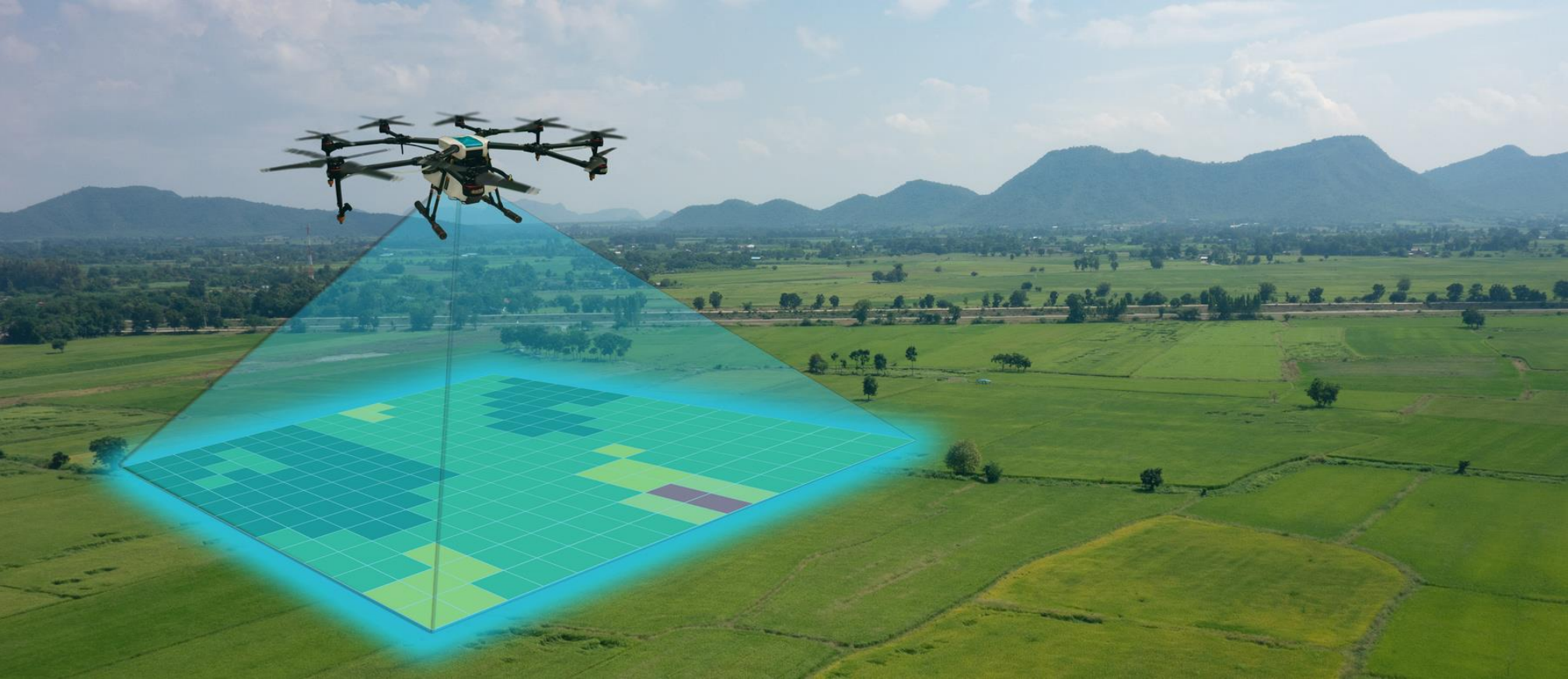


RESPOND FASTER, MAKE BETTER DECISIONS

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# AirborneLogic

Vigormetrics™



IAWARDS 2021 SA/NT WINNER



# ABOUT AirborneLogic

## OUR MISSION

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Helping growers effectively use time, money and resources to grow better crops and adapt and respond to climate change

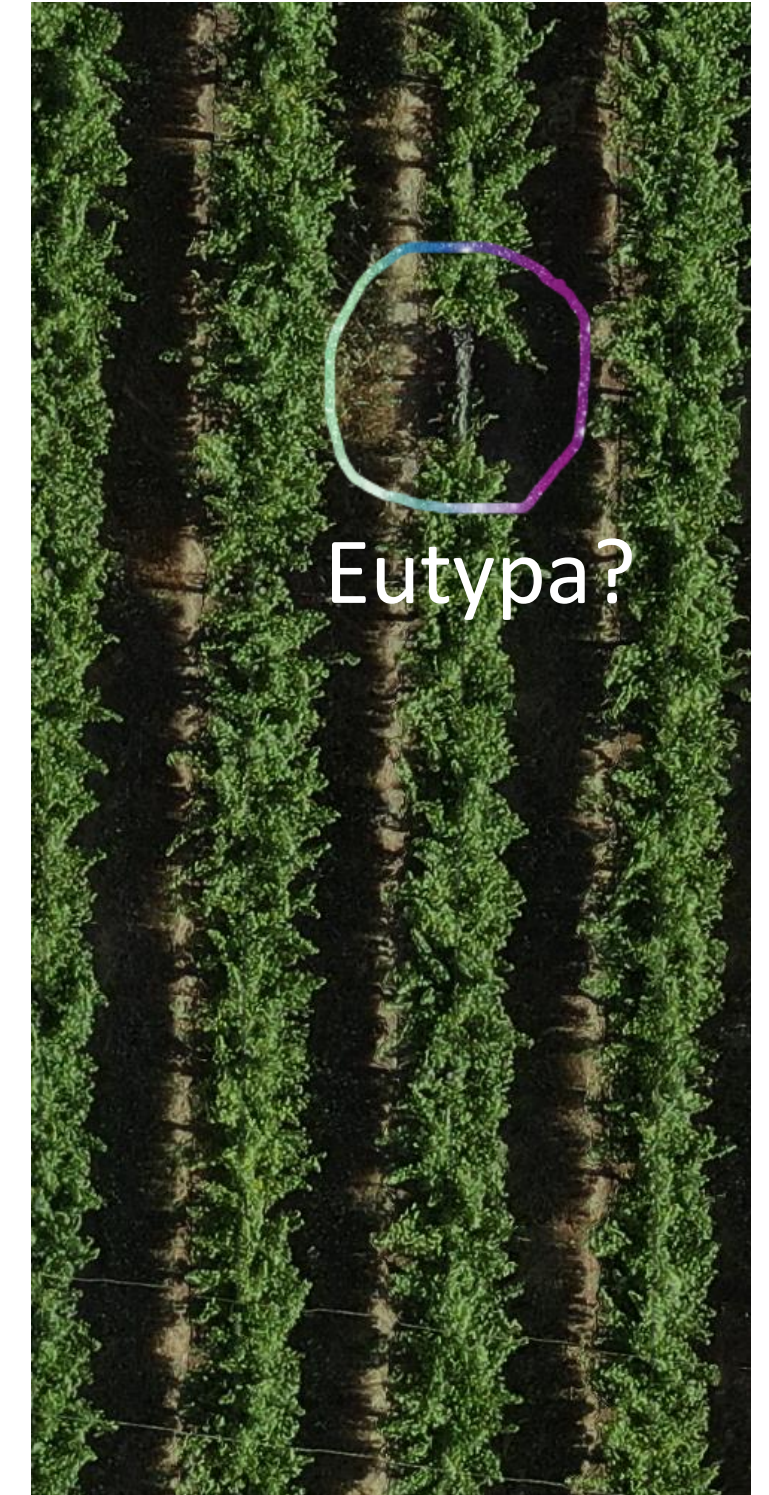
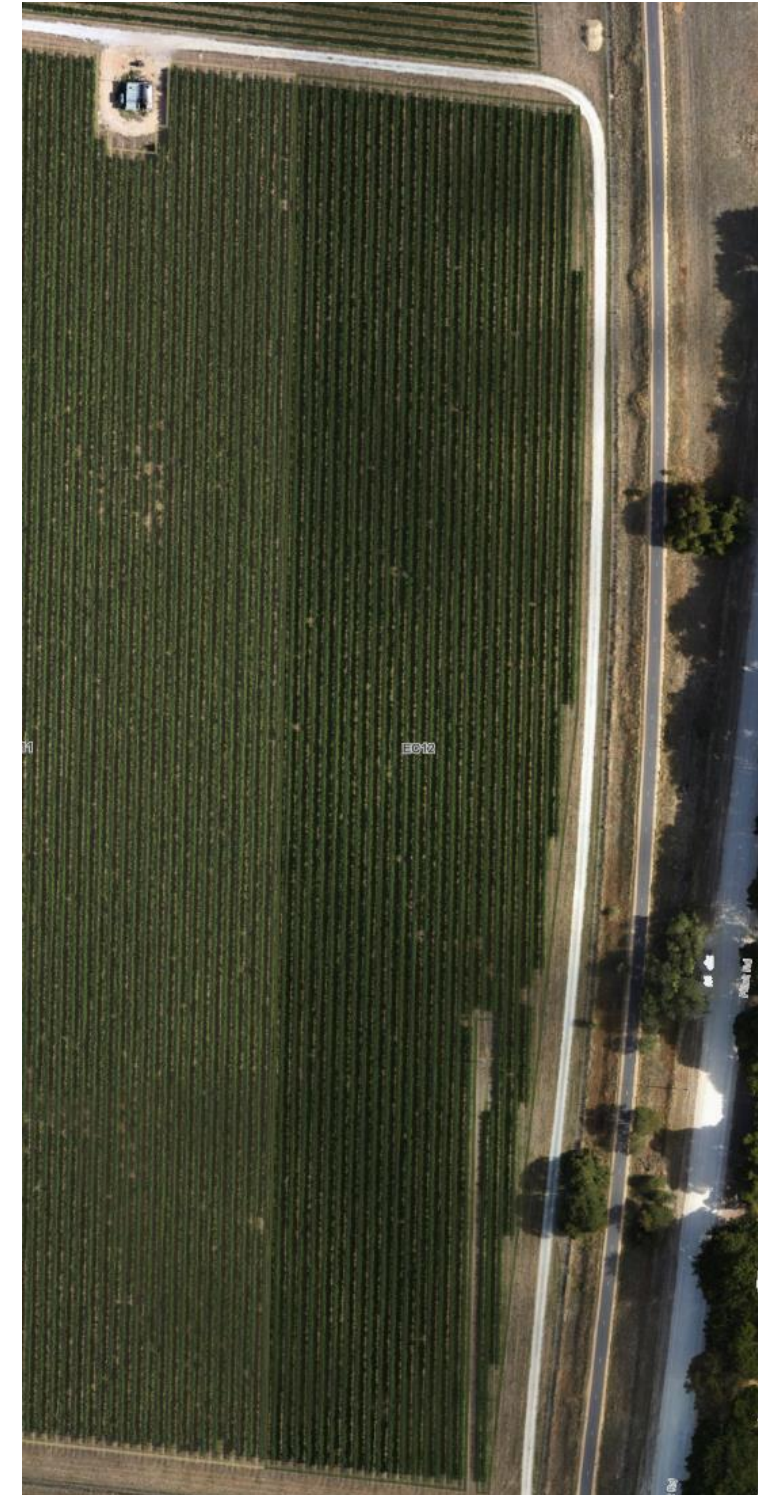
## OUR FOCUS

