

This 7th VfM booklet contains
37 Value for Money Stories
contributed from across the country in the
3 months ending May 2013.

Take a look and if you want to learn more, email
or call the contributor, or just make use of their
idea!

If you have a VfM Story that you would like to contribute, please email one of the following for a blank slide.

Auckland/Northland Tony.Fisher@ama.nzta.govt.nz

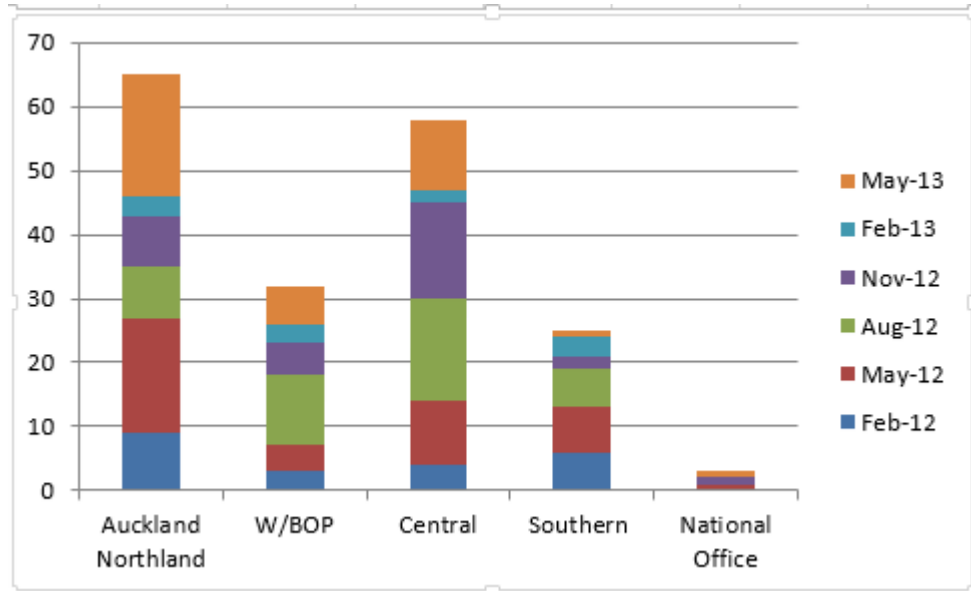
W/BOP Nigel.D'Ath@nzta.govt.nz

Central - Andrew.Adams@nzta.govt.nz

Southern – Roger.Bailey@nzta.govt.nz

National Office – Ian.Cox@nzta.govt.nz

highways and network operations



To date we have received 202 Value for Money slides.

Value for Money Initiative: WBOP27 Maranui Treatment Ponds – Smart Disposal of Waste

Opportunity

To reduce quantities of material (30,000m³) having to be removed from stormwater treatment pond site and disposed – opportunity to achieve through positive engagement and consultation with adjacent landowner.

Solution

Agreed areas of land with adjacent landowner where all good and unsuitable material could be placed adjacent to construction site. No material was required to be disposed of elsewhere.



Estimated Costs & Benefits

NZTA got a significant cost saving not having to remove the material from site and it avoided double handling of material. Approximately 30,000m³ of cut, saving could have been \$20/m³ or more ie \$600k. Adjacent landowner got to retain material suitable for their future development, which requires considerable fill.

Contributors

Angela Crean (NZTA), Beca Infrastructure Tauranga

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes

Categories

Earth works
Waste material
Cost savings

Value for Money Initiative: WBOP28 Chip Hot Rolled into Asphalt

Opportunity

The escalating cost of temporary traffic management on high volume roads with increasing traffic volumes have directed Inroads to find innovative solutions for reactive maintenance that minimise time to complete and the likelihood of rework required

Solution

Mill and inlay with hot mix asphalt can be cost effective on high volume roads as the risk of early failure is lower than for stabilisation/reseal. However, conventional hot mix does not meet texture criteria. Solution was to spread and roll sealing chip into the hot surface. This can also be carried out at night to minimise disruption to traffic

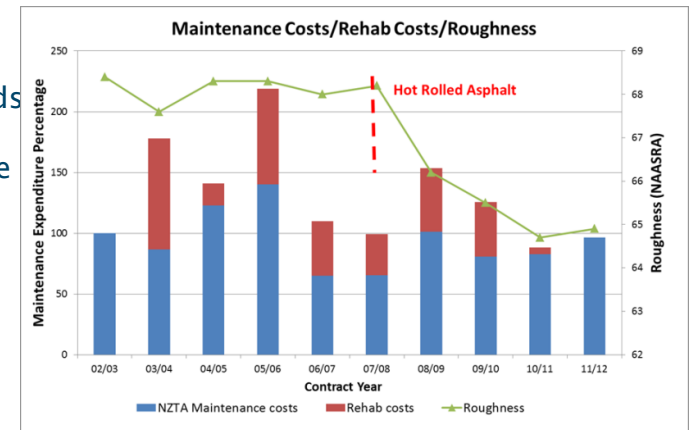
Estimated Costs & Benefits



Contributors

Nigel D'Ath (NZTA); Inroads/Bayroads

Increased material cost but significantly outweighed by TTM savings. Significantly reduced disruption to road users. Skid resistance criteria satisfied. Improved network performance (roughness). Reduced renewal (AWT)



Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

Categories

Cost savings
Pavements
Maintenance patching
Skid resistance

Value for Money Initiative: WBOP29 Flush Retardant Seals

Opportunity

Shortened seal life/escalating costs due to reflective flushing

Solution

Polymer Modified Binder chipseals.

Mainly utilised in heavy stress areas, where slow/slowing HCV traffic present



Estimated Costs & Benefits

Seal lives in these areas extended by 20%

Flushing intervention cost down by 50%

Contributors

Wouter Viljoen (NZTA), Transfield Services Ltd – PSMC006

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	Yes

Categories

Cost savings
Chip seal life
Flushing

Value for Money Initiative: WBOP30 Long life pothole repairs Broom Roothing Product (BRP) Mats

Opportunity

\$120k/year spent on pothole repairs. However, up to 35% of rework was required which added another \$42k = \$162k total/year.

