

Document 1

James Sorensen

From: Fabian Marsh <Fabian.Marsh@saferoads.co.nz>
Sent: Thursday, 23 November 2017 10:20 a.m.
To: s 9(2)(a)
Cc: Colin Brodie; Mike Pilgrim
Subject: Fw: Alliance Quick Wins

FYI. I have added to agenda for discussion on Monday

Let me know if you'd like to discuss in advance

Fabian

From: Fabian Marsh
Sent: 23 November 2017 09:36:31
To: Tony Fisher
Subject: Alliance Quick Wins

Tony,

FYI, I will be attending a meeting in Wellington today with S&E to discuss measures aimed at fast-tracking road safety infrastructure in response to the Associate Minister's call to action to improve the road toll (BOOST for local roads).

Similarly, I would like to see what median barrier projects we can progress as Quick Wins. I have asked Mike to take a look through the Alliance programme and the Gap Analysis Programme to identify sites / sections where we could potentially implement median works in the short-term, specifically we are looking for lengths that don't effect or have minimal impact on adjacent land-owners. We will take a look at sites where we might be able to progress median barriers in the short-term, but also look at wide centreline treatments now with potential for median barrier later.

I also see this as an opportunity to pull together everyone that needs to be involved along the project delivery chain and focus efforts on a specific outcome. Once we have this information and a proposed programme ready to go (hoping one to two weeks) I'd like to hold a workshop with all parties necessary to make this happen (Alliance, C&E, SD&D, Finance, etc) to work through all issues, i.e. confirm where the money comes from, what is possible in terms of staged funding, can we propose multiple median barrier projects as a fast-track programme BCR rather than site specific, etc.

Happy to discuss.

Fabian

James Sorensen

From: Colin Brodie
Sent: Monday, 27 November 2017 8:58 a.m.
To: 'Fabian Marsh'
Cc: Lisa Rossiter; Harry Wilson
Subject: Fast tracking median barriers
Attachments: Fw: Alliance Quick Wins

Hi Fabian, I hope you had a good weekend.

Are you getting much traction on the idea of trying to fast track the median installation on some of the SRA and GAP projects as per attached email?

I am aware that the new Assoc Minister is keen to announce some activities to address the increasing road toll.

I wonder if there is merit and an opportunity around " Looking for opportunity to expedite median barrier installation on some high risk corridors, to address the head on crash problem".

However, we probably need to identify some of those opportunities.

Keen on your thoughts.

Colin

Colin Brodie / Lead Advisor, Strategic Interventions

Safety and Environment

s 9(2)(a)

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PO Box 13-055, Tauranga Central 3141, New Zealand

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James Sorensen

From: Fabian Marsh
Sent: Wednesday, 6 December 2017 4:59 p.m.
To: Colin Brodie; Mike Pilgrim; s 9(2)(a)
s 9(2)(a)
Cc: Fergus Tate; Harry Wilson
Subject: RE: Ambitious High Risk Rural Roads Median Barrier programme.

Hi Colin,

Firstly, I think an ambitious high risk rural roads median barrier programme is necessary if we are to make a step change in preventing serious road trauma. Based on the feedback provided, your estimated cost of \$2M / km seems about right with a likely range of between \$1.5m / km on easier routes to \$2.5-\$3M / km on more difficult routes. I also think that by targeting National and higher volume Regional Corridors we could identify a programme of around 600-700kms. So in summary, I think the proposal and aspiration for an ambitious programme is about right. Achieving this will however be dictated by the level of commitment and ability to negotiate the various risks, such as project approvals, stakeholder buy-in and lead in time for communications and engagement.

As a suggestion, we could develop a staged implementation programme that includes Quick Wins first; where risks might be lower, such as s 18(d). This should include potential Quick Wins under the Safe Roads Alliance programme which includes a number of projects (eg. s 18(d)) where the ambition is currently limited to just future proofing for median barriers. I also think we should be looking at Quick Wins / interim treatment on high risk roads that have been taken off-line due to future major upgrades / projects (5-10 years away), such as s 18(d). I would also suggest that achieving such an ambitious target would require a programme based economic assessment / approval rather than project-by-project.

In summary, an ambitious median barrier programme such as this is required to bring about a step change reduction in serious road trauma, but it will also be subject to significant implementation risks.

Regards,

Fabian

From: Colin Brodie
Sent: Tuesday, 5 December 2017 2:46 p.m.
To: Mike Pilgrim; s 9(2)(a) Fabian Marsh; s 9(2)(a)
Cc: Fergus Tate; Harry Wilson
Subject: Ambitious High Risk Rural Roads Median Barrier programme.

Hi Guys.

In preparation to Harry's discussion with the Board this Friday, a meeting which may be attended by the Assoc Minister, I have been asked what an ambitious programme (target?) of treating high risk state highways, particularly with treatments such as median barriers may involve.

In my opinion these are going to include National (incl HV) and higher volume (say above 5-600vpd) Regional Corridors.

Based upon a range of information I have to hand (attached and below) I believe a total length would be say 700km of road (assuming some of the potential say 800+km will not be possible to get a barrier in)

Let's assume 200km of this is in the SJRRPBC, then that is another 500km

Let's assume \$2m/km, then that is another \$1BN.

If that was to be achieved over 5 years (really ambitious) then that would be about an extra \$200M/yr.

Add that to the say \$100Mpa for the SRA programme and \$50/pa for Marmite/Boost type programmes, this would total \$350Mpa.

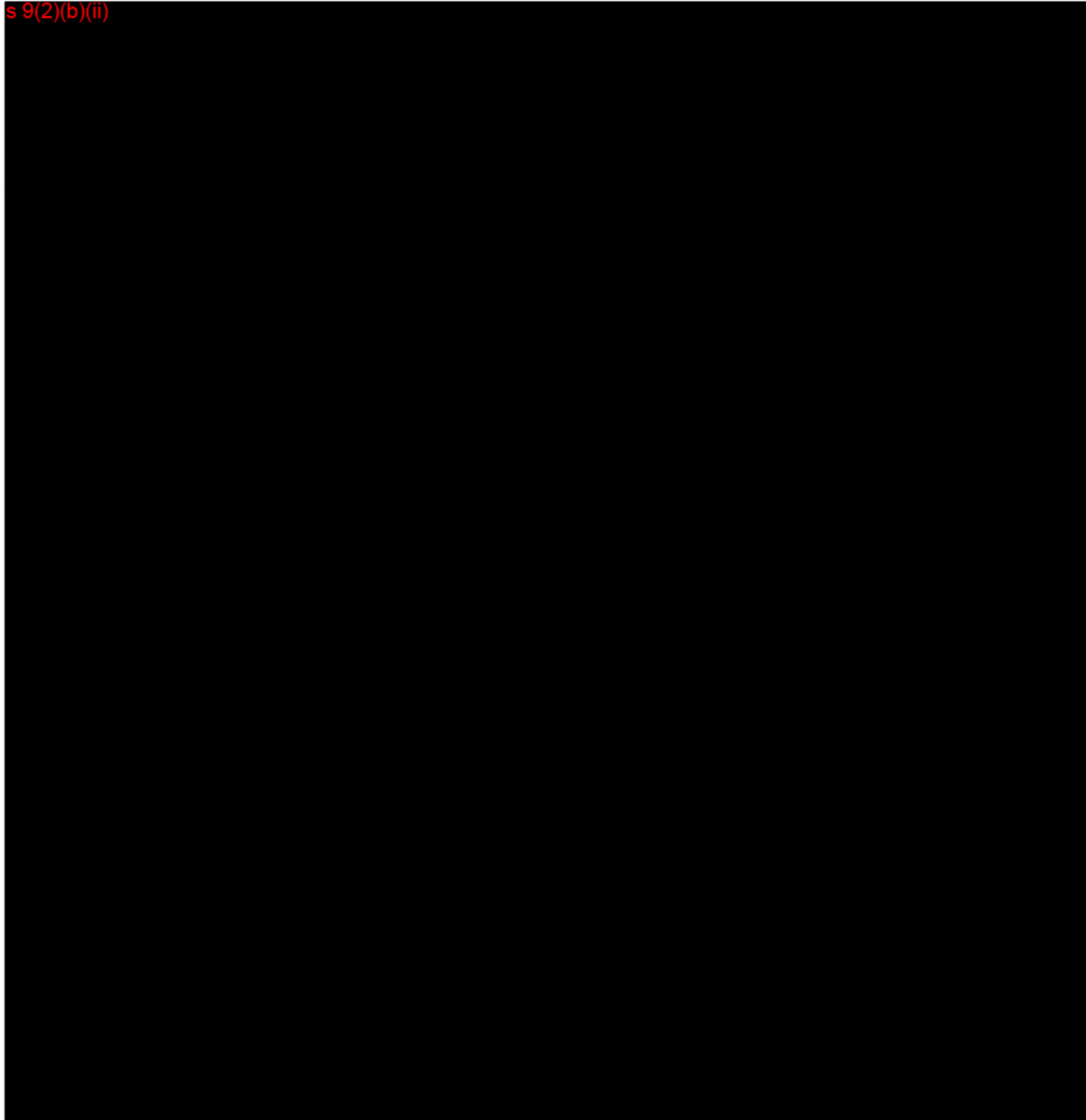
Can you please run your eye over this and see if this analysis and advice would sound reasonable.

