IBEC
ITS Benefits Evaluation Community

Benefit Analysis of an Electronic Road Use Charge System

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IBEC Session 1: Developments in Benefits, Evaluation and Costs of Road Charging

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Intelligent Transport Systems
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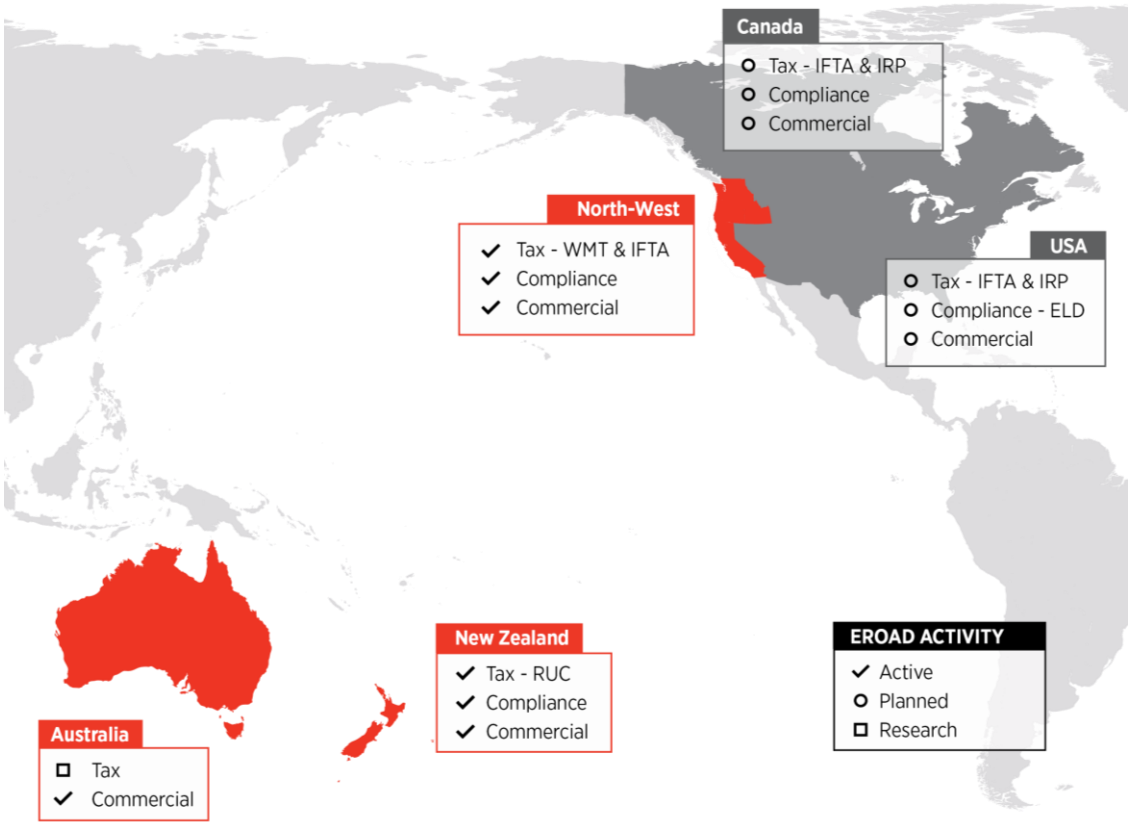
About EROAD

- EROAD is a fully integrated technology, tolling and services provider. Our advanced technology provides road charging, compliance and commercial services with the same platform to lower overall client and delivery costs.
- **First company** to implement a GNSS/cellular-based road charging solution across an entire country (New Zealand)
- Operations in **New Zealand, Australia, Oregon, Washington and Idaho**
- Sole heavy vehicle technology supplier for **California** Road User Charge Pilot
- **40,000 units** across three countries
- EROAD's services offered include:
  1. **Tax (RUC, WMT, IFTA)**
  2. **Compliance services (ELOGS, ELD, HOS)**
  3. **Commercial services**
- EROAD is listed on the New Zealand Stock Exchange (NZX:ERD)



The EROAD Technology Platform

One advanced technology platform, multiple applications

New Zealand

Tax
Road User Charges (RUC)

Compliance
Health and safety

Commercial
Fleet tracking, telematics services

Australia

Compliance
Health and safety

Commercial
Fleet tracking, telematics services

Oregon

Tax
Weight Mile Tax (WMT)

Compliance
Safety, HOS

Commercial
Fleet tracking, telematics services

North America

Tax
International Fuel Tax (IFTA)

