Identifying opportunities for collaboration

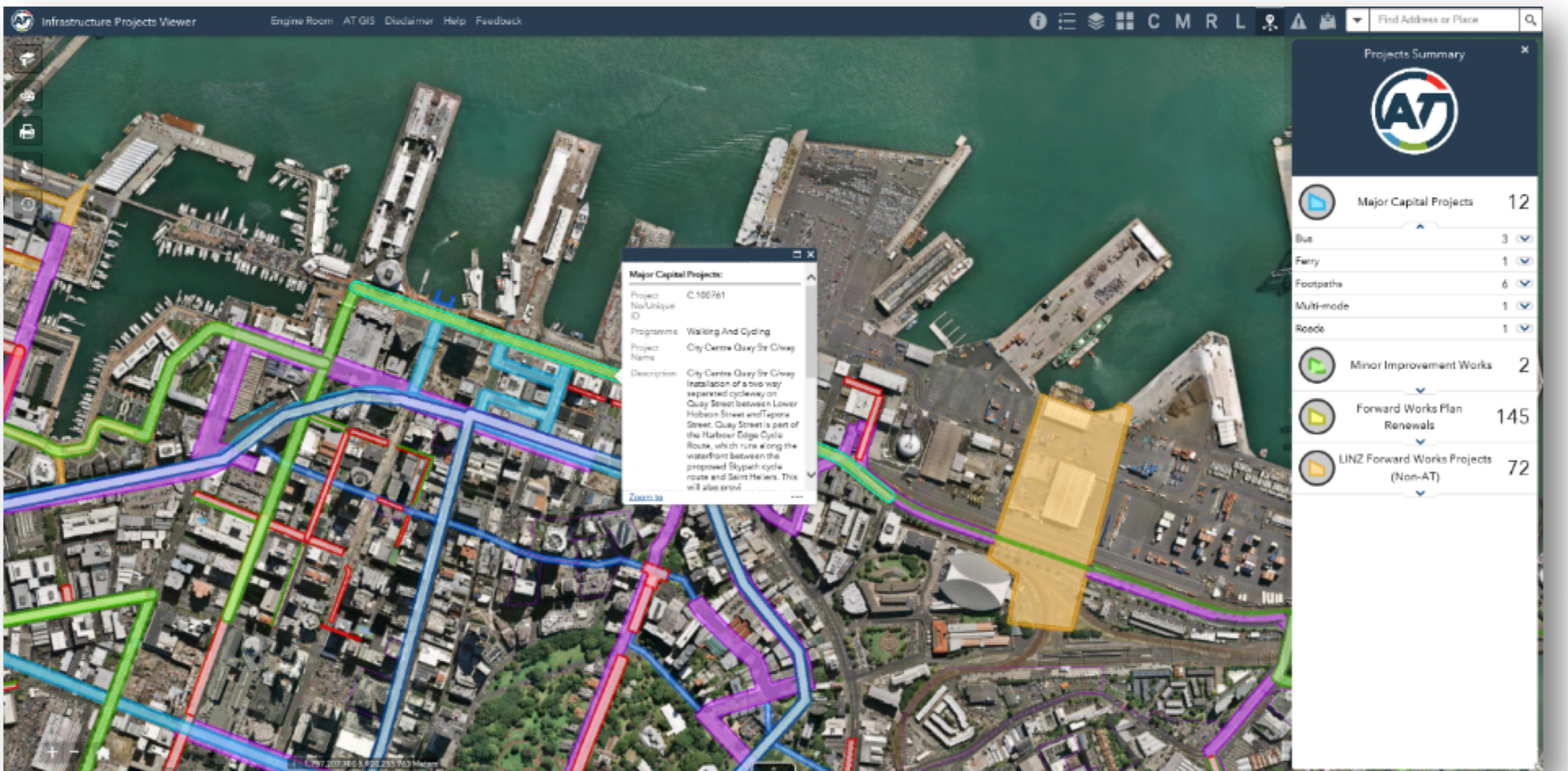
Infrastructure Projects Viewer

Auckland Transport

An Auckland Council Organisation

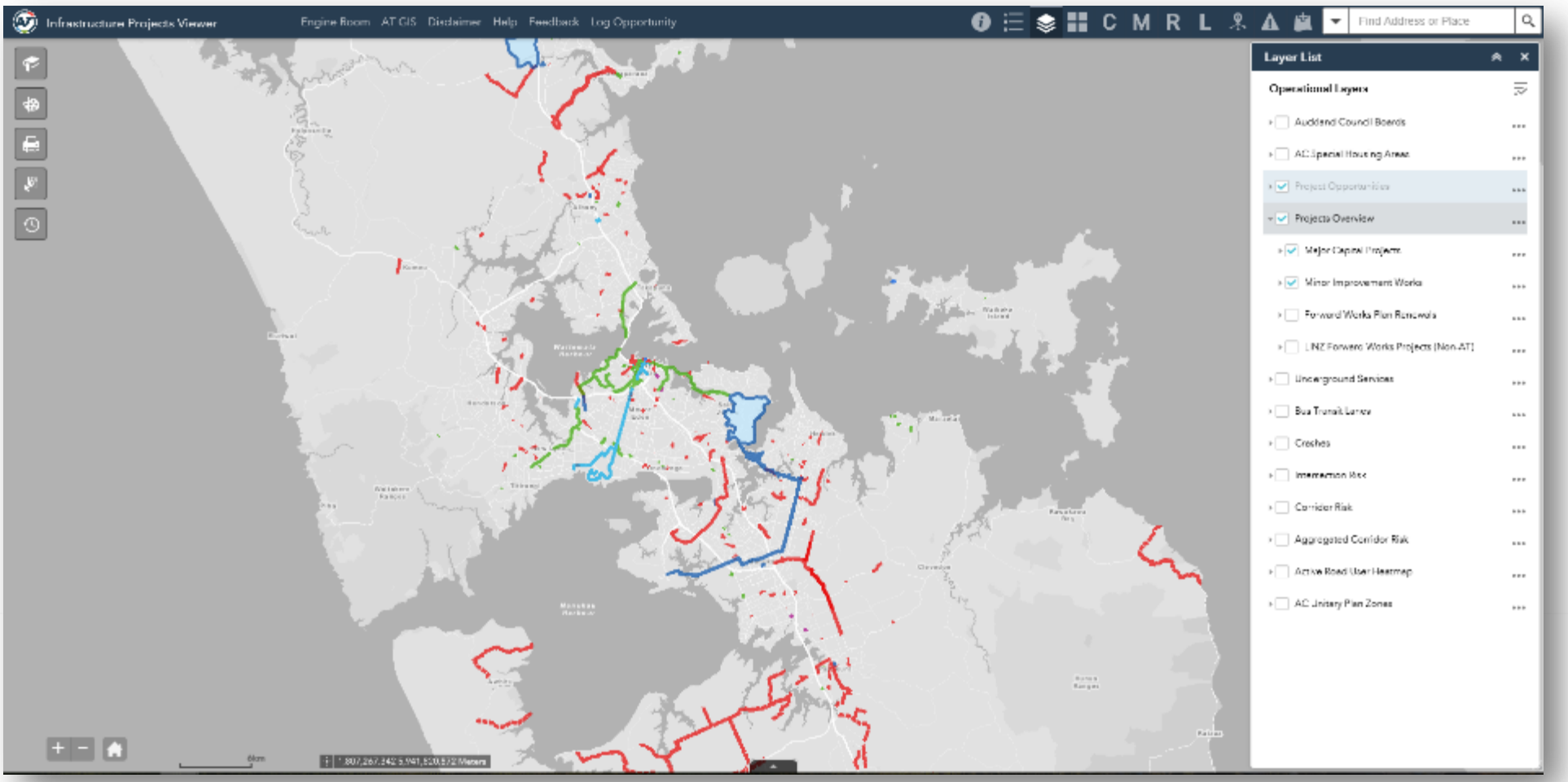
What is AT's Infrastructure Projects Viewer?

- The Infrastructure Project Viewer (IPV) is an Esri Web AppBuilder app



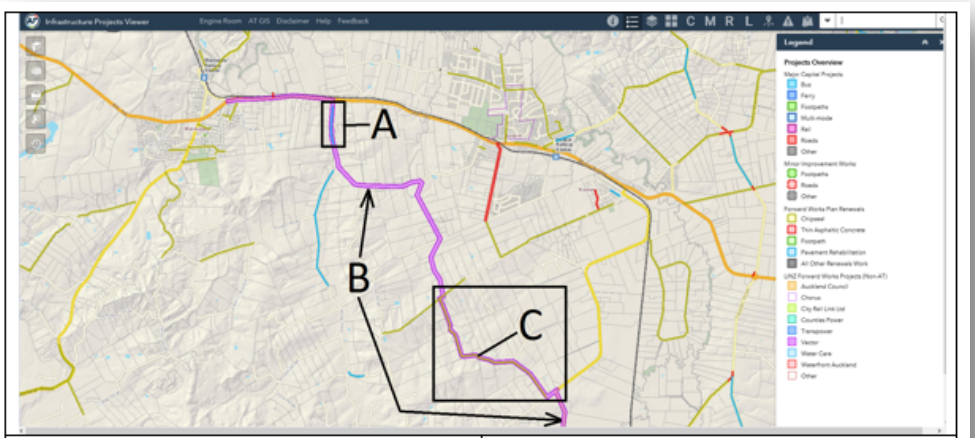
COTS first… IPV is a configured solution

- The template and widgets are all COTS, i.e. commercial-off-the-shelf (no customisation)



IPV identifies collaboration opportunities

- IPV was used to ‘manually’ identify possible opportunities earlier this year. Overlaps between MIW & Renewals in the 2018/19 programme were assessed.
- Recommendations were made for deferring / accelerating planned AT Renewals in our upcoming programme (saving approx. $500k).
- A similar assessment / recommendation process also followed for overlaps with non-AT projects.
- Through collaboration we are reducing disruption to the public and saving money!



A - FOSTER RD **Works ID** – 18496 **Programme Year** – 2019/20 **Estimated Cost** – 258,020 **Work Type** – Pavement Rehabilitation **Local Board:** RODNEY	**B - Waitakere to Waimauku Substation** **Stage ID:** 66049 **Work Type:** Electricity - Future Planned **Org:** Vector **Programme Year Start:** 31/12/2017 **Programme Year End:** **Contact:** Elnaz.vanVuuren@vector.co.nz
C - POMONA RD **Works ID** – 18926 **Programme Year** – 2019/20 **Estimated Cost** – 89,706 **Work Type** – Renewal - Chipseal **Local Board:** RODNEY	**Recommendation:** Verify if delivery of Vector project **(Site B)** can tie-in with the Rehab and resurfacing works on **Site A** (ideal) and **Site C** respectively.

Automation of opportunities identification

- This process has now been automated using an FME workbench, and released to production
- Every AT project manager is emailed a personalised list of overlapping / co-located projects to assess

Hi Ravi Chandrappa (AT),

You have a total of 27 projects with potential opportunities. The combined value of these opportunities is $10198628.6