Solution

Installation of BRP Mats. Over a 12 month period, various conditions, applications and methods were trialed, Successes/failure's measured, and robust processes developed



Estimated Costs & Benefits

- Results:
- 1) Less than 10% rework (\$12k) required.
 - 2) Improved road user safety.
 - 3) Positive public perception through less interventions,
 - 4) 30% of BRP's used in early intervention mode preventing major pavement repair

Contributors

Wouter Viljoen (NZTA), Transfield Services Ltd – PSMC006

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	Yes

Categories

Cost savings

Maintenance patching

Value for Money Initiative: WBOP31 Demonstrating Journey Time Savings

Opportunity

We get asked to prove the benefits that we are forecasting on a project. NZTA has been very poor at base lining and validating post opening journey times and reliability savings. We had this challenge on the Te Rapa section of the Waikato Expressway

Solution

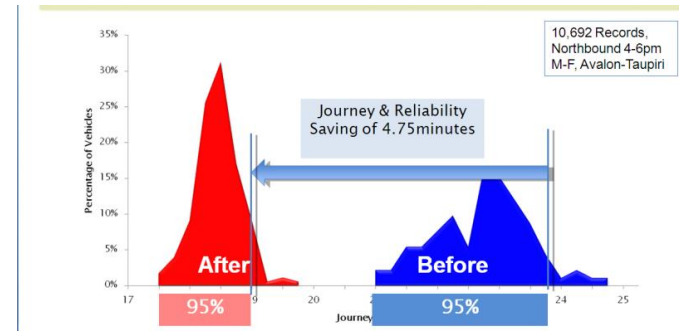
We deployed Bluetooth (Blip Systems) detectors that recorded the journey times of 1000's of vehicles before and after opening of the Te Rapa Expressway Section. The records proved a 4 minute journey saving and a further 45s in reliability saving.

Estimated Costs & Benefits

The units installed cost under \$30k and continue to provide journey time and reliability data as well as live traffic flows and along with the 10 other units provide invaluable data on the performance of SH1 in the Waikato. Over 1,500,000 journeys stored to date. This is an invaluable and cost effective system.

Contributors

Richard Young – Hamilton - 7266



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	Yes

Category

Journey Time
ITS

Value for Money Initiative: WBOP32 Insurance Premium Savings

Opportunity

On an Alliance Contract the early project completion by 6 months provided opportunity to reduce insurance costs on Te Rapa project. Requires project team to be proactive. If you don't ask and tenaciously chase it you won't receive!

Solution

Negotiations through insurance broker enabled refund on public liability and contract works insurance on early practical completion. Reset reduced cover for remaining capital works risk for defects liability period.

Estimated Costs & Benefits

Final premium savings of \$14k for public liability and \$56k for contract works insurance. This saving was shared with the Alliance Partners.

Contributors

Te Rapa Alliance , P Murphy



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	Yes

Categories

Cost savings
Commercial

Value for Money Initiative: C53 Dolos – local solution for local problem

Opportunity

More intense storm events are the cause of significant scouring. Rock riprap is still one of the most suitable design options for scour protection. Unfortunately there are limitations in sourcing suitable rock in the Gisborne region.

Solution

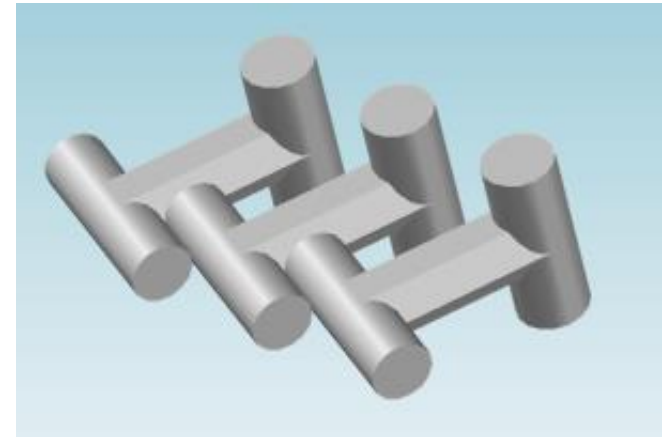
Manufactured riprap - Concrete Dolos - was considered as an alternative to quarrying rock locally. Discussions with local authority confirmed support and acceptable solution.

Estimated Costs & Benefits

Locally sourced, generating income and jobs. Readily available, two sizes (4T & 2T), Competitively priced compared to quarried or imported large rock. Can be readily monitored and maintained. More sustainable than quarrying large rock locally.

Contributors

NZTA Napier and Opus Structures team



Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

Categories

Cost Savings
Scour/Erosion protection

Value for Money Initiative: C54 Sharing State Highway Route information

Opportunity

Sharing the impacts on the road network, road works, public events and travel delays, that occur on the state highways. Customers can view a weekly newspaper column, which helps them understand the weeks expected delays on the network

Solution

- Information collected, reported and distributed weekly and provided to the media, and publish in the paper
- Advertisement is free, as it provides content to the paper.
- Shows major destinations (not just the regional boundaries)

Estimated Costs & Benefits

- Informed customers and stakeholders
- Large savings with no cost to advertise (say \$200 per week for 52 weeks = \$10,400)
- Information being inserted in TRIES system

Contributors

NZTA Napier and Opus Team



Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes

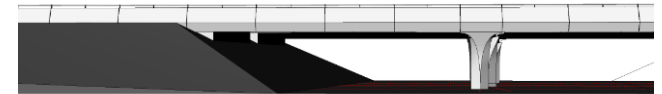
Categories

- Cost savings
- Customer Service

Value for Money Initiative: C55 Risk-based design of bridges for liquefaction for M2PP

Opportunity

The combination of highly liquefiable ground and very high seismicity meant that a conventional approach to the mitigation of ground movements due to liquefaction at bridges was very expensive, at \$47.9M out of a total bridge cost of \$106.2M.



Solution

To improve value for money whilst still meeting the performance requirements for bridges, a risk based approach was developed in which the ground improvement was designed on the basis of the importance of each structure, allowing reduced design standards at less important bridges.

Estimated Costs & Benefits

The cost of the ground improvement has been reduced by 33% using this approach saving about \$17M. The seismic performance requirements of the NZTA Bridge Manual have still been achieved except at three stream bridges where departures from standards have been agreed.

