

# Unsealed Grading Why/Where/When

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HEB Construction



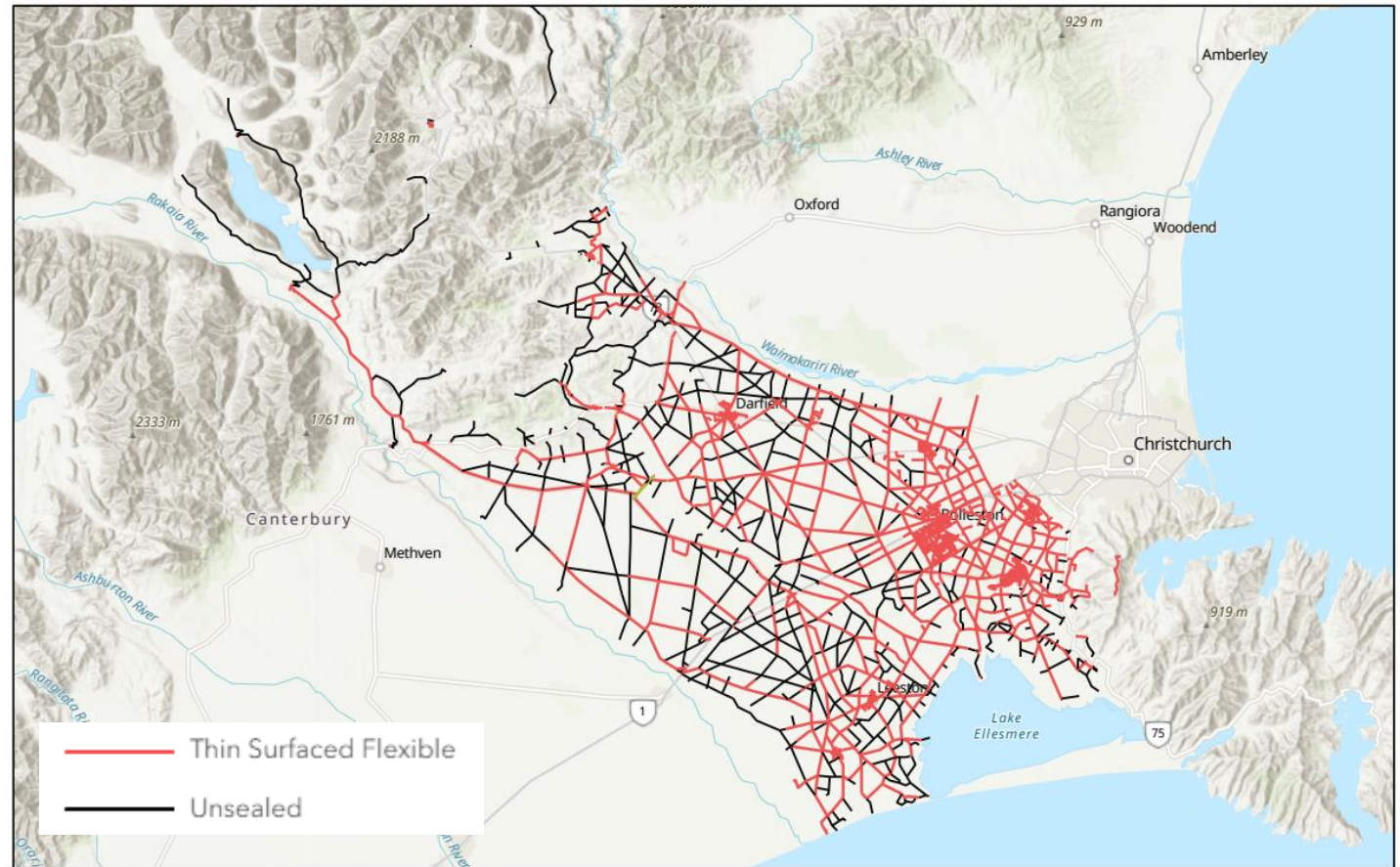
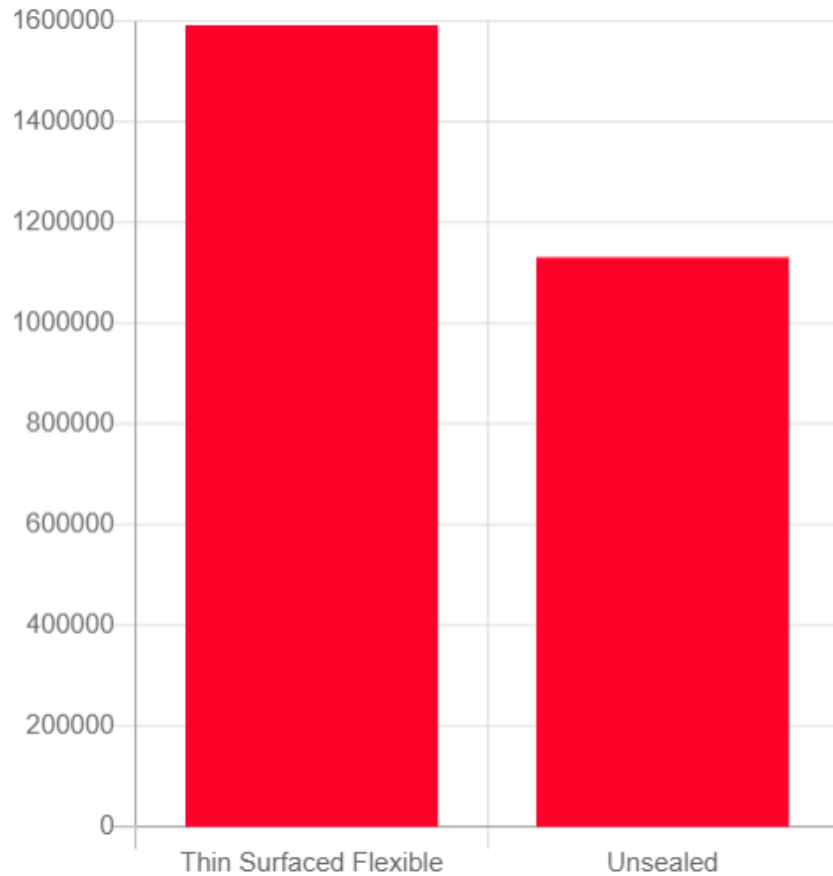
# Agenda

- Selwyn Roothing Network
- Data Analysis
- Collaboration
- Building the System
- System Demonstration
- Network Improvements
- Lessons Learned
- Questions ??