View all potential Opportunities

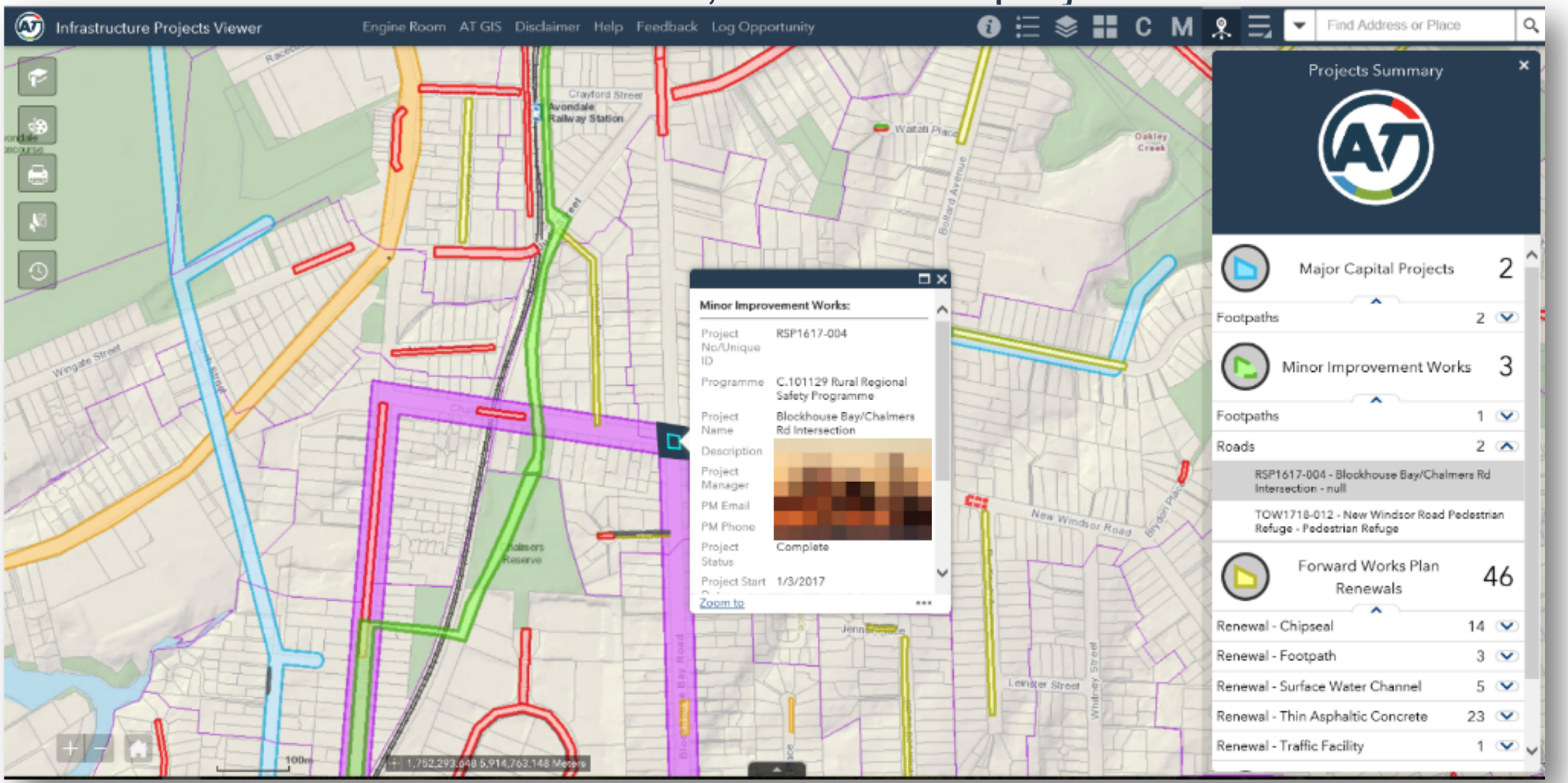
Project No	Project Name	Potential Opportunities	Start Date	End Date	Project Managers to Contact	Link
TOW1718-008	Great North Road/ Lynwood	$51,345.0	28.02.2017	03.10.2017	RAMM	View
TOW1718-006	Great North Road / Kirby Street Intersection	$50,846.0	28.02.2017	03.10.2017	RAMM	View
TOW1718-015	Glengarry Road - Roslyn Road - Shetland Street intersection in Glen Eden	$96,000.0	28.02.2017	20.11.2017	RAMM	View
TOW1718-003	Kirby Street / Thurnlow Street Intersection	$88,000.0	28.02.2017	21.12.2017	RAMM	View
RSP1617-004	Blockhouse Bay/Chalmers Rd Intersection	$18,000.0	28.02.2017	29.06.2018	Jane Liu (Vector), RAMM	View
MCI1617-016	Great South Road / Rockfield Road	$25,367.0	28.02.2017	29.06.2018	Jane Liu (Vector)	View
MCI1617-016-A	49 Munroe Road & 82 Summerlands Drive	$	28.02.2017	29.06.2018	Tim Barry (Water Care), RAMM	View
MCI1617-016-B	49 Munroe Road & 82 Summerlands Drive	$	28.02.2017	29.06.2018	Tim Barry (Water Care)	View
MCI1819-001	Great North Road - Stadium Rd Ped Crossing	$200,000.0	28.02.2017	29.06.2018	David Ward (Water Care)	View
FP1617-014	First View Avenue	$40,753.0	28.02.2017	29.06.2018	RAMM	View
FP1617-013	Beachlands Road	$193,256.0	28.02.2017	29.06.2018	Altaf Ali (AT), RAMM	View
FP1617-011	Ross Avenue	$20,470.0	28.02.2017	29.06.2018	RAMM	View
FP1617-010	Roscommon Road A	$60,147.0	28.02.2017	29.06.2018	Chris Watson (Water Care), RAMM	View
FP1617-009	McLaughlin's Road A	$108,417.0	28.02.2017	29.06.2018	RAMM	View
FP1617-004	McLaughlin's Road B	$11,815.0	28.02.2017	29.06.2018	RAMM	View
NOP1617-003	Queenstown Road / SH20 Roundabout	$	28.02.2017	29.06.2018	Jane Liu (Vector), RAMM	View
MCI1617-013	Carrington Road	$4,357,800.0	28.02.2017	29.06.2018	David Ward (Water Care), Fabio Wendlady (AT), RAMM	View
MCI1617-019	Porchester Road - cycle lane greening	$3,000.0	28.02.2017	29.06.2018	Chris Watson (Water Care)	View
RS1617-076	Titirangi Road Mid-Block Signal relocation	$144,823.0	28.02.2017	29.06.2018	RAMM	View

Opportunities assessment process

- PM's can zoom to, view & assess each opportunity in their list

Opportunities assessment process

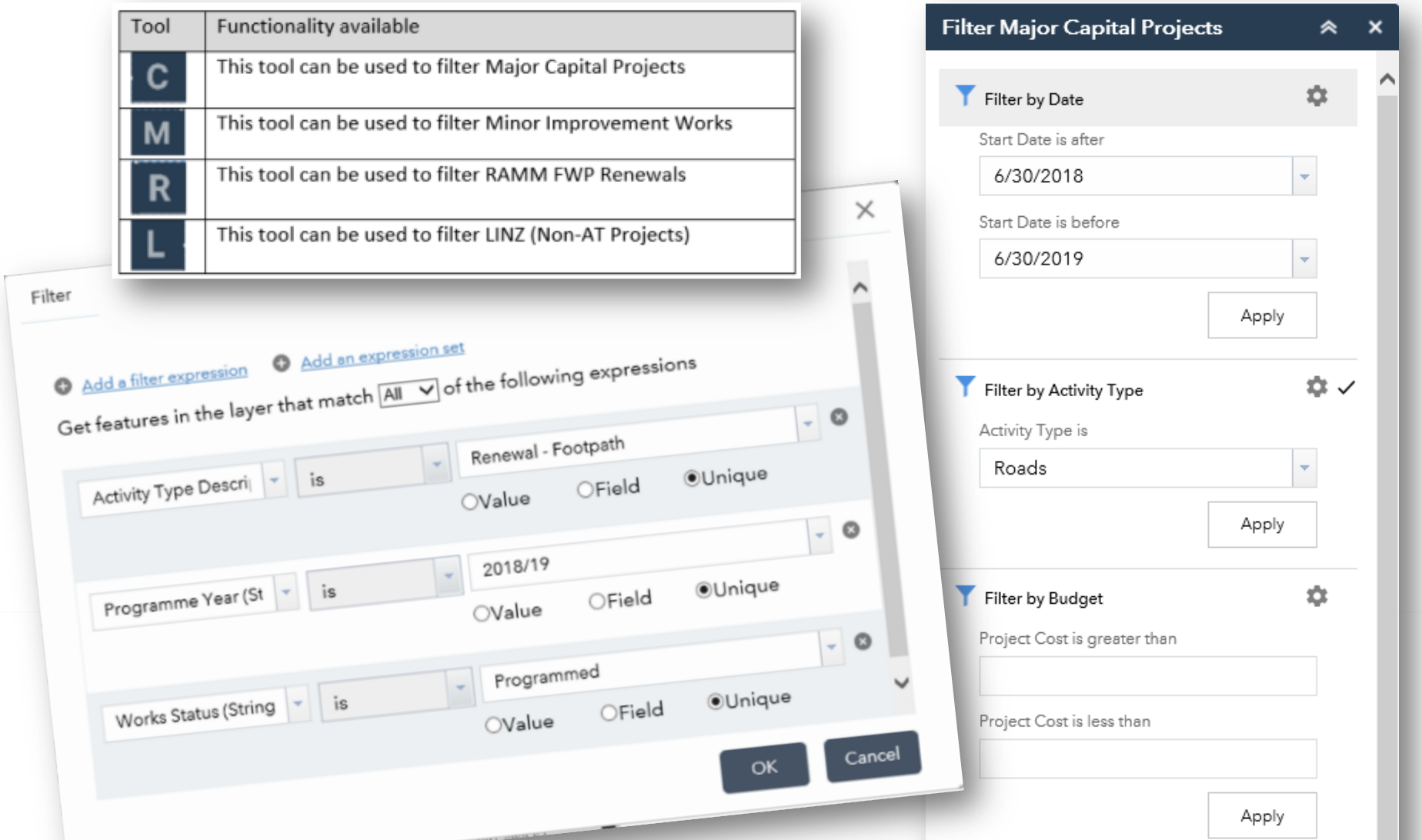
- All projects have a description, along with activity type, planned start / end / construction date, and current project status



Opportunities assessment process

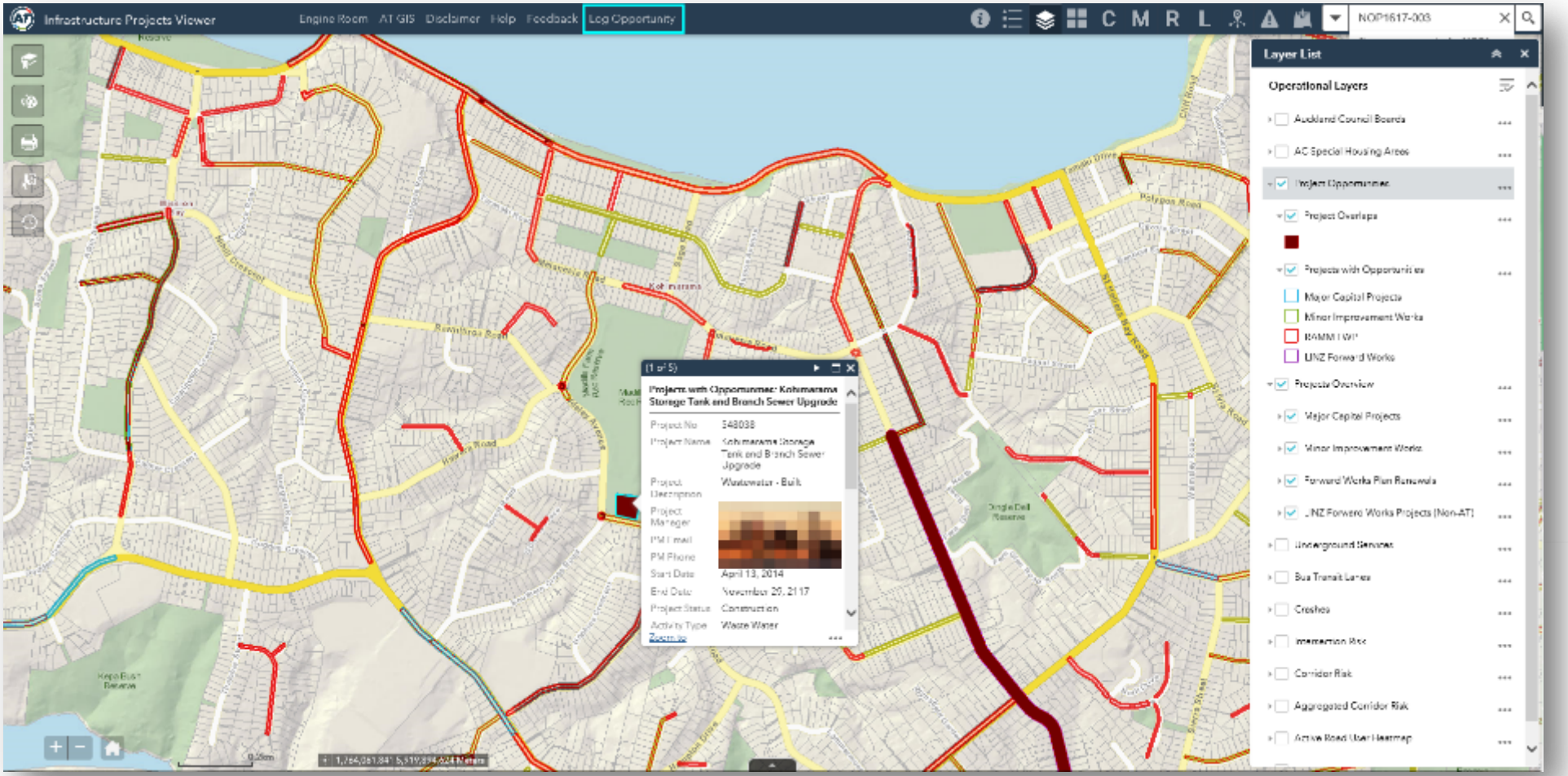
- Filter tools can be used to narrow down opportunities of interest

Tool	Functionality available
C	This tool can be used to filter Major Capital Projects
M	This tool can be used to filter Minor Improvement Works
R	This tool can be used to filter RAMM FWP Renewals
L	This tool can be used to filter LINZ (Non-AT Projects)



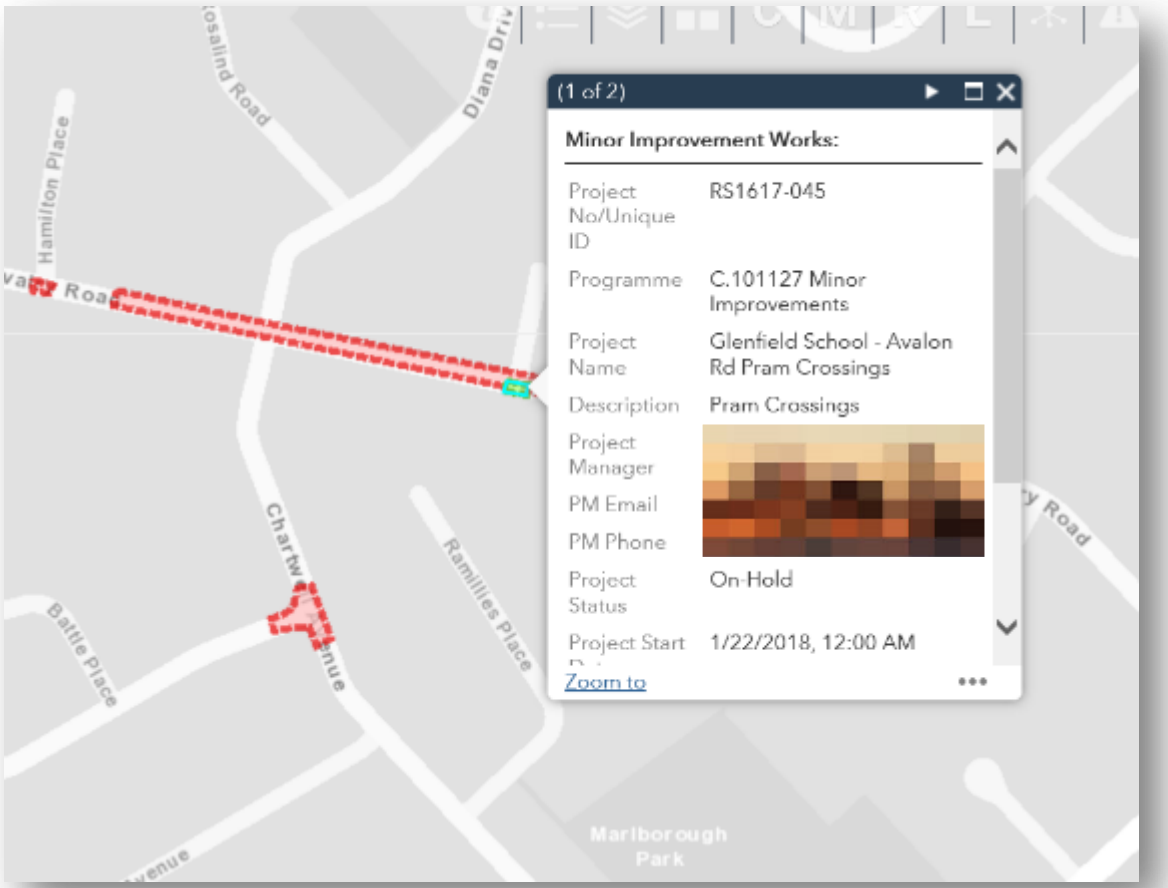
Opportunity assessments are logged

- PM's log assessments they have completed. This includes:
  - Whether an opportunity been identified. Any recommendations for collaboration. An estimate of costs that could be saved.



