WAKA KOTAHI
NZ TRANSPORT AGENCY

SAFETY CAMERA SYSTEM

Indicative Business Case

March 2022

New Zealand Government

More information

Waka Kotahi NZ Transport Agency
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DOCUMENT CONTROL

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Document sign-off

Role, group, and title	Name	Sign-off date
Programme Director	Richard Stewart	
IQA Waka Kotahi	Sam Breen George Ross	
Waka Kotahi Delegation Committee	Vanessa Brown	

CONTENTS

RESOURCES

Key Waka Kotahi strategic, procurement, and programme management artefacts referred to in this business case are listed with their location in the following table. Documents listed in the table are for the Safety Camera System Programme, unless otherwise stated. Other documents referred to in or supporting the IBC are listed in the References, p 109.

Document	Version	Location
Assurance Plan	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/03.%20Management/Quality%20Assurance/Assurance%20Plan/Safety%20Camera%20System%20Assurance%20Plan%20v1.0%20Final.docx?d=w36f93a1449e04cd98e2c424db817dfda&csf=1&web=1&e=6BdrX2
Benefits Realisation Strategy	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/05.%20Definition/Programme%20Benefits/Benefits%20Realisation%20Strategy%20(Final%20Draft%20version).docx?d=w97f457ab1d584298aef2edd432ca6c75&csf=1&web=1&e=jkfXn2
Change Management Strategy	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/10.%20Change%20Management/Change%20Management%20Strategy/Safety%20Camera%20System%20Change%20Strategy%20v0.5%20SteerCo.docx?d=w1fe890b17f5c4ef8840519f0124b8640&csf=1&web=1&e=QIL9ko
Communications and Engagement Strategy	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/11.%20Communications%20and%20Engagement/Communications%20and%20Engagement%20Strategy/Safety%20Camera%20System%20Communications%20and%20Engagement%20Strategy%20.docx?d=w0e01b46d78f34be3affd5714b9abbe90&csf=1&web=1&e=YoIeYW
External and Internal Stakeholder Matrix	Draft	https://nztransportagency.sharepoint.com/:f:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/10.%20Change%20Management/Stakeholder%20Engagement?csf=1&web=1&e=s5bmLx
Issue Register	Draft (live)	https://nztransportagency.sharepoint.com/:x:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/03.%20Management/Risks%20and%20Issues/MASTER%20Safety%20Camera%20System%20Programme%20Issue_Register_v3%20report.xlsx?d=wffa06a7beeff49fb9cafa6a257fee90c&csf=1&web=1&e=W5OpAh
Point of Entry	Final	https://nztransportagency.sharepoint.com/:b:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/05.%20Definition/Indicative%20Business%20Case/Point%20of%20Entry/SCS_PoE_Final.pdf?csf=1&web=1&e=eRTjQc
Procurement Plan: Infringements Processing System	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/03.%20Management/Procurement/Technology/Back%20Office%20Offence%20Processing/SCS%20-%20Back%20Office%20Infringements%20Processing%20System%20Procurement%20Plan%2020211012%20Final%20(002).docx?d=w7de8a827bf9a4af6828666a61f818296&csf=1&web=1&e=lPoaBT
Procurement Plan: Safety Cameras and Safety Camera Management System	Final	https://nztransportagency.sharepoint.com/:b:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/03.%20Management/Procurement/Technology/[redacted]/Procurement%20Plan/SCS%20-%20Safety%20Cameras%20and%20Safety%20Camera%20Management%20System%20Procurement%20Plan%20202211108%20FINAL_Procurement%20endorsed.pdf?csf=1&web=1&e=rGB64q

Document	Version	Location
Programme Advisory Board Terms of Reference	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/02.%20Advisory/SCS%20Programme%20Advisory%20Board/Safety%20Camera%20System%20Programme%20Advisory%20Board%20ToR.docx?d=w3785df5c20124ced958a46fedc49531b&csf=1&web=1&e=JbULOc
Programme Blueprint	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/05.%20Definition/Programme%20Blueprint/Safety%20Camera%20System%20Programme%20Blueprint%20V1.0%20FINAL.docx?d=w6a0e89db7f9a4531b8ccca33d6a23b3d&csf=1&web=1&e=VuV5zY
Programme Brief	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/04.%20Identification/Programme%20Brief/Safety%20Camera%20System%20Programme%20Brief%20V1.0.docx?d=w8d4a4485d1484956be435f2b5ea56eb6&csf=1&web=1&e=YdyzlJ
Programme Definition Document	Final	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/05.%20Definition/Programme%20Definition%20Document/Safety%20Camera%20System%20Programme%20Definition%20Document%20v1.0%20FINAL.docx?d=w6bb02a9345f043808ad39aecc3400819&csf=1&web=1&e=F0XHej
Programme Internal Communications and Engagement Framework	Draft	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/11.%20Communications%20and%20Engagement/Communications%20Plans/SCSP%20Programme%20Internal%20communications%20framework.docx?d=w205db9cfc93e4c1892a1620bc3e75fdc&csf=1&web=1&e=QVqV4j
Programme Risk Register	Draft (live)	https://nztransportagency.sharepoint.com/:x:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/03.%20Management/Risks%20and%20Issues/MASTER%20Safety%20Camera%20System%20Programme%20Risk_Register_v5%20report.xlsx?d=w64ac0183174746d2a34fc5f49c7ab028&csf=1&web=1&e=4hNDPJ
Programme Steering Committee Terms of Reference	Draft v1.3	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/01.%20Governance/SCS%20Programme%20Steering%20Committee/Safety%20Camera%20System%20Programme%20Steering%20Committee%20TOR%20v1.3.docx?d=w0e72452752594ab09d6db30f09766c5c&csf=1&web=1&e=7QNeGm
Risk Management Strategy and Framework	Draft	https://nztransportagency.sharepoint.com/:w:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/03.%20Management/Risks%20and%20Issues/Programme%20Risk%20and%20Issue%20Management%20Strategy%20template.docx?d=wb7160aebf0d6449f88a83f96403b14c9&csf=1&web=1&e=AgkLU1
SCSP Stakeholder Engagement	Draft	https://nztransportagency.sharepoint.com/:x:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/10.%20Change%20Management/Stakeholder%20Engagement/SCSP%20-%20Stakeholder%20Engagement.xlsx?d=w8eba24faaf6f42b19306047c648f92e1&csf=1&web=1&e=M1IlzJ
Stakeholder Management Plan	Draft	https://nztransportagency.sharepoint.com/:p:/r/sites/RtZProgrammeTeam-grp365/Shared%20Documents/WS3%20Safety%20Camera%20System/11.%20Communications%20and%20Engagement/Stakeholder%20Management/Stakeholder%20Management%20Plan%20DRAFT.pptx?d=w1c48b9b7c9884bd886a0eb562e583ac4&csf=1&web=1&e=JVOpBZ

ACRONYMS

Acronyms used in this business case are listed below.

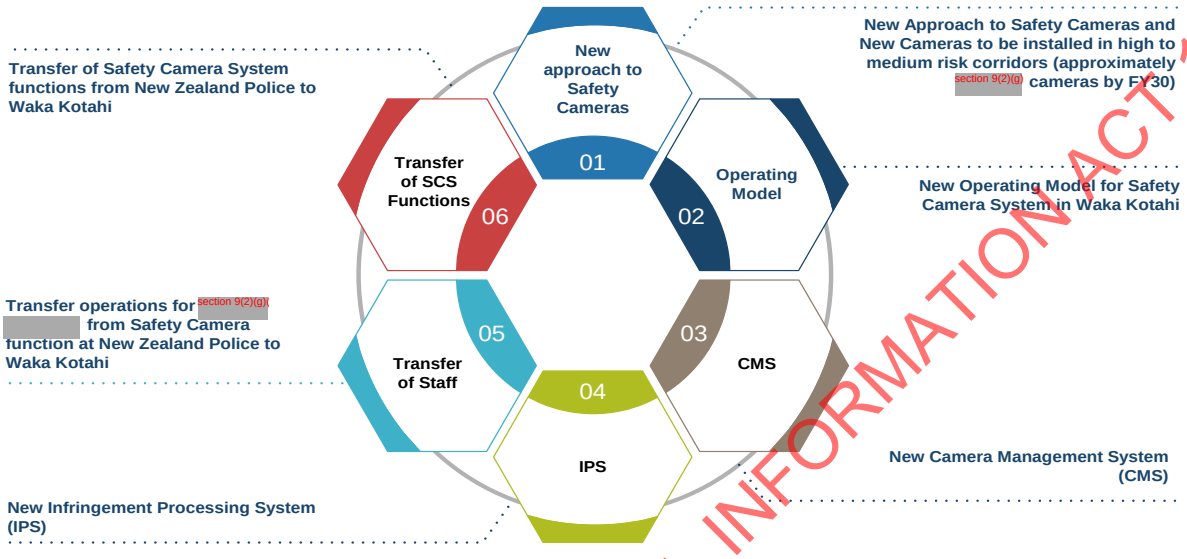
Acronym	Definition
BCR	benefit–cost ratio
CSF	critical success factor
CMS	camera management system
DBC	Detailed Business Case
DSI	death and serious injury
ESC	Executive Steering Committee
FTE	full-time equivalent
GPS	Government Policy Statement
IBC	Indicative Business Case
ICT	information and communications technology
IQA	independent quality assurance (which may be performed internally by a specific Waka Kotahi team or externally by IQANZ)
IPS	infringement processing system
IT	information technology
ILM	investment logic mapping
MCA	multi-criteria analysis
NLTF	National Land Transport Fund
NLTP	National Land Transport Programme
NPV	net present value
NZ	New Zealand
PBC	Programme Business Case
PIPS	Police Infringement Processing System
PV	present value
RtZ	Road to Zero
RtZ ESC	Road to Zero Executive Sub-committee
SCS	Safety Camera System
TUS	Tackling Unsafe Speeds (the current package of work)

EXECUTIVE SUMMARY

Proposed investment in this business case will reduce deaths and serious injuries by 5% by 2030 and lower them by 130 annually

ES1 This business case proposes that Waka Kotahi invests in the Safety Camera System (SCS) across the six areas illustrated in Figure 1.

Figure 1: Investment proposed in this business case



ES2 The proposed investment takes a measured approach to implementing new technologies (such as average speed cameras) and the capabilities required to support them (discussed further in the economic case).

ES3 The proposed investment includes implementing an estimated section 9(2)(g)(ii) safety cameras section 9(2) and is expected to deliver a 5% saving in deaths and serious injuries (DSIs) by 2030 and a reduction in DSIs on the road by 130 annually. Together, these outcomes create a total net present value benefit to society of over $1.5b.

Deaths on NZ roads are not acceptable under the Road to Zero strategy

ES4 New Zealand society pays a heavy toll from poor drivers on the roads. The Ministry of Transport estimates the average social cost of death on roads is $4.9m per death, $0.9m per serious injury, and $0.1m per minor injury. In FY20, speeding had a social cost of $1b to the country with 113 deaths and 508 people seriously injured.

ES5 In November 2019, the Government announced its new national road safety strategy, Road to Zero. The strategy's vision is a 'New Zealand where no one is killed or seriously injured and where no loss of life is acceptable on the roads'.

ES6 Road to Zero sets a target of a 40% reduction in DSIs by 2030 through 15 interventions, including the new SCS, which is expected to contribute 5% of the target.

Good reasons exist for investing

ES7 A variety of options for the future SCS at Waka Kotahi were carefully considered by stakeholders and subject-matter experts. The outcome of these considerations led to the development of a preferred option that meets Waka Kotahi investment objectives, has a good strategic fit and aligns to Waka Kotahi business needs, has the greatest potential to be achieved, can be delivered by suppliers with capacity and capability, can be delivered on time, has the social licence to be pursued in society, and creates the greatest financial value for money as evidenced through financial modelling.

ES8 The investment in the preferred option (Option 4) will deliver four substantial benefits.

- **Reduce DSIs by 5%** through increased compliance with speed limits. Waka Kotahi modelling estimates the preferred option will reduce DSIs by 5% and save 130 lives annually.
- **Reduce risk of harm for all road users** – safety cameras are expected to reduce speed across the overall network. When speed increases, the risk of a crash and crash severity also increase. Lower mean speeds across the network will make roads much safer for all road users and encourage people to walk, cycle, e-bike, and e-scooter to their destination.
- **Create social licence for increased use of safety cameras** – investment in marketing, advertising, branding, education, learning, and development is expected to change public attitudes towards safety cameras, dramatically enabling additional camera capabilities to be increasingly used to deter poor driving behaviour (for example, texting while driving).
- **Increase the return on investment from safety cameras** – improving Waka Kotahi efficiency and optimising its capability through investment in a new operating model (people and processes) and an updated technology stack, including a new camera management system (CMS) and new infringement processing system (IPS), will generate a net present value benefit to society of over $1.5b and save about 1,563 to 2,431 lives over 20 years.

ES9 In contrast with other options examined, the preferred option best ensures continued delivery of SCS services across the country, minimises the risk of service disruption during the function's transfer from New Zealand Police to Waka Kotahi, creates the greatest feedback loop by installing cameras in tranches, and provides greatest basis for implementing safety cameras across the country by FY30.

Preferred option can be funded from the National Land Transport Fund

ES10 Waka Kotahi has the financial capacity to fund the SCS Programme through the current National Land Transport Fund cycle, with funds being set aside under the latest Government Policy Statement on Land Transport.

Investment in new operating model and camera management and infringement processing systems is required whether the preferred option is approved or not

ES11 Regardless of whether the preferred option is approved, investment is needed in a new operating model for the Safety Camera System, anew CMS, and a new IPS. This is because:

- transferring people (about 100 full-time equivalents), processes, and safety cameras (139) requires new ways of working as these capabilities have never existed in Waka Kotahi, so investment in a new operating model is required
- processing of images captured by transferred cameras cannot be done using current Waka Kotahi technology and Police's current technology is at end of life so cannot be transferred (as found by PwC during commercial due diligence), so investment in a new CMS is required
- processing of infringements generated by the transferred cameras is not a function that exists in Waka Kotahi and Police's technology is at end of life and cannot be transferred across, so investment in a new IPS is required.

Next steps – Detailed Business Case to resolve areas of concern

ES12 Assuming the Waka Kotahi delegation committee approves this investment proposal, the SCS Programme will continue to de-risk the investment process by developing a Detailed Business Case (DBC). The DBC will provide decision makers with greater assurance about actual delivery timeframes and costs for the SCS.

ES13 The DBC is expected to be completed by 30 September 2022 and will validate the preferred option across the elements noted in Table 63 on p 106.

INTRODUCTION

This introduction outlines the purpose of this document, proposed investment, background to, and structure and content of this Indicative Business Case (IBC). The IBC further tests and develops the recommendations from the earlier Programme Business Case (PBC).

1. Purpose of this document

1.1 This document:

- reconfirms the transfer date of safety camera functions from New Zealand Police (Police) to Waka Kotahi in the 2021–24 National Land Transport Programme (NLTP) cycle
- seeks the Waka Kotahi Board's approval to proceed with the proposed investment under the preferred option (**Option 4** – Preferred Way Forward) and develop a Detailed Business Case (DBC) to validate that option in the 2021–24 NLTP cycle
- confirms the strategic context and fit of the proposed investment in the Safety Camera System (SCS) Programme to help progress NZ's road safety strategy to 2030 – Road to Zero (RtZ)
- provides evidence to support the estimate that the proposed investment will directly reduce deaths and serious injuries (DSIs) on NZ roads by 4% by 2030 (baselined against 2018), which is a significant contribution to the savings required to meet the RtZ target of a 40% reduction in DSIs by 2030
- confirms the case for investment and expansion for the SCS, requiring both additional capital and operational contributions
- formalises the delivery of the SCS Programme through various strategic documents, including the SCS vision, Programme Blueprint, Programme Brief, and Programme Definition Document
- recommends a preferred way forward for the proposed investment and how new SCS functions will be embedded into Waka Kotahi.

2. Proposed investment

2.1 The proposed investment, set out in the preferred option (Option 4), takes a measured approach to implementing new technologies (such as average speed cameras) and the capabilities required to support them (discussed further in the economic case, p 53).

2.2 The preferred option invests in:

- a new approach to using safety cameras in NZ
- the integration of safety camera functions into the Waka Kotahi operating model to support the new approach
- a new camera management system (CMS)
- a new infringement processing system (IPS)
- the transfer of the operation of 139 safety cameras from Police
- the transfer of SCS functions from Police to Waka Kotahi
- an additional section 9(2)(g)(ii) safety cameras by FY2030.[1]

2.3 The preferred option enables Waka Kotahi to evaluate and learn as it delivers, which is necessary since much is still uncertain about the optimal safety camera network for NZ and legislative change is required to enable new technologies and automation.

[1] The investment in average speed cameras is based on corridors and the number of detection points. Currently, the model assumes about 3.58 detection points per average speed camera, which are included in the section 9(2)(g)(ii) cameras.

2.4 The preferred option delivers an estimated 809 safety cameras and will lower DSIs by 130 annually and make a 5% DSI saving by 2030. The one-time implementation cost for the programme and change team and ICT implementation is an estimated section 9(2)(b)(ii) see Table 1.

2.5 The main alternative options scale camera expansion and pace of delivery. They are called Option 3: Less Ambitious Way Forward and Option 5: More Ambitious Way Forward.

- The Less Ambitious Way Forward will deliver an estimated 239 safety cameras, lower DSIs to 57 annually and achieve a 2% DSI saving by 2030. The one-time implementation cost for the programme and change team and ICT implementation is expected to be section 9(2)(b)(ii)
- The More Ambitious Way Forward will deliver an estimated 1,639 safety cameras, lower DSIs to 183 annually and achieve a 7% DSI saving by 2030. The one-time implementation cost for the programme and change team and ICT implementation is expected to be section 9(2)(b)(ii)

Table 1: Safety Camera System proposed investment options

	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
Whole-of-life costs (over 20 years discounted at 4%)	section 9(2)(b)(ii)		
One-time implementation cost ($m)			
Number of long-run DSIs saved per year (from FY29)	57	130	183
DSI percentage reduction in 2030	2%	5%	7%
Benefit–cost ratio (20 years discounted at 4%)	section 9(2)(b)(ii)		

Source: Waka Kotahi, SCS Financial Model, 2022.

3. Background

Road Safety Partnership Programme initiated a programme to investigate new ways of using safety cameras to improve road safety and reduce DSIs

3.1 The Automated Compliance and Intervention Management programme was initiated in 2018 as part of the Road Safety Partnership Programme between Waka Kotahi and Police. Its aim was to design and implement a national network of automated fixed and mobile devices to improve road safety and reduce DSIs.

In 2019, the Government released its national road safety strategy to prevent people being killed or seriously injured on roads

3.2 In November 2019, the Government announced its national road safety strategy, RtZ, for 2020–2030 and its associated initial action plan for 2020–2022.

3.3 RtZ outlines a plan to prevent people being killed or seriously injured on NZ roads, with a target of a 40% reduction in DSIs (from 2018 levels) by 2030. The action plan accompanying the strategy contains 15 initial actions within the strategy's five focus areas, one of which is introducing a new approach to tackling unsafe speeds.

3.4 RtZ places human wellbeing at the heart of NZ's road transport planning. The vision of RtZ is 'a New Zealand where no one is killed or seriously injured in road crashes'[2] and where no loss of life is acceptable when using the road transport system.

[2] New Zealand Government. 2021. *Road to Zero: Annual monitoring report 2020*. Wellington: Author, p 2.

In 2019, Cabinet agreed to the Tackling Unsafe Speeds package, including a new approach to safety cameras

3.5 Changing NZ's approach to and improving how it uses safety cameras is a key priority for RtZ. The Government announced the Tackling Unsafe Speeds (TUS) package in November 2019.[3] TUS is a key part of RtZ and its initial action plan.

3.6 Cabinet agreed to the following changes in government policies on safety cameras.

- There should be a significant increased investment in additional safety cameras on the network, prioritised in the Government Policy Statement on Land Transport 2021/22 – 2030/31 (GPS).
- Safety cameras should be located on the highest-risk parts of the network.
- As part of the investment in additional cameras, safety cameras should be clearly signed to reduce excessive speeds on high-risk roads.
- Ownership and operation of the camera network should be transferred from Police to Waka Kotahi at the appropriate time.

Board agreed to support the Minister and Ministry of Transport in reducing DSIs

3.7 The Waka Kotahi Board agreed to support the Minister and Ministry of Transport in reducing DSIs, stating:[4]

> The Transport Agency is fully committed to playing its part in achieving the trauma reduction target ultimately agreed by Government, whether this is 40%, 50% or 60%. If 40% is set, we would welcome opportunities to explore greater levels of ambition as implementation progresses – for instance, developments in technology may enable more rapid progress.

Board made section 9(2)(b) available to fund replacement of the Police Infringement Processing System, but later decided to invest in setting up the TUS Programme

3.8 In August 2019, the Waka Kotahi Board agreed to invest section 9(2 in supporting Police to upgrade and/or replace the Police Infringement Processing System (PIPS).

3.9 In February 2020, the Waka Kotahi Executive Leadership Team agreed to establish the TUS Programme, and the section 9(2)(b was used to fund that programme instead of upgrading PIPS.

In early 2020, Waka Kotahi and Police initiated programmes to support the transfer of safety camera operations

3.10 At the start of 2020, a programme business case (PBC) initiated the TUS Programme to design and implement a new regulatory framework for speed management and transfer and expand safety camera operations.

3.11 Police initiated the Infringements Transformation Programme to enable the transfer of safety camera operations and modernise the processes and system required to support officer-issued infringements.

Board endorsed the TUS PBC in August 2021

3.12 The Waka Kotahi Board endorsed the TUS PBC on 11 August 2021. The PBC sought Board approval for the TUS Programme's three component programmes in the 2021–24 NLTP cycle:

- Speed Management Programme – implementation
- Safer Speeds Around Schools Programme – implementation
- SCS Programme – funding for high-level design, a procurement process, and DBC.

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[3] Cabinet. 2019. *Minute of Decision – Tackling Unsafe Speeds Programme* (CAB-19-MIN-0575).

[4] Waka Kotahi. 2019. *Tackling Unsafe Speeds Options Paper*. Wellington: Author.

TUS PBC identified five problem statements, three benefits, and two investment objectives for the SCS Programme

3.13 The TUS PBC outlined five problem (or opportunity) statements that the investment in the SCS Programme would resolve.

- **Problem statement 1** – The most effective volume and mix of safety camera types and their use need to be fully understood to ensure the desired reduction in DSIs is achieved.
- **Problem Statement 2** – Waka Kotahi lacks the capability to assume accountability and management of the SCS.
- **Problem Statement 3** – Waka Kotahi cannot transfer existing infringements processing technology from Police as it is near end of life.
- **Problem statement 4** – The existing camera fleet does not readily integrate with newer technology.
- **Problem statement 5** – No consistent consultative process or technology exists for capturing speed management plans.

3.14 The TUS PBC noted that investment in the SCS would provide three key benefits.

- **Benefit 1** – Increased number of road users travelling at safe and appropriate speeds.
- **Benefit 2** – Reduced DSIs by 4%.
- **Benefit 3** – Improved overall wellbeing for individuals in NZ.

3.15 Furthermore, the TUS PBC expected these benefits to be delivered by achieving three investment objectives. The objectives were to invest in:

- foundations of a new SCS, including the transfer of ownership and operation of safety cameras (technology and people) to Waka Kotahi
- implementation of the capabilities required to operate and optimise a new approach to using safety cameras to reduce inappropriate speed
- expansion of the safety camera network over multiple phases.

Independent quality assurance recommended separating the SCS Programme out of the TUS PBC and developing a separate business case

3.16 section 9(2)(ba)(i)

IQA recommendations led to development of the SCS Programme and this IBC, which provides sound assurance of the proposed investment

3.17 The SCS Programme completed the identification stage in May 2021 with a Programme Steering Committee established and Programme Blueprint, Programme Brief, and Programme Definition artefacts approved.

[5] Waka Kotahi. 2021. *SCS Point of Entry Document*. Wellington: Author.

3.18 In July 2021, the Programme Steering Committee and Waka Kotahi Delegations Committee recommended that a separate IBC be developed for the SCS Programme.

Next step in confirming the proposed investment is this IBC

3.21 This IBC is the next step towards confirming the SCS investment proposal.

4. Structure and content of this business case

IBC follows the Waka Kotahi business case process and aligns with Treasury's Better Business Cases framework

4.1 This IBC takes stakeholders through the Waka Kotahi business case process, which aligns with Treasury's Better Business Cases framework. This approach systematically ascertains that the investment proposal:

- is supported by a compelling case for change – the strategic case
- Optimises value for money – the economic case
- Is commercially viable – the commercial case
- Is financially affordable – the financial case
- Is achievable – the management case.

4.2 The main components of this document are listed in Table 2.

[6] Ministry of Transport. 2021.*Tackling Unsafe speeds*. Wellington: Author.

Table 2: Structure and main content of this IBC

Component	Description
Executive summary	Summarises the proposed transfer and expansion of the SCS, which is the purpose of this IBC, the five cases, and next steps.
Introduction (sections 1–4)	Describes the purpose, structure, and content of this document and the proposal.
Strategic case (sections 5–14)	Defines the key problems the proposed investment will resolve and the case for change. Explains the root causes of the problems and identifies the strategic context, organisational context, and partners and key stakeholders involved. Outlines the benefits, investment objectives, risks, constraints, dependencies, assumptions, and overall case for change.
Economic case (section 15–24)	Identifies a preferred option (the Preferred Way Forward – PWF). Describes the long-list of options and rationale for short-listed options. Details how short-listed options were evaluated and the results of the assessment to determine the preferred option.
Financial case (sections 25–28)	Demonstrates the affordability of the preferred option. Identifies the costs of implementing the preferred option and how the preferred option will be funded.
Commercial case (sections 29–33)	Outlines proposed procurement arrangements for the preferred option, including the procurement plan, procurement strategy, consenting plan, required services, property plan, contract provisions, and potential risk sharing.
Management case (sections 34–45)	Demonstrates the achievability of the preferred option. Summarises the plan for implementing the preferred option, programme/project management approach for successful delivery of the programme, change management approach, and how benefits, risks, and dependencies will be managed.
References	Lists reports and other documents referred to in or supporting the IBC. (See also the list of Waka Kotahi strategic, procurement, and programme management artefacts in Resources, p 6.)
Appendices	Contain supplementary supporting information.

STRATEGIC CASE

The strategic case outlines the element of speed and its role in causing deaths and serious injuries (DSIs) on NZ roads (section 5). It defines the key problems and their root causes that the proposed investment will resolve and the case for change (section 6). In addition, it summarises the strategic and organisational context (section 7) and the partners and key stakeholders involved (section 8). Lastly, this case outlines the benefits; investment objectives; scope; risks; constraints, dependencies, and assumptions; and further justification for why change is needed now (sections 9–14, respectively).

Documents referenced in the IBC are listed in References, p 109. Waka Kotahi strategic artefacts (and their location) are listed in Resources, p 6.

Note: This case was informed by published articles and their data that supported the case for change for the SCS. The research was selected on the basis of their citations, being the best available research, and having been used by Waka Kotahi teams in other internally published documents. This case is not a meta-analysis or systematic review of all available research in this field. If you would like a more detailed list of research in this field, contact the Waka Kotahi research team directly.

5. Role of speed in deaths and serious injuries on NZ roads

5.1 This section outlines the strategic context of the element of speed and its role as the primary cause of DSIs on NZ roads. Specifically, this section highlights how:

- driving over the speed limit is a widespread problem in NZ and contributes to DSIs on roads
- safety cameras (fixed speed, average speed, and mobile speed) can reduce, to varying degrees, speeding over the limit on the wider network
- safety cameras (fixed speed, average speed and mobile speed) can, therefore, help reduce DSIs on roads
- red-light running is a problem in NZ and contributes to DSIs
- red-light cameras can help reduce red-light running and, therefore, help reduce DSIs.

Speeding is defined as driving too fast for the conditions of the road

5.2 The Ministry of Transport defines speeding as driving above the recommended speed limit of the road, subject to road conditions such as weather and traffic.[7]

5.3 Speed lies at the core of the road safety problem in NZ and throughout the motorised world. Although many factors contribute to passenger injury during a vehicle crash, the kinetic energy transferred to vehicle occupants is the key driver for DSIs.[8] As speed increases, four factors increase with an associated increase in the risk of crash involvement. The four factors are:[9]

- stopping distance –the distance travelled both during reaction time and after the brakes are applied
- the probability of exceeding the critical speed on a curve
- the chance of other road users misjudging how fast the speeding driver is travelling
- the probability of a rear-end crash if the driver has not accounted for the increased speed by increasing the following distance.

[7] Ministry of Transport. 2021. Speed. Safety: Annual statistics (web page). www.transport.govt.nz/statistics-and-insights/safety-annual-statistics/speed

[8] E. D. Richter, T. Berman, L. Friedman, & G. Ben-David. 2006. Speed, road injury and public health. *Annual Review of Public Health* 27, 125–152.

[9] Ministry of Transport. 2021. Speed. Safety: Annual statistics (web page). www.transport.govt.nz/statistics-and-insights/safety-annual-statistics/speed

5.4 An enormous volume of research explains the relationship between speed, kinetic energy, and road DSIs globally. The World Health Organization estimates that 1.3m deaths occur globally due to road traffic crashes.[10] Between 20 million and 50 million more people suffer serious injuries.

5.5 In addition, the World Health Organization notes that 'speeding' is one major factor contributing to DSIs on the road globally, observing that every 1% increase in mean speed produces a 4% increase in fatal crash risk and 3% increase in serious crash risk. Furthermore, death risk for pedestrians hit by car fronts rises steeply with speed – 4.5 times from 50km/h to 65km/h.