Contributors

Andrew Quinn, Geoff Brown and the M2PP alliance team

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes

Categories

Cost savings
Value Engineering
Structures

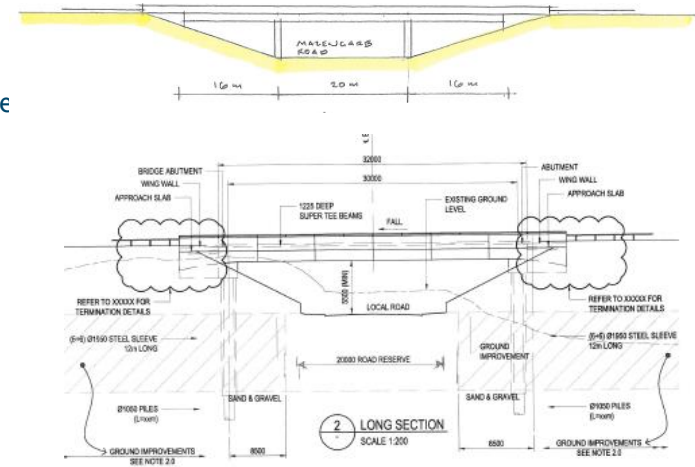
Value for Money Initiative: C56 Value Engineered Outcomes

Opportunity

Through a structured value engineering process, elements of the project were examined for value (vs cost) and for the contribution made towards project outcomes.

Solution

The key elements examined were overhead bridge clearances, bridge embankments/abutments/ground improvements, reduced cross-section, OGPA, planting, local road connectivity, vertical alignment



Estimated Costs & Benefits

The savings from the Scheme Estimate (SE) was \$58M in direct costs alone. This contributed to a total reduction in Scheme costs of around \$100M

Contributors

Andrew Quinn, Noel Nanckervill and the M2PP alliance team

Highways Strategic Priority	Impacts
Safe Journeys	Contributes
Efficient & Reliable Journeys	Sustained at lower cost
Social & Environmental Responsibility	Reduced footprint
People & Processes	Resource efficiency
Efficient Delivery of Works	Right first time

Category

Cost savings

Value Engineering

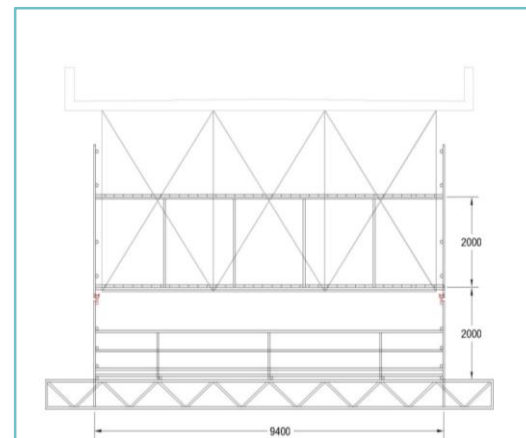
Value for Money Initiative: C57 Use hanging gantries for both cleaning and steel work inspections

Opportunity

Several large galvanized truss bridges in the Nelson Tasman region were due to be cleaned under periodic maintenance. The Contractor involved had previously successfully used a gantry hung from the bottom flange of a large girder bridge, instead of the more traditional full scaffold.

Solution

The introduction of a running system based around a hung scaffold bar, allowed a rolling gantry system to be used to good effect. Adding into this work detail steel inspections of bolted and flanged connections increased the usefulness of the system at a relatively small cost.



Estimated Costs & Benefits

The use of this system on a recent contract for a large single span bridge (SH6 Newton Bridge BSN2610) gave a **50%** saving over the conventional full (hung) scaffold system.

Contributors

Neil Beckett – NZTA and Opus Blenheim

Highways Strategic Priority	Impacts
Safe Journeys	Low
Efficient & Reliable Journeys	Low
Social & Environmental Responsibility	Medium
People & Processes	Medium
Efficient Delivery of Works	High

Categories

Cost savings
Structures
Inspections

Value for Money Initiative: C58 Maximise Structure Life by regular inspections with ease of access to rail structures

Opportunity

Region 10 in Marlborough has the strategic SH1 (S) running North – South through the province. For most of this distance this shares the corridor with the rail track. Inspections of structures within or adjacent to rail required full stand over and permits from KiwiRail for each inspection.

Solution

Using a rail mounted KiwiRail maintenance truck for the inspections, the track was accessed in Picton and traversed under full rail permit down to the South boundary below Ward and the Kaikoura Coast. 7 structures were inspected.



Estimated Costs & Benefits

The cost for one KiwiRail permit allowing 3hrs of access is approximately \$800. Doing all 7 in a single long permit cost in the order of \$1,200. Thereby a **saving of \$4400** on this exercise. **Benefits are the speed of inspections and the safety coverage by KiwiRail staff.**

Contributors

Neil Beckett – NZTA and Opus Blenheim

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	Yes

Categories

Cost savings
Structures

Value for Money Initiative: C59 Emergency Response Stick

Opportunity

In the aftermath of a civil emergency, all our emergency response documents and as built drawings may be inaccessible as our building may have sustained damage

Solution

Creating digital copies of all useful documents and drawings which are placed on a USB stick which is then distributed to the Network Operations team so they have access to the information even if we can't access our building

Estimated Costs & Benefits

We pay approximately \$12 for a dust and water resistant USB stick which will provide the team with emergency contact details, plans for dealing with bridge collapses or landslides and as built drawings of our structures.

Contributors

Neil Beckett & Sam Rudge



Highways Strategic Priority	Impacts
Safe Journeys	Low
Efficient & Reliable Journeys	High
Social & Environmental Responsibility	High
People & Processes	Low
Efficient Delivery of Works	Low

Categories

Information Management

Value for Money Initiative: C60 Peak Flow Heatmap Reports

Opportunity

Our traffic count sites provide useful information which regularly just sits in the TMS system. This is a graphical method of highlighting flow patterns and allows us to plan traffic calming measures

Solution

Import our traffic flow data into a table which uses colours to indicate high volume flows. This allows traffic trends to be easily identified and planned for.

Estimated Costs & Benefits

Each report takes a short time to prepare, but we can use this information to plan traffic calming measures for high flow periods, and scheduling of roadworks into low volume periods.