IPV is a communication tool

- Knowing who to contact (and having contact details for them) ensure that communication can happen when an opportunity to collaborate is identified

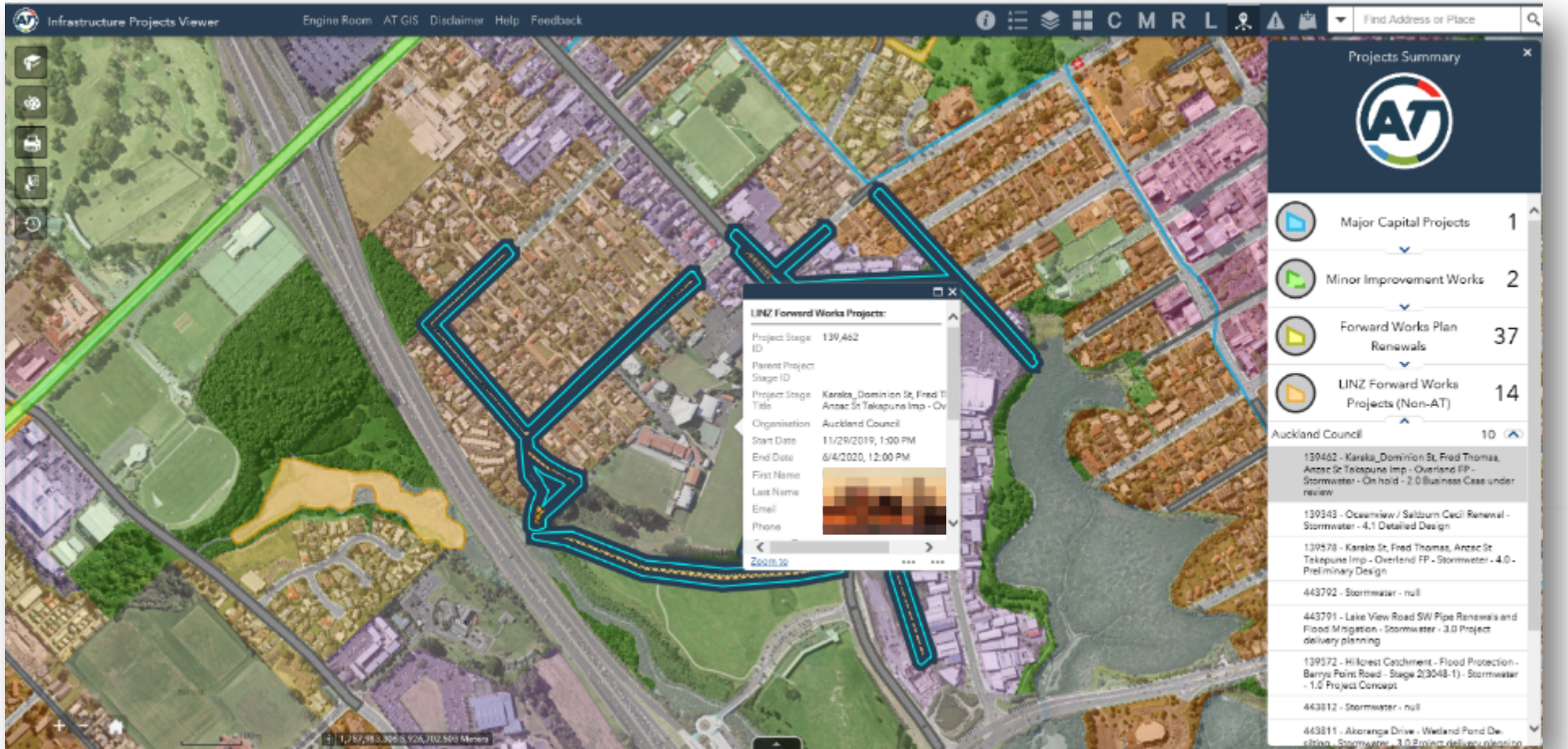


Data from multiple sources in one place

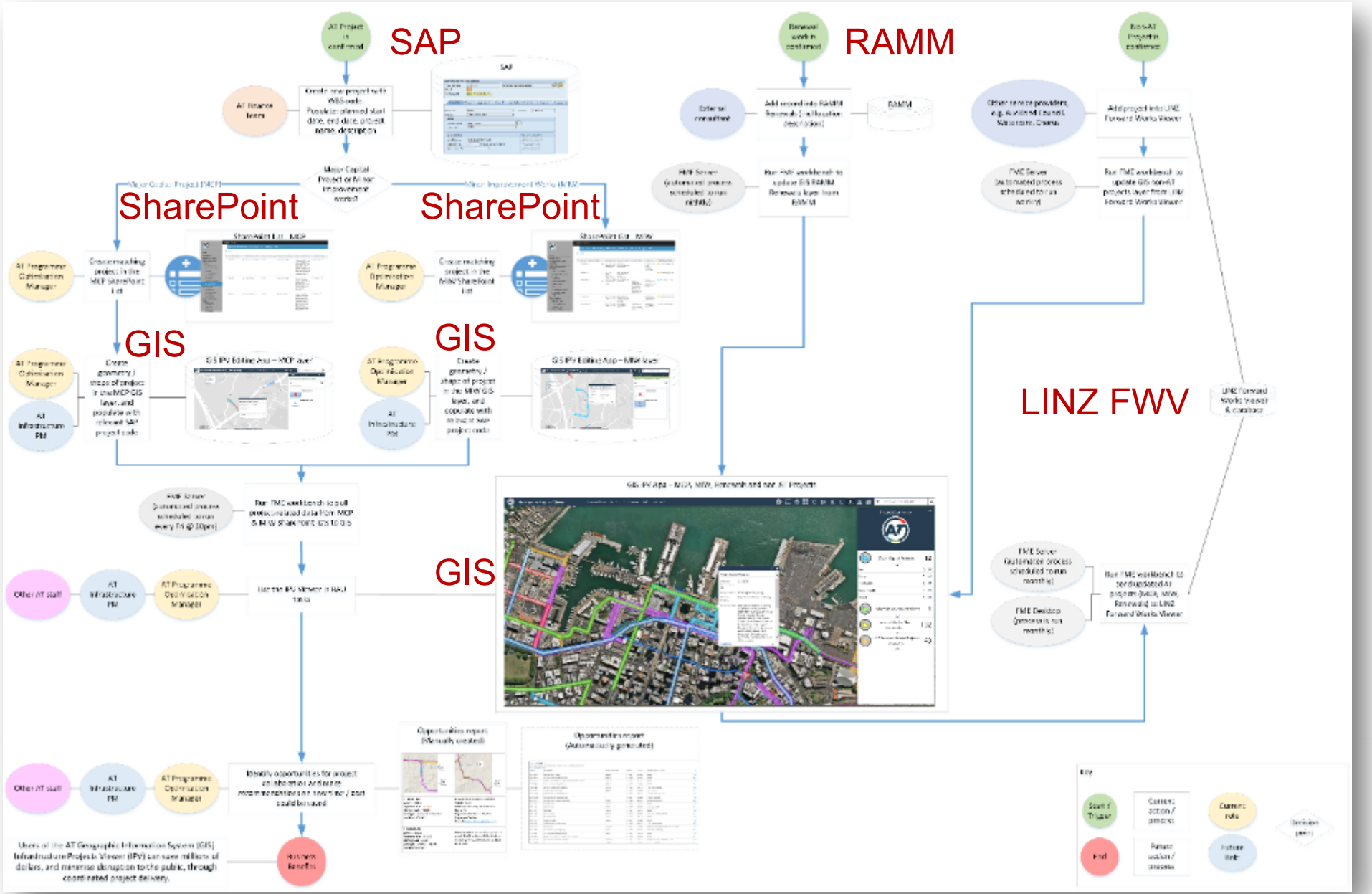
- MCP & MIW
  - Attribute information – sourced from ‘master’ lists in SharePoint (which draws information from SAP).
  - Geometries - are captured in a IPV WAB editing app (in GIS)
- Renewals
  - Sourced from AT‘s asset management system (RAMM) – both geometries & attributes
- Non-AT project
  - Sourced from the LINZ Forwards Works Viewer - both geometries & attributes
- ETLs
  - FME workbenches are scheduled on FME Server to pull data from the various systems noted above into AT’s GIS

IPV saves AT PM's time

- We don't just pull non-AT data into the IPV. We also push all of our AT project information to the LINZ Forward Works Viewer on a monthly basis
- We therefore save the AT Infrastructure Project mangers time, by doing the data 'push' for them, and negate the need for them to use and update two systems

