

Canterbury Mobile Blackspots

Final Report

Prepared for Environment Canterbury (on behalf of the Canterbury Mayoral Forum)

Prepared by Beca Limited

30 March 2021



Revision History

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on behalf of	Beca Limited		

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Project Purpose

This project was initiated by the Mayoral Forum which is made up of the Chair of Environment Canterbury and the Mayors of the 10 territorial authorities in Canterbury.

In our increasingly connected world, having access to mobile coverage in as many areas as possible is becoming enormously valuable and in some cases even essential for day to day operations. The Mayoral Forum recognises this significance and wanted to better understand the potential economic and social benefits of reducing mobile blackspots on improved productivity and logistics, safety and emergency operations and the tourism sector. Using this information alongside the ground testing process the final task is to advocate targeted investment in mobile telecommunications infrastructure where it is likely to have the greatest impact on economic and social development in the region.

The purpose of this project was to test current voice mobile coverage data by completing on the ground field testing on Canterbury state highways and using this data to gain an understanding of state highway mobile blackspot locations. Once these mobile blackspot locations have been identified, then working with a group of stakeholders to define and prioritise them. The project also sought to provide some validation of mobile coverage data that already exists to understand how well this data matched the ground tested data to help inform how it can be used to undertake wider analysis in the future.

Methodology

This project involved regional council and territorial authority field staff crowdsourcing drive test data, which was collected across Canterbury State highways, capturing mobile signal service levels. This data was used together with other data gathered during the project to identify road segments as mobile blackspots. Stakeholder engagement was then undertaken to confirm these locations and determine the priority of these sections.

The methodology consists of the following steps:

1. Desktop study and data collation
2. Capture of anecdotal information from stakeholders
3. Field data collection using NetMonitor mobile application
4. Identification of mobile blackspots
5. Matrix of social and economic datasets to assist with prioritisation
6. Stakeholder engagement workshop

1. Desktop Study and Data Collation:

The desktop study explored the datasets that were already available which could help inform early prioritisation of areas, provide a contextual picture of coverage, and be used as a basis for testing the driven data against. As part of the study CIP were contacted to find out what regionally specific mobile coverage data they had, including drive test data, planned tower build locations and the proposed coverage of these towers. Available mobile coverage data was also gathered from telecommunications companies.

2. Capture of Anecdotal Mobile Blackspot Information:

A list of stakeholders was provided by the Mayoral Forum including contacts from each of the territorial authorities, rural post, milk companies, emergency management teams and the NZ Trucking association. A full list of stakeholders can be found in Appendix B. Stakeholders were provided with a crowdsourcing web map (figure 1) which allowed them to identify locations within the region that they understood to be mobile blackspots. It also offered the opportunity for the stakeholders to provide feedback on how their business was impacted by the lack of coverage.

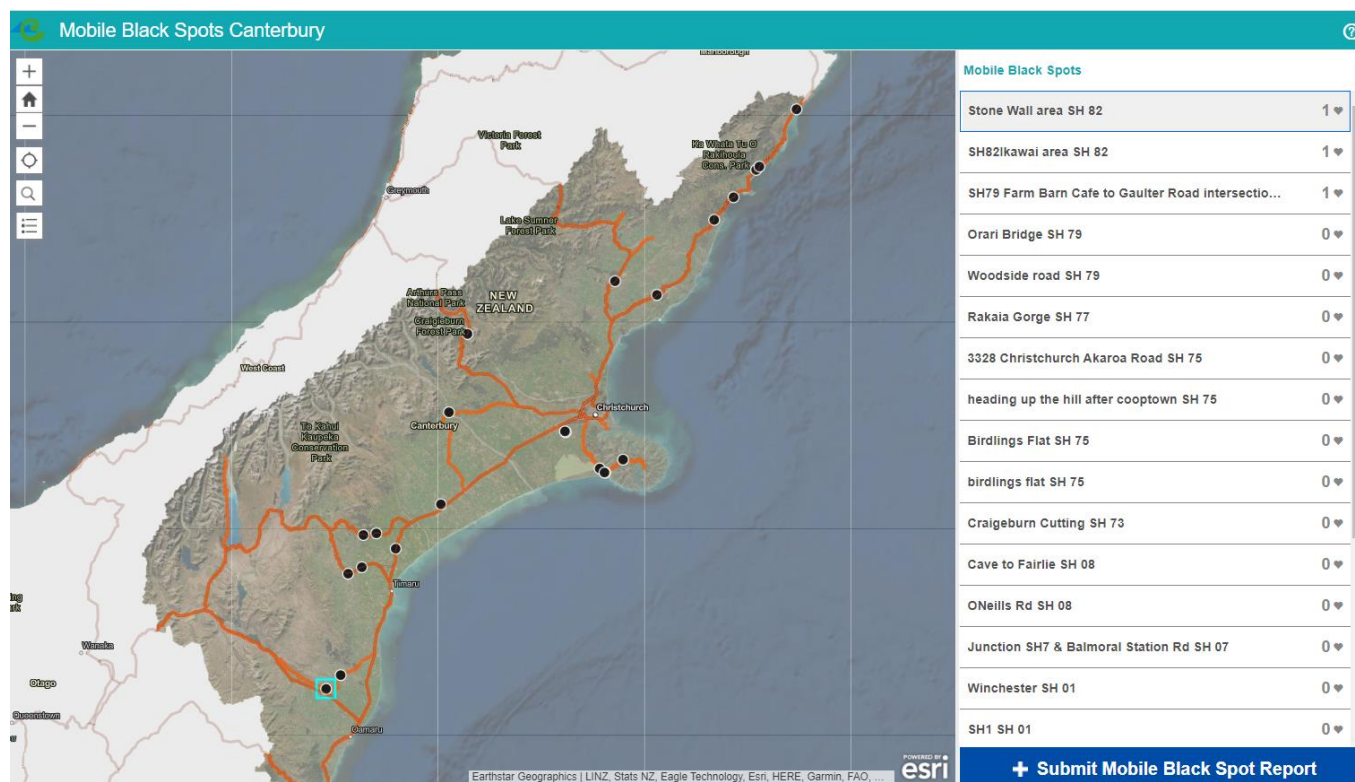


Figure 1 Stakeholder identified mobile blackspots

3. Mobile Data Collection and Processing

The Mayoral Forum engaged field staff from Environment Canterbury and other territorial authorities in the region to capture mobile signal data. A drive tested dataset was collected and built to support existing evidence of blackspots across Canterbury state highways. An application called “NetMonitor Cell Signal Logging Lite” (NetMonitor) was used to capture signal service levels as received from towers to a mobile device.

Instructions and guidance on how to use the application can be found in Appendix A. Processing of the resulting data captured included converting the text files into a geospatial format, testing each data point for the required service level, and distinguishing data collected on the state highway network.

The required service levels used on this project were supplied by the Rural Connectivity Group (RCG) who are working with CIP to build state highway mobile voice coverage across the country. Where the received signal strength indication (rssi) is greater than or equal to -123 dBm (decibel-milliwatts) as detected inside the vehicle the service level for mobile voice calls is met, as shown in Figure 2.

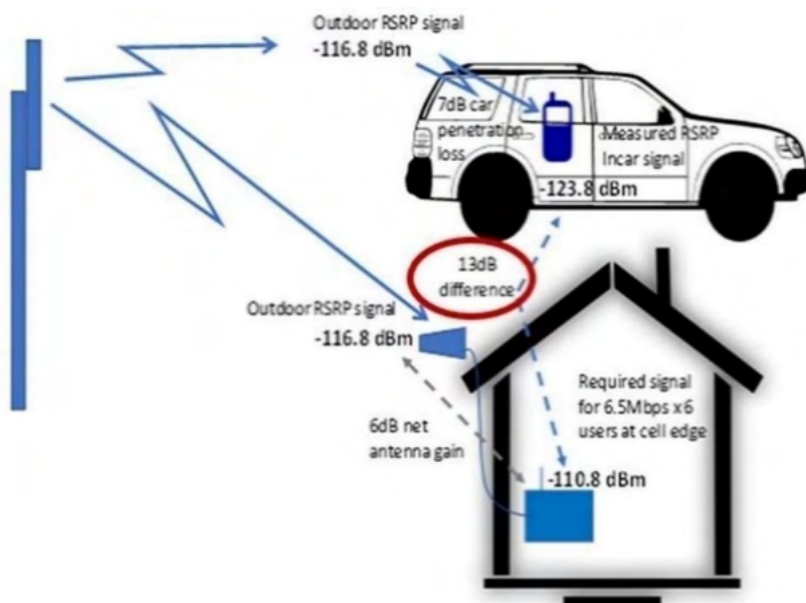


Figure 2 Link diagram showing mobile signal strength levels (dBm) in a vehicle. As provided by the Rural Connectivity Group to Crown Infrastructure Partners.

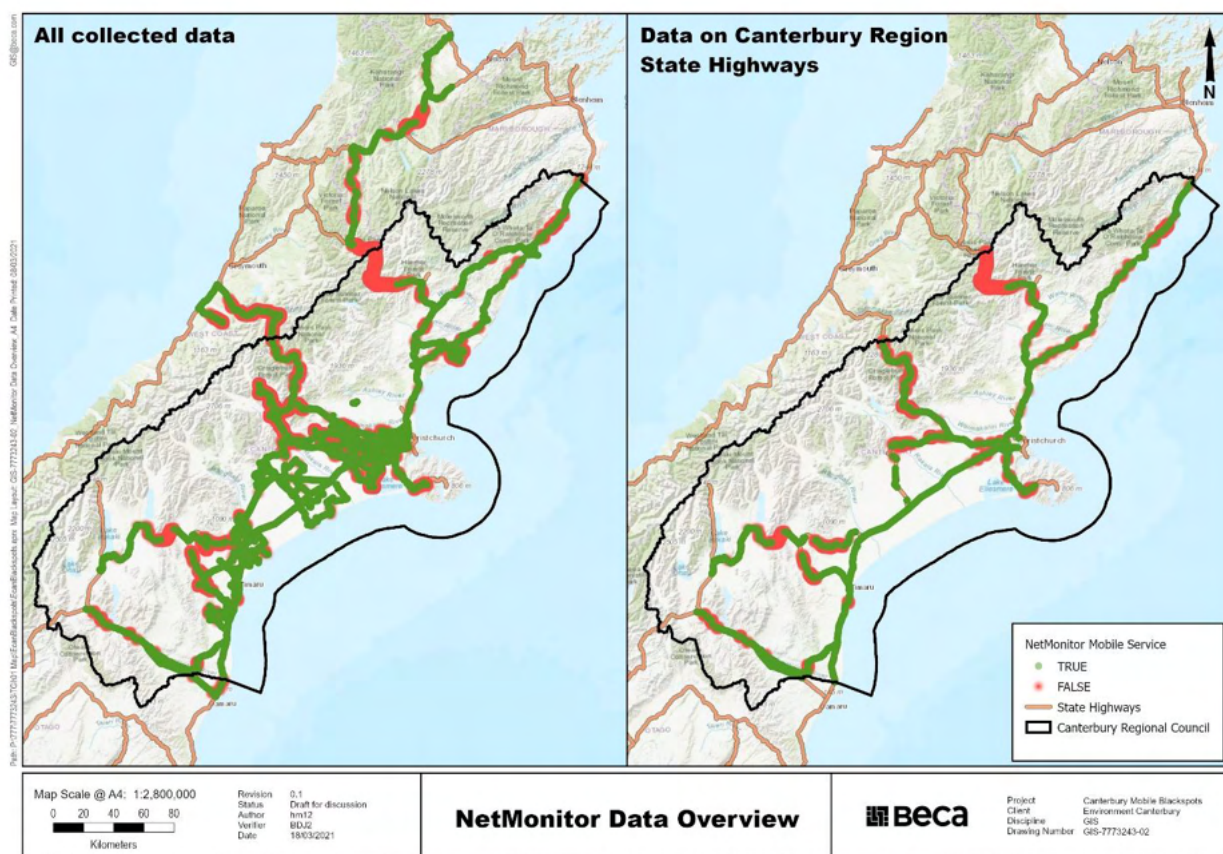


Figure 3 NetMonitor data received and clipped to Canterbury state highway

Figure 3 shows the coverage of NetMonitor data that was received. While this coverage is not complete and exhaustive, it does provide direct and measurable observation of mobile service levels across Canterbury.