Compliance
Electronic Logging Device (ELD) / HOS

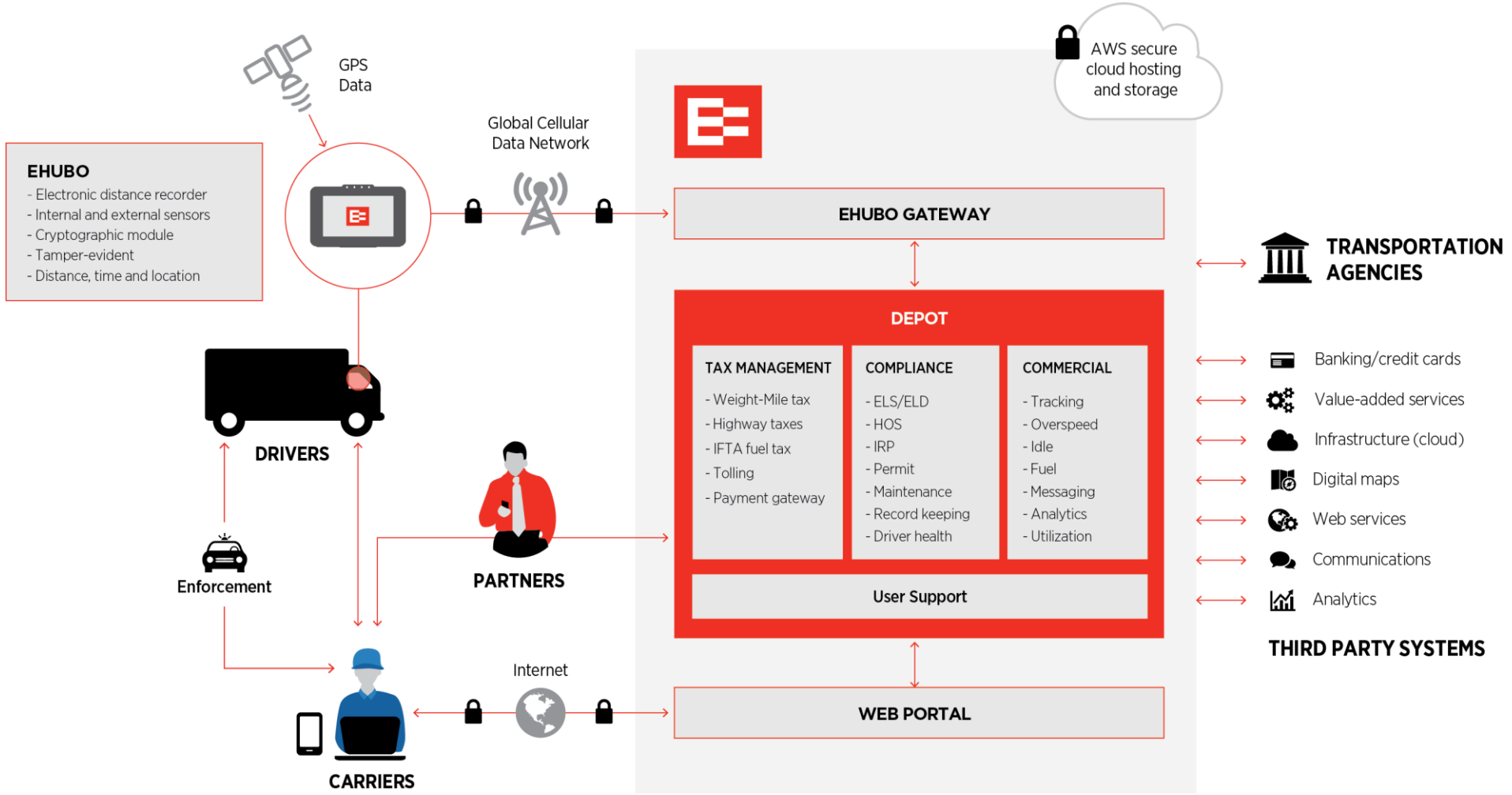
Commercial
Fleet tracking, telematics services

The EROAD Technology Platform

EROAD's end-to-end technology platform consists of:

1. Electronic distance recorder called Ehubo (in-vehicle hardware)
2. Driver application and logbook application (mobile software)
3. Cloud based, highly available, SaaS platform called Depot
4. Online applications portal (SaaS)
5. Bank grade payment gateway
6. A regulatory interface

The EROAD Technology Platform



The EROAD Technology Platform

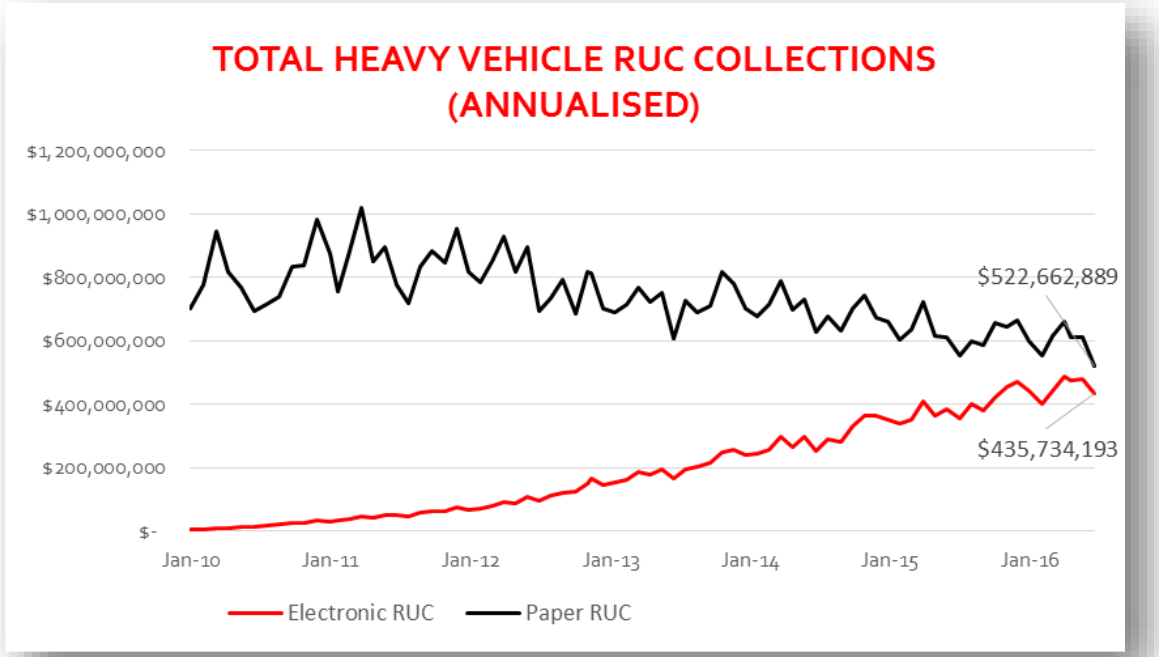
- EROAD's in-vehicle hardware, the Ehubo, measures distance travelled with a high degree of accuracy, and captures location, route, driver behaviour and operational data.