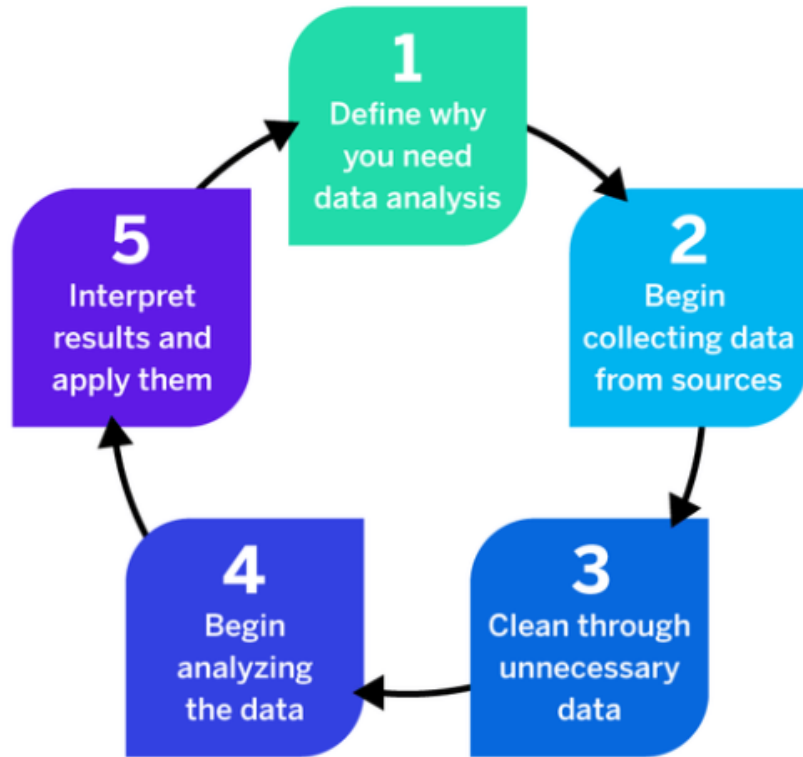




# Selwyn Roding Network

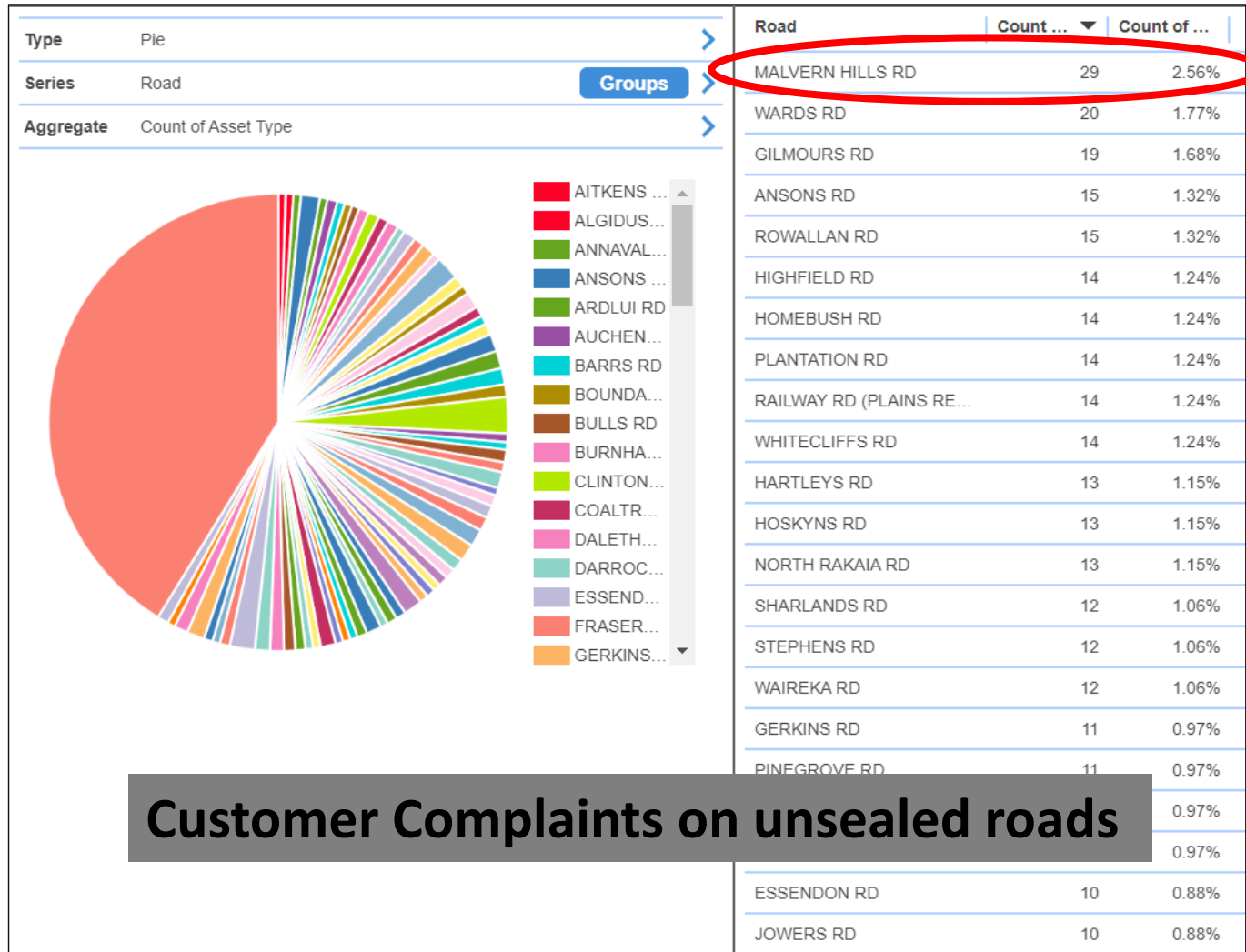


# Data Analysis

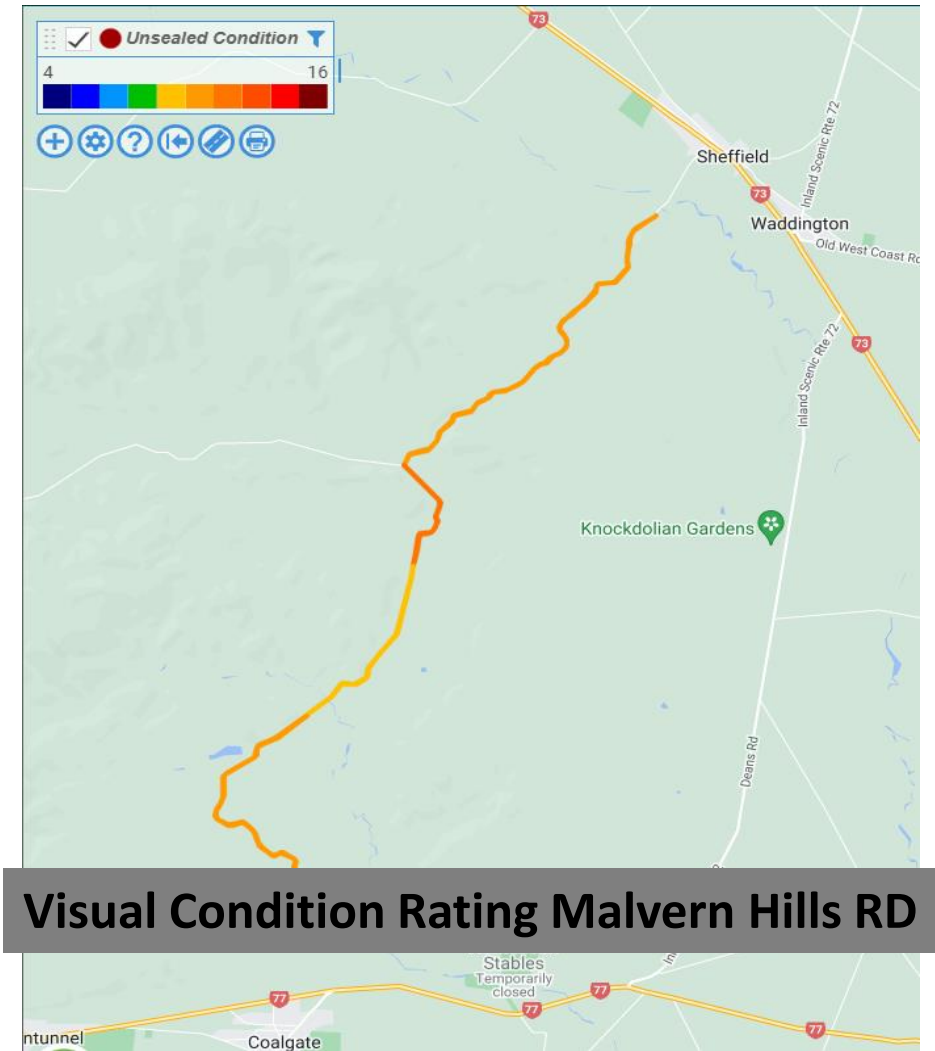


- Customer Service Requests
- Unsealed Road Condition Visual Ratings
- Fault Analysis (type, number, Recurring ?)
- Staff Feedback
- Historic Frequencies

