

CASE STUDY – Powering Precision Agriculture with a Custom-Built Network

How Quo Group Network Solutions designed and delivered a specialised, multi-technology network to connect robotics and digital systems across a large-scale, multi-crop agricultural operation — driving productivity, resilience, and future-ready growth.

Executive Summary

Client

A large agricultural organisation cultivating multiple crop types across thousands of hectares of dispersed farmland.

Challenge

Limited and inconsistent connectivity across vast, remote paddocks was restricting the adoption of robotics, sensors, and online systems — capping productivity and operational visibility.

Solution

A purpose-built, converged network integrating existing **WiFi** and **Layer 2 / Layer 3** infrastructure with **long-range, multi-frequency Sub-1GHz** wireless technology — creating a **long-range, medium-bandwidth, highly available, monitored and maintained** connectivity backbone.

Outcomes

- ✓ 35% increase in overall operational productivity
 - ✓ 99.9% network availability across critical operations
 - ✓ 40% reduction in manual checks and travel time
 - ✓ 2,500+ hectares connected under unified coverage
 - ✓ 150+ connected devices (robotics, sensors, cameras) and growing
 - ✓ Improved yield outcomes through real-time data and automation
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Client Background

Our client is one of the region's largest diversified agricultural producers, growing a range of crops across geographically dispersed properties. Operating at scale, the organisation had ambitious plans to modernise operations through **autonomous machinery, IoT sensing, precision irrigation, and cloud-based farm management systems**.

However, realising this vision depended on one critical foundation the existing environment lacked: **reliable, secure connectivity everywhere — not just near the homestead**.

The Business Challenge

Modern agriculture is increasingly data-driven, but the physical realities of farming — distance, terrain, dust, moisture, and power constraints — make connectivity uniquely difficult.

Key challenges included:

- **Limited or no connectivity** in remote paddocks and across distant assets.
- **Fragmented infrastructure** with inconsistent, unreliable performance.
- **Growing reliance on robotics, sensors, and cloud applications** that demanded always-on links.
- **Security and manageability gaps** — the organisation needed a solution that was safe, scalable, and easy to operate.
- **Minimal downtime tolerance** during critical operations such as planting, spraying, and harvest windows.

Standard consumer Wi-Fi couldn't reach far enough. Cellular coverage was patchy and costly at scale. The organisation needed something purpose-built.

Our Custom Network Solution

Quo Group designed a **converged, multi-layer network** that combines the strengths of established enterprise networking with the reach of long-range wireless — engineered specifically for harsh rural environments.

The Four Integrated Layers

Layer	Role	Key Components
Core Network	Central intelligence & services	Data centre, cloud services, internet, security
L2 / L3 Network	Distribution & control	Distribution, routing, switching, VLAN segmentation
Sub-1GHz Long-Range Network	Extended reach backbone	Multiple sub-1GHz frequencies, redundant paths, low power
Edge Connectivity	Field-level access	Robotics, IoT sensors, environmental monitors, cameras, remote assets

Why Sub-1GHz?

Lower frequencies travel **further** and **penetrate obstacles** far better than 2.4/5GHz WiFi. By deploying **multiple sub-1GHz frequencies**, we created a **long-range, medium-bandwidth** backbone that delivers:

- **Extended coverage** across kilometres of open farmland.
- **High availability** through redundant, self-healing paths.
- **Resilience** in dust, heat, and moisture where conventional links fail.
- **Low power draw**, ideal for solar-powered remote nodes.

Secure, Monitored & Maintained

The solution isn't just deployed — it's **actively managed**:

- 24/7 network monitoring and alerting
 - Proactive maintenance and firmware management
 - Segmented, secured traffic (VLANs + encryption)
 - Centralised visibility across all connected assets
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Network Coverage

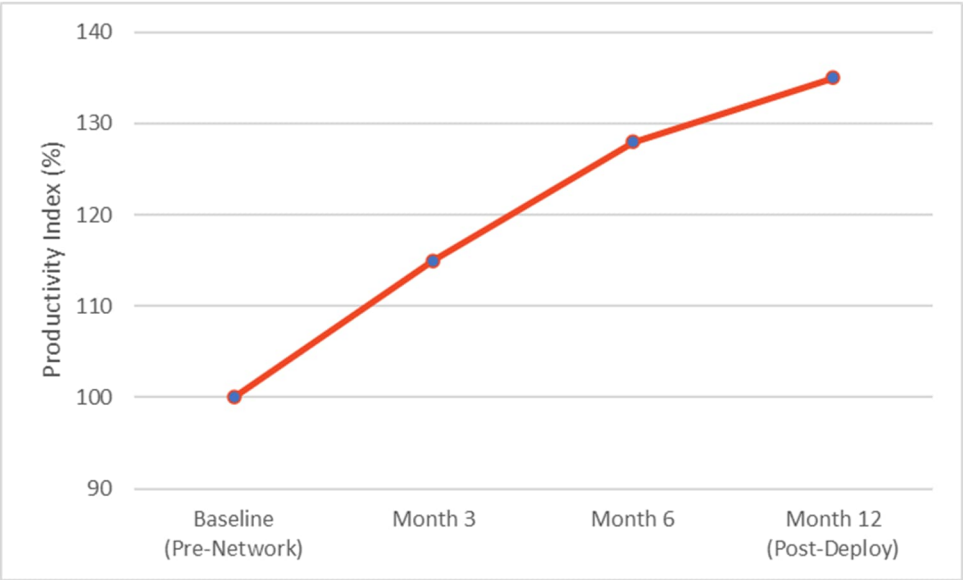
The unified network now blankets the operation with tiered coverage:

-  **WiFi Coverage** — high-bandwidth zones near buildings, sheds, and processing hubs
 -  **Sub-1GHz Coverage** — long-range reach across remote paddocks and field assets
 -  **Combined Coverage** — seamless overlap ensuring continuity as machinery moves
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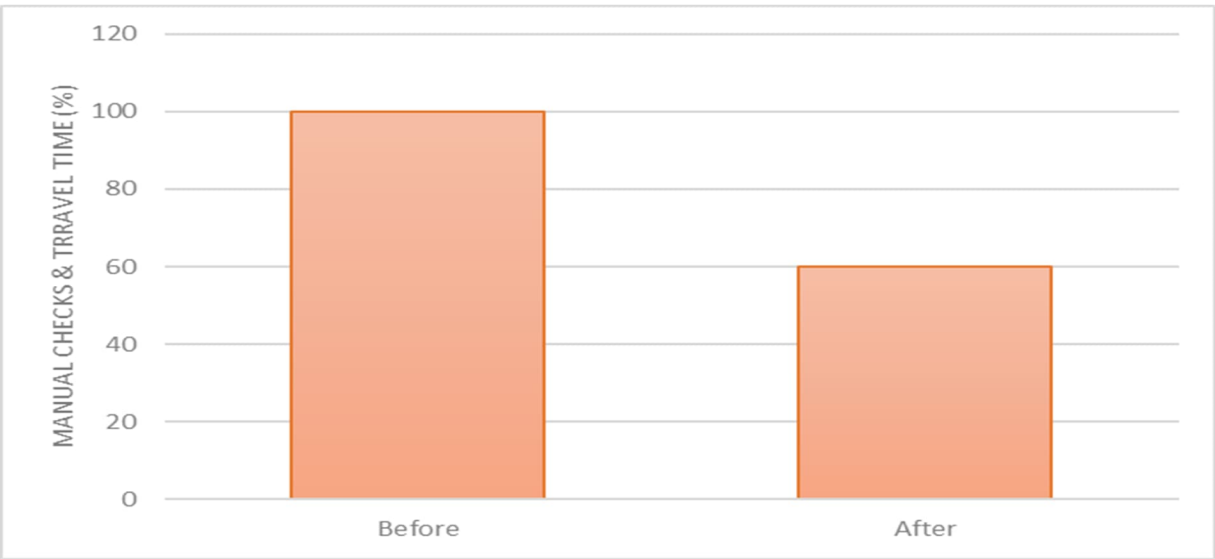
Connectivity Footprint

	2500+ hectares connected
	150+ Connected Devices (and growing)
	99.9% Network Availability

Results Achieved



Reduction in Manual Field Checks



Measurable Business Outcomes

Metric	Result
Overall operational productivity	+35%
Network availability (critical ops)	99.9%
Manual checks & travel time	-40%
Hectares under unified coverage	2,500+
Connected devices	150+
Yield outcomes	Improved via real-time data & automation

Business Impact

The benefits extended well beyond connectivity metrics.

Enabled Automation at Scale

Autonomous machinery and robotics could now operate reliably across the entire property — not just in connected pockets.

Real-Time Decision Making

Live sensor and environmental data flowed continuously to cloud platforms, giving managers actionable insight into soil, moisture, machinery health, and crop conditions.

Reduced Operational Cost

Fewer manual inspections and less travel meant lower labour and fuel costs, while proactive monitoring reduced unplanned downtime.

Future-Ready Foundation

The modular architecture scales easily — new sensors, paddocks, and technologies can be added without re-engineering the network.

Client Testimonial

"The custom network built by Quo Group has given us the connectivity backbone we need to innovate at scale. It's reliable, secure and built for the future of agriculture."

— Head of Technology, Large Agricultural Organisation

Why Quo Group Network Solutions

We design and deliver connectivity where others can't reach.

Our expertise spans:

- Custom long-range wireless (Sub-1GHz, multi-frequency)
- Enterprise L2/L3 network design & segmentation
- WiFi and hybrid network integration
- IoT, robotics & edge connectivity
- Secure, monitored & managed network services
- Industrial, agricultural & commercial deployments

We build networks that are **scalable as operations grow, resilient in harsh environments, secure and professionally managed, and designed for industrial, agricultural, and commercial applications.**

Let's Connect Your Future

Whether you're modernising operations, deploying robotics, or connecting remote assets, Quo Group can design and deliver the right network solution for your business.

Ready to transform your operations?

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Built for agriculture. Ready for what's next. Let's talk about what's possible.