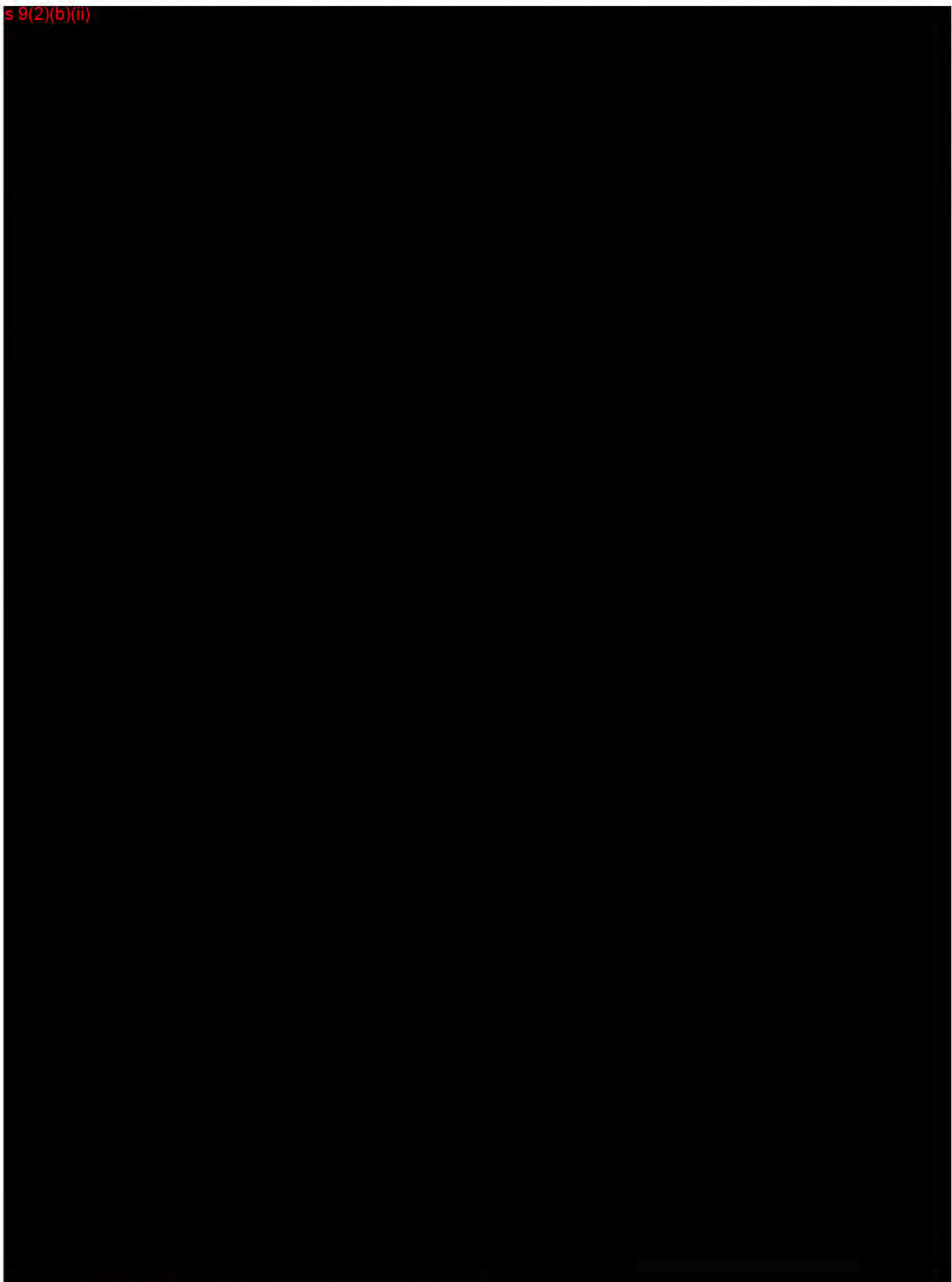
Thanks.

Colin

s 9(2)(b)(ii)







s 9(2)(a)

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James Sorensen

From: Fabian Marsh
Sent: Tuesday, 19 December 2017 4:40 p.m.
To: Mike Pilgrim
Cc: s 9(2)(a) [redacted]
s 9(2)(a) [redacted] Colin Brodie
Subject: Quick Wins Median Barriers
Attachments: Strategic Fit Flowchart - Corridors.docx; Re: Median Barrier Quick Wins Programme

Mike,

Thanks for making a start on this and for your comments. Firstly, can you please include me in correspondence with Abley so I can see what's happening. Also, I've taken a look at the median analysis layer in SafetyNET and have the following comments (acknowledging that this is still a work in progress):

- The routes seem low AADT; and, perhaps more importantly;
- The reason why the higher risk / higher volume routes are not included, and where they are, is not transparent.

It may be that the Quick Wins end up being on some relatively low volume roads but I want to be able to tell the story: i.e. from a top-down perspective 1) these roads are where all the F&S crashes are happening; 2) these roads are where all the traffic volume / exposure is; 3) this is a prioritised list based on items 1 and 2; 4) these are the roads where we can't do anything because they are subject to future upgrades and / or other reasons; 5) these are the roads that are not going to be easy because of narrow pavement width, high access density, etc. I'd like to adopt the policy approach as s 9(2)(a) [redacted] recently suggested in terms of starting where we get the most benefits and working our way down the list. s 9(2)(g)(i) [redacted]
[redacted]
[redacted]

I therefore suggest we want to document the process carefully and we may well need to do most of the following via spreadsheet so we can easily extract the relevant information / story.

I suggest setting up a spreadsheet starting with ALL roads (need to consider segment length as you suggest). Then add columns that can be ranked via:

1. Collective Risk (Crashes per km): to target per km treatment to address the most crashes
 - o What % / length of roads represent 80% DSIs or similar and where are they?
2. AADT / VKT: to target treatment to where most people are travelling
 - o What % of traffic is travelling on the highest Collective Risk roads and how does this compare to routes that specifically target highest VKT?

Items 1 and 2 aim to identify High Strategic Fit – similar to attached IAF criteria; then include

3. ONRC classification
4. Covered by future upgrade / project ? – if so, when and is there potential to still include interim median barrier? (this will require some investigations and manual manipulation)
5. Pavement cross section: anything 10m and above should potentially be achievable as Quick Wins.
6. Access density: low access density means less direct impact on community

For items 4, 5 and 6 we could include a YES / NO type criteria and / or threshold with space for comments so we can track reason for including / excluding at a later date.

s 9(2)(f)(iv) and s9(2)(g)(i)

NOTE 2 – in parallel to the above, I suggest progressing with s 9(2) recommendation to pull together regional recommendations on what should be included in this programme (either as Quick Win [Stage 1] or future [Stage 2]). We can capitalise on some other Quick Wins such as s 18(d) which, based on discussions yesterday, hopefully we can start construction on 23km of median barrier by Q1 / 2 next year.

Let's aim to discuss this tomorrow as we need to make good progress on this with a programme ready by mid-end January 2018.

