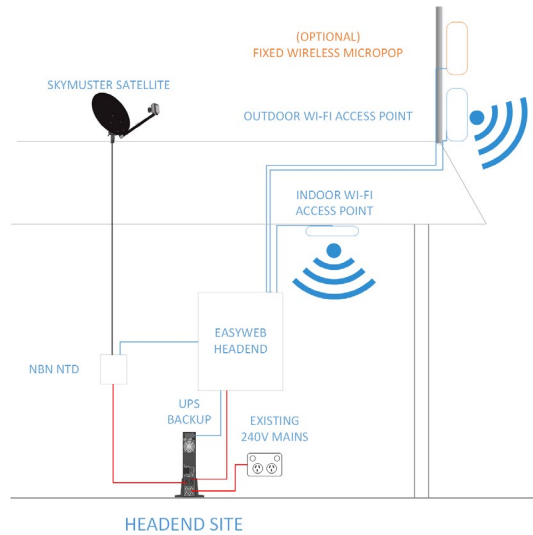
Applications
   Remote Nursing
   Emergency Services
   Trades
   Construction
   Infrastructure Maintenance
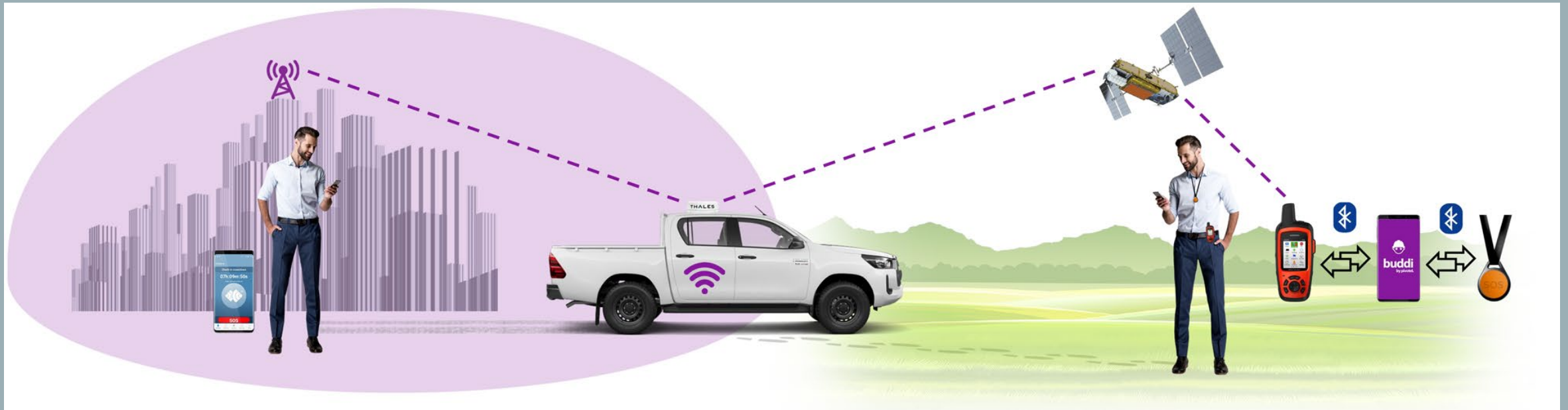
# CONNECTED COMMUNITIES
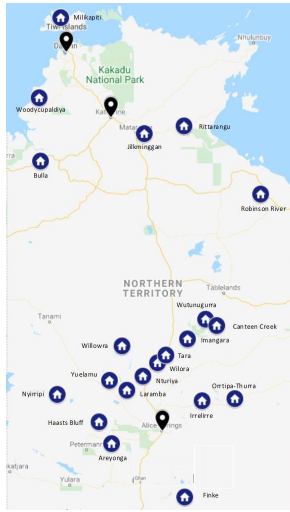
Tender awarded to Pivotel to deliver 21 open WiFi & Satellite enabled Remote Indigenous Communities in Northern Territory supporting WiFi calling and high speed data connectivity.