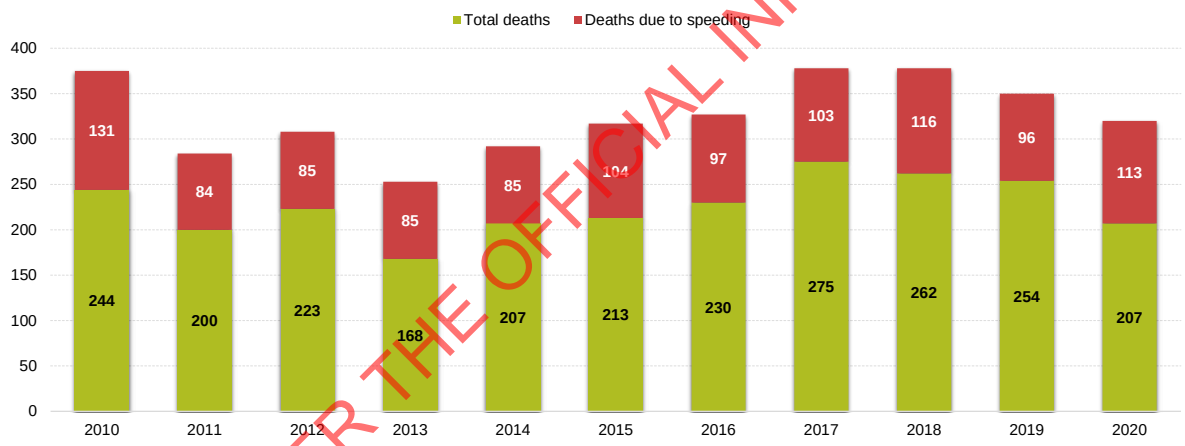
Driving over the speed limit contributes to DSIs on roads

5.6 The data in Figure 2 indicates that over the 11 years from FY2010, driving above the speed limit accounted for, on average, 31% of all deaths on NZ roads per year.

5.7 Furthermore, the data highlights that over that 11-year period:

- 44% of all deaths were a direct result of driving above the speed limit – of the 2,483 deaths on the road, 1,099 were due to driving over the limit (see Figure 2)
- 30% of all serious injuries were a direct result of driving above the speed limit – of the 19,869 serious injuries on the road, 5,592 were due to driving over the limit (see Figure 3 and Appendix K).

Figure 2: Total deaths on NZ roads compared with deaths on NZ roads due to driving above the speed limit, FY2010–21

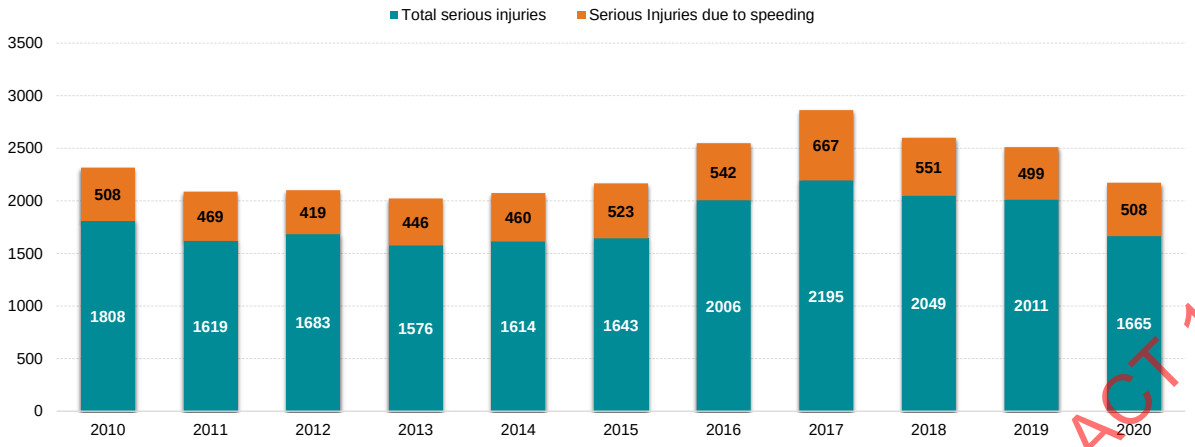


Source: Ministry of Transport. 2021. Te Marutau – Ngā tatauranga ā-tau: Safety – annual statistics (website). www.transport.govt.nz/statistics-and-insights/safety-annual-statistics/

Note: Crash data is derived from Traffic Crash Reports completed by police officers who attend fatal and injury crashes. The information about crash circumstances and causes is extracted from these reports by Waka Kotahi and Ministry of Transport staff and stored in the Crash Analysis System. The data presented in this IBC is extracted from that.

[10] World Health Organization. 2021. Road traffic injuries (web page). www.who.int/news-room/fact-sheets/detail/road-traffic-injuries.

Figure 3: Serious injuries on NZ roads due to driving above the speed limit, FY2010–21



Source: Ministry of Transport. 2021. Safety – annual statistics. Te Marutau — Ngā tatauranga ā-tau (website). www.transport.govt.nz/statistics-and-insights/safety-annual-statistics/

Note: Crash data is derived from Traffic Crash Reports completed by police officers who attend fatal and injury crashes. The information about crash circumstances and causes is extracted from these reports by Waka Kotahi and Ministry of Transport staff and stored in the Crash Analysis System. The data in this IBC is extracted from that.

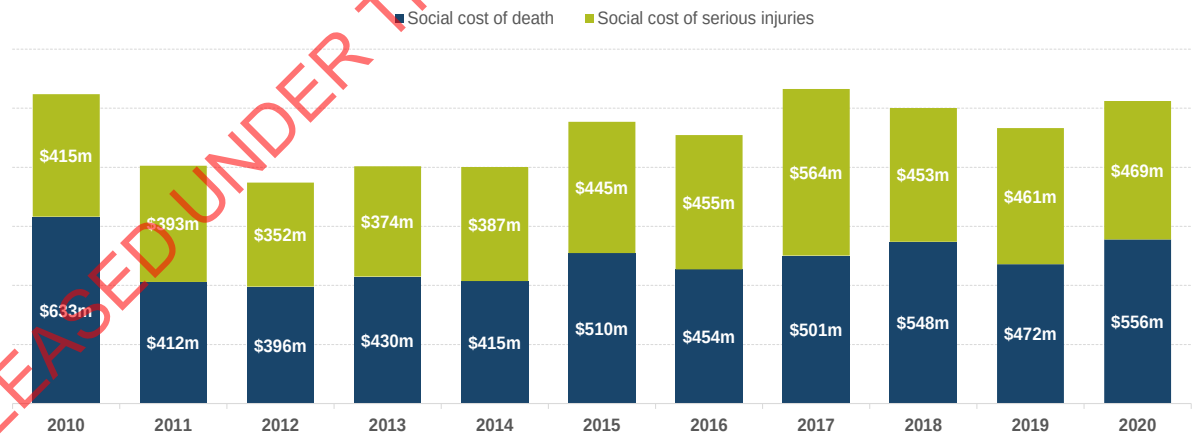
5.8 The Ministry of Transport notes that road deaths and injuries (serious and minor) impose intangible, financial, and economic costs on society. These costs include loss of life and reduced quality of life, reduced output due to temporary incapacitation, and medical, legal, and vehicle damage costs.

5.9 The Ministry equates the average social cost to society of death on roads to $4.9m per death, $0.9m per serious injury, and $0.1m per minor injury (as at 2017).[11]

5.10 Based on the Ministry's estimates, in FY2010–21, driving above the speed limit on NZ roads cost society $10.1b, comprising $5.3b from deaths and $4.8b from serious injuries (see Figure 4).

5.11 In FY2020, driving above the speed limit had a social cost to the country of $1b, with 113 deaths and 508 serious injuries on NZ roads (see Figure 4).

Figure 4: Social cost to NZ of DSIs from driving above the speed limit, FY2010–21



Source: Ministry of Transport. 2021. Te Marutau – Ngā tatauranga ā-tau: Safety – annual statistics (website). www.transport.govt.nz/statistics-and-insights/safety-annual-statistics/

Note: Crash data is derived from Traffic Crash Reports completed by police officers who attend fatal and injury crashes. The information about crash circumstances and causes is extracted from these reports by Waka Kotahi and Ministry of Transport staff and stored in the Crash Analysis System. The data in this IBC is extracted from that.

[11] These are the most up-to-date values from the Ministry.

Safety cameras (fixed speed, average speed and mobile speed) will reduce DSIs

5.12 International research shows that safety cameras save lives by changing driving behaviour and reducing DSIs on roads and have an overall positive road safety impact for all users.

5.13 The first study to examine the use of safety cameras was conducted in West London and published in 1994.[12] This study noted that speed cameras very successfully reduced speed.

5.14 Speed cameras were introduced in NZ around October 1993. They were initially placed on stretches of road with a record of speed-related crashes. The stretches of road were signposted with 'Speed Camera Area' signs, and cameras were highly visible. At rural sites, cameras were mobile and vehicle mounted. At urban sites, cameras were mobile and vehicle mounted or were fixed and mounted on poles ('static').

5.15 Police studied crash data in the 20 months following the introduction of static cameras. It found a 23% reduction in DSIs at urban static camera sites and an 11% reduction in DSIs at rural sites.[13]

5.16 While NZ research into safety cameras has been limited to the one Police study, international research has been rigorous. International evidence provides ample data to infer that a similar, if not greater, DSI reduction can be accomplished in NZ with implementation of an appropriate mix of safety cameras on high-, medium-, and low-risk corridors (see Table 3).

Table 3: Evidence of reductions in DSIs from using different safety cameras

Camera type*	Impact expected on DSIs	Evidence**
Fixed	Reduce DSIs by 20% within 250–500m of the camera	Høye. 2014. Speed cameras, section control, and kangaroo jumps: A meta-analysis.
Average speed	Reduce DSIs by 56% over the treated corridor	Høye. 2014. Speed cameras, section control, and kangaroo jumps: A meta-analysis.
Mobile speed	Reduce DSIs by 21–30% across the network	Keall, Povey, & Frith. 2002. Further results from a trial comparing a hidden speed camera programme with visible camera operation. Cameron & Delaney. 2008. *Speed Enforcement: Effects, mechanisms, intensity and economic benefits of each mode of operation.* Cameron. 2008. *Development of Strategies for Best Practice in Speed Enforcement in Western Australia: Supplementary report.* Cameron. 2009. *Safety Benefits of Speed Cameras*.
Red-light	Reduce DSIs by 20% at the intersection of installation	Cohn, Kakar, Perkins, Steinbach, & Edwards. 2020. Red light camera interventions for reducing traffic violations and traffic crashes.

* For an overview of the camera types, see Appendix B.

* For bibliographic details, see References, p 109.

[12] M. Winnett. 1994. *A review of speed camera operations in the UK*. Paper presented at the 22nd European Transport Forum PTRC.

[13] NZ Police. 2021. Why do we have safe speed cameras (web page). www.https://www.police.govt.nz/advice-services/driving-and-road-safety/speed-limits-cameras-and-enforcement/safe-speed-cameras

Driving over the speed limit is a widespread problem in NZ

5.17 The relationship between speed and road trauma is well established in NZ and internationally, and managing speed continues to remain a primary focus of road safety authorities. A 2017 study of DSIs in NZ revealed that approximately 87% of all crashes occurred at speeds that were under 10km/h over the posted speed limit.[14]

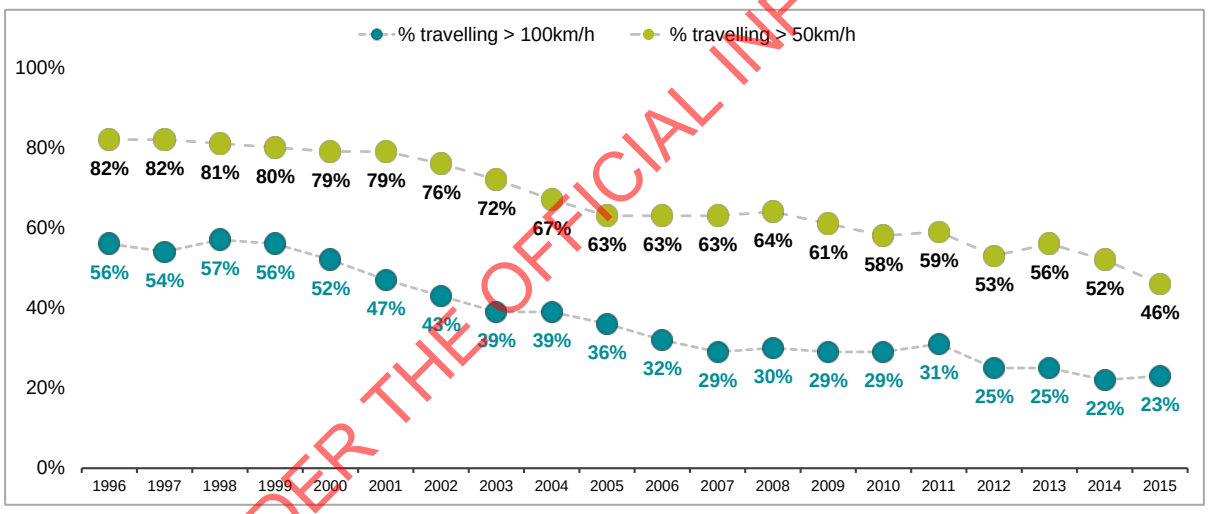
5.18 The Ministry of Transport used to perform an annual speed survey to gauge the number of vehicles travelling over the posted speed limit around the country. The last survey was in 2015.[15] The surveys were conducted at randomly selected sites to provide an estimate of the national speed profile.

5.19 Speed surveys monitored changes in free speeds of vehicles in 100km/h speed limit areas and main urban 50km/h areas. Free speeds are measured when vehicles are unimpeded by the presence of other vehicles (that is, some distance exists between a vehicle travelling at a free speed and the vehicle in front of it) or environmental features such as traffic lights, intersections, hills, corners, or road works.

5.20 The last speed survey found:[16]

- 23% of vehicles surveyed on open roads were travelling faster than the 100km/h speed limit (see Figure 5)
- 46% of vehicles surveyed on urban roads were travelling faster than the 50km/h speed limit (see Figure 5).

Figure 5: Percentage of cars exceeding the speed limit in NZ, 1996–2015



Source: Ministry of Transport. 2015. *Speed Survey Results*. Wellington: Author.

Safety cameras (fixed, average speed, and mobile) reduce speeding on the wider network

5.21 A mix of new technology safety cameras creates what researchers call a halo effect – a reduction in speed on wider parts of the network. This compares with traditional approaches to speed enforcement that aim to catch and punish the speeding driver at the site where the speeding offence occurred (or was detected), so will reduce speed only at those parts of the network.

[14] H. Mackie, L. Hirsch, & I. McAuley. 2017. Fatal footsteps: Understanding the Safe System context behind New Zealand's pedestrian road trauma. *Journal of Road Safety* 32(1), 5–16.

[15] The Ministry's reason for not conducting subsequent surveys is unknown.

[16] Ministry of Transport. 2015. *Speed Survey Results*. Wellington: Author.

5.22 Researchers observe two types of halo effect.[17]

- **Distance halo effect** – the distance (usually measured in kilometres) on either side of the enforcement site over which a reduction in speeding behaviour occurs.
- **Time halo effect** – the time (in days) from the enforcement activity during which speeds at the enforcement site are reduced.

5.23 International research has found safety cameras are extremely effective in creating halo effects across wider parts of the network. Two examples are as follows.

- NZ researcher Barnes found that a distance halo effect was created from a marked mobile traffic police vehicle, where speed reduction began more than 2km before the site and lasted for 6km after the site – a total of up to 8km.[18]
- American researchers noted that when enforcement is more strategically used the halo effect is much larger. For example, Brackett and Edwards found that a stationary traffic police car randomly moved from place to place along a stretch of road created an impression of a massive concentration of enforcement along that road. This created a reduction in speed of up to 20km from either side of the stationary car.[19]

5.24 Findings from other international research into the halo effect are summarised in Table 4.

Table 4: International evidence of reduction on speeding on wider network

Country	Reduction in speed across the network	Findings and evidence*
UK	30%	A study of 1,000 safety cameras installed across the UK between 1992 and 2016 found that safety cameras reduced overall speed across the network by 30%. Evidence: Tang. 2017. *Do Speed Cameras Save Lives?*
France	20%	Safety cameras reduced speed across the French network by 19.7%. Evidence: Blais & Carnis. 2015. Improving the safety effect of speed camera programs through innovations: Evidence from the French experience.
UK, France, Australia, and other countries	Varying	Safety camera networks and speed-calming interventions led to large sustainable and highly cost-effective decreases in average speed across the UK, Australia, France, and other countries. Evidence: Richter, Berman, Friedman, & Ben-David. 2006. Speed, road injury and public health.

* For bibliographic details, see References, p 109.

[17] P. Champness, M. Sheehan, & L. Folkman. 2015. *Time And Distance Halo Effects Of An Overtly Deployed Mobile Speed Camera*. Centre for Accident Research and Road Safety Queensland.

[18] Barnes (1984) cited in D. Zaal. 1994. *Traffic Law Enforcement: A review of literature* (report 53). Monash University Accident Research Centre. Prepared for Federal Office of Road Safety, Canberra & Institute for Road Safety Research (SWOV).

[19] J. B. Edwards. 1999. Speed adjustment of motorway commuter traffic to inclement weather. *Transportation Research Part F2* 2(1), 1–14.

6. Defining the problem for the SCS

6.1 This section outlines the root causes of the current problems for the SCS and strategic documents that contain additional information about the root causes.

6.2 A facilitated investment logic mapping (ILM) workshop was held between 6 and 20 October 2021 with key stakeholders to gain a better understanding of issues and business needs and why change and/or investment are needed now by Waka Kotahi.

6.3 The stakeholder group identified and agreed two key problems, their weightings, and root-causes (which are discussed below).

- Problem 1 – We are not utilising safety cameras effectively, which limits our ability to encourage compliance and reduce road deaths and injuries (70%).
- Problem 2 – We need to change public attitudes away from safety cameras being a revenue gathering tool to being a safe system tool in order to maximise safety camera effectiveness and utility (30%).

6.4 The Programme Steering Committee approved the two problem statements and respective benefits on 17 November 2021.[20]

6.5 The output from the workshop, the investment logic map and benefits map, are in Appendix A.

6.6 The subsequent sections provide the reasons and rationale for the problem statements.

Problem 1: We are not utilising safety cameras effectively, which limits our ability to encourage compliance and reduce road deaths and injuries (70%)

6.7 Problem 1 reflects the multiple roles safety cameras can play on the NZ network and their ability to encourage compliance and reduce road DSIs on the network.

6.8 The root causes of this problem are complex, and pressure arises mainly from a combination of five root causes.

- Root cause 1 – The safety camera technology Police uses is older generation compared with the new generation technology available today (for example, average speed cameras), making current cameras less effective at enforcing compliance.
- Root cause 2 – The Police Infringement Processing System (PIPS) is at end of life, leading to reduced efficiency and effectiveness in processing non-compliant driving behaviour.
- Root cause 3 – NZ has the lowest number of safety cameras on its network compared with other jurisdictions (based on our research), which limits our ability to reduce DSIs effectively.
- Root cause 4 – NZ has very low penalties for speeding infringement offences, and camera-issued offences do not attract demerit points.
- Root cause 5 – Safety cameras have not been systematically targeted at high-risk parts of the road network to reduce DSIs (in part, due to the low number of cameras).

Root cause 1 – The safety camera technology Police uses is older generation compared with the new generation technology available today (for example, average speed cameras), making current cameras less effective at enforcing compliance

6.9 Commercial due diligence on Police by PwC on behalf of Waka Kotahi between August and November 2021 revealed a large proportion of Police safety cameras uses older generation technology, which is less efficient, is less effective, and generates sub-optimal road user compliance (that is, doesn't deter speeding).[21] This is because these older cameras capture

[20] Waka Kotahi. 2021, 11 November. *Programme Advisory Board Minutes.* Wellington: Author.

[21] PwC. 2021. Due diligence for Police transfer of safety cameras to Waka Kotahi. Unpublished confidential document.

fewer incidents and allow more non-compliant drivers to get away with speeding on the roads, leading to a higher level of DSIs than would be the case with new generation technology.

6.10 Current Police safety camera technology has five main issues. Compared with newer technology, it:

- is more than 10–20 years old (depending on the specific technology) and, while Police installed new cameras over 2014–2018, most used first-generation technology that can catch fewer non-compliant drivers (see Table 5) – for example, static cameras installed by Police 8 years ago were procured a few years before being implemented and were likely developed a further 10–20 years before that
- is less efficient at processing images and capturing non-compliant drivers, with only approximately 70% of images being captured accurately and 30% of non-compliant drivers not being processed
- is less effective in terms of integration and back-office processing; for example, red-light and fixed (static) cameras require manual downloading of images regularly rather than being sent directly to the back office for processing using 5G or fibre, which is available in newer safety camera technology
- does not include average speed cameras, which are highly effective in improving road user compliance and reducing DSIs
- is approaching end of life and all Police mobile cameras must be replaced by the end of FY2023.

Table 5: Current Police cameras equipped with older generation technology

Camera types	Camera technology age	No. of cameras	Technology efficiency	Incidents/per camera, old technology*	Incidents/per camera, new technology
Static (fixed) safe speed cameras Life expectancy is 4 years	Current cameras are 8 years old *(from the date installed, but older given when they were procured, for example, 10–20 years)*	54	Static cameras can discriminate lane, direction, and vehicle size. No automatic number plate recognition capability unless deployed in point-to-point with a supporting back-office automatic number plate recognition engine	7,660	15,000 (+96%)
Red-light cameras Life expectancy is 5 years	Current cameras range from new to 7 years old *(from the date installed, but older given when they were procured for example, 10–20 years)*	45**	Red-light enforcement only. Capable of speed enforcement concurrent with red-light enforcement, but this feature is not enabled. If enabled and targeted to worst approach leg, could see 26% reduction in DSIs across the intersection (46 on the worst approach alone)	196	3,100 (+1,482%)

Camera types	Camera technology age	No. of cameras	Technology efficiency	Incidents/per camera, old technology*	Incidents/per camera, new technology
Mobile safe speed cameras Life expectancy is 6 years	Current cameras are 9 years old and at end of life *(from the date installed, but older given when they were procured for example, 10–20 years)*	43	Can discriminate direction and vehicle type (truck or car) but has no lane differentiation, which limits prosecution	8,572	15,000 (+75%)

Source: PwC. 2021. Due diligence for Police transfer of safety cameras to Waka Kotahi. Unpublished confidential document.

* Current incidents per camera based on Police camera incidents data for 6 years (2016 to September 2021).

** Forty-two cameras belong to Auckland Transport and three to Police.

6.11 verage speed cameras are highly effective in reducing DSIs. International findings on DSI reductions following the introduction of average speed cameras are noted in Table 6.

Table 6: International evidence about the impact of average speed cameras on DSIs in treated corridors

Country	DSI % change after the introduction of average speed cameras
Norway	Decrease in DSIs by 49%
Netherlands	Decrease in DSIs by 50%
Australia	Decrease in DSIs by 50%
Italy	Decrease in DSIs by 51%
United Kingdom	Decrease in DSIs by 50%

Source: H. S. Lahrmann, B. Brassøe, J. W. Johansen, & J. C. O. Madsen. 2016. Safety impact of average speed control in the UK. *Journal of Transportation Technologies* 6(5), 312–326. 10.4236/jtts.2016.65028

6.12 Police doesn't use average speed cameras for several reasons, including that:

- average speed cameras require legislative change in NZ
- average speed camera technology was relatively expensive until about 2015 after which the cost of installing and operating the technology decreased from $1.5m/km to less than $100,000/km.

Root cause 2 – PIPS is at end of life, leading to reduced efficiency and effectiveness in processing non-compliant driving behaviour

6.13 All incidents detected by safety cameras are processed by the Police Infringement Bureau using PIPS. An outline of PIPS is in Appendix D.

6.14 Commercial due diligence found PIPS is at end of life and requires significant capital and operational investment to keep functioning.

6.15 PIPS is less efficient in processing and less effective in managing prosecution activities such as sending out infringements than newer processing systems, which can process infringements in real-time if so enabled. If the new camera management system (CMS) and infringement processing system (IPS) do not allow for real-time processing, there will be a

negative impact on the enforcement regime, as a key principle of enforcement is that infringements are issued as quickly as possible to deter the behaviour.

6.16 PIPS has six main limitations.

- **Slower infringement processing** – Commercial due diligence found the current system is less efficient than more modern infringement processing systems, leading to less capture and processing of incidents on the road; for example, a modern CMS and IPS can verify and process 200% more incidents then PIPS.
- **Limited automation capability** – This means incidents are processed manually, which requires enough staff to be available. This becomes problematic when the speed threshold is reduced during public holidays, creating a seasonal spike in volumes. This work around will no longer be viable, if additional safety cameras are installed across the country.
- **Limited business intelligence** – Current infringement processing lacks business intelligence capabilities, so high-risk drivers with multiple speed violations and non-compliant driving behaviour offences cannot be distinguished from otherwise compliant drivers who exceed the speed limit for the first time. A new CMS and IPS will enable the relationship between driving behaviour and current infringements to be explored and high-risk drivers identified.
- **Limited ability of infringement processing staff** to verify and process other forms of non-compliant road behaviour – The current system limits the number of incidents staff can process in a year compared with new technology, which will allow a higher volume of processing, thus contributing to greater compliance by drivers.
- **Limited in capacity** to cope with increases in internal and external volumes of infringements and incapable of processing infringements from new technology such as average speed cameras.
- **Limited in capability** to process incidents from average speed and dual red-light–speed cameras.

Root cause 3 – NZ has the lowest number of safety cameras on its network compared with other jurisdictions, which limits our ability to reduce DSIs effectively

6.17 NZ's current 'anytime, anywhere' enforcement approach to safety cameras means fixed and mobile cameras are not signposted and mobile speed enforcement can occur anywhere on the network. The main purpose of this approach is make drivers think speeding can be detected at any time and in any place on the network.

6.18 However, NZ has relatively few safety cameras per capita compared with other jurisdictions (see Table 7) and very low penalties for speeding (see Table 8 and Table 9), which greatly undermine the effectiveness of the enforcement approach, particularly, the ability to achieve the necessary level of general deterrence. Further, NZ has not yet operationalised camera types that have proven highly successful overseas (that is, average speed and dual function red-light–speed cameras), which can effectively complement an 'anytime, anywhere' approach.

6.19 NZ has about 142 safety cameras across its road network: 45 red-light, 54 fixed speed, and 43 mobile cameras.

6.20 The current approach to safety cameras lacks a holistic view that would see more cameras installed and high- to medium-risk corridors treated alongside effective education campaigns to deter non-compliant driver behaviour.

Table 7: Safety cameras and road fatalities per capita

Jurisdiction	Safety cameras per 100,000 population	Road fatalities per 100,000 population
Sweden	>11	2.5
Netherlands	9.4	3.6
France	7.5	5.2
Victoria (Australia)	6.6	3.3
New South Wales (Australia)	4.7	4.6
United Kingdom	4.2	2.8
New Zealand	2.3	7.9

Source: Ministry of Transport. 2019. *Impact Summary: Tacking unsafe speeds* (version released under the Official Information Act 1982). Wellington: Author; New Zealand Police research, November 2018, updated for additional cameras and population changes; International Transport Forum. 2018. *Road Safety Annual Report 2018*. OECD/ITF; NSW Government. 2020. *Speed Camera Programs*: 2017 annual review. Sydney: Author.

Note: These figures include fixed, mobile, point-to-point, red-light, and combined red-light–speed cameras. NZ does not have operational point-to-point or combined red-light–speed cameras.

Root cause 4 – NZ has very low penalties for speeding infringement offences, and camera-issued offences do not attract demerit points

6.21 NZ's relatively low penalties for speeding offences (see Table 8 and Table 9) greatly undermines the overall enforcement approach, particularly the need to achieve general deterrence across the network. General deterrence is critical to road safety and an effective safety camera programme; it is based on the perception that speeding is likely to be detected and incur a significant penalty. This perception leads to people changing their behaviour without having to be caught. General deterrence is the most effective and favoured enforcement strategy for encouraging compliance and keeping people safe.

6.22 A main aim of the SCS Programme and wider RtZ portfolio is to develop a more effective approach to safety cameras through increased certainty of detection, more severe penalties, and faster processing of penalties. All of which will contribute to greater deterrence overall.

6.23 NZ has an inconsistent penalty regime for speeding offences. Drivers earn demerit points in addition to fines if they are detected exceeding the speed limit by police officers, but camera-issued infringement notices do not attract demerit points. This is inconsistent with the Global Road Safety Facility's recommendations on penalty regimes.[22]

6.24 Reviewing penalties for speeding offences does not fall within scope of this IBC, but effective road safety penalties are critical to the effectiveness of the SCS. The type and severity of penalties are critical for both specific and general deterrence. The Ministry of Transport is reviewing penalties as part of the wider RtZ portfolio.

Table 8: How NZ speeding infringements compare with those in other jurisdictions (NZ dollars)

Country	Urban roads fines	Open roads fines
Sweden	1–10km/h over 30km/h limit = $370 11–15km/h over limit = $430 16–20km/h over limit = $504 +21km/h over = $611 plus licence suspension for 2–6 months	+21km/h over any limit = $611 plus licence suspension for 2–6 months

[22] Global Road Safety Facility. 2021. *Guide for Road Safety Interventions: Evidence of what works and what does not work*. Washington DC: World Bank.