Regards,

Fabian Marsh / Safe System Lead

NZTA / Safe Roads

s 9(2)(a)

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Safe Roads

James Sorensen

From: Fabian Marsh <Fabian.Marsh@saferoads.co.nz>
Sent: Tuesday, 19 December 2017 3:53 p.m.
To: Fabian Marsh
Subject: Re: Median Barrier Quick Wins Programme

From: s 9(2)(a)
Sent: 18 December 2017 14:46
To: Mike Pilgrim
Cc: Fabian Marsh; s 9(2)(a)
Subject: RE: Median Barrier Quick Wins Programme

Hi Mike

I've had a quick look at Safetynet medians it's a good start but as its theoretical may need some more review as I'm not sure how well these highlighted sections would work in practice (many of these routes are pretty low volume and the inference is probably narrow). My gut feel is getting feedback from regional safety engineers and any local knowledge we have across safe roads may bear the most fruit.

Interestingly the section near Queenstown set me thinking about the adjacent section between Lake Hayes and Frankton (10000AADT)- I did a bit of a safety review here a couple of years ago. There are 3 new roundabouts for turnarounds, good seal width and with the exception of a 2-4 other accessways that may need a mid-break, could be a winner? It may be possible to go further to Arrowtown (although there are a couple of intersections and other accesses).....if we could squeeze out 10km we are 10% of the way there.....9 more sites to go.

Other thought is how about if we have a stream where we concentrate on median dividing passing lanes? And what about looking at lead-in approaches to roundabouts? There's usually a bit of space and they are usually on a curve, may be able to get 100m or so on each side of each one.

What do you think?

Cheers

s 9(2)(a)



-----Original Message-----

From: Mike Pilgrim [mailto:Mike.Pilgrim@nzta.govt.nz]

Sent: Monday, 18 December 2017 7:20 a.m.

To: s 9(2)(a)

Cc: Fabian Marsh <Fabian.Marsh@saferoads.co.nz>; s 9(2)(a)

s 9(2)(a)

Subject: RE: Median Barrier Quick Wins Programme

Morning s 9(2)(a)

- There is a layer in SafetyNET Dev website called Median Analysis that is split by no access and low access and then into risk, I have also asked for this in spreadsheet format that we can use to build a programme

- Also have a word doc with high risk sections and low access that I'll forward through latter today

- I had a meeting with the Auckland NZTA office the other week to come up with corridors they thought were good candidates based on what they believed were higher risk and that had low access density. Still need to meet with the other offices.

I think we need to get the spreadsheet from Abley and add RAMM data for cross section width then we can build an indicative easy win programme with a realistic cost against it. As a second step the information that we have based the numbers for Colin on is the Gap data set so really long corridors. I think I asked Abley to break it down to RS lengths so we had more practical lengths would be good to add an access density, seal width and alignment columns to this then we could build a programme based on volume, crash rate, cost, easy wins.

Give me a call when you get in and I'll run through the above in a bit more detail on how I think we could put the programme together.

Mike

From: s 9(2)(a)

Sent: Friday, 15 December 2017 3:37 p.m.

To: Mike Pilgrim

Cc: Fabian Marsh; s 9(2)(a)
Subject: FW: Median Barrier Quick Wins Programme

Hi Mike

Just to follow on from our conversation this morning - seems like you've done some work in this space so don't want to duplicate.

Also understand you are busy but when you get the chance a few bullets on what you need help with would be good and we can pitch in where required.

I've had a chat with s 9(2)(a) and he has some time next week to help out with this so keep him in the loop and let him know what you need.

Cheers

s 9(2)(a)

-----Original Message-----

From: Fabian Marsh [mailto:Fabian.Marsh@nzta.govt.nz]
Sent: Thursday, 14 December 2017 4:38 p.m.
To: s 9(2)(a) Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>
Cc: s 9(2)(a)
Subject: RE: Median Barrier Quick Wins Programme

I like your suggestion. Though let's do in parallel and throw all into the mix as part of pulling together proposed list, i.e. run the top down analysis, filter out what's not feasible and add in the feedback we get from the regions.

I assume you are happy to start this with the regions ? If so, please just copy me in.

Cheers,

From: Marcus Brown [marcus.brown@saferoads.co.nz]
Sent: Thursday, 14 December 2017 4:20 p.m.
To: Fabian Marsh; Mike Pilgrim
Cc: s 9(2)(a)
Subject: RE: Median Barrier Quick Wins Programme

Sounds like a good process.

One suggestion I have bearing in mind the "quick win" nature of the initial proposal is potentially we go to each region (and most people locally would know where it is possible to introduce a narrow mid barrier section) and get a list of possible/buildables - then prioritise these based on crashes or volume. The high density/high volume approach is ideal but may exclude some easy installs. What do you think?

Cheers

Marcus

From: Fabian Marsh [mailto:Fabian.Marsh@nzta.govt.nz]
Sent: Thursday, 14 December 2017 12:51 p.m.
To: s 9(2)(a) Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>
Cc: s 9(2)(a)
Subject: Median Barrier Quick Wins Programme

s 9(2)(a)

As previously discussed, Mike and I were looking to start developing a potential median barrier quick wins programme. In addition, Colin Brodie prepared a brief outline for a similar programme in preparation for recent discussions with the Associate Minister. Attached for your information is the latest I have on this. I see the Quick Wins programme as s 9(2)(f)(iv) and s9(2)(g)(i)

In my view, the key to the Quick Wins s 9(2)(f)(iv) and s9(2)(g)(i) is to identify sites with sufficient detail and some certainty to increase the likelihood of them being able to progress. I suggest the following:

- * Start with a blank canvas, ignoring other major projects etc
- * Identify the highest crash density / traffic volume sites (similar to the discussion we had with s 9(2)(a)
- * Then prioritise these sites into a list based on descending crash density / volume
- * Once we have this list we can look at each potential site and tick as a potential candidate or cross off (reasoning for each needs to be captured)
- * Then we should look at each potential candidate to understand the possible constraints (major project in 5 years, 8m cross section, high density of driveways, etc) - we should put tension on some of this, such as pushing for interim installations with 5 or so years returns, retrofitting existing 10m cross sections, etc
- * Then aim to come up with sites / sections that could be treated

As we were discussing, if you are able to help Mike progress this, that would be great. It would be good to have something by id-late January if possible. Again, we could potentially call on other resources to assist if available.

Regards,

Fabian

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James Sorensen

From: s 9(2)(a)
Sent: Friday, 23 February 2018 1:28 p.m.
To: Colin Brodie; Paul Durdin
Subject: FW: Quick Wins Median Barriers

Hi Colin,
I have updated our analysis with the new criteria for identifying quick wins.

The output is mapped on s 9(2)(b)(ii). I've called the layer "Median Analysis (v2)" and retained the work that Carl did initially as "(v1)".

The quick wins are divided into "proactive" (based on ONRC) and "reactive" (based on a mix of ONRC, risk and volume). The criterial for each category is attached, as is a summary of FS crash counts, DSi targeted and length by ONRC class.

Cheers,
s 9(2)(a)

From: Colin Brodie [mailto:Colin.Brodie@nzta.govt.nz]
Sent: Thursday, February 15, 2018 11:53 AM
To: s 9(2)(a)
Cc: s 9(2)(a); Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; Fergus Tate <Fergus.Tate@nzta.govt.nz>
Subject: RE: Quick Wins Median Barriers

Hi s 9(2)(a)
This all looks reasonable.
I would make one change in regards to Typology for Median barriers.
I would include median barriers on all high or medium high collective risk national and regional highways with an AADT greater than 10,000 vpd.
This would be my first go anyway.
Cheers
Colin

From: s 9(2)(a)
Sent: Thursday, 15 February 2018 11:02 a.m.
To: Colin Brodie; Fabian Marsh; Mike Pilgrim; Fergus Tate
Cc: s 9(2)(a)
Subject: RE: Quick Wins Median Barriers

Hi all

Just following up on the email sent last Wednesday. Specifically, if you have any feedback on the typologies and the circumstances where median barrier forms part of the typology (refer bottom of last email) then can you please get back to me today. If we don't hear back from you then we will progress on the current typology assumptions for the purposes of developing the revised table of criteria for updating the analysis.

Thanks

s 9(2)(a)
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s 9(2)(a)

From: s 9(2)(a)

Sent: Wednesday, 7 February 2018 1:57 PM

To: 'Colin Brodie' <Colin.Brodie@nzta.govt.nz>; Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; Fergus Tate <Fergus.Tate@nzta.govt.nz>

Cc: s 9(2)(a)

s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

Hi all

Thanks for your time this morning. To recap, we will:

1. Modify the process to improve the alignment with the 20-year view programming tool.
2. Change the 'Strategic Fit' layer name to something else – probably related to the ONRC typology.
3. Modify the 'Easy Install' criteria to include sections that are omitted on the basis of existing carriageway width but have characteristics that lend to widening e.g. flat terrain plus generous offset to hazards (which should be available from Star Rating data).
4. Review the segment length used in the analysis.
5. Circulate a revised table of the proposed criteria to you in advance of updating the analysis.
6. Produce outputs that show the length of network targeted by ONRC and the number of DSi targeted.