- The Ehubo records, stores and continuously transmits encrypted data to the web-based application called Depot, where users access information and services online

- The tax application displays and reports distance and location travelled by vehicles, calculates taxes owed and generates supporting records. Tax reports are automatically generated in the correct format. The application also supports online tax filing where available.

New Zealand – Introduction of Electronic Road User Charges

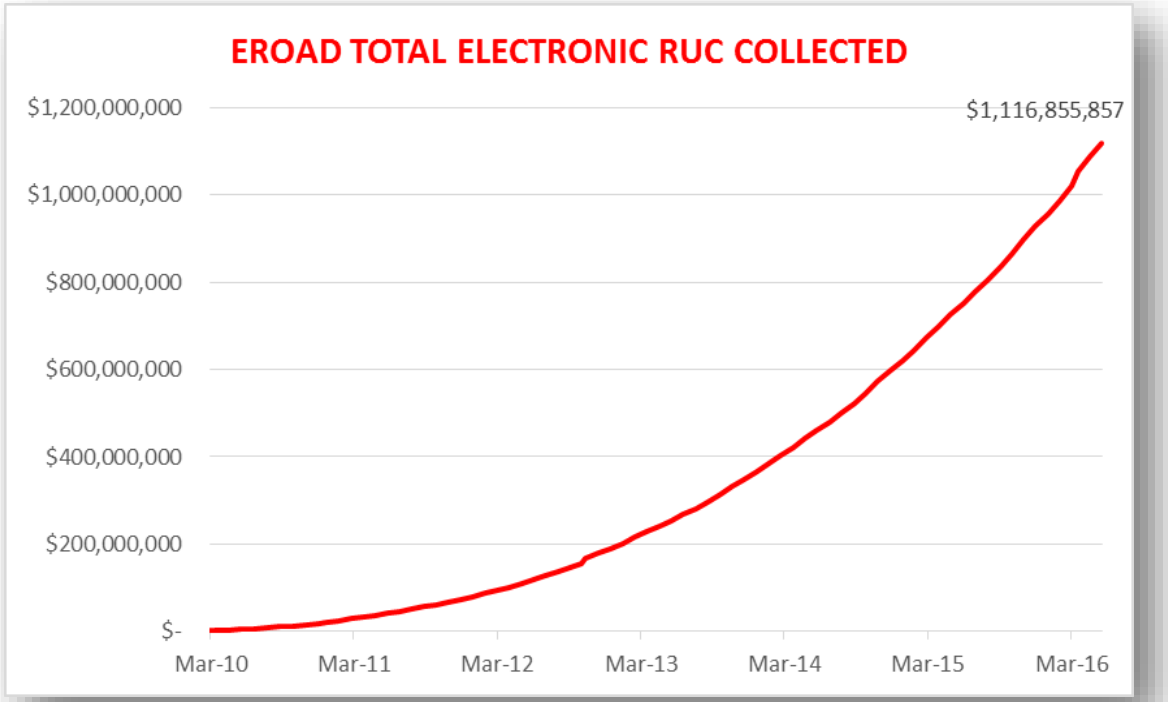
- Electronic RUC was launched by EROAD in February 2010.
- ERUC is now 45% of Total Heavy Vehicle RUC.
- Manual RUC dropped from $900 million to $520 million.
- Growth opportunities remain strong with $520 million of Heavy Vehicle RUC still collected manually.



Source : New Zealand Transport Agency

EROAD in New Zealand

- To 31 March 2016 EROAD has collected **$1.1 Billion** in RUC for NZTA.
- Continuing to grow in both **Heavy and Light** vehicles.
- **32,452** contracted units, at March 2016
- **50% growth rate** per annum
- 97% customer retention rate
- **RUC** still an important driver of demand
- **Health and Safety** the "new driver".



Source : New Zealand Transport Agency

ERUC delivers downstream benefits

ERUC delivers downstream benefits

- Beyond the primary direct benefits of an electronic road use charge system in terms of enabling tax reporting, there are secondary downstream benefits flowing from the:
  - Ability to deliver new tax, compliance and commercial services to the platform.
  - Accumulated unique data collected that can be used to deliver a wide range of new services and analytics insights.

IMPORTANT to note that the carrier owns their own data. EROAD guarantees confidentiality of individual carrier data and only makes anonymized summary data available for users other than motor carriers under strict terms of data use and retention.

New Zealand – Health and Safety Reform – April 2016

1. Health and Safety at Work Act (HSWA) introduced 4th April 2016
   - Defines motor vehicle as a **workplace**
   - Requires employer to provide a **safe** workplace
   - Requires employer to **manage and monitor** driver behavior and vehicle safety in the workplace
   - Employer must take all **reasonable and practical** steps
   - *Note : **Fatigue and speed** are two practical areas of focus of corporates' health and safety managers*

2. EROAD was able to provide a suite of Health & Safety Products to supports its customer with these new compliance obligations. These ranged from an electronic logbook and driver management to ability to share