Country	Urban roads fines	Open roads fines
Norway	+21km/h over limit = $1,625 plus licence suspension for 3–36 months	+21km/h over limit = $1,225 plus licence suspension for 3–36 months
Netherlands	+20km/h over 30km/h limit = $344 plus licence suspension for a minimum of 1 month +20km/h over 50km/h limit = $1,225 plus licence suspension for a minimum of 1 month	+20km/h over open road speed limit = $240 plus licence suspension for a minimum of 1 month (Note: Penalty updated by consumer price index yearly.)
Britain	+21km/h over limit = $203 +41km/h over limit = $232–2,025 plus licence suspension	+21km/h over limit = $203 +40km/h over limit = $232–2,025 plus licence suspension for 2–6 months
France	+20km/h over limit = $232 +40km/h over limit = $232 plus licence suspension for 2–6 months	+20km/h over limit = $232 +40km/h over limit = $232 plus licence suspension for 2–6 months
New Zealand	Up to 10km/h over limit = $30 11–15km/h over limit = $80 16–20 km/h over limit = $120 +20km/h over limit = $170–400 +40km/h over limit = $510–$630	Up to 10km/h over limit = $30 11–15km/h over limit = $80 16–20km/h over = $120 +20km/h over limit = $170–400 +40km/h over limit = $510–630 and licence suspension for period depending on speed.

Source: New Zealand Police. 2021. What are the fines for speeding? (webpage). www.police.govt.nz/faq/what-are-the-fines-for-speeding

Table 9: How NZ compares with Australian jurisdictions on demerit points for speeding

Australian state or country	Fines (in NZ dollars)	Demerit points
Victoria	Up to 10km/h over limit = $220	1
	10–24km/h over limit = $355	3
	25–29km/h over limit = $488 plus licence suspension for 1 month	4
	30–34km/h over limit = $577 plus licence suspension for 1 month	4
	35–39 km/h over limit = $665 plus licence suspension for 6 months	6
	+40km/h over limit = $755–888 plus licence suspension for 6–12 months	6 (12 demerits in 3 years leads to licence suspension)
Queensland	Less than 13km/h over limit = $191	1
	13–19km/h over limit = $287	3
	20–29km/h over limit = $479	4
	30–39km/h over limit = $670	6
	+40km/h over limit = $1,341 plus licence suspension for 6 months	8 plus licence suspension for 6 months (12 demerits in 3 years leads to licence suspension)

Australian state or country	Fines (in NZ dollars)	Demerit points
New South Wales	Up to 10km/h over limit = $131	1
	10–19km/h over limit = $303	3
	20–29km/h over limit = $520	4
	30–45km/h over limit = $995	5
	+45km/h over limit = $2,682	6
	(Higher penalties apply for heavy vehicle speeding and speeding around schools)	(13 demerits over 3 years results in licence suspension)
New Zealand	Up to 10km/h over limit = $30	No demerit points for offences detected by safety cameras
	11–15km/h over limit = $80	
	16–20km/h over = $120	
	+20km/h over limit = $170–400	
	+40km/h over limit = $510–630 plus licence suspension	

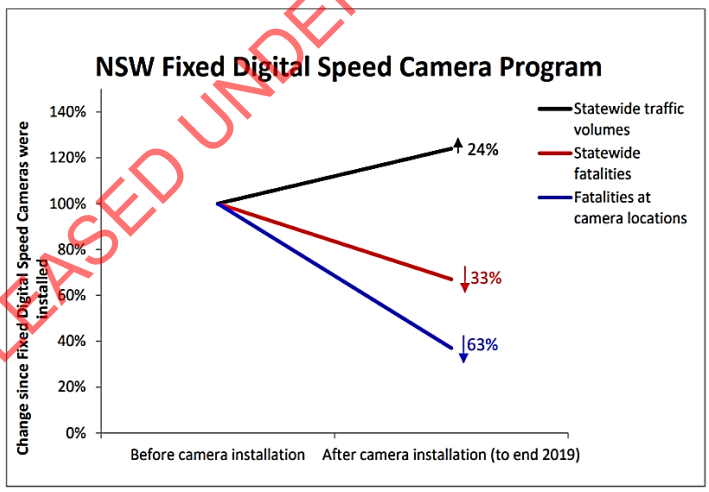
Source: Ministry of Transport. 2018. *Road Safety Strategy Speed Reference Group*. Wellington: Author; New Zealand Police. No date. What are the fines for speeding? (webpage). www.police.govt.nz/faq/what-are-the-fines-for-speeding

Root cause 5 – Safety cameras have not been systematically targeted at high-risk parts of the road network to reduce DSIs (in part, due to the low number of cameras)

6.25 Safety cameras have been highly effective at improving safety outcomes in other jurisdictions, particularly when installed in high-risk areas of the network. For example, in New South Wales, as at 31 December 2019:[23]

- 140 cameras are installed in 110 locations
- fixed speed cameras have reduced casualty crashes by 40%, fatalities 63%, and injuries 45%
- the reduction in DSIs equates to a saving to the community of AU$529m
- cameras reduced fatalities at camera locations and state-wide (see Figure 6).

Figure 6: New South Wales reduction in deaths after installation of fixed speed cameras



Source: NSW Government. 2020. *Speed Camera Programs: 2020 annual review.* Sydney: Author, p 7.

[23] NSW Government. 2020. *Speed Camera Programs: 2020 annual review*. Sydney: Author.

6.26 Current safety camera deployment and mix across the network could be enhanced by using the latest business intelligence technology to deploy cameras to the highest risk areas. The last formal review of Police's safety camera site strategy was conducted by the Auditor-General in 2002.[24] Several factors the Auditor-General observed remain relevant.

- Police had no national standard or policy on the use of deployment plans for determining speed camera deployment on a day-to-day basis.
- The degree to which speed cameras were deployed in a strategic or planned manner was at the discretion of District Commanders and their Area Traffic Managers, and practice differed markedly between Districts.
- Mobile speed cameras were left to operators to deploy. Operators must remain on-site while the camera is operating. With no clear direction on site strategy, operators were observed to have 'favourite' sites rather than choosing sites according to risk.
- Mobile speed cameras deployed by operators were often chosen for convenience over risk, as operator-deployed cameras had reduced travel time, high personal comfort, less isolation, and high safety for the operator.
- All of these factors reduced the deployment of mobile cameras on high-risk roads.

6.27 In the 2019 Cabinet paper for the TUS Programme, the Associate Minister of Transport observed that nearly 'half of all DSIs are concentrated on the highest risk 10 percent of the network'.[25]

6.28 Future deployment of safety cameras will be based risk-based, that is, roads will be treated based on their risk profiles.

Problem 2: We need to change public attitudes away from safety cameras being a revenue gathering tool to being a safe system tool in order to maximise safety camera effectiveness and utility (30%)

6.29 Stakeholders agreed the three underlying root causes of problem 2 during the ILM session.

- Root cause 1 – Public attitudes towards speeding and its impact on safety are negative.
- Root cause 2 – The public has little understanding of a 'Safe System' and how safety cameras are part of an overall system response to keep people safe.
- Root cause 3 – The public considers safety cameras to be for revenue gathering rather than a road safety intervention.

Root cause 1: Public attitudes towards speeding and its impact on safety are negative

6.30 The most recent public attitude survey found most New Zealanders are generally comfortable with speeding and don't consider speeding a safety risk when driving on the network:[26]

- 50% of New Zealanders enjoy driving fast along the open road
- 35% of New Zealanders believe driving over the speed limit is not speeding
- 30% of New Zealanders believe that if you speed and you're careful there is not much chance of an accident.

6.31 The evidence on speed, however, clearly shows a strong correlation between speed and road crash frequency and severity. When speed increases, the risk of a crash and of its severity increase as well.

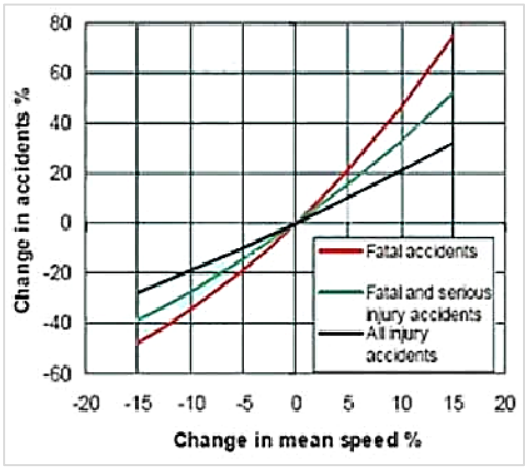
[24] Office of Auditor General. 2002. *Bringing down the Road Toll: The Speed Camera Programme*. Wellington: Author.

[25] Associate Minister of Transport. 2019. *Tackling Unsafe Speeds Programme* (Cabinet paper, redacted version released under the Official Information Act 1982), para 95.

[26] Kantar. 2021. *Public Attitudes to Road Safety 2020*. Wellington: Waka Kotahi.

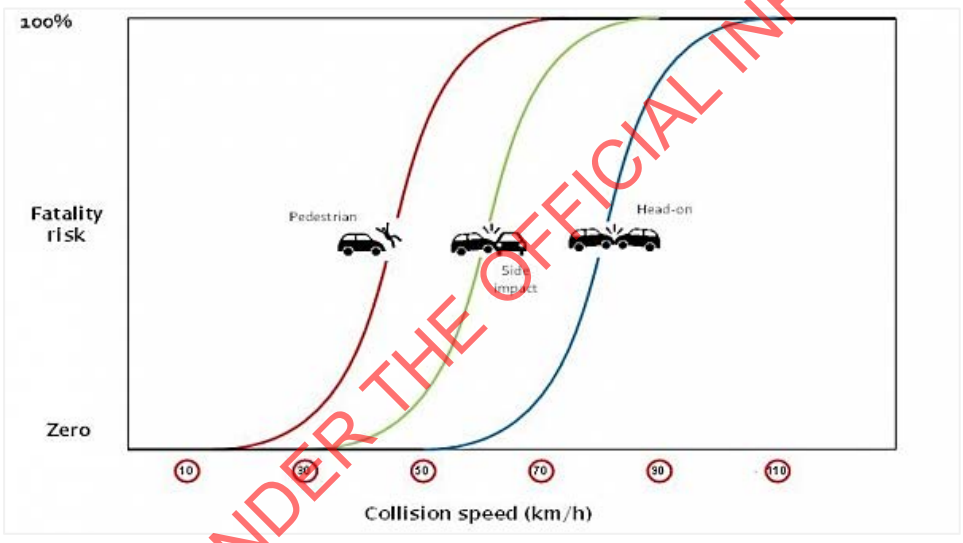
6.32 This correlation is well supported by the widely accepted Nilsson power model,[27] which observes that a 1% reduction in speed yields a 2% reduction in all injury crashes, a 3% reduction in DSIs, and 4% reduction in fatal crashes (see Figure 7 and Figure 8)).

Figure 7: Nilsson's power model



Source: Nilsson (2004) cited in M. H. Cameron & R. Elvik. 2010. Nilsson's power model: Connecting speed and road trauma. Applicability by road type and alternative models for urban roads. *Accident Analysis & Prevention* 42(6), 1,908–1,915.

Figure 8: Impact of speed on death and serious injuries



Source: International Transport Forum. 2018. *Speed and Crash Risk*. Paris: OECD/ITF.

Root cause 2: The public has little understanding of a 'Safe System' and how safety cameras are part of an overall system response to keep people safe

6.33 A Safe System approach recognises that people make mistakes and are vulnerable in a crash.[28] This approach reduces the price paid for a mistake, so crashes don't result in loss of life or limb. Mistakes are inevitable – DSIs from road crashes are not.

[27] M. H. Cameron & R. Elvik. 2010. Nilsson's Power Model: connecting speed and road trauma. Applicability by road type and alternative models for urban roads. *Accident Analysis & Prevention* 42(6), 1,908–1,915.

[28] Waka Kotahi. 2021. *Standard Safety Intervention Toolkit*. Wellington: Author, p 6.

6.34 According to the Waka Kotahi *Standard Safety Intervention Toolkit* (2021), a safe system is where:[29]

> The selection of treatment measures starts with the objective of implementing primary Safe System interventions, which are most likely to eliminate the occurrence of fatal and serious injuries. Often … a suite of interventions … can be implemented to manage a particular risk, with some measures typically being more effective than others.

6.35 System responses include speed limits that match the environment and characteristics of the road, infrastructure improvements and the installation of interventions such as median barriers, and vehicle safety standards that protect occupants (and other road users) in the event of a crash.

6.36 Encouraging drivers to comply with rules and regulations is also critical to achieving safety outcomes. This involves the **effective use of education and engagement to encourage safer driving behaviours and enforcement to deter drivers from breaking the rules**. These are all part of the new investment in the SCS, including investment with the wider RtZ portfolio on marketing and communication (education campaigns) to change the public's hearts and minds.

6.37 Currently, 88% of the NZ public believe NZ has 'safe roads' and 89% believe 'speed limits at 50k/h for urban and 100km/h for open roads are adequate'.[30] However, public perception is much further from realty. Of NZ roads, both urban and rural, 88% have an inappropriate speed limit given the type of road (see Table 10).

Table 10: Proportion of NZ roads with incorrect speed limits for their conditions

Land use	National strategic roads (high volume) (%)	National strategic (%)	Regional strategic (%)	Arterial (%)	Primary collector (%)	Secondary collector (%)	Access (%)	Total (%)
Rural	73	57	82	77	85	90	99	93
Urban	54	59	39	23	39	87	79	69
All	**68**	**58**	**72**	**54**	**73**	**90**	**95**	**88**

Source: from Ministry of Transport. 2018. *Road Safety Strategy Speed Reference Group*. Wellington: Author.

6.38 The RtZ portfolio includes using safety cameras to support a Safe System alongside speed management and infrastructure improvements. For example, to improve safety around schools, a Safe System approach would ensure safe and appropriate speed limits, introduce physical speed management infrastructure devices, install safety cameras, and run education campaigns.

6.39 Safety cameras have proven to be highly effective at improving safety outcomes in other jurisdictions as part of an overall Safe System approach when installed in high-risk areas of the network and accompanied with safe speed limits and effective penalties. See the example from New South Wales in Table 11.

[29] Waka Kotahi. 2021. *Standard Safety Intervention Toolkit*. Wellington: Author, p 10.

[30] Kantar. 2021. *Public Attitudes to Road Safety 2020*. Wellington: Waka Kotahi.

Table 11: New South Wales safety camera effectiveness

Camera type	Benefits as at 2020
Fixed speed	40% reduction in casualty crashes 63% reduction in fatalities 45% reduction in injuries
Red-light	35% reduction in DSIs 77% reduction in fatalities 36% reduction in serious injuries 59% reduction in pedestrian causalities
Average speed	29% reduction in casualty crashes 51% reduction in fatalities 18% reduction in serious injuries
Mobile speed	Reduction in speed across the state network Reduction in speed on average by 10km/h High driver compliance at 99%

Source: NSW Government. 2020. *Speed Camera Programs: 2020 annual review*. Sydney: Author, pp 6, 9, 10, and 33.

Root cause 3: The public considers safety cameras to be for revenue gathering rather than a road safety intervention

6.40 In the most recent public attitudes survey, 36% of people did not think safety cameras were being operated fairly.[31]

6.41 A misperception exists among the public that safety cameras are a revenue-gathering tool for Police rather than a safety-focused intervention. An objective of this investment proposal is to improve perceptions of safety cameras as a safety intervention as part of the overall Safe System approach and contribute to developing a new social norm for speed.

6.42 Revenue generated from safety cameras goes into the Crown's Consolidated Fund not to Police.

6.43 Other countries support the public seeing cameras as a safety tool by using the revenue collected for specific safety or driver reward–based purposes rather than as general Crown revenue. For example, in Sweden, drivers who drive at or under the speed limit are entered into speed camera lotteries to win money. The prizes come from the fines paid by people who speed. However, this is not considered best practice in NZ.

6.44 In South Australia, apart from $60 per fine being paid into the Victims of Crime Levy fund, all fines collected from safety cameras (speed and red-light) are returned to road safety through the Community Road Safety Fund and used for road safety improvements.

7. Strategic and organisational context

7.1 This section overviews the environment in which the proposed investment will take place and summarises relevant national, sector, and organisational strategies and how the proposed investment aligns with portfolios of work being undertaken across the transport sector.

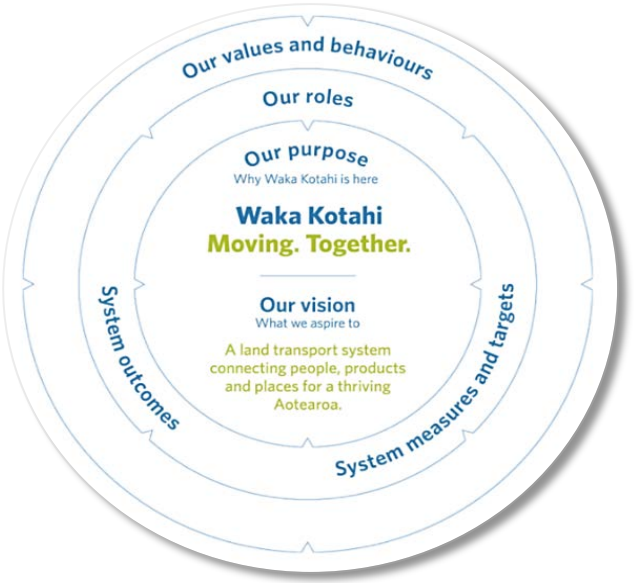
7.2 The Government Policy Statement on Land Transport 2021 (GPS) sets out investment outcome expectations that align with the Ministry of Transport's Transport Outcomes Framework. The RtZ strategy and its targeted 40% reduction in DSIs work toward the safety outcomes in the GPS. How this investment addresses these expectations is discussed below.

[31] Kantar. 2021. *Public Attitudes to Road Safety 2020*. Wellington: Waka Kotahi.

SCS programme aligns with the Waka Kotahi vision and strategic direction – Te Kāpehu

7.3 Waka Kotahi launched its strategic direction, Te Kāpehu, in 2020. It sets out our vision of 'a land transport system connecting people, products and places for a thriving Aotearoa' (see Figure 9).

Figure 9: Waka Kotahi strategic direction – Te Kāpehu



7.4 The vision will be achieved through investment in four long-term strategic outcomes. Table 13 summarises how the proposed investment in the SCS will support these outcomes.

SCS programme aligns with the Government's Safe System outcomes in GPS 2021

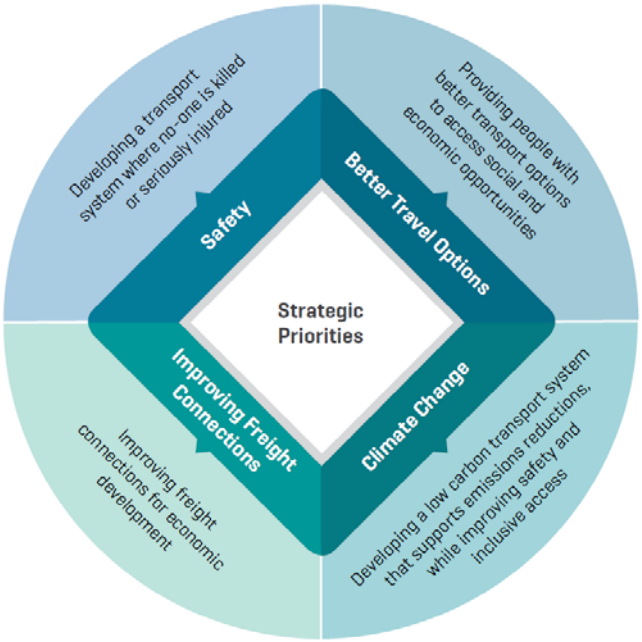
7.5 The GPS sets the strategic direction for the land transport system and Waka Kotahi over 10 years. The GPS is updated every three years and guides how Waka Kotahi invests the National Land Transport Fund (NLTF).

7.6 The GPS is how the Government sets the direction of work that Waka Kotahi needs to do to deliver on the Transport Outcomes Framework. The GPS centres on the wellbeing and liveability of places as the purpose of the transport system.

7.7 The SCS Programme supports delivery of the four GPS strategic priorities (shown in Figure 10) 2021 in the following ways.

- **Improving 'safety'** – The programme will improve compliance and reduce average speeds across the network, thereby reducing DSIs. This is the first priority for the programme.
- **Developing 'better travel options'** – The programme will improve compliance with road safety measures (speed and driving behaviour), which will allow people to feel safer on the road and consider using alternative modes of transport to cars such as bicycles, e-bikes, and scooters.
- **Improving 'climate change'** – The programme will improve network speed across treated roads, which will create uniform speeds and reduce amounts of acceleration, de-acceleration, braking, and over-taking. This change will reduce greenhouse gas emissions and improve climate change outcomes.
- **Improving 'freight connections'** – The programme will support uniform speed across the network, reduce crashes, reduce DSIs, reduce congestion, and improve the overall flow of traffic. All these value-add elements will improve freight connection time, which will enhance economic development regionally and nationally.

Figure 10: Government Policy Statement on Land Transport 2021/22 – 2030/31



SCS programme aligns with Waka Kotahi statutory functions

7.8 Waka Kotahi is a Crown entity governed by a statutory board. Under the Land Transport Management Act 2003, the objective of Waka Kotahi is 'to undertake its functions in a way that contributes to an effective, efficient and safe land transport system in the public interest'.[32] Under that Act, Waka Kotahi has three broad functions: regulatory; infrastructure, planning, and investment management; and general and other functions.

7.9 The SCS Programme will support Waka Kotahi to meet its statutory functions as noted in Table 12.

[32] Land Transport Management Act 2003, s 94.

Table 12: Waka Kotahi statutory functions that the SCS Programme supports

Functions	How supported by SCS Programme
1 **Regulatory** function include: – contributing to establishing, operating, and enforcing regulation of the land transport system – managing and overseeing regulatory requirements for land transport.	The SCS Programme will: • transfer safety camera functions from Police to Waka Kotahi and replace the current back-office system (PIPS) to allow faster, more efficient, and more effective processing of infringements and enable more effective enforcement of compliance across the network • invest in a new operating model (people, processes, and technology), which will modernise the safety camera function, creating large efficiency gains by deploying safety cameras across the network to support broader speed management and planning, and taking a risk-targeted approach to enable the greatest DSI savings • invest and expand safety camera operations to align with planning and delivery of safety infrastructure transport; thus, making cameras an additional tool for Waka Kotahi when evaluating interventions for a particular site to reduce DSIs and encourage greater road compliance behaviour.
2 **Infrastructure, planning, and investment management** functions include: – managing the state highway system – overseeing the planning and delivery of public transport	
3 **General and other** functions include: – delivering or managing the delivery of activities for ticketing system and payments – promoting safe road user behaviour and vehicle safety – promoting a safe system of rules governing road user behaviour	

SCS programme aligns with the Government's strategic objectives to improve individual and collective wellbeing for all New Zealanders

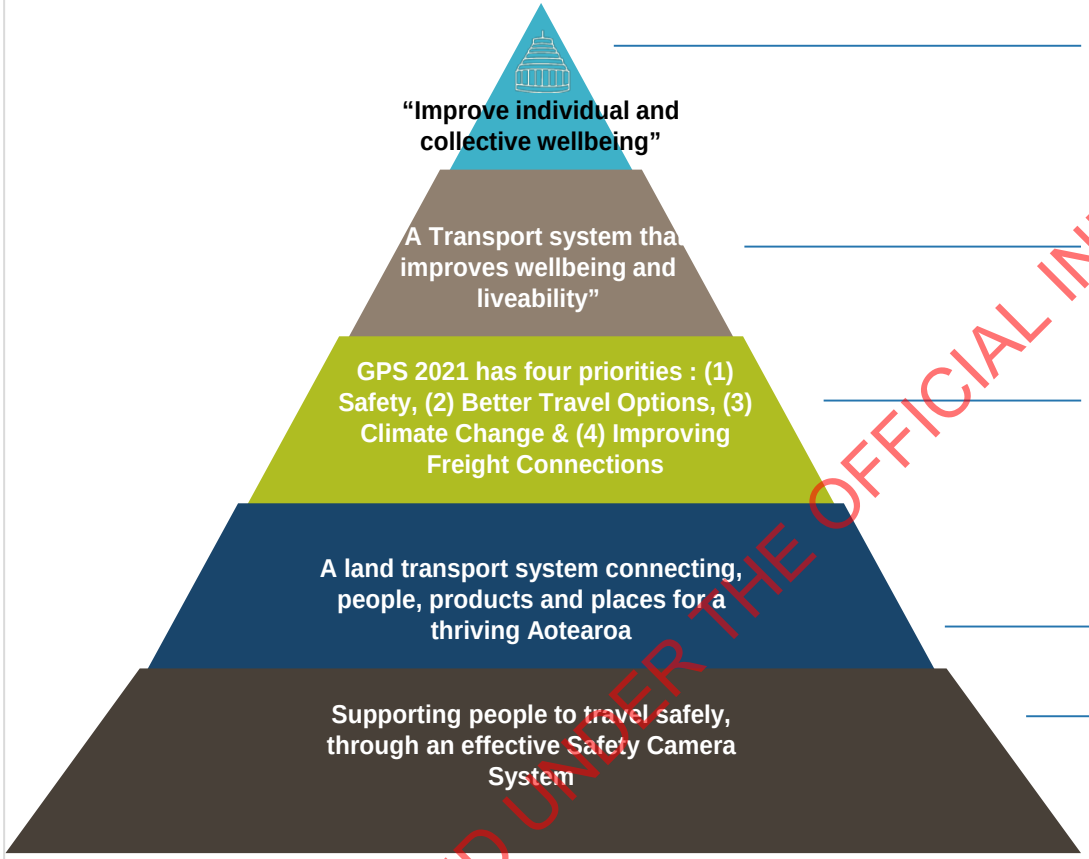
7.10 The proposed investment is linked to Te Kāpehu, the Waka Kotahi strategic direction, which, in turn, is linked to GPS 2021 and Ministry of Transport outcomes, which, in combination, all link to the Treasury outcome 'improve individual and collective wellbeing' (see Figure 11). The long-term strategic outcomes of Waka Kotahi are linked to the proposed investment in the SCS in Table 13.

7.11 The proposed investment is expected to create DSI savings of 4% by 2030, which is expected to be a present value saving of approximately $1.5b. This is a significant economic benefit to the country.

7.12 Road crashes impose intangible, financial, and economic costs on society (as noted in 5.8).

7.13 In 2019, the 14,742 injuries on NZ roads had an annual average cost to society of $4.9b (in 2019 prices).

Figure 11: SCS proposed investment alignment to wider government strategies



WHY?
THE TREASURY

The Living Standards Framework – guides all central departments and agencies activities towards a shared understanding of what helps achieve higher living standards to support intergenerational wellbeing. The transport outcomes are interrelated and need to be achieved together to improve intergenerational wellbeing and the quality of life in Aotearoa.

WHY?
MINISTRY OF TRANSPORT

Transport Outcomes Framework – This framework defines the government's long-term strategic outcomes for the transport system. It puts wellbeing and liveability at the centre, describing improving people's wellbeing and the livability of places as the purpose of the transport system.

WHY?
GPS 2021

GPS 2021– Sets out the government's strategic direction for the land transport system including Waka Kotahi over the next 10 years (FY21/22 and FY30/31). The Government has identified four strategic priorities and four specific portfolio initiatives for Waka Kotahi' to invest into.

WHY?
WAKA KOTAHI - TE KAPEHU STRATEGY

Safe System Outcome – we want Aotearoa where no one is killed or seriously injured when using or working on the transport system.

HOW?
SAFETY CAMERA SYSTEMS PROGRAMME

Transfer, invest and expand – Safety Camera systems across NZ roads (networks), which will create a safe land transport system, improves people's wellbeing and livability through transport network and lift overall wellbeing in Aotearoa

Table 13: Waka Kotahi long-term strategic outcomes mapped to the proposed investment

Strategic outcome*		Proposed investment	
Safe – ensuring no one is killed or seriously injured when using or working on the transport system	Invests in additional cameras to encourage motorists to travel at safe and appropriate speeds across a broader portion of the network, which will reduce DSIs by 4% by 2030 (baselined to 2018).	Safety Cameras need to be considered along side other RtZ intervention to determine the ideal mix and type of camera for the site selected. Other RtZ intervention include – Safety around school, Speed infrastructure, Speed Management and others.	Evaluate the site to determine the most appropriate form of camera type and intervention tool. Focus will be to review all high to medium risk corridors. For example Frank kits brown road, where there is speeding post current camera may be changed to average speed.
Environmentally sustainable – reducing harm to, and improving, the environment with a focus on reducing greenhouse gas emissions	Invests and expands cameras across the network to reduce non-uniform speeds, acceleration, braking and excess speed, which all contribute to greenhouse gas emissions.	Safety Cameras create an halo effect across the network. International research[33] has found that overall speed to drop significantly by as much as 20% by having speed cameras implemented.	Expansion of Safety Cameras across high to medium risk corridors will decrease overall speed on these corridors, which will reduce overall carbon footprint.
Effectively and efficiently moving people and freight – ensuring networks are available and reliable at consistent levels of service with a focus on increasing the uptake of efficient, cost effective, low carbon transport options	Invests and expands cameras across the network to reduce DSIs on the road, which impacts on freight and people moving between points A and B.	Invests in new technology to support the new fleet of cameras such as average speed cameras to ensure travel flows smoothly and uniformly across high-risk corridors, which are key for moving people and freight.	Average Speed Cameras will be installed in corridors that are important for people and freight movement. International research[33] has found that average speed camera reduced speed by 30% and was followed by 85% of the drivers.
Meeting current and future needs – ensuring we have access to the people, funding, and system we need	Invests to future proof the technology in cameras and the back-office for future generations.	Investment in CMS, IPS and new Cameras will future proof the system for the next 10 to 15 years.	Safety Cameras, CMS and IPS will be ready to turn on the technology stack to catch drivers that are not complying to the rules at the time e.g. texting while driving, driving someone else's car without a license and others.