- DETAIL (helping you locate/count whats hard to see)
- SERVICE (+30 years working with agriculture)
- EXPERTISE (helping you get to most from your data)

**SAME LOCATION:** GOOGLE EARTH – 10M PIXELS



P1 – 1 CM PIXELS



*Drones/planes can collect high detail imagery and remote sensed data on demand that can ...*



- Detect and display things that are hard to see
- Accurately locate/measure/count/analyse/report..... objects/detail/change over time
- Help you navigate straight to problem areas or points of interest (ala Google maps)

# RGB - Asset labelling, location and stock take (desktop and handheld)

**AirborneLogic** | EXAMPLE ESTATE ▾  
GROWER PORTAL

LAYER LIST | LEGEND | **OVERVIEW** | VIGORMETRIC ▾ 1

HOME | SUMMARY | DETAILS

Example Estate ⓘ

Block Count	13
Row Count	887
Vine Count	88,391
Total Row Length (...)	176796
Total Block Area (ha)	45.2

Blocks ⓘ

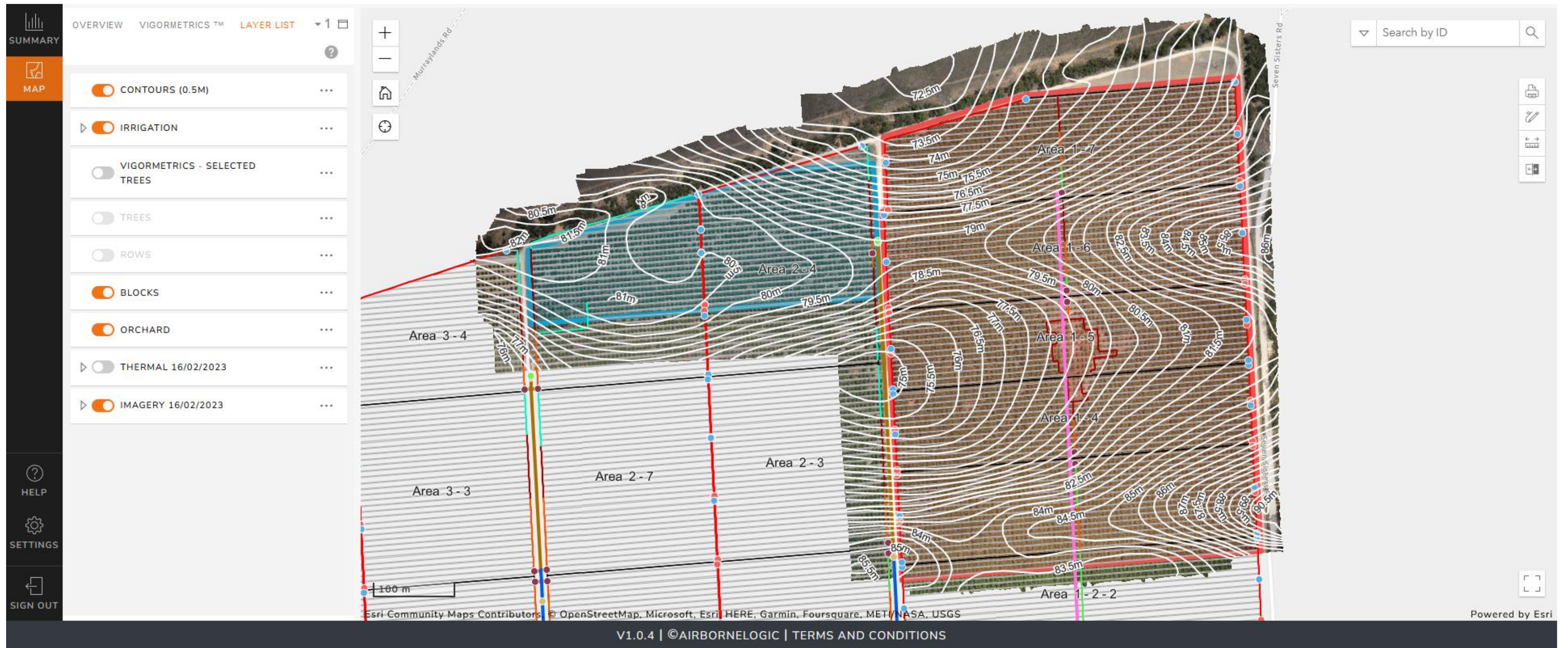
Block Na...	Variety	Last Capt...
A	malbec	22/01/2021
B	riesling	22/01/2021

Map labels: A - malbec, B - riesling, C - riesling, D - shiraz, E - shiraz, F - grenache, G - cabernet sauvignon, H - chadonnay, I - sauvignon blanc, J - shiraz, K - tempranillo, M - cabernet sauvignon