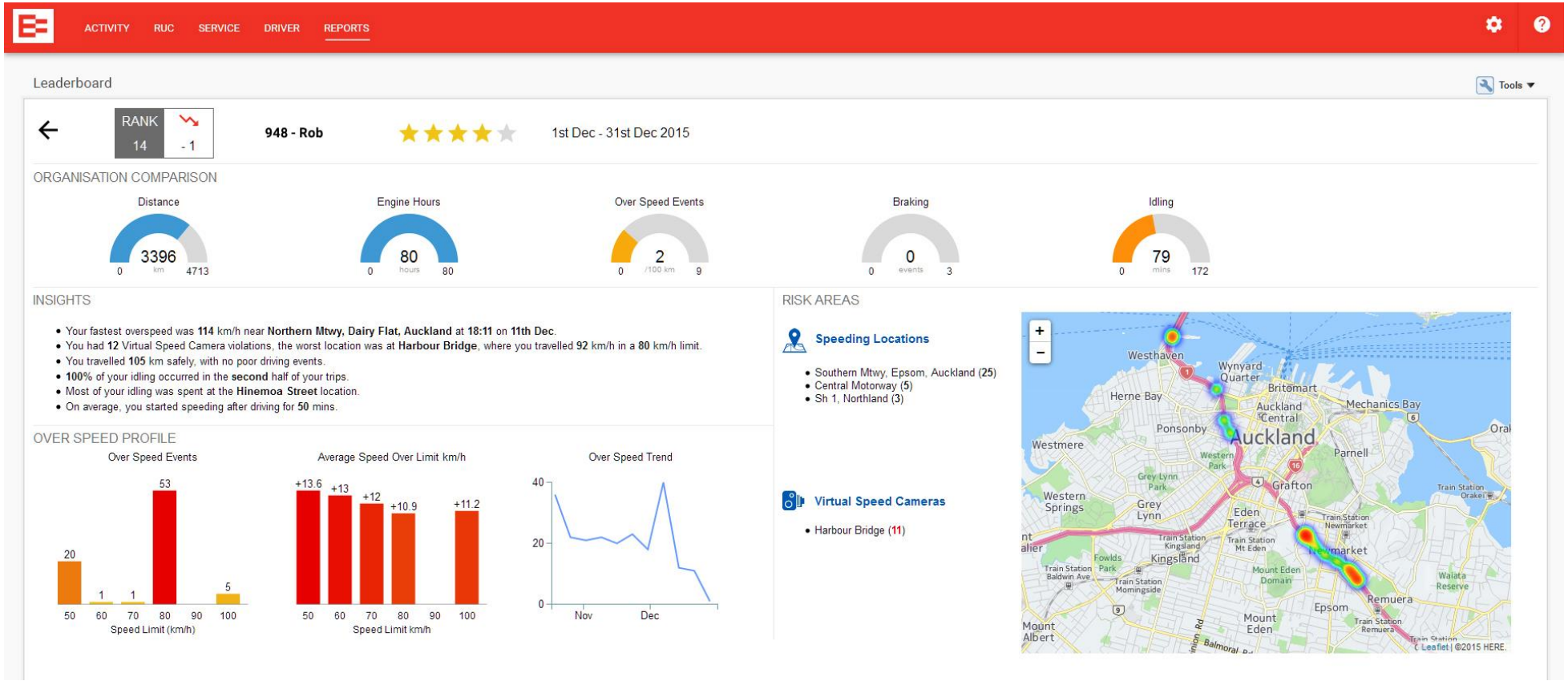
Telematics is a reasonable and practical way to manage and monitor driver and vehicle safety





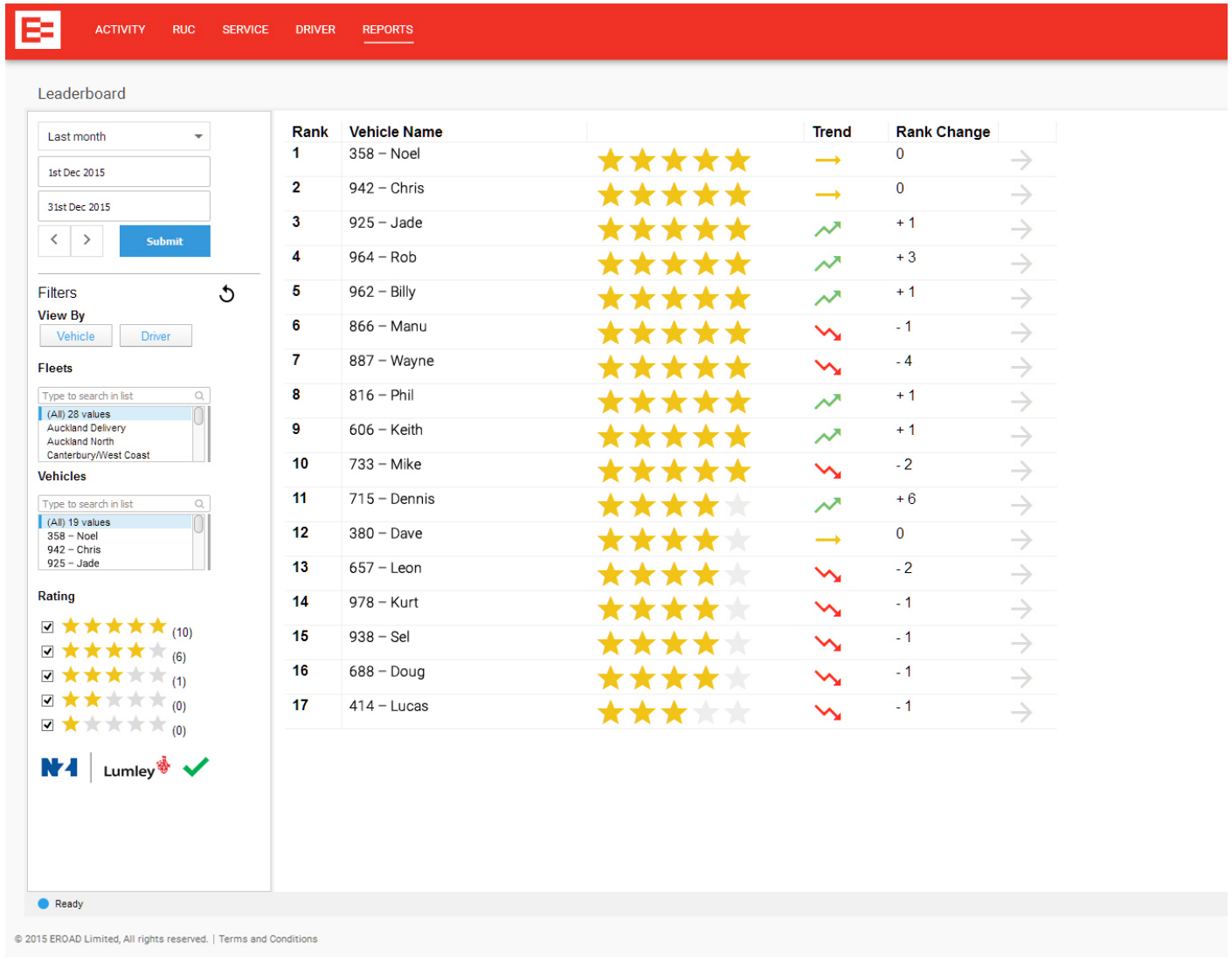
New Zealand - Health and Safety

- The day the Health and Safety reform became law in April this year EROAD was able to provide its suite of H&S products to 34,000 vehicles across New Zealand. The power of the platform.