4. Mobile Blackspot Identification

For this project a mobile blackspot has been defined as any section of state highway that does not meet the required service level for voice calls, as recorded by NetMonitor, along a section of state highway at least 400m long. This is in keeping with the commonly used 400m distance in transport accessibility studies on walking and cycling services and is based on the assumption that in an emergency most people should be able to walk that 400m in a reasonable time to call for help (see note below).

Following the stakeholder engagement process, the mobile blackspot definition was adjusted to include 'low service levels' in places that coincide with anecdotal evidence of service loss, this includes rssi values between -123 dBm and -113 dBm. An example of this can be seen in Winchester (figure 4 below).

Note: a 400m distance is commonly used in transport accessibility studies for cycling and walking services. See NZTA report (<https://www.nzta.govt.nz/assets/consultation/guidelines-for-public-transport-infrastructure/docs/guidelines-pt-infrastructure-draft.pdf>).

In some instances, mobile blackspots have been categorised as No Signal - One Direction. This is where the rssi value has been less than the -123 dBm threshold while the vehicle was driving in one direction but when a vehicle has driven the opposite direction the phone has not lost connectivity.

Along some segments of state highway, GPS connectivity has been lost while data has been collected, this has meant that no location data has been returned in the processing. As mobile service is not reliant on a GPS satellite connection, data continued to be captured at regular intervals while driving these areas and we have confirmed that these locations are all categorised as mobile blackspots due to the rssi values being less than the -123dBm threshold.

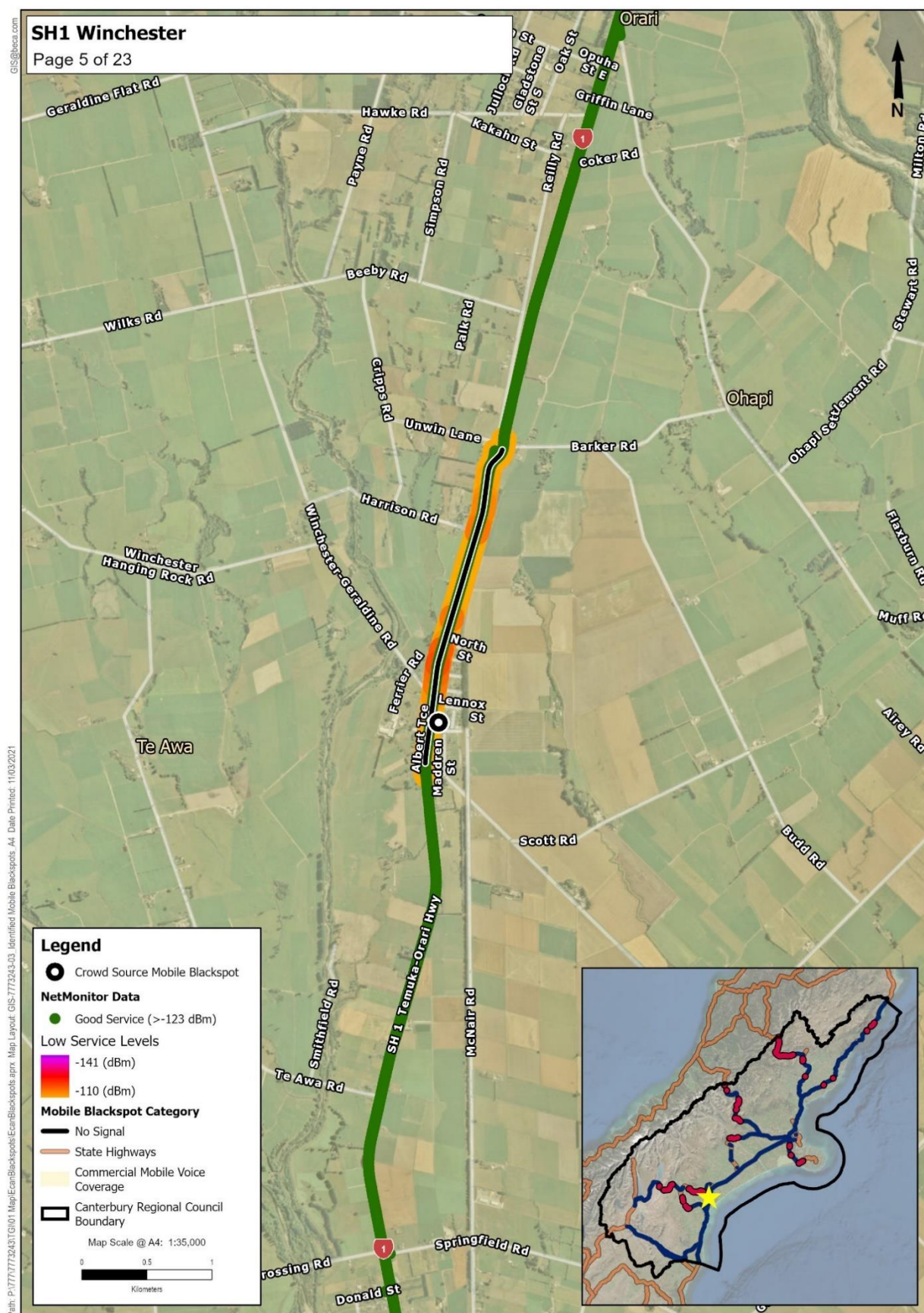


Figure 4 Winchester Mobile Blackspot

5. Mobile Blackspot Priority Analysis

Each mobile blackspot has been analysed against the datasets listed in table 1 to capture the attributes of the layer against the blackspot. These metrics were used to understand some of the criteria regarding the social and economic effects of mobile black spots including how many cars are using the state highway, population numbers affected and number of emergency call outs along the segment.

Table 1 Priority Matrix Inputs

Dataset Name	Description	Source	Open data (if available)
Segment Length	The distance of each blackspot segment	Mobile blackspot identification output	
Average annual daily traffic (AADT)	Median AADT of segments taken as the value	Waka Kotahi NZ Transport Agency	Weblink
Heavy vehicles AADT	Median AADT of segments taken as the value	Waka Kotahi NZ Transport Agency	Weblink
Usual Resident Population (2018)	Intersect on Statistical Area 2 boundary. Where more than one area intersects a segment the population with largest area is selected.	Stats NZ 2018 Census by Statistical Area 2 for the Canterbury Region	Weblink
Crash Data	Selected within 50m radius of continuous blackspot. Sum of each crash type <ul style="list-style-type: none"> - Fatal - Serious - Minor 	Waka Kotahi NZ Transport Agency	Weblink
Fire and Emergency NZ Incident Data	This incident record contains point locations for call out incidents, including a time and date alongside a categorised incident type. Provided by Chris Munro, the Operations Manager for the Southern Communications Centre.	Fire and Emergency NZ (FENZ)	Private dataset
Townships	Townships that a mobile blackspot goes through.	Land information New Zealand	Weblink

During the stakeholder engagement workshops more information was added to these blackspot segments such as if the section has heavy tourist dependence.

Stakeholder Engagement Workshop Feedback Summary

The project was introduced to key stakeholders identified by the Mayoral Forum via an email on 17 June 2020. Once the drive test data was predominantly collected, a workshop was held with the stakeholders to interrogate mobile blackspot data identified in the process described above. The workshop was held on Friday 12th February 2021 and was attended by staff from the below organisations. This was a subset of the original list of stakeholders as identified in Appendix B.

Ashburton District Council

Christchurch City Council
 Hurunui District Council
 Timaru District Council
 Waitaki District Council
 St Johns
 Fire and Emergency NZ

After a general introduction to the project, attendees were given the opportunity to outline their key drivers and the impacts of mobile blackspots as shown in Figure 5 below.

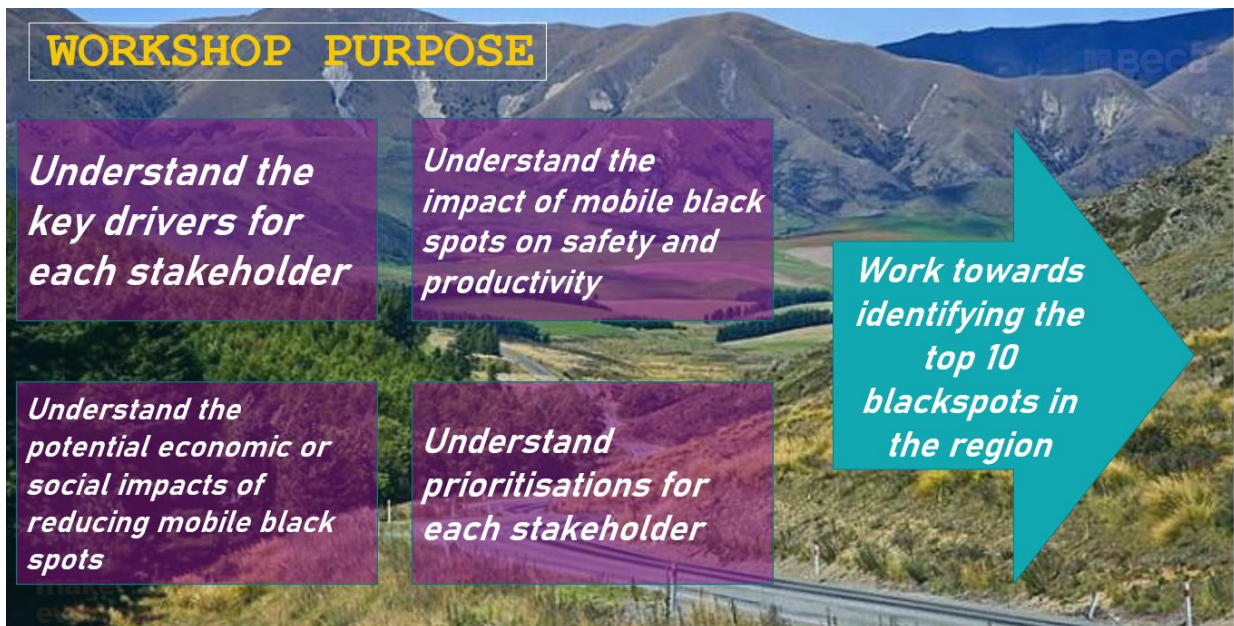


Figure 5 Workshop questions put to stakeholders

Key Drivers

St John and FENZ were principally concerned with reducing response time to incidents either through improving the speed that callers could connect to emergency services or improved accuracy of Enhanced Caller Location technology which pinpoints where an emergency call is being made from by providing coordinates (therefore, if an incident occurs in a mobile black spot and someone has to travel away from the incident to get signal or call from a landline, time is added to the response while the incident site is located). They were also concerned about improving the safety for their staff, particularly where they have only one paramedic in a paramedic crew. Further to this, advice on how to respond to a situation is provided from the call centre to paramedics and this cannot be undertaken where within a blackspot so improved coverage improves standard of care.

The territorial authorities were concerned with community safety including:

- Improved coverage of Civil Defence Tools (bulk messaging regarding natural disasters and events such as Covid19 outbreaks)
- Safety of their staff when out on site or travelling around their district
- Supporting better access to *555 calls and decreasing police response times
- Community connectivity and the flow on effects on wellbeing and health
- Improving the ability to gather information about assets and incidents across the region (i.e. water quality data collection and integration, reporting of maintenance / general complaints, wandering stock)
- More consistent and reliable access to the internet to support tourism and leisure activities

Impact on Productivity:

Councils currently rely on telemetry equipment that uses radio technology for communication. This equipment comes at a significant cost so being able to explore and use alternative methods with improved cell phone coverage could save Council's money.