# Analysis on Unsealed Roads



Customer Complaints on unsealed roads



Visual Condition Rating Malvern Hills RD

# Fault Analysis on Malvern Hills Road

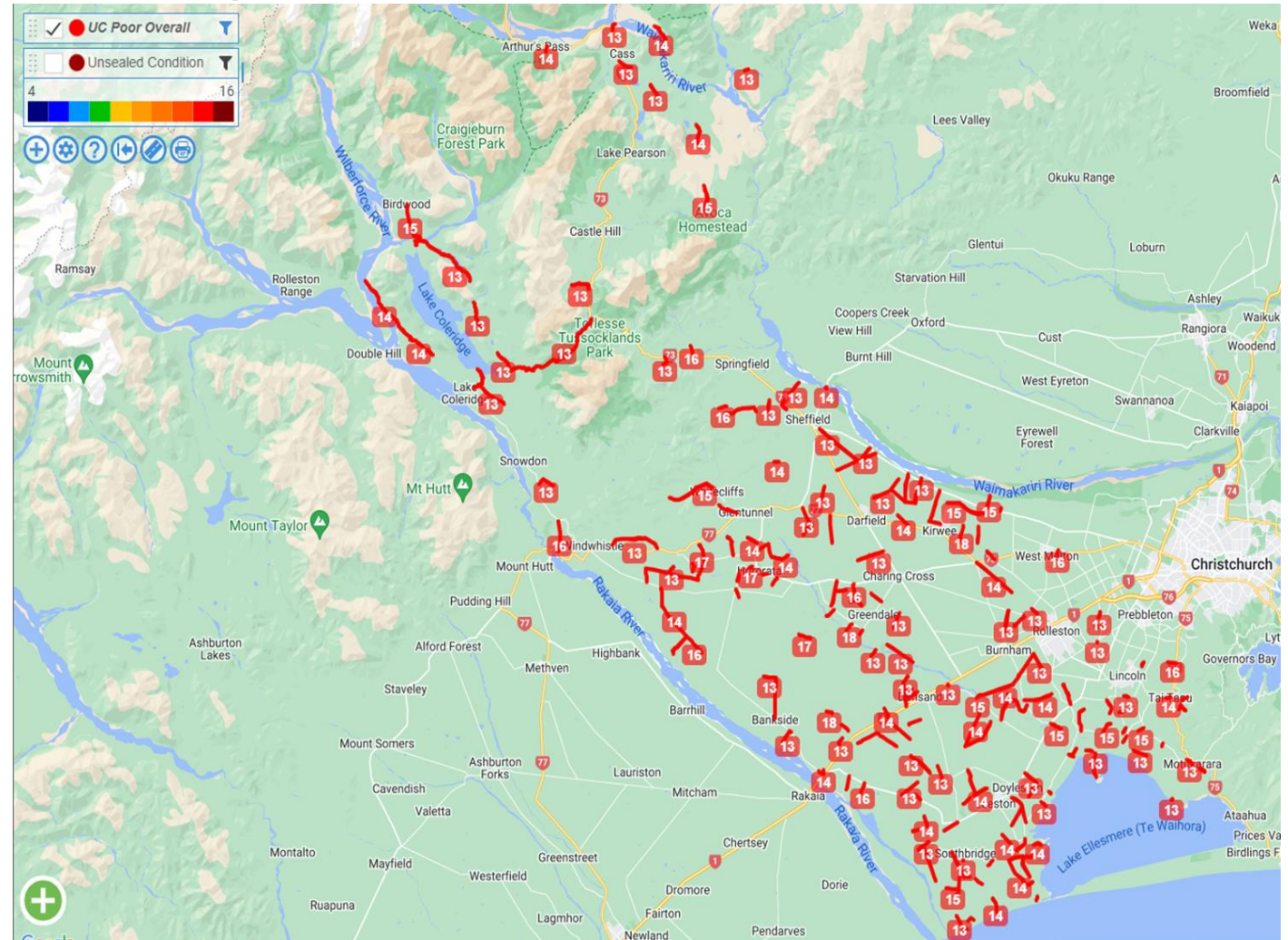
- Used to understand recurring issues.
- Alignment of council priorities.
- What is related to grading.
- Used as a base measure for improvement monitoring.

Fault	Count ... ▼	Count of ...
Scouring	22	14.97%
Dayworks - Culverts	19	12.93%
Reshape Cross Fall	19	12.93%
Inspection Required	16	10.88%
Potholes	16	10.88%
Aggregate Loss	12	8.16%
Saturated Pavement	6	4.08%
SWStruct - Crk/Broken/Da...	6	4.08%
Subsidence	5	3.4%
SWStruct - Construct New ...	4	2.72%
Dayworks - Aggregate Loss	3	2.04%
Rutting	3	2.04%
SWStruct - Clear Debris	3	2.04%



# Frequency Range View of Poorly Rated Unsealed Roads

- Used to understand flow of grading routes efficiencies.
- Alignment of council priorities.
- Helps make sense of changes related to connecting roads.
- Easy to communicate to field workers rather than data tables.



View after the freq ranges were altered by project team

# Collaboration

- Council Workshops
- Fonterra & Synlait
- Grader Operators
- Operation Manager
- Supervisors
- Administration
- Community