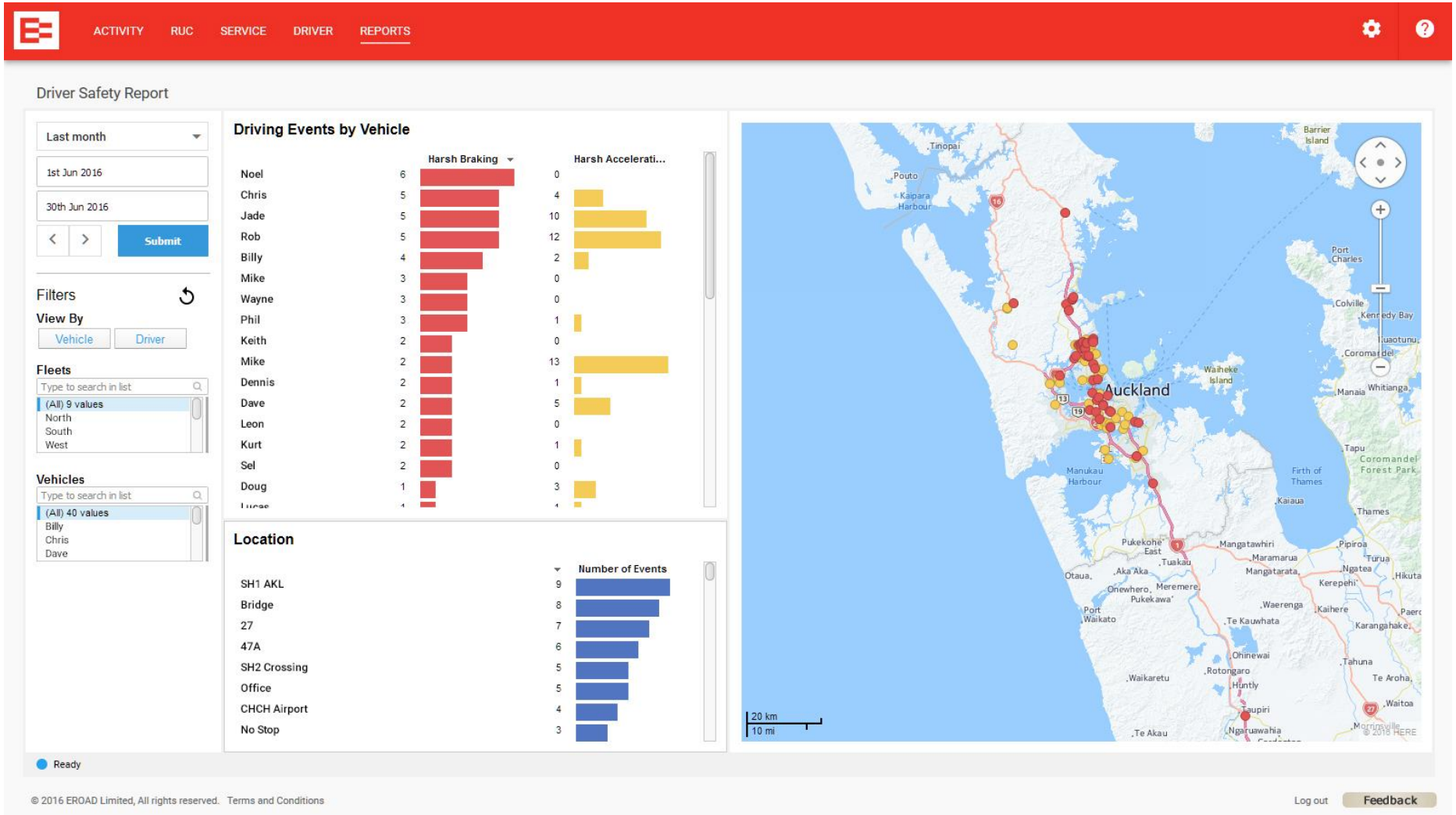


New Zealand - Health and Safety

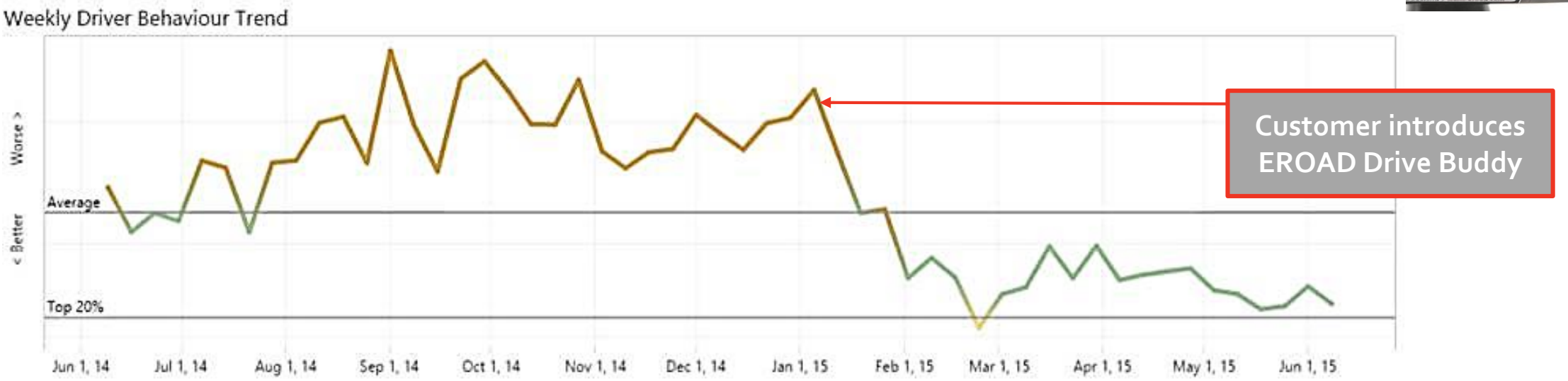
- Collaboration with NZI Lumley: Safe Driving Rewards Programme.
- Star rating compares drivers with EROAD driving population.
- If a company is in the top 25% of EROAD customers for driving behaviour and is also a customer of NZI Lumley, it may qualify for excess waiver in the event of an accident.