200 m | Netherby | Esri Community Maps | Powered by Esri

V0.2.4 | ©AIRBORNELOGIC | TERMS AND CONDITIONS

# RGB - Map land features & infrastructure

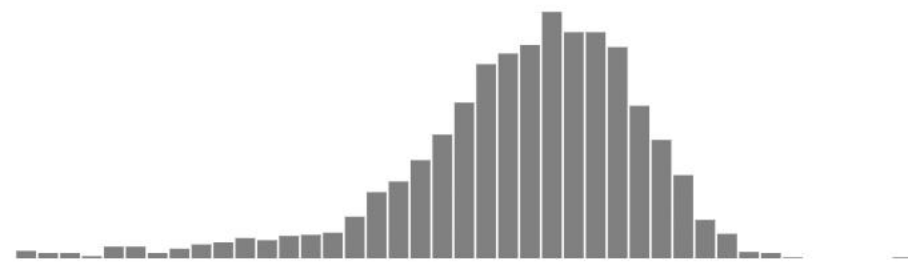


GROWER PORTAL, DETECT PROBLEM AREAS, EASY ACTION

# RGB Sensors - PLANT COUNTS, CANOPY UNIFORMITY, GAPS, "Change over Time"

Tree Count	
Vine Count	2,544
Total (m <sup>2</sup> )	11,755
Min (m <sup>2</sup> )	0
Max (m <sup>2</sup> )	8.08
Average (m <sup>2</sup> )	4.62
Standard Deviation (...)	1.09

## Block Distribution i ▼



## Range Selection i ▼

SHOW RANGE AS PERCENTAGE

0%

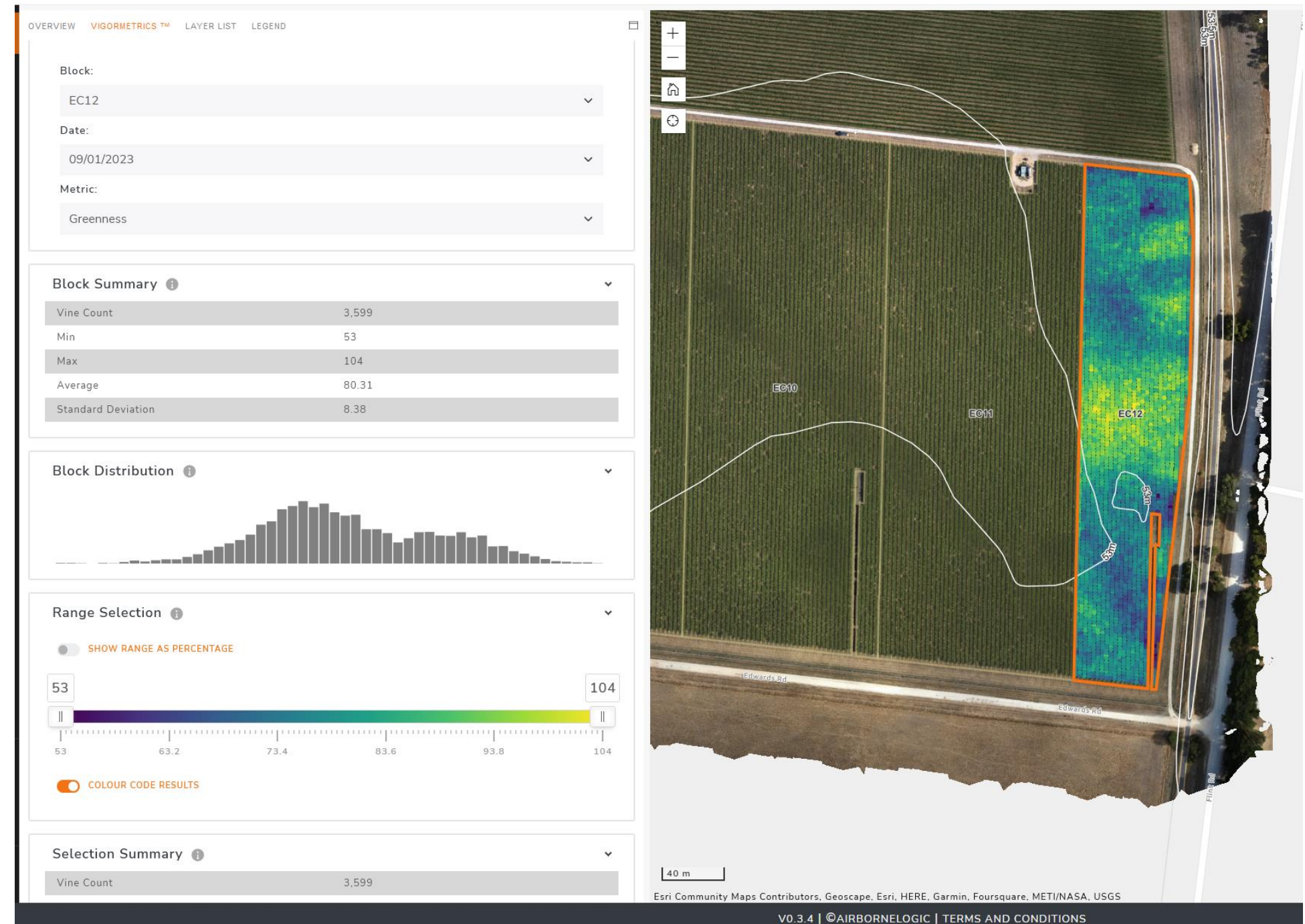
100%



Tree/missing count, uniformity (height/volume/area), disease (visual/spectral)

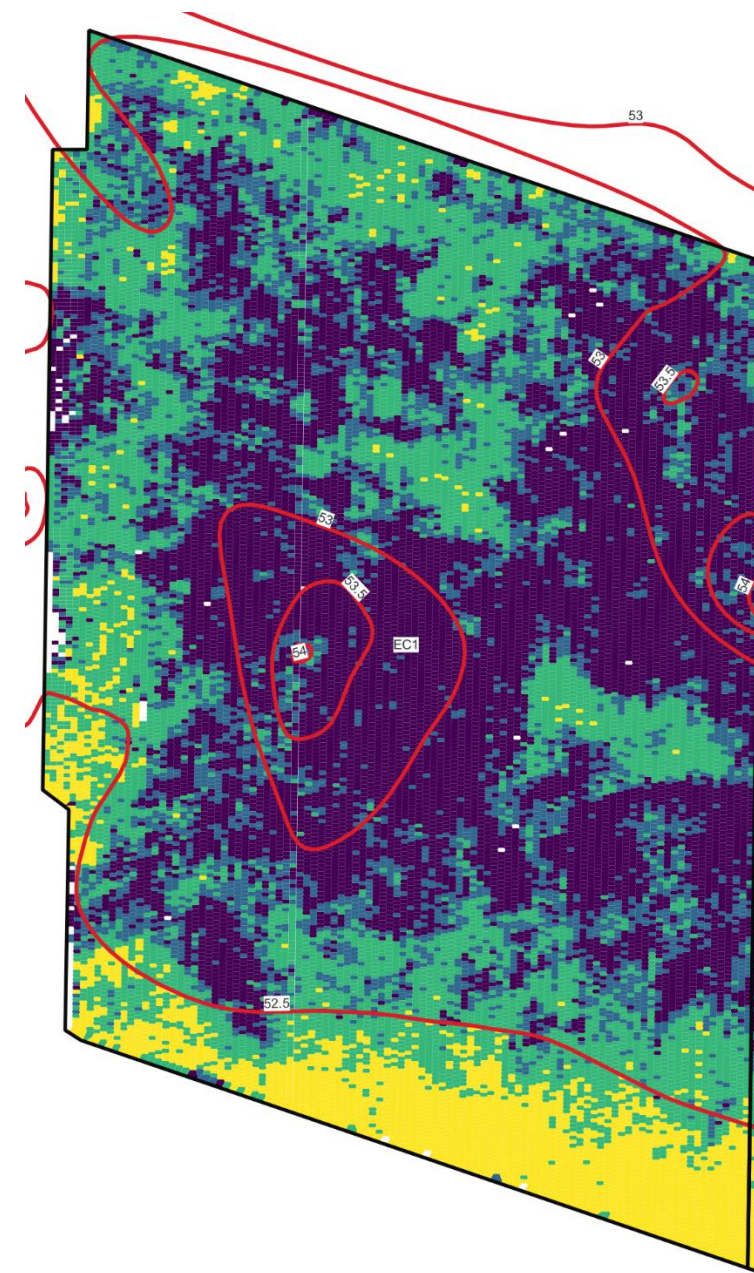
# Multispectral sensors– Plant health, nutrition and disease