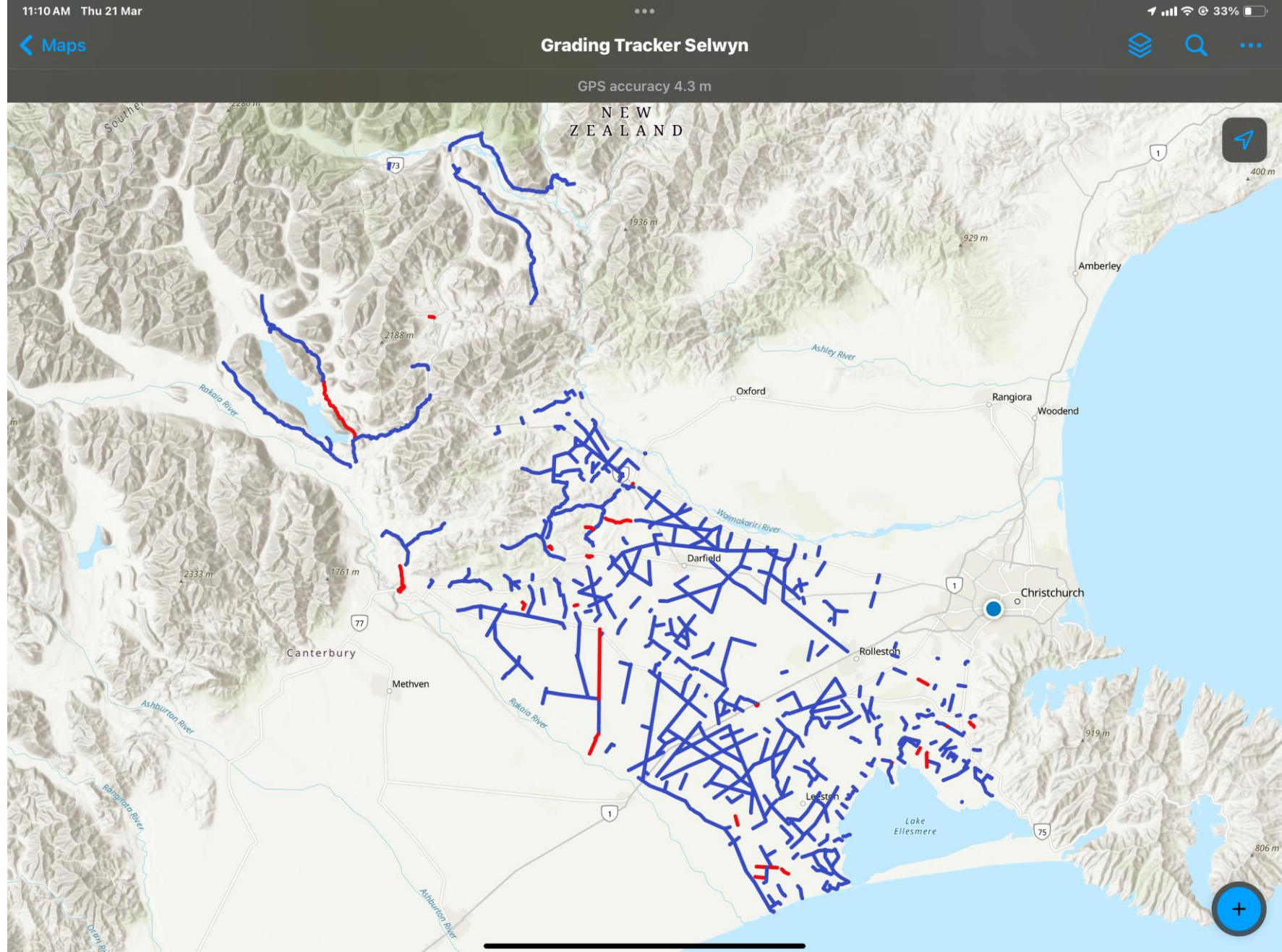
# Building The System

- Dispatches Created in RAMM
- Dataset mirrored in ESRI GIS with fields added to allow for frequency and future date for scheduling
- Related tables setup and configured in ArcPRO
- Web App built in Field Maps with calculated fields where possible
- Offline areas configured
- Dashboard configured
- Data extract tool setup

# System Demonstration

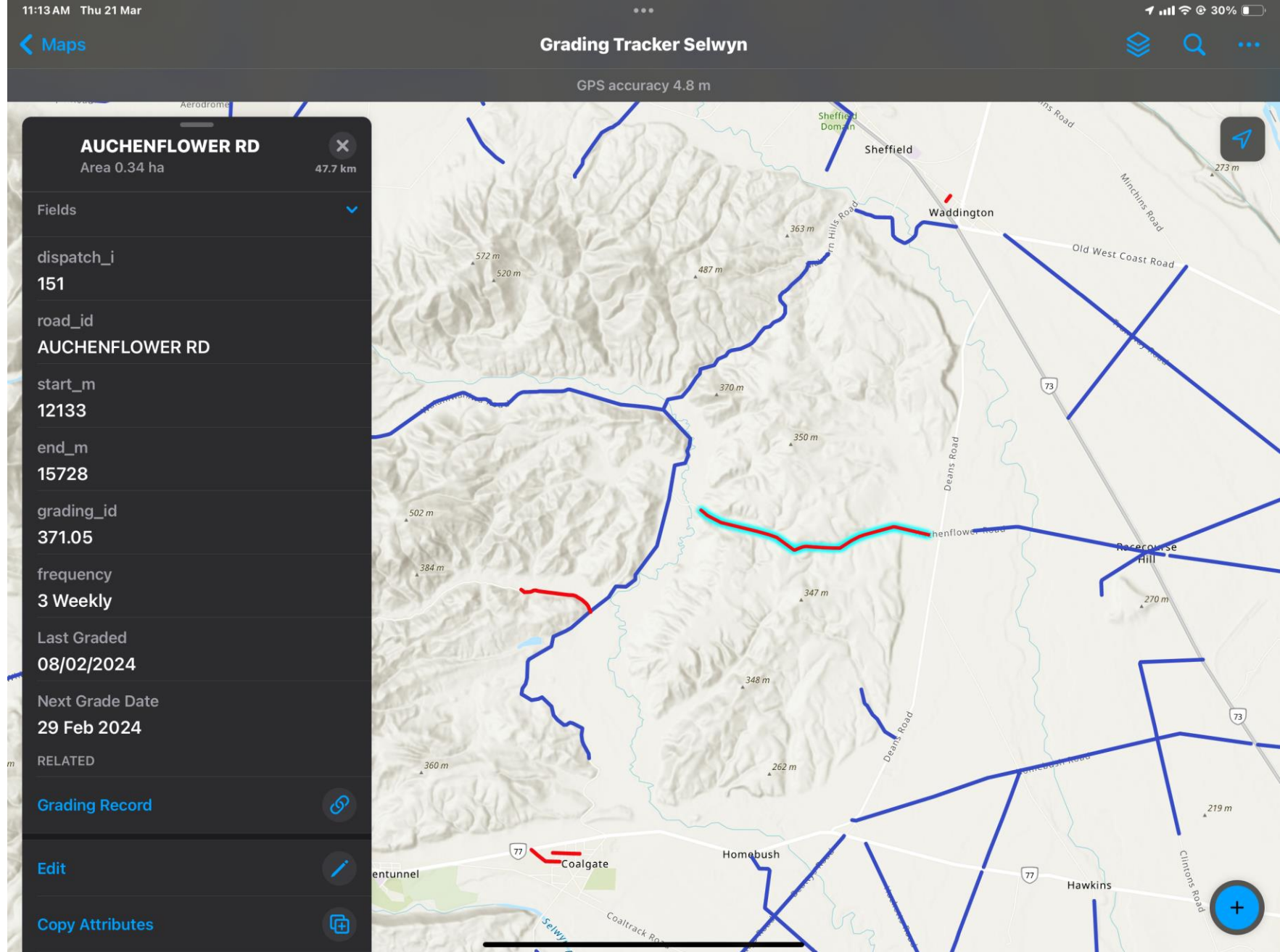
- Video of the system workflow has been replaced with screenshots so the presentation can be uploaded to Apopo Website.
- Original video from live presentation can be supplied on request.
- The following 6 slides show the field app on an ipad and then the dashboard used to monitor the grading of network.
- Dashboard is utilised by Contract Management team as well as Council Staff and councillors if required.