Contributors

Neil Beckett, Andrew Rowe & Sam Rudge

130	228	490	742	807	936	897	949	1018	1122	1228	1401	1222	1162	554	380
54	155	290	562	756	1040	1080	1071	971	1035	1050	916	842	527	368	276
58	100	205	295	665	865	1023	984	997	1079	933	864	690	513	359	237
109	236	488	649	694	793	702	696	752	774	908	1227	1231	736	441	251
95	220	512	733	730	781	780	775	734	854	949	1270	1268	1032	448	346
109	236	483	743	707	815	798	802	772	861	950	1268	1275	1012	486	382
101	242	492	724	710	766	813	846	789	865	986	1325	1367	1053	525	424
114	225	464	690	728	875	911	936	971	1083	1257	1435	1302	1083	677	427
107	176	314	557	862	1053	1168	1029	967	1008	910	983	866	609	411	199
118	125	234	408	738	1008	1271	1196	1149	1124	1024	936	845	535	375	295
115	251	521	752	739	650	613	571	661	762	881	1212	1224	874	415	251
119	238	555	827	683	633	581	628	643	750	954	1162	1330	860	443	370
134	245	596	894	683	569	660	647	668	791	994	1268	1307	946	453	388
119	278	519	840	742	621	634	642	697	849	1033	1281	1303	1023	564	375
146	257	480	800	725	704	709	783	823	997	1275	1302	1171	1235	919	459
131	243	377	621	841	1067	1085	943	959	915	931	978	928	713	362	208
47	105	196	382	550	791	993	1000	992	990	1059	1049	779	496	339	281
99	252	528	769	714	629	613	606	639	756	966	1203	1256	814	442	285
123	242	549	841	741	632	655	660	661	798	960	1188	1298	894	493	412
127	253	543	869	786	667	620	610	658	749	994	1258	1314	958	520	328
116	228	539	871	757	709	619	605	668	802	1088	1239	1326	928	542	386

Highways Strategic Priority	Impacts
Safe Journeys	Medium
Efficient & Reliable Journeys	high
Social & Environmental Responsibility	Low
People & Processes	Low
Efficient Delivery of Works	Medium

Value for Money Initiative: C61 Email Storage

Opportunity

Staff do not upload emails to Kete as it takes too long and there is fear it will “lose” their emails. Instead they use outlook folders. Use technology to combat email storage problem. When compared with staff costs required to upload emails to Kete, cost of data storage is small.

Solution

Encourage staff to store important emails in project-related folders. These can be bulk-uploaded to Kete periodically by admin staff (say once per year). That way the emails would be uploaded to a consistent and retrievable place in Kete (allaying fears of emails being lost in Kete).

Estimated Costs & Benefits

Estimated time for staff to upload an email to Kete: 20 secs. Time for staff to drag an email to a folder: 2 secs. Saving – 18 secs per email. Say 40 emails per day. Saving: 12 mins per day, 1 hour per week, 46 hours per year * 1000 staff = 46,000 hours per year, less costs of bulk upload.

Contributors

Jo Draper



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	Yes

Category

Information Management

Value for Money Initiative: C62 Terrace Tunnel – Transport Modeling

Opportunity

A new I&R contract requires modeling input to deliver the project and will require significant transport modeling input.

Solution

To ensure VfM is achieved the existing Wellington transport model will be used to avoid development of another model. Opus who developed and understand the model well will deliver the model inputs to the project team to add historical knowledge and experience value, and reduce operational time/costs.

Estimated Costs & Benefits

Use of existing model – Significant cost saving compared to developing new model (\$100K-\$200K). Significant time saving to programme (4 months in an 18 month contract)

Use of existing consultant (Opus) – Time saving and reduction in modeling budget required through no learning curve required (estimated at \$20-30K).

Contributors

Terrace Tunnel Investigations – Rowan Oliver



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	Yes

Categories

Transport Modelling

Recycling and Reuse of materials

Value for Money Initiative: C63 Ngauranga to Aotea Quay Stage 1 Construction: Light Poles

Opportunity

A opportunity was identified to use salvaged street light poles from WICI Project's (Buckle St). Currently there are old concrete light poles present north of the SH2 Ngauranga On Ramp on the hillside. This is out side the project area, but as light pole are available A w-section barrier is currently protecting motorist from the light poles, this is old and below required height, therefore we are replacing the barrier and now we will replacing the light poles.

Solution

Reuses the salvaged street light poles from WICI Project's (Buckle St) to replace the old concrete light poles.



Estimated Costs & Benefits

Five light poles were salvaged and we are currently have installed two, with a saving of \$3,000 per light pole.

Contributors

NtAQ Project Team

Categories

Recycling and Re-use of materials

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

Value for Money Initiative: C64 Ngauranga to Aotea Quay Stage 1 Construction: Barriers

Opportunity

A opportunity was identified to use WICI Project's (Buckle St) concrete barriers and screens, as there are not currently required in WICI for the NtAQ Stage 1 construction.

Solution

NtAQ required concrete barriers during the Stage 1 SH2 Ngauranga On Ramp Improvements to undertake to construction works. Fletcher's were unable to source barriers in Wellington and were planning on shipping down barriers from Auckland at NZTAs cost. Peter Martineau noticed that there were barriers at the Buckle St site that were not being used. He contacted WICI and asked if we could use their barriers till end of June 2013. This was acceptable to WICI, as they had limited space to store them.

Estimated Costs & Benefits

An arrangement was made with WICI to do an NZTA internal project transfer of \$30,000 for the hire of the barriers and screens. Fletcher's had estimated the cost to ship down and hire barriers and screens to be \$234,000. The barriers and screens had to be transported to NtAQ, but at much reduce cost and lower impact on the environment.

Contributors

Peter Martineau and the NtAQ Project Team

Categories

Cost Savings
Recycling and Reuse of materials



Highways Strategic Priority	Impacts
Safe Journeys	Medium
Efficient & Reliable Journeys	Low
Social & Environmental Responsibility	High
People & Processes	Low
Efficient Delivery of Works	High

Value for Money Initiative: C65 - Freight Efficiency – One Network

Opportunity

High Productivity Motor Vehicle (HPMV) permits were processed only to the boundary of Port Marlborough and did not include travel on the Port roads and ferry linkspans. The Marlborough Roads office would then have to forward the application onto Port Marlborough who would have to manually evaluate whether or not the linkspans were able to be crossed by HPMVs and overweight vehicles. With the number of HPMV applications increasing it was seen as a good opportunity to work with Port Marlborough to put the linkspans onto Opermit thereby saving time and money and offering a one stop shop for the freight and heavy haulage industry.

