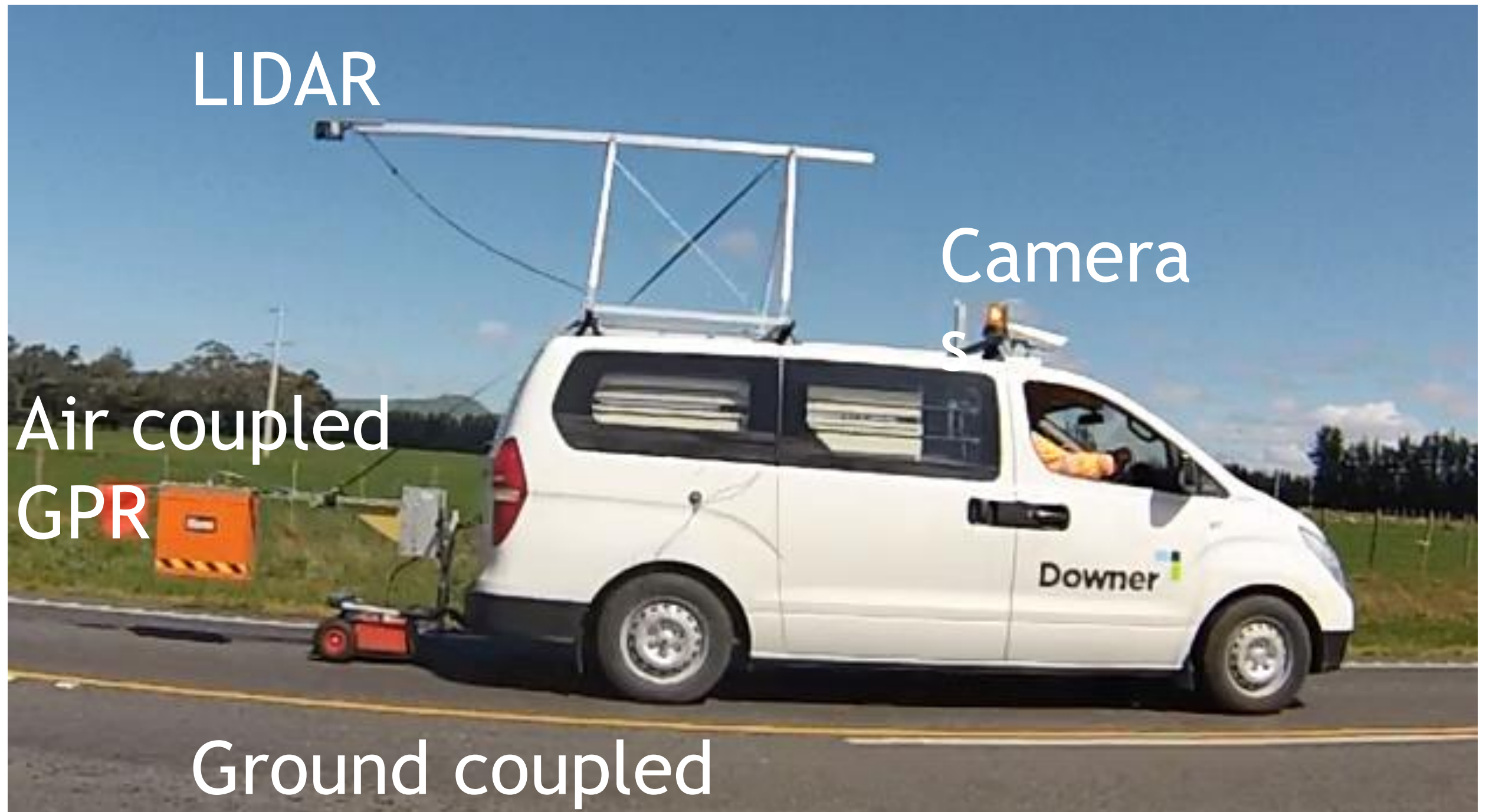
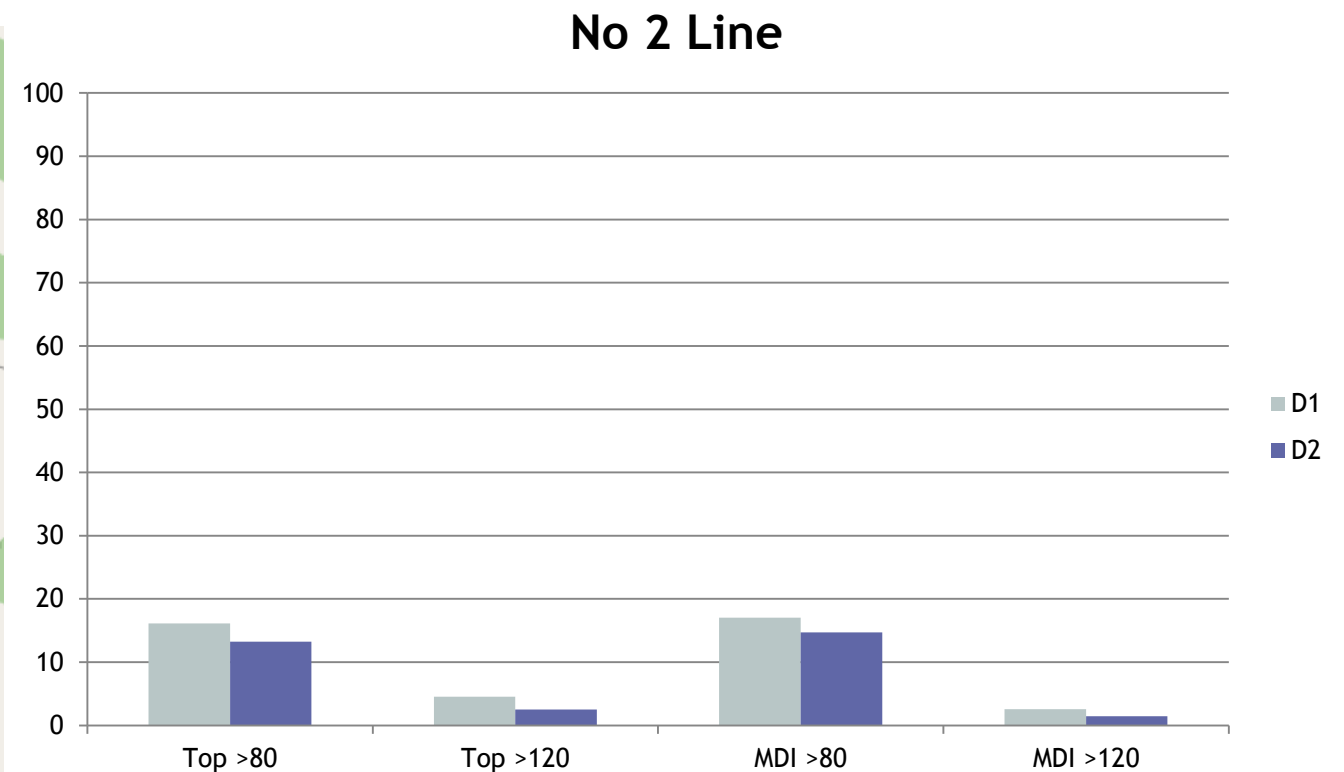