- Full view of Selwyn Grading jobs in the field system (ipad).
- Blue lines show roads within frequency range
- Red lines show roads outside of frequency range.
- Blue Location dot is live from users location.

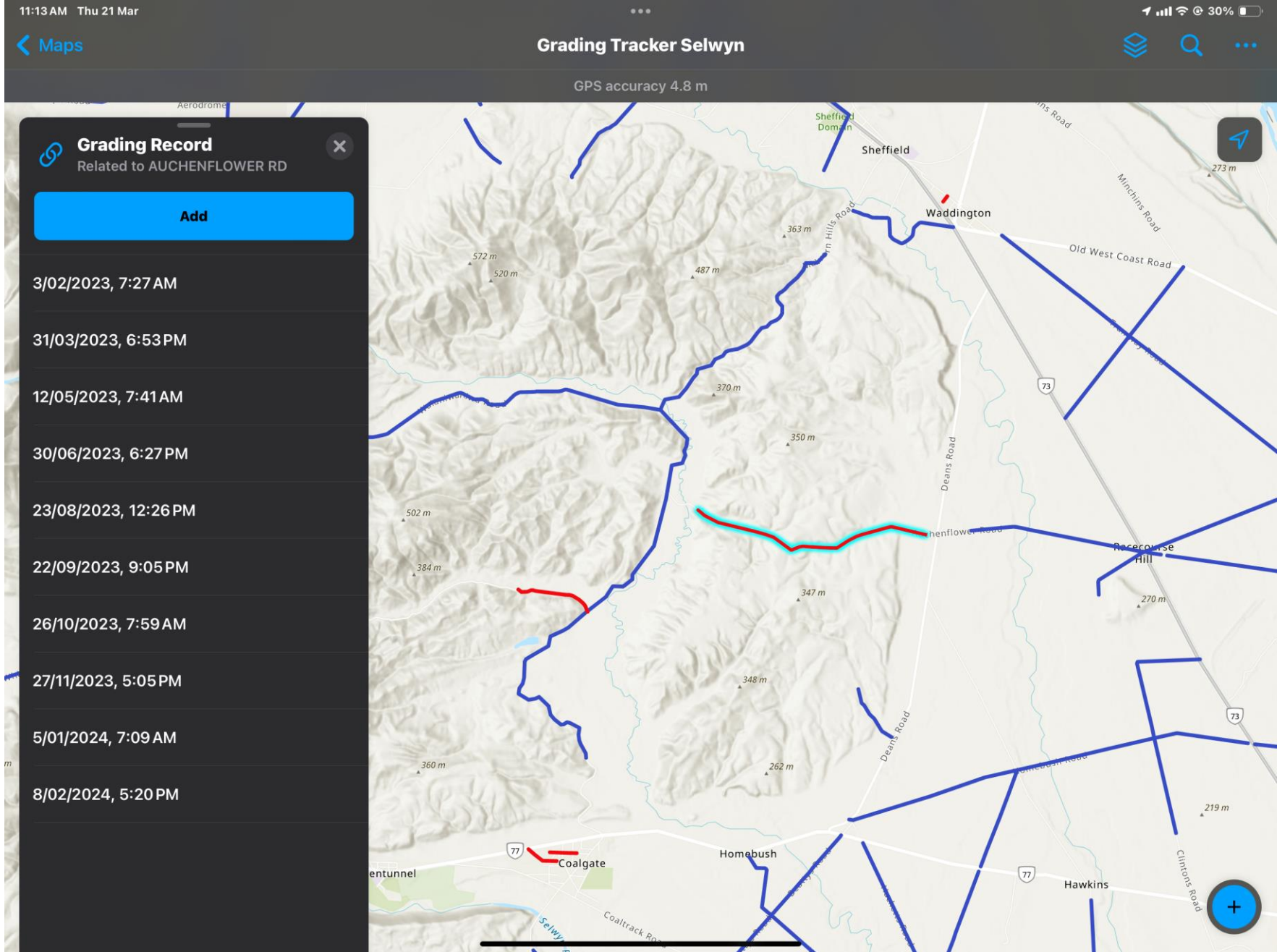




- Popup view of an out of frequency road.
- Highlights on the map the road.
- Can see that it was due by the 29<sup>th</sup> February.