- Grading quality
- NDVI/Greenness used to assess variability
- Confirmed via spot sampling
- Records kept to evaluate impact/compare next season

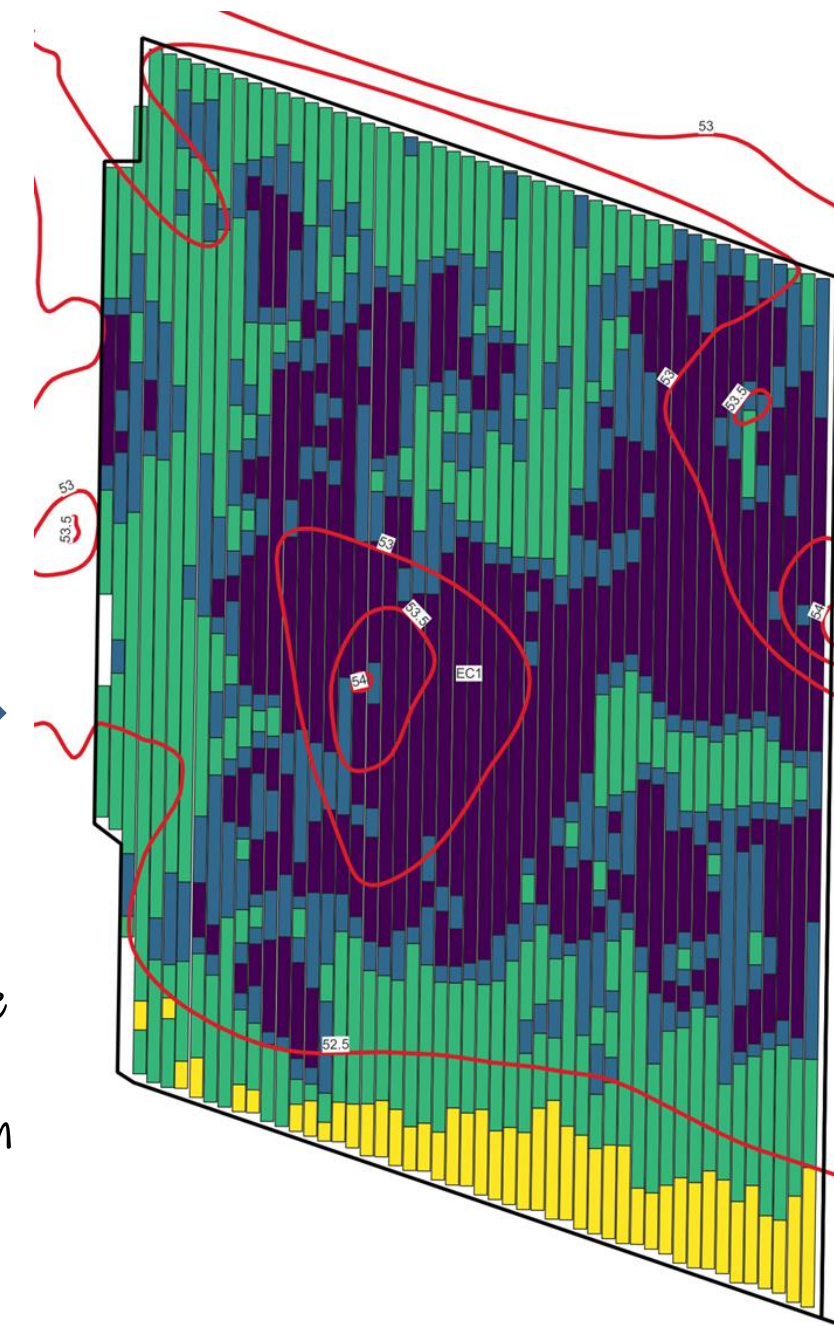


# ACTIONABLE INSIGHTS

- Automated variable rate applications maps for mulch/compost



Vigour maps converted to Variable Rate Application Programs



- Records kept to evaluate impact/compare next season
- Block boundaries can be used to turn on/off spray units etc

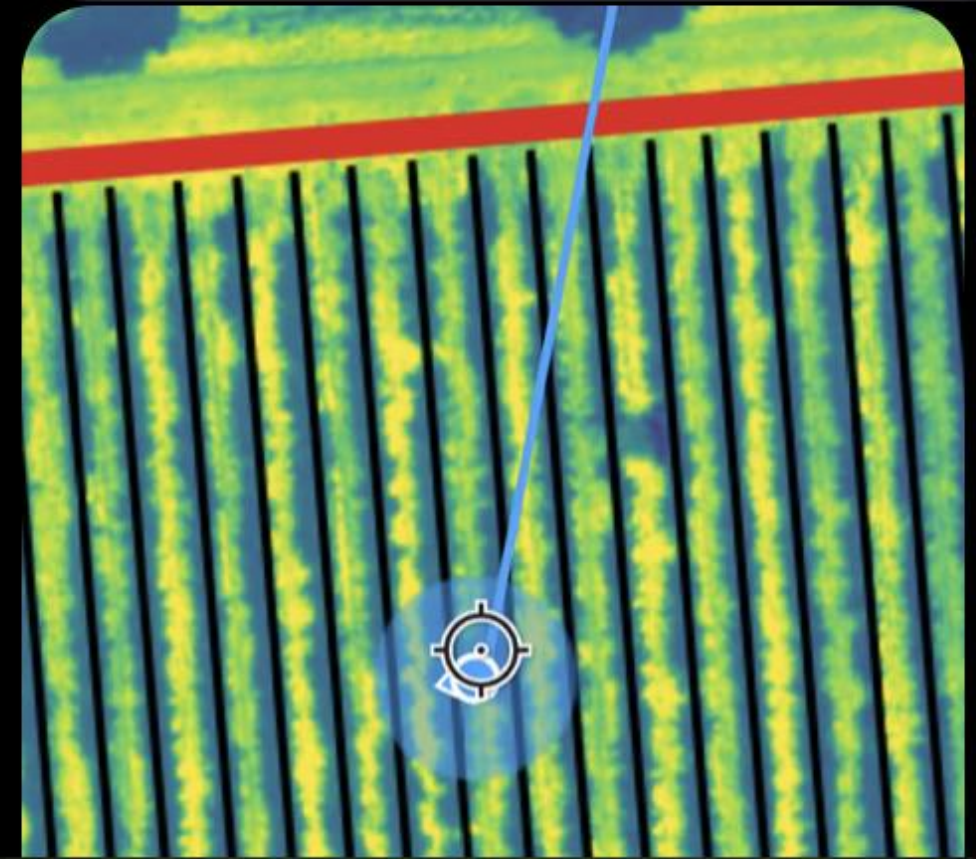


# ACTIONABLE INSIGHTS – Targeting leaks

- Self flown mission
- 26 leaks and blown risers located/fixed
- Workload reduced from 16 to 5 hours (more optimization possible)
- + variability assessments/counts etc