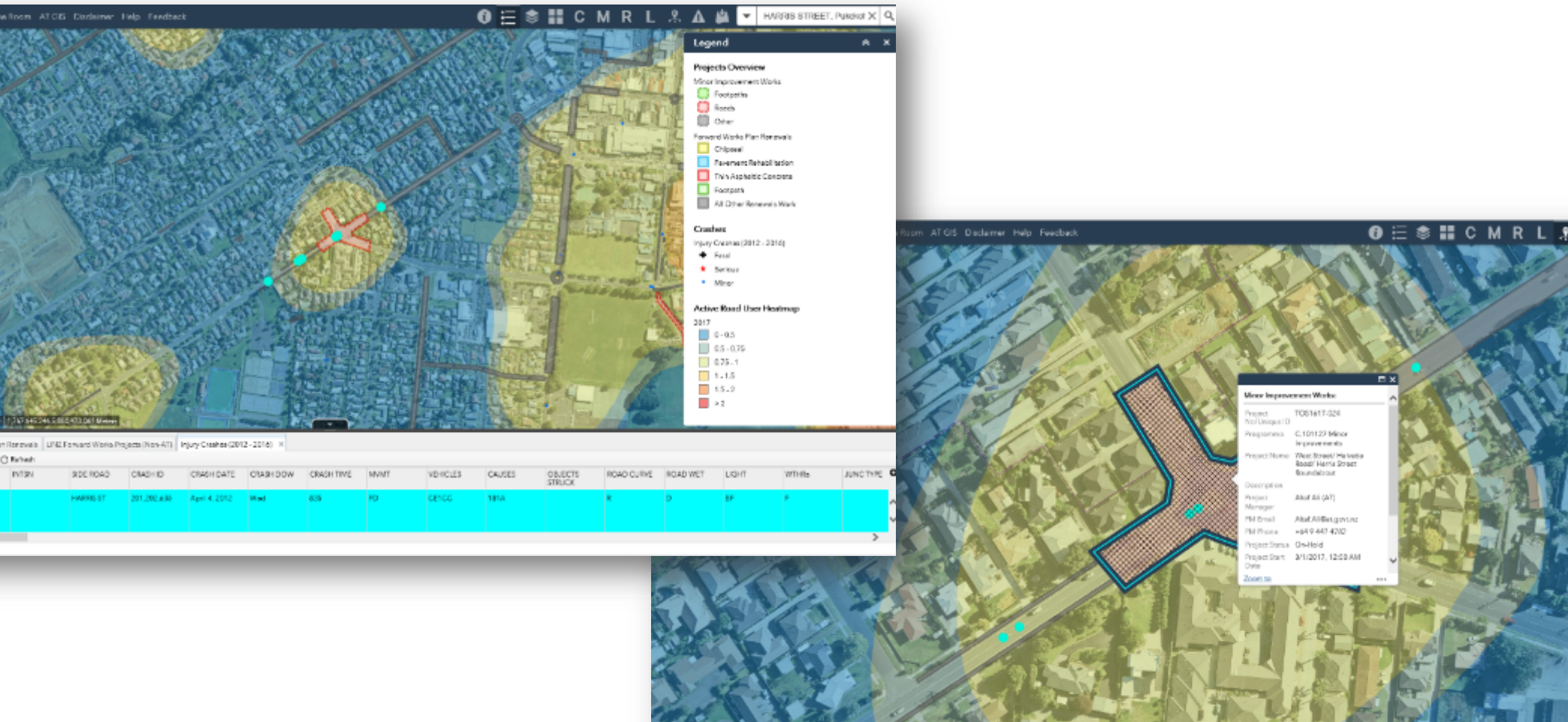


IPV solution design



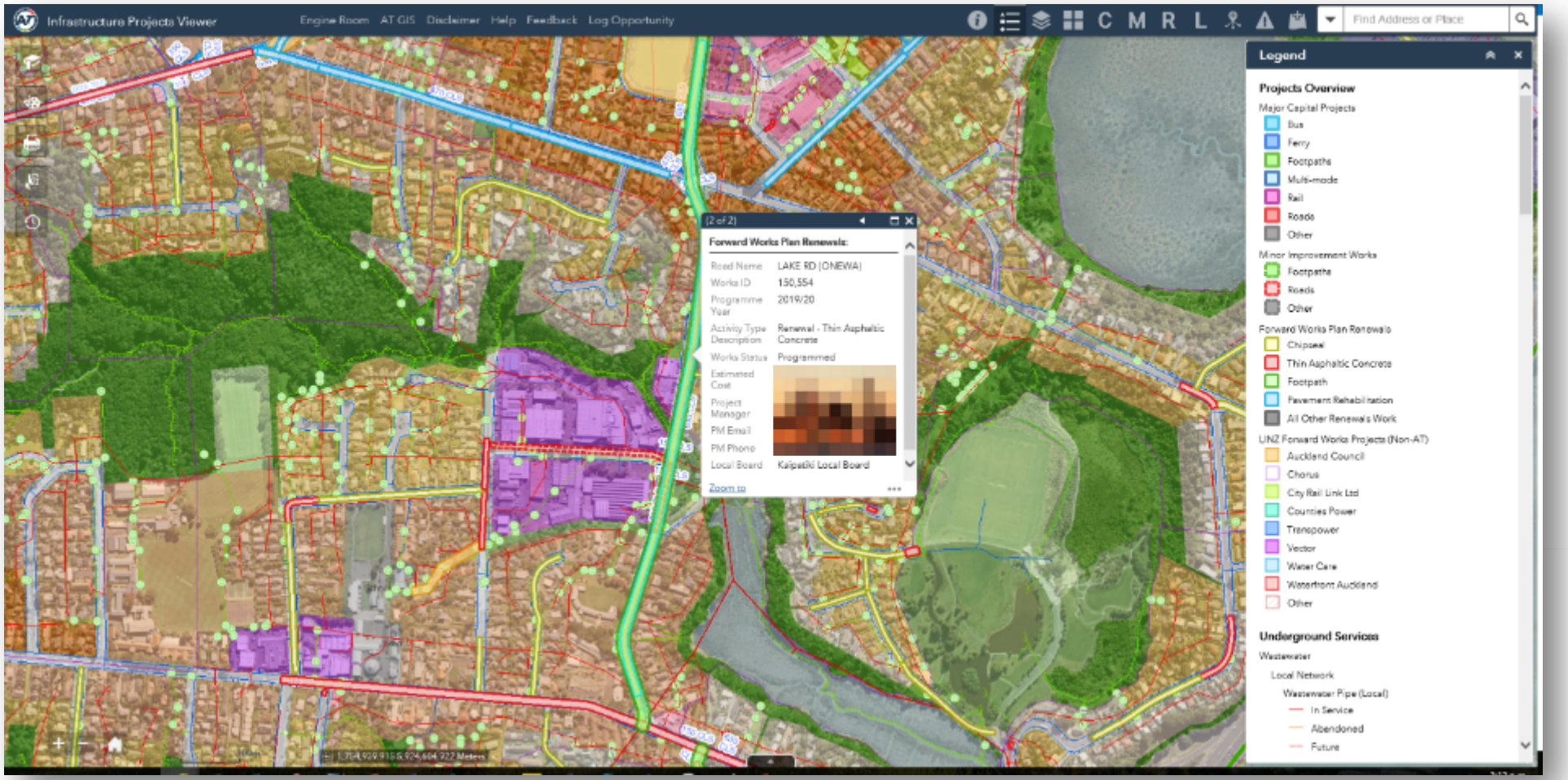
IPV provides valuable insights

- IPV provides AT staff with powerful insights they didn't previously have, e.g. crash data can provide justification around planned spend, or indicate where work might need to be undertaken



IPV provides valuable insights

- AT have access to AC GIS layers as well
  - These provide powerful insights alongside project layers, e.g. underground services, unitary plan zones, property information, consents, etc.



IPV enhancements are feedback driven

- We rely on our SME's, partners and customer feedback to drive the IPV roadmap

- IPV has a feedback link which opens a Survey123 app that records requests for additional data, functionality and/or records new use cases

Infrastructure Projects Viewer (IPV) - Road Map

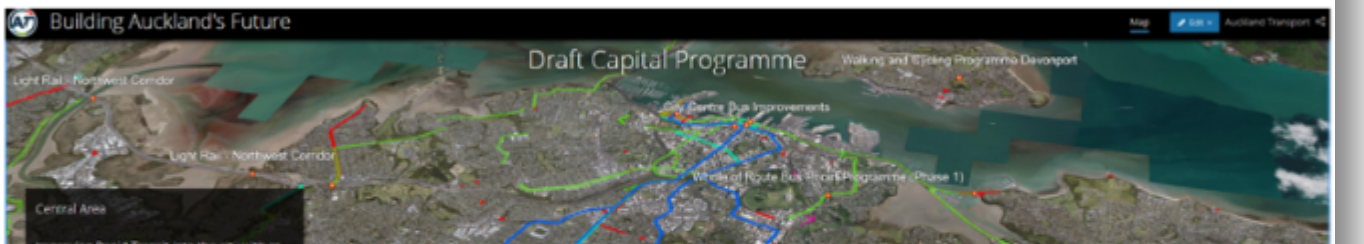
Last updated: 30/07/18 by Lisa Read

Coming soon

The following enhancements have been proposed as functionality / items that will add value across AT.

- Sharing AT project layers with Auckland Council, the wider council-family and NZTA. These layers will contain project managers names and contact details, but exclude any financial information. The objective of doing this is to encourage wider awareness, communication and collaboration.
- Generating and sharing 'sanitised' versions of the project layers with the public on the AT GIS Open Data Portal. These layers will exclude project manager names and contact details as well as financial information, but give the public visibility of what projects are planned, as well as where and when
- Bringing in NZTA funding information from SAP, so that it is available and can be summarised in the IPV
- Introducing statistics sourced from public surveys that provide insights on safety information, as well as priorities for upcoming improvement works
- Enabling users to drill down to the asset level, and view information regarding current condition grades and/or previous and planned work.
- Integrating the IPV solution with strategic projects and "lifecycle management" to enable confirmed projects to roll over from possible, to proposed, to planned
- A dashboard app that will enable high level visualisation of project information across the region
- Adding in detailed planned roadworks information / layers
- Using a GIS Storymap to communicate planned work with Local Boards and/or the public
- Adding in layers that will provide AT Infrastructure Project Managers with transparency on planned development work proximal to their projects, e.g. approved consents.

An interactive 3D spatial solution is available that could be used by AT staff when they consult with Local Board (part of a Storymap):



IPV is a self-serve solution

- The AT GIS Team are not Subject Matter Experts in AT's projects and /or assets.
- IPV empowers AT's SME's to populate and maintain data at source.

- To date, our team's role has been to set up and configure the solution components (apps and ETLs)
- Going forward, we'll enhance the solution but do **no** data maintenance ourselves… we're leaving this to the experts
- This is a win-win!

IPV is a product

- AT's BT unit is using agile methodology, and IPV is a product
  - We have a backlog of enhancement requests that we review and groom with the IPV Product Owner on a weekly basis

Work Item Type	Title	State	Tags	Assigned To	Iteration Path	Created By
User Story	IPV - I want to release an updated Infrastructure Projects Viewer in Aug-18	New	Solution		AT_Spatial	Lisa Read (AT)
Task	IPV - Prepare report for Opus (roads that are impacted by MCP ad dont require inspection) - de by Fri 03/08	Closed	Analysis P1 Unplanned	Kieran O'Donnell...	AT_Spatial\Tue 31 Jul - Mon 6 Aug	Lisa Read (AT)
Task	IPV - Handover IPV / RLTP and all related ETLs to Ben	New	BAU Handover P1 ...	Kieran O'Donnell...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Handover of IPV / RLTP and all related ETLs - from Kieran to Ben	Active	Handover P1	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Prepare business case for covering all IPV enhancements as its own project (as too big for quick wins)	New	P1 Project Management	Thomas Wakema...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - FME ETL Testing: IPV SharePoint lists migration to SharePoint Online	New	ETL P1 Solution	Kieran O'Donnell...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Amit Kokje (AT
Task	IPV - Invesitgate whether Editing app can support diff poly geoms, e.g. rectangle, semi-circle, ellipse	Active	Data P2	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Investigate what brown /green field data is availabele from AC (as well as Development areas)	New	Data P2 Solution	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Source CRL route map layers and add to IPV	Active	Data P1	Thomas Wakema...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Extend IPV to include NZTA funding data from SAP / SharePoint	Active	P1 Solution Waiting	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Enhance solution to enable SharePoint list items to be opened from popups (MCP and MIW only)	New	P1 Solution	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Hide completed projects on load	Active	P2 Solution	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Add confirmed asset layers to app colour-coded by condition grade	Active	Data P1 Waiting	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Complete RFC for Aug-18 Pre-Prod release (target date is w/o 20/08)	New	Solution	Benjamin Coop (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Complete RFC for Aug-18 Prod release (target date is w/o 27/08)	New	P1 Solution	Benjamin Coop (...	AT_Spatial\Tue 04 Sept - Mon 17 Sept	Lisa Read (AT)
Task	IPV - Update roadmap to include indicative timeframes	New	Deferred P3 Solution	Lisa Read (AT)	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Release updated app to Prod, write Need2Know / Yammer, and update roadmap doc (target date is w/o 27/08)	New	Solution	Benjamin Coop (...	AT_Spatial\Tue 21 Aug - Mon 03 Sept	Lisa Read (AT)
User Story	IPV - I want to release an updated Infrastructure Projects Viewer in Sep-18	New	Solution		AT_Spatial	Lisa Read (AT)
Task	IPV - Confirm Solution Design for how new strategic projects will be managed	New	Solution	Kieran O'Donnell...	AT_Spatial	Lisa Read (AT)
Task	IPV - Create strategic projects editing app POC	New	Solution	Hilario Cachero (...	AT_Spatial	Lisa Read (AT)
Task	IPV - Submit paper / nomination for IPWEA Excellence Award	New	Solution	Hilario Cachero (...	AT_Spatial	Lisa Read (AT)
Task	IPV - R&D options for providing users with print outputs	New	R&D Solution	Hilario Cachero (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Scope requirements for MIW SharePoint List (Meetign Wed 04/07)	New	Scoping Solution	Hilario Cachero (...	AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
Task	IPV - Setup POC of 3D interactive solution for consultations	New	POC R&D Solution		AT_Spatial\Tue 7 Aug - Mon 20 Aug	Lisa Read (AT)
User Story	IPV - I have a number of new requirements that need to be sized and prioritised	New			AT_Spatial	Lisa Read (AT)
Task	IPV - Enter the project into the Project Excellence awards	New			AT_Spatial	Lisa Read (AT)
Task	IPV - Source and add geotechnical data to the IPV	New			AT_Spatial	Lisa Read (AT)
Task	IPV - Source and add flood area data to the IPV	New			AT_Spatial	Lisa Read (AT)

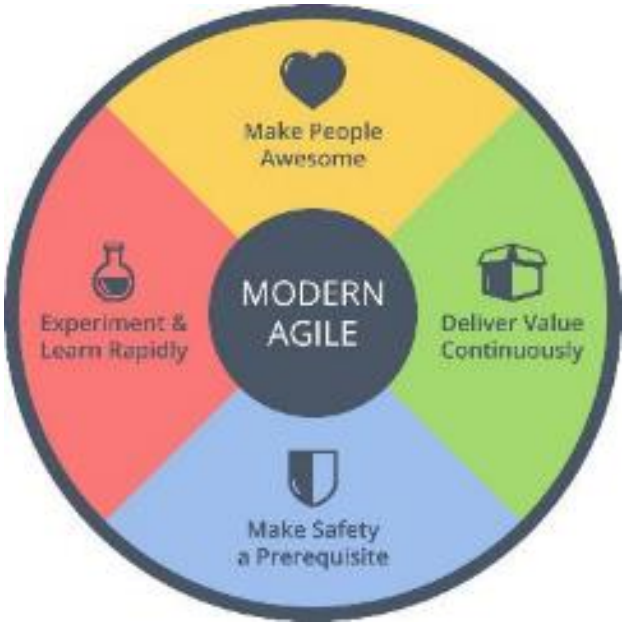
What's next?

- The IPV has the potential to:
  - Minimise disruption to the public, through coordinated project delivery
  - Help us review, set, justify and update project priorities across the Auckland region
  - Save millions of dollars

- In order to maximise these benefits to all customers, AT will:
  - Work with AC, the wider council-family, NZTA to share our ideas, data, tools, and solutions, e.g. portal collaboration;
  - Share a 'sanitised' version of our data with the public

What's next?

- Stay AGILE:
  - Continue to try new ideas / ways of working
  - Assess our success regularly
  - Quickly adapt and pivot if needed
  - Release and learn regularly



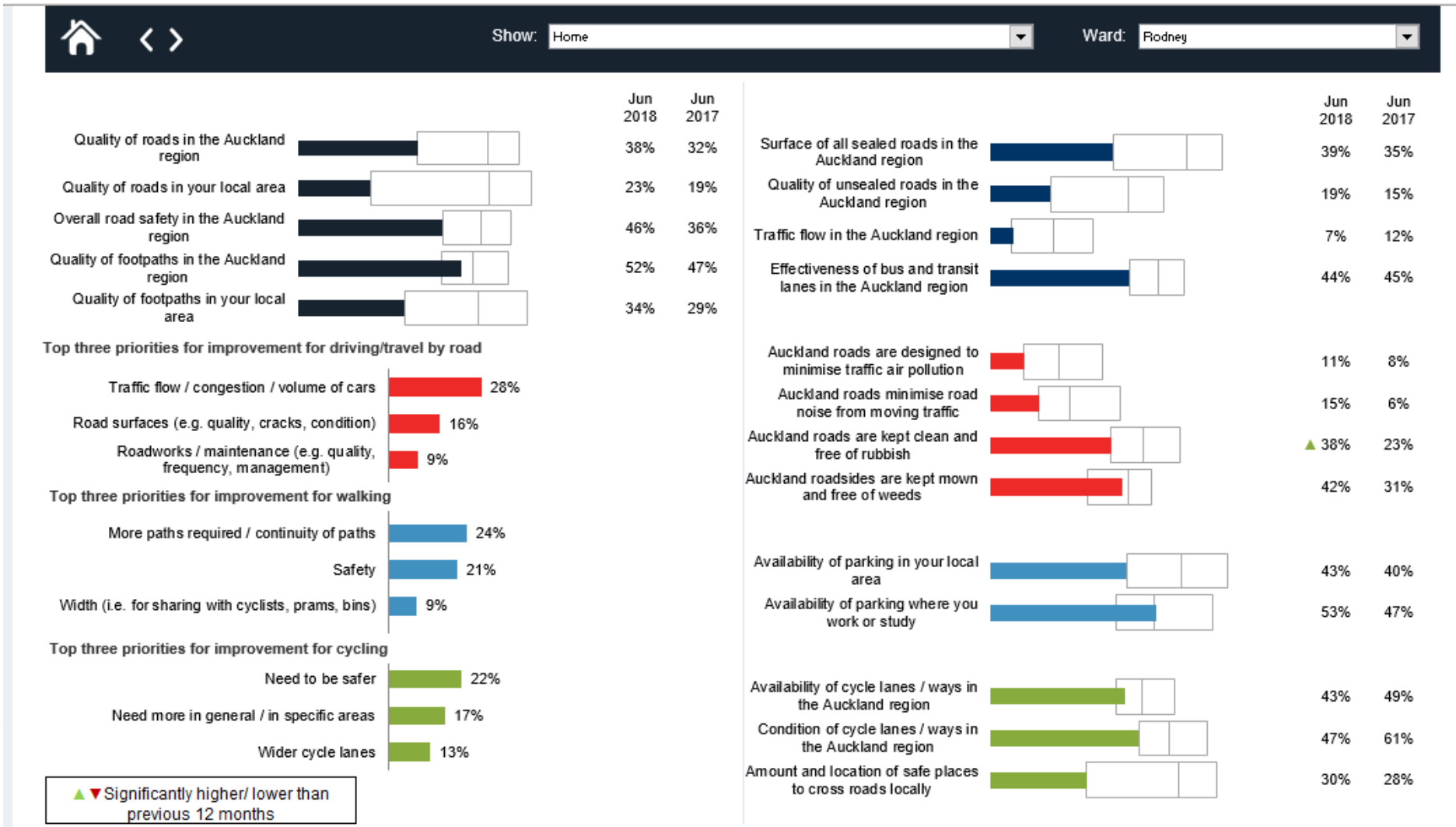
- At the time of submitting our abstract for this presentation, we thought the IPV solution was worth sharing with as-is…