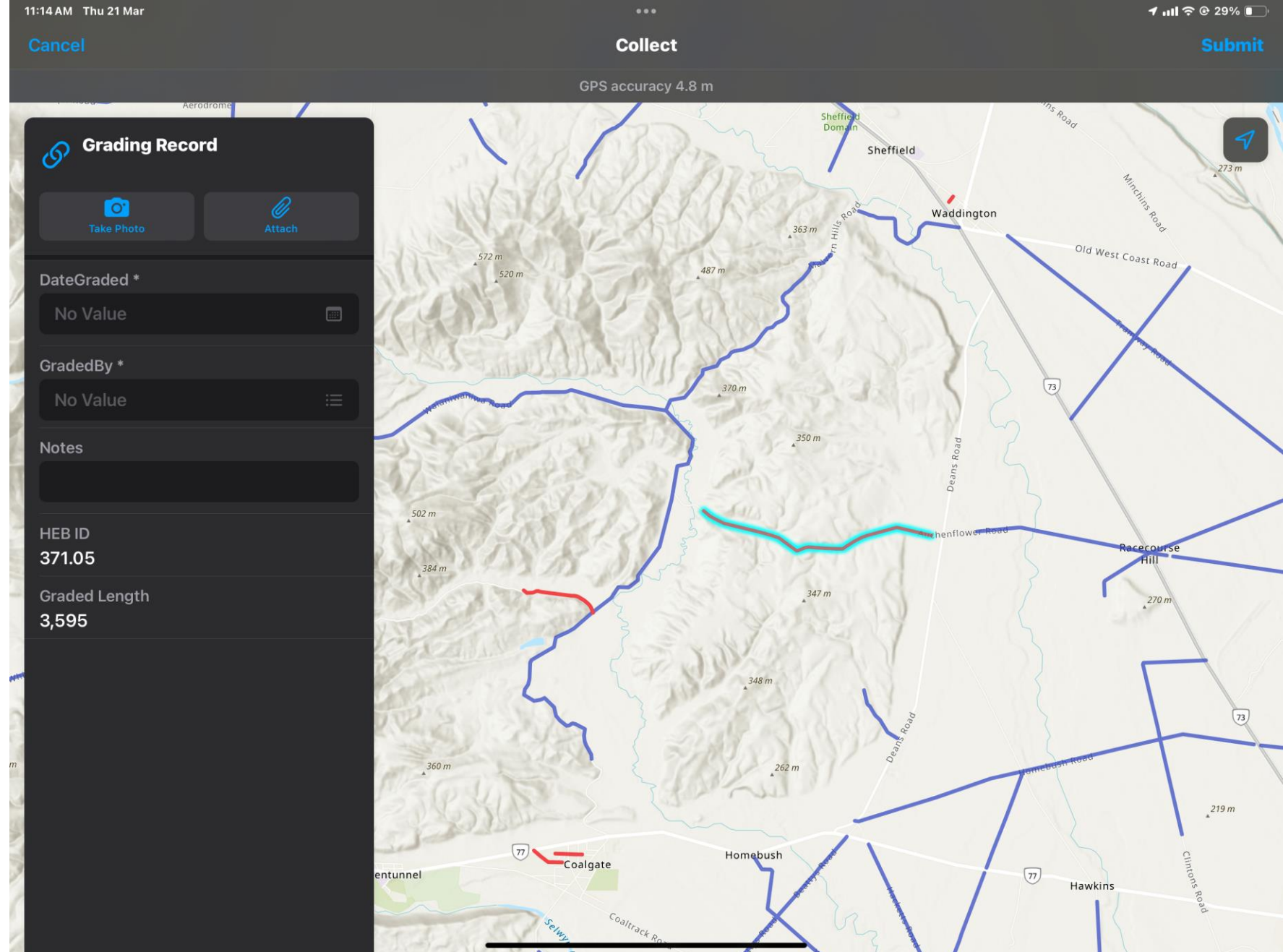


- Full view of the grading history records.
- This is where the grader operator adds a new record after they grade the road.





- View of the grading record fields.
- Can take photos and attach other documents easily if required.
- HEB ID & Graded length are calculated from the underlying Grading Dispatch.

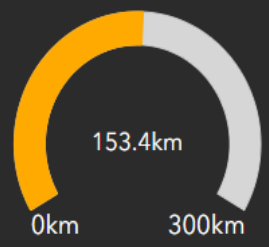




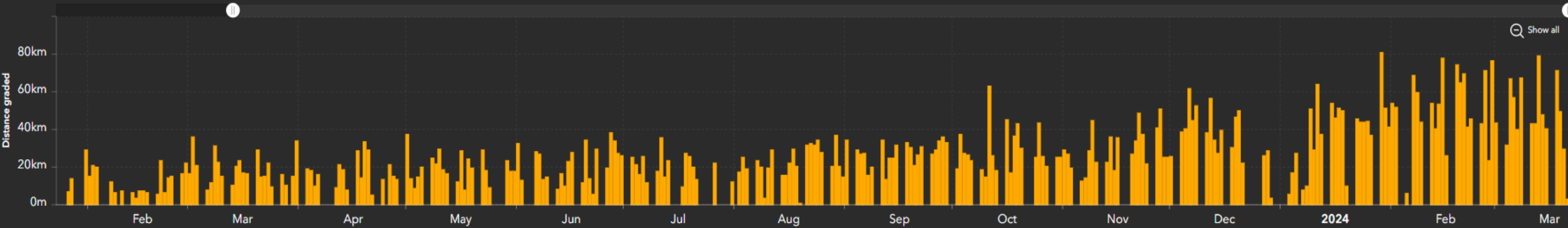
Total Distance Graded  
**7778.4km**  
(over selected range)

Weekly Progress Tracker

(Based on 300km/week)

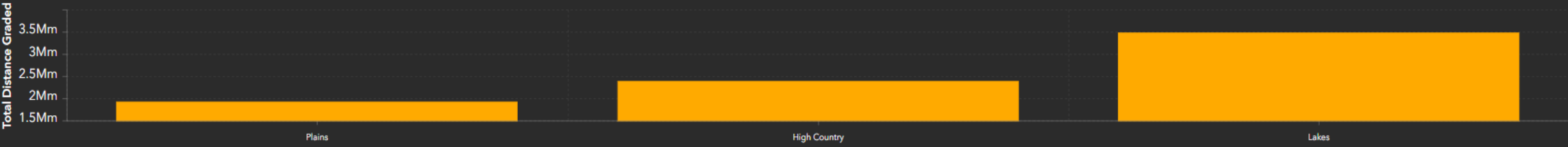


Distance Graded by Date



Last update: 56 minutes ago

Distance Graded by Area



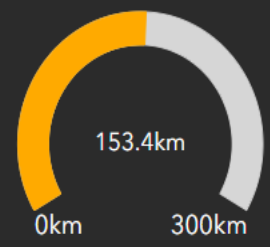
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Total Distance Graded  
**432.3km**  
(over selected range)