* Waka Kotahi. 2021. *Waka Kotahi NZ Transport Agency Statement of Intent 2021–26*. Wellington: Author.

[33] Soole, D. W., Watson, B. C., & Fleiter, J. J. (2013). Effects of average speed enforcement on speed compliance and crashes: a review of the literature. *Accident Analysis & Prevention*, 54, 46-56.

SCS Programme is a key Road to Zero intervention

7.14 Waka Kotahi is committed to delivering RtZ and its target of a 40% reduction in DSIs by 2030. The vision of RtZ is 'a New Zealand where no one is killed or seriously injured in road crashes'[34] and where no loss of life is acceptable in the transport system.

7.15 The RtZ vision is based on Vision Zero. First launched in Sweden in 1997, Vision Zero provided a common vision that brought together stakeholders, changed public attitudes, and raised public expectations.

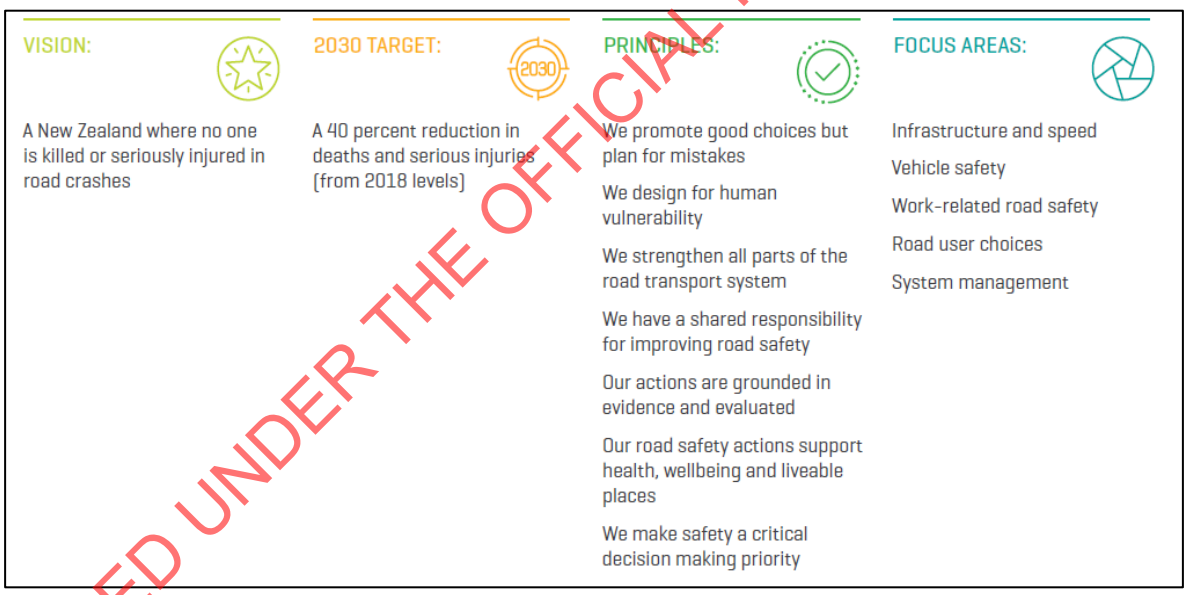
7.16 Vision Zero and the guiding Safe System approach are now considered best practice. They have been adopted in many countries, including Canada, the Netherlands, Sweden, the UK, the US, Norway and New York, and road trauma has significantly decreased.

7.17 In Sweden, Vision Zero has led to infrastructure improvements (for example, road barriers that separate cars from bikes and oncoming traffic, safer pedestrian environments), increased use of public transport, lower urban speed limits, and much safer and generally newer vehicles. In the almost 20 years since the vision's launch, road deaths in Sweden have halved.[35]

7.18 The Safe System approach is underpinned by the seven principles and five key focus investment areas illustrated in Figure 12.

7.19 RtZ actions will be implemented over the 10 years to 2030 through a series of action plans. The initial action plan for 2020–2022 contains 15 immediate actions, of which TUS is one (focus area 1, action 2). This action, and all it encompasses, will be supported by a wider system response that includes investing in safety treatments and infrastructure improvements, prioritising road policing, reviewing road safety penalties, and investing in the SCS.

Figure 12: Road to Zero, NZ's road safety strategy



Source: New Zealand Government. 2021. *Road to Zero: Annual monitoring report 2020*. Wellington: Author, p 2.

SCS Programme is a significant change programme aligned with the RtZ action plan

7.20 The SCS Programme is a significant change programme for Waka Kotahi. It aligns with the RtZ actions for TUS and enables development of this IBC (and a subsequent DBC).

[34] New Zealand Government. 2021. *Road to Zero: Annual monitoring report 2020*. Wellington: Author, p 2.

[35] International Transport Forum. 2020. *Sweden: Road Safety Report 2020*. Paris: International Transport Forum, OECD.

7.21 The programme's vision is 'supporting people to travel safely, through an effective SCS'. This vision supports the wider RtZ portfolio of initiatives and the changes Police and the Ministry of Justice need to implement for the road transport system to operate safely and effectively.

7.22 Safety cameras can make a significant contribution to reducing DSIs, but they need to be integrated into the broader speed compliance and management system to have the biggest impact and achieve the right regulatory outcomes. Critical to this contribution is having safe and appropriate speed limits on all roads, as the benefits of a SCS or other speed enforcement measures cannot be fully realised if speed limits are higher than safe speeds. People will continue to be killed and seriously injured when mistakes are made within legal but unsafe speed limits.

7.23 In line with its vision, the programme's immediate focus is to get the proposed investment approved and then complete a DBC by the end of September 2022 for approval in October. With an approved DBC, the programme will be able to start its implementation stage.

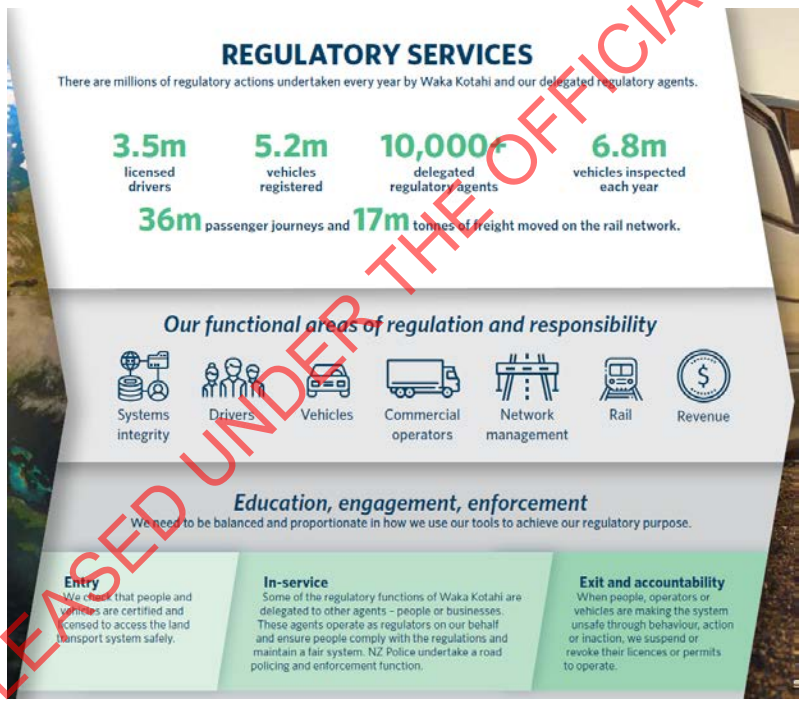
7.24 The programme must be informed by evidence and intelligence if it is to be effective and innovative to keep pace with change (for example, by building capability to integrate complementary technologies in the future).

7.25 The programme's main activities are outlined in Appendix M.

SCS Programme aligns with Tū Ake, Tū Māia, the Waka Kotahi regulatory strategy

7.26 The SCS Programme is consistent with the direction of Tū Ake, Tū Māia, the Waka Kotahi regulatory strategy 2020–2025, which is working towards 'reduced DSIs supported by good practice regulation'.[36] The programme supports the key functional area Network Management as shown in Figure 13.

Figure 13: Regulatory Strategy of Waka Kotahi



7.27 Waka Kotahi does not regulate alone – an effective regulatory system relies on everyone contributing to keep NZ safe. Waka Kotahi plays a vital role in strengthening engagement and alignment with other regulators and key stakeholders. This means working closely with the Ministry of Transport, Police, government organisations, regional, district and city councils and

[36] Waka Kotahi. 2020. *Tū Ake, Tū Māia (Stand Up, Stand Firm): Regulatory Strategy 2020–25*. Wellington: Author.

road controlling authorities, iwi and Māori, delegated agents, industry groups, and regulated parties.

7.28 Tū Ake, Tū Māia supports wider Waka Kotahi strategies and the GPS. Its vision is a safe, fair, and sustainable transport system for everyone, and it has a goal of contributing to a 40% reduction in DSIs by 2030, of which 4% will be delivered through this investment proposal.

In Te Ara Kotahi, speed is no more of a factor in DSI outcomes for Māori than non-Māori

7.29 Te Ara Kotahi (the Māori Strategy) provides strategic direction for how Waka Kotahi works with and responds to Māori as the Crown's Treaty partner and what this means for how Waka Kotahi does business.[37]

7.30 *He Pūrongo Whakahaumaru Huarahi Mō Ngā Iwi Māori*, the Māori road safety outcomes report,[38] was presented to the RtZ Executive Sub-Committee in February 2021. This report observed that speeding, and driving behaviour creating DSIs on NZ roads, doesn't create different outcomes for Māori and non-Māori.

7.31 DSIs are no different for Māori drivers and non-Māori drivers – ethnicity has little to do with DSIs, so investing in safety cameras is unlikely to further marginalise Māori and Pasifika.

SCS Programme will continue to work with Police to deliver a Safe System on NZ roads

7.32 Police's vision is for NZ to be the safest country.[39] This means everybody can be safe and feel safe in their homes, in their communities, and on the roads (see the latest Police vision in Appendix C).

7.33 The NZ road safety record is unacceptable. In 2019 alone, 352 people died on the country's roads – an average of almost one person per day.[40]

7.34 Police is one of several agencies responsible for ensuring NZ's roads are safe for all road users. Alongside Waka Kotahi and the Ministry of Transport, Police committed to RtZ as a sector partnership strategy with a collective vision.[41]

7.35 Police made considerable commitments to road safety through the Road Safety Partnership Programme 2018–2021 and identified operational priorities for road safety that directly address the factors known to contribute to the greatest harm.

7.36 Over the next 5 years, Police will continue to prioritise road safety, which includes deterring people from engaging in risky driving behaviours. Its key tools in this work are safety cameras (until their transition), compliance checkpoints, and a visible presence in marked police vehicles.

7.37 The key indicator of success for Police aligns with the SCS Programme – a reduction in DSIs.

8. Key stakeholders

8.1 The proposed investment has several stakeholders whose involvement is needed to develop and implement a successful programme. Table 14 identifies key external stakeholders and their primary areas of interest for investment in the SCS. Internal stakeholders and their interests in the SCS are in Appendix E.

[37] Waka Kotahi. 2020. *Te Ara Kotahi | Our Māori Strategy*. Wellington: Author.

[38] Waka Kotahi. 2021. *He Pūrongo Whakahaumaru Huarahi Mō Ngā Iwi Māori: Māori road safety outcomes.* Wellington: Author.

[39] New Zealand Police. 2020. *New Zealand Police Statement of Intent 2020–2025.* Wellington: Author, p 10.

[40] Ministry of Transport. 2022. Daily updated provisional road deaths. Te Marutau – Ngā tatauranga ā-tau: Safety – annual statistics (website). www.transport.govt.nz/statistics-and-insights/safety-road-deaths/

[41] New Zealand Government. 2021. *Road to Zero: Annual monitoring report 2020*. Wellington: Author, p 2.

8.2 Detailed information on how key stakeholders will be managed during the SCS Programme is in the management case (see section 40). Supplementary information developed by the Programme for stakeholders and endorsed by the Programme Steering Committee is included in the References.

Table 14: External stakeholders relevant to the proposed investment in the SCS

External stakeholders	Focus areas
Minister of Transport	Is keen to ensure SCS outcomes support Transport Outcomes objectives.
Minister of Police	Is keen to ensure community safety outcomes are attained.
Ministry of Transport	Is keen to ensure changes to policies required to get safety camera technology operational are implemented and the intent of policy changes is applied across the transport sector.
New Zealand Automobile Association – Board and National Governance Team	Is a road user association interested in road safety and providing input into local road safety landscape; that is, safety cameras are installed in appropriate locations for maximum speed enforcement.
Ia Ara Aotearoa Transporting New Zealand	Is a heavy vehicle association interested in ensuring heavy vehicle drivers can get to where they are going efficiently and safely and in safety cameras and speed enforcement.
New Zealand Taxi Federation and Bus and Coach Association New Zealand	Are industry associations whose members are keen to understand how safety cameras will be implemented nationally and how speed enforcement changes will be linked to the camera changes.
New Zealand Police	Is a key partner in the SCS Programme and is running a parallel programme (Infringement Transformation Programme) to transition safety camera operations to Waka Kotahi.
Ministry of Justice	Is interested in ensuring a smooth transition for safety cameras and the infringement process so infringement processing, fine collection, and prosecutions are not interrupted. If an infringement is not paid within the legislated period of 56 days (plus a grace period for late payments), the file is transferred to the Ministry of Justice for collection. Thirty percent of camera-issued infringements and 46% of officer-issued infringements are transferred to the Ministry of Justice as unpaid fines.
Auckland Transport	Is a key road controlling authority that will have a major component of safety camera enforcement on its network. Waka Kotahi will process its safety camera infringements (currently, for red-light running). It will have significant input into the placement of safety cameras.
Road controlling authorities	Are interested in road safety and speed management in their territories. Provide input into safety camera sites assessment, camera placement, and consent for site construction and installation.
Regional Transport Committees	Are decision-making bodies of elected members responsible for regional speed management plans and key consulting bodies for safety camera placement and expansion.
Regional councils	Have a delivery role in transport planning and consultation on regional speed management planning. Speed management planning and processes is a new function for regional councils and they are interested in the placement of safety cameras.

External stakeholders	Focus areas
Iwi	Ensure Treaty of Waitangi principles are applied. Are interested in policy around enforcement levers and Māori road safety outcomes.
The Treasury	Is keen business case development follows its Better Business Cases guidance and benefits are realised appropriately (through NLTP spend).
Government Chief Digital Officer (Department of Internal Affairs)	Is interested in ensuring new Waka Kotahi systems and processes adhere to government digital standards.
Government Chief Information Security Officer (Government Communications Security Bureau)	Is interested in ensuring new Waka Kotahi systems and processes adhere to government information security standards.
Privacy Commission	Is interested in ensuring risk of privacy breach is mitigated. Provides guidance and input into privacy issues.
Media	Are likely interested in the people transfer, safety camera expansion, and infringement processing timings.
Public	Need to understand what they need to do – how to pay infringements, what the new, highly visible, no surprises approach means for them, and how and why they need to change behaviour (that is, understanding why driving slower is better).
Unions – Police Association, PSA, E tū, and Police Guild	section 9(2)(f)(iv)
Technology suppliers	Are keen to provide the best technology solution to support business operations.
Other suppliers	Are keen to provide business services and solutions to support business operations.
ACC (Accident Compensation Corporation)	Is keen to ensure the SCS reduces DSIs, which relates to injury prevention.
WorkSafe New Zealand	Is keen to ensure new employees coming into Waka Kotahi will be kept safe and that the organisation has appropriate health and safety measures in place
Walking and cycling disability groups	Need to understand what they need to do and what the SCS means for them.

9. Benefits

Four benefits are sought from the proposed investment

9.1 The potential benefits from successful delivery of the proposed investment were identified as part of the ILM workshops held between 6 and 20 October 2021 with key stakeholders.

9.2 Stakeholders identified and agreed the potential benefits (and their weightings) and key performance indicators as set out in Table 15 (see also Appendix A).

9.3 The Programme Advisory Board agreed the benefits, weightings, and key performance indicators on 17 November 2021.

Table 15: Benefits and key performance indicators for the proposed investment in the SCS

Benefit	Key performance indicator
DSI reduction due to compliance with speed limits (40%)	KPI 1: Decrease in number of non-compliant vehicles (speed) in treated corridors and intersections KPI 2: Decrease in number of non-compliant vehicles on wider network KPI 3: Decrease in number of DSI in treated corridors and intersections KPI 4: Decrease in number of DSI on wider network
Reduced risk of harm for all road users (30%)	KPI 5: Decrease in mean speed on treated corridors and intersections KPI 6: Increase in perception of safety for all road users
Social licence for increased use of safety cameras (15%)	KPI 7: Contribution of cameras to reducing costs of DSIs KPI 8: Increase in support for increase in number of cameras
Return on investment in safety cameras is optimised (15%)	KPI 9: Contribution of cameras to reducing costs of DSIs KPI 10: Contribution of cameras to success of overall RtZ programme

Source: See the benefits map in Appendix A.

9.4 The benefits sought through the SCS Programme align with RtZ outcomes. They also provide a sound rationale for the proposed investment in the SCS, as described in the following points.

- **DSI reduction due to compliance with speed** – This investment will have a direct impact on DSIs. Modelling by Waka Kotahi and the Ministry of Transport shows a reduction in DSIs by 4% by FY2030, which aligns with the RtZ strategy. International evidence shows that safety cameras are a powerful deterrent for speeding. Compliance is encouraged merely by having cameras on the road, as the perceived threat of getting a fine as a result of speeding encourages compliance across the network.
- **Reduced risk of harm for all road users** – This investment will reduce speed across the network. A substantial body of evidence demonstrates a close correlation between speed and road crash frequency and severity. When speed increases, the risk of a crash and crash severity also increase. Lower mean speeds across the network will make roads safer for all commuters and encourage people to use alternative modes of transport such as walking, cycling, and public transport.
- **Social licence for increased use of safety cameras** – This investment will change public attitudes towards safety cameras as a revenue gathering tool to a road safety tool. In addition, this investment will contribute to the Social Licence Programme (in the RtZ portfolio), which aims to change public perceptions about road safety and attitudes about what is a Safe System on roads. That programme will create a 'public belief that zero deaths and serious injuries on our roads is possible and in our collective control'.[42]
- **Return on investment in safety cameras is optimised –** This investment will make a significant and tangible (monetised) benefit to society in terms of DSI savings, which create a flow-on benefit to everyone. The estimated value of statistical life is $4.53m per fatality (at June 2019 prices).[43] This investment will save approximately 120 lives per year from 2030, which is a benefit to the wider society of an estimated $543.6m.

9.5 Stakeholders also agreed qualitative (non-monetised) benefits – see Appendix J.

[42] Ministry of Transport. 2020. Road to Zero. New Zealand's Road Safety Strategy 2020-2030. Wellington: Author.

[43] Ministry of Transport. 2020. *Social Cost of Road Crashes and Injuries: June 2019 update*. Wellington: Author.

Benefits will be developed further in the DBC

9.6 Benefits will be developed further in the next business case phase. Appropriate baselines, clear accountabilities, and reporting requirements for benefits realisation will be agreed through the DBC.

9.7 Further information about benefits is throughout the economic case and in the management case (section 42), with all details summarised in the benefits management plan.

10. Investment objectives

Five investment objectives are pursued from current investment in the SCS

10.1 ILM workshops held with key stakeholders between 6 and 20 October 2021 identified existing business problems, expected benefits, and investment objectives for the investment proposal and the wider SCS Programme.

10.2 The stakeholders identified and agreed the five investment objectives set out in Table 16.

Table 16: Investment objectives for current SCS proposal

No.	Investment objective
1	To reduce average speed on roads that are treated with safety cameras (where safety cameras are deployed) leading to a reduction in DSIs by 2030 (from 2018 baseline).
2	To improve the quality of SCS (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline).
3	To improve road user compliance with speed limits through the SCS that reduce risk of harm for all road users by 2030 (from 2018 baseline).
4	To improve public attitudes towards safety cameras as part of a Safe System, measured as an increase in social licence for safety cameras by 2030 (from 2018 baseline).
5	To maximise the return on investment in the SCS for the public by reducing DSI cost to the country by 2030.

11. Scope

11.1 Stakeholders agreed the key activities in scope for the proposed investment in the ILM workshops in October (see Table 17).

Table 17: Scope of the proposed investment in the SCS

In scope
Establishment and implementation of the Waka Kotahi SCS, including: • transfer of service section 9(2)(f)(iv) from Police • camera operation and management – operating model, processes, and policies • end-to-end offence processing (that is, processing of infringements, as well as processing and prosecution of high-speed traffic offences detected by safety cameras) • processing of infringements generated after agreed cutover • agreed data sharing with Police.
Initial expansion of existing network to agreed camera numbers and types
Delivery of education pieces or wider awareness campaigns (where appropriate) to support programme outcomes
Development of a business case for the next phase (building on the lessons from the first phase), including potential future expansion, additional infringement types and/or legislative changes

Out of scope
Ongoing delivery of officer-issued infringements (will be addressed by Police)
Further expansion of camera network beyond agreed numbers (will be addressed in subsequent phases)
Awareness campaign requirements not related to the SCS

12. Risks

12.1 Senior stakeholders and the SCS Programme team are confident that the risks of the proposed investment are manageable.

12.2 The main risks to successful delivery are in Table 18. The risks depicted are to be expected when transferring functions from one agency to another and are consistent with transfers observed by the Public Service Commission.[44]

12.3 Risks will be managed in accordance with good practice. The SCS Programme will regularly report on risks across its workstreams. The programme's approach to risk identification and mitigation is based on the RtZ Portfolio Management Office, which aligns with the Waka Kotahi Z/44-Risk Management Standard.

12.4 Risk will be regularly reported to the Programme Director, Programme Steering Committee, Programme Advisory Board, Road Safety Partnership Governance Group, RtZ Executive Sub-committee, and Waka Kotahi Board. Escalation and reporting thresholds for risks are in the programme's risk register (which will inform the management case in the DBC).

12.5 Additional information about risks, the risk register, and governance will be outlined in the management case in the DBC.

Table 18: Main risks to successful delivery of the proposed investment

No.	Main risk	Mitigations in place
R-1	If the transfer of safety cameras and offence processing from Police to Waka Kotahi results in negative publicity and public perception, then commencing a camera expansion programme immediately following transfer may be seen as controlling and/or revenue gathering. This could lead to negative media coverage, poor public and stakeholder perception, and damage to the Waka Kotahi brand.	Cabinet decided to transfer responsibility for safety cameras to help to shift public perceptions. The Public Attitudes to Road Safety report for 2020 found that 64% of people think speed cameras are operated fairly and 65% agree they help to lower the road toll. Public awareness campaigns are planned to change attitudes towards safety cameras. Fixed cameras will have signage to warn drivers ahead of the camera, providing an opportunity to comply. This assists in communicating that safety cameras are road safety tools.
R-2	If the programme is the subject of an IQANZ review that concludes the programme is at significant risk, then implementation of the recommendations will result in a significant delay.	The RtZ Implementation Plan takes the timing of external independent quality assurance into account. The last IQANZ recommendations have been implemented. A Stage Gate Review is being completed, and another IQANZ review has been scheduled to assess the progress of the programme and IBC.

[44] Public Service Commission. 2017 (last modified 2 October). Machinery of government: Guidance and information (webpage). www.publicservice.govt.nz/our-work/mog/

No.	Main risk	Mitigations in place
R-3	section 9(2)(g)(i)	The Police Association was invited to and attended vision/blueprint workshops for SCS programme development and invited to a roadshow conducted in 2021. A change management strategy has been developed.
R-4	If funding for the expansion and ongoing operation of the safety camera network and offence processing is unavailable, then Cabinet's objective for the SCS cannot be met. Cabinet agreed to 'invest in additional cameras to encourage motorists to travel at safe and appropriate speeds across a broader portion of the network' and noted 'this will require prioritising investment in expanding the camera network in GPS 2021, and investment in processing system enhancements in this GPS period'. Waka Kotahi may have difficulty funding safety camera and offence processing operations beyond GPS 2021.	A new RtZ activity class was created and the GPS specifies that it includes 'a range of measures to support the TUS programme', of which the SCS Programme is a part. Potential funding constraints in the NLTP and RtZ activity class can be mitigated through the investment prioritisation process. In addition, the SCS Programme is reviewing alternative funding sources, including hypothecation of infringement fees, cost recovery, ACC funding, and new Crown funding.

13. Assumptions, constraints, and dependencies

Senior stakeholders have a shared understanding of assumptions, constraints, and dependencies

13.1 Assumptions are made to simplify decision making on this investment proposal. Constraints are limitations imposed on this investment proposal from the outset. Dependencies are external influences on the success of the SCS Programme, where success is contingent on the actions of others.

13.2 This proposal is subject to the assumptions, constraints, and dependencies noted in Table 19, Table 20, and Table 21, respectively.

13.3 Management strategies and registers have been developed, and assumptions, constraints, and dependencies will be monitored and reported.

Table 19: Key assumptions

ID	Description
A1	Police and Waka Kotahi will enter into a legal agreement to guide the transfer of safety camera and offence processing operations.
A2	section 9(2)(b)(ii) to Waka Kotahi or used as the basis for negotiating a new agreement.
A3	The first phase of expansion of the safety camera network section 9(2)(b)(ii)

ID	Description
A4	The preferred technology suppliers have the capacity and resources based in NZ to deliver the programme.
A5	The technology solution for safety cameras will automate camera management activities and at least some back-office functions.
A6	Mobile safety camera operators will be based in Waka Kotahi regional offices, if they are currently based within a 30-minute drive of that office. section 9(2)(f)(iv)
A7	Accommodation for about 100 people will be required in a central offences processing location by the beginning of 2023, with the option to expand to 150 by 2030.
A8	Waka Kotahi will initially use the Police Calibration Service to calibrate the transferred safety cameras.

Table 20: Key constraints

ID	Description
C1	Cabinet has agreed ownership and operation of the camera network should be transferred from Police to Waka Kotahi.
C2	Police will retain and administer officer-issued infringements.
C3	The RtZ Executive Steering Committee (ESC) agreed all existing camera types (red-light, mobile speed, and static speed) are to be transferred from Police to Waka Kotahi.
C4	The RtZ ESC agreed core safety camera operation and offence processing functions will not be outsourced.
C5	If personnel transfer from Police to Waka Kotahi, it would be on the basis of a 'technical redundancy'. If Waka Kotahi needs roles equivalent to existing Police roles, it may make offers of employment to Police personnel for those roles.
C6	If Waka Kotahi offers equivalent roles to Police Infringement Bureau personnel, then these roles need to be based in Wellington.
C7	Police personnel have been told the transfer will happen no earlier than mid-2022.
C8	Operation of point-to-point (average speed) cameras requires a change to legislation through the Regulatory System (Transport) Amendment Bill 2 (RSTA 2), which is expected to pass in section 9(2)(f) and come into effect from section 9(2)(f)(iv)
C9	Implementation timeframes are subject to change, if agencies' change programmes are delayed (for example, if Police is not ready to transfer people, processes, and systems over by transition period).
C10	Implementation timeframes for IT systems are subject to detailed planning with selected vendor(s) and the deployment requirements of the type of solution(s) offered.
C11	Implementation timeframes for IT systems are subject to dependency constraints on integration to Waka Kotahi internal system and the availability of nominated subject-matter experts who can participate in solution configuration and design with the programme and vendor teams after contract(s) are signed.
C12	Cabinet has agreed there should be a significant increased investment in additional safety cameras on the network, prioritised in the GPS.
C13	DBCs will be prepared to secure funding for the safety camera expansion and procurement of the IT systems for safety camera management and offence processing once a preferred supplier has been identified and costs have been confirmed.

Table 21: Key dependencies

ID	Description
D1	Dependent on Police to deliver the activities required to effect the transition of Police people, processes, contracts, and documentation.
D2	Dependent on Police to negotiate an agreement and establish the capability to provide safety camera gazetting and calibration services to Waka Kotahi.
D3	Dependent on Police to negotiate an agreement and establish the capability to receive and process infringements referred by Waka Kotahi.
D4	Dependent on the Speed and Infrastructure Programme, part of the RtZ portfolio, to manage the safety camera site design and construction required to deliver the safety camera expansion across the national road network.
D5	Dependent on an information sharing agreement or memoranda of understanding being agreed between Waka Kotahi and several central agencies to share data, enable point-to-point cameras, and enable automated issuing of infringements.
D6	section 9(2)(f)(iv)
D7	Dependent on the Speed Management Programme, in the RtZ portfolio, to implement the National Speed Limit Register to provide a centralised and definitive record of speed limits at safety camera locations.
D8	Dependent on the Social Licence Programme, in the RtZ portfolio, to manage the delivery of marketing/awareness campaigns to change public attitudes towards safety cameras.
D9	Dependent on the Safety, Health & Environment Programme, in the RtZ Portfolio, to research and advise on Māori road safety outcomes to inform safety camera placement, signage design, and consultation.
D10	Dependent on road controlling authorities to set speed limits to ensure the enforced limit is safe and appropriate to reduce DSIs.
D11	Dependent on the Electric Vehicle Transition Project to monitor requirements for mobile camera vehicles to meet government expectations of a low emission fleet by 2025.
D12	Dependent on Police to monitor the replacement of existing mobile safety cameras as they reach end of life.
D13	Dependent on Police to research the viability of using trailer-mounted mobile safety (speed) cameras.
D14	Dependent on the Distracted Driving Trial Project to research the viability of using safety cameras to detect mobile phone use while driving.