The emergency call centre now uses Enhanced Caller Location technology that locates where a call has been made from via GPS. This improves the ability of emergency staff to get to an incident quickly as 80% of calls come from cell phones.

Civil Defence relies on bulk emergency messaging services to distribute key urgent communications i.e. emergency event evacuations.

Potential Social and economic impacts of reducing

It is common for farmers to use monitoring technology that uses cell phone coverage to manage farms. Proving more uniform cell phone coverage levels the playing field for farmers across the Region.

Improved cell phone coverage allows people to access to internet and data without having a monthly plan and via a range of devices. This enables and improves social connectivity without the same financial outlay.

The Governments three waters reform will likely require better use of data. Improved cell phone coverage will improve integration of collected data with territorial authority's data sources, providing better and faster updates.

Following the exploration of the key drivers and impacts a prioritised list of mobile blackspot was discussed in further detail and input from each attendee was gathered. The blackspot assessment provided a number of insights, including some specific additional ones provided by St John and Fire and Emergency NZ (FENZ). This discussion is captured below in Table 2.

Table 2 Workshop feedback

Black Spot State Highway and Location	Category	Length (km)	FENZ Incidents (All)	Traffic AADT	Heavy Transport	Total Crash Count	Population (2018)	Tourist Route	Discussion	CIP Built and Planned Coverage	Priority
SH1 at Domett Rd	No Signal - One Direction	0.30	0	3115	716	3	1323	Yes	High main trunk route tourism and freight.		Low
SH1 at Greta Rd	No Signal - One Direction	0.53	1	3115	716	4	1242	Yes	High main trunk route tourism and freight.		Low
SH1 Kaikoura Coast at Mangamaunu	No Signal - One Direction	1.03	7	3097	681	22	1689	Yes	High main trunk route tourism and freight. Crash risks	Segments of identified SH mobile blackspots by CIP have current bids for service to be built by the RCG	Medium
SH1 Kaikoura Coast Half Moon Bay to Okiwi Bay	No Signal	0.47	0	3097	681	21	1689	Yes	Blackspots on inside of corners where there is mobile coverage "shadow". Major events in this region i.e. Kaikōura earthquake. During this time, FENZ was required to have cell phones from 3 providers. Technically challenging to fix. High main trunk route for tourists and trucking firms. Crash risks	Segments of identified SH mobile blackspots by CIP have current bids for service to be built by the RCG	High
	No Signal	1.03	1	3097	681	19	1689	Yes			
	No Signal	0.48	4	3097	681	20	1689	Yes			
	No Signal	0.77	3	3097	681	2	1689	Yes			
SH1 Winchester	No Signal	2.50	14	9069	1542	55	1761	Yes	Small businesses nearby - but for Council it is the inability to make contact when reviewing problems and projects in the area. High FENZ incident count.		Medium

Black Spot State Highway and Location	Category	Length (km)	FENZ Incidents (All)	Traffic AADT	Heavy Transport	Total Crash Count	Population (2018)	Tourist Route	Discussion	CIP Built and Planned Coverage	Priority
SH7 Lewis Pass	No Signal	45.91	78	1317	237	319	261	Yes	A lot of fires here in dry season Variable weather St John attend a lot of non-crash related instances events here		High
	No Signal	0.67	3	1317	237	12	261	Yes	High traffic route, lots of tramping tracks, huts, hunting so would be worth discussing with LandSAR teams. Also, a very long mobile blackspot		
SH7 at Culverdon Rd	No Signal - One Direction	0.59	0	3683	589	2	2223	Yes	As above		Medium
SH7 at Marble Point	No Signal	4.08	8	3005	451	39	2223	Yes	As above	Segments of identified SH mobile blackspots by CIP have current bids for service to be built by the RCG	Medium
SH73 Arthurs Pass	No Signal - One Direction	0.46	1	1639	328	5	159	Yes		RCG have recently built towers in this region to provide mobile voice coverage as part of CIPs Mobile blackspot fund	High
	No Signal - One Direction	0.80	5	1486	193	0	159	Yes			
SH73 at Craigieburn Cutting	No Signal	2.17	4	2013	382	6	159	Yes	St John – identify this area as patchy Busy location for FENZ with some major fires here New cell sites at Castle Hill and Cass but these areas lie between		High
	No Signal	3.19	2	2013	382	14	159	Yes			
	No Signal - One Direction	5.24	1	2013	382	9	159	Yes			

Black Spot State Highway and Location	Category	Length (km)	FENZ Incidents (All)	Traffic AADT	Heavy Transport	Total Crash Count	Population (2018)	Tourist Route	Discussion	CIP Built and Planned Coverage	Priority
SH73 Porters Pass	No Signal	3.28	2	1978	277	24	1164	Yes	Steep winding road with significant ice issues during winter (requires speed restrictions due to the danger). A large number of dangerous overtaking maneuvers happen here due to no ability to pass trucks going uphill.		High
	No Signal	2.00	3	1978	277	19	159	Yes			
	No Signal	2.49	3	1978	277	20	159	Yes			
SH75 at Tai Tapu Rd	No Signal	1.71	5	6794	272	7	1701	Yes	This blackspot is more of an inconvenience than Catons Bay. There are more lifestylers, more commuters. Proximity to Christchurch. Very high AADT values and population.		Medium
SH75 Birdlings Flat & Catons Bay	No Signal	1.26	5	3060	214	7	1168	Yes	Catons Bay on Lake Wairewa / Forsyth is a freedom camp location. Not particularly isolated.	RCG have recently built towers in this region to provide mobile voice coverage as part of CIPs Mobile blackspot fund	Medium
	No Signal	0.82	3	3060	214	4	1167	Yes			
	No Signal	0.49	2	3060	214	6	1167	Yes			
SH75 Motukarara	No Signal	0.53	1	3837	307	3	612	Yes	Inconvenience because calls drop out but not a hazard, only a few houses here		Low
SH77 Rakaia Gorge	No Signal	0.80	1	1501	270	0	1449	Yes	Higher transport route in the winter to access Mt Hutt ski field		Medium
	No Signal	0.97	7	1501	270	6	1449	Yes			
	No Signal	2.19	10	1501	270	14	1449	Yes			

Black Spot State Highway and Location	Category	Length (km)	FENZ Incidents (All)	Traffic AADT	Heavy Transport	Total Crash Count	Population (2018)	Tourist Route	Discussion	CIP Built and Planned Coverage	Priority
SH77 Windwhistle	No Signal	0.55	0	1501	270	1	1194	No			Low
	No Signal	0.73	0	1501	270	3	1194	No			
SH79 Geraldine-Fairlie Highway	No Signal	3.11	4	2461	295	14	1368	Yes	Lower crash areas but high compared to the others Variable weather Slow & impatient drivers Lot of fire issues - time delay = bigger impact St Johns have flagged this area as an issue Airport to Mt Cook route = tourists that have just landed & first windy, hilly road they have encountered. No communications, also accident-prone road		High
	No Signal	0.87	1	2461	295	7	1368	Yes			
	No Signal	2.95	5	2461	295	17	1368	Yes			
SH79 Hilton	No Signal	0.92	1	2461	295	9	1368	Yes			Medium
	No Signal	4.38	11	2707	325	16	1368	Yes			
SH79 Opuha River Bridge	No Signal	0.42	2	2576	421	12	1368	Yes			Medium
	No Signal	0.39	2	2576	412	2	1347	Yes			
	No Signal	0.84	0	2464	295	1	1368	Yes			
SH8 Albury	No Signal - One Direction	5.42	2	3056	428	18	1347	No	Can't make contact while in this area; high volume freight and service road		Medium

Black Spot State Highway and Location	Category	Length (km)	FENZ Incidents (All)	Traffic AADT	Heavy Transport	Total Crash Count	Population (2018)	Tourist Route	Discussion	CIP Built and Planned Coverage	Priority
SH8 Cave	No Signal	6.75	5	2251	315	19	1347	No	Little township which is not serviced Likely increase of heavy traffic due to forestry. Water main suppliers located through there. No cell phone coverage limits effectiveness of FENZ pagers.		High
SH8 Burkes Pass	No Signal	12.60	20	3543	425	76	1347	Yes	Blackspot includes Burkes Pass community and businesses. Large black spot, high crash and incident rates.		High
	No Signal	0.88	4	3212	353	19	1182	Yes			
SH8 Whisky Cutting	No Signal	1.09	4	3212	353	6	1182	Yes	High tourist route so tourists are fresh off the plane although this doesn't translate to crashes. Straight, open, and wide here so good driving conditions however, flat, open, wide and windy makes it a fire hazard. A lot of fire incidences here		High

Priority Mobile Blackspots

The workshop attendees discussed their priorities and based on that discussion the following top ten priority areas have been selected –

1. SH7 Lewis Pass
2. SH8 at the Cave township
3. SH75 at Tai Tapu
4. SH73 Arthur's Pass
5. SH73 Craigieburn Cutting
6. SH73 Porters Pass
7. SH79 Geraldine - Fairlie highway
8. SH8 Burkes Pass
9. SH1 Kaikoura Coast Half Moon Bay to Okiwi Bay
10. SH77 Rakaia Gorge

The attendees also identified another route that has high priority for them, but it is not classified as a state highway and therefore sits outside of the parameters of this project. This mobile blackspot is the inland route / alternative state highway. This route is used when the state highway networks along the coast north to south are closed, for instance, after the Kaikōura earthquake.

A lot of discussion was centred on the locations where St Johns and FENZ attend numerous incidents which are not crash related and therefore, was not recorded in the data we held. FENZ offered to provide their incident report data so that it can be added to our data matrix analysis. This was added after the workshop and included in the final analysis.

Timaru District Council noted that there were mobile blackspots in their jurisdiction that were not mapped by the drive test data we received. They offered to have a summer intern undertake a drive test of the state highways in their area to close this data gap. This drive test data was provided and has been included in the final analysis. It did not include any additional mobile blackspots.

The attendees identified several organisations not in attendance that they felt would benefit from joining the conversation. These included –

Federated Farmers
Enterprise North Canterbury
Canterbury Waka Kotahi New Zealand Transport Agency
LandSAR

Conclusion

Mobile signal data was collected by engaging field staff from the regional council and territorial authorities to crowdsource using an app called NetMonitor. Although the drive test data collected within this project has not produced a complete dataset of drive testing on Canterbury state highways, the coverage area of collected data covers a large majority of state highways in Canterbury. The drive test data alone does not provide a robust dataset for scientific analysis but can be used in conjunction with other data collected during the project such as anecdotal information from stakeholders and mobile coverage maps available from telecommunications companies.

Some key indicators can be drawn from the data collected:

- The existing and planned mobile coverage data already available from telecommunications companies and CIP can be used generally at the macro level to determine the worst mobile blackspot areas.

- Using a combination of the data output from drive testing, anecdotal evidence and the telecommunications mobile coverage data can provide an understanding of the worst mobile blackspot areas and highlight areas for discussion or further testing if required.
- The data collected has provided suitable information for stakeholder engagement to take place allowing interpretation and prioritisation based on the contribution of the workshop attendees.

Some opportunities noted for future reference include:

- Increasing the drive test data collected. This could include:
 - Increasing the total coverage of data collected to cover all state highways
 - Increasing the number of passes on each state highway
 - Specifically choosing phones that use different network providers for comparison
 - Include non-state highway roads

This could provide more accuracy on the specific locations of mobile blackspots and give a better understanding of the entire region and an insight into changes in mobile coverage across different providers.

- Involve additional stakeholder groups to provide insight into more commercial benefits and outcomes of increased mobile coverage.

The stakeholder engagement workshop allowed us to identify ten high priority mobile blackspot areas to be put forward for advocacy to central government, CIP, and telecommunications companies.