New Zealand – Health and Safety



Health & Safety : Driver Behaviour - *helping drive safety*



ERUC delivers downstream benefits – power in the data

- The data collected is order to calculate and manage RUC includes;
  - Distance, time, location, RUC class, industry classifications, weight (nominated or GMW).

- Data collected is also collected to provide Health & Safety and commercial service;
  - Speeding, harsh braking, cornering and acceleration, geo-fence situational activity.

- From this data origination and destination travel, routes travelled and travel times can be calculated.

- EROAD has developed data sharing protocols with BECA in New Zealand to unlock the value of the data while ensuring the confidentiality of customers.

- EROAD provide anonymized data to BECA, BECA provide insights to government to improve capability, safety ad productivity of the transport network.

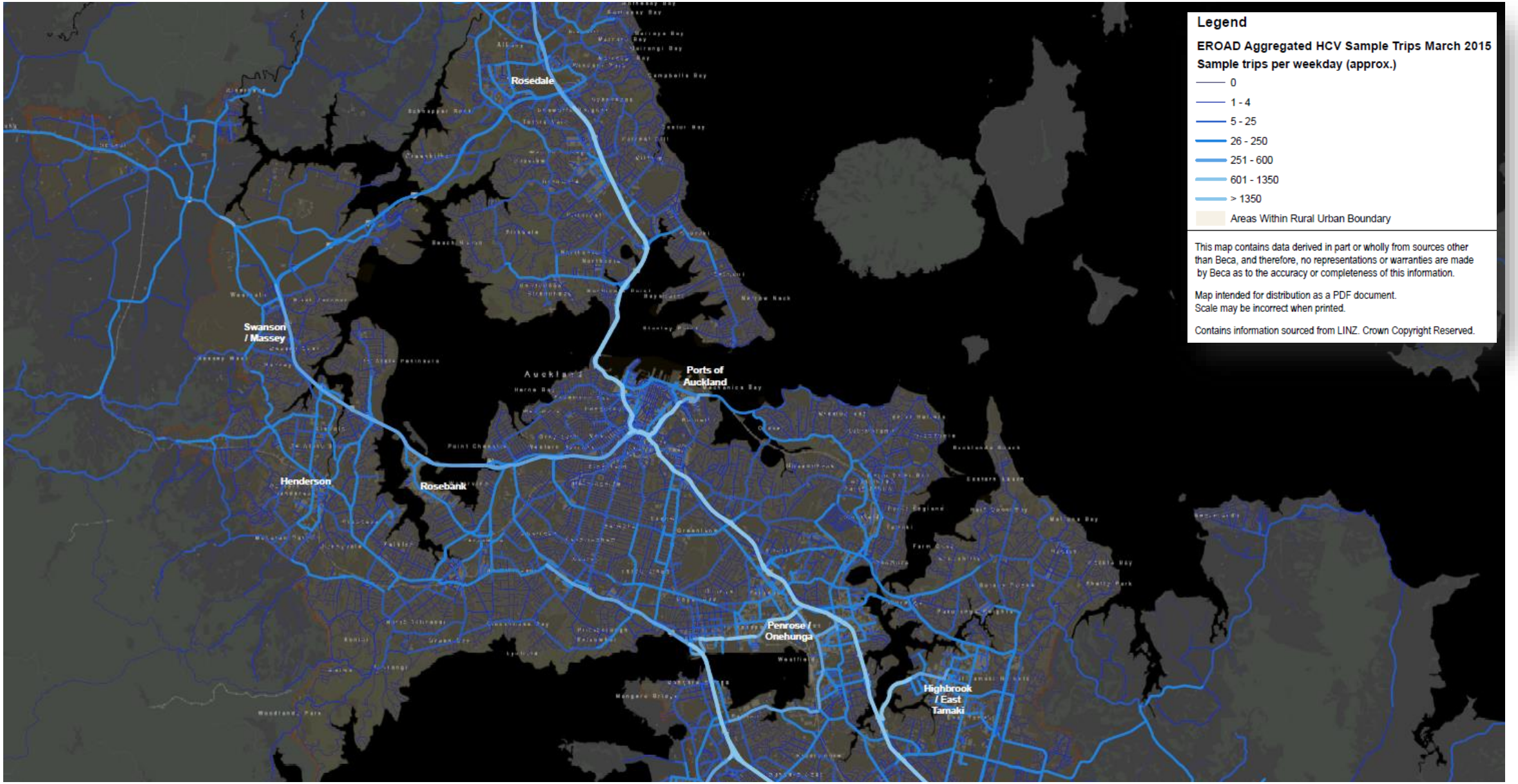
IMPORTANT to note that the carrier owns their own data and EROAD guarantees confidentiality of individual carrier data and only makes anonymized summary data available for users other than motor carriers under strict terms of data use and retention.