14. Additional information about the current state of the SCS and what the future will look like

14.1 This section contains additional information about the current state of the SCS and how the desired future state will be achieved

Number of Police personnel operating and managing safety cameras and prosecutions

14.2 Most safety camera functions (apart from camera maintenance) are carried out by Police personnel. About 71 full-time equivalents (FTEs) operate mobile cameras and about 96 FTEs process about 1m safety camera infringements annually as well as officer-issued infringements.

14.3 About 11 FTEs in the Police Prosecution Service handle about 1,100 safety camera prosecutions annually.

Cameras and vehicles are increasingly leased instead of owned

14.4 Some cameras and vehicles are owned, but leasing is becoming the preferred approach.

Police cameras use old technology requiring largely manual management

14.5 Camera management is largely manual with data transferred by DVD to maintain a secure chain of evidence.

14.6 Incidents are verified manually through a robust process, and infringement notices are issued using physical post.

14.7 The manual nature of the end-to-end process means notices are issued several days after an offence occurs, and this can be more than a week during periods of high volumes.

Moving to the future state with changed attitudes to speed, more cameras, and cameras in high-risk locations

14.8 This proposed investment enables a step change in culture and attitudes around speed. The SCS Programme will work with sector stakeholders and partners, including iwi, hapū, and local communities, to emphasise that safety cameras are about improving safety on roads and reducing DSIs.

14.9 This proposal will expand the camera network significantly with section 9(2)(g)(ii) cameras (fixed, red-light, average speed, and mobile) by 2030.

14.10 Fixed cameras will be more visible and clearly signed. Mobile cameras will likely be used in a more covert, general deterrence, mode.

14.11 High-risk sites will be chosen for cameras based on historical data about harm and modelling of underlying risk factors.

14.12 The SCS delivery model will be based on Tū Ake, Tū Māia (see sections 7.26–7.28)[45] and use the 'three Es' – educate, engage, and enforce – to achieve the desired changes in behaviour and, ultimately, a reduction in DSIs..

14.13 The gap between the current state of the SCS and the desired future state is summarised in Table 22. Supplementary information on enabling technology, security considerations, and future proofing is in Appendix F.

[45] Waka Kotahi. 2020. Tū Ake, Tū Māia (Stand Up, Stand Firm): Regulatory Strategy 2020–25. Wellington: Author.

Table 22: Proposed investment to drive the change from current state to future state

Category	Current state	Future state
Roles and responsibilities	Police is responsible for its safety camera network and the handling of all associated offences, including prosecution. Police personnel carry out most safety camera functions (apart from camera maintenance). Cameras implemented by road controlling authorities such as the red-light cameras implemented by Auckland Transport are the responsibility of the road controlling authority (with Police undertaking the associated offence processing). Police provides infringement processing functions for Auckland Transport's red-light cameras.	Waka Kotahi is responsible for the SCS to allow better integration with the speed management planning process. It changes public perceptions about the importance and relevance of safety cameras (that is, they are not primarily a revenue-gathering tool). Police retains responsibility for officer-issued infringements. Cameras implemented by road controlling authorities are the responsibility of the road controlling authority (with Waka Kotahi undertaking associated offence processing).
Public attitudes	Two-thirds of the public perceive safety cameras as being used to improve safety and used fairly, but a residual perception exists that cameras are used mainly for enforcement and revenue generation.	A step change occurs in the prevailing culture and attitudes around speed. Waka Kotahi works closely with its partners, including iwi, hapū, and local communities, supported by marketing programmes to build awareness, understanding, and support for the need for interventions such as safety cameras to reduce DSIs.
Camera network	About 135 fixed and mobile safe speed cameras operate across the country under an 'anytime, anywhere' model. There is no overt signage about the location of cameras. Camera sites are selected based on historical crash data, behavioural data, and predictive analysis. Safety cameras have a broader range of functions than can be used.	The safety camera network is expanded significantly with section 9(2)(g)(ii) safety cameras (fixed, red-light, average speed, and mobile) by 2030. Cameras are placed on high-risk sites chosen based on a combination of historical data about harm and predictive modelling of underlying risk factors. Fixed cameras are more visible, with average speed and fixed cameras clearly signposted. A broader range of safety camera functions are used.
Camera management	The management of cameras is largely manual with data transferred via DVD to maintain a secure chain of evidence. About 71 FTEs operate the mobile cameras.	Camera management is more automated, with secure electronic transmission of data. Incident verification is more automated with the potential to use advanced automation technologies and artificial intelligence to pre-process images. Efficiencies are achieved while maintaining and building robustness, integrity, and trust and confidence in the system.

Category	Current state	Future state
Offence processing	Incidents are verified manually through a highly robust process, so infringement notices are often issued (via physical post) days or weeks after an incident is detected. About 96 FTEs process about 1 million safety camera infringements annually as well as officer-issued infringements. The Police Prosecution Service has an estimated 11 FTEs handling about 1,100 safety camera prosecutions annually.	The number of infringements initially rises significantly (estimated at three times current volumes), but eventually reduces as compliance increases. section 9(2)(f)(iv) [redacted]
Enabling technology	The Police Infringement Processing System (PIPS) and related systems are at or approaching end of life and overdue for replacement.	Modern technology platforms incorporate innovation to support new ways of working that are more efficient and maximise the potential of automation, while complying with security and privacy standards. This enables the integration of technologies from different suppliers and ensures capability to support future technologies as they emerge.

ECONOMIC CASE

The economic case outlines the optioneering process conducted to identify the preferred option – the PWF (section 15). It then defines the do minimum option as a baseline comparator (section 16) and identifies and assesses a long-list of options and explains the rationale for establishing the short-list (sections 17 and 18). Subsequently, it describes the evaluation of the short-listed options (section 19). The resulting preferred option is then described (section 20) and evaluated for its value for money (section 21). The outcomes of sensitivity and risk analyses are in sections 22 and 23, respectively. The case concludes by reconfirming the investment prioritisation profile of the preferred option (section 24). As noted in the introduction, this IBC further tests and develops the recommendations from an earlier PBC.

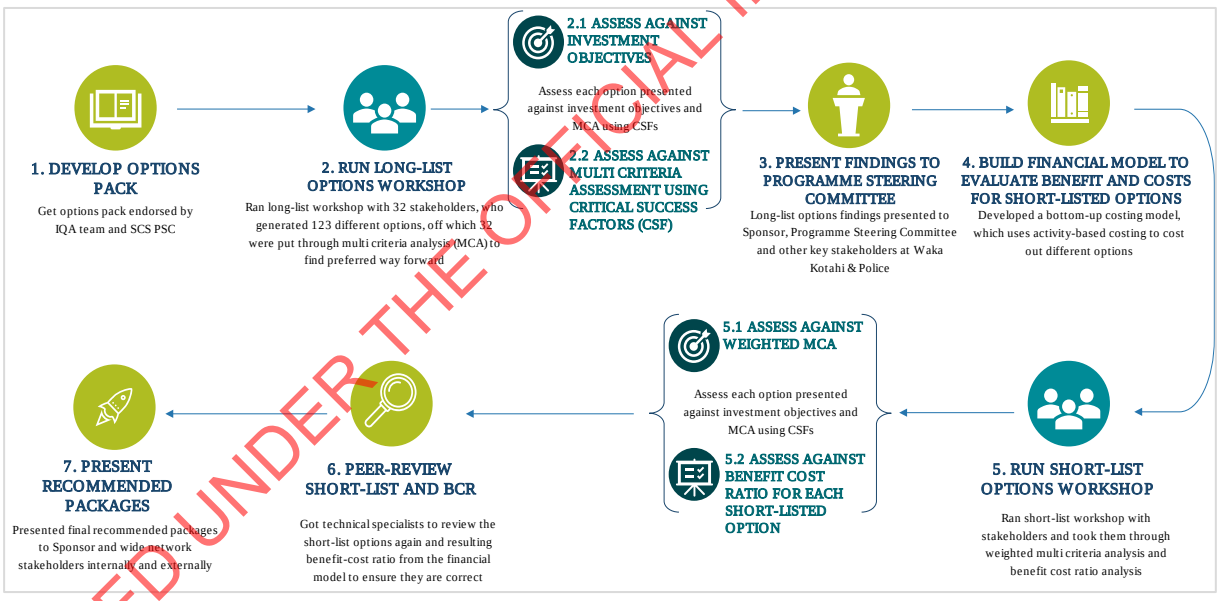
15. Optioneering process

Waka Kotahi optioneering process used to determine the preferred option

15.1 The Waka Kotahi optioneering process was applied to establish the preferred option. Optioneering is the in-depth consideration of alternatives to find a preferred option, in this case for the SCS.

15.2 Figure 14 illustrates the SCS optioneering process conducted with senior stakeholders between 25 October and 2 December 2021. The Programme Steering Committee endorsed this approach in October 2021.

Figure 14: SCS optioneering process



Notes: BCR = benefit–cost ratio; CSF = critical success factor; 'IQA team' means the internal Waka Kotahi team that performs quality assurance.

16. Do minimum – baseline comparator option

16.1 Stakeholders agreed during the optioneering workshops that the do minimum option represents the minimum level of expenditure required to maintain a minimum level of SCS service – not the minimum level of investment required to achieve programme objectives.

16.2 Table 23 outlines the agreed do minimum for the SCS Programme. This option is used as the baseline comparator for the subsequent value for money assessment.

Table 23: Do minimum option for the SCS Programme

Do minimum option		Rationale
1	**Transfer safety camera systems from Police to Waka Kotahi**	Transfer of ownership was mandated by the Minister of Transport and agreed by Cabinet in 2019.[1]
2	**Hold the number of safety cameras as is in the network with no new investment for camera expansion**	No new investment is made to expand the SCS network across the country, only to maintain the current service level.
3	**Develop a new operating model for the Safety Camera System (SCS) at Waka Kotahi (that is, people, processes, and technology)**	A new operating model is required as Waka Kotahi doesn't have SCS functions in-house and section 9(2)(f)(iv) , processes, and technology into its existing operations.
4	**Get a new camera management system (CMS) and a new infringement processing system (IOPS)**	A new CMS and a new IPS are required for Waka Kotahi to manage and process images captured by the Police camera network, as the current police system is at end of life and cannot be decoupled from Police and transferred to Waka Kotahi (as noted in the due diligence process for the transfer).[2]

Notes

1 Cabinet. 2019. *Minute of Decision – Tackling Unsafe Speeds Programme* (CAB-19-MIN-0575); Associate Minister of Transport. 2019. *Tackling Unsafe Speeds Programme* (Cabinet paper). Wellington: Author.

2 PwC. 2021. Due diligence for Police transfer of safety cameras to Waka Kotahi. Unpublished confidential document.

17. Long-list options identification

Stakeholders agreed the critical success factors against which options would be assessed

17.1 An optioneering workshop on 3 November 2021 with stakeholders determined appropriate critical success factors (CSFs) against which each option would be evaluated using multi-criteria analysis (MCA). This analysis assisted stakeholders to move from a long-list of potential options to a short-list.

17.2 Table 24 reiterates out the investment objectives from the strategic case, and Table 25 sets out the CSFs stakeholders agreed would be used to evaluate long-listed options to determine a short-list of options for further examination.

Table 24: Investment objectives used in optioneering process

#	Investment objective
1	To reduce average speed on roads that are treated with safety cameras (where safety cameras are deployed) leading to a reduction in DSIs by 2030 (from 2018 baseline).
2	To improve the quality of SCS (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline).
3	To improve road user compliance with speed limits through the SCS that reduce risk of harm for all road users by 2030 (from 2018 baseline).
4	To improve public attitudes towards safety cameras as part of a Safe System, measured as an increase in social licence for safety cameras by 2030 (from 2018 baseline).
5	To maximise the return on investment in the SCS for the public by reducing DSI cost to the country by 2030.

Table 25: Critical success factors used in the SCS optioneering process

#	Description	How well does the option …
CSF 1	**Strategic fit and business needs**	Meet the agreed investment objectives Meet related business needs (opportunities and problems associated with the current situation) Meet service requirements, for example, minimum current service levels of the SCS Fit with: • the RtZ strategy (reduce DSIs by 40% by 2030) • Waka Kotahi strategy (aligned with Safe System outcomes – a New Zealand where no one is killed or seriously injured when using or working on the transport system) • Ministry of Transport healthy and safe people outcomes (to protect people from transport-related injuries and harmful pollution and makes physically active travel an attractive option)
CSF 2	**Potential achievability**	Meet technical achievability – rate the technical or practical ease/difficulties that may be present, when implementing this alternative/option for example local site geography or existing contract Meet safety and design – rate the level of potential hazards associated with the alternative/option that pose a health and safety risk in design, operation, or maintenance Meet consentability – the level of consenting complexity/difficulty and risks of this adversely impacting on required workstream timelines or other aspects
CSF 3	**Potential affordability**	Meet capital, operational, and maintenance costs – is the indicative cost of the option affordable
CSF 4	**Supplier capacity and capability**	Meet supplier capacity and capability – does the supplier have capacity and capability to deliver the required option
CSF 5	**Programme timeline**	Meet programme timeline – can the option be delivered
CSF 6	**Opportunities and impacts**	Consider environmental effects – any specific environmental impact created Consider social and culture impacts – social licence for having safety cameras across the network and to turn on new technology (beyond cameras) Consider climate change mitigation – impact of the option on demand for travel by car, now or in the future Consider climate change adaptation – does option create any other climate change risk Consider cumulative impacts
CSF 7	**Impacts on Te Ao Māori**	Impact on Te Ao Māori
CSF 8	**Fatal flaws**	Fatal flaws – does the option present any fatal flaws (yes/no)
CSF 9	**Potential value for money**	Option optimises public value (social, economic, and environmental) in terms of potential costs, benefits, and risks

Stakeholders generated 123 options of which 32 were evaluated using MCA

17.3 The long-list process focuses on developing the breadth and depth of possible interventions, SCS components, and options. Option ideas were generated at workshop 1 on 18 November 2021. Attendees at this workshop included representatives from the SCS Programme, RtZ programme partners, the Waka Kotahi Investment team, internal Waka Kotahi IQA advisors, and Police (see the full list of stakeholders in Appendix G).

17.4 Participants at the workshop were asked to generate ideas that would resolve the functional needs related to the identified problems and benefits sought. In total, 123 long-list options were identified across five dimensions of MCA (defined in Table 26).

17.5 Stakeholders identified a comprehensive range of feasible programme options under each of the five dimensions of choice.

Table 26: Options considered within the five dimensions of MCA

Dimension of choice		Description
1	**Scope**	The 'what' in terms of coverage of the programme.
2	**Service solution**	The 'how' in terms of delivering the 'preferred' scope of the programme.
3	**Service delivery**	The 'who' in terms of delivering the 'preferred' scope and service solution for the programme.
4	**Service implementation**	The 'when' in terms of delivering the 'preferred' scope, solution, and service delivery arrangements for the programme.
5	**Funding**	The 'funding' required for delivering the 'preferred' scope, solution, service delivery arrangements, and implementation path for the programme.

18. Long-list options assessment

Stakeholders performed an exhaustive evaluation of each option using MCA

18.1 Stakeholders filtered the initial 123 options at a workshop to exclude options that were:

- considered outside the scope of the IBC (for example, outside the programme area)
- required significant legislative changes and could not be achieved in the current programme cycle
- part of another programme in the RtZ portfolio of initiatives
- business as usual or would otherwise be implemented (for example, the use of staging)
- politically sensitive and had been agreed at the programme's outset to be 'out of bounds' (for example, outsourcing all SCS functions)
- at a level of detail beyond what is appropriate for this stage of the business case process
- considered infeasible due to significant physical constraints (for example, average speed cameras being deployed everywhere)
- duplicates of other options (some duplicates were merged to create the final option to be assessed).

18.2 An initial appraisal of the long-list filtered out 91 options that were less likely to offer value for money and to make the short-list for further economic appraisal.

18.3 Following the initial filtering exercise, stakeholders took the remaining 32 options and evaluated each option against investment objectives and CSFs across the five dimensions (a picture of the long-listed options from the workshop is in Figure 15).

Figure 15: Long-list MCA options workshop wall, 18 November 2021

18.4 Stakeholders scored each long-listed option using the Waka Kotahi MCA seven-point scoring system (see Table 27). The facilitator moderated scores to arrive at a moderated final score for each option.

Table 27: Waka Kotahi MCA scoring system

Magnitude	Definition	Score
Large positive (+ve)	Major positive impacts resulting in substantial and long-term improvements or enhancements of the existing environment.	**3**
Moderate positive (+ve)	Moderate positive impact, possibly of short-, medium-, or long-term duration. Positive outcome may be in terms of new opportunities and outcomes of enhancement or improvement.	**2**
Slight positive (+ve)	Minimal positive impact, possibly lasting over only the short term. May be confined to a limited area.	**1**
Neutral	Neutral – no discernible or predicted positive or negative impact	**0**
Slight negative (-ve)	Minimal negative impact, possibly lasting over only the short term and definitely able to be managed or mitigated. Might be confined to a small area.	**-1**
Moderate negative (-ve)	Moderate negative impact. Impacts may be short, medium or long term and are highly likely to respond to management actions.	**-2**
Large negative (-ve)	Impacts with serious, long-term, and possibly irreversible effect leading to serious damage, degradation, or deterioration of the physical, economic, cultural, or social environment. Requires major rescope of concept, design, location, and justification or extensive work to mitigate the effect.	**-3**

18.5 At the end of the MCA process all scores were aggregated. The result for each option leads to one of three final choices.

- The option is **discounted** from further appraisal.
- The option is **carried forward** for further consideration.
- The option is identified as a **likely way forward**.

18.6 The options carried forward to the short-list evaluation are illustrated in Figure 16 and indicative output after the MCA is illustrated in Figure 17 with a detailed description of the long-listed options and moderated scores applied in the MCA process in Appendix H. The final long-listed options across the MCA dimensions are described in Table 28.

Figure 16: Final summary of options carried forward to short-list evaluation

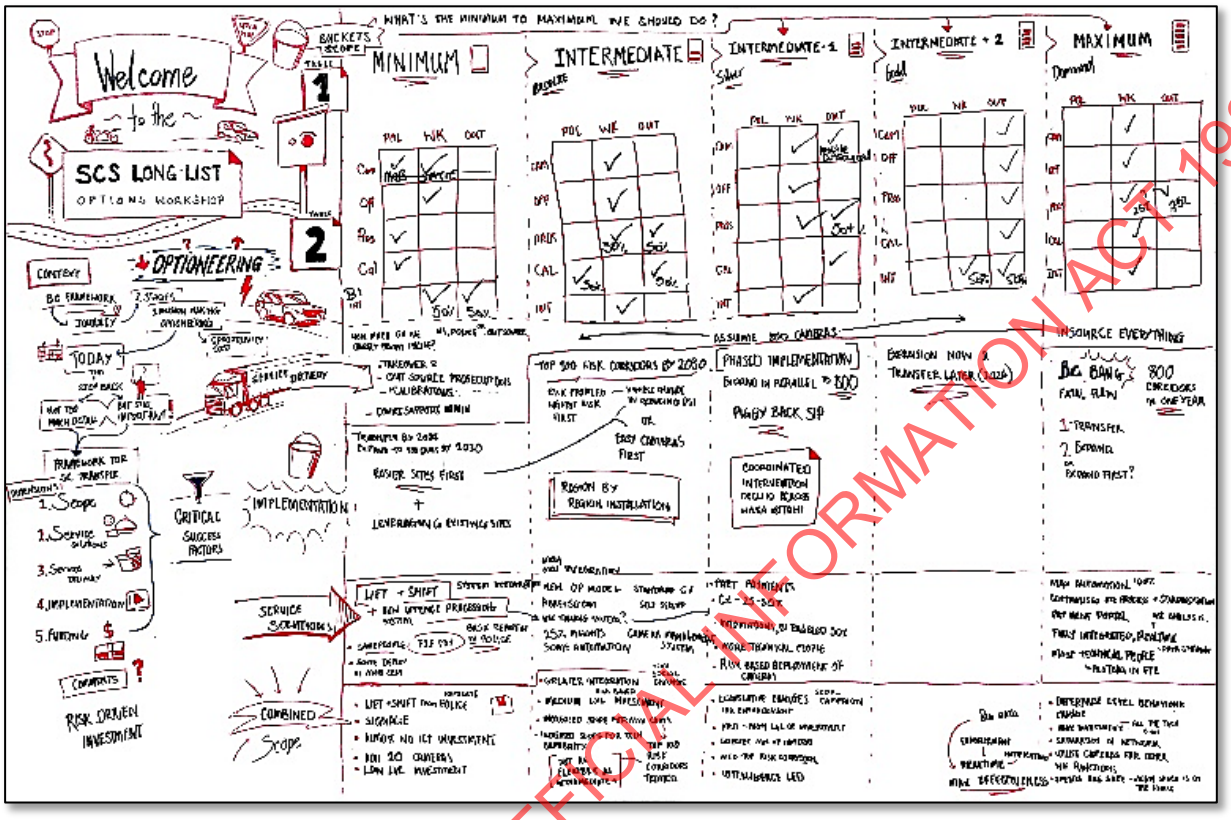


Figure 17: Indicative long-list output after MCA (see Appendix I for detail)

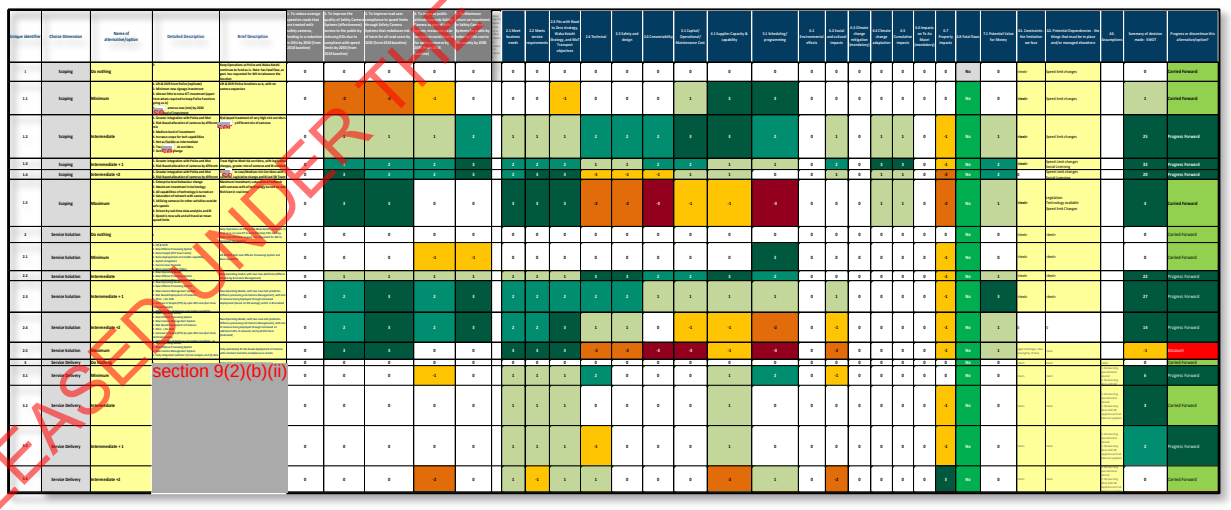


Table 28: Moving from long-list to short-list based on MCA across the five dimensions of choice

Dimension	Do Nothing	Do Minimum	Intermediate (bronze)	Intermediate + 1 (silver)	Intermediate + 2 (gold)	Maximum (diamond)
1. Scope	1.1 – Keep operations at Police and Waka Kotahi continues to fund as is. Note: Has fatal flaw, as government has requested Waka Kotahi to take over the function	1.2 – Lift & shift Police functions as is with no camera expansion	1.3 – Risk-based treatment of high-risk corridors, implement section 9(2)(g)(ii) across high-risk corridors	1.4 – Treat high- to medium-risk corridors section 9(2)(g)(ii) cameras by FY30 Note: May include legislative change, business intelligence enabled, and camera mixes	1.5 – Treat high- to low-risk corridors with section 9(2)(g)(ii) cameras by FY30 Note: May include legislative change, business intelligence enabled, and camera mixes	1.6 – Treat all corridors across the country with safety cameras Maximum investment, saturation of network with cameras with all technology turned on and business intelligence driven in real-time
	Carried forward	Carried forward	Likely way forward	Likely way forward	Likely way forward	Carried forward
2. Service solution		2.2 – Includes: • lift & shift • new offence processing system • same people (FTE count same) • same deployment and mobile capability • same system integration • face-to-face payment • basic reporting with Police operating model • new offence processing system (IPS) • new camera management system (CMS) • fibre + 5G cameras • no increase in people • same mix of cameras • same system integration with Ministry of Justice as currently form Police • face-to-face payment, and self-service payments • no customer experiences • no changes in business processes	2.3 – Includes: • new operating model • new IPS • new CMS • fibre + 5G cameras • no increase in people • same mix of cameras • same system integration with Ministry of Justice as currently form Police • face-to-face payment, and self-service payments • no customer experiences • no changes in business processes and automation	2.4 – Includes: • new operating model • new IPS • new CMS • risk-based deployment of cameras • fibre + 5G cameras • increase in people (FTEs) by up to 40% max (but more technical people) • different mix of cameras and mobile capability • system integration with Ministry of Justice • face-to-face payment, and self-service payments • standard customer experience (uplift of 25% min) • business intelligence enabled and automation (30% max) • part-payments or alternative resolutions	2.5 Includes: • new operating model • new IPS • new CMS • greater social licence to turn on more of the capabilities of cameras and technology platforms to catch more than speed offences on the road • straight-through processing utilised to greater degree and confidence in business operations • risk-based deployment of cameras • fibre + 5G cameras • FTEs predominately technical people, with manual processing reduced to bare minimum • greater mix of high-risk cameras that deliver greatest return on investment (eg, average speed) • seamless integration with Ministry of Justice	2.6 Includes: • new operating model • new IPS • new CMS • fully integrated real-time: risk analysis and data sharing (100%) • fibre + 5G cameras • mostly technical FTEs (for example, data scientists) • different mix of cameras and mobile capability • full integration with main government departments and Crown agencies • omni-channel payment suite • high level of customer experience (100%) • centralised business intelligence process & standardisation (100%)

Dimension	Do Nothing	Do Minimum	Intermediate (bronze)	Intermediate + 1 (silver)	Intermediate + 2 (gold)	Maximum (diamond)
					• face-to-face payment, and self-service payments • high level of customer experience (uplift of 25%min) • business intelligence led and greater automation of tasks (50% max) • part-payments or alternative resolutions (support by AI & good governance)	
	Carried forward	Carried forward	Likely way forward	Likely way forward	Likely way forward	Discount
3. Service delivery		3.2 Functions provided as follows: 1 Police in charge of: - mobile cameras - prosecutions - calibrations 2 Waka Kotahi in charge of: - static cameras - business intelligence 50% 3 Outsource or partner: - business intelligence 50% *Note: Level of outsourcing/partnership to be developed further as not fully developed*	3.3 Functions provided as follows: 1 Police in charge of: - calibrations retain 50% and Waka Kotahi partners 50% (if possible) - cameras all - offence processing - prosecution 50% (and Waka Kotahi partners 50% if possible) - business intelligence 2 Outsource or partner: - prosecution 50% (partner if possible) - calibration 50% (partner if possible) *Note: Level of partnership to be developed further as not fully developed currently*	3.4 Functions provided as follows: 1 Waka Kotahi: - cameras all - offence processing - prosecution 50% (and Waka Kotahi partners 50%, if possible) - business intelligence 2 Outsource or partner: - prosecution 50% (partner if possible) - calibration 100% (partner if possible) *Note: Level of partnership to be developed further as not fully developed*	3.5 Functions provided as follows: 1 Waka Kotahi: business intelligence – 50% 2 Partner: - cameras 100% *(note: fatal flaw, can't do, as must retain core functions)* - offence processing – 100% *(note: fatal flaw, can't do, must retain core functions*) - prosecution – 100% - calibration – 100% (see limits & constraints below) - business intelligence – 50% *Note: Level of partnership to be developed further as not fully developed.* *Note: Contains fatal flaw – can't move forward as can't outsource cameras.*	3.6 Functions provided as follows: 1 Waka Kotahi: - cameras 100% - offence processing 100% - prosecution 25% (and outsource 75%) - calibration 100% - business intelligence 100% 2 Outsource or partner: - prosecution 75% *Note: Level of outsourcing/partnership to be developed further as not fully developed*
	Carried forward	Likely way forward	Carried forward	Likely way forward	Discount	Discount

Dimension	Do Nothing	Do Minimum	Intermediate (bronze)	Intermediate + 1 (silver)	Intermediate + 2 (gold)	Maximum (diamond)
4. Service implementation		4.2 No camera expansion but a slow transfer of cameras to Waka Kotahi	4.3 Phased implementation (about 40 cameras per year, reaching section 9(2)(g)(ii) by FY30)	4.4 Phased implementation section cameras per year) • takeover Police functions by 2024 • expand cameras in parallel section 9(2) by 2030 • piggyback off other Road to Zero (RtZ) programmes (eg, Speed and Infrastructure Programme SIP) • perform coordinated intervention across Waka Kotahi (look at all programmes and what they are trying to do for that site treatment based on risk before installing cameras)	4.5 Phased implementation section cameras per year) • takeover Police functions by 2024 • expand cameras in parallel section 9(2)(g)(i) by 2030 • piggyback off other RtZ programmes (eg, SIP) • Perform coordinated intervention across Waka Kotahi (look at all programmes and what they are trying to do for that site treatment based on risk before installing cameras)	4.6 Big bang expansion section 9(2) cameras in one year • transfer in the same year as expansion • expand at the same time in same year *Note: Fatal flaw*
	Carried forward	Likely way forward	Carried forward	Likely way forward	Carried forward	Discount
5. funding	5.1 Fund Police as is	5.2 Hypothecation – retain the revenue generated from SCS to fund SCS operations at Waka Kotahi	5.3 NLTF funded, CAPEX funded through RtZ and OPEX through Investment Management	5.4 NLTF funded, CAPEX and OPEX through RtZ	5.5 Treasury funds all	5.6 Alternative procurement model – public–private partnership (PPP)
	Carried forward	Carried forward	Likely way forward	Likely way forward	Discount	Discount

19. Shortlisted options

Five options were shortlisted

19.1 This section describes the short-list and sets out the reason for selecting the recommended options and the rationale for discarding other options.