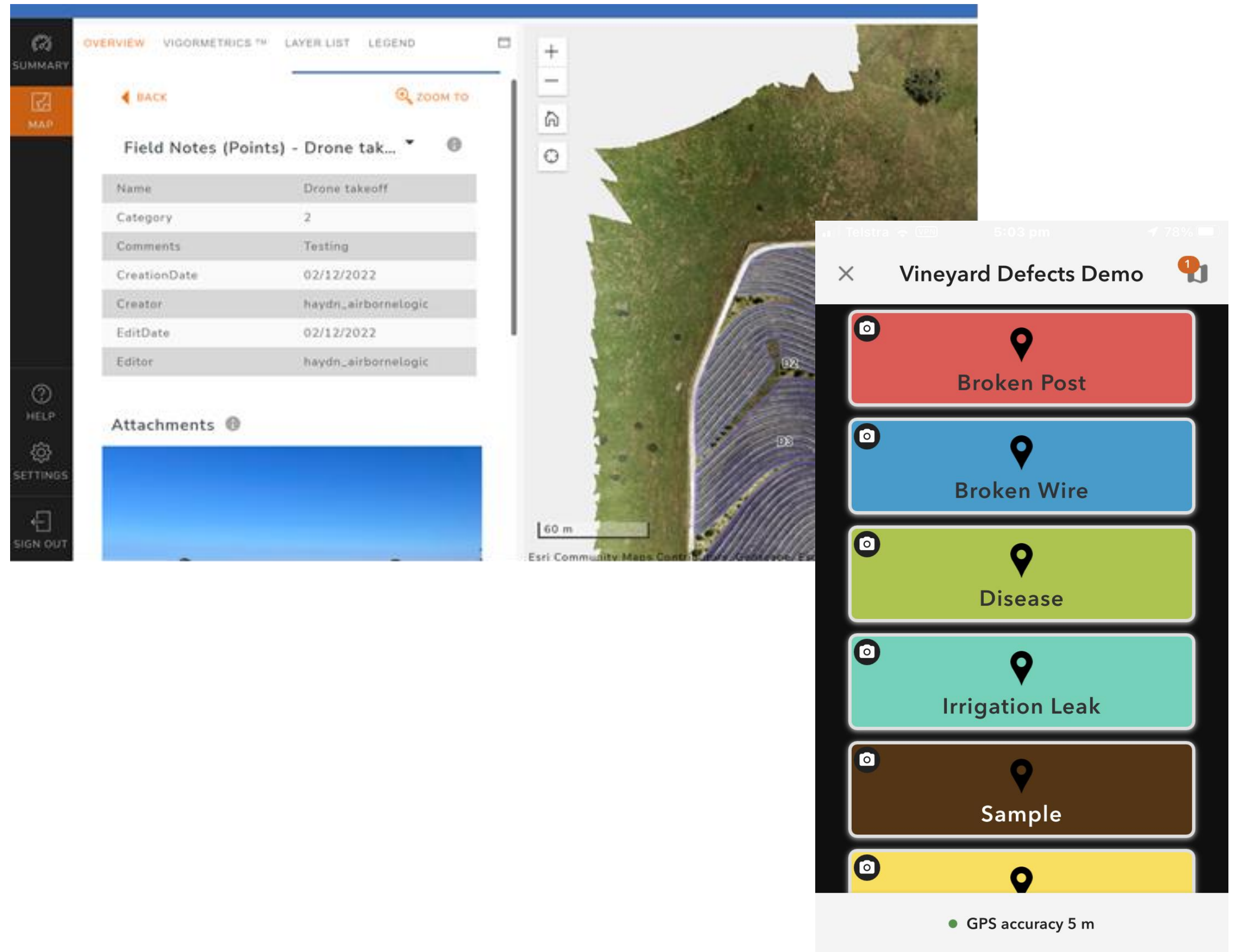


Hi Dan and Mike. I have ground truth the map with Avenza on a large and small leak. Large being a blown riser and the small being a missing dripper. Both took me within 3m of the leaks. Cheers Chris



# FAST SCOUTING + ACCURATE RECORD KEEPING

- Portable maps (ala Google Maps)
- Add-on Apps
- Digitized record keeping



# PLANT ID, USING HYPERSPECTRAL IMAGING

SPECIES DETECTION, SPECTRAL SIGNATURE

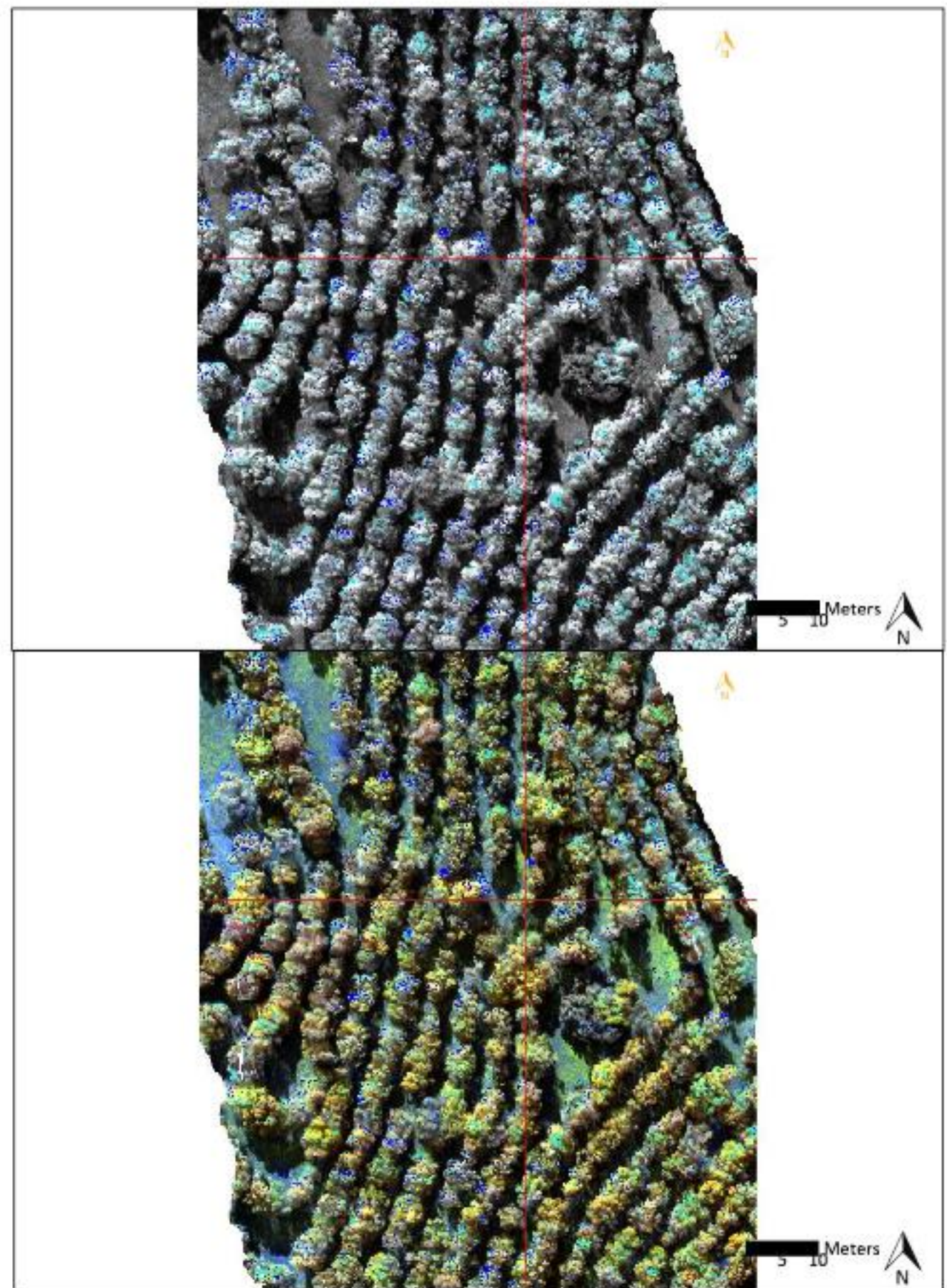


Figure 14 - ACE classified tree species discrimination: cyan areas: *Eucalyptus diversifolia*; Blue areas: *Eucalyptus leucoxyton*. Top: greyscale backdrop image of band 834nm, Bottom: false colour composite wavebands (446nm, 716nm, and 834nm).