1. SH7 Lewis Pass
2. SH8 at the Cave township
3. SH75 at Tai Tapu
4. SH73 Arthur's Pass
5. SH73 Craigieburn Cutting
6. SH73 Porters Pass
7. SH79 Geraldine - Fairlie highway
8. SH8 Burkes Pass
9. SH1 Kaikoura Coast Half Moon Bay to Okiwi Bay
10. SH77 Rakaia Gorge

The most common driver from stakeholders that aided the prioritisation of these mobile blackspots was safety. Safety of council field staff, communities, emergency services staff working alone, tourists and all state highway users. Other drivers included community connectivity, information gathering regarding incidents and assets, more consistent and reliable access to the internet to support tourism and leisure activities.

A

Appendix A – NetMonitor Instruction Guide

Canterbury Mobile Black Spots Data Capture Guide

NetMonitor Cell Signal Logging

Prepared for Environment Canterbury (on behalf of the Canterbury Mayoral Forum)

Prepared by Beca Limited

28 May 2020



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Appendices

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on behalf of	Beca Limited		

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Executive Summary

Environment Canterbury has commissioned Beca to design and conduct a data gathering exercise with the intent to determine black spots in cellular coverage on State Highways in the Canterbury Region. This document is intended to provide a guide to anyone who will be participating in the data gathering exercise.

It covers:

- The mobile application and hardware to be used
- How to configure the app for data gathering
- Safe operation while driving
- How to export data
- Where to send the exported data

1 The Mobile Application

Users should download the application “NetMonitor Cell Signal Logging Lite” (NetMonitor). Please be aware there are applications with similar names, as well as a Pro version of this app. The free version is suitable, and no user is required to purchase any applications for this data gathering exercise.

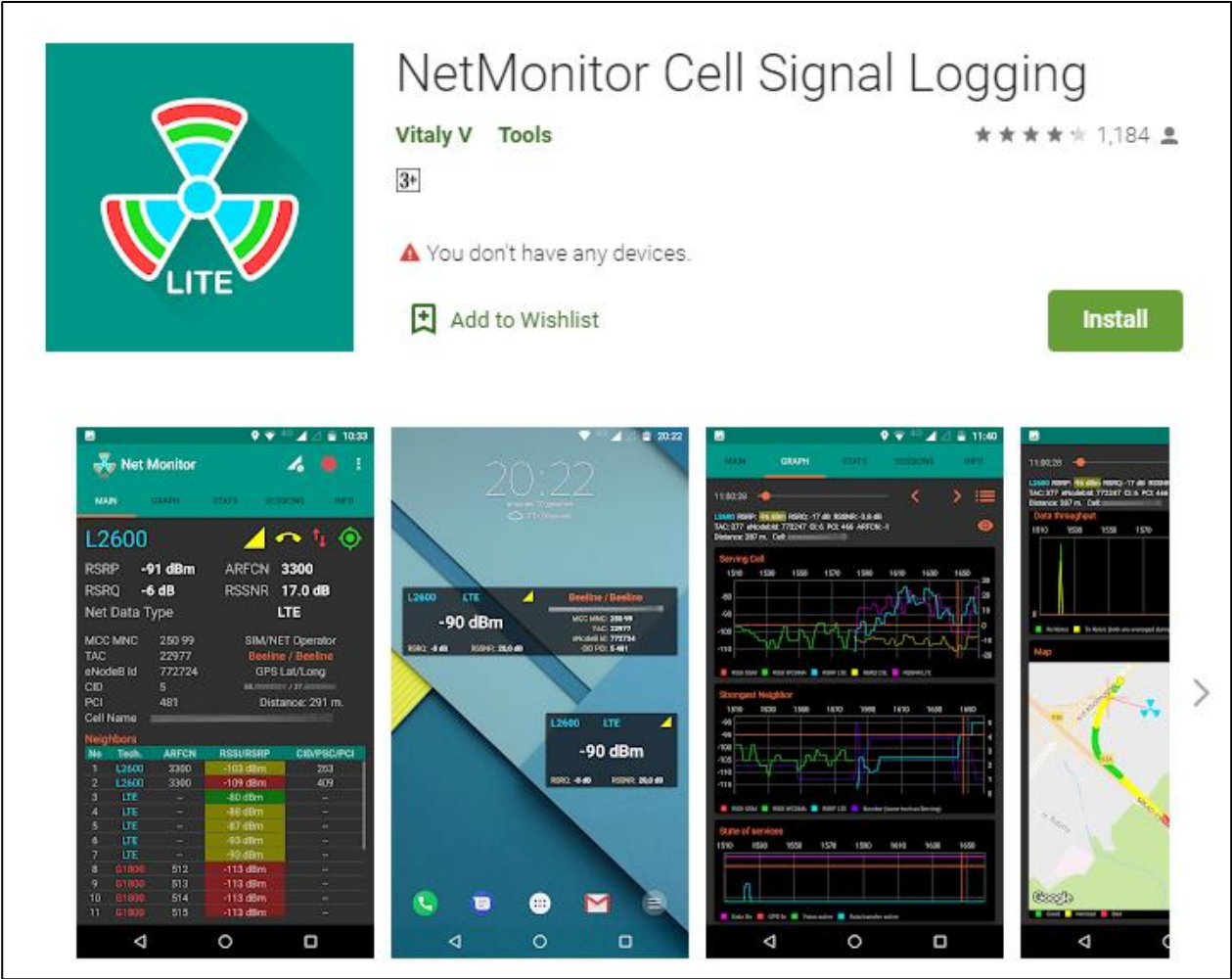


Figure 1 NetMonitor Cell Signal Logging in the Google Play store

2 Suitable Hardware and Operating System

NetMonitor is designed to run on the Android operating system. It requires access to the cellular hardware that is not possible on iOS devices. Phones are **required** rather than tablets, even if a tablet has a sim card for cellular data. The phone should run Android 4.3 or later.

3 Operating NetMonitor & Safety Recommendations

Do not interact with the phone or application while driving. Any time you need to interact with the phone application the vehicle should be stationary and parked in a safe location.

Initial App Set-up (In the Office)

The first time you open the app it will request specific permissions. Please grant all requested permissions to ensure the app works correctly.

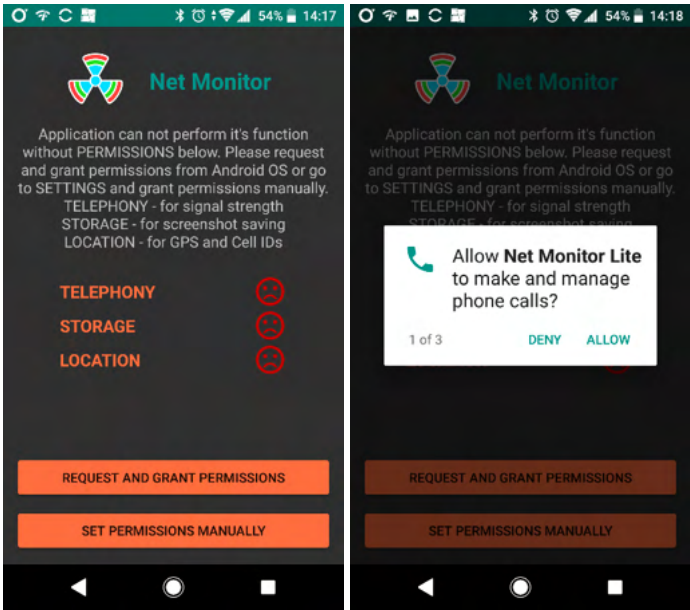


Figure 2 NetMonitor requests telephony, storage and location permissions

Accept any information messages that popup by clicking the OK button.

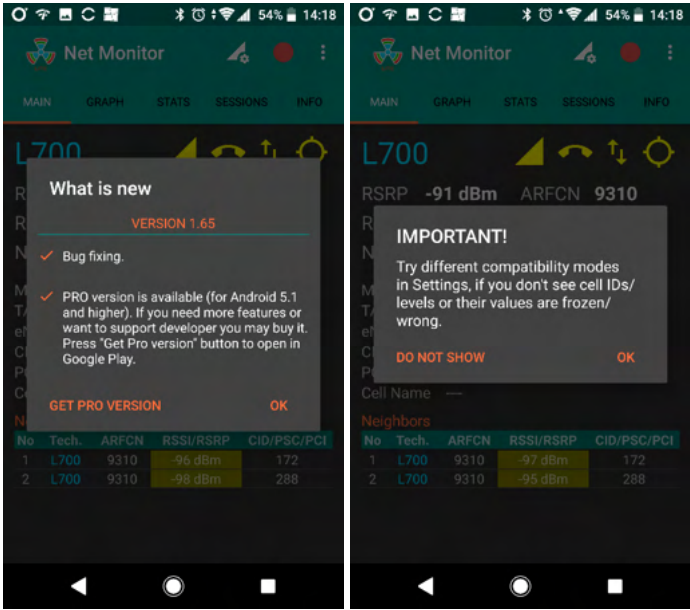


Figure 3 Information messages

Steps to capture Cell Signal data (set up in stationary vehicle)

- 1. Open the app.

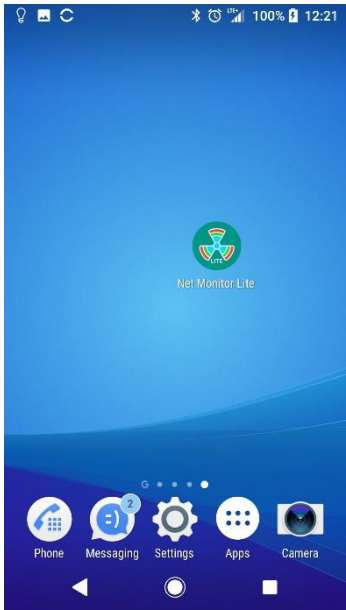


Figure 4 App Icon

- 2. Begin capturing data in a new session. To start a session, press on the Red circle in the Top Right corner (indicated with the yellow arrow).



Figure 5 Begin recording options

- 3. Ensure phone is in clear view of the sky and mounted in a car device holder or properly secured to limit movement in a location that is not distracting to the driver.
- 4. Where possible ensure the phone is plugged in to genuine tested charging cable as regular use of the GPS can deplete the battery quickly.
- 5. Follow NZ Legislation requirements outlined in [7.3A Ban on use of mobile phones while driving](#).

6. Once the user has driven their route, they should pull over to a safe location ensuring the vehicle is stationary before stopping data recording.
To stop data recording press on the White square in the Top Right corner (indicated with the yellow arrow).



Figure 6 Stop data recording

Users can start and stop recording as many times as they like. Each session will be recorded and stored as separate sessions in the application. Each session must be exported and emailed separately.

4 Exporting and emailing NetMonitor data

Each session should be exported from the application as a CSV file and emailed to project-48116@workspace.beca.com.

1. The user should press on the “Sessions” Tab (Indicated with a yellow arrow).

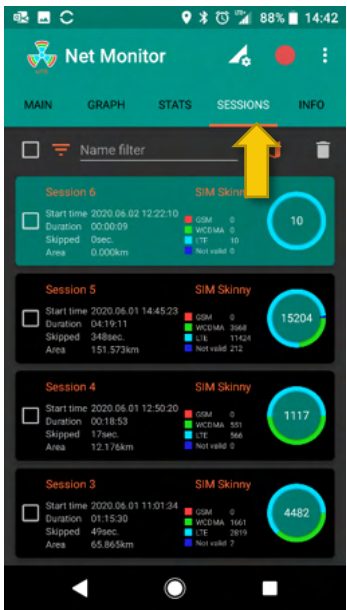


Figure 7 Sessions tab

- 2. The User should long press on each session to export and will be asked to choose an action. Choose “Export Session to CSV File” (Indicated with a yellow arrow).

Choose the “Email” option (Indicated with a yellow arrow) and it will launch your email app of choice. Send to project-48116@workspace.beca.com.