19.2 The short-list packaged together individual components across the five dimensions of the MCA to create final short-list packages for assessment. See Appendix I for a complete description of moving forward from long-list to short-list packages.

19.3 Stakeholders analysed the long-list (see Table 28) using MCA to establish the short-list of options for further assessment.

19.4 The shortlist comprises:

- **Option 1: Do Nothing** – Leave the SCS with Police and continue to fund as is.
- **Option 2: Do Minimum** (baseline comparator for determining value for money) – Transfer the SCS from Police to Waka Kotahi with a new operating model at Waka Kotahi, a new camera management system (CMS) and infringement processing system (IPS) with no new camera expansion.
- **Option 3: Less Ambitious Way Forward (bronze option)** – Transfer the SCS from Police to Waka Kotahi with a new operating model at Waka Kotahi, new CMS and IPS, and expand the SCS across high-risk corridors only (section 9(2)(g)(ii) cameras by FY2030).
- **Option 4: Preferred Way Forward (silver option)** – Transfer the SCS from Police to Waka Kotahi, with a new operating model at Waka Kotahi, new CMS and IPS, and expand the SCS across high- to-medium risk corridors (section 9(2)(g)(ii) by FY2030).
- **Option 5: More Ambitious Way Forward (gold option)** – Transfer the SCS from Police to Waka Kotahi with a new operating model at Waka Kotahi, new CMS and IPS, and expand the SCS across high-risk corridors (section 9(2)(g)(ii) by FY2030).

Weighted MCA was applied to evaluate the short-list and determine the preferred option

19.5 A short-list options workshop was held on 2 December 2021 with stakeholders. They assessed and evaluated the five options using weighted MCA (WMCA), which is summarised in Table 29 and detailed in Appendix I.

Table 29: Summary of short-list options evaluation using weighted multi-criteria analysis (WMCA)

	Do Nothing	Baseline	Bronze option	Silver option	Gold option
	Option 1: Do nothing – Leave the SCS with Police and continue to fund as is	**Option 2: Do Minimum** – Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS	**Option 3: Less Ambitious Way Forward** – Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, new cameras on high-risk corridors section 9(2)(g)(ii) by FY30)	**Option 4: Preferred Way Forward –** Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, and new camera on high- to medium-risk corridors section 9(2)(g)(ii) by FY30)	**Option 5: More Ambitious Way Forward** – Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, new cameras on high- to low-risk corridors section 9(2)(g)(ii) by FY30)
Investment objectives (30 points)	Scored **0 points** in WMCA. Doesn't achieve any of the investment objectives	Scored **6 points** in WMCA. Achieves very few components of investment objectives. Current police cameras are not necessarily located in the highest risk parts of the network. This means this option doesn't support a reduction in death and serious injuries (DSIs) on highest risk parts of the corridor and help achieve the Road to Zero (RtZ) target.	Scored **19 points** in WMCA. Supports the investment objectives and has high probability for treating all high-risk corridors by 2030. Most of the DSIs occur around high-risk corridors, by treating that area it will discourage excessive speeds in these areas, which will reduce the risk of DSIs occurring. It is also likely to generate positive social licence from the public.	Scored **26 points** in WMCA. Contributes directly towards reducing DSIs & assists RtZ meet its 40% DSI objectives by 2030. This option has appropriate level of investment & scale to create halo effect across the network to reduce DSIs. Creates indirect benefit on public attitudes – by reducing DSIs significantly, the public in turn views the intervention as positive.	Scored **30 points** in WMCA. Completely achieves the investment objective of reducing DSIs by 40% across the entire network. Has the highest level of investment and scale across the network to reduce DSIs. Creates an eroding effect on social licence with public by saturating the network with cameras that is, going from section 9(2)(g)(ii) 0 across the country in less than 10 years.
Strategic fit and business needs – Tacking Unsafe Speeds (TUS) Cabinet directive, RtZ strategy, Waka Kotahi Safe System outcome and Ministry of Transport (MoT) healthy & safe people outcomes (12 points)	Scored **0 points** in WMCA. Doesn't achieve strategic fit and meets business needs.	Scored **4 points** in WMCA. Investment in only new operating model and new CMS & IPS to make cameras work at Waka Kotahi doesn't help achieve the business need to meet Cabinet directive to reduce DSIs and align with RtZ strategy or meet Waka Kotahi Safe System outcome.	Scored **7 points** in WMCA. Investment in new cameras on high-risk corridors goes some way to meeting business need (Cabinet directive). This option aligns with RtZ strategy but doesn't fully meet the objective of 4% DSI reduction by 2030. It supports Waka Kotahi Safe System outcome and MoT outcomes.	Scored **10 points** in WMCA. Investment in new cameras across high- to medium-risk corridor meets Waka Kotahi business need set by TUS Cabinet paper directive. It meets the RtZ 4% DSI reduction by 2030 as well as the Waka Kotahi Safe System outcome and MoT outcomes.	Scored **10 points** in WMCA. Investment in new cameras across high- to low-risk corridor meets Waka Kotahi business need set by TUS Cabinet directive. It meets the RtZ 4% DSI reduction by 2030 as well as the Waka Kotahi Safe System outcome and MoT outcomes.

	Do Nothing	Baseline	Bronze option	Silver option	Gold option
Potential achievability – people, process, tech, safety, design and consenting (12 points)	Scored **12 points** in WMCA. Waka Kotahi has to do nothing but fund Police as is, this option is completely achievable.	Scored **12 points** in WMCA. Waka Kotahi has to do minimum and requires no new cameras to be expanded across the network.	Scored **9 points** in WMCA. Waka Kotahi only needs to install cameras on high-risk corridors that requires less consenting and achievable by FY30.	Scored **8 points** in WMCA. Waka Kotahi needs to install cameras on high- to medium-risk corridors, which requires a lot of consenting, safety, and design to be incorporated for section 9(2)(g)(ii) cameras by FY30.	Scored **7 points** in WMCA. Waka Kotahi needs to install cameras on high- to low-risk corridors, which requires a lot of consenting, lots of safety and design to be incorporated for section 9(2)(g)(ii) cameras by FY30.
Supplier capacity & capability (12 points)	Scored **12 points** in WMCA. Waka Kotahi has to do nothing but just fund.	Scored **12 points** in WMCA. Waka Kotahi has to do minimum, which is novate the contracts from Police to Waka Kotahi.	Scored **12 points** in WMCA. There is one supplier in the market and it has the capacity under the leasing model to provide cameras to be installed across high-risk corridors section 9(2)(g)(ii) by FY30).	Scored **8 points** in WMCA. There is one supplier in the market and it has the capability, but the capacity is likely to be impacted when installing cameras on high- to medium-risk corridors section 9(2)(g)(ii) cameras).	Scored **5 points** in WMCA. With only one supplier in the market, its capacity to provide cameras for all high- to low-risk corridors will be challenging by FY30.
Programme timeline – deliver by FY30 (16 points)	Scored **16 points** in WMCA. Waka Kotahi has to do nothing but fund only.	Scored **16 points** in WMCA. Waka Kotahi has to do just novate the contracts.	Scored **16 points** in WMCA. Waka Kotahi has to install cameras on high-risk corridors section 9(2)(g)(ii) cameras) by FY30.	Scored **10 points** in WMCA. Waka Kotahi has to install cameras on high to medium risk corridors section 9(2)(g)(ii) cameras) by FY30, which are a lot of new cameras per year.	Scored **3 points** in WMCA. Waka Kotahi has to install cameras on high to low-risk corridors section 9(2)(g)(ii) cameras) by FY30, which is almost not achievable given current labour market.

	Do Nothing	Baseline	Bronze option	Silver option	Gold option
Social, cultural & property impact – social licence to do more with SCS and Te Ao Māori impact from SCS (12 points)	Scored **0 points** in WMCA. Doesn't impact on social licence or Te Ao Māori.	Scored **0 points** in WMCA. Doesn't impact on social licence or Te Ao Māori.	Scored **2 points** in WMCA. Has a positive impact on social licence by making public aware of DSI reduction on high-risk roads and that cameras are not for revenue generation but for safety and deterring unsafe speeds. Has a neutral impact on Te Ao Māori.	Scored **7 points** in WMCA. Has a positive impact on social licence by making public aware of reduction in DSIs on high to medium risk roads. Investment is made to raise awareness through public campaigns. Has a neutral impact on Te Ao Māori.	Scored **3 points** in WMCA. Has a slightly negative impact on social licence by having cameras everywhere in a short time. Public may react adversely. Could have a negative impact on Te Ao Māori.
Potential Value For Money – public value for money (12 points)	Scored **3 points** in WMCA. Cameras under Police create the same public value for money as is.	Scored **3 points** in WMCA. Cameras novated to Waka Kotahi under new technology continue to deliver same value for money as is.	Scored **10 points** in WMCA. Investment in cameras in high-risk roads create DSI savings from high-risk areas and deliver great public saving for investment made.	Scored **13 points** in WMCA. Investment in cameras in high- to medium-risk roads create greatest DSI savings, which include halo effect across the network for reducing speed overall.	Scored **3 points** in WMCA. Cameras on high- to low-risk roads some of the benefits gained earlier as the cost of implementing this solution outweigh the benefits created by DSI savings.
Fatal flaw (yes/no)	**Yes** *Doesn't meet TUS Cabinet directive*	**No**	**No**	**No**	**No**
Total WMCA score	**44**	**54**	**76**	**84**	**63**
Option rank	**5**	**4**	**2**	**1**	**3**

Bottom-up costing model used to assess costs and benefits for each short-listed option

19.6 A bottom-up costing model was developed for the SCS. It looks at costs and their drivers at the lowest level of activity possible, then rolls the costs up to an aggregate level.

19.7 This model was developed according to the following principles.

- Build separate financial outputs for each short-listed option.
- Identify individual cost drivers for the lowest level of functions performed by the safety camera systems.
- Test key assumptions with stakeholders at an activity level before rolling up the costs for an SCS function.
- Note all assumptions that have a material impact on the model.
- Produce a comprehensive suite of financial statements for each option.
- Flex the financial model to adjust for camera volume, camera operating costs, FTE costs, FTE numbers, and efficiency gains (resulting from new technology).
- Assess the remaining options on a financial basis.

Quantitative analysis of monetary benefits and costs was undertaken

19.8 The five short-listed options were appraised using benefit-cost ratio (BCR) analysis on the estimated costs, benefits, and risks that could be valued in monetary terms. The general assumptions made for the purposes of the benefit–cost analysis are in Table 30.

Table 30: General assumptions for benefit and costs analysis

#	Assumption	Factor
1	**Investment horizon** – The proposed economic life is 20 years, from 1 July 2021 to 30 June 2040.	20 years
2	**Discount rate for net present value (NPV) & whole-of-life cost** – The discount rate is 4% per annum (as specified by the Waka Kotahi Investment team for this project type).	4%
3	**Inflation rate** – No inflation is assumed in the economic analysis (as per Waka Kotahi investment principles).	0%
4	**Income tax rate** – The tax rate is 0%, as tax is not specific to this project.	-
5	**Depreciation, capital charges, interest, and other financing costs** are excluded from the analysis.	-
6	**Contingency adjustment** – An allowance for underestimating costs is applied at a specified rate for some cost categories in operating (OPEX) and capital (CAPEX) camera costs.	13%
7	**Programme & change team asset life** – Implementation of the overall programme is for three years, from FY21–24.	3 years
8	**Technology & vendor asset life** – Technology platforms such as the CMS and IPS have a useful life of 7 years.	7 years
9	**Signage** – This asset has a life of 8 years.	8 years
10	**Safety cameras** – A leasing model is followed and is cost neutral for whole-of-life cost estimates.	-
11	**Capital costs** – These are identified for each option and detailed in Appendix O.	-
12	**Operation costs** – These are identified for each option and detailed in Appendix O. They include camera running costs, FTEs, and salaries.	-

Contingency adjustment applied in modelling BCR

19.9 A contingency adjustment of approximately 13% was applied to provide an allowance for underestimated costs (OPEX and CAPEX) in the financial model. The contingency has been applied specifically when calculating camera costs.

Benefit–cost ratio for short-listed options

19.10 This section presents the results of the BCR and WMCA analysis conducted with stakeholders at the short-list options workshop (see Table 31). Table 31 outlines the total cost for each option and its additional cost on top of the 'Do Minimum' option (see Appendix P for details).

19.11 The BCRs for the five options are:

- Option 1, Do Nothing: section 9(2)(b)(ii)
- Option 2, Do Minimum: section 9(2)(b)(ii)
- Option 3, Less Ambitious Way Forward: section 9(2)(b)(ii)
- Option 4, Preferred Way Forward: section 9(2)(b)(ii)
- Option 5, More Ambitious Way Forward: section 9(2)(b)(ii).

Table 31: Results of BCR analysis and WMCA for short-list options

	Option 1: Do Nothing	Option 2: Do Minimum (Baseline)	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
	Leave the SCS with Police and continue to fund as is	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, new cameras on high-risk corridors	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, and new camera on high- to medium-risk corridors	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, new cameras on high- to low-risk corridors
WMCA scores	44	54	76	84	63
WMCA %	**42%**	**51%**	**72%**	**79%**	**59%**
Number of Police cameras	139	139	139	139	139
Number of new cameras	0	0	section 9(2)(b)(ii)		
Total cameras	**139**	**139**	section 9(2)(b)(ii)		
Total costs*, FY21–40 (20yrs)	section 9(2)(b)(ii)				
Total benefits*, FY21–40 (20yrs)					
DSIs by 2030	32	32	57	130	183
4% target (% of DSI target achieved)	1.12%	1.12%	1.99%	4.55%	6.96%
NPV costs*	section 9(2)(b)(ii)				
NPV benefits*					
BCR (non-PV)					
BCR (NPV)					

Appraisal summary table and benefits management plan completed for short-listed options

19.12 Appraisal summary tables summarise monetised and non-monetised benefits and whole-of-life costs.

19.13 An appraisal summary table and benefits management plan for each short-listed option is in Appendix N. The tables summarise information from the wider economic case, which was developed in accordance with the Waka Kotahi monetised benefits and costs manual[46] and non-monetised benefits manual.[47]

20. Preferred option

20.1 This section sets out the selection process for the preferred option (**Option 4**), describes the preferred option, and outlines what is in and out of scope for the preferred option. The value for money (economic evaluation) of the preferred option and sensitivity and risk analyses are in subsequent sections.

Selection of the preferred option

20.2 The optioneering process conducted 25 October to 2 December found **Option 4** to be the preferred option.

20.3 Option 4 – the PWF – was selected through the Waka Kotahi optioneering process. This process took the option through multiple screening processes and evaluation with key stakeholder groups. The option was:

- assessed initially in the early assessment sifting tool
- rigorously scrutinised through the long-list options workshop under MCA
- evaluated again in the short-list using WMCA
- assessed in terms of its benefits and costs to society through BCR analysis.

Description and scope of the preferred option

20.4 Option 4 takes a gradual approach to the adoption of new camera technologies and a measured approach to rolling out new technologies, which will enable Waka Kotahi to evaluate and learn as it delivers the SCS Programme.

20.5 Activities in-scope and out-of-scope for the preferred option are in Table 32.

[46] Waka Kotahi.2020. *Monetised Benefits and Costs Manual*. Wellington: Author.

[47] Waka Kotahi.2020. *Non-monetised Benefits Manual*. Wellington: Author.

Table 32: Scope of the preferred option

In-scope
• section 9(2)(f)(iv) to Waka Kotahi by FY24. • Transfer of cameras from Police to Waka Kotahi by FY24. • Transfer of camera operations and management to Waka Kotahi by FY24. • Transfer of end-to-end processing (that is, processing of infringements as well as processing and prosecution of high-speed traffic offences detected by safety cameras). • Agree on data sharing between Police and Waka Kotahi by FY24. • Develop a new operating model (people, processes, and technology) for the SCS by FY24. • Implement a new CMS and IPS to capture and process images from safety cameras at Waka Kotahi by FY24. • Install and expand new safety camera numbers and types across high- and medium-risk corridors by FY30 section 9(2)(g)(ii) cameras). • Develop and deliver education initiatives or wider awareness campaigns as appropriate to support programme outcomes.
Out of scope
• Ongoing delivery of officer-issued infringements (Police). • Operation and management of existing safety cameras (existing road controlling authorities). • Further expansion of the camera network beyond agreed numbers (subsequent phases). • Awareness campaign requirements not related to the SCS.

21. Value for money of preferred option

21.1 This section sets out the costs, benefits, and BCR for the preferred option (Option 4).

Benefits of the preferred option

21.2 The economic benefits of the preferred option (Option 4) are summarised in Table 33.

Table 33: Economic benefits of the preferred option

Item	Benefit
Number of DSI savings to the society	section 9(2)(b)(ii)
Nominal DSI saving in $m (20 years)	
Total NPV benefit $m	
DSI percentage reduction at 2030	4.55%
Non-monetised benefits ✓ = minimal impact ✓✓ = moderate impact ✓✓✓ = major impact	
Improve driver behaviour and compliance	✓✓✓
Reduce emissions	✓✓✓
Improve network efficiency	✓✓✓
Improve emergency response	✓✓✓
Reduce cost avoidance	✓✓✓
Improve overall network safety	✓✓✓

Costs of the preferred option

21.3 Capital and operating costs were developed and considered through the optioneering process. Individual cost elements were broken down to the most granular level for activity-based

accounting, and then rolled up with subject-matter experts. The two cost areas are the camera network and the programme and technology.

21.4 Table 34 summarises for the preferred option (Option 4) the 20-year CAPEX costs.

21.5 The total CAPEX cost is section 9(2)(b)(ii) . Therefore, the total expected NPV CAPEX cost is section 9(2)(b)(ii)

Table 34: CAPEX costs – preferred option

CAPEX items	Cost ($m)
1. Camera network costs (over 20 years)	section 9(2)(b)(ii)
New camera set-up costs	
Mobile cameras renewal costs	
Mobile camera site signage & safety costs	
2. Programme and technology costs (over 20 years)	
Programme change team costs	
CMS – vendor implementation costs	
CMS – ICT professional implementation costs	
IPS – vendor implementation costs	
IPS – ICT professional implementation costs	
Payment processing – Ministry of Justice implementation costs	
Payment processing – vendor implementation costs	
Waka Kotahi overhead	
Total CAPEX costs	
Total expected CAPEX costs (NPV)	

21.6 Operational costs have been supplied in an NPV format, as varying costs per year due to different functions and phasing of programme implementation mean a typical yearly figure can't be provided.

21.7 NPV figures have been calculated over a 20-year period. Table 35 summarises the OPEX costs for the preferred option.

21.8 The total OPEX cost is section 9(2)(b)(ii) . Therefore, the total expected NPV OPEX cost is section 9(2)(b)(ii)

Table 35: OPEX costs – preferred option

OPEX items	Cost ($m)
1. Camera network costs (20 years)	section 9(2)(b)(ii)
Camera operating costs	
Camera network costs	
Verification costs	
Enforcement costs	
Peak load penalty costs	
Infringement payment processing costs	
Calibration technology costs	

OPEX items	Cost ($m)
2. Programme and technology costs (20 years)	
CMS – ongoing maintenance & support costs	section 9(2)(b)(ii)
IPS – ongoing maintenance & support costs	
Waka Kotahi overheads	
Total OPEX costs	
Total expected OPEX costs (NPV)	

Benefit–cost ratio for the preferred option

21.9 The BCR was calculated using the NPV total benefits and costs for the preferred option (Option 4) (see Table 36). The BCR for the preferred option is section 9(2)(

Table 36: BCR – preferred option

Item	Cost
Total NPV benefits	section 9(2)(b)(ii)
Total NPV costs	
BCR	

22. Sensitivity analysis

22.1 After sensitivity analysis on Options 3–5, Option 4 remains preferred.

Sensitivity testing shows the impact of different assumptions

22.2 Optimistic and pessimistic scenarios were developed using the following assumptions.

- The base case uses the output from the financial model and takes benefits at 100% and costs at 115% (P50).
- The optimistic scenario decreases costs by 22% and increases benefits by 22%.
- The pessimistic scenario increases costs by 22% and decreases benefits by 22%.

22.3 The impact of the scenarios on the BCR is in Table 37. The analysis shows the BCR is sensitive to changes in the assumptions, and variations in costs and benefits within expected ranges could result in a negative BCR.

Table 37: Sensitivity test results on BCR

Sensitivity	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
Monetised costs and benefits (over 20 years discounted at 4%)			
SCS	section 9(2)(b)(ii)		
Monetised benefits (reduction in social costs due to fewer DSIs)			
Net present value			
BCR			
DSI % reduction at 2030	1.6% to 2.3%	3.5% to 5.5%	5.4% to 8.5%
DSIs saved over 20 years	705 to 1,097	1,563 to 2,431	2,213 to 3,443
Cost per DSI saving	section 9(2)(b)(ii)		

23. Risk analysis

Quantitative risk analysis will be conducted for the Detailed Business Case

23.1 A quantitative risk analysis will be undertaken to assess the BCR range for the preferred option (Option 4) in the DBC.

23.2 The quantitative risk analysis for the DBC will model the BCR using a Monte Carlo simulation with the following four inputs.

- **Cost risks** – A base cost estimate (no contingency), P50 (expected estimate), and P95 costs will be used as the low, base, and high values, respectively, based on a triangular probability distribution.
- **Benefit progression** – This is over a 40-year period, based on outputs of a single modelled year. We will examine impact of benefits being delivered earlier (2026) compared with later (2036).
- **Other economic benefits** – These are assumed to be an additional 5% of the total benefit at this stage. A low of 0% and high of 10% are assumed for the Monte Carlo analysis using a triangular probability distribution.
- **Driver compliance benefit** – This has been assumed to be 60% for the preferred option, 50% for the pessimistic scenario, and 80% for the optimistic scenario, creating a range of inputs for the Monte Carlo simulation.

24. Reconfirming investment prioritisation profile for preferred option

24.1 This section reconfirms the investment prioritisation profile for the preferred option (Option 4) (see Table 38).

24.2 Investment prioritisation is the basis for including an activity in the NLTP. Depending on the amount of funding available for an activity class, activities with a priority order above an investment threshold in that activity class are included in the NLTP.

24.3 The GPS alignment for safety cameras is based on the forecast DSI reduction and the current risk of the corridors. The programme has calculated a weighted average DSI reduction for the Safety Camera programme to estimate the DSI on treated corridors and intersections, this comes out at about 28%. The DSI reduction combined with the project targeting medium-to-high and high-risk corridors gives this programme a High GPS alignment.

Table 38: Investment prioritisation profile for the preferred option

Factor	Rating
GPS alignment	High
Efficiency	Low
Scheduling	High
Priority order	5
No variances from the existing NLTP priority order The investment priority order of **5** is consistent with the PBC priority order of **5**	

FINANCIAL CASE

The financial case outlines the costs (section 25) and funding arrangements (section 28) for the preferred option (Option 4). Financial assumptions are set out in section 26, and funding risks are discussed in section 27. This case also provides assurance that the preferred option is affordable for Waka Kotahi.

25. Cost of the preferred option

25.1 The estimated total NPV cost of the preferred option (Option 4) is section 9(2)(b)(ii) (see Table 39).

Table 39: Indicative funding required – preferred option

Cost category ($m)	Three-year NLTP funding periods ($m)						
	2021–24	2025–27	2028–30	2031–33	2034–36	2037–39	Total cost (20 yrs)
Operating costs							
Camera operating	section 9(2)(b)(ii)						
Camera network							
Verification							
Enforcement							
Peak load penalty							
Infringement payment processing							
Calibration technology							
CMS ongoing maintenance and support							
IPS ongoing maintenance and support							
Total operating costs							
Capital cost							
New camera set-up							
Mobile camera renewal							
Mobile camera site signage and safety							
Programme change team							
CMS – vendor implementation							
SCMS – ICT professional fees, implementation							
Infringement processing (IPS) – vendor implementation							
IPS – ICT professional fees, implementation							
Payment processing – Ministry of Justice implementation							
Payment processing – face-to-face payment implementation							
Total capital costs							
Overhead charges							
Total operating and capital costs							
Contingency adjustment *Note: Included in total cost above*							
Discount rate	4%	4%	4%	4%	4%	4%	4%
NPV of total costs	section 9(2)(b)(ii)						

26. Financial modelling assumptions

26.1 From 1 to 15 November 2021, meetings were held with key stakeholders who understand the areas of the business to agree the modelling assumptions, which are set out in Table 40.

Table 40: Main modelling assumptions

Assumptions	Driver or value	Source
Inflation	0%	Consumer Price Index, Stats NZ
Number of cameras per average speed corridor	3.58	Derived from subject-matter experts – Cameras and Camera Technology
Discount rate	4% – discount rate	Monetised Benefits and Costs Manual
Mobile camera vehicle asset life	7 years	Current police renewal rate
FTEs required to operate mobile cameras	2.22	Current police numbers required to run two shifts per day
Base salary	$100,000	Assumed average base salary amount
Improvement in driver compliance	60%	Derived from subject-matter experts – Cameras and Camera Technology
Efficiency gain ratio – verification	200%	Derived from subject-matter experts – Cameras and Camera Technology
Efficiency gain ration – enforcement	15%	Derived from subject-matter experts – Cameras and Camera Technology
Technology platform asset life	8 years	Derived from subject-matter experts – Camera Technology
DSI social cost value	$1,307,181	Ministry of Transport

26.2 A detailed estimate of whole-of-life costs for the preferred option (Option 4) is in Appendix O.

27. Funding risks

27.1 The financial model takes into account funding risks and uncertainties associated with cost estimation (see Table 41).

Table 41: Key funding risks and uncertainties associated with costs

Costs	Type	Risk
Camera system setup costs	Operational	Optimism bias adjustment of 115%
Camera system implementation	Capital	Optimism bias adjustment of 115%

28. Funding arrangements and affordability

Preferred option is affordable

28.1 The preferred option (Option 4) is expected to cost section 9(2)(b)(ii) over the implementation period for the 10 years 2022 to 2031. Whole-of-life costs are estimated at section 9(2)(b)(ii) over the 20 years of the expected service life of the assets.

28.2 The Waka Kotahi Investment and Finance team assessed the impacts of the proposal on the operating statements and balance sheet as being accurate and robust to changes in key assumptions. Appropriate contingencies have been included for risk and uncertainty.

28.3 The Waka Kotahi Finance team agrees that, on this basis, the **preferred option is affordable** within the NLTP cycle. A letter of commitment from the Finance team or Executive Leadership Team will be supplied on approval of this IBC.

Preferred option impact on New Zealand Police

28.4 NZ Police currently operate safety cameras and process the associated infringements, along with the infringements issued by the approximately 1,000 road policing officers around New Zealand. These activities are funded by the National Land Transport Fund through the Road Safety Partnership Programme. Traffic Camera Operators (approximately 66 FTE) support mobile cameras, while the Police Infringements Bureau (approximately 100 FTE) and Police Calibration Service (approximately 12 FTE) support both safety cameras and road policing activities. Other NZ Police business units provide support to safety camera operations including the Police Prosecution Service, the National Road Policing Centre and corporate functions.

28.5 Waka Kotahi commissioned PwC to perform a financial due diligence review of current NZ Police safety camera operations. PwC identified that the following resourcing levels could be attributed to safety camera operations: Traffic Camera Operators 66 FTE, Police Infringement Bureau 78 FTE, Police Calibration Service 1 FTE, Police Prosecution Service 1 FTE. PwC calculated that the current state operating expenses are estimated to be section 9(2)(b)(ii). This includes attributed FTE costs, an overhead allocation, camera leasing and maintenance, vehicle running costs and depreciation, travel, postage and information technology. Their report also commented on the net book value of assets to be transferred, leasing arrangements and employee leave liabilities. The PwC report has been shared with NZ Police.

28.6 The financial (and economic) case for the preferred option, currently doesn't include the annual cost savings of section 9(2)(b)(ii) per annum, which will need to be factored into the Detailed Business Case costing model.

28.7 As safety cameras progressively transfer from NZ Police to Waka Kotahi the associated workload at NZ Police will reduce. As the workload reduces the funding from the National Land Transport Fund through the Road Safety Partnership Programme will reduce accordingly. During the 12 to 24 months of transfer there will be a degree of duplication of functions between NZ Police and Waka Kotahi and NZ Police funding will be maintained at appropriate levels during this period.

28.8 section 9(2)(f)(iv) The Public Service Commission's Machinery of Government guidance is being used to support this process and independent legal advice has been sought.

COMMERCIAL CASE

The commercial case outlines the proposed procurement arrangements for the preferred option (Option 4). These arrangements include required services, the procurement strategy, the procurement plan, contract provisions, and potential risk allocation (sections 29–32, respectively).

This IBC details high-level procurement activities for safety cameras, a camera management system (CMS), and an infringement processing system (IPS). The subsequent DBC will detail how the different commercial arrangements will be implemented for the preferred option.