# OPTIONS

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- We Fly
  - Large selection of High precision instruments (cameras, thermal, hyper and multi-spec sensors)
- You Fly
  - Share a drone
  - Fly when you want
  - Reduced cost over time
  - Use for other purposes
- Quick turn-around



# COST OPTIONS

## Pricing List and Options

Service	Description	Cost (Excl GST)
Assistance with drone purchase	Provide advice and assist with selection of drone/s – assist securing discount from suppliers	\$500
Grower portal licence	12 months subscription (+ support) annual	\$1,600
Field Maps App	12 months subscription (+ support) annual	\$550
AirborneLogic property base mapping set up	Base map set up and load to portal ready for repeat flights by either AirborneLogic or "Fly your own"	\$35/HA
Fly Your Own (RGB+Thermal)	Process RGB and Thermal image data, load to portal and provide analytics <ul style="list-style-type: none"> <li>• Single flight</li> <li>• 2-4 flights</li> <li>• 5+ flights</li> </ul>	<ul style="list-style-type: none"> <li>• \$15/HA</li> <li>• \$13/HA</li> <li>• \$11.50/HA</li> </ul>
Fly Your Own (RGB+Multi)	Process RGB and multispectral image data, load to portal and provide analytics <ul style="list-style-type: none"> <li>• Single flight</li> <li>• 2-4 flights</li> <li>• 5+ flights</li> </ul>	<ul style="list-style-type: none"> <li>• \$18/HA</li> <li>• \$15/HA</li> <li>• \$13.50/HA</li> </ul>
Repeat flights by AirborneLogic	RGB and Thermal, flown + loaded to portal	\$24/ha
Repeat flights by AirborneLogic	RGB and Multispectral, flown + loaded to portal	\$27/ha

Processing packages include:

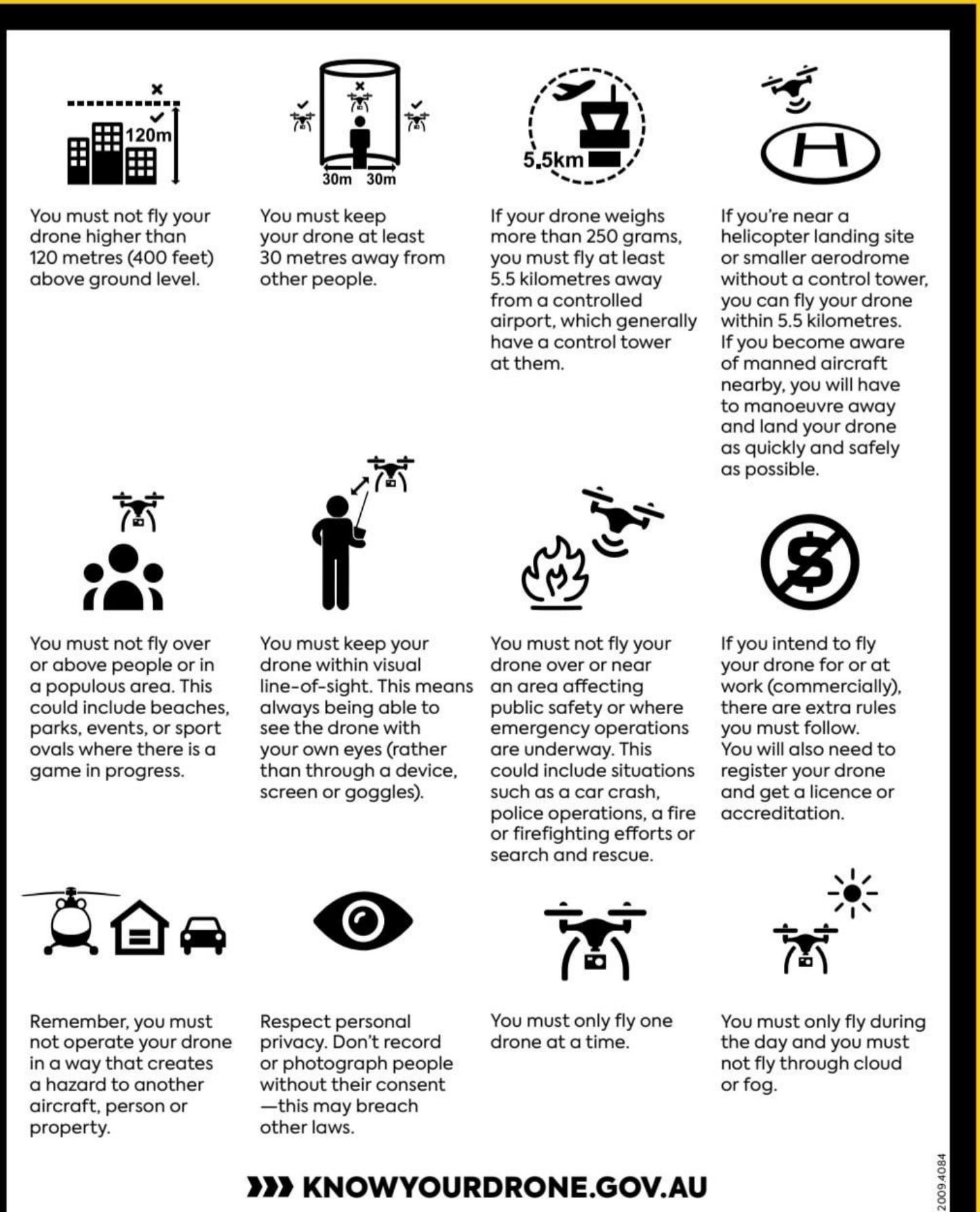
- Set-up support
- Bulk discount
- RGB with thermal or multi
- Assistance with file conversion for other use


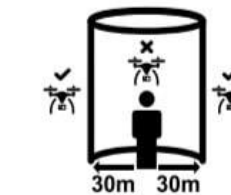










(e.g. GIS, Tracmaps, spray units, self-drive machinery etc)



# CONSIDERATIONS

- Drone types and sensors (what fits your needs?)
- Get trained (RePL) ~ 4 days (+\$1800)
- Talk to CASA (When a ReOC is required)
- Ethics – consult with your neighbors to avoid any issues



 <p>You must not fly your drone higher than 120 metres (400 feet) above ground level.</p>	 <p>You must keep your drone at least 30 metres away from other people.</p>	 <p>If your drone weighs more than 250 grams, you must fly at least 5.5 kilometres away from a controlled airport, which generally have a control tower at them.</p>	 <p>If you're near a helicopter landing site or smaller aerodrome without a control tower, you can fly your drone within 5.5 kilometres. If you become aware of manned aircraft nearby, you will have to manoeuvre away and land your drone as quickly and safely as possible.</p>
 <p>You must not fly over or above people or in a populous area. This could include beaches, parks, events, or sport ovals where there is a game in progress.</p>	 <p>You must keep your drone within visual line-of-sight. This means always being able to see the drone with your own eyes (rather than through a device, screen or goggles).</p>	 <p>You must not fly your drone over or near an area affecting public safety or where emergency operations are underway. This could include situations such as a car crash, police operations, a fire or firefighting efforts or search and rescue.</p>	 <p>If you intend to fly your drone for or at work (commercially), there are extra rules you must follow. You will also need to register your drone and get a licence or accreditation.</p>
 <p>Remember, you must not operate your drone in a way that creates a hazard to another aircraft, person or property.</p>	 <p>Respect personal privacy. Don't record or photograph people without their consent —this may breach other laws.</p>	 <p>You must only fly one drone at a time.</p>	 <p>You must only fly during the day and you must not fly through cloud or fog.</p>

**KNOWYOURDRONE.GOV.AU**

2009.4084

# OUR EXPERIENCE

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- Flying since 2019
- >100 missions
- Tested many variables, sensors, processing methods

## TIPS

- Check local air traffic
- Draw flight plans before onsite
- Make sure you use RTK (do your research on service and correction streams - [STARLINK](#))
- Watch out for birds!!