Open WiFi connectivity ensures users with WiFi calling enabled mobile handsets can connect and make and receive calls and messages while in proximity of the community hub.

# CONNECTED FARM

Digital farms of the future need the ability to cost effectively connect sensors, controllers, pumps and machinery using industry standard solutions employing WiFi or cellular technologies, and to a lesser extent low-power long range technologies such as LoraWan.

Agri-tech Expert Working Group:

*"The main finding of our discussions is …… there are localised connectivity gaps on, across and between farms. We have called this patchiness 'salt and pepper connectivity'".*

*It is not reasonable to expect that the national carrier business models, even with stepped up 'push-pull' approaches from government, will solve what is essentially a local scale problem. As a result, what we have seen is the emergence of alternative approaches in the market, including farmers installing bespoke solutions, as well as a cohort of second tier retail service providers (RSPs) who are filling in the salt and pepper.*

Agri-tech Expert Working Group (AEWG) report, commissioned by the DTIRDC and prepared on behalf of the Australian Broadband Advisory Council (ABAC),

Image reproduced from connectedfarms.com.au
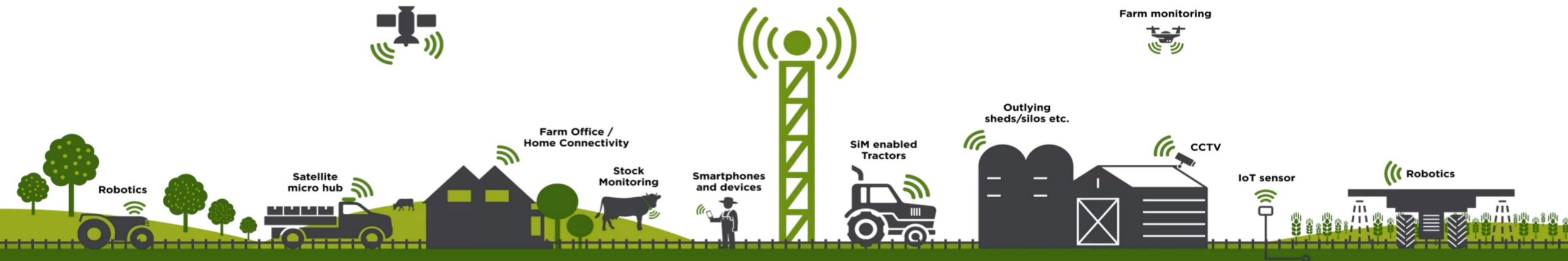
# SUMMARY

All presented use cases are impacted by the need to use in-efficient technology, transmission power limitations, spectrum access or performance contraints

Outdoor rural connectivity options include:

- WiFi           -  very range limited or very expensive to instal and manage wide-area meshed WiFi
- 4G/5G          - 2/3rds of the country has no 4G/5G coverage and low band spectrum is locked-up by
                    national MNOs
- LPWAN          - limited to very small data packets
- Satellite      - currently expensive

Rumours abound of  "high powered" WiFi solutions which breach ACMA mandated power thresholds for unlicensed spectrum and of unregistered/unauthorised use of low band licenced spectrum.

# CONSIDERATIONS

Adoption of global standards and the harmonisation of spectrum bands offers the best opportunity to leverage scale and innovation that comes from a global marketplace, but…
a rigid adherence to global approaches and a 'one-size fits all' approach to spectrum management can hinder the innovative deployment of solutions to the "other 2/3rds"

**Relax the 4W EIRP power limit in rural and remote environments where the risk of interference is itself remote?**

**Reserve 3GPP approved low-band spectrum for use on an Apparatus or Area Wide Licence basis to facilitate the mass adoption of digital agriculture**

**Increase accessibility to mid-band licenced spetrum as an interim measure ahead of freeing-up low band spectrum**

**Enable controlled use of licenced spectrum in mobile applications – Connected Vehicle, COWs**