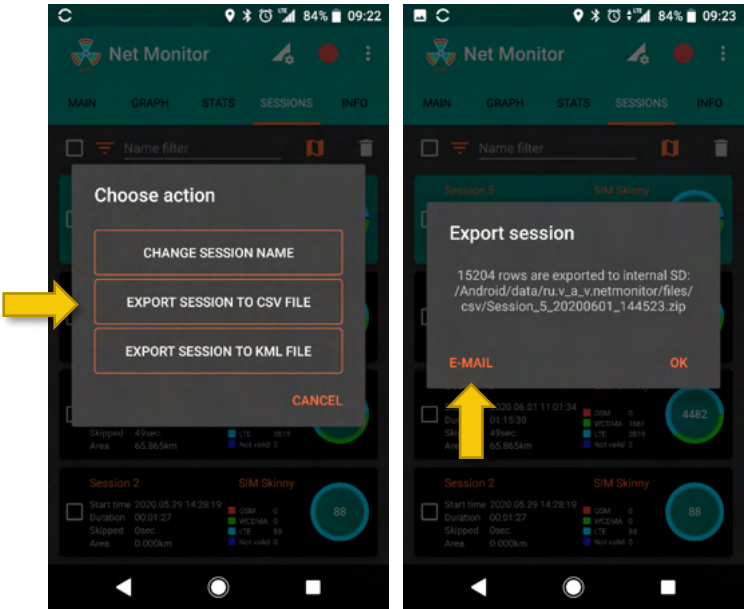


Figure 8 Export session to CSV file via email

- 3. Once the sessions are emailed the users can delete the data from their phones. Select all sessions to delete using the check boxes on the left-hand side and pressing the delete icon (Indicated with a yellow arrow) in the top right of the session list.



Figure 9 Selected sessions

5 Help

If you have any issues using the app, please email project-48116@workspace.beca.com with an explanation of the issue you are having.

B

Appendix B – Stakeholder Engagement Plan

Communication and Engagement Plan

Prepared for Environment Canterbury (on behalf of the Canterbury Mayoral Forum)

Prepared by Beca Limited

19 March 2021



Creative people together transforming our world

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Appendices

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Revision History

Revision N°	Prepared By	Description	Date
	Genevieve Doube	Draft	12 May 2020
	Genevieve Doube	Draft for client review	11 June 2020
	Genevieve Doube	Amendments following client review	12 June 2020
	Genevieve Doube	Amendments following workshop	15 February 2021

Document Acceptance

Action	Name	Signed	Date
Prepared by	Genevieve Doube		15 February 2021
Reviewed by	Natalie Dixon		19 March 2021
Approved by			
on behalf of	Beca Limited		

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1 Purpose

The purpose of this plan is to outline the communication and stakeholder engagement approach for the Canterbury Mayoral Forum Mobile Blackspots Project.

2 Project Outline and Background

Good mobile coverage is an enabler for productivity and logistics, safety and emergency services, the tourism sector and communication in our rural communities.

There is government funding available to help tackle mobile black spots but first the Canterbury Mayoral Forum need to identify the key state highway black spots, and then prioritise a list of the top 10 we would like funding for.

Crown Infrastructure Partners Limited (CIP) and the Ministry of Business Innovation and Employment (MBIE) have GIS mapped mobile coverage using publicly available data, however experience on the ground and anecdotal evidence indicate that this may not provide an accurate picture of the actual coverage that can be achieved throughout rural Canterbury.

The Canterbury Mayoral Forum have engaged Beca to ground truth existing mapped mobile coverage data and work with key stakeholders to come up with a list of the region's state highway mobile black spots.

A desktop study will explore the datasets that are already available which could help inform early prioritisation of areas, provide a contextual picture of coverage, and be used as a basis for testing the driven data against.

As part of the study CIP will be contacted to find out what regionally specific mobile coverage data they had, including drive test data, planned tower build locations and the proposed coverage of these towers. Available mobile coverage data will also be gathered from telecommunications companies. We will also interface with CIP and the telecommunication providers to understand what constitutes an acceptable level of service for cellular data and communications.

Prior to commencing the drive testing it will also be important to understand the anecdotal evidence of poor coverage. Discussions with stakeholders will be key in gathering this information and we have developed a website for stakeholders to identify any known state highway black spots.

Once the full list of black spots has been identified, Beca will facilitate a virtual workshop with the key stakeholders so that we can collectively prioritise 10 sites.

3 Communication Objectives

The following communication objectives have been identified for this project:

- Key stakeholders are identified and invited to participate by the Mayoral Forum
- Key stakeholders are well informed of the project early in the process.
- Key stakeholders know the project timeframe and when they will have opportunities to feed into the process.
- Key stakeholders' knowledge and resources support the information requirements for the project
- Key stakeholders feel that their input has been considered and have helped to shape the priorities.
- Key stakeholders buy in to and support the project outcomes
- Key stakeholders understand the limits of the project

- Understanding among stakeholders is built of the collective issues and the agreed ranking criteria.

4 Roles and Responsibilities

The below table outlines the key team members, interfaces with Environment Canterbury and Mayoral Forum -

Role	Name	Organisation	Responsibility
Canterbury Mayoral Forum Chair	Jenny Hughey	Environment Canterbury	
Canterbury Mayoral Forum secretariat – Principal Advisor	Maree McNeilly	Environment Canterbury	Communications with the forum
Project Director	Orlando Kootstra	Beca	Job Director
Project Manager	Bianca de Jong	Beca	Job Manager - main client contact. Has weekly meetings with the Canterbury Mayoral Forum secretariat –Programme Manager
Canterbury Mayoral Forum secretariat – Programme Manager	Rosa Wakefield	Environment Canterbury	

5 Communication Protocols

Genevieve Doube (Beca) will prepare and update the Communications and Engagement Plan during the project, working closely with Bianca de Jong, Beca Project Manager and Rosa Wakefield, CREDS Programme Implementation Manager.

All documents will be reviewed by the Project Director Orlando Kootstra, Project Manager Bianca de Jong (Beca) and Project Manager Rosa Wakefield (Canterbury Mayoral Forum secretariat).

Engagement and coordination with the relevant stakeholders will be initiated by Environment Canterbury and the Canterbury Mayoral Forum and then managed by Genevieve Doube. Relationships with Environment Canterbury staff will be managed by Bianca de Jong.

COVID impacts

As of 29 May 2020, gatherings up to 100 people are allowed. However, organisations may have different approaches to Health and Safety requirements for their staff which may affect on their ability to attend face to face meetings and workshops.

6 Stakeholders

The stakeholders as suggested in RFP include Waka Kotahi, NZ Post, regional milk producers and emergency services. Environment Canterbury has supplied a list of stakeholders to be contacted in the first instance which is provided in the table below:

Organisation	Contact	Contact Details
Kaikōura District Council	Angela Oosthuizen, CE Dave Clibbery	angela.oosthuizen@kaikoura.govt.nz Dave.Clibbery@kaikoura.govt.nz
Hurunui District Council	Hamish Dobbie, CE, and Chair of the Canterbury Operations Forum Dan Harris	hamish.dobbie@hurunui.govt.nz dan.harris@hurunui.govt.nz
Waimakariri District Council	Jim Palmer, CE Gerard Cleary	Jim.Palmer@wmk.govt.nz gerard.cleary@wmk.govt.nz
Christchurch City Council	Dawn Baxendale, CE David Adamson Bridget Obrien	dawn.baxendale@ccc.govt.nz David.Adamson@ccc.govt.nz Bridget.Obrien@ccc.govt.nz
Selwyn District Council	David Ward, CE Murray Washington (Chair, Canterbury Engineering Managers Group)	david.ward@selwyn.govt.nz murray.washington@selwyn.govt.nz
Ashburton District Council	Hamish Riach, CE Neil McCann Bevan Rickerby	Hamish.riach@adc.govt.nz neil.mccann@adc.govt.nz bevan.rickerby@adc.govt.nz
Timaru District Council	Bede Carran, CE Ashley Harper Erik Barnes	bede.carran@timdc.govt.nz ashley.harper@timdc.govt.nz Erik.Barnes@timdc.govt.nz
Mackenzie District Council	Suzette van Aswegen, CE	suzette@mackenzie.govt.nz
Waimate District Council	Stuart Duncan, CE	stuart.duncan@waimatedc.govt.nz
Waitaki District Council	Fergus Power (CE) Neil Jorgensen	fpower@waitaki.govt.nz njorgensen@waitaki.govt.nz
Environment Canterbury	Nadeine Dommissie, COO	Nadeine.Dommissie@ecan.govt.nz Natasha.Densey@ecan.govt.nz

	Natasha Densey contact for Environment Canterbury Operations group	
Rural Post	Adrian Sexton, Rural Contracts Manager	adrian.sexton@nzpost.co.nz
Fire and Emergency New Zealand (Canterbury)	Steven Greenyer, Area Commander Mid/South Canterbury Mike Gaskin – Fire Risk Management Officer / Specialist Fire Investigator (Selwyn contact)	steven.greenyer@fireandemergency.nz mike.gaskin@fireandemergency.nz
St John Ambulance	Craig Woodham, Regional Operations Support Manager, South Island David Thomas, General Manager South Island Region	craig.woodham@stjohn.org.nz david.thomas@stjohn.org.nz
Fonterra	James Caygill, Manager Regional Engagement, South Island)	James.Caygill@fonterra.com
Synlait	Penny Gallagher, Environmental Manager	penny.gallagher@synlait.com
Westland Milk	Alice van den Hout, Rolleston Site Manager	Alice.vandenHout@westland.co.nz
NZ Trucking Association	Dave Boyce, Chief Executive Officer Carol Mcgeady, Executive Officer	dave.boyce@nztruckingassn.co.nz carol.mcgeady@nztruckingassn.co.nz

7 Key Message

The key messages will guide discussion with the stakeholders –

- Publicly available data sets have been used as a base
- More data has been gathered via a drive testing as well as stakeholder anecdotal evidence
- Importance of working together to agree criteria for prioritisation recognising that organisations may have different perspectives
- Desire to understand the impact of mobile blackspots on safety and productivity as well as the potential economic or social impacts of reducing these.
- Identify the top 10 blackspots in the region
- Limits of project to effect change.

8 Communication and Engagement Tactics

The table below outlines the tactics for engagement with the stakeholders

Date	Audience	Activity / Action	Responsibility	Status
5 June	Stakeholders	Email to introduce the project and the process that will be followed along with when we expect to make further contact with them. Outline how we will record their feedback and ideas	Genevieve Doube draft email and coordinate stakeholders	Completed 17 June 2020 Follow up email 1 September 2020 and 12 December 2020
8 June	Canterbury Mayoral Forum	Agree criteria of social and economic impacts for assessment of prioritisation of black spots	Bianca and / or Genevieve	Completed Conversation with Rosa prior to stakeholder engagement
early 2021	Stakeholders	Joint online engagement workshops to: <ul style="list-style-type: none"> • Understand the key drivers for each stakeholder • Assess the potential economic or social impact of the identified blackspots on their business based on the set of agreed criteria. 	Genevieve Doube	Completed 12 February 2021
12 February 2021	Stakeholders	Follow up conversations via phone, online surveys or interactive maps to capture information from those who may not be able to attend workshops.	Bianca Clark / Genevieve Doube	Completed
March 2021	Stakeholders	Provide stakeholders with the final report which includes the summary of feedback as required		
Ongoing	Canterbury Mayoral Forum	Outline process to keep them up to date on project progress	Maree McNeilly	

9 Risks and Opportunities

Risk	Likelihood	Level of Impact	Mitigation approach / opportunity
Competing priorities identified	Medium	High	Further tease out the effect of the mobile blackspot for each priority
Agreement cannot be reached between stakeholders	Medium	High	Use the evaluation criteria
Prioritisation criteria are not fit for purpose	Low	Medium	Be agile in the workshop and take robust notes of the conversation
A stakeholder feels this project is a duplication of work already done	Low	Low	Clear communication about the project and work that has been done and work we are planning

10 Stakeholder Outcomes

Successful stakeholder engagement will have been achieved if the workshop develops an understanding between the attendees of the challenges that a lack of mobile coverage creates and the 10 priority mobile blackspots can be agreed upon.