# CASE STUDY - AMADIO

ACCURATE VINE COUNTS  
PROVIDE 80% ROI ON COST OF  
DATA CAPTURE ALONE

- Ability to separate out individual vines used to update area under production statistics
- New vine counts amount to +7000 less than originally recorded
- Results ground-truthed in multiple regions throughout the vineyard
- Total savings in pruning costs ~ \$5 700
- Further ROI achieved via optimal application/spreading of compost to most “in-need” areas + targeting low producing vines
- Improved ability to review vineyard status remotely (offices are ~ 80 km away) – better joint decision-making ability with the client

**Amadio Vineyard Kersbrook**

Block Name	Variety	Last Capture	Capture Count
Block 1 A-1	cabernet sauv...	17/03/2022	1
Block 1 A-2	cabernet sauv...	17/03/2022	1
Block 1 A-3	cabernet sauv...	17/03/2022	1
Block 1 B	sauvignon blanc	17/03/2022	1
Block 1 C	pinot gris	17/03/2022	1
Block 10	pinot noir		
Block 11	pinot noir		
Block 12	pinot noir		
Block 13 (North)	pinot noir		
Block 13 (South)	pinot noir		
Block 14	pinot noir	24/11/2022	1
Block 15	pinot noir	24/11/2022	1
Block 16	sangiovese	24/11/2022	1
Block 17	pinot noir	24/11/2022	1
Block 18	chardonnay	24/11/2022	2
Block 19	nebbiolo	24/11/2022	2
Block 2 A	shiraz	17/03/2022	1
Block 2 B	shiraz	17/03/2022	1
Block 2 C	shiraz	17/03/2022	1
Block 2 D	shiraz	17/03/2022	1
Block 20	nebbiolo	24/11/2022	2
Block 21	pecorino	24/11/2022	2
Block 22 A	fiano	24/11/2022	1
Block 22 B	fiano	24/11/2022	1

**Summary Statistics:**

Block Count	Row Count	Vine Count	Total Row Length (m)	Total Block Area (ha)
82	2,441	303,232	466,591	131.8



# CASE STUDY - HILL RIVER CLARE ESTATE

3 YEARS - 2020-23

200 Ha survey - conversion from paper to digital maps, seasonal canopy analysis + assessment of “change over time”

PORTAL DEVELOPMENT

Collaboration/support partnership

BENEFITS

- Reduced time/increased accuracy targeting low productivity areas (> productivity by 10T)

- Increased precision in locating problems (workload reduced from days to 1 hour)

- Improved reporting for bank valuation

- Reported improved decision making and time saved (yet to be quantified)

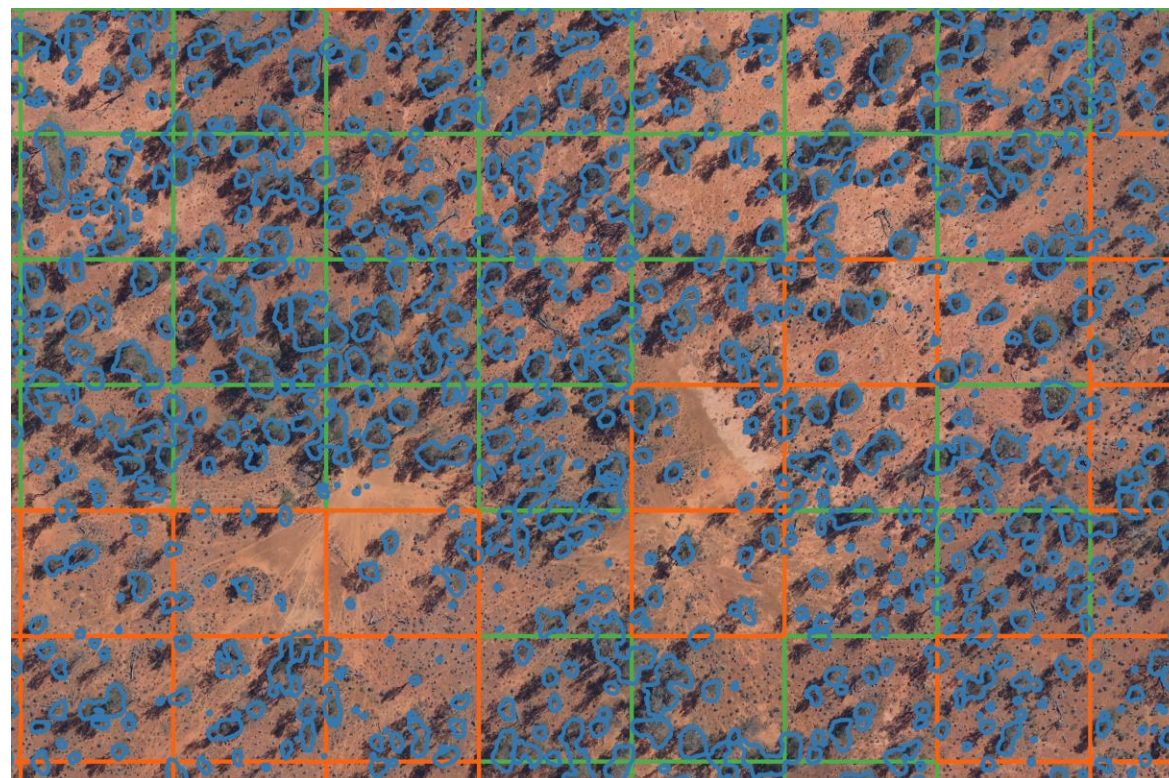
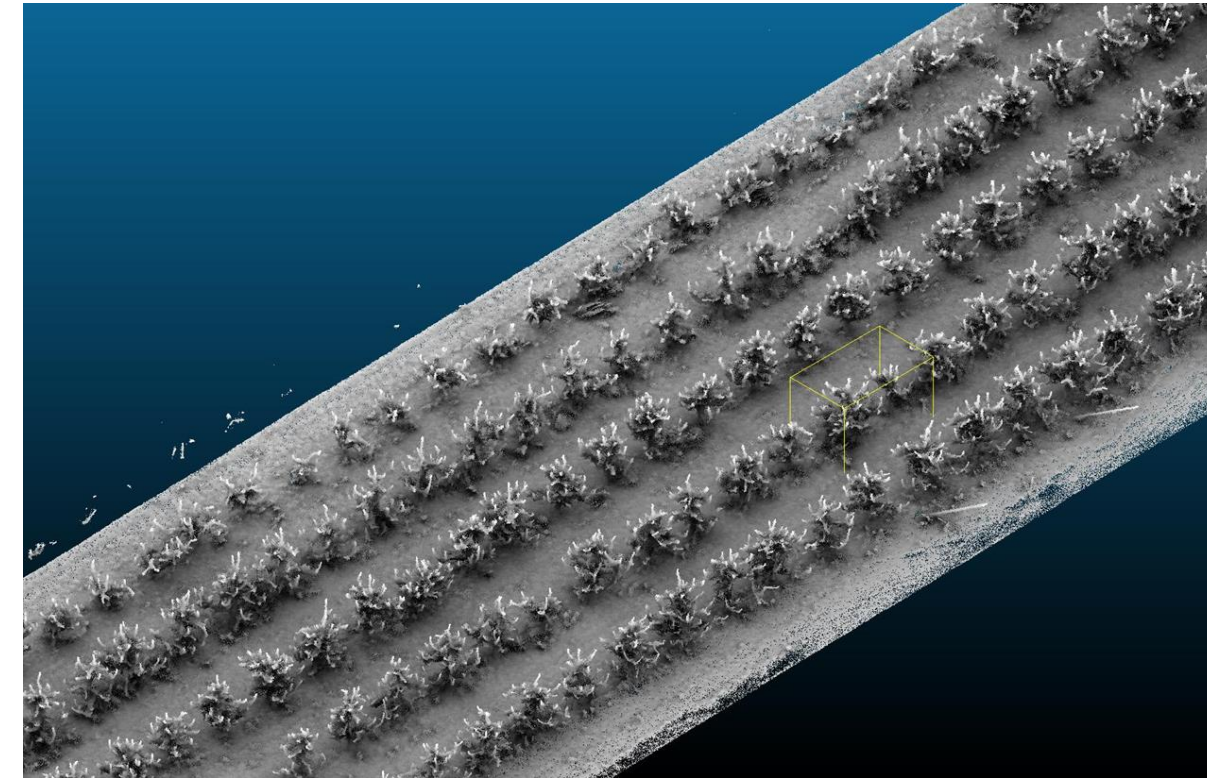
- Targeted support for tech adoption