- Since then, we've had direct engagement from the AT CE and ELT to:
  - Drive this forward, and
  - Provide a holistic picture in <u>one</u> end-to-end solution

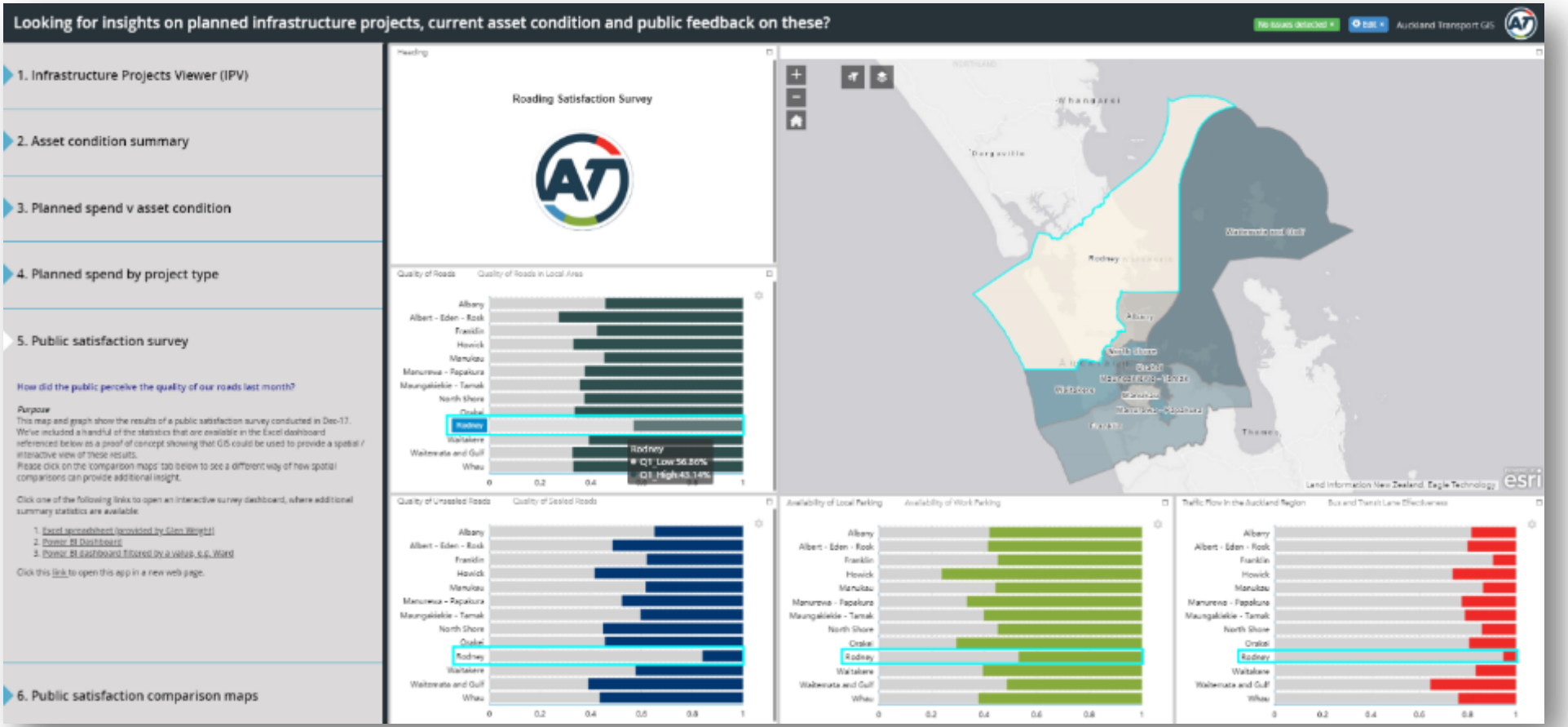
Live demo time…

- What could possibly go wrong?

Infrastructure > Customer insights



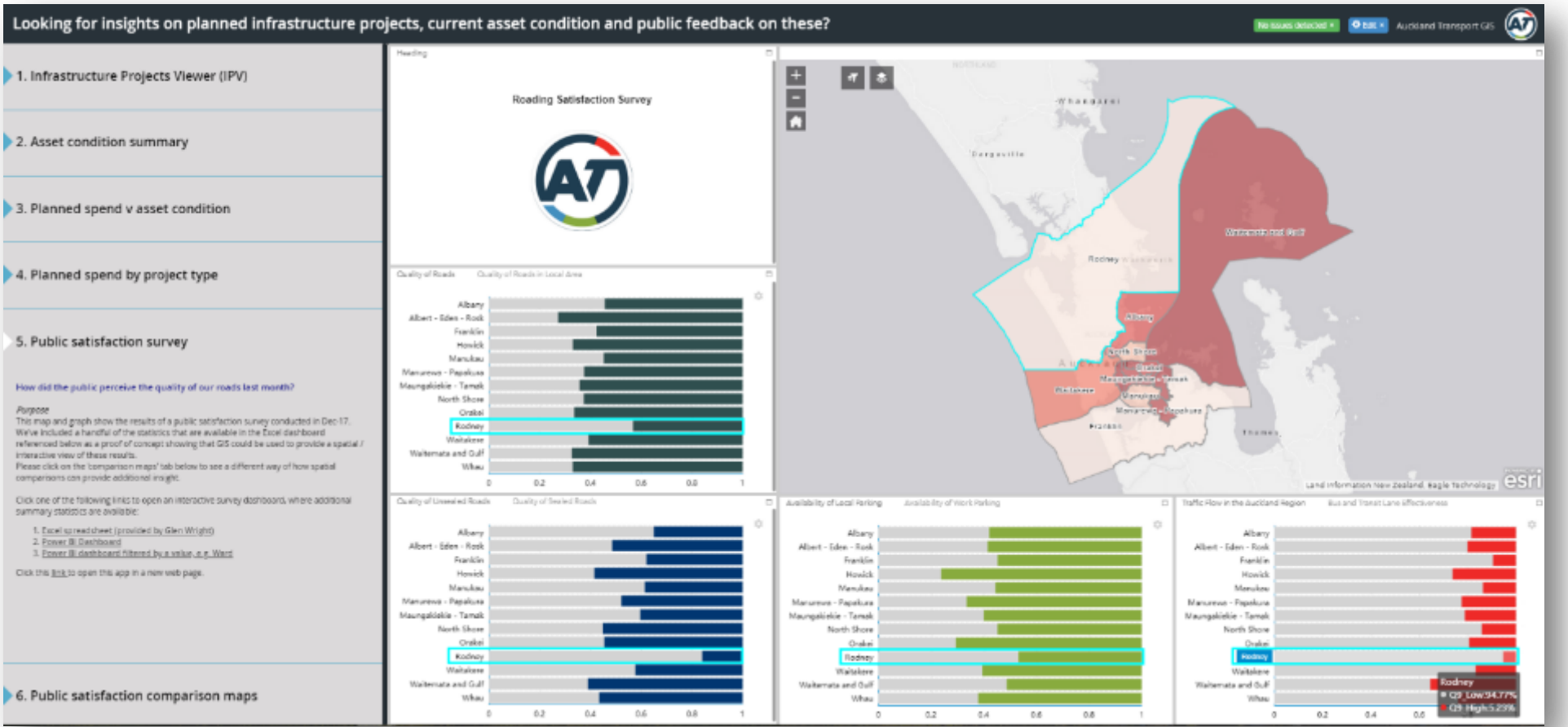
Infrastructure > Customer feedback



Graphs: Quality of roads (turquoise / blue), parking (green), traffic flow (red)

Map: Quality of roads (turquoise); darker = higher satisfaction; lighter = lower

Infrastructure > Customer feedback

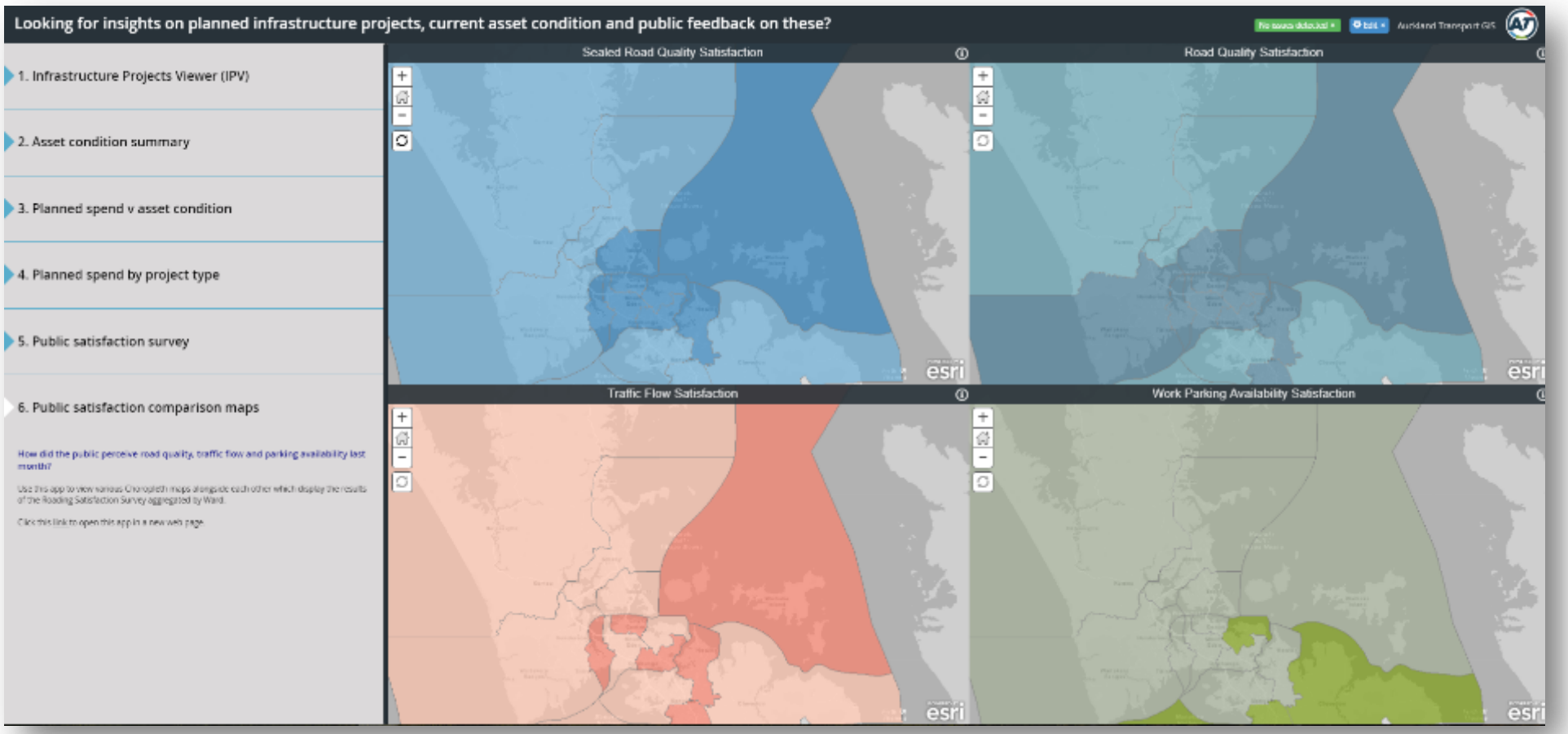


Graphs: Quality of roads (turquoise / blue), parking (green), traffic flow (red)

Map: Quality of roads (red); darker = higher satisfaction; lighter = lower

Insight: Customer satisfaction on all 4 questions is comparatively low for Rodney

Infrastructure > Customer feedback

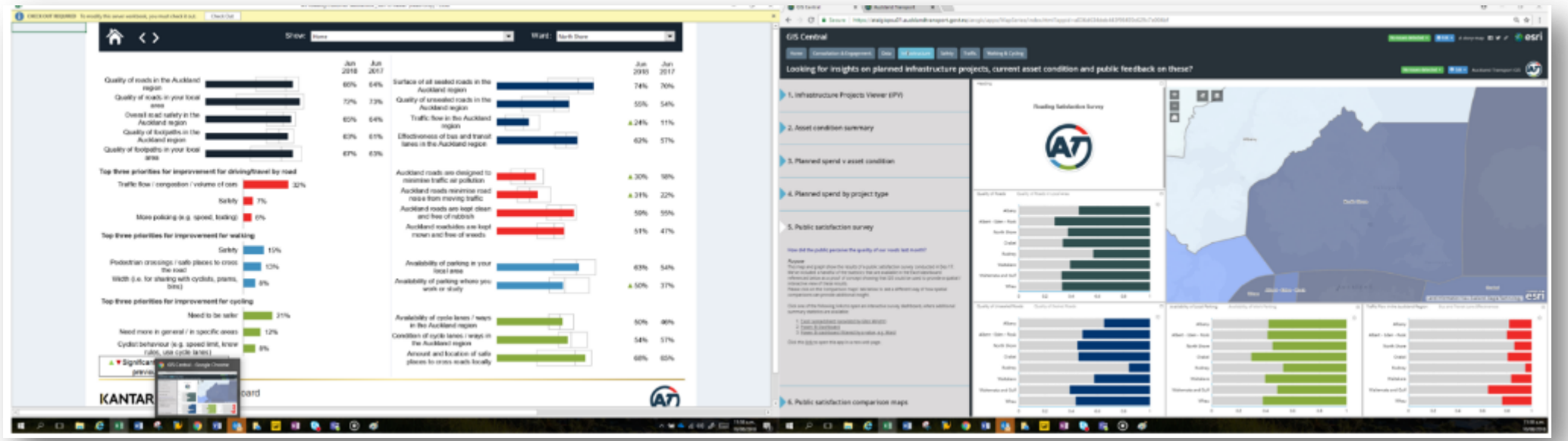


Map colours: Quality of roads (turquoise / blue), parking (green), traffic flow (red)