ERUC delivers downstream benefits – power in the data

The data can be used to:

- Monitor congestion and determine its economic impact
- Freight movements can predict regional GDP and economic downturn
- Predict freight transit times
- Identify possible new toll route
- Calibrate economic models
- Improve safety of road network
- Enhance insurance underwriting
- Substantiate road investments – demonstrate forecasted cost benefits were achieved.
- Lower greenhouse gas emissions reporting

New uses continue to evolve and are only limited by one's imagination.



Map Scale @ A0: 1:70,000

2,800 1,400 0 2,800 Metres

N

Revision	Author	Verified	Approved	Date
1	SCP	AYF	CV	09/05/2016

Freight Network Demand Study

Weekday EROAD Aggregated HCV Sample Trip Data March 2015 - Heat Map

Auckland Urban Area

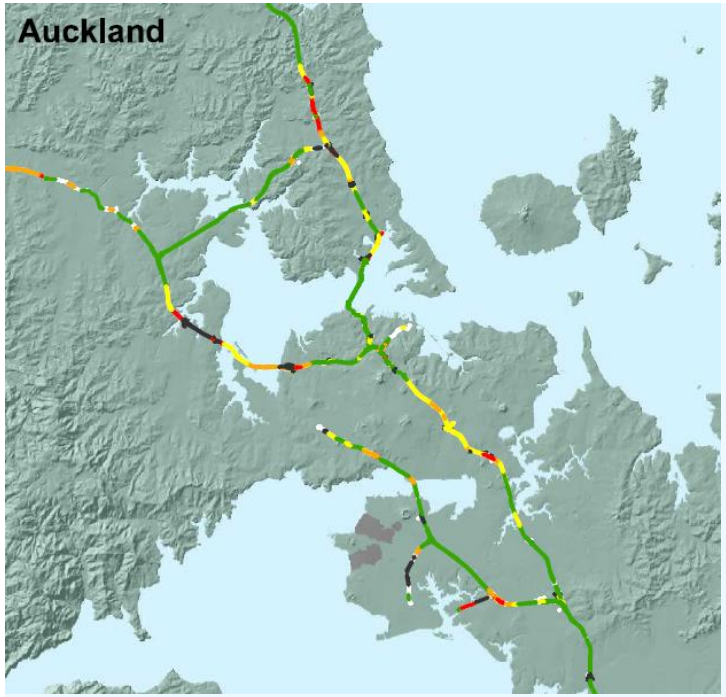
Client: Auckland Transport

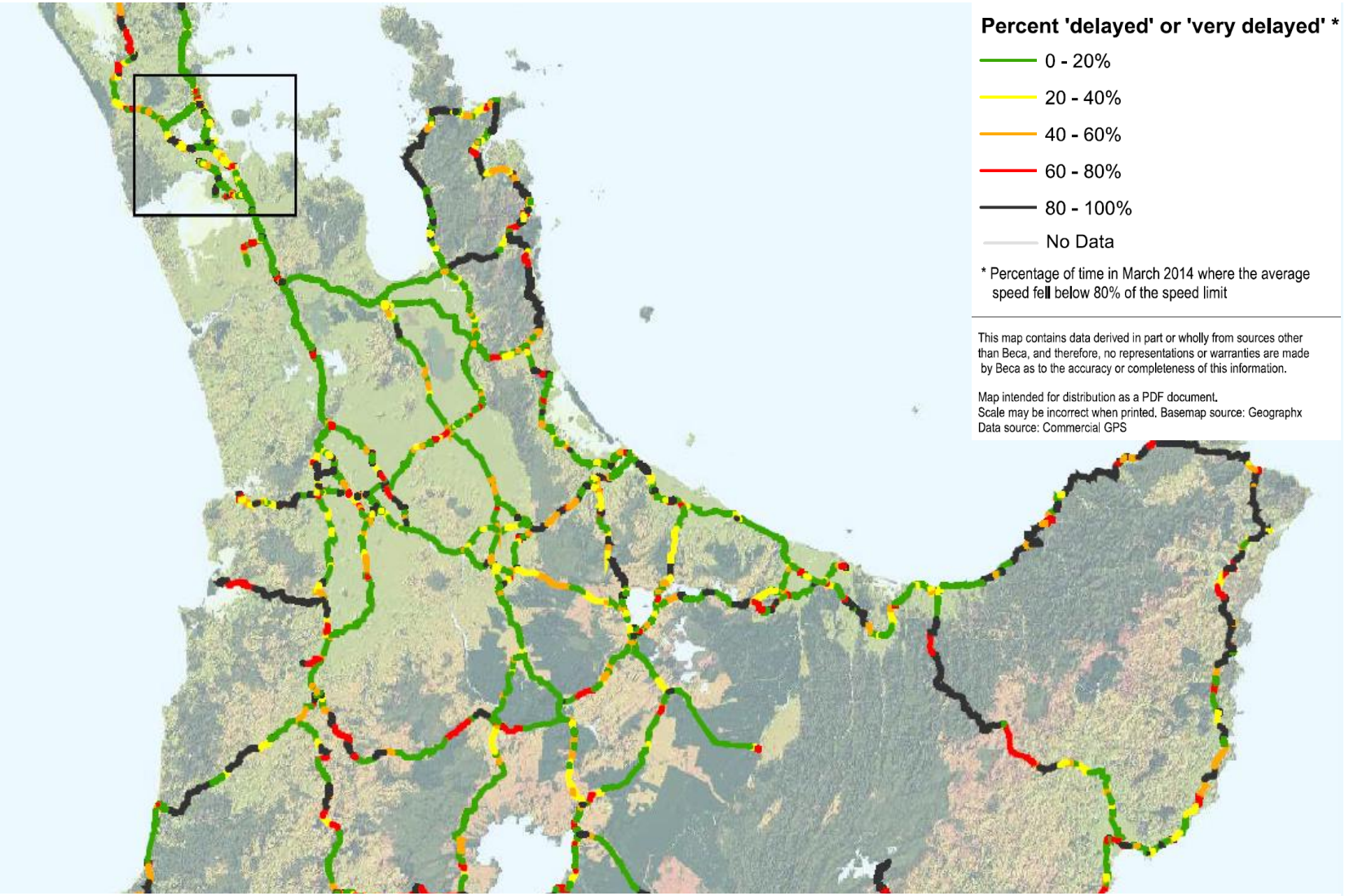
Beca

Discipline: GIS

Project: AT Analytics Queries

Drawing No: GIS-31811379-14





Percent 'delayed' or 'very delayed' *

- 0 - 20%
- 20 - 40%
- 40 - 60%
- 60 - 80%
- 80 - 100%
- No Data