We weren't 100% sure if we agreed to consider loss-of-control crashes in the reactive component or not. Our suggestion would be to allow for this as a sensitivity test only to assess its impact before deciding whether or not it should be included or not. Let me know what you think about this suggestion.

The ONRC typology that you shared with us that formed the basis of the 20-year programming tool is attached. That showed that median barrier would be part of the typology for National Strategic High Volume (20,000 vpd) corridors and potentially on National or Regional Strategic corridors with 5,000+ vpd. This has been translated into the 20-year view analysis as only applying to National Strategic High Volume corridors (ONRC = National Strategic (High Volume)). The other high volume corridors are assumed to have the wide centreline treatment and not the median barrier. If you would like that approach revised then please let me know, as it won't be an overly onerous task given the models are already setup.

s 9(2)(a)

s 9(2)(a)

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s 9(2)(a)

<http://www.abley.com/communication-terms-and-conditions-1-1/>

We have moved! Abley and Interpret teams are located at Level 1, 137 Victoria Street Christchurch. My contact details will remain the same.

From: Colin Brodie [mailto:Colin.Brodie@nzta.govt.nz]

Sent: Friday, 2 February 2018 12:12 PM

To: s 9(2)(a) Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; Fergus Tate <Fergus.Tate@nzta.govt.nz>

Cc: s 9(2)(a)

s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

Thanks s 9(2)(a)

This looks a great start (as usual).

I would be keen to arrange a joint session, with shared screen to discuss it.

To me there seems to be a few anomalies I am keen to understand. For instance (to get you thinking about it)

1. Under Strategic fit, we seem to have lengths such as s 18(d) being included. Suggests to me included in strategic fit includes high head on crash history). In my mind strategic fit should probably be those lengths that meet the ONRC road stereotype standards.
2. Under a number of layers, the s 18(d) is not included, yet this in in our present programme for median barrier.
3. s 18(d) is in the Quick Wins, yet it already has a Median Barrier.
4. Do we need both a Quick Wins and an Easy install layer. What is the difference?

Cheers

Colin

From: s 9(2)(a)

Sent: Friday, 2 February 2018 10:40 a.m.

To: Colin Brodie; Fabian Marsh; Mike Pilgrim

Cc: s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

Hi all,

Please note that the link provided below in not correct, which is why you would be unable to access the web viewer with the login credentials provided. The correct link is s 9(2)(b)(ii)

Login with nzta / SafetyNET

Regards

s 9(2)(a)

s 9(2)(a)

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<http://www.abley.com/communication-terms-and-conditions-1-1/>

We have moved! Abley and Interpret teams are located at Level 1, 137 Victoria Street Christchurch. My contact details will remain the same.

From: s 9(2)(a)

Sent: Wednesday, 31 January 2018 12:01 PM

To: Colin Brodie <Colin.Brodie@nzta.govt.nz>; Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>

Cc: s 9(2)(a)

s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

Hi All,

s 9(2) and I have finished attaching all required attributes to the Town-to-Town corridors and we have also put together a draft set of corridors which we may wish to target and some quick-wins.

Perhaps we could meet tomorrow to discuss the results so far and talk about the next steps? Colin, Fabian and Mike – what is your availability?

To summarise the results so far:

1. We have isolated the top 28% of the SH network by length (about 3,000km) which is either:
 - National Strategic (in line with the 20-year view tool), or;
 - Is Regional Strategic/Arterial but has more than 0.08 head-on crashes per km in the last 5 years and at least 2.4 head-on DSI in total in the last 5 years (this equates to about 3 crashes minimum). This second criterion captures SHs such as **s 18(d)** which is Regional Strategic but has a crash record which justifies the installation of a median barrier.

Collectively, 55% of all head-on DSI equivalents in the past 5 years occurred on these corridors. It is proposed that these corridors would form the **strategic** set of corridors where we want to see median barriers installed in the long term.

2. To identify corridors where median barriers would be **easy to install**, the following filters have been applied:
 - Less than 2 intersections per km,
 - Less than 2 address points (accessways) per km OR less than 5 address points in total, and;
 - More than 10m of carriageway width.
3. To identify corridors which have a **head-on crash issue**, the following filters have been applied:
 - More than 0.08 head-on crashes per km, and;
 - More than 2.4 head-on DSI in total in the last 5 years (this equates to about 3 head-on crashes minimum).
4. Finally, selecting the **easy-to-install** corridors with a **head-on crash issue**, approximately 180km of State Highway is highlighted as potential **quick-wins**.

All four of these layers have been uploaded to the **s 9(2)(b)(ii)**. The Username/Password combination to log in to the web viewer is **s 9(2)(b)(ii)**.

Look forward to hearing your feedback.

Regards,

s

9(2)

(a)

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s 9(2)(a)

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From: Colin Brodie [<mailto:Colin.Brodie@nzta.govt.nz>]

Sent: Tuesday, January 23, 2018 12:51 PM

To: **s 9(2)(a)** Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>

Cc: **s 9(2)(a)**

s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

Looks like a reasonable start to me.

After the first high identification of corridors, I do think we want to add in the additional data such as carriageway width, access/intersection density, (anything else, landuse?) ,that will assist with the quick wins analysis.

Whilst we would expect most of these corridors will be National Strategic (incl HV), we do not want to rule out regional and arterial that may meet the volume and risk criteria, even if the 20 year view road stereotype model didn't include median barriers. **s 18(d)** is a regional route as is **s 18(d)**

Cheers

Colin

From: s 9(2)(a)
Sent: Tuesday, 23 January 2018 12:19 p.m.
To: Colin Brodie; Fabian Marsh; Mike Pilgrim
Cc: s 9(2)(a)
Subject: RE: Quick Wins Median Barriers

Hi All,

To summarise what we discussed this morning:

- We are looking to identify a high-level list of corridors which may benefit from median barrier installation. We are also looking to identify a subset of these corridors which are 'quick-win' projects. The quick-win corridors will be analysed more rigorously (at a desktop level) to ensure suitability.
- We agreed to proceed with this analysis using the town to town (5-10km segments) SH corridors.
- We will join all relevant data (see Fabian's email below) to each corridor.
- We will also attach all applicable information from the 20-year view tool to these corridors.
- Finally, we will apply filters to these corridors to eliminate any unsuitable sections and then prioritise based on DSI/km and number of head-on/run-off-road crashes.

At this point we will upload the draft corridors to a web viewer and distribute some high-level results around the team. We can then meet again to discuss the next steps. Let me know if you would like to make any amendments to the above methodology.

In terms of invoicing, we can either put together an offer for you or we can bill our time under SafetyNET enhancements. We can get started immediately in either case. A separate offer may be the best option in this case due to the scope of this project.

Thanks and Regards,

s
9(2)
(a)

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From: Colin Brodie [<mailto:Colin.Brodie@nzta.govt.nz>]

Sent: Thursday, January 18, 2018 2:50 PM

To: s 9(2)(a)

Cc: Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; s 9(2)(a)

s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

What I think we do need is a map of highways where we want to install Median Barriers (over next decade) and then from within that identify the Quick Win Opportunites.

The first list could use

- ONRC
- Volume
- Risk

We has a similar map from the KiwiRAP into iRAP in 2010. This could be possibly be derived from or at least checked against "the 20 year view tool"

s 9(2)(b)(ii)

Then the quick wins would include be derived from that using the criteria below.

But I would not exclude the SJRRPBC lengths as we should be seeing what we can do to get barriers in these where possible.

Cheers

Colin

From: s 9(2)(a)

Sent: Thursday, 18 January 2018 1:59 p.m.

To: Fabian Marsh

Cc: Mike Pilgrim; Colin Brodie; s 9(2)(a)

Subject: RE: Quick Wins Median Barriers

Hi Fabian

Thanks for taking the time to discuss what you are wanting to achieve with this piece of work. I've spoken with s 9(2)(a) and can confirm that the analysis undertaken late last year was quite rudimentary and could be enhanced significantly by adopting the approach you mentioned. To summarise, this included identifying road sections with:

- Volume above a threshold
- Carriageway width above a threshold
- Access density below a threshold

Then once those theoretical sections are identified, eliminate those sections covered by programmed works e.g. from the SJRRPBC. The remaining sections would then be subject to a desktop assessment to determine whether they would be suitable candidates for median barriers, the criteria of which are yet to be confirmed.