All choropleths: darker = higher satisfaction; lighter = lower

Insight: Customer satisfaction on all 4 questions is comparatively low for Rodney

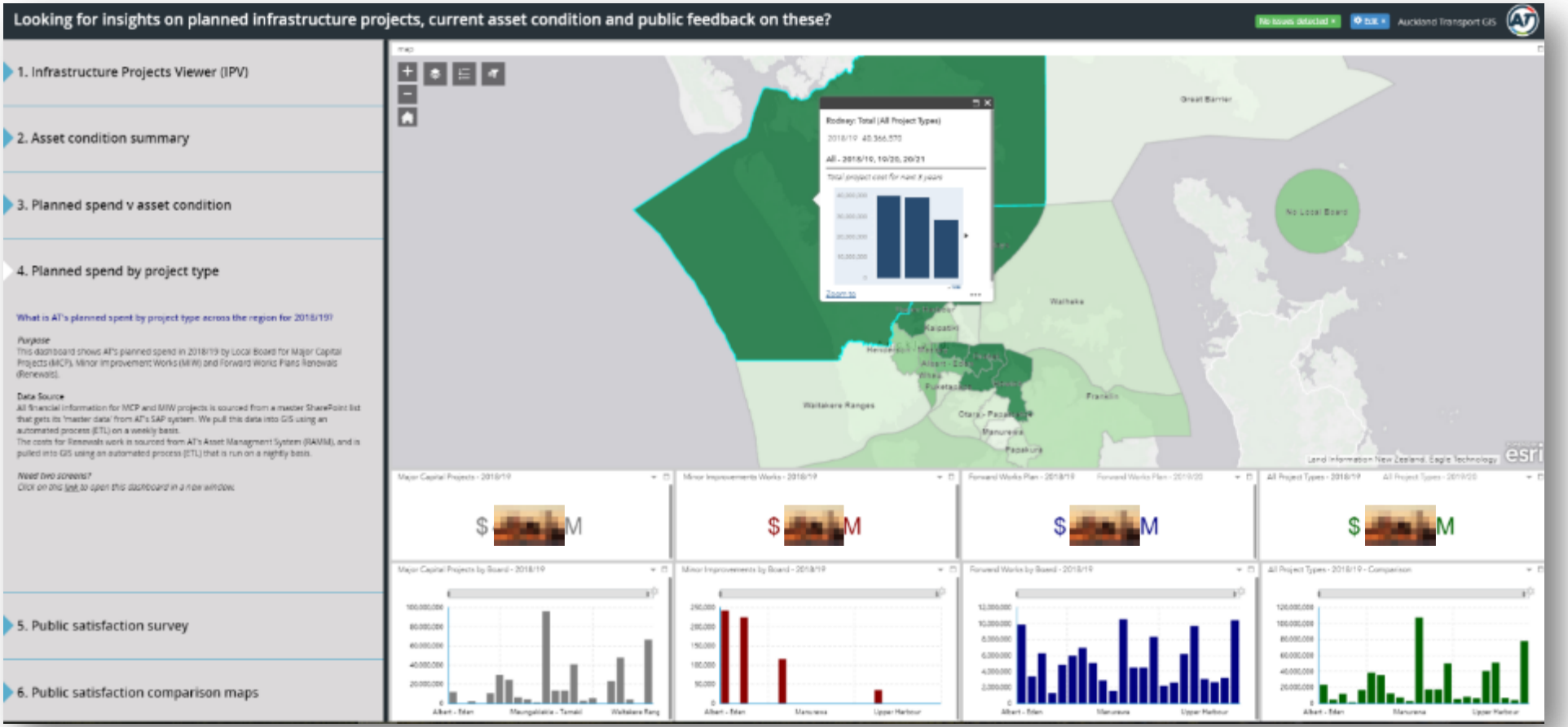
Infrastructure > Two screens



Open interactive dashboard in a 2nd window using hyperlink listed in the ‘Roading satisfaction survey’ narrative:

- Screen 1: Interactive dashboard (user can filter by ward)
- Screen 2: Interactive map (user can compare with other wards)

Infrastructure > Planned spend

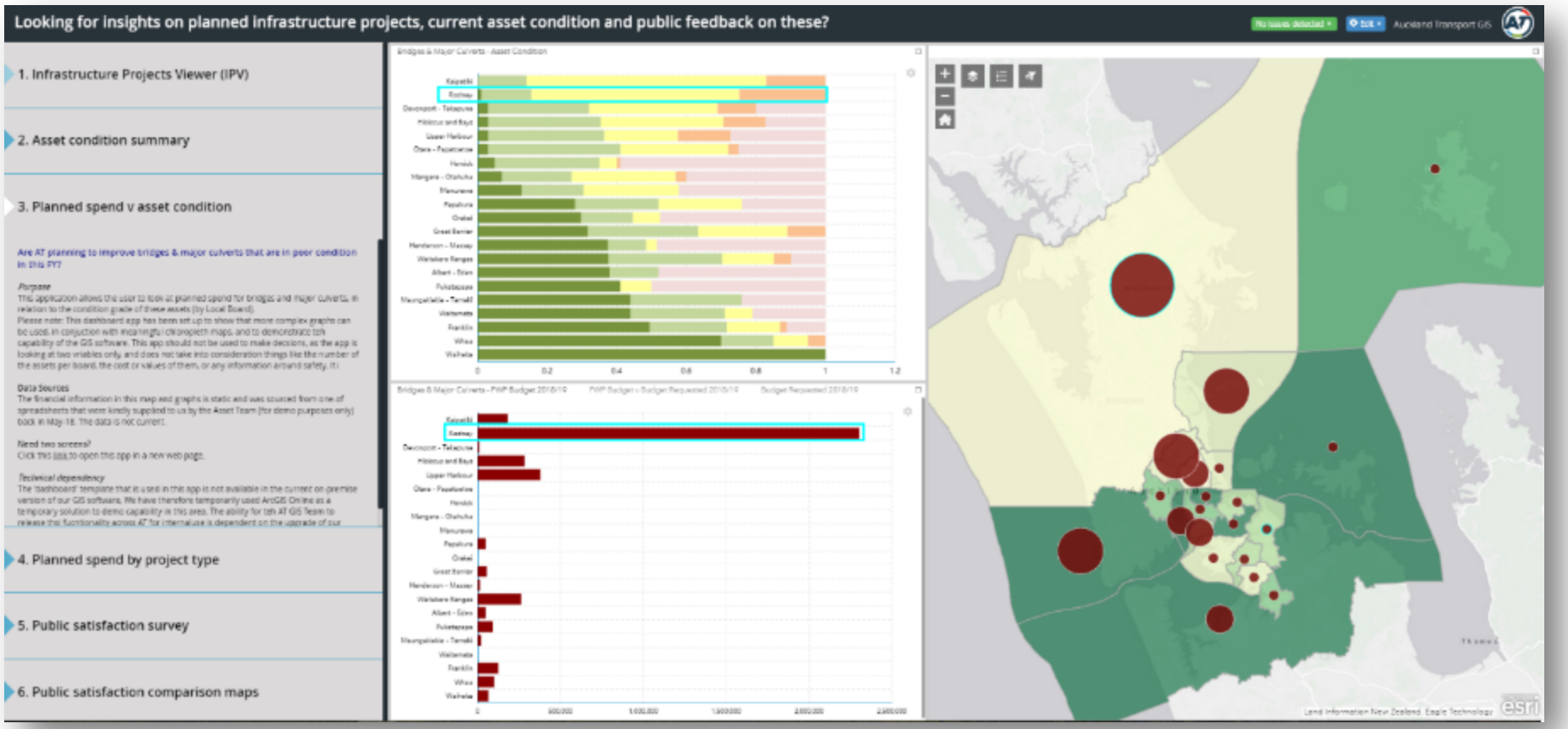


Graphs: MCP (grey), MIW (red), Renewals (blue), Total (green)

Map: Total planned spend (green); darker = higher; lighter = lower

Insight: Planned spend in Rodney is comparatively high

Planned spend v Asset condition

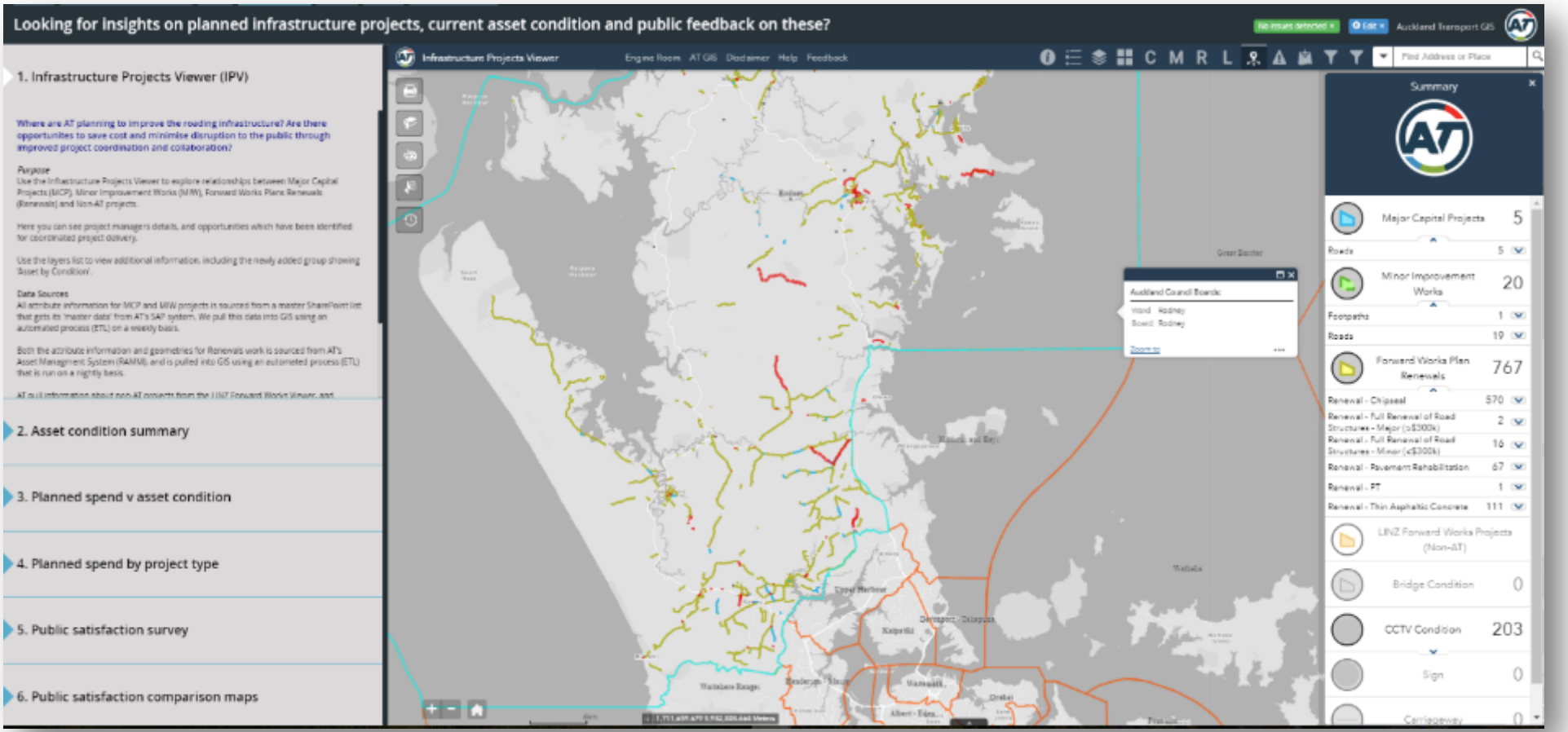


Graphs: Top – Asset condition of roads & major culverts; Bottom – Planned spend on bridges & major culverts in 2018/19

Map: Condition of assets (green); darker = more assets in very good / excellent condition; Planned spend (red); bigger = higher planned spend; smaller = lower planned spend

Insight: Planned spend in Rodney is high, but condition of assets in that board is low