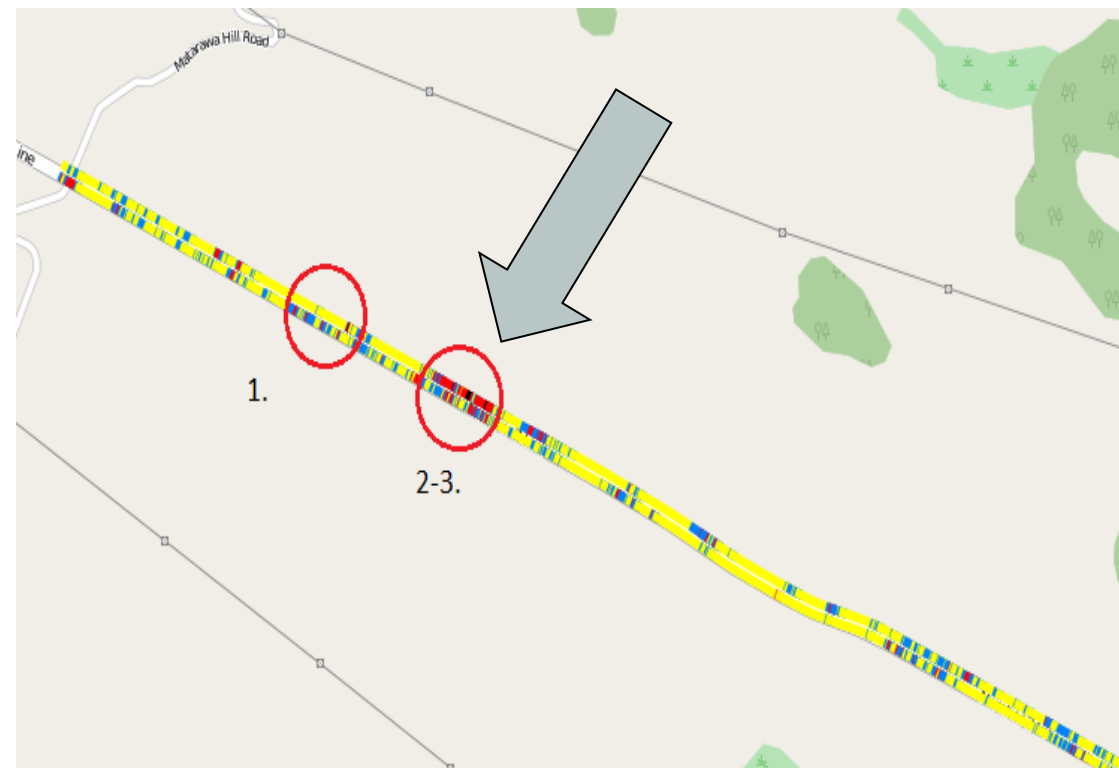