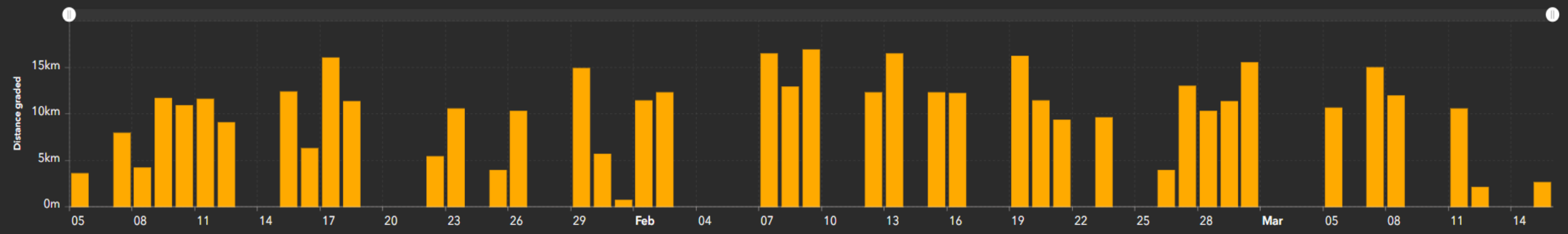
Filter Options  
(Date and Grader Operator area)

Weekly Progress Tracker

(Based on 300km/week)

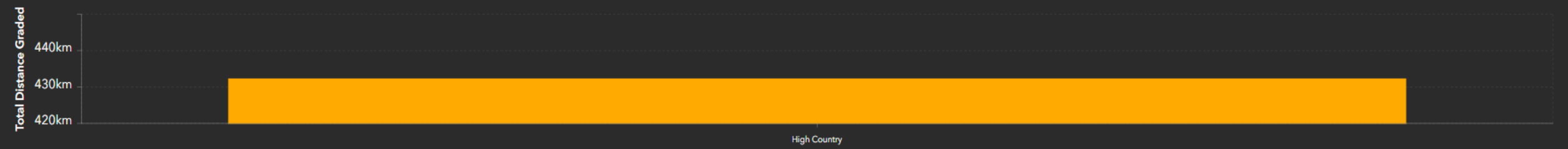


Distance Graded by Date



Last update: 12 seconds ago

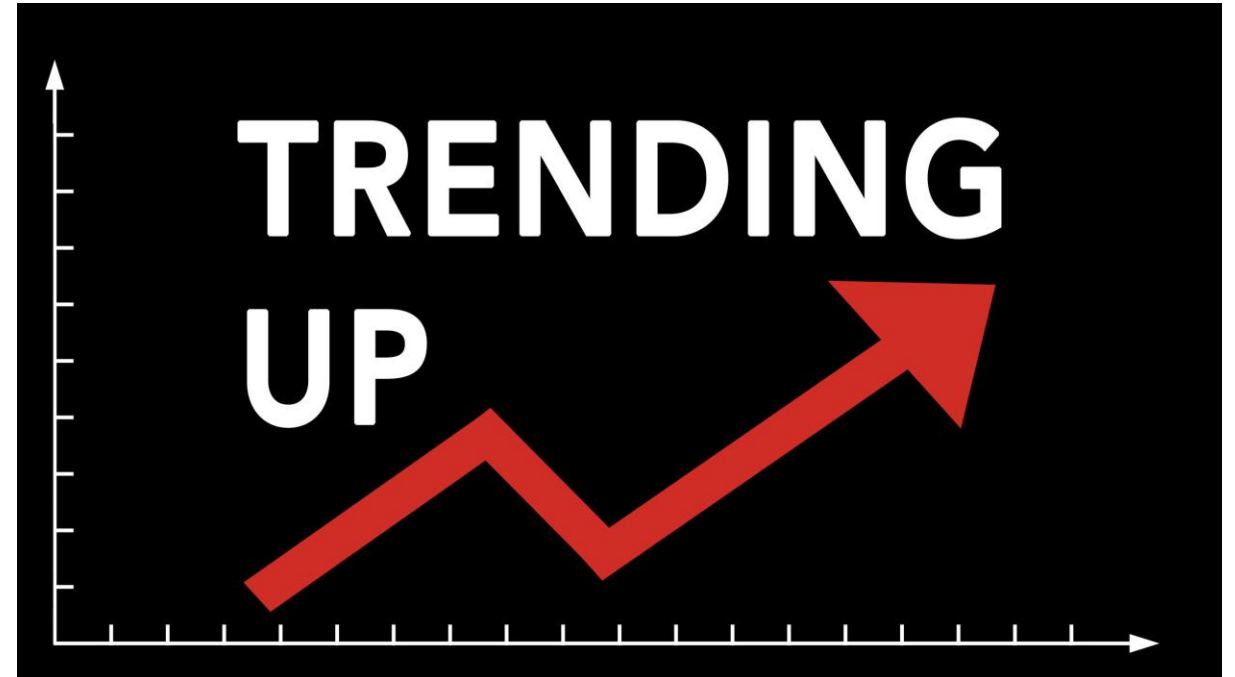
Distance Graded by Area



Last update: 12 seconds ago

# Network Improvements

- Reduced CSR's
- Reduced re-metalling required
- Improved Communication
- Reduction in wasted travel
- Improved Drainage through significant weather events
- Data accuracy improvement through daily updates





# Customer Complaints vs Graded Length



# Lessons Learned

- Stick to schedule unless urgent
- Training manuals are a must
- Offline areas need to be field validated
- Graded lengths per day need to be a realistic target
- Don't use Boolean logic
- Expect everyone to ask for access
- Old dogs can learn new tricks !!