Documents referenced in the IBC are listed in the References, p 109. Waka Kotahi procurement artefacts (and their location) are listed in the Resources, p 6.

29. Required services

SCS Programme will undertake commercial activities, some of which have been approved in respective procurement plans

29.1 The preferred option (Option 4) requires a variety of capabilities, spanning camera hardware, technology systems, and support services to enable the establishment, management, and operation of the safety cameras and office processing functions in Waka Kotahi. Commercial requirements are summarised in Table 42 and detailed in Appendix L.

Table 42: Commercial activities required – preferred option

Commercial capability required	Type	Activities	Status
Safety cameras	Camera technology hardware and maintenance services for IT	Safety cameras: • average speed • fixed speed • red-light • mobile • maintenance and support services	Procurement plan approved November 2021
Mobile safety camera enforcement	Enforcement system services	Deployment hours • vehicles and fit-out • traffic camera operators	Transfer to Waka Kotahi from Police to Waka Kotahi by FY23
Safety camera testing, calibration and certification	Professional service	Calibration services: • *Gazette* testing of new cameras and technology • calibration services • camera and site certification	To be decided through the DBC
Safety camera management technology system	Technology systems and services	CMS and services: • CMS management • CMS monitoring • CMS reporting • CMS data processing	Procurement plan approved November 2021

Commercial capability required	Type	Activities	Status
Infringement processing technology system	Technology systems and services	IPS and services: • IPS data entry • IPS verification • IPS adjudication • IPS payments • IPS customer services	Procurement plan approved October 2021
Civil engineering works (design and construction)	Physical infrastructure services	Civil engineering works: • site designs • construction • construction supervisor • safety audit	Delivery arm of the Speed and Infrastructure Programme will implement
Specialist programme services	Professional service	Professional services to support delivery of SCS Programme: • quality assurance • privacy impact assessment • quantitative risk assessment • organisation design and operating model • probity • procurement • programme delivery • change management • subject-matter expertise	Various procurement agreements approved, depending on the service, July 2021 to December 2023

30. Procurement strategy

Procurement strategies for different commercial activities are being developed, approved, and noted in respective procurement plans

30.1 The SCS Programme will develop a procurement plan for each commercial capability required to ensure the requisite due diligence and procurement processes are undertaken to:

- meet Waka Kotahi and programme strategic fit and business need
- meet capability and capacity required by the supplier to meet programme objectives
- understand whole-of-life cost and contract terms
- understand contract type
- understand any transition period if required.

30.2 The commercial capabilities required for the SCS Programme will be procured in accordance with the Waka Kotahi procurement policy and government rules of sourcing set out by the Ministry of Business, Innovation and Employment (illustrated in Figure 18).

Figure 18: SCS Programme procurement will apply Waka Kotahi Procurement Strategy

30.3 The Enterprise Procurement team, which leads the procurement function in Waka Kotahi, will support the SCS Programme to procure the required commercial capability. Table 43 summarises the recommended procurement approach for different capabilities.

30.4 Table 43 summarises procurement strategies that have been developed and approved in their respective procurement plans for safety cameras and CMS and for IPS.

Table 43: Procurement strategies for safety cameras, the CMS, and the IPS

Capability	Brief description	Procurement strategy
Safety cameras and CMS	section 9(2)(b)(ii)	A three-step due diligence process is being used with the preferred supplier section 9(2)(b)(ii) on advice from the Waka Kotahi Procurement and Commercial team. • Step 1 – Review the section 9(2)(b)(ii) supply contract – completed. • Step 2 – Review Police's original procurement RFP and evaluation report. • Step 3 – Undertake section 9(2)(b)(ii) and SCS Programme commercial due diligence on functional and non-functional requirements.
IPS	Conduct due diligence on a Waka Kotahi existing processing system; if not appropriate, undertake open market procurement	The Procurement and Commercial team advised the SCS Programme to follow a possible two-step process. • Step 1 – Conduct due diligence on the Waka Kotahi preferred Tolling Processing System to confirm whether it can meet SCS needs (see Appendix [2]). If it cannot meet the needs of the SCS, then go to step 2. • Step 2: Undertake open market procurement

Commercial capability discussions under way will be approved through the DBC

30.5 Table 44 summarises procurement strategies that are still in negotiation with strategic discussions occurring between the SCS Programme and internal and external stakeholders. These discussions are expected to be completed for the DBC.

Table 44: Procurement strategies in discussion, expected to be completed for the DBC

Capability	Procurement strategy
Mobile safety camera enforcement (people, process, vehicles and technology)	Subject to commercial negotiations, the transfer of existing Police mobile teams, and the incumbent supplier being able to expand the fleet as required to meet programme objectives. Capability includes: • mobile safety camera enforcement (existing) • mobile safety camera enforcement (new)
Safety camera testing, calibration, and certification	Under discussion.
Civil engineering work (design and construction) for safety cameras installation across the country	Internal Waka Kota supply agreements – the SCS Programme will engage with the Speed and Infrastructure Programme to manage all civil engineering work required for safety cameras
Specialist programme services	All-of-government commercial agreements used to procure professional services as required for quality assurance, gazetting, privacy assessment, programme management, and a change team.

31. Procurement plan

Procurement plans approved for safety cameras, CMS, and IPS

31.1 Procurement plans have been approved for the components of the SCS. See:

- Procurement Plan: Safety Cameras and Safety Camera Management System
- Procurement Plan: Infringements Processing System.

SCS Programme will section 9(2)(b)(ii) *for safety cameras and CMS for Waka Kotahi*

31.2 The key aspects of the procurement activities for safety cameras and the CMS are as follows.

- Several suppliers exist globally for safety cameras: section 9(2)(b)(ii)
- Local buyers for safety camera services are primarily Police and Auckland Transport.
- section 9(2)(b)(ii)

31.3 The indicative timeframe for safety camera and CMS procurement milestones is in Table 45.

Table 45: Key procurement activities for safety cameras and CMS

Procurement milestone	Indicative date
Request for information issued as part of Police's Automated Compliance and Intervention Management work	(early) 2019
Joint request for information issued by Waka Kotahi for provision of CMS and/or back-office processing system that could support processing of infringements as well (IPS)	October 2020
Due diligence completed on section 9(2)(b)(ii) and conducted on advice from the Waka Kotahi Procurement and Commercial team	November 2020 – October 2021
Procurement plan approved for safety cameras and CMS	15 November 2021
Pricing schedule updated – review and update pricing schedules received from section 9(2)(b)(ii) for safety cameras and CMS	29 November 2021
Commercial negotiations completed between Waka Kotahi and section 9(2)(b)(ii)	30 November 2021 – February 2022
Contracts established and signed – Master Services Agreement signed to establish contract with section 9(2)(b)(ii)	December 2022

SCS Programme will conduct due diligence on the preferred Tolling Processing System to assess its fit for purpose

31.4 Table 46 highlights key commercial activities the SCS Programme will undertake to assess whether the Tolling Processing System can be used for the IPS and the indicative due diligence timeline.

Table 46: IPS due diligence timeline

Action	Indicative date
Stage 1 – High-level due diligence	
High-level due diligence on preferred tolling processing system	October 2021
High-level due diligence outcome approved *If no roadblocks, proceed with Stage 2 otherwise proceed with open market pre-procurement activities*	October 2021
Stage 2 – Detailed-level due diligence	
Detailed-level due diligence on preferred Tolling Processing System	November–December 2021
Detailed-level due diligence outcome approved (tolling solution meets SCS requirements – proceed with joint commercial negotiations)	December 2021
Commercial negotiations – joint tolling and SCS (tolling has already commenced)	section 9(2)(b)(ii)
Contract signed: • Master Services Agreement • Tolling statements of work • SCS statements of work	section 9(2)(b)(ii)
Open market pre-procurement actions	
PwC engaged to support development of a request for proposal Probity auditor engaged Request for proposal prepared	November–December 2021

SCS Programme will go to market if the Tolling Processing System is not fit for purpose

31.5 Table 47 highlights key commercial activities and an indicative timeline for the SCS Programme, if the preferred Tolling Processing System cannot be re-used for the IPS and the programme needs to go to market.

Table 47: Open market timelines for IPS

Action	Indicative date
Due diligence decision	
Due diligence process confirms that Tolling Processing System does not meet the back-office infringements processing needs of SCS	November 2021
Pre-procurement	
PwC engaged to support development of request for proposal Probity auditor engaged Request for proposal prepared	November–December 2021
Request for proposal	
Tender Secretary uploads and releases request for proposal on GETS	Week starting 31 January 2022
Supplier briefing	In week starting 7 February 2022
Last date for supplier questions	18 February 2022
GETS closing date	10am, 10 March 2022
Evaluation	
Individual evaluations	section 9(2)(b)(ii)
Evaluation panel moderation meeting(s)	
Presentations and demo (if requested)	
Evaluation recommendation report	
Evaluation recommendation report approval (evaluation panel, Sponsor, Business Owners(s), and delegated financial authority)	
Post-evaluation	
Commercials (due diligence, negotiation, contracting, etc)	Start May 2022
Notice of outcome letters for Tender Secretary to release to suppliers drafted	TBC
Successful and unsuccessful suppliers debriefed	On request
Contract (expected) start date	1 August 2022
Tender Secretary publishes contract award notice on GETS (provided by Project Manager)	30 business days after the contract has been fully signed

31.6 The evaluation model for the IPS open market evaluation will use weighted attribute with a non-weighted price as prescribed under the Government Procurement Rules. For additional information see the Procurement Plan: Infringements Processing System.

32. Contract provisions

Waka Kotahi contractual terms will minimise programme administration costs and time

32.1 Standard contractual terms will be used where possible to take advantage of market familiarity and to minimise programme administration costs and time.

32.2 For safety cameras and the CMS, the main contract provisions are in Table 48.

Table 48: Safety camera and CMS contractual provisions

Main contractual provision	Description
Duration of contract	section 9(2)(b)(ii)
Right of renewal	2 rights of renewal of 2 + 2 years (that is, completion in October 2027)
Total contract term	2 + 2 + 2 = 6 years (including renewals completion in October 2027) The initial term was 6 years but when the relationship is transferred to Waka Kotahi, the remaining initial term will be 2 years so that the total contract term will be about 6 years, including renewal
Contract	section 9(2)(b)(ii)
Service provider	section 9(2)(b)(ii)
Procuring authority	Waka Kotahi, Digital & Workspace
Payment	CMS will follow Payment Car Industry compliance and be organised by the Waka Kotahi Finance team
Contract variation and review	Contract review will be agreed between Waka Kotahi and supplier but can include – monthly and quarterly service level agreements and key performance indicators discussion Contract variation (which includes prices increase) will be conducted in writing only once an agreement has been reached between both parties
Intellectual property	Information risk is considered high for this implementation, and the SCS Programme will work closely with the Digital and Workspace security team for inputs into the implementation of this capability
Compliance	Supplier must meet all the required compliance set out in the Procurement plan

32.3 For the IPS, the main contract provisions are in Table 49.

Table 49: IPS contractual provisions

Main contractual provision	Description
Duration of contract	Initial term is 5 years, commencing in April 2022
Right of renewal	Two rights of renewal of 3 + 2 years
Total contract term	5 + 3 + 2 = 10 years (including renewals) with dates (potentially) aligned to joint Tolling and SCS needs
Contract	Contract Template Master Services Agreement – ICT with statement of work to cover build, the service, and ongoing support
Service provider	To be confirmed in the DBC , but can be one of section 9(2)(b)(ii)
Procuring authority	Waka Kotahi, Digital & Workspace

Main contractual provision	Description
Payment	IPS will follow Payment Car Industry compliance and be organised by the Waka Kotahi Finance team
Contract variation and review	Contract review will be agreed between Waka Kotahi and supplier but can include – monthly and quarterly service level agreements and key performance indicator discussion Contract variation (which include prices increase) will be conducted in writing only once an agreement has been reached between both parties
Intellectual property	Information risk is considered high for this implementation, and SCS Programme will work closely with the Digital and Workspace Security team for inputs into the implementation of this capability
Compliance	Supplier must meet all the required compliance set out in the procurement plan

33. Risk allocation

Commercial risks have been considered and will be mitigated

33.1 Risks and mitigation actions have been mapped out in the respective procurement plans and will be managed in accordance with the Waka Kotahi risk framework. This framework is used to assess the level of risk to Waka Kotahi of known and perceived risks to the procurement.

33.2 Waka Kotahi has developed a standard table to provide guidance on the allocation of risks (see Table 50).

33.3 The risks in Table 50 do not supersede risks identified under any Conditions of Contract. Where a conflict of meaning or ambiguity exists around risk allocation, the Conditions of Contract have precedence.

Table 50: SCS commercial – risk allocation

Risk	Risk description	Principal retains risk	Supplier retains risk	Comment
Requirements & architecture not adequately defined	If requirements and architecture are not adequately defined, then: • the selected solution will not deliver required functional and technical capabilities • the solution will not be properly configured, leading to operational issues • solution delivery will not meet business acceptance criteria	✓		The principal is responsible for defining requirements and architecture to enable the supplier to understand the functional and technical capabilities required and to deliver a solution configured to meet business requirements.

Risk	Risk description	Principal retains risk	Supplier retains risk	Comment
Supplier implementation delivery does not meet agreed stage gates or acceptance criteria	If supplier implementation delivery does not meet agreed stage gates, then cost and timeframe overruns will occur	✓	✓	Both the principal and supplier retain risk in respect to their accountabilities in enabling agreed stage gates to be met.
	If supplier implementation delivery does not meet agreed acceptance criteria, then cost and timeframe overruns will occur		✓	The supplier is responsible for delivering a solution that meets the principal's requirements and passes agreed business and technical acceptance criteria. In this regard, the supplier retains the risk.
Agreed service levels are not met	If supplier does not deliver to agreed service levels, then there will be an impact on principal's business operations		✓	The supplier is responsible for the delivered solution and services meeting agreed service levels.
Agreed warranty conditions are not met	If supplier does not address issues with delivered solution after the solution is operationalised during the agreed warranty period and its conditions, then there will be a large operational impact		✓	The supplier retains the risk to resolve issues with the solution after it is operationalised under an agreed warranty period.
Security and/or privacy is breached	If supplier does not implement adequate security controls and/or processes, then that can lead to loss of information and privacy breaches	✓	✓	The supplier is responsible for ensuring appropriate security procedures and controls are in place within the domains under its management to protect the principal's information.
Intellectual property is not protected	If intellectual property is not appropriately protected, then this can lead to loss of capability	✓	✓	The principal and supplier retain risk to ensure management of intellectual property is agreed and protection mechanisms are in place.

MANAGEMENT CASE

The management case demonstrates the achievability of the preferred option (Option 4) and is outlined in section 34. The case then summarises the programme management approach (including change management and governance arrangements) that will be followed for the successful delivery of the programme (sections 35–39). The case also covers the stakeholder engagement approach (section 40), the programme's activity plan, key milestones, and roadmap (section 41), how benefits and risks will be managed (sections 1 and 43), and the forms of programme assurance (section 44).

Documents referenced in the IBC are listed in the References, p 109. Waka Kotahi programme and project management artefacts (and their location) are listed in Resources, p 6.

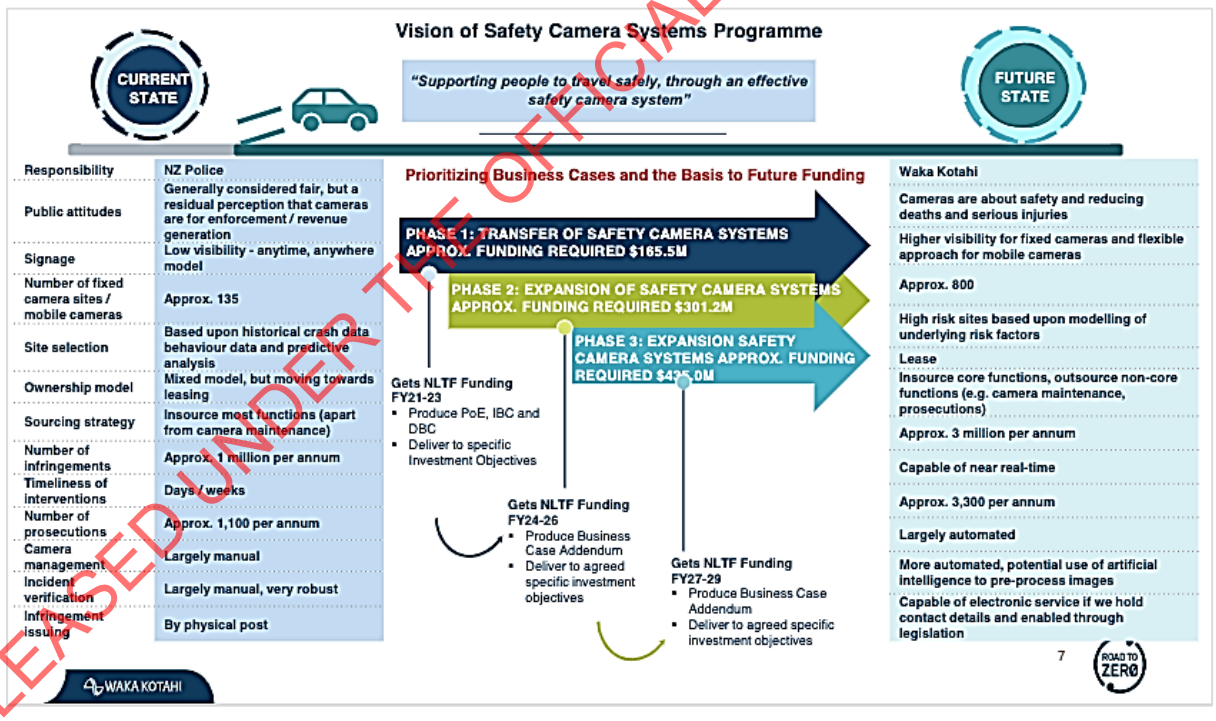
34. Outline of the management case

SCS Programme will help people travel safely, through an effective SCS

34.1 The purpose of the management case is to describe the arrangements that will be put in place to successfully delivery the preferred option and manage programme risks.

34.2 The programme's purpose is to 'support people to travel safely, through an effective safety camera system'. The programme will achieve this through various means by shifting the current state of the Safety Camera System (SCS) from where it is today with Police to a new future state in Waka Kotahi that includes investment in new cameras and the back-office to support safety camera functions (see Figure 19).

Figure 19: Current and future state of the SCS



SCS Programme will follow good practice programme management with the Programme Director and workstreams working together to achieve programme objectives

34.3 The SCS Programme will be delivered by the Programme Director and multiple workstreams, all supporting the programme to achieve its objectives and milestones.

34.4 Figure 20 and Table 51 provide a high-level overview of the programme's delivery structure and role of the workstreams. For additional detail about the programme and workstreams, see the Programme Definition Document.

Figure 20: SCS Programme team delivery structure

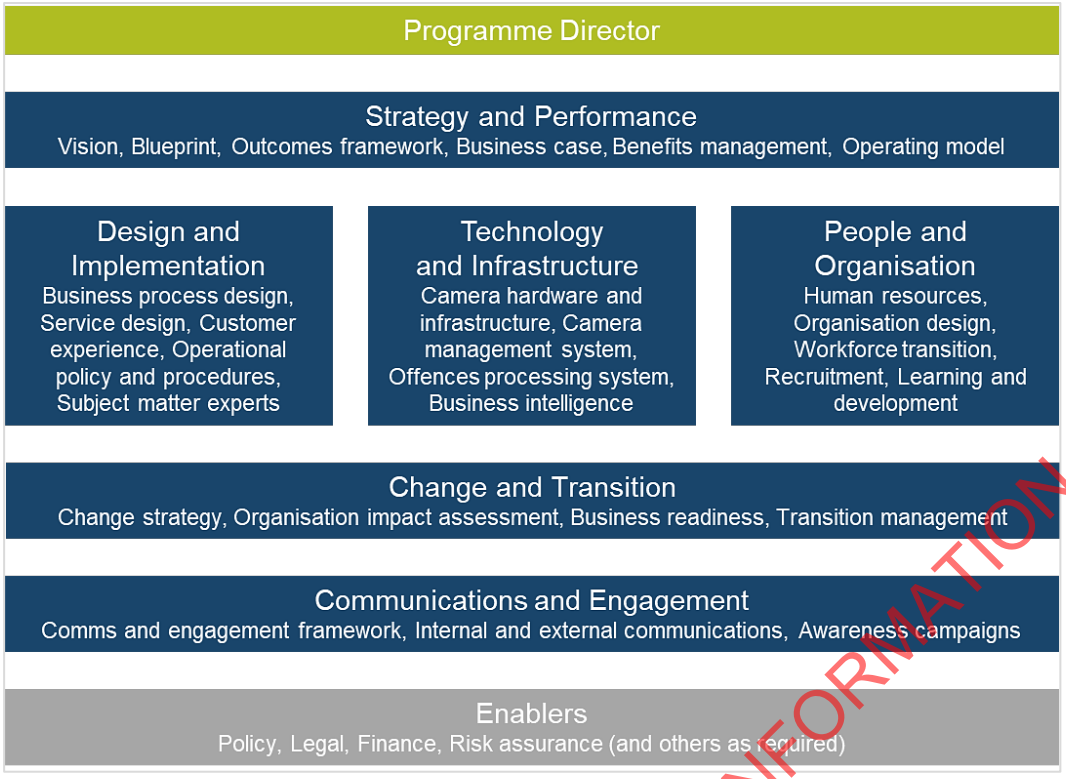


Table 51: SCS Programme workstreams overview

Workstream	Role
Design and Implementation	Is tasked with determining the future state based on the business requirements. Aims to define each process, policy, and procedure that will be required to successfully operate the SCS at Waka Kotahi. Is responsible for all aspects of the design up to user acceptance testing where it will confirm initial business requirements have been met.
People and Organisation	Is responsible for ensuring the right organisational design, structure, and capabilities are in place to manage the people aspects of the SCS transition from Police to Waka Kotahi. Focuses on ensuring the right people, capability, people processes, and practices are in place to ensure a seamless transition.
Change and Transition	Is responsible for ensuring the organisation is ready for change and has change strategy, organisation impact, business readiness and transition management in place.
Communication and Engagement	Is responsible for ensuring correct communication and engagement are being conducted out of the programme to support Waka Kotahi and wider government. Includes developing the communication and engagement strategy, communication framework, and internal and external communications and awareness campaigns.

Workstream	Role
Technology and Infrastructure	Is tasked with providing the technology required to transfer the safety camera and infringements processing operations from Police to Waka Kotahi. Police's technology systems supporting these functions are end of life, so Waka Kotahi needs to replace them with modern, fit-for-purpose technology systems and services that can effectively support these functions in Waka Kotahi into the future. In addition a sub-stream called *Camera Network Transition & Expansion* – will be tasked with transitioning and expanding the existing cameras and operations from Police to Waka Kotahi. This is a major component of the SCS Programme. It will rely heavily on the technology selected and implemented by Technology and Infrastructure; the process, policy, and procedure changes defined by Design and Implementation; and the people plans led by People and Organisation
Strategy and Performance	Provides the overall strategy (the 'why') and framework (the 'how') for overall programme delivery. Is an enabler for the programme to outline strategy, get investments, and deliver towards benefits.

35. Management strategy and framework

SCS Programme will follow the Enterprise Portfolio Management Office methodology, which aligns with best practice programme and project management

35.1 The SCS Programme will follow the Waka Kotahi programme management framework and be consistent with both the infrastructure project methodology (as an NLTP-funded programme) and the technology project methodology (with architecture and design approval stage gates and so on).

35.2 The programme will also follow the requirements and methodology of the Enterprise Portfolio Management Office and Waka Kotahi change management practice.

35.3 The programme will be managed in accordance with best practice programme and project management principles (Managing Successful Programmes (MSP ®) and Prince2 ®)) to provide a systematic and effective delivery framework.

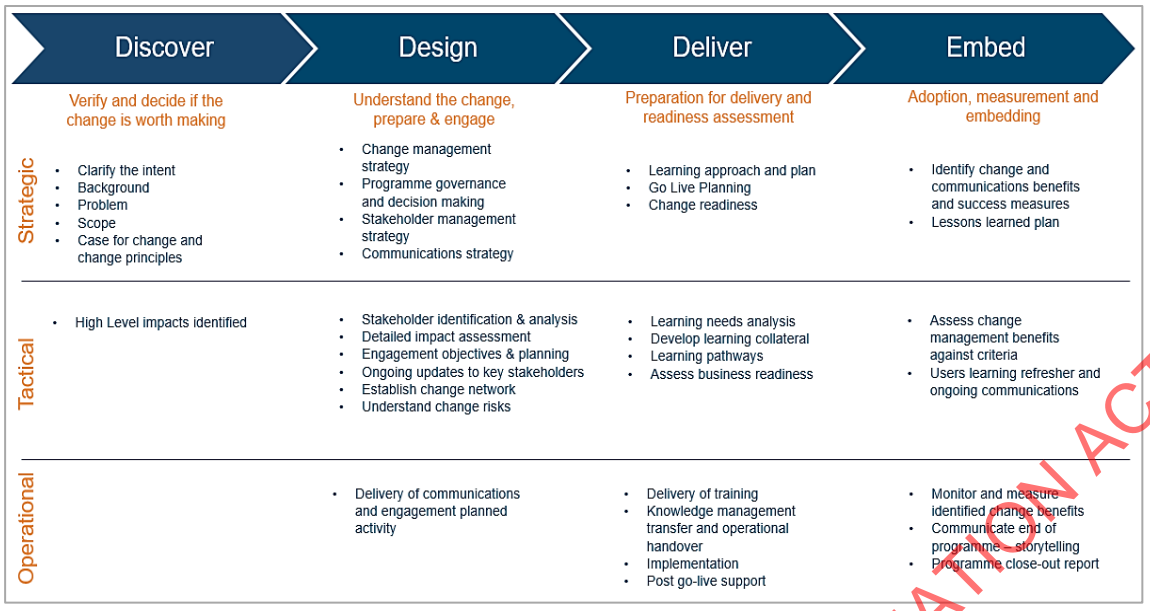
Programme success will be supported by a good practice change management approach

35.4 Change management is a structured approach to supporting the people and organisational elements of change and managing associated risks. Change management is essential to achieving programme outcomes. Research shows that when programmes fail, the primary causes are overwhelmingly people related.

35.5 The Change and Transition workstream delivers the change component of the SCS Programme. The change management approach will be used to understand the needs of individuals and groups during programme delivery.

35.6 Figure 21 shows key components of the change management approach. For more information, see the SCS Change Management Strategy.

Figure 21: Change management approach for the SCS Programme



36. Governance arrangements

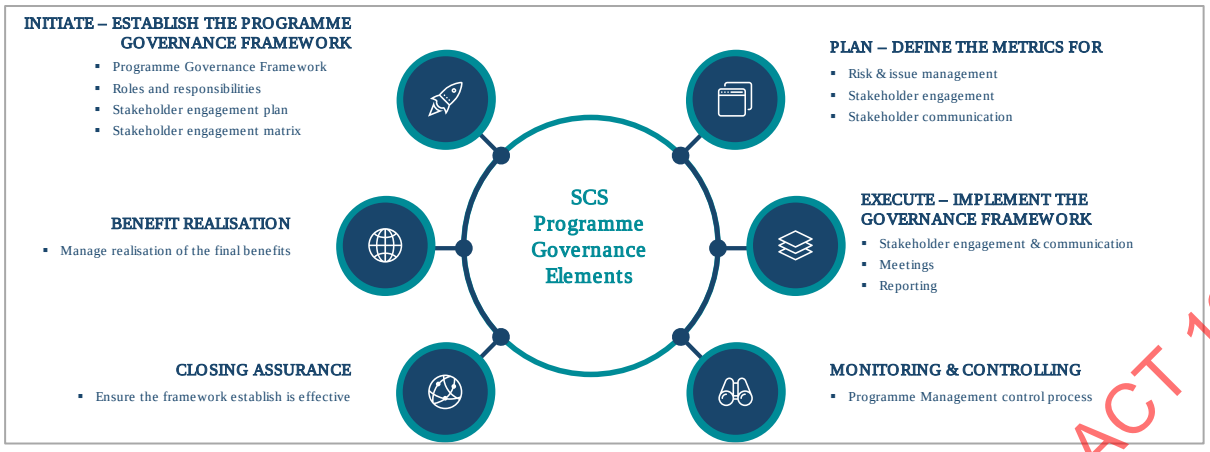
Programme governance will be provided through a steering committee, partnership group, RtZ sub-committee, and Waka Kotahi executive leadership

36.1 Programme governance is the oversight function that aligns with the Waka Kotahi operating model and encompasses the full programme and project life cycle. Governance of the SCS Programme is through the SCS Steering Committee, Road Safety Partnership Group, RtZ Executive Sub-committee (RtZ ESC), and Waka Kotahi Executive Leadership Team. Governance focuses on two critical elements.

- **Alignment with Waka Kotahi strategic and investment objectives** is defined in the SCS Programme Definition Document and Programme Blueprint, which sets out the programme and workstream governance framework, roles and responsibilities, and stakeholder engagement and communication.
- **Longevity, monitoring, and controlling of the governance plan** are elements that come to fruition during the programme life cycle. The Programme Director in collaboration with workstream leads will monitor and control the different parts of the programme and their needs through regular meetings, risk and issue management, assurance reviews, and reviews of programme management and control processes.