The above is very simplified and I'm sure you will flesh out more details with the team tomorrow. Please schedule a meeting (with s 9(2)(a) all cc to this email) at a time that is convenient for you and your colleagues.

I catch up with progress when I get back from leave on Wednesday.

Regards

s 9(2)(a)

s 9(2)(a)

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www.abley.com

s 9(2)(a)

<http://www.abley.com/communication-terms-and-conditions-1-1/>

We have moved! Abley and Interpret teams are located at Level 1, 137 Victoria Street Christchurch. My contact details will remain the same.

From: Fabian Marsh [<mailto:Fabian.Marsh@nzta.govt.nz>]

Sent: Wednesday, 17 January 2018 10:35 AM

To: s 9(2)(a)

Cc: Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; Colin Brodie <Colin.Brodie@nzta.govt.nz>

Subject: Quick Wins Median Barriers

s 9(2)(a)

I will try calling later today to organise a phone call on this.

In the meantime, below and attached is some information I previously sent to Mike Pilgrim in an effort to outline some thinking on how we might proceed with this and the objectives we are trying to achieve.

Regards,

Fabian

From: Fabian Marsh

Sent: Tuesday, 19 December 2017 4:40 p.m.

To: Mike Pilgrim

Cc: s 9(2)(a)

Colin Brodie

Subject: Quick Wins Median Barriers

Mike,

Thanks for making a start on this and for your comments. I've taken a look at the median analysis layer in SafetyNET and have the following comments (acknowledging that this is still a work in progress):

- The routes seem low AADT; and, perhaps more importantly;

- The reason why the higher risk / higher volume routes are not included, and where they are, is not transparent.

It may be that the Quick Wins end up being on some relatively low volume roads but I want to be able to tell the story: i.e. from a top-down perspective 1) these roads are where all the F&S crashes are happening; 2) these roads are where all the traffic volume / exposure is; 3) this is a prioritised list based on items 1 and 2; 4) these are the roads where we can't do anything because they are subject to future upgrades and / or other reasons; 5) these are the roads that are not going to be easy because of narrow pavement width, high access density, etc. I'd like to adopt the policy approach as s 9(2)(a) recently suggested in terms of starting where we get the most benefits and working our way down the list. s 9(2)(g)(i)

I therefore suggest we want to document the process carefully and we may well need to do most of the following via spreadsheet so we can easily extract the relevant information / story.

I suggest setting up a spreadsheet starting with ALL roads (need to consider segment length as you suggest). Then add columns that can be ranked via:

1. Collective Risk (Crashes per km): to target per km treatment to address the most crashes
 - What % / length of roads represent 80% DSIs or similar and where are they?
2. AADT / VKT: to target treatment to where most people are travelling
 - What % of traffic is travelling on the highest Collective Risk roads and how does this compare to routes that specifically target highest VKT?

Items 1 and 2 aim to identify High Strategic Fit – similar to attached IAF criteria; then include

3. ONRC classification
4. Covered by future upgrade / project ? – if so, when and is there potential to still include interim median barrier? (this will require some investigations and manual manipulation)
5. Pavement cross section: anything 10m and above should potentially be achievable as Quick Wins.
6. Access density: low access density means less direct impact on community

For items 4, 5 and 6 we could include a YES / NO type criteria and / or threshold with space for comments so we can track reason for including / excluding at a later date.

s 9(2)(f)(iv) and s9(2)(g)(i)

NOTE 2 – in parallel to the above, I suggest progressing with s 9(2)(a) recommendation to pull together regional recommendations on what should be included in this programme s 9(2)(f)(iv) and s9(2)(g)(i). We can capitalise on some other Quick Wins such as s 18(d) which, based on discussions yesterday, hopefully we can start construction on 23km of median barrier by Q1 / 2 next year.

Let's aim to discuss this tomorrow as we need to make good progress on this with a programme ready by mid-end January 2018.

Regards,

Fabian Marsh / Safe System Lead

+61 8 1 308 8005

s 9(2)(a)

fabian.marsh@saferoads.co.nz nzta.govt.nz/safe-roads

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James Sorensen

From: Fabian Marsh
Sent: Tuesday, 27 March 2018 11:40 a.m.
To: s 9(2)(a) Colin Brodie
Cc: Mike Pilgrim; Chris Young
Subject: FW: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

From: s 9(2)(a)
Sent: Tuesday, 27 March 2018 11:10 a.m.
To: Fabian Marsh; Mike Pilgrim
Cc: Colin Brodie
Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Hi Fabian,

Here are my comments. I couldn't find the cost for SRA projects, but the list is complete so I'm hoping the cost/km is worked from our costing.

Project list – yellow all confirmed – a few recent phase changes for 3 getting to construction. Also one new BC s 18(d)

RE Median barrier programme – I have suggested some cross-over opportunities, but I cant figure out the s 18(d) lengths sorry.

Let me know if you need anything else.

Cheers

s 9(2)(a)

From: Fabian Marsh [<mailto:Fabian.Marsh@nzta.govt.nz>]
Sent: Tuesday, 27 March 2018 9:46 a.m.
To: s 9(2)(a) Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>
Cc: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Subject: FW: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

s 9(2)(a)

We are in the final stages of confirming an Out of Scope. Can you please help with a very quick review of the following:

1. Out of Scope
2. Review the attached Quick Wins Median Barrier spreadsheet to action the following:
 - a. Highlight any median barriers in the Quick Wins list that are Out of Scope

Apologies for this but we need to complete this if at all possible for a meeting at 11:30am today.

Fabian

From: s 9(2)(a)
Sent: Tuesday, 27 March 2018 9:21 a.m.
To: Colin Brodie; Mike Pilgrim; Fabian Marsh; Chris Young; Niclas Johansson
Cc: s 9(2)(a)
Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Hi All,

See attached an extract of

1. the current [redacted] **Out of Scope**,
2. the current Quick-Win Median Barriers Projects. Column BG states if there is an overlap with an **Out of Scope**.

Regards,

[redacted]

[redacted]
Abley Transportation Consultants Limited
www.abley.com

[redacted] s 9(2)(a)
Communication terms and conditions

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Sent: Monday, March 26, 2018 6:41 PM
To: s 9(2)(a)
Cc: Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Fergus Tate <Fergus.Tate@nzta.govt.nz>; s 9(2)(a)
Subject: Re: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

s 9(2)(a) Thanks and look forward to discussions in the morning.

[redacted] **Out of Scope**

This needs to be increased
Cheers
Colin

Sent from my iPhone

On 26/03/2018, at 6:35 PM, s 9(2)(a) wrote:

Hi All,

Attached is the latest version of the programme for discussion tomorrow morning.

Updates include:

- Integration of the edited Regional feedback from Mike/Fergus/Fabian (inclusions/exclusions),
 - By default, everything is in, unless comments specifically ask for an exclusion (this means that if Regions didn't make a comment, the project is in).
- All motorway sections removed.
- s 18(d) intersection re-included as well as s 18(d) and s 18(d)
- Prioritisation order modified such that:
 - All HR Intersections (including those identified by the Regions which we have agreed to bring through),
 - All ARU projects in the first three years,
 - Remainder of projects in the first three years filled in using our current prioritisation methodology.
- SST treatments above \$2M per km have a 60% DSI reduction applied.
- Where treatment costs have not been estimated, median barrier treatments are now \$2M per km.

- Intersection treatment costs have been updated to match those used in the \$800M Local Roads programme.
- ARU projects can be 'packaged up' in the summary table so that we aren't specifying specific projects.
- 'Engineer Up' SM projects have been updated such that they are \$1.5M per km.
- s 18(d) [redacted] has been included under the NLTP projects.
- Region added to each project and the summary statistics include a breakdown by region.
- s 18(d) [redacted] has been moved from 'Challenging Conversations' to 'Engineer Up' under Speed Management.
- s 18(d) [redacted] has been excluded as the LCLR work underway there should cover the Safety Management works we proposed.
- s 18(d) [redacted] remains in the NLTP projects (i.e. proposed SRA projects).
- Have excluded s 18(d) [redacted] as minor improvements are being constructed now.