READING BETWEEN THE VINES – EPISODE 6

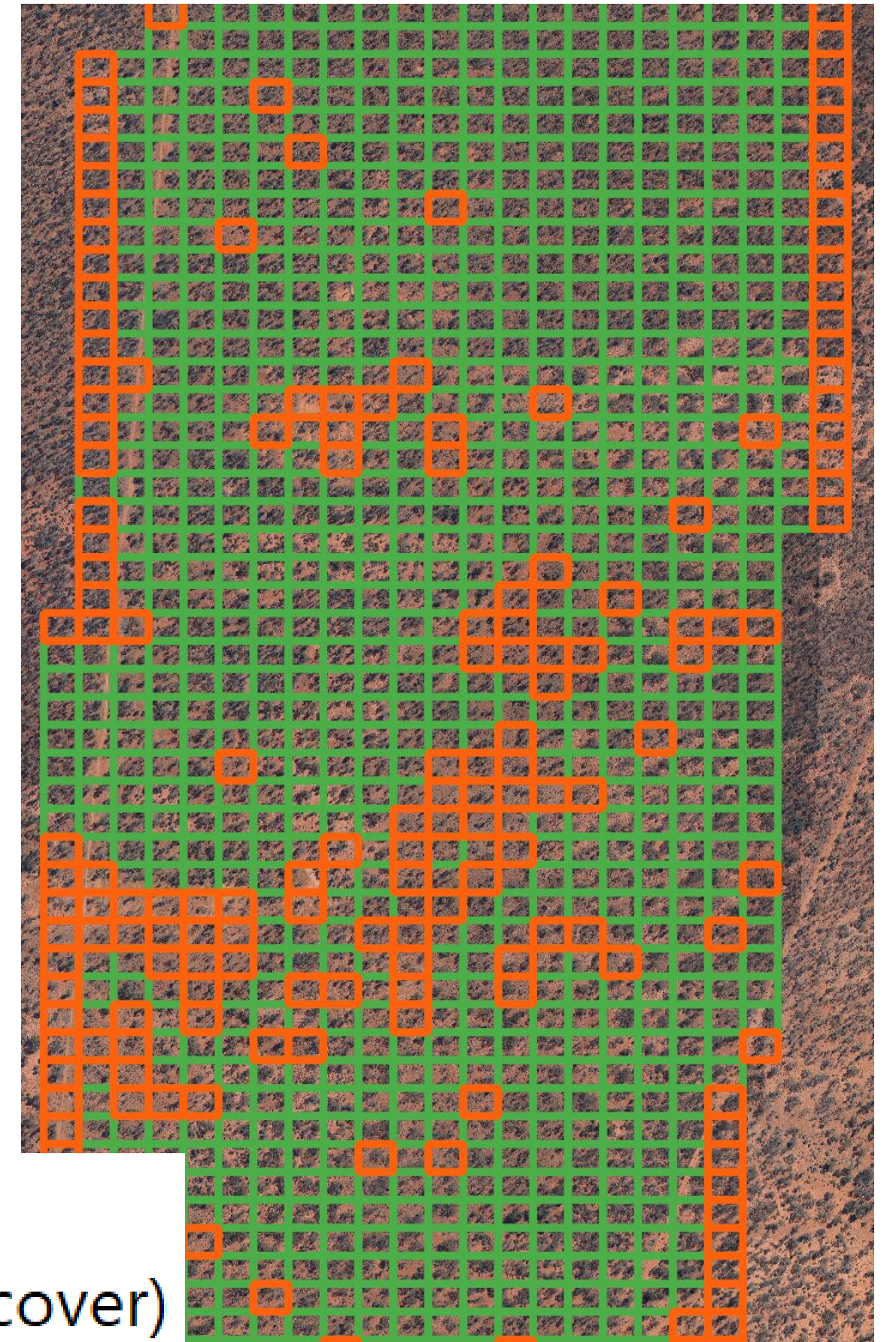
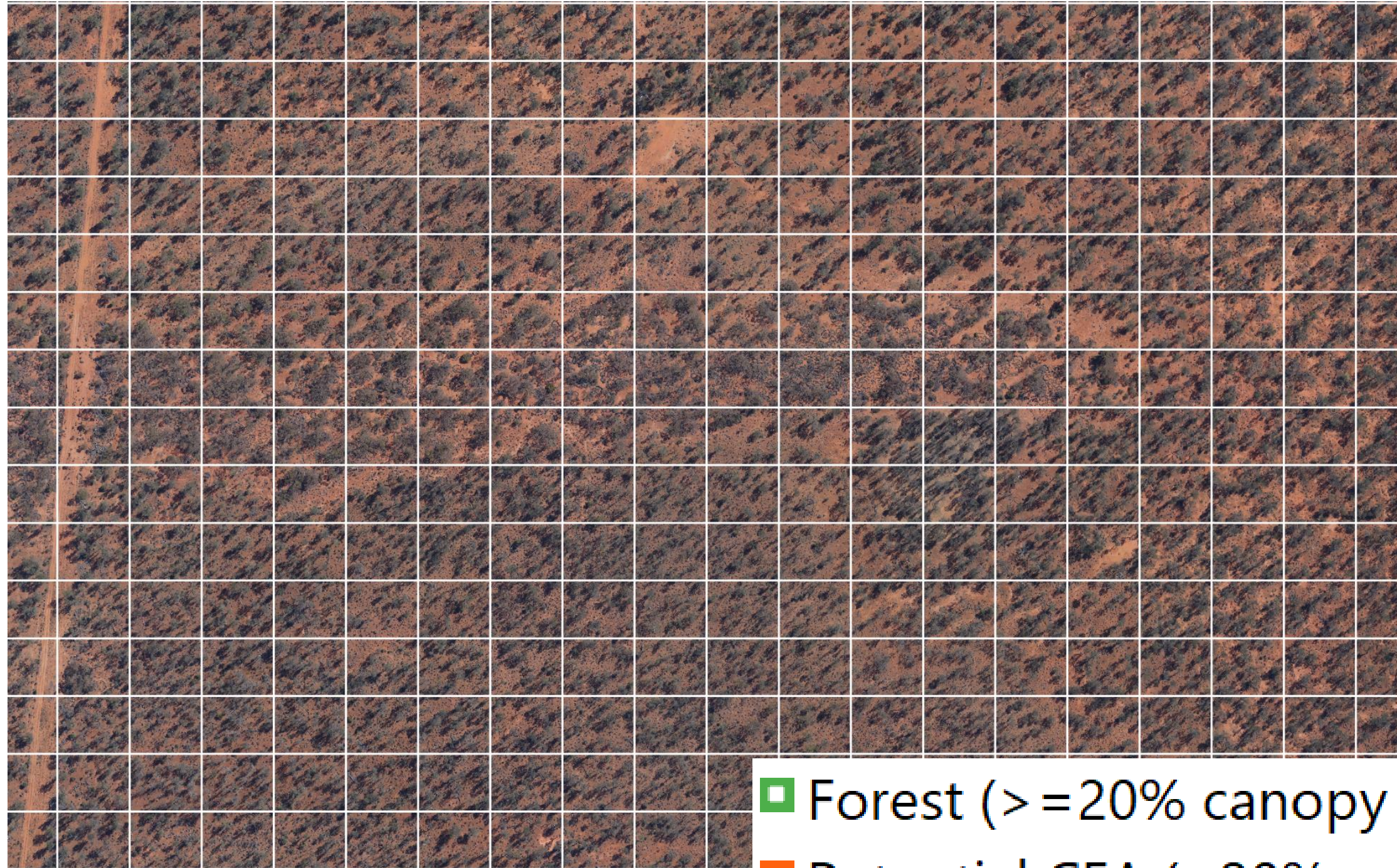
<https://www.wineaustralia.com/news/articles/reading>



# CARBON/BIODIVERSITY - Accurate measurement for benchmarking + reporting



# CARBON FARMING, GIS & SCRIPTING



- Forest ( $\geq 20\%$  canopy cover)
- Potential CEA ( $< 20\%$  canopy cover)

# WHAT'S NEXT ?

## CARBON & BIODIVERSITY

- ACCURACY AND VALIDATION
- AI AND MACHINE LEARNING
- LARGE-SCALE, LOW-COST IMAGE CAPTURE
- DATA FUSION - RGB, LIDAR, HYPERSPECTRAL



# CONTACT US



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