* Percentage of time in March 2014 where the average speed fell below 80% of the speed limit

Map intended for distribution as a PDF document.
Scale may be incorrect when printed. Basemap source: Geographx
Data source: Commercial GPS

Map Scale @ A1: 1:1,900,000

0 37.5 75 150
Kilometres

Revision	Author	Verified	Approved	Date
1	HEC	OK	GDN	21/05/2015

Title:

Delayed or Very Delayed trips

All Curvature

Client: **Ministry of Transport**

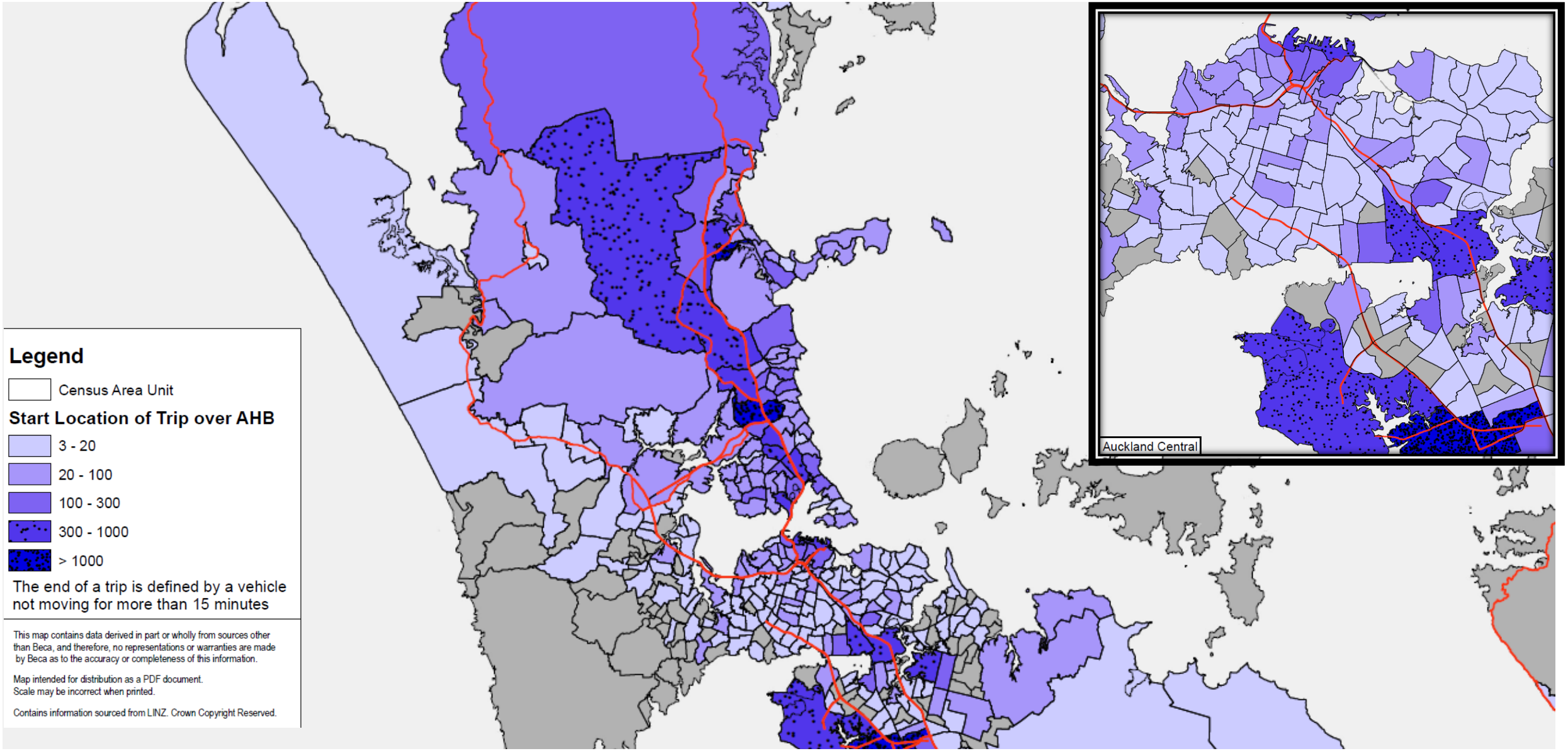
Project: **Freight Congestion Study**

N

Beca

Discipline: **GIS**

Drawing No: **GIS-3819701-03**



Legend

Census Area Unit

Start Location of Trip over AHB

- 3 - 20
- 20 - 100
- 100 - 300
- 300 - 1000
- > 1000

The end of a trip is defined by a vehicle not moving for more than 15 minutes

Map Scale @ A3: 1:500,000

0 2.5 5 10 15

kilometers

Revision	Author	Verified	Approved	Date
1	MG	RJL	GN	1/09/15

Title:

Start Location for Freight travelling over the AHB

Client: Ministry of Transport

Project: Freight Studies 2015

N

Beca

Discipline: GIS

Drawing No: GIS-3819701-19

THANK YOU

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