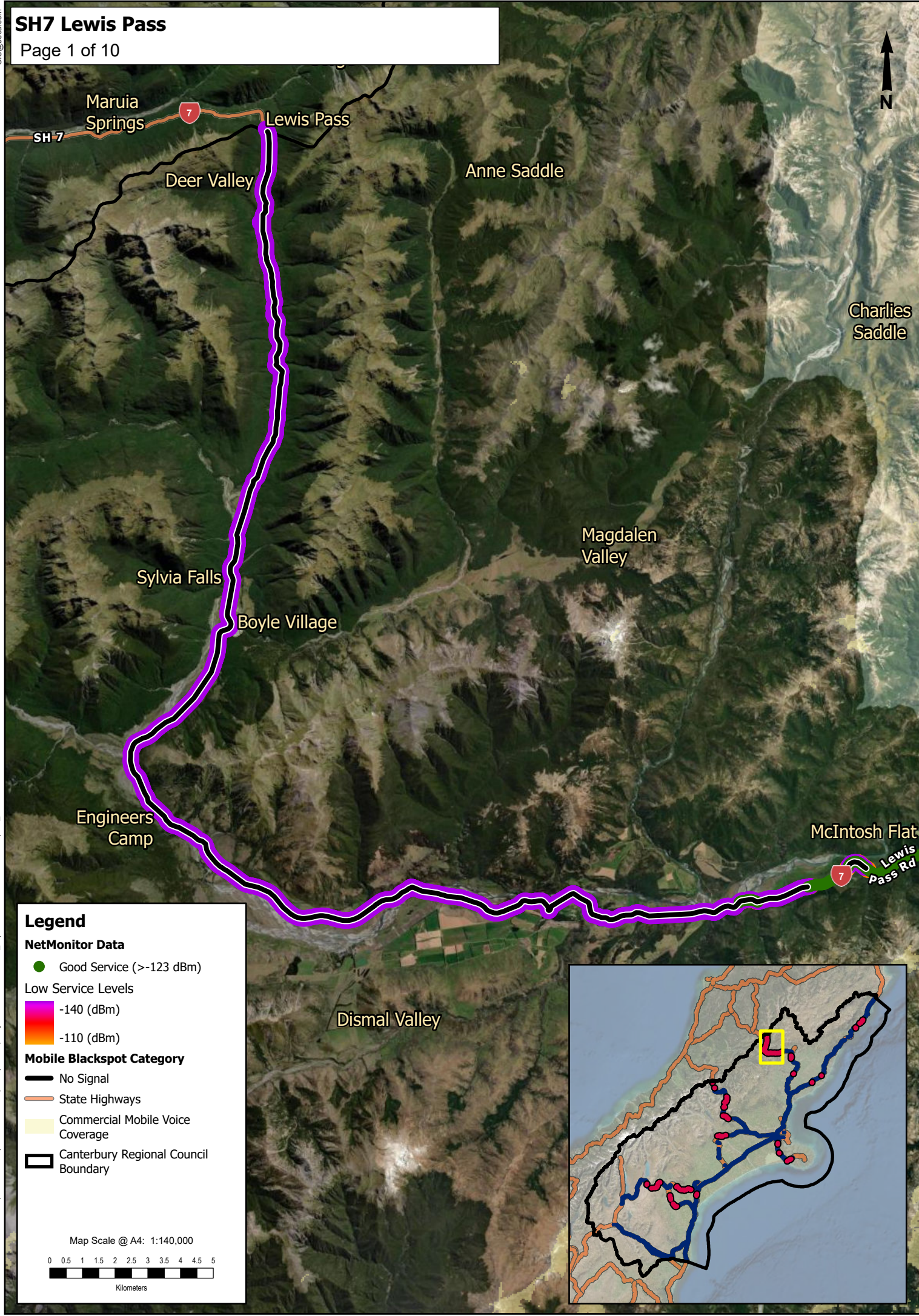
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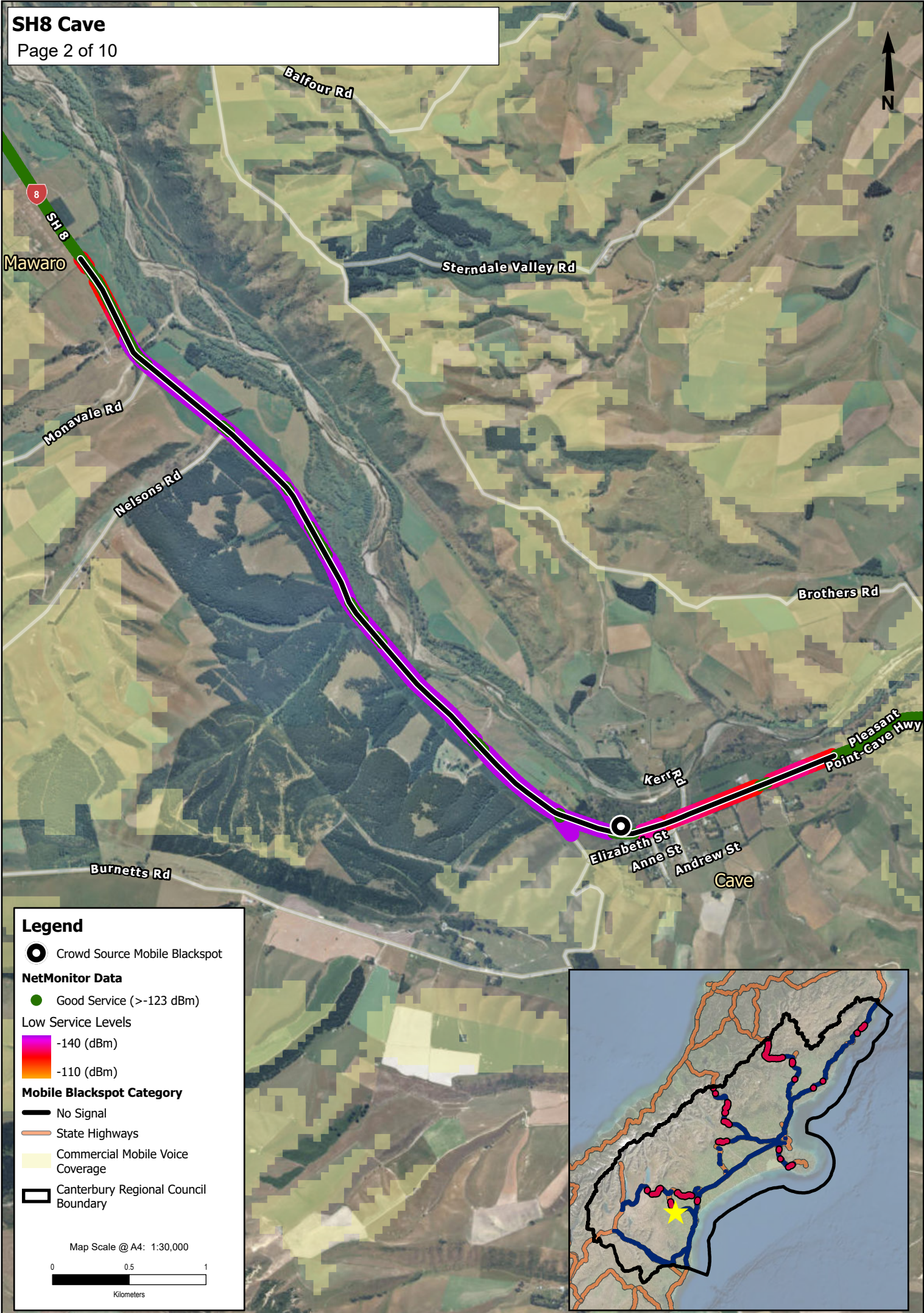
Appendix C – Report Maps