Solution

The Marlborough Roads office worked closely with Port Marlborough Ltd to progress getting the Port roads and ferry linkspans into NZTA's permitting system (Opermit). The Port undertook detailed analysis of its structures and these are now included in the Opermit system. This now means that all HPMV and Overweight permits can be managed by NZTA. This allows the operator to come off the ferry and onto the linkspans, Port roads and also Marlborough District Council roads to connect with SH15 making the journey seamless. This 'one network' approach is helping streamline freight movements in the area and make it easier for the operators.



Estimated Costs & Benefits

A small investment by Port Marlborough Ltd with assistance from Marlborough Roads has resulted in a more efficient 'one network' service for operators, better processing times for both HPMV permits and Overweight permits and the knowledge that these vehicles are now being accurately assessed crossing the linkspans thereby reducing the damage to these structures. The long term benefits to Port Marlborough, NZTA and operators far outweigh this short term investment.

Contributors

Marlborough Roads, Port Marlborough Ltd and Opus

Categories

One Network/Collaboration
Customer Service

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	No

Value for Money Initiative: NAT3 State highway construction and maintenance noise and vibration guide

Opportunity

Remove construction vibration policy vacuum and inconsistencies in approach, implement NZS 6803 construction noise standard, reduce costs, improve risk management and enhance customer service.

Solution

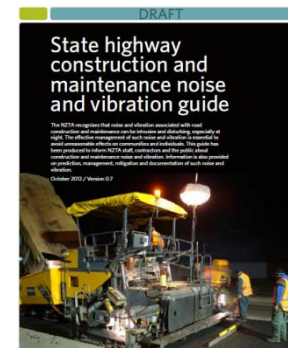
Application of specified vibration criteria within a clear management framework. Supporting tools including construction noise calculator, model designation conditions, construction management plan template, monitoring specifications.

Estimated Costs & Benefits

Savings of between \$5,000 to \$30,000 per project using templates and calculator to avoid consultant fees. Use of model designation conditions will help avoid NZTA non-compliance with statutory obligations.

Contributors

Rob Hannaby, Stephen Chiles and URS New Zealand Ltd.



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	No

Category

Cost Savings
Environment
Information Management

Value for Money Initiative: AN59 Further North Hokai Nuku Integration Ara Tuhono - Puhoi to Wellsford Road of National Significance

Opportunity

At the first Geotechnical drilling location, the land owner informed the team that there were Kumara Pits located close to the drill area. This occurred on the Monday. Drilling was scheduled to commence on the Tuesday. Being made aware that there was an archaeological site close to the drilling site had the potential to considerably delay the works by up to 3 months.

Solution

Through the relationships set up with Hokai Nuku, a kaumatua meet the lead geotech Engineer on site. It was established that there were the remains of a large Maori garden, however, the drilling was all on a slope, and as such was not going to disturb the archaeological site. A quick meeting was held between iwi, the project archaeologist and the alliance. The issue was resolved, drilling commenced on the Wednesday.

Estimated Costs & Benefits

Additional costs of engaging with Hokai Nuku are in the order of \$24,000 per annum.

Not delaying the drilling rigs alone in this instance saved in the order of \$15,000 but more importantly kept the project on programme which has a weekly cost of approx. \$200,000 (if delayed).

Contributors

Further North Stakeholder Team



Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes

Category

Consultation
Cost Savings

Value for Money Initiative: AN60 Narrow Culvert Widening

Opportunity

There are a number of 1950's vintage MOW box culverts on SH 16 which are narrow and have minimal shoulders with only a dangerous pipe handrail and up to 4m unprotected drop. The traditional fix is in-situ construction with high cost and environmental risk working with concrete in an open watercourse.

Solution

An innovative solution has been developed using precast concrete L shaped slabs supported by gabion baskets and existing wingwalls. This allows a widened road shoulder with guardrail barrier to protect the steep drop into the stream. This standard design is used to replace all narrow culverts.



Estimated Costs & Benefits

Use of precast allows speedier construction resulting in less traffic control and customer disruption. It provides a wide shoulder allowing a protective barrier with better highway delineation and minimises environmental risk. The cost of traditional construction is around \$95k compared to \$48k for the precast alternative.

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

Contributors

Transfield Services and Murray Parker

Value for Money Initiative: AN61 Automatic Impact Braking Systems for Attenuators

Opportunity

If one of our truck mounted attenuator's (TMA) is struck from behind by a vehicle on our state highway network there is potential for the TMA to roll forward and cause a secondary strike. This secondary strike could cause injury to the very operation that the TMA is protecting. In the event of a TMA strike the operator of the TMA could be moving forward slowly in a mobiling situation. At the moment of impact from behind the operators foot will not be able to apply the foot brake, thus causing roll forward of the TMA.

Solution

On our new TMA's automatic impact braking (AIB) systems have been. This would, at the moment of impact eliminate the need for the operator to make sure that the foot brake is applied before a secondary strike occurs. There is potential for AIB's to be retro fitted to existing TMA's which are used as shadow TMA's.



Estimated Costs & Benefits

Peace of mind for the operator of the TMA, peace of mind for the operation being protected. Minimise roll forward of TMA no secondary impacts from TMA's.

Contributors

AMA

Category
Health and Safety

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	No

Value for Money Initiative: AN62 Environmental Handbook

Opportunity

Environmental information available in the Environmental Management Plan (EMP) is not in a practical form for use on site, nor is the information in a site-friendly form.

Solution

An Environmental Handbook was developed and designed for site use. It gives simple processes on how to incorporate good environmental practice easily into day to day life at the AMA. It contains environmental procedures and contingency procedures. It also contains useful tools and fuel efficiency information. The handbook has been designed to be user-friendly, interesting and informative. The handbooks were introduced to AMA staff at the 1st Day Back.

Estimated Costs & Benefits

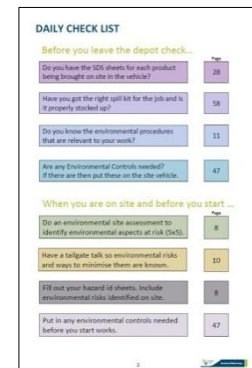
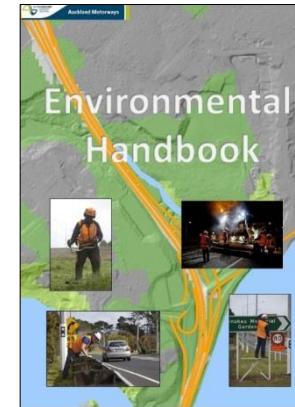
The Environmental Handbook will allow supervisors and environmental staff to train staff on different environmental matters. It gives staff easy access to environmental information and provides tools that they can incorporate into their working day that reduces the risk of them negatively impacting upon the environment.