At this stage, I have not:

- Matched these projects against the Resilience projects from s 9(2)(a) [redacted] (will do this once we've confirmed our draft programme).
- Changed the summary table to reduce the amount of information displayed.
- Done a manual check of intersection costs to check they are reasonable.
- Applied a factor to account for higher crash rates in the past few years (this can easily be applied later to the whole programme).
- Included any intersections from the updated HR intersections list.
- Cross-checked with the HR roads list which Dale/Fergus are developing.
- Excluded s 18(d) [redacted] as we haven't clarified whether funding for construction is confirmed or not.
- Excluded s 18(d) [redacted] as we haven't confirmed whether funding is confirmed for Speed Management.

Kind Regards,

s 9(2)(a) [redacted]

s 9(2)(a) [redacted]

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s 9(2)(a) [redacted]

Communication terms and conditions

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>

Sent: Friday, March 23, 2018 12:22 PM

To: Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>; Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; s 9(2)(a) [redacted]

s 9(2)(a) [redacted] Fergus Tate <Fergus.Tate@nzta.govt.nz>

Cc: s 9(2)(a) [redacted]

Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Thanks All.

s 9(2)(a) [redacted] what is the chance of having updated summary tables (full programme and first 3 years) by the 3pm meeting.

Cheers

Colin

From: Mike Pilgrim

Sent: Friday, 23 March 2018 12:15 p.m.

To: Fabian Marsh; Carl O'Neil; Colin Brodie; Fergus Tate

Cc: s 9(2)(a) [redacted]

Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Afternoon

Combined spread sheet attached with the feedback from Ferg, Fabian and myself.

Mike

From: Fabian Marsh
Sent: Friday, 23 March 2018 11:23 a.m.
To: s 9(2)(a) Colin Brodie; Fergus Tate; Mike Pilgrim
Cc: s 9(2)(a)
Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Mike,

As discussed, attached are my notes from our meeting just now. Can you please amalgamate with your notes into one "FINAL" version for our meeting this afternoon.

Once you have your version ready can you email out in advance of the meeting.

Fabian

From: s 9(2)(a)
Sent: Thursday, 22 March 2018 1:55 p.m.
To: Colin Brodie; Fergus Tate; Fabian Marsh; Mike Pilgrim
Cc: s 9(2)(a)
Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Hi All,

Please see attached an updated copy of the spreadsheet which I circulated yesterday containing our proposed actions based on the Regional feedback.

The spreadsheet has been updated to include relevant feedback from the document in the email below (any rows which I've added since yesterday are in pink)

Note that I have ignored any corridors which appear in programmes that aren't primarily safety related (e.g. resilience, efficiency).

Regards,

s
9(2)
(a)

Abley Transportation Consultants Limited

www.abley.com

carl.oneil@abley.com

T +64 3 371 0030

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From: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Sent: Wednesday, March 21, 2018 5:02 PM
To: s 9(2)(a) Fergus Tate <Fergus.Tate@nzta.govt.nz>; Fabian Marsh <Fabian.Marsh@nzta.govt.nz>; Mike Pilgrim <Mike.Pilgrim@nzta.govt.nz>
Subject: Fwd: Action Required: Post Meeting Follow Up - Review of the revised draft 2018-21 SHIP

Unfortunately, attached is a second lot of feedback that we need to incorporate.

Cheers

Colin

Sent from my iPhone

Begin forwarded message:

From: Michael Blyleven <Michael.Blyleven@nzta.govt.nz>
Date: 21 March 2018 at 2:49:24 PM AEDT
To: s 9(2)(a) Chris Gasson
<Chris.Gasson@nzta.govt.nz>, Kesh Keshaboina <Kesh.Keshaboina@nzta.govt.nz>,
Paul Glucina <Paul.Glucina@nzta.govt.nz>, Sarah Downs
<Sarah.Downs@nzta.govt.nz>, Adam Francis <Adam.Francis@nzta.govt.nz>
Cc: Chris Young <Chris.Young@nzta.govt.nz>, Colin Brodie
<Colin.Brodie@nzta.govt.nz>, Graham O'Connell <Graham.OConnell@nzta.govt.nz>,
Dave Gennard <Dave.Gennard@nzta.govt.nz>
Subject: RE: Action Required: Post Meeting Follow Up - Review of the revised draft
2018-21 SHIP

Hi s 9(2)(a)

To meet your deadline, attached is the compiled feedback from Kesh's Target Growth portfolio that he has asked me to gather. It has built on the earlier feedback provided by Graham's System Optimisation Team.

The detailed comments from each region in the infohub links will also have comments on other local projects from BoP, Waikato, Wgtn and Canterbury.

Regards
Mike

From: s 9(2)(a)
Sent: Wednesday, 14 March 2018 4:24 p.m.
To: Chris Gasson; Kesh Keshaboina; Michael Blyleven; Paul Glucina; Sarah Downs; Adam Francis
Cc: Chris Young; Colin Brodie; Graham O'Connell; Dave Gennard
Subject: Action Required: Post Meeting Follow Up - Review of the revised draft
2018-21 SHIP

Dear All,

Thank you for your focus and attention on Monday, particularly to those of you that travelled at short notice.

At the close of the meeting we agreed to share some documents with you, and that you would then follow up for each of your respective areas. You will note that we have pared down the distribution list on the basis that you as the portfolio managers will lead the collation and response after engaging directly with your Regional Safety Engineers and the Lead Strategic Advisors.

Please treat these details with absolute care and concern for security and sharing as noted on Monday.

Documents – As loaded to InfoHub

- Resilience Corridors list
- A list of proposed corridors and a map as a power point slide prioritising the corridors. The numbers and letters inside the different symbols correspond to the

reference numbers in the spreadsheet for each corridor. We have prioritised locations into three categories 1 to 3... 1 being the ones we would target first. In addition to the named locations we would be undertaking the bridge replacement programme for end of life bridges as well as low cost low risk activities targeted across the whole SH network

- <https://infohub.transporthub.govt.nz/otcs/cs.dll/properties/30928396>
- Safety Corridors and Intersections list (including links to maps)
- Colin has prepared detailed instructions for you and they are included along with the file in this link.
- <https://infohub.transporthub.govt.nz/otcs/cs.dll/properties/30928048>
- Summary revised assessment priorities
- This is the transcribed information that you provided to us at the Monday workshop (12 March). Please provide feedback in highlighted column as per below.
- <https://infohub.transporthub.govt.nz/otcs/cs.dll/properties/30908669>

You will recall that the safety and resilience corridors that feature in the next SHIP will form a significant part of the next highway programme, and signal our response to the step change required to meet the objectives and priorities of the new GPS.

The information in the above documents has been developed from desk top analysis, and we request your urgent assistance in reviewing the proposed corridors to:

- Signal where interventions have been completed, or are in construction now (therefore corridors that can be removed)
- Identify glaring errors or omissions (corridors missed where there is a recognised problem)
- Confirm the corridors align with your local knowledge of the problem areas (the start and finish points of the corridor line up with your local knowledge)

In addition, could you also identify:

- What/which are the regional priorities (and WHY)
- Identify the "Challenges" – provide brief context as suitable

And... complete this by the close of business on Wednesday (21 March).

Contact us if you need any further guidance s 9(2)(a)

Cheers, s 9(2)(a)

s 9(2)(a)
s 9(2)(a)
s 9(2)(a)
s 9(2)(a)
s 9(2)(a)

Wellington Office / Majestic Centre, 100 Willis Street,
Private Bag 6995, Wellington 6141, New Zealand

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<NLTP and SRA Programmes V11.xlsx>

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James Sorensen

From: John-Michael Swannix <johnmichaelswannix@mediaworks.co.nz>
Sent: Friday, 6 April 2018 4:13 p.m.
To: Fergus Tate
Subject: Quick Wins Programme

Kia ora Fergus,

Just following up our call, if you could send me any details about the Quick Wins Programme some time early next week that would be great.

Specifically,

- What roads have been identified
- The estimated cost per road of installing safety features like median barriers.
- The type of median barrier being referred to in each project. e.g. Rugged, Semi-rigid or flexible.

Also, when Minister Twyford refers to median barriers in this article:

http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12025373

Safety has the top priority, nationwide. "Look at it this way," said Twyford. "For half the cost of the former government's East West Link, between Penrose and Onehunga, we could put a median barrier on every kilometre of state highway in New Zealand."

Does that mean the cost of installing median barriers on all state highways is around 900 million dollars?