SH7 Lewis Pass

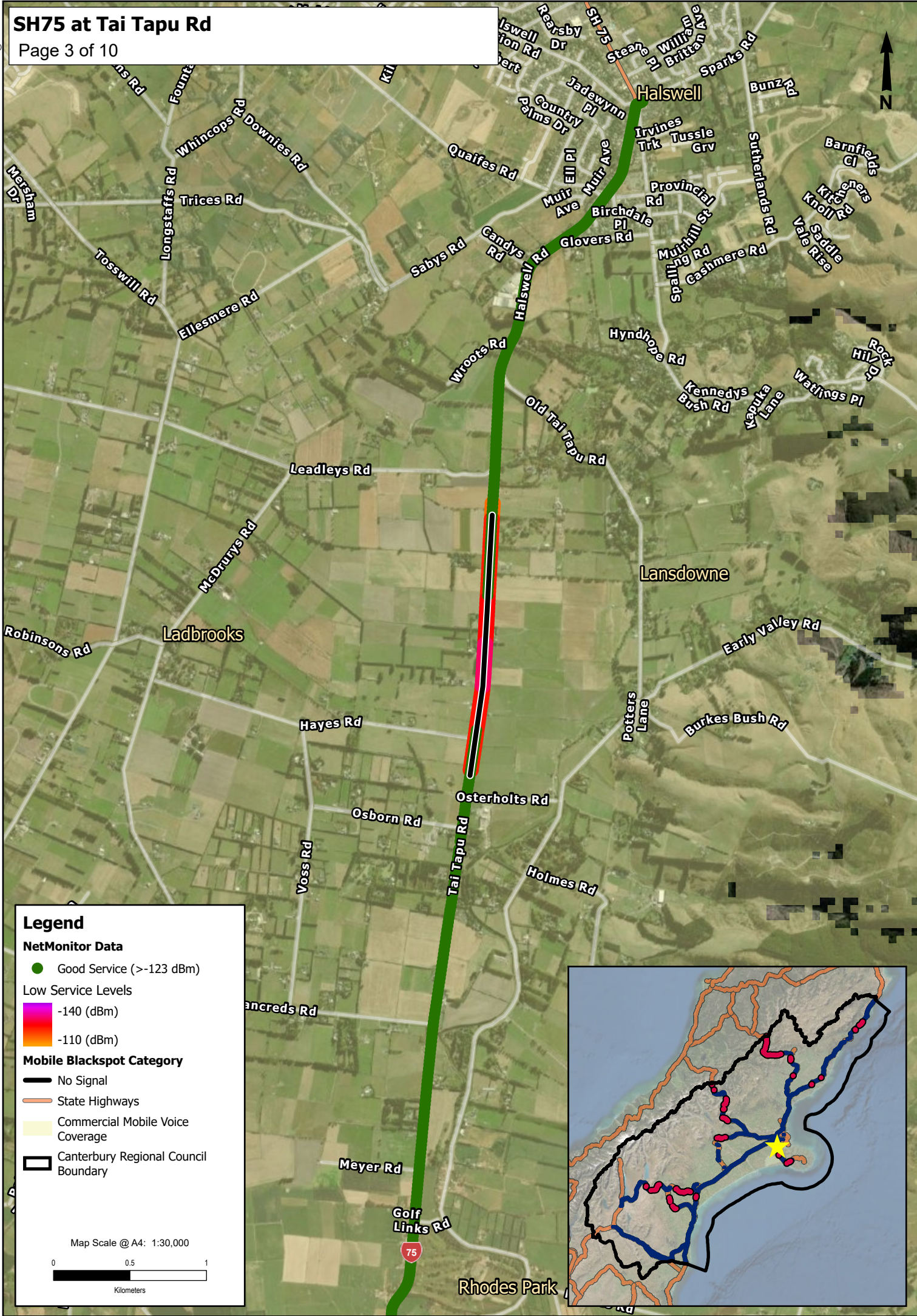
Page 1 of 10

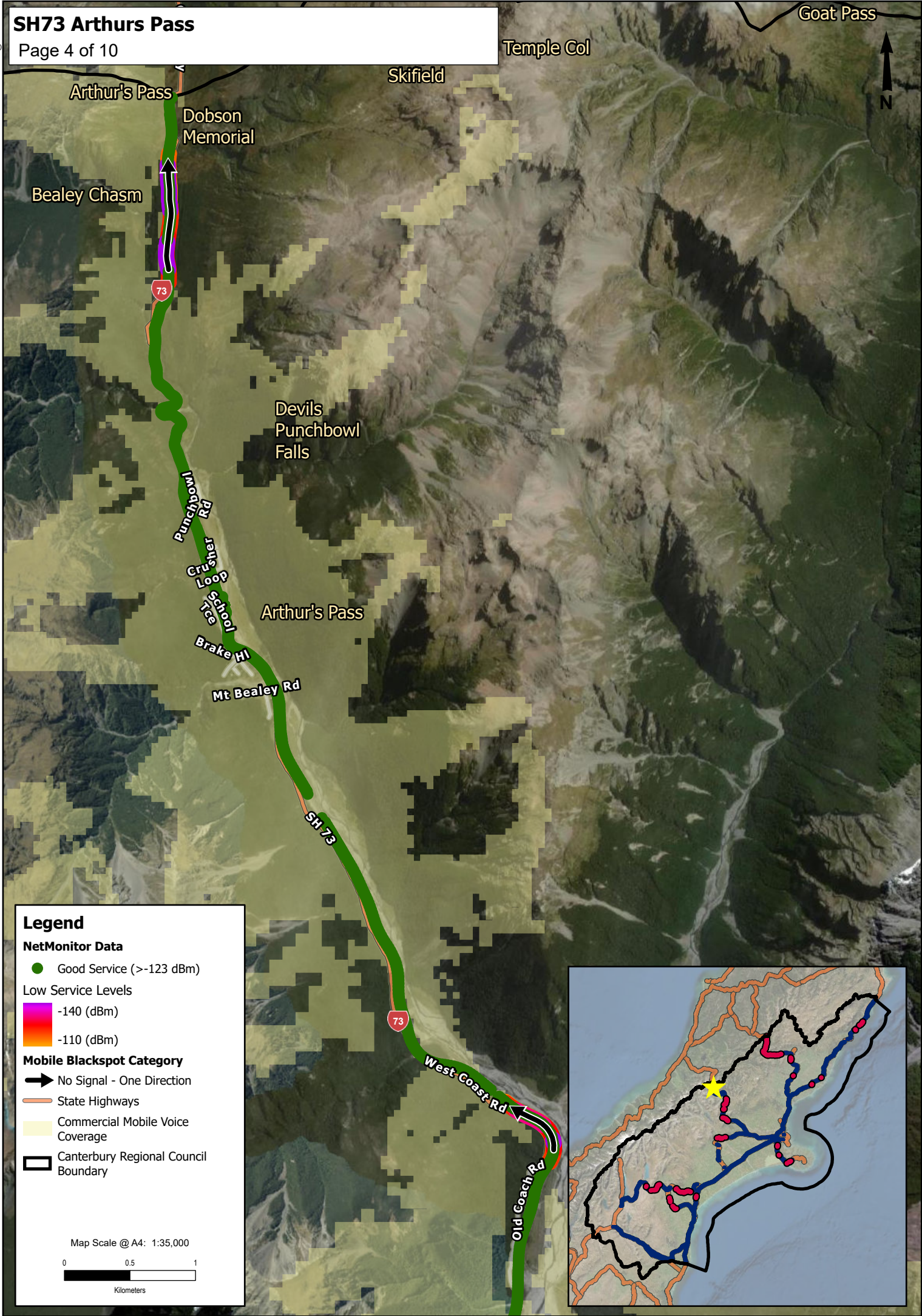
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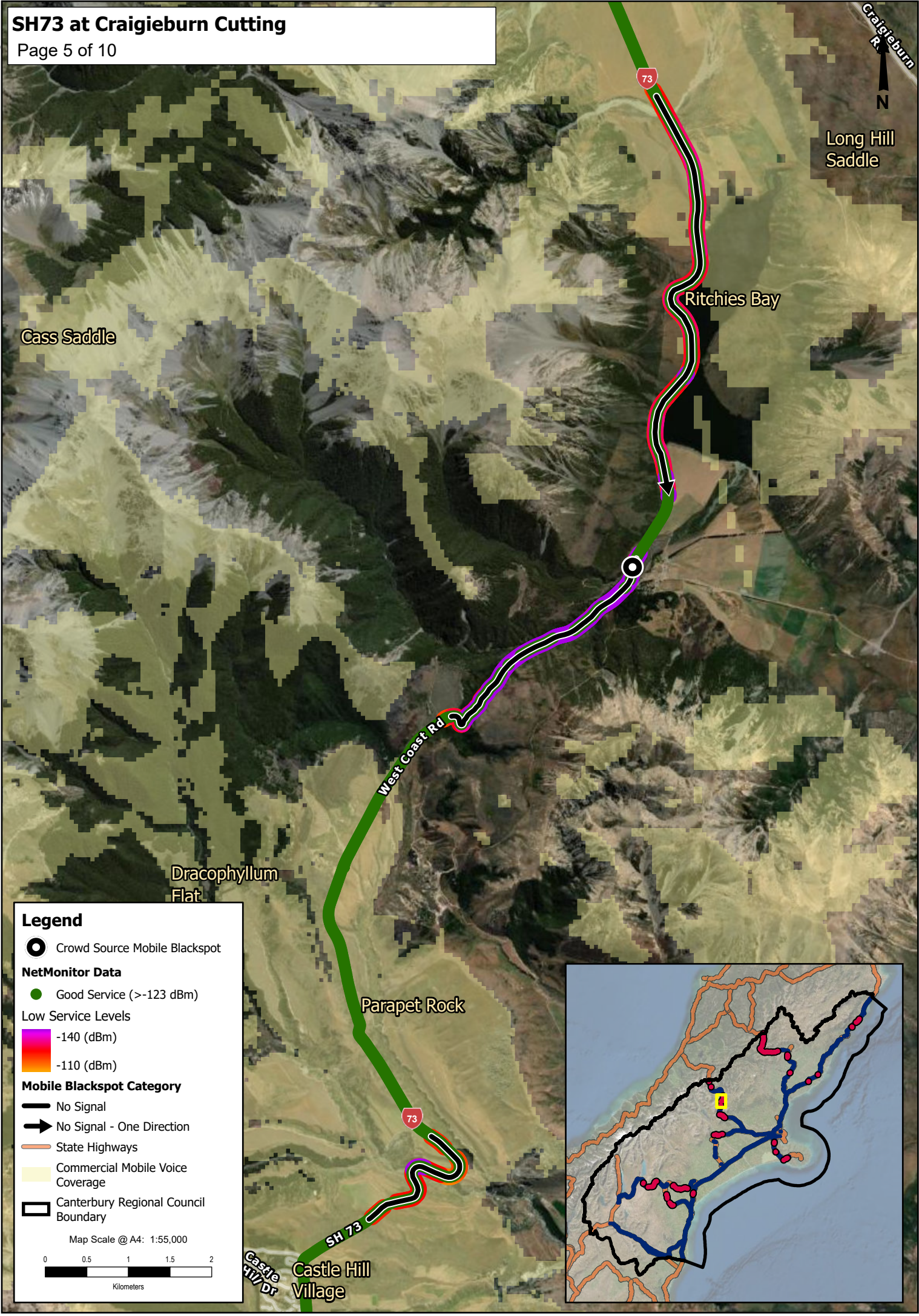