Contributors

AMA

Category

Information Management
Environmental



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

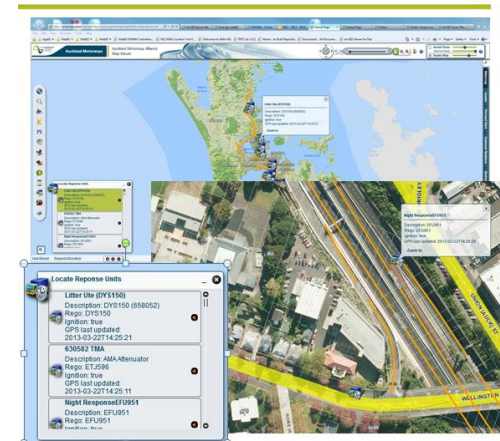
Value for Money Initiative: AN63 Real-time Navman GPS Data Geo RSS feed

Opportunity

Delivery response vehicles have been fitted previously with Navman GPS units, however, this information was not available on the Map Viewer (GIS) in the past.

Solution

A Geo RSS feed of the real-time Navman GPS data from each response vehicle on the network was built. This live Geo RSS feed is now consumed by a Geo RSS widget on the AMA Map Viewer which allows the data to be automatically refreshed and updated (live update) every minute without having the user to refresh the browser. The user can see the response units move on the map in real time and be able to zoom in when selected on the list and view additional information.



Estimated Costs & Benefits

Enhancement on the internal communication through the Map Viewer so that the location of the response vehicles are readily available on demand and monitored in real-time. This will allow emergency response decisions to be made swiftly with precision and effectiveness.

Contributors

AMA

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	No

Category

ITS
Information
Health and Safety
Customer Service

Journey Time

Value for Money Initiative: AN64 Innovative design solution for raising & widening of SH16 Causeway

Opportunity

To reduce the capital cost, the overall footprint and disruption associated with the delivery of the SH16 Causeway Upgrade project. During the RFP the Causeway Alliance identified major cost savings along the Causeway section of the project without compromising whole of life; safety; journey reliability or environmental improvements.

Solution

To reduce the capital cost but improve environmental impact associated with widening work through the Causeway for SH16 Causeway. The Causeway Alliance implemented the following integrated design and construction strategy:

1. Widening SH16 to the north only (asymmetric widening) instead of symmetric widening as per the Specimen Design, this results in less ground improvements required and less disruption to the user through less construction phases required, resulting in less Temporary Traffic Management (TTM) required;
2. Reduced the overall cross sectional width of the SH16 road reserve (when compared to Specimen Design), resulting in less land take, whilst still providing the required lanes (and width of lanes), bus shoulder, roadside furniture and stormwater conveyance and treatment.
3. Implemented a flexible ground improvement solution (wick drains, pre-load and temporary stability berms), instead of an expensive rigid solution of Deep Soil Mixing (DSM) suggested by the Specimen Design. This also has environmental advantages over pumping concrete into the existing mud.
4. In accordance with NZTA Safe System approach, TL4 roadside safety barriers are provided along both sides of the carriageway.

The solution also allows for future proofing against future sea level rise, without the need for additional ground improvement works or future reclamation.

Estimated Costs & Benefits

Approx \$50m

Contributors

The Causeway Alliance – Designers/Constructors/Estimators



Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	No

Category

Value Engineering
Cost Savings

Value for Money Initiative: AN65 Remote Control “Swing Signs” on Medians

Opportunity

CoPTTM requires installation of Temporary Traffic Management (TTM) signs on the median. These require specific traffic management during installation, and in the case of narrow medians may cause specific hazards due to the proximity of opposing traffic to staff installing the signs. These signs require repeated installation and removal at long term work sites.

Solution

Use remote controlled signs mounted on medians which rest parallel with traffic when not in use, but are rotated remotely into their “working” position when required. This will reduce deployment time and cost, and reduce exposure of staff working with live traffic



Technology with traditional TTM signage



Estimated Costs & Benefits

Improved worker safety, and improved efficiency (less time for TTM and larger work windows for frequent use sites).

Contributors

Zachary Lawrence - AMA

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	
Social & Environmental Responsibility	
People & Processes	
Efficient Delivery of Works	

Category

ITS

Health and Safety

Value for Money Initiative: AN67 Maoro noise walls

Opportunity

Opportunity to retrofit high maintenance and visually substandard noise barriers to create high quality, low maintenance design outcome for the community and road users.

Solution

To use where possible the existing barriers to keep costs down and replace and build new barriers where required, whilst retrofitting and painting the barriers to achieve a better visual outcome.

Estimated Costs & Benefits

Retrofit of existing barriers where possible instead of complete replacement; removal of graffiti problem through design; significant improvement to visual environment for community and road users.

Contributors

Jacque Bell, Simon Paton, Helen Kerr, Dave Little (Designer)



Before



After

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

Category

Environmental
Cost Savings
Reuse of materials

Value for Money Initiative: AN68 Onewa Interchange

Opportunity

Extensive roading improvements provided the opportunity to deliver through the design and mitigation package an award winning low maintenance, high visual and ecological quality landscape design.

Solution

As part of the design package a dynamic and sustainable planting scheme has been established. The area is in a high traffic volume area and therefore a low maintenance outcome was imperative. There is no mowing required as the area has been fully planted and is largely self-sufficient.

Estimated Costs & Benefits

Low whole of life costs due to the planting largely being self sufficient and not requiring mowing and traffic management measures; improved visual experience for road users; sustainable and high ecological value.

Contributors

Simon Paton, Terry Palethorpe (Designer)



Highways Strategic Priority	Impacts
Safe Journeys	yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes

Category

Cost savings
Environmental

Value for Money Initiative: AN69 Innovative solution to use steel barriers for temporary traffic management for the duration of the SH16 Causeway Upgrade project.