Thanks

JMS

JOHN-MICHAEL SWANNIX | MULTI-PLATFORM JOURNALIST | TV, RADIO, DIGITAL | NEWSHUB | MEDIAWORKS | (09) 360 0330 EXT 9841 | MOBILE 02102427845 | @JMSwannix

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Thank you.

James Sorensen

From: Fergus Tate
Sent: Friday, 6 April 2018 4:23 p.m.
To: Colin Brodie
Subject: FW: Quick Wins Programme

We can discuss next week

I will need to have some general blurb and we will need to discuss the barrier costs and Tywford's comments

From: John-Michael Swannix [<mailto:johnmichaelswannix@mediaworks.co.nz>]
Sent: Friday, 6 April 2018 4:13 p.m.
To: Fergus Tate
Subject: Quick Wins Programme

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Thank you.

James Sorensen

From: John-Michael Swannix <johnmichaelswannix@mediaworks.co.nz>
Sent: Tuesday, 10 April 2018 1:03 p.m.
To: Fergus Tate
Subject: Re: Quick Wins Programme

Brilliant thanks.

JMS

On 10 April 2018 at 12:58, Fergus Tate <Fergus.Tate@nzta.govt.nz> wrote:

Hi John-Michael

I have a meeting this afternoon 1:30 with Colin Brodie who has been looking at the median barrier programme

Should get back to you after that

Fergus Tate CMEngNZ CPEng

Lead Safety Advisor (Roads and Roadsides)

System Design and Delivery

DDI 64 4 894 6496

Mob 64 27 2810 478

E Fergus.Tate@nzta.govt.nz / W nzta.govt.nz

National Office / Victoria Arcade, 50 Victoria Street,
Private Bag 6995, Wellington 6141, New Zealand



From: John-Michael Swannix [mailto:johnmichaelswannix@mediaworks.co.nz]
Sent: Tuesday, 10 April 2018 12:57 p.m.
To: Fergus Tate
Subject: Re: Quick Wins Programme

Hey Fergus,

Just wondering how you're getting on with this.

Thanks

JMS

On 6 April 2018 at 16:13, John-Michael Swannix <johnmichaelswannix@mediaworks.co.nz> wrote:

Kia ora Fergus,

Just following up our call, if you could send me any details about the Quick Wins Programme some time early next week that would be great.

Specifically,

- What roads have been identified

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JOHN-MICHAEL SWANNIX | MULTI-PLATFORM JOURNALIST | TV, RADIO, DIGITAL | NEWSHUB | MEDIAWORKS | (09)
360 0330 EXT 9841 | MOBILE 02102427845 | @JMSwannix

Street Address 3 Flower St, Eden Tce | Private Bag 92624, Symonds Street, Auckland 1150



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Thank you.

James Sorensen

From: Harry Wilson
Sent: Tuesday, 10 April 2018 3:15 p.m.
To: Fergus Tate
Subject: Re: Quick Wins Programme

All good

Sent from my iPhone

On 10/04/2018, at 2:50 PM, Fergus Tate <Fergus.Tate@nzta.govt.nz> wrote:

Harry refer below are you happy with this response. I need to get back to John-Michael today

Dear John-Michael

Just had a meeting over your request.

The Quick Wins programme is part of a wider draft state highway safety programme which is still under development. The draft has not yet been presented to either Senior Management, the Board, nor consulted on As a result

- 1) I cannot tell you which roads have been identified however these are likely to be higher volume higher risk highways
- 2) This is extremely variable depending on the barrier type and the extent of any widening and ancillary works required.
- 3) nor the barrier systems which will be determined at the detailed design stage
- 4) in terms of the barrier costs alone this would be correct. However, our experience is that during detailed design we find there are very few situations where we can install median barriers without ancillary works such as carriageway widening, access modifications, turn around facilities, pull over bays etc. These works may increase the cost significantly.

From: John-Michael Swannix [<mailto:johnmichaelswannix@mediaworks.co.nz>]
Sent: Friday, 6 April 2018 4:13 p.m.
To: Fergus Tate
Subject: Quick Wins Programme

Kia ora Fergus,

Just following up our call, if you could send me any details about the Quick Wins Programme some time early next week that would be great.

Specifically,

- What roads have been identified
- The estimated cost per road of installing safety features like median barriers.
- The type of median barrier being referred to in each project. e.g. Rugged, Semi-rigid or flexible.

Also, when Minister Twyford refers to median barriers in this article:

http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12025373

Safety has the top priority, nationwide. "Look at it this way," said Twyford. "For half the cost of the former government's East West Link, between Penrose and Onehunga, we could put a median barrier on every kilometre of state highway in New Zealand."

Does that mean the cost of installing median barriers on all state highways is around 900 million dollars?

Thanks

JMS

--

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Thank you.

James Sorensen

From: Fergus Tate
Sent: Tuesday, 10 April 2018 4:15 p.m.
To: 'John-Michael Swannix'
Subject: FW: Quick Wins Programme

Dear John-Michael

As I explained I have just had a meeting over your request.

The Quick Wins programme is part of a wider draft state highway safety programme which is still under development. The draft has not yet been presented to either Senior Management, the Board, nor consulted on As a result:

- 1) I cannot tell you which roads have been identified. However these are likely to be higher volume higher risk highways
- 2) This is extremely variable depending on the barrier type and the extent of any widening and ancillary works required.
- 3) Nor can I provide details of the barrier systems, which will be determined at the detailed design stage
- 4) in terms of the barrier costs alone this would be correct. However, our experience is that during detailed design we find there are very few situations where we can install median barriers without ancillary works such as carriageway widening, access modifications, turn around facilities, pull over bays etc. These works may increase the cost significantly.

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Thank you.

James Sorensen

From: Colin Brodie
Sent: Thursday, 12 April 2018 11:01 a.m.
To: Fabian Marsh; Fergus Tate
Cc: Lisa Rossiter; Niclas Johansson
Subject: FW: Median Barrier analysis

Just for your information at this stage until we see what come out of the IAF. It indicates that a median barrier programme would have a BCR >1 albeit some individual projects within it would not.

Cheers
 Colin

From: s 9(2)(a)
Sent: Thursday, 12 April 2018 10:16 AM
To: Colin Brodie <Colin.Brodie@nzta.govt.nz>; s 9(2)(a)
Cc: s 9(2)(a) Fabian Marsh <Fabian.Marsh@nzta.govt.nz>
Subject: RE: Median Barrier analysis

Hi Colin

We've done some further analysis of this by looking at the crashes that occurred in 2017. These numbers are presented in (brackets) in the table.

Scenario	Length	Cost	Dsi Targeted pa	Dsi Saved pa	Programme BCR
1. Quick Wins BCR >1	245.8	\$ 368,700,000	58.7 (63)	29.0 (27.4)	1.64 (1.55)
2. Quick Wins all	477.4	\$ 716,175,000	88.3 (97)	38.1 (48.9)	1.11 (1.43)
3. Other Opportunities BCR >1	104.6	\$ 261,530,000	34.1 (32)	16.6 (16.3)	1.32 (1.30)
4. Other Opportunities all	506.1	\$ 1,265,250,000	108.4 (123)	39.7 (44.7)	0.66 (0.74)
Total (2+4)	983.5	\$ 1,981,425,000	196.7 (220)	77.8 (93.6)	0.82 (0.99)

What the numbers show is that for sites with a BCR >1 the actuals for 2017 are very closely aligned with expectations. That's encouraging. But even more encouraging is that for sites with a BCR <1, the actuals are higher than expected. This is what we'd expect, because many of these locations are pulled through on the basis of potential risk ... and it's only those that have actual poor safety outcomes at present that get the BCR.

We have 100 sites in the overall analysis with a BCR <1. Of those, there was a head-on DSi at 29 locations (in one year) and a run-off-road DSi at a further 24 locations. That's more than half of the sites. The overall DSi saved at these sites would have been 50.0, and 21.6 of these would have been on quick-win sections.

All of this helps provide the evidence base I think you're looking for to justify expenditure at locations with inherently high-risk attributes that may not be borne out in the recent crash statistics. We can certainly do some further analysis of this data if you want.