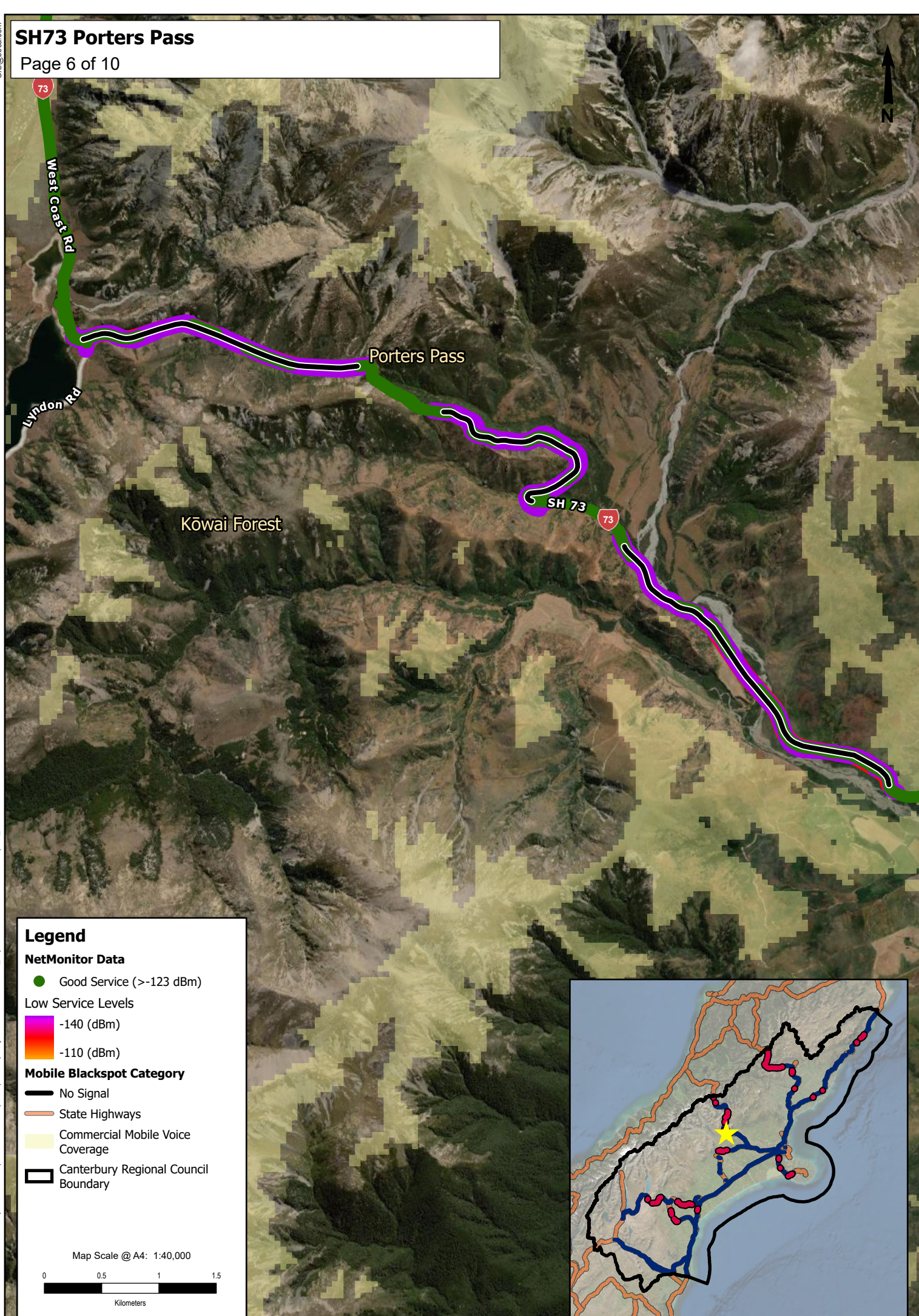


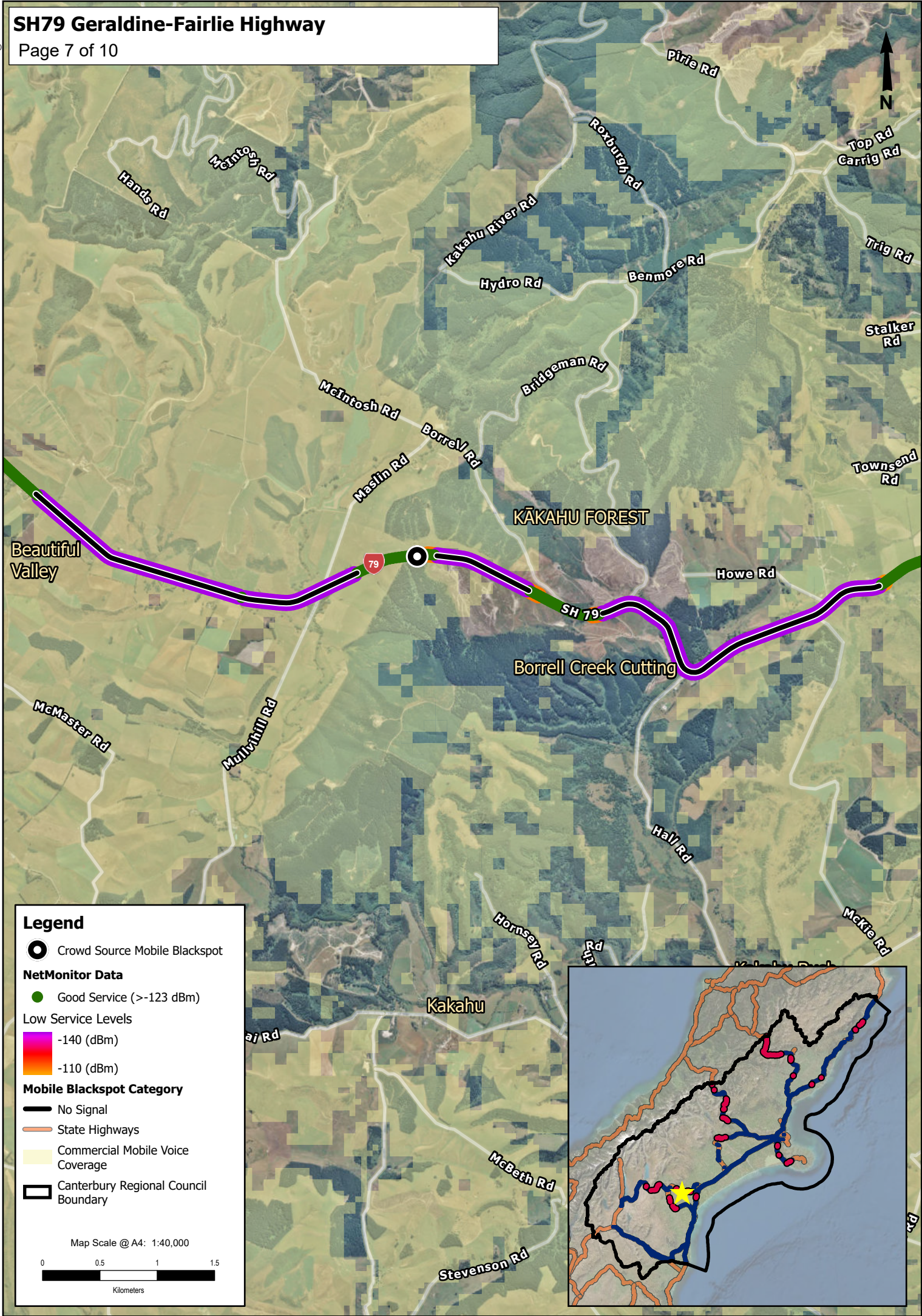
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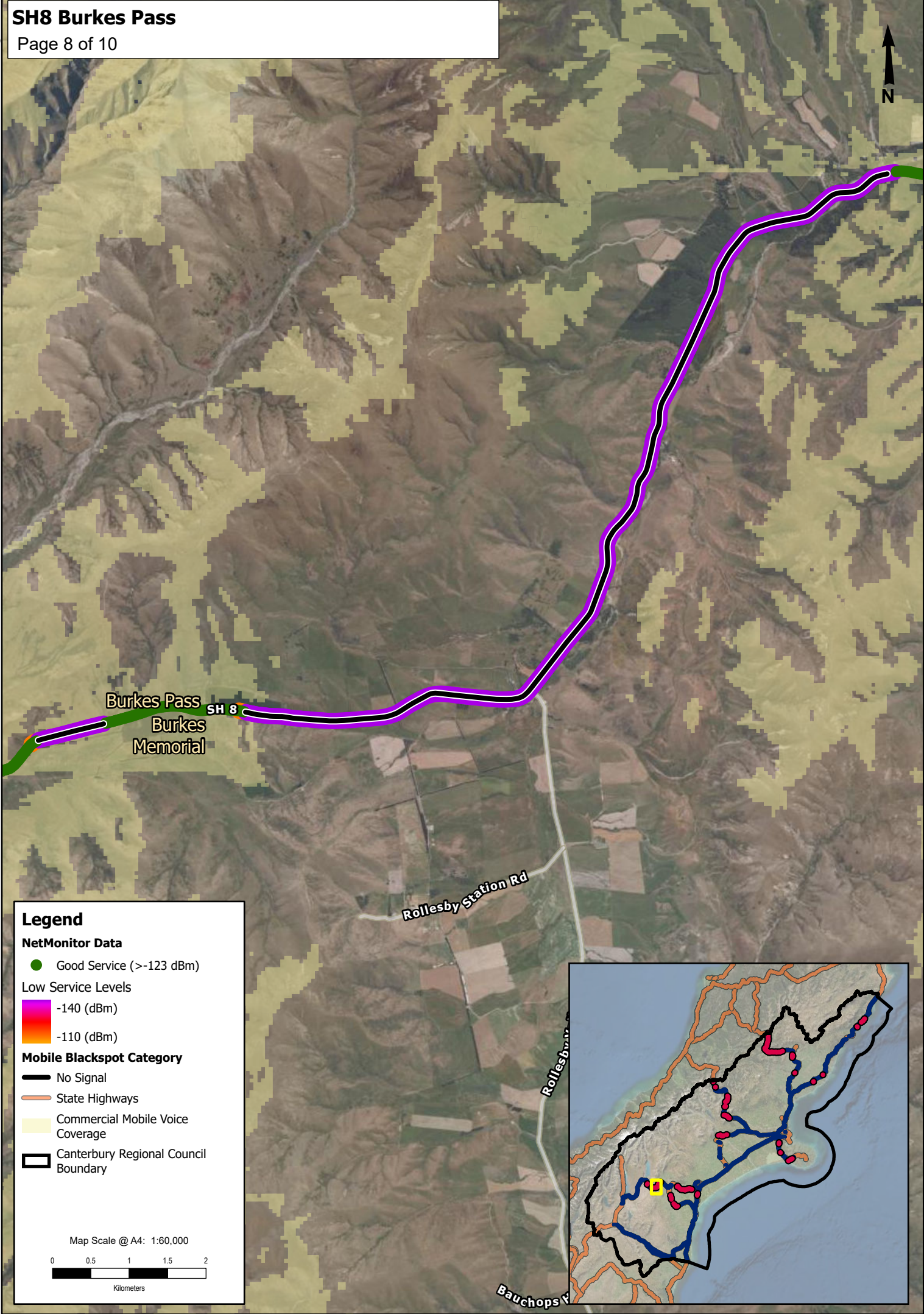
Legend

- Crowd Source Mobile Blackspot
- NetMonitor Data**
 - Good Service (>-123 dBm)
- Low Service Levels**
 - 140 (dBm)
 - 110 (dBm)
- Mobile Blackspot Category**
 - No Signal
 - State Highways
 - Commercial Mobile Voice Coverage
 - Canterbury Regional Council Boundary

Map Scale @ A4: 1:40,000

00.511.5

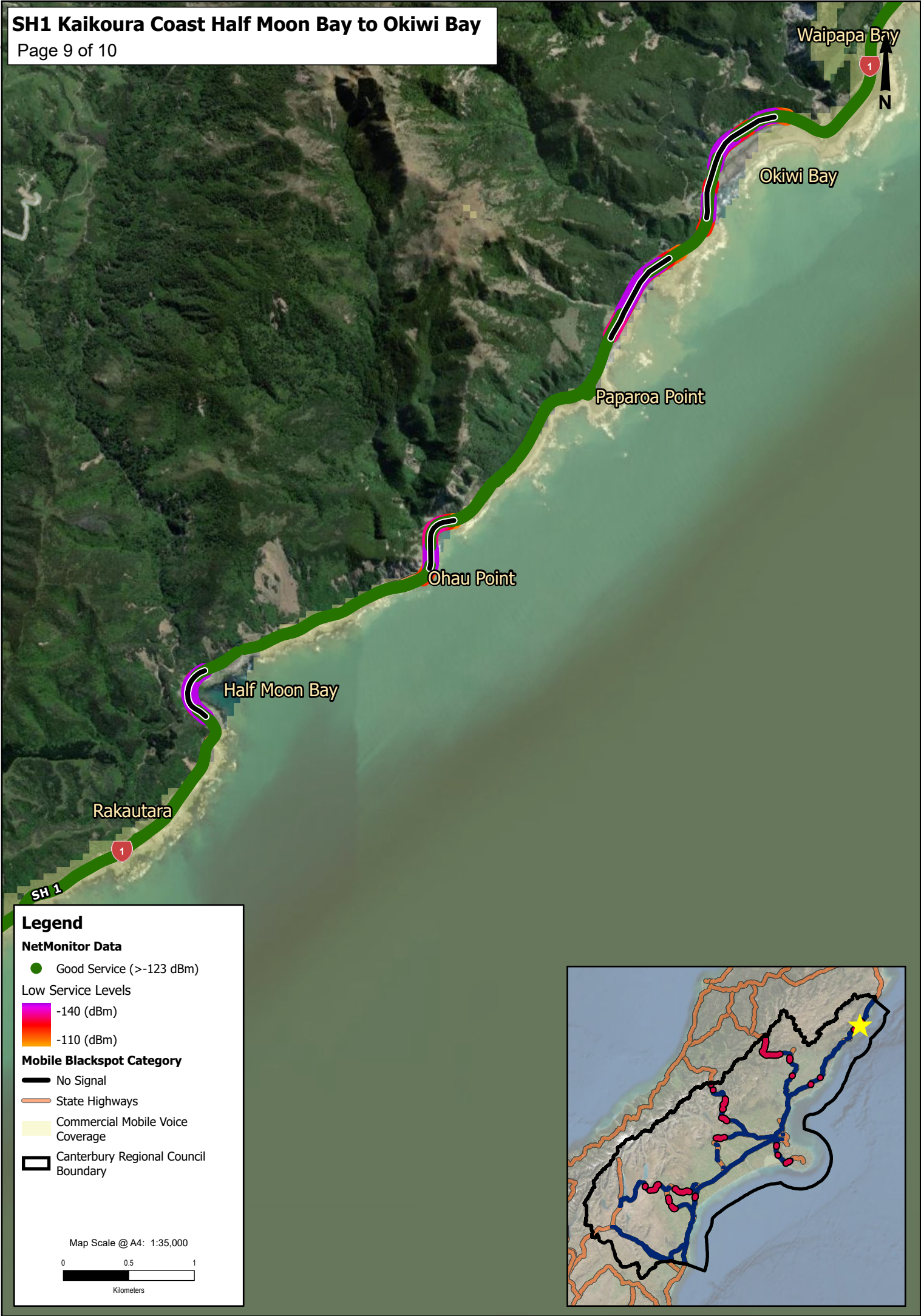
Kilometers



SH1 Kaikoura Coast Half Moon Bay to Okiwi Bay

Page 9 of 10

Path: P:\7777773243\TG101 Map\EcanBlackspots\EcanBlackspots.aprx Map Layout: GIS-7773243-04_Top 10 Identified Mobile Blackspots_A4 Date Printed: 11/03/2021



Legend

NetMonitor Data

Good Service (>-123 dBm)

Low Service Levels

-140 (dBm)

-110 (dBm)

Mobile Blackspot Category

No Signal

State Highways

Commercial Mobile Voice Coverage

Canterbury Regional Council Boundary

Map Scale @ A4: 1:35,000

00.51

Kilometers