NZ Moisture Monitoring Project - 2015



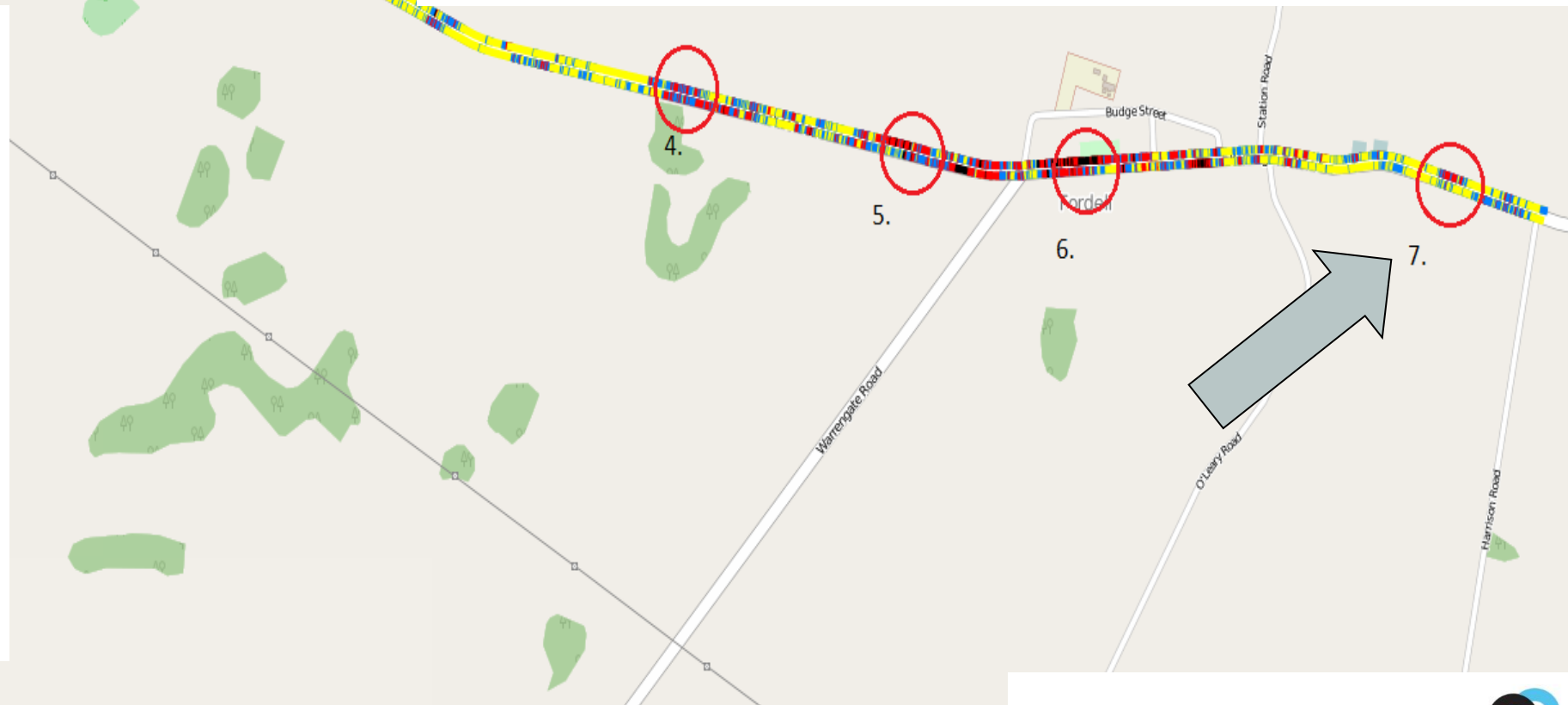
Whanganui No2 Line



MDI_TOTAL_D2

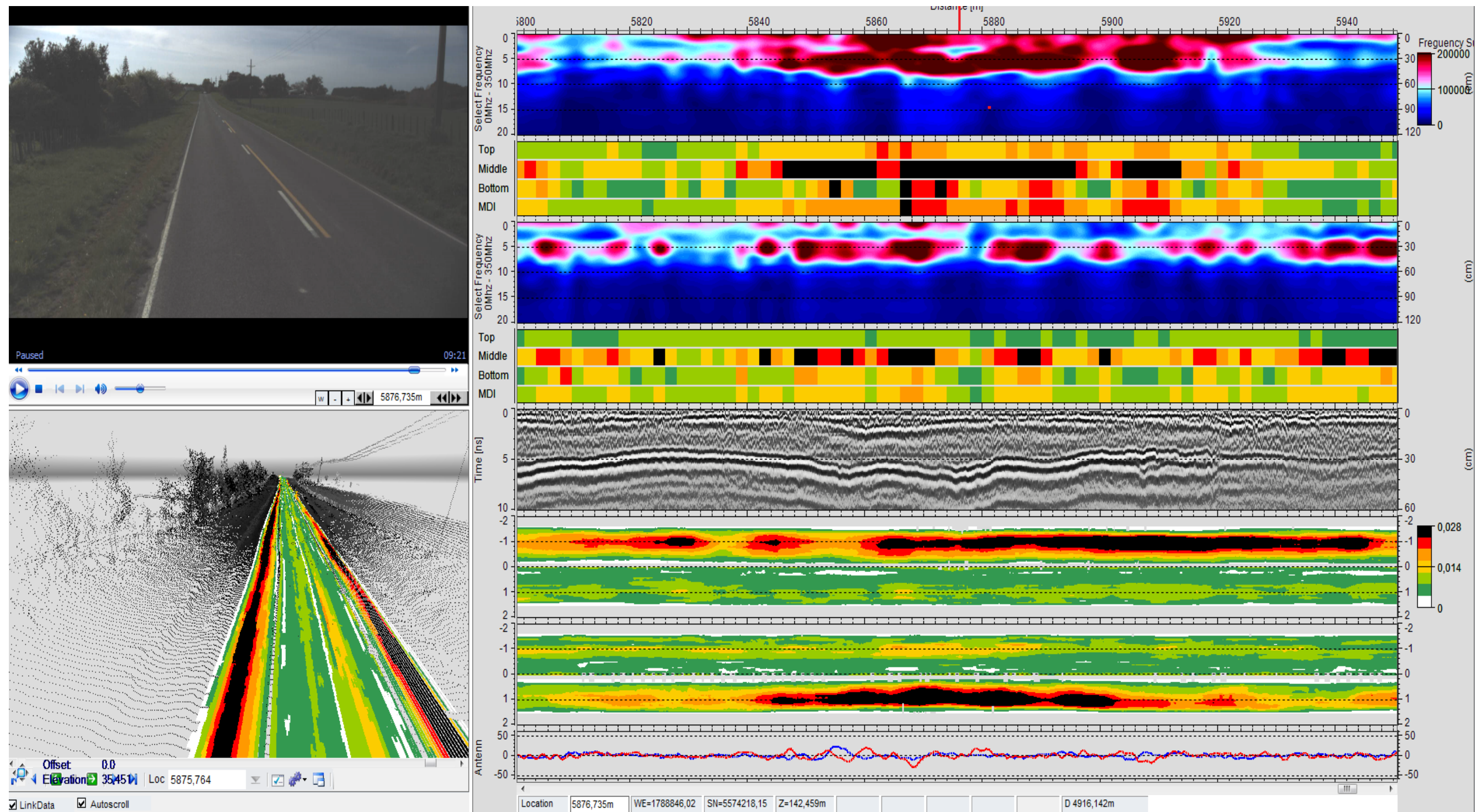


MDI_TOTAL_D1



No 2 Line 5800-5950m

Sandwich / moisture traps



Benefits of moisture and laser lidar survey

- Prioritise drainage improvement spend
 - Measuring effectiveness of moisture control techniques
 - Know where the water is to remove, top, middle or bottom
- Drainage/Surface Waterproofness Improvement to prevent the need for patching and defer pavement renewals – PROACTIVE MAINTENANCE – (Scotland saved 20% in maintenance costs)
- Drainage improvement along with patching to extend patch life, also fixing the actual problem as to why this spot has failed
- Assisting in Pavement Renewal Design and Investigation
 - Laser lidar survey data direct into CAD and road design software – point cloud for accurate determination of quantities (can survey after construction as well) – less points needed for total station survey.
 - Can estimate pavement depth over whole site based on GPR
 - Include drainage improvement as part of design solution to fix the reason why pavement failed in the first place – extend life
 - Some sites could be fixed cheaply by smoothing ruts and fixing drainage
- Unsealed Roads Asset Management
 - Laser lidar can identify flat areas, poor geometry, corrugations and rutting, raised edges, inadequate ditch depths
 - GPR gives existing gravel depths
 - Video looks at dust generation
- Identify vulnerable areas of the network
- Moisture survey combined with rutting from LIDAR will allow the worst areas to be fixed first and data used for forward work planning.