Opportunity

The use of steel barriers compared to traditional concrete barriers for the temporary traffic management has resulted in significant time and cost savings connected with the barrier transportation; deployment; and ongoing barrier management for the project.

Solution

Approximately 11.8km of lightweight steel barriers will be used across the project instead of the traditional heavier concrete barriers. This realises the following benefits for the project:

- whole of life benefits due to a much higher residual value at the end of the project and re-use;
- quicker and easier to deliver; deploy; and manage during construction;
- increased flexibility for construction methodology within the tight corridor since it is easier to move and relocate than heavier concrete barriers;
- less disruption to road users due to less closures and quicker installation and removal;
- more economic transportation costs and environmental benefits during delivery and removal;
- Improved safety; COPTTM approved; and provides TL4 protection (rather than TL3);
- It is possible to deploy 300m of steel barrier per hour compared to the 46m of concrete barriers. The project has procured its own Hi-Ab truck thus negating the need for external subcontract transport contractors. The project has secured a guaranteed minimum buy back from the manufacturer of the barriers at 41% of the original purchase price. The steel barriers have an estimated life of 25 years.

Estimated Costs & Benefits

Approx \$1.7m

Contributors

The Causeway Alliance – Designers/Constructors/Estimators



Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes

Category

Cost Savings

Recycling and Reuse of materials

Value for Money Initiative: AN70 Waipoua Forest Management Plan Upgrade

Opportunity

Throughout Northland, Kauri Dieback also known as PTA, *Phytophthora taxon Agathis* threatens stands of native Kauri forest. State highway maintenance activities within forested areas is known to contribute to the spread of PTA. The Department of Conservation, DOC has requested that NZTA works collaboratively with the Contractors to identify methods to reduce the spread of PTA.

Solution

NZTA has an existing Waipoua Forest Highway Management Plan. This document is currently out of date and needs to be updated to reflect current conditions and best practice to manage the spread of PTA. A number of solutions have been identified which will be included in the Contractor's Environmental Management Plan. Solutions completed to date include; metalling of areas adjacent to the highway pull off areas to reduce the spread of PTA via soil, aggregates, and water. Other initiatives include; construction of isolation bunds, disturbed soil control - importation and disposal, specific wash down procedures and increased signage. Closure of existing contaminated dump sites, protection of new and existing dump sites.

Estimated Costs & Benefits

Benefits: Preservation of a nationally significant resource and a high profile tourist destination. Increased stakeholder collaboration, stop/reduce the spread of a significant biological threat. Safeguarding biodiversity and natural character of the area.

Costs: Low cost option approx \$20K for a significant benefit protecting our Forest and economic generator for the area and the wider Northland region. Loss of cultural identity for Maori and the wider community.

Contributors

Te Roroa, Department of Conservation, Waipoua Forest Trust, Ministry of Primary Industries, Fulton Hogan, Opus, NZTA.



Highways Strategic Priority	Impacts
Safe Journeys	Low
Efficient & Reliable Journeys	Low
Social & Environmental Responsibility	High
People & Processes	High
Efficient Delivery of Works	High

Category

Environmental
Consultation
Customer Service

Value for Money Initiative: AN71 RAMM Structures Assets Information on Map Viewer

Opportunity

The AMA's Structures Assets information on the Map Viewer (GIS) were sourced from Excel spread-sheets that weren't up-to-date and were inaccurate. Recently, this data have been uploaded into RAMM for the first time replacing all the spread-sheets previously held.

Solution

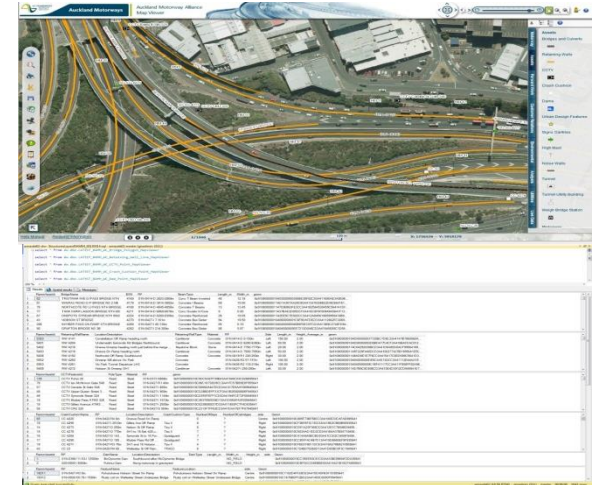
With AMA's Structures Assets information now in RAMM, we have replaced the old one-off Excel spread-sheet sourced Structures Assets information mapped on the Map Viewer with our local data-warehouse copy extracted and updated from RAMM.

Estimated Costs & Benefits

This enhances the internal and external communication as well as work efficiency through the Map Viewer in a number of ways. The information is now readily available to AMA staff via the Map Viewer, mapped accurately and up-to-date with RAMM, automatically updated every time we update our data-warehouse with RAMM. This significantly increases the efficiency to update AMA's Structures Assets information as we can now spatially view what is in RAMM with transparency and acknowledges what to update, correct and feedback on.

Contributors

IDM Team and Structures Team.



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	Yes
Efficient Delivery of Works	Yes

Categories

Information Management
Structures

Value for Money Initiative: AN72 Umbrella & Fire Blanket to trap falling debris

Opportunity

Recent enabling works at the Stormwater Quality Improvement Device (SQID) Tank in Grafton Gulley required the old manual winch mechanisms to be cut from the manhole ports to allow staff to access the tank to remove the sediment build up.

Solution

The problem with doing hot work in the manhole portal was that sparks and the hot cut bolts and nuts would drop into the tank. This was an ignition risk as well as a problem if the bolts were later sucked up by the sucker truck. A beach umbrella and fire blanket were used to make a trap which could be lowered through the manhole and then opened and pulled up on the underside of the deck.

Estimated Costs & Benefits

All winches were gas and grinder cut and removed with all debris being trapped in the inverted umbrella, with the fire blanket preventing ignition of the umbrella.