Regards

s 9(2)(a)

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www.abley.com

s 9(2)(a)

<http://www.abley.com/communication-terms-and-conditions-1-1/>

From: s 9(2)(a)

Sent: Tuesday, 10 April 2018 9:47 AM

To: Colin Brodie <Colin.Brodie@nzta.govt.nz>; s 9(2)(a)

Cc: s 9(2)(a) Fabian Marsh <Fabian.Marsh@nzta.govt.nz>

Subject: RE: Median Barrier analysis

I have split line 4 in half so those sections with BCR >1 can be identified separately.

Scenario	Length	Cost	Dsi Targeted pa	Dsi Saved pa	Programme BCR
1. Quick Wins BCR >1	245.8	\$ 368,700,000	58.7	29.0	1.64
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Total (2+4)	983.5	\$ 1,981,425,000	196.7	77.8	0.82

s 9(2)(a)

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>

Sent: Tuesday, 10 April 2018 9:37 AM

To: s 9(2)(a)

Cc: s 9(2)(a) Fabian Marsh <Fabian.Marsh@nzta.govt.nz>

Subject: RE: Median Barrier analysis

Thanks again.

In the Row 3 Other opportunities, what % would not have a BCR >1.

From: s 9(2)(a)
Sent: Tuesday, 10 April 2018 9:34 a.m.
To: Colin Brodie; s 9(2)(a)
Cc: s 9(2)(a) Fabian Marsh
Subject: RE: Median Barrier analysis

Hi Colin

Answers to your questions are:

1. s 9(2)(b)(ii)
2. The Criteria are:

1. Quick Wins

Must satisfy all of the following:

- | |
|---|
| • Carriageway >10m; or |
| • Carriageway <10m but has 4m+ offset to hazards and in flat terrain; and |
| • <=3 intersections per km; and |
| • <= 5 address points per km (or less than 10 in total) |

Must satisfy one of the following:

- | |
|---|
| • National Strategic High Volume (12,000+ vpd) = proactive; or |
| • ONRC is Arterial, Regional Strategic or National Strategic; and
DSi > 1.0 / km / 5-years = reactive; or |
| • ONRC is Regional Strategic or National Strategic; and
Traffic volume is 6,000+ vpd; and
Collective Risk is High or Medium-High = reactive |

2. Everything Else

- Does not satisfy all of the carriageway, intersection or access density criteria, but satisfies one of the proactive or reactive criteria.
- Has less than 50% median barrier coverage along the section (based on the dataset we have).

It's probably also worth pointing out that 80 of the 162 sections captured by this analysis are SJRRPBC sections, and another 8 are RoNS sections. So more than half of the identified sections were being upgraded anyway ... but perhaps not all with median barrier.

I have asked s 9(2) to attach the 2017 crash data to these 162 sections to help build up the evidence argument for taking a more proactive approach. That may be helpful for justifying a shift away from BCR, but we won't know until we crunch the numbers. Will get that through to you later this morning.

Give me a call if you want to discuss.

Thanks

s 9(2)(a)

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www.abley.com

s 9(2)(a)

<http://www.abley.com/communication-terms-and-conditions-1-1/>

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>

Sent: Tuesday, 10 April 2018 9:11 AM

To: s 9(2)(a)

Cc: s 9(2)(a) Fabian Marsh <Fabian.Marsh@nzta.govt.nz>

Subject: RE: Median Barrier analysis

Hi s 9(2)(a)

Can you please advise/confirm the following

1. For the quick wins we used \$1.5M/Km and \$2.5M/km elsewhere
2. The make-up of the total 983km i.e.
 - a. All national routes with AADT>10,000 vpd ?
 - b. Regional routes with AADT>10,000 vpd and a high head on risk?

I assume that this all comes from that median barrier exercise Dale did for us some time ago. Resending that analysis to me would also be helpful.

Cheers

Colin

From: s 9(2)(a)

Sent: Monday, 9 April 2018 4:53 p.m.

To: Colin Brodie

Cc: s 9(2)(a) Fabian Marsh

Subject: RE: Median Barrier analysis

Hi Colin,

s 9(2)(a) extracted the results sooner than expected so here are the latest results.

Scenario	Length	Cost	Dsi Targeted pa	Dsi Saved pa	Programme BCR
1. Quick Wins BCR >1	245.8	\$ 368,700,000	58.7	29.0	1.64
2. Quick Wins all	477.4	\$ 716,175,000	88.3	38.1	1.11
3. Other Opportunities	506.1	\$ 1,265,250,000	108.4	39.7	0.66
Total (2+3)	983.5	\$ 1,981,425,000	196.7	77.8	0.82

Not surprisingly, it is the cost that hurts the 'other opportunities'. If the cost per km was \$1.5M instead of \$2.5M, these opportunities would have a BCR of 1.09 (the same as for quick wins).

Would you like to see this spatially?

Regards

s 9(2)(a)

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s 9(2)(a)

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Sent: Monday, 9 April 2018 4:24 PM
To: s 9(2)(a)
Cc: s 9(2)(a) s 9(2)(a) Fabian Marsh
<Fabian.Marsh@nzta.govt.nz>
Subject: Re: Median Barrier analysis

Thanks s 9(2)
That is great

Sent from my iPhone

On 9/04/2018, at 4:05 PM, s 9(2)(a) wrote:

Hi Colin

Here are the results based on the 'quick wins' analysis only. We are currently extracting all the other sections that satisfy the proactive or reactive metrics that would not be considered a quick win because of carriageway width, intersection density or access density. Will get those figures to you as soon as they're ready (tomorrow morning).

Scenario	Length	Cost	Dsi Targeted pa	Dsi Saved pa	Programme BCI
Quick Wins BCR >1	245.8	\$ 368,700,000	58.7	29.01	1.
Quick Wins all	477.4	\$ 716,175,000	88.3	38.10	1.

Give me a call if you have any questions.

Regards

s
9(2)
(a)

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www.abley.com

s 9(2)(a)

<http://www.abley.com/communication-terms-and-conditions-1-1/>

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Sent: Monday, 9 April 2018 1:54 PM
To: s 9(2)(a)
Cc: s 9(2)(a) s 9(2)(a) Fabian Marsh
<Fabian.Marsh@nzta.govt.nz>
Subject: Re: Median Barrier analysis

Thanks guys.

Sent from my iPhone

On 9/04/2018, at 1:22 PM, s 9(2)(a) wrote:

Hi Colin

s 9(2)(a) has completed some analysis and it's just waiting for s 9(2)(a) to check before sending it to you. Will be done this afternoon.

Regards

s 9(2)(a)
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s 9(2)(a)
<http://www.abley.com/communication-terms-and-conditions-1-1/>

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Sent: Monday, 9 April 2018 1:02 PM
To: s 9(2)(a)
Cc: s 9(2)(a)
Fabian Marsh <Fabian.Marsh@nzta.govt.nz>
Subject: Re: Median Barrier analysis

Any update as to how this work is going.
Cheers
Colin

Sent from my iPhone

On 5/04/2018, at 2:58 PM, s 9(2)(a) wrote:

Hi Colin,
Just to let you know I'm looking at this now. I've had a chat with s 9(2)(a) to clarify what is required. I'll give you an update when I have something to share.

Cheers
s 9(2)(a)

From: Colin Brodie <Colin.Brodie@nzta.govt.nz>
Sent: Thursday, April 5, 2018 9:51 AM
To: s 9(2)(a)
s 9(2)(a)
Cc: Fabian Marsh <Fabian.Marsh@nzta.govt.nz>
Subject: Median Barrier analysis

As discussed yesterday we need some urgent analysis done around median barrier installation.

1. I recall s 9(2)(a) undertaking analysis of where we would like to install median barriers based upon ONRC+ high head on risk+ high volume. Within this are some quick wins.
2. s 9(2) has pulled some of this through to the Enhanced SH Safety programme, and calculated BCR based upon 80%

savings in head on DSI and 40% saving in ROR DSI (??).

Some of these do not get a BCR greater than 1

3. What we are keen to understand is the difference between what we would get if we have to have a BCR>1, and What we would get if we ignored the BCR. The comparison would be Length, cost, DSI targeted and DSI saved.
4. I think we might need three scenarios, the Full length of barriers from 1) above, a subset of those (approx. 500km) being those roads with the Highest risk roads, and then only those with a BCR>1.

Can you please give some thought to this, and get it underway asap.

Regards

Colin

5.

6. s 9(2)(a)

E colin.brodie@nzta.govt.nz / w nzta.govt.nz

Tauranga Office / Level 3, Harrington House, 32 Harrington Street,
PO Box 13-055, Tauranga Central 3141, New Zealand

<image001.jpg>

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