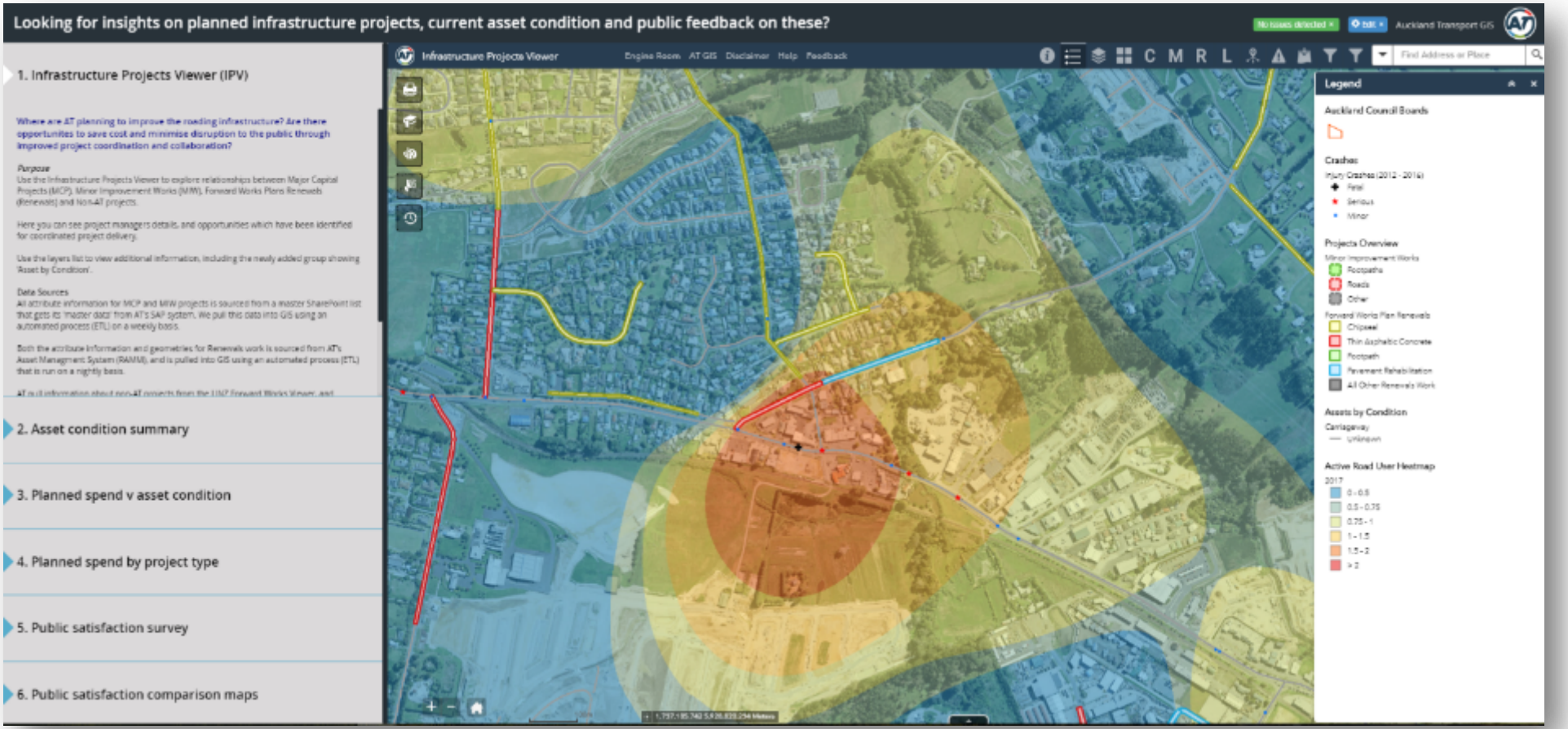
Infrastructure > Roading projects



Roading projects in Rodney (either planned or underway):

- MCP (5), MIW (20), Renewals (767)

Infrastructure > Roading projects



Drill down:

- Look at high risk / unsafe areas (that have had fatal / serious crashes)
- Example insight: The planned project that will improve safety isn't scheduled to start until 2019/20. Take action: is it possible to bring this work forward?

Holistic picture in one end-to-end solution

- I have been struggling with a technical usability challenge…
  - Esri have provided us with tools that enable us to provide our customers / clients with targeted solutions
  - At AT, our GIS Team have become solution focussed, and are delivering a heap of apps that are independently providing benefit to requesters across our organisation
  - It can be daunting / overwhelming for 'outsiders' (non-GIS Team-ers) to discover what data / solutions / apps are available, and to find the 'one' that will solve their business or customer problem
  - Even within our own team, we are not all fully aware of everything that we have released

- So when we came up with the idea to try using a Story Map as our method for creating the 'holistic picture' requested, we took this one step further…

Location Intelligence Central

NEW IDEA!!

Enabling powerful insights

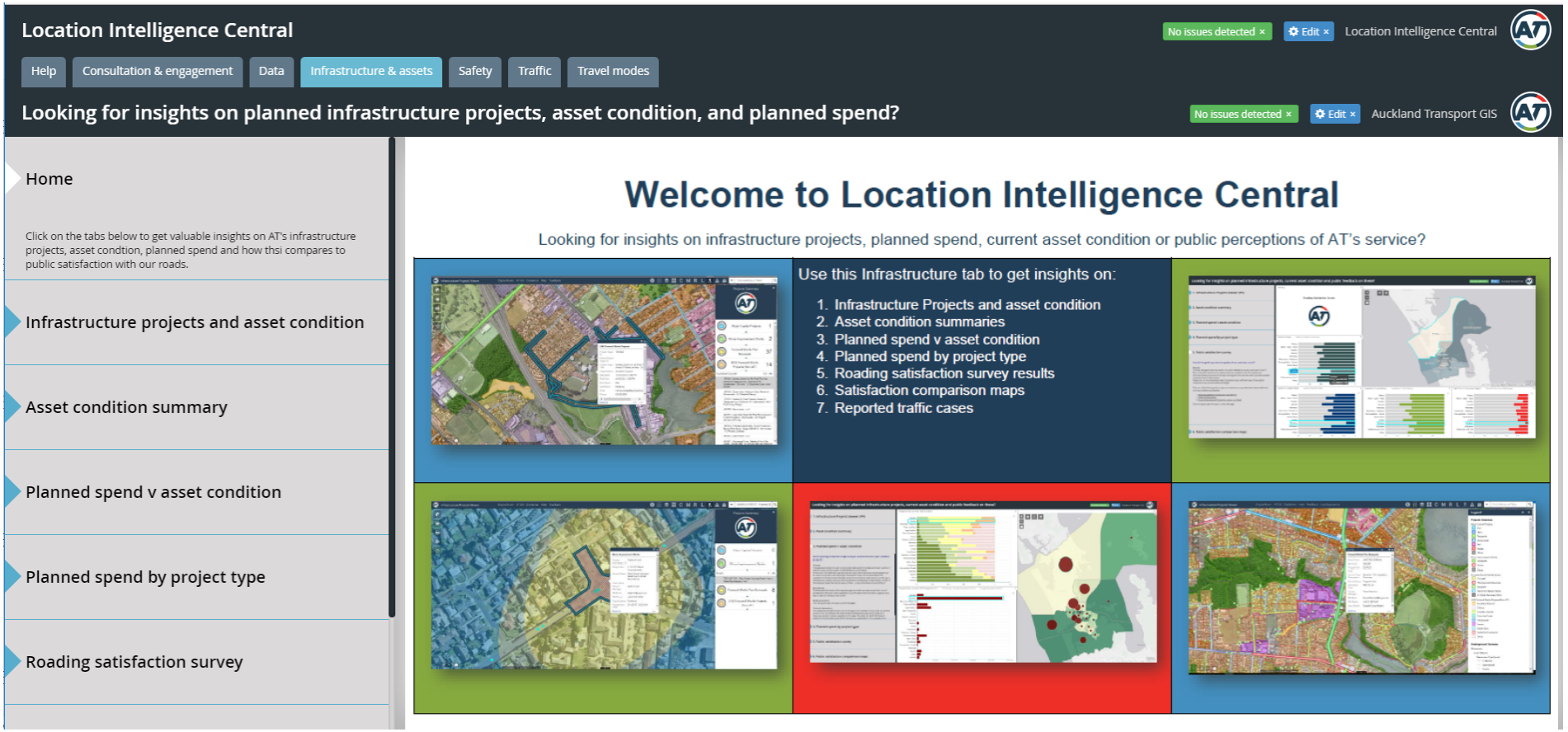
Auckland Transport
An Auckland Council Organisation

Location Intelligence Central

- Using a ‘wrapper’ for multiple themed ‘child’ Story Maps

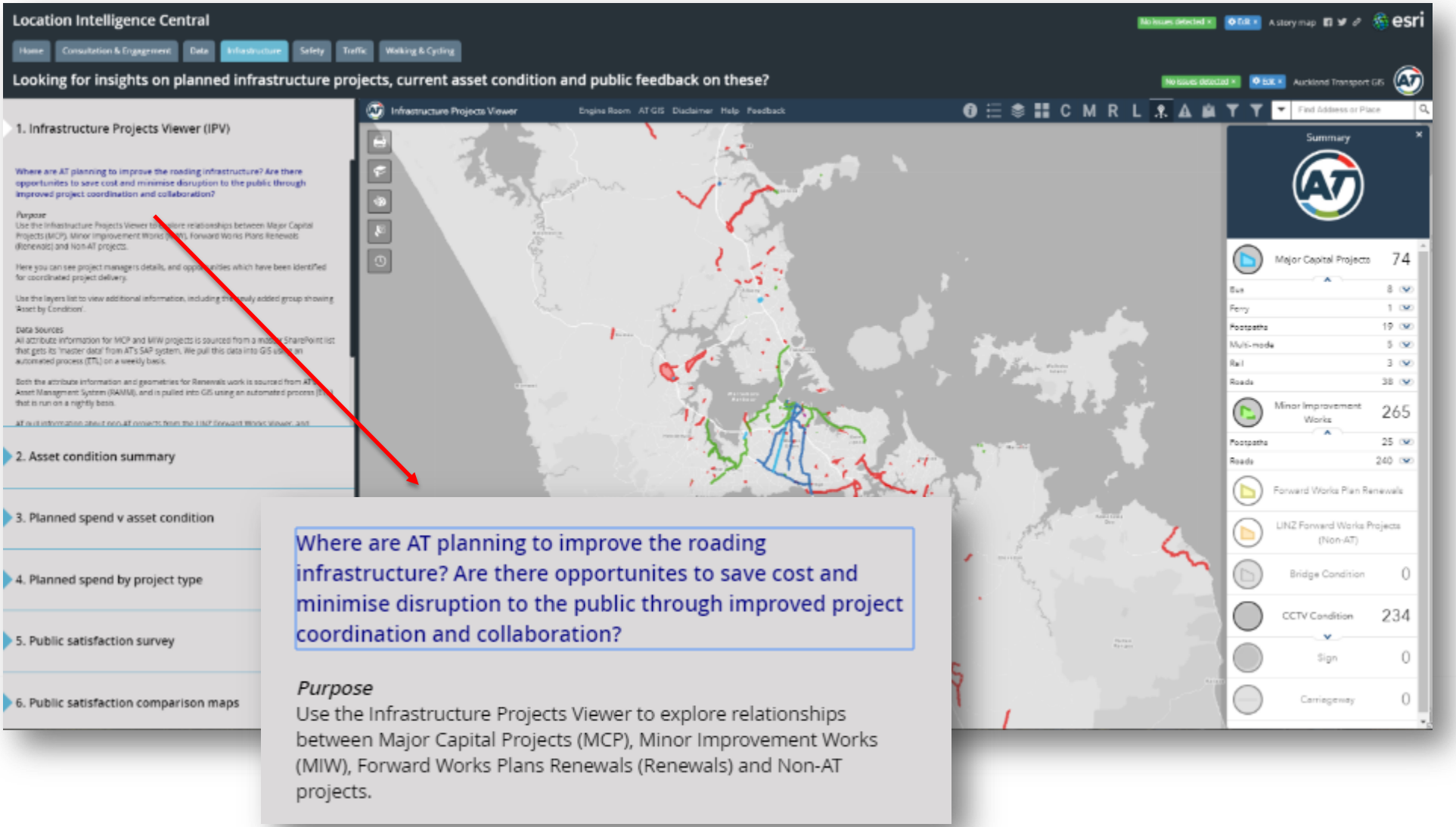
- Alternatives to this approach could be the new ArcGIS enterprise sites, and/or a combination of apps, templates, solutions.

Infrastructure as a ‘child’ Story Map

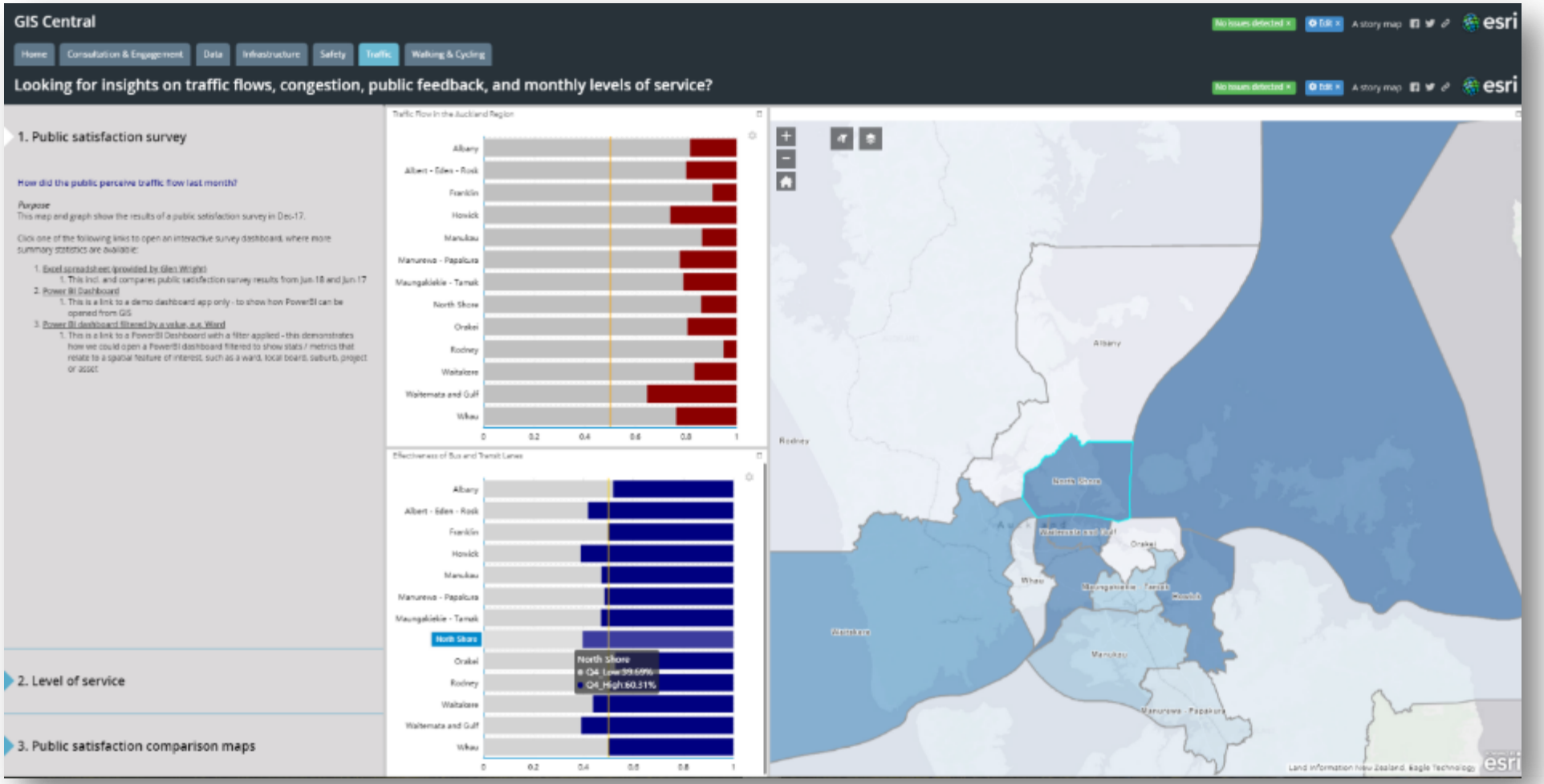


Purpose: To help our users / customers find the answers to business problems in a simple way that doesn’t feel onerous, is not time consuming, and is not ‘too hard’…