Contributors

Jim Bernhard & Graham Wainwright– Engineering Team (AMA)



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	Yes
People & Processes	No
Efficient Delivery of Works	Yes

Categories

Health and Safety

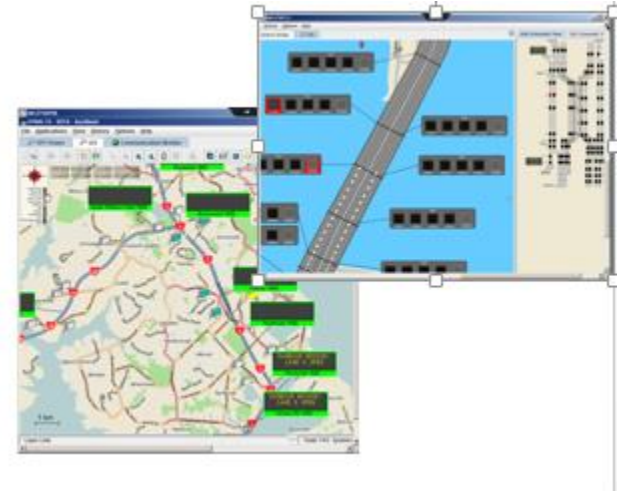
Value for Money Initiative: AN73 NZTA Systems Access in Field on iPad

Opportunity

The NZTA uses multiple system to control their ITS and tunnel systems such as DYNAC, DVTel, TIM etc. These can be accessed from an NZTA PC or via a remote log-on using a laptop

Solution

By installing remote access on the Technician's iPads it is possible to access all these systems from the device. As the iPads are in rugged cases, Technicians can use them in 'real time' in tunnels to control DYNAC during testing and maintenance



Estimated Costs & Benefits

- Testing of tunnel systems without needing second person in control room running system.
- These 'instant-on' devices allow Technicians to quickly log-in and fix faults remotely. Often the on-call technician can do this without leaving his house during the night.

Contributors

Laurence Fear, Ian Leach (AMA)

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	Yes

Value for Money Initiative: AN74 Use of Moxa for Signal Communication

Opportunity

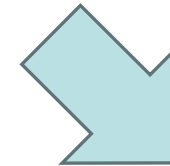
The Serial to Ethernet converters used at the ramp signal sites on the network are expensive devices with additional functionality which is not required.

These devices have a reputation for being unreliable and are prone to insect damage through the venting and firmware corruption due to power brown outs.

Solution

A cheaper off the shelf product from Moxa does the required job at less than 1/10th the price,

It has been found to be more reliable and is less prone to insect damage.



Estimated Costs & Benefits

A cheaper, reliable solution alternative has been found to a propriety device along with a 5 year warranty for the new device.

Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	Yes

Contributors

Aaron Taylor, Jean-Paul Modderman (AMA)

Category
Cost Savings
ITS

Value for Money Initiative: AN75 2013 SCRIM Data Mapping & Visualisation

Opportunity

SCRIM Coefficient indicates how safe the road surface is for travelling vehicles and how healthy the paving is. This is collected as a part of the High Speed Data survey carried out annually by WDM, in which the data comes in tabular form.

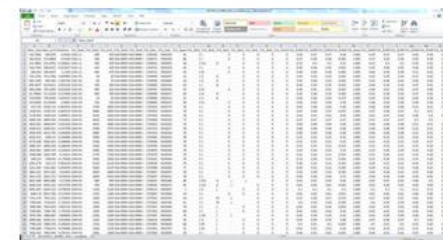
Solution

The tabular data is transformed through a series of complex data processes to be visualised and mapped accurately in GIS.

The data is linear referenced and mapped using GPS coordinates instead of RS/RP so that it is geospatially accurate. This data is then available for viewing on the map viewer.

Estimated Costs & Benefits

This enhances the internal and external communication as well as work efficiency through the Map Viewer in a number of ways. The information is now readily available to AMA staff via the Map Viewer, visualised graphically with customised colour codes, mapped accurately and up-to-date, overlays with other useful information such as the forward works programme. This significantly increases readability of the data and efficiency for work that need to refer to this data, especially asset management and paving since this data is readily available so adjustments can be made to the forward works programme.



Highways Strategic Priority	Impacts
Safe Journeys	No
Efficient & Reliable Journeys	No
Social & Environmental Responsibility	No
People & Processes	No
Efficient Delivery of Works	Yes

Contributors

IDM Team (AMA)

Value for Money Initiative: AN76 Innovative Shared Utilities Trench & Vector Joint Bay Alignment for SH16 Causeway Upgrade Project

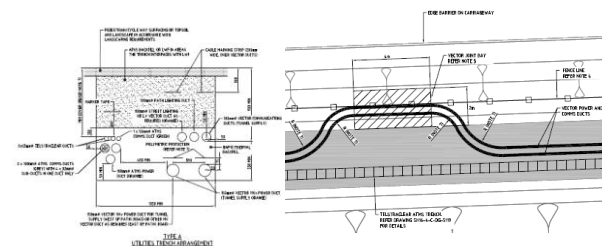
Opportunity

To reduce the capital cost, disruption to pedestrians and cyclists, and maintenance costs associated with the delivery of the SH16 Causeway Upgrade project. During the RFP and detailed design the Causeway Alliance identified whole of life cost savings and opportunities to reduce disruption to pedestrians and cyclists, and improve safety, journey reliability and environmental outcomes.

Solution

To reduce the capital and maintenance costs of utility services and reduce disruption to the users of the shared path during the construction phase, the Alliance implemented the following integrated design and construction strategy:

1. Relocate all services (Vector, Vodafone (TelstraClear), NZTA ATMS, street lighting and path lighting) into a shared trench positioned beneath the shared path, significantly reducing civil works cost. Vodafone & ATMS ducts were previously located on the northern embankment, with access for maintenance requiring temporary traffic management.
2. Position the shared trench and associated access pits within the shared path corridor to provide for safe maintenance access to all services post construction and avoid the need for costly and disruptive motorway TTM.
3. Locally diverted the Vector Power ducts out of the sealed shared path at required cable joint positions to enable staged construction and avoid re-excavation of the path, increased capital cost and further disruption to pedestrians and cyclists. This also provides ease of future access to joint bays.



Estimated Costs & Benefits

Approx \$1m, ease of access and maintenance, motorist safety. NZTA are already investigating for adoption of the solution on other projects.

Contributors

The Causeway Alliance – Designers/Constructors/Estimators

Category

- Cost savings
- Customer Service
- One Network/Collaboration

Highways Strategic Priority	Impacts
Safe Journeys	Yes
Efficient & Reliable Journeys	Yes
Social & Environmental Responsibility	Yes
People & Processes	Yes
Efficient Delivery of Works	Yes