Using IPV within the ‘child’ Story Map



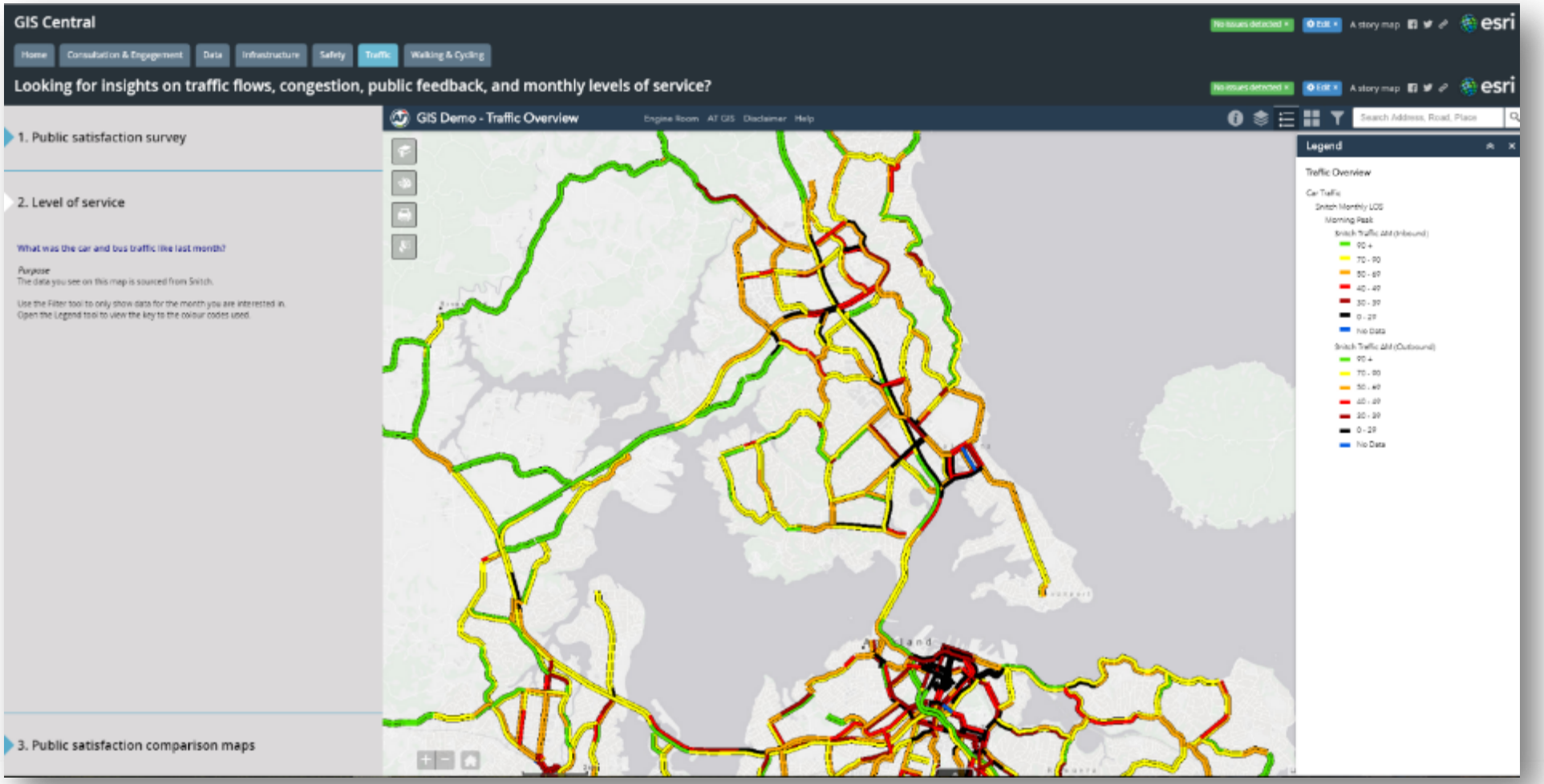
Traffic > Customer feedback



Graphs: Top (red) – Satisfaction with traffic flow; Bottom (blue) – Effectiveness of bus & transit lanes

Map: Effectiveness of bus & transit lanes (blue); darker = higher satisfaction; Insight: Customer satisfaction with traffic flow on the North Shore last month was relatively low; but satisfaction of the effectiveness of bus and transit lanes was high

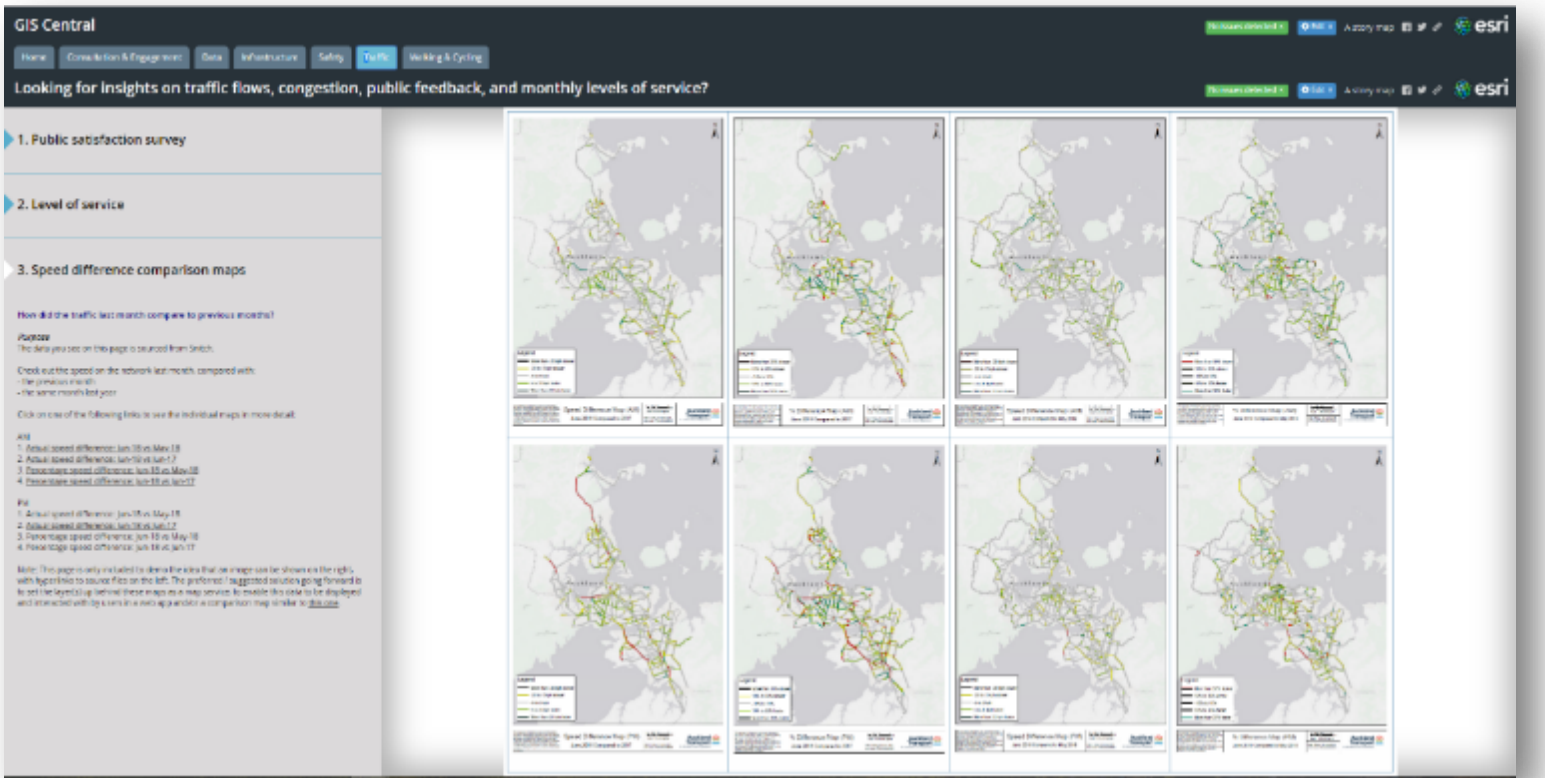
Traffic > Level of service for cars



Questions: What was the actual traffic flow like last month for cars on the North Shore? How does our measured level of service compare with customer feedback?

Insight: There are a number of part of the network that had a poor level of service (red or black). Customer feedback is aligned with our measured LOS

Traffic > Patterns over time



Questions: Was the poor LOS last month on a particular road an anomaly, or a regular occurrence?

Insight: Comparative maps can be used to analyse the network. Where poor performance is found, the next step is to look at options to improve traffic flow, e.g. where are current traffic signal and roundabouts currently located? Is it possible / viable to widen the road and add a lane? Where do commuters who travel this network start / end their journeys? Why are these drivers not using public transport? Could they?

Summary

- IPV is proving to be useful and effective, and providing both the intended & escalating business and customer benefits.

- This solution has been endorsed by management. All AT Infrastructure PM's are mandated to use it.

- Opportunities assessments are being captured, along with ongoing estimates of cost saved, so that we can track benefit over time.

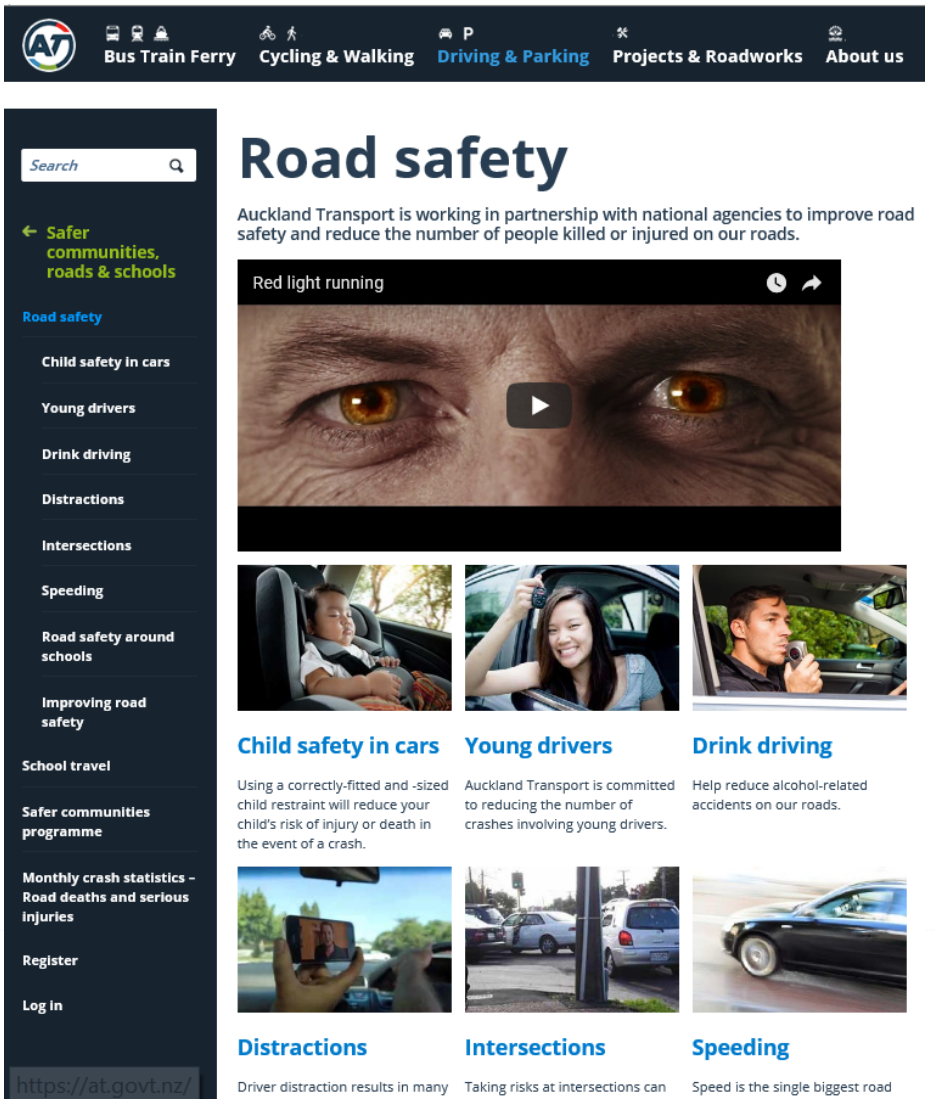
- The IPV is a self-serve solution.

- The AT GIS Team have a COTS first approach.

- When we trial Location Intelligence Central as a solution, I expect to see our user-base grow, along with demand for enhancements / requests for additional insights.

GIS community collaboration

- NZEUC 2018 is an opportunity to network and collaborate
- Let's share our tools, ideas and knowledge, as well as our data:
  - Together we can improve customer experience on the Auckland road network
- I'd like to hear what you think:
  - Thoughts on the IPV
  - Feedback / ideas for enhancement?
  - What do you think about Location Intelligence Central? Do you think it will guide users on how / where they can answer business and customer problems?
  - Are you interested in collaborating?



Questions

- Do you have any questions for me, the AT GIS Team, and/or Auckland Transport?