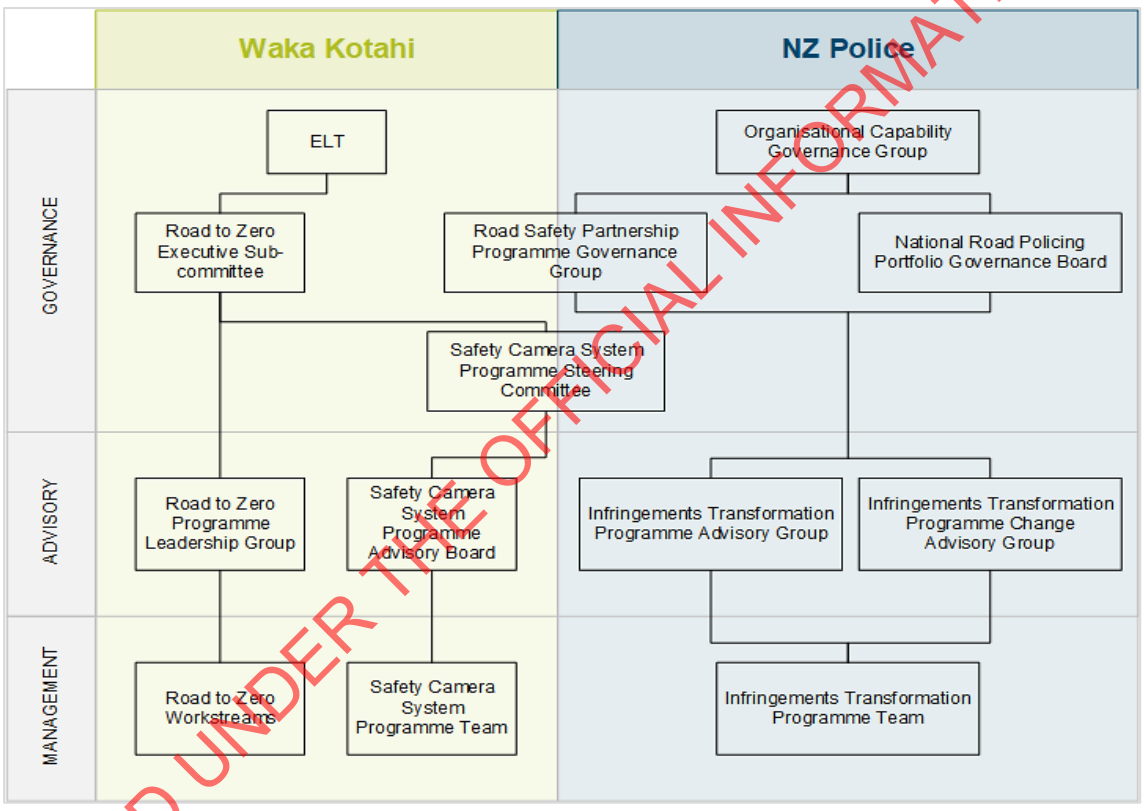
36.2 Programme governance follows the Waka Kotahi Programme Management Framework and is consistent with the Enterprise Portfolio Management Office methodology. Figure 22 illustrates the main components of the governance elements that have been endorsed in programme artefacts such as the Programme Definition Document.

Figure 22: Endorsed components of SCS Programme governance



36.3 The programme governance structure is in Figure 23.

Figure 23: SCS Programme governance structure



36.4 The SCS Programme has four levels of governance and an advisory board, all providing different inputs and expertise to ensure the programme delivers its overall objective.

- **RtZ ESC** – This sponsoring sub-committee is the forum that resolves portfolio-level risks and issues affecting the implementation of the RtZ strategy. It oversees the progress of the development and implementation of the RtZ portfolio. RtZ ESC membership is in Table 52.

Table 52: RtZ ESC roles and members

Role	Member
Chair	General Manager, Engagement and Partnership
Member, Waka Kotahi	Director of Land Transport
	General Manager, Safety Health & Environment
	General Manager, Transport Services
	Director, Office of the Chief Executive
Member, New Zealand Police	Deputy Chief Executive, Insights and Deployment
Subject-matter expert	Chief Financial Officer
	Portfolio Manager, Road to Zero
	Senior Manager, Road Safety

- **Programme Steering Committee** – This committee is chaired by the Business Owner, under authority delegated by the Sponsor (the General Manager Regulatory Services and Director Land Transport). It is responsible for the successful introduction of the SCS into Waka Kotahi and ensuring the system delivers the agreed business benefits. It acts as a forum to resolve issues and risks that impact on the programme. The committee's membership is in Table 53. For more information, see the Programme Steering Committee Terms of Reference.

Table 53: Programme Steering Committee roles and responsibilities

Role	Member
Business Owner and Chair	Deputy Director of Land Transport
New Zealand Police Sponsor	Assistant Commissioner, Deployment & Road Policing
New Zealand Police Business Owner	Co-Director, Road Safety Partnership
Waka Kotahi Senior Supplier (Technology)	Strategic Technology Portfolio Lead
Member, Waka Kotahi	Senior Manager, Road Safety

- **Road Safety Partnership Programme Governance Group –** This group is jointly chaired by the National Manager: Road Policing (Police) and Senior Manager: Road Safety (Waka Kotahi) on an alternating basis. The group's purpose is to ensure Waka Kotahi and Police work in partnership to deliver the Road Safety Partnership Programme, directly contributing to the targeted 40% reduction in road DSIs.
- **Programme Advisory Board –** This board's purpose is to get 'the right people' together to ensure an appropriate range of perspectives is considered, particularly, people who are likely to be involved in or have experience relevant to the operation of safety cameras and the processing of offences. This board is chaired by the Programme Director. It doesn't have decision-making authority but advises the Programme Steering Committee on key deliverables and decisions. Membership of this board is in Table 54. For more information, see the Programme Advisory Board Terms of Reference.

Table 54: Programme Advisory Board membership

Group	Role
SCS Programme (Chair)	Programme Director, Safety Camera System
Corporate Support	Manager, Business Operations
	Financial Services Analyst
	Principal Counsel
Engagement and Partnership	Practice Manager, Communications and Engagement
People	Manager, Business Partnering
Regulatory Services	Senior Manager, Customer Services
	Principal Intelligence Advisor
	Manager, Network Safety
Safety, Health and Environment	Principal Advisor, Road User Choices
	Lead Advisor, Road Policing
Transport Services	Lead Advisor Safety, Programme and Standards
	Team Lead, Safety Engineers
	Lead Advisor, Urban Transport
Te Aukaha Digital	Product Manager, Transport Technology Operation and Management
	Principal Advisor, Land Transport Security
New Zealand Police	Co-Director Road Safety Partnership
	Manager, Police Infringements Bureau

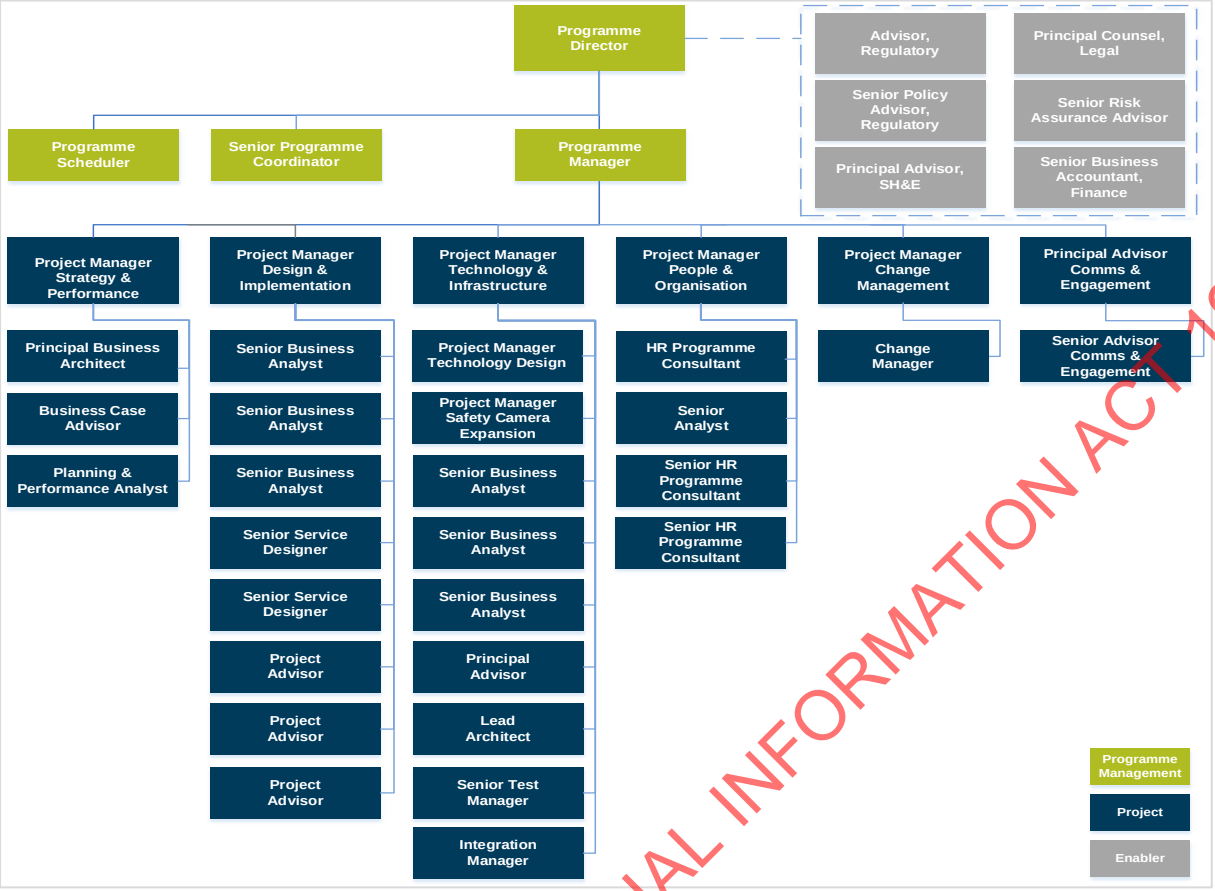
37. Management structure

Programme Director is responsible for successful delivery of the SCS Programme supported by workstream leads

37.1 The Programme Director is responsible for the delivery of the SCS Programme.

37.2 The programme employs a team of professional project managers (as workstream leads), change managers, business analysts, business architects, and other specialists. SCS staff by role are listed in Figure 24. For more information, see the Programme Definition Document.

Figure 24: Programme team organisational chart



38. Reporting arrangements

SCS Programme and its workstreams will report to governance at different frequencies

38.1 Programme-level reporting is as follows:

- Every month, each workstream lead completes a status report in Waka Kotahi system PlanView.
- Every month, workstream status reports are consolidated into a programme report that is presented to the RtZ ESC.
- Every month, the RtZ ESC programme report is modified and reused for the Programme Steering Committee and Regulatory Executive Steering Committee.

Governance and advisory groups will receive programme reports during different times of the month

38.2 The sequence of reporting to different governance and advisory groups for decision-making and escalating risks and issues is in Table 55. This is endorsed in the SCS Programme Definition Document.

Table 55: Reporting arrangements for SCS governance and advisory groups

Reporting group	Reporting date (cycle)
Programme Advisory Board	Reports every 2nd week of the month
Programme Steering Committee	Reports every 3rd week of the month
RtZ ESC	Reports every 4th week of the month
Waka Kotahi Executive Leadership Team	Reports every week

39. Key roles and responsibilities

SCS Programme has developed key roles and responsibilities for different workstreams so leads and analysts can work efficiently towards achieving their milestones

39.1 The senior roles delivering this programme and their responsibilities are summarised in Table 56. For more details, see the Programme Definition Document.

Table 56: SCS programme structure – roles and accountabilities

Role	Accountability
Programme Sponsor – General Manager of Regulatory Services and Director of Land Transport	Owns the strategic alignment of the change and the investment. Is accountable for ensuring: • workstreams and programmes deliver on the planned SCS benefits • delivery of the initiative.
Business Owner – Deputy Director, Land Transport	Makes sure the programme is aligned to Waka Kotahi outcomes and investment objectives. Supports securing funding from the Sponsor. Champions the SCS programme to wider stakeholder group. Assembles the senior programme team.
Programme Director, Safety Camera Systems	Manages programme interaction with governance and advisory groups. Takes the Sponsor and Business Owner's vision and coordinates the work to give effect to it. Maps out the work required to each milestone with workstream leads and finds the right people to do it. Plans for capacity, dependency, risks, and mitigations. Oversees week-by-week planning of work.
Programme Manager, Safety Camera Systems	Takes lead from Programme Director in organising programme vision and coordinating activities with different workstream leads. Creates a detailed activity and milestone map for different workstreams, which feed into a plan on page for the Programme Director. Organises workload planning with different workstream leads. Manages day-to-day risk of the programme.
Strategy & Performance workstream lead	Is accountable for the: • programme vision • programme blueprint • programme framework • programme business case • programme benefit management plan • operating model design.
Design & Implementation workstream lead	Is accountable for: • business process design • service design • customer experience • operational policy and procedures • subject-matter expertise.

Role	Accountability
Technology & Infrastructure workstream lead	Is accountable for: • camera hardware and infrastructure • the camera management system • the offence processing system • business intelligence.
People & Organisation workstream lead	Is accountable for: • human resources • organisation design • workforce transition • recruitment • learning and development.
Camera Network Transition & Expansion workstream lead	Is accountable for: • the transfer of existing cameras from Police • the expansion of new cameras • the management of operations of new and existing cameras • supporting implementation of technology • supporting design of process and policy.
Change & Transition workstream lead	Is accountable for: • change strategy • organisation impact assessment • business readiness • transition management.
Communication & Engagement workstream lead	Is accountable for: • the communications and engagement framework • internal and external communications • awareness campaigns.
Enablers workstream	Contains individual subject-matter experts who support the programme, including in the areas of: • policy • legal • finance • risk assurance.

40. Stakeholder engagement

SCS Programme has developed key stakeholder engagement artefacts

40.1 The SCS Programme has developed three important stakeholder engagement artefacts:

- Communications and Engagement Strategy
- Change Management Strategy
- Stakeholder Management Plan.

40.2 The SCS Programme is developing a stakeholder management plan that will detail specific actions and strategies in managing key stakeholders, both internal and external. The stakeholder management plan will cover the level of interaction at a high level and current management of key stakeholders. For more details, see SCS Programme Communications

and Engagement Strategy, Programme Internal Communications and Engagement Framework, and SCS Stakeholder Engagement.

40.3 Key stakeholders that are crucial to the success of this programme, include, but are not limited to Police, Ministry of Transport, Ministry of Transport, E Tū, Public Service Association, NZ Police Association, road controlling authorities, as well as local iwi and communities. The SCS Programme will engage with key stakeholders regularly in a cadence observed in the Stakeholder Management Plan. For more details, see SCSP Stakeholder Engagement. Stakeholder analysis and interaction is illustrated in Figure 25.

Figure 25: Stakeholder engagement interaction matrix

Classification	Values		
Manage closely	**Critical** Influence + **Low** Interest/Involvement	**Critical** Influence + **Medium** Interest/Involvement	**Critical** Influence + **High** Interest/Involvement
Keep satisfied	**High** Influence + **Low** Interest/Involvement	**High** Influence + **Medium** Interest/Involvement	**High** Influence + **High** Interest/Involvement
Keep informed	**Medium** Influence + **Low** Interest/Involvement	**Medium** Influence + **Medium** Interest/Involvement	**Medium** Influence + **High** Interest/Involvement
Monitor	**Low** Influence + **Low** Interest/Involvement	**Low** Influence + **Medium** Interest/Involvement	**Low** Influence + **High** Interest/Involvement
Monitor	**No Current** Involvement + **Low** Interest/Involvement	**No Current** Involvement + **Medium** Interest/Involvement	**No Current** Involvement + **High** Interest/Involvement

40.4 The Communications and Engagement Strategy notes the communication principles the SCS Programme must follow in all stakeholder interactions (see Figure 26).

Figure 26: SCS Programme's communication principles

41. Outline activity plan

Implementation schedule developed in collaboration with senior stakeholders, advisors, and other subject-matter experts

41.1 Senior stakeholders got together in July and August 2021 and agreed to the plan and schedule for implementing the preferred option. The schedule is summarised as a programme 'plan on a page' in Figure 27.

41.2 The key activity outline takes into account:

- Waka Kotahi internal stakeholder input
- SCS Programme team input
- legal input
- due diligence input
- lessons from previous transfers from the Public Service Commission
- Police input
- subject-matter experts in the transfer of operations, technology, infrastructure, and safety cameras and associated systems.

41.3 The SCS Programme is estimated to take approximately three years (2021–2023).

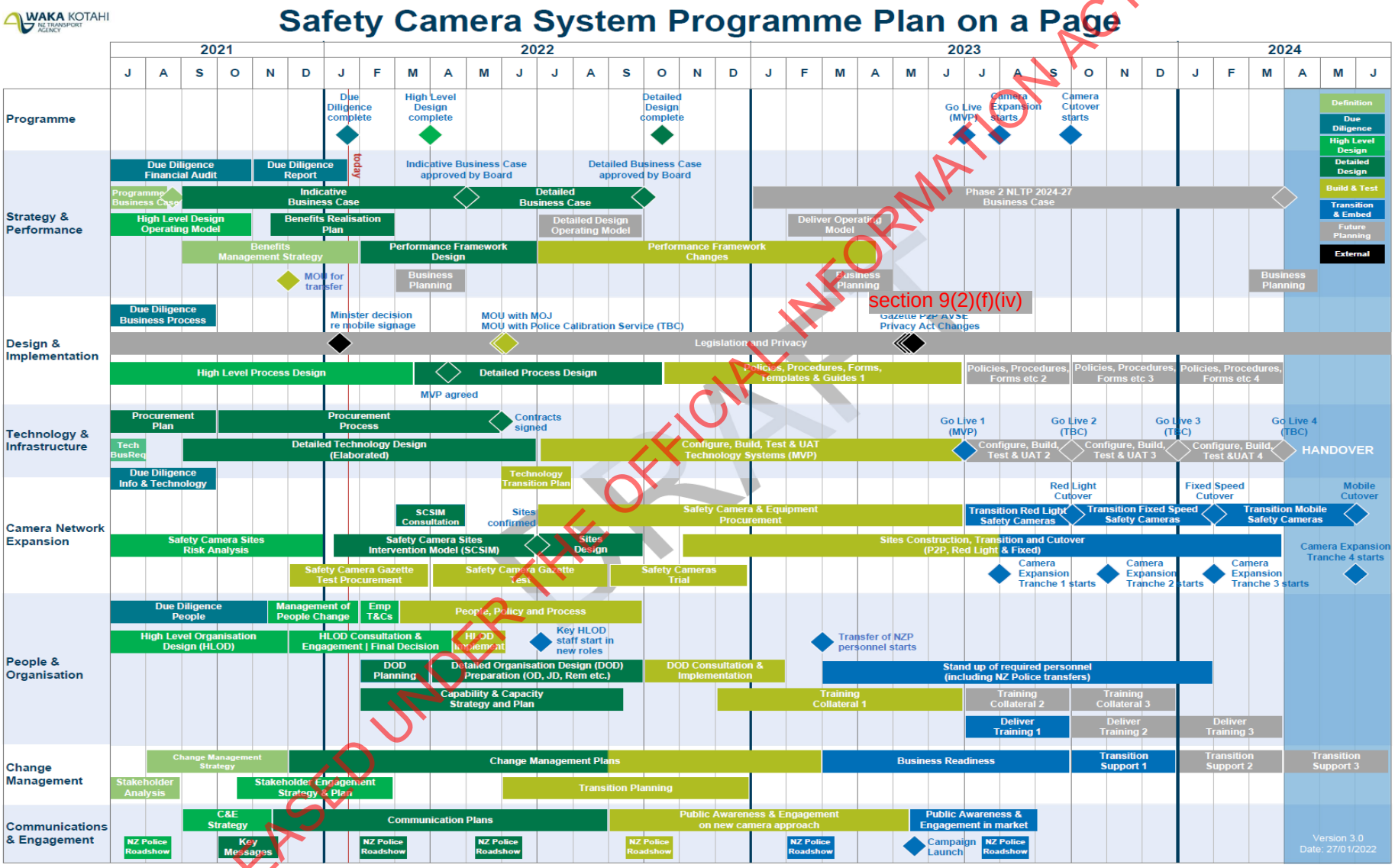
41.4 The programme's key milestones are listed in Table 57 and illustrated in the road map in Figure 27. For more details, see the Programme Definition Document.

Table 57: Key programme milestones

Tranche or stage	Rationale	Indicative start date	Indicative end date
Identification	The purpose of this stage is to assess at a high level if the programme is viable and achievable, while avoiding having to do a detailed cost analysis, investment appraisals, and so on.	February 2021	May 2021
Definition	The purpose of this stage is to develop the detailed definition and planning that results in a business case that provides the basis for deciding whether to proceed with the programme. Developed Programme Blueprint.	June 2021	August 2021
Due diligence	This is a term from mergers and acquisitions in the commercial sector. It involves systematically gathering and considering a wide range of information to inform decision making. In the machinery of government context, due diligence is an important aspect of transferring functions from one public entity to another.	June 2021	November 2021
Design	The blueprint developed in the Definition stage describes the desired future state at a high level. However, this design needs to be elaborated with further levels of detail before the build and test stage. Design activity occurs concurrently across customer experience, business process, organisation, technology, information, and infrastructure domains and is brought together and described as an integrated operating model.	August 2021	May 2022
Build and test	Building and testing happen in the same stage to enable iterative and Agile delivery approaches to be adopted as appropriate. Activity happens concurrently across the different domains to enable the different design elements to influence each other.	April 2022	April 2023

Tranche or stage	Rationale	Indicative start date	Indicative end date
Red-light transition	The transition of safety cameras and associated functions will occur in stages over a year. Each transition will take about 3 months, which allows sufficient time to bring the required people on board and complete testing and training on new 'minimum viable product' systems and process. Red-light cameras have been chosen for the first transition as they are fewer in number than other current camera types and infringement volumes are lower, which will allow time to bed in new systems and processes, including interfaces with road controlling authorities and the Ministry of Justice.	section 9(2)(f)(iv)	April 2023
Fixed speed transition	Fixed speed cameras have been chosen for the second transition as the process will be less complex than for mobile cameras, which will allow time to bed in new systems and processes.	April 2023	July 2023
Mobile speed transition	Mobile speed cameras have been chosen for the final transition as the process will be more logistically complex. By this stage, the new systems and processes should be operating well with most post-implementation issues addressed. This will allow the transition process to focus on recruitment and the transfer of Traffic Camera Operators and vehicles and the associated property requirements.	July 2023	October 2023
Embed transition	A fourth transition stage has been allowed for to enable post-implementation support and a final release of processes and systems changes to address post-implementation issues. It will also include a formal process for the programme to hand over to business as usual.	October 2023	December 2023

Figure 27: Programme roadmap – timescales, milestones, and tranches (as at January 2022)



42. Benefits management

Benefits are measurable and will be managed in accordance with good practice

42.1 The SCS Programme has developed benefit profiles for each benefit to define the processes needed to ensure each benefit is realised, and quantify the measure that will be used to track progress. The measures included in the profiles have been defined according to SMART criteria in line with the Waka Kotahi Investment Approach and Treasury's Better Business Cases guidelines. For more details, see the SCS Benefits Realisation Strategy.

42.2 The programme has included baseline measures, where they exist, in the Benefits Realisation Plan. Where baseline measures do not exist, the team will complete a baseline measurement exercise in line with the dates noted in the Benefits Realisation Plan.

42.3 The programme and Benefit Owner will report regularly on progress to the programme's governance groups. In addition, benefits may be reported in accountability documents such as the Annual Report, Statement of Performance Expectations, and Statement of Intent.

42.4 The programme will review the Benefits Realisation Plan at least half-yearly. This review will include:

- an update of the Benefits Realisation Plan because of changes to scope or timelines
- an update of the benefits register and measures used to track the progress of benefits achievement and realisation
- review and sign-off by the Benefit Owner and respective governance group.

42.5 The SCS Programme is committed to delivering the benefits safety cameras will provide to road users and wider economy (see Table 58).

Table 58: SCS benefits, measures, and metrics

Benefit	Measure	Metric
1. DSI reduction due to compliance with speed limits	1.1 Decrease in number of non-compliant vehicles (speed) in treated corridors and intersections	1.1.1 Net decrease in non-compliant vehicles (speed) in treated corridors and intersections
	1.2 Decrease in number of non-compliant vehicles on wider network	1.2.1 Net decrease in non-compliant vehicles on wider network
	1.3 Decrease in number of DSIs in treated corridors and intersections	1.3.1 Net reduction in DSIs on treated corridors and intersections
	1.4 Decrease in number of DSIs on wider network	1.4.1 Decrease in the total number of DSIs on treated corridors and intersections
2. Reduce risk of harm for all road users	2.1 Decrease in mean speed on treated corridors and intersections	2.1.1 Net reduction in mean speed on treated corridors and intersections
	2.2 Increase in perception of safety for all road users	2.2.2 Net decrease in perception of safety for all road users
3. Social licence for increased use of safety cameras	3.1 Contribution of cameras to reduce costs of DSIs	3.1.1 Contribute towards reduction in DSIs to support RtZ portfolio target
	3.2 Increase in support for increase in number of cameras	3.2.1 Increase support in public attitude towards safety camera systems

Benefit	Measure	Metric
4. Return on investment in safety cameras is optimised	4.1 Contribution of cameras to reducing costs of DSIs	4.1.1 Net decrease in DSI costs
	4.2 Contribution of cameras to success of overall RtZ programme	4.2.1 Contribution of cameras in DSI savings, DSI number towards RtZ portfolio target

43. Risk management

Risks will be managed in accordance with the enterprise risk management framework

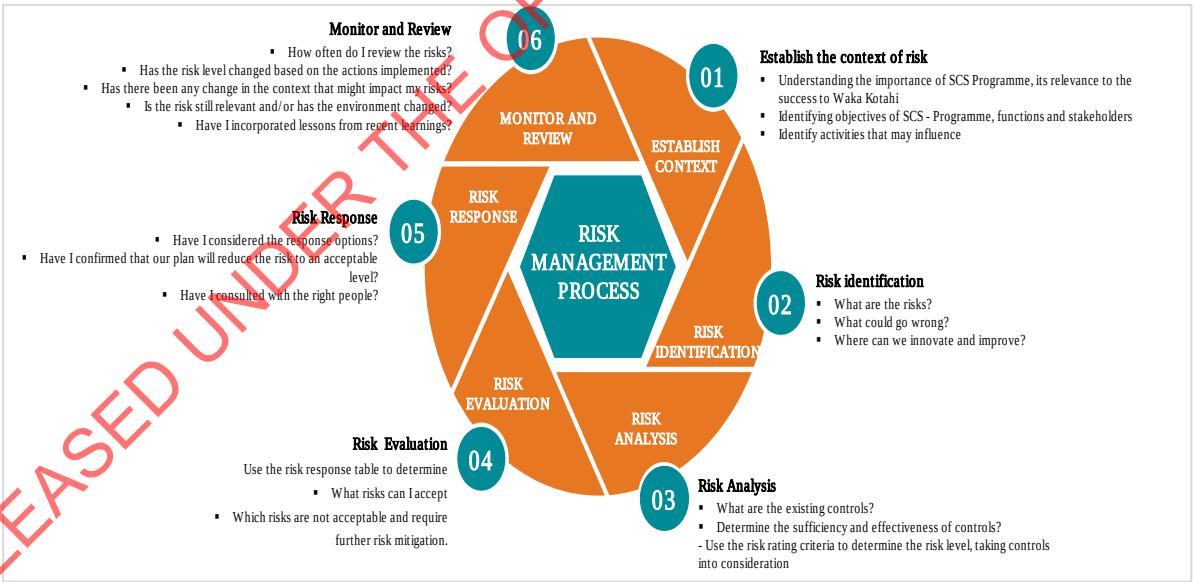
43.1 Risks associated with this programme were identified in the strategic case then refined and assessed in the economic case.

43.2 This section identifies key risks associated with the SCS investment. The overall investment and programme are rated high risk based on The Treasury Risk Profile Assessment and Waka Kotahi Risk-Based Approach. **This rating reflects the size of potential investment, the need for integrated change management across multiple agencies, and the significant requirement for new capabilities in people, processes, and technology.** The SCS Programme will deliver brand new functions in Waka Kotahi, which requires a new operating model and new capabilities in the organisation.

Risks are regularly reported, according to agreed escalation thresholds

43.3 The SCS Programme will manage all programme risks in accordance with the Waka Kotahi enterprise risk management framework that is based on standard ISO 31000. The risk management process comprises six steps of equal importance (see Figure 28).

Figure 28: Risk management process



43.4 The Risk Management Strategy and Framework and Risk Register have been developed for the programme. For details, see the Programme Risk Register. These will be progressively updated as more detailed analysis is undertaken.

43.5 The highest-rated risks (critical and high) are in Table 59.

Table 59: Programme risks at levels critical and high

ID	Description	Mitigation	Likeli-hood	Conse-quence	Risk level
R-232325	Funding for expansion and ongoing operation of the safety camera network and offence processing is uncertain. Cabinet agreed to 'invest in additional cameras to encourage motorists to travel at safe and appropriate speeds across a broader portion of the network' and noted 'this will require prioritising investment in expanding the camera network in GPS 2021, and investment in processing system enhancements in this GPS period'. Waka Kotahi may have difficulty funding safety camera and offence processing operations beyond GPS 2021.	A new Road to Zero activity class has been created and GPS 2021/22–2030/31 specified that it includes 'a range of measures to support the Tackling Unsafe Speeds programme'. However, the RtZ activity class is currently over-subscribed and alternative funding sources may need to be explored for example, hypothecation of infringement fees, cost recovery, ACC funding and/or a future Budget bid for Crown funding.	Possible	Extreme	Critical
R-221344	The transfer of safety cameras and offence processing from Police to Waka Kotahi could result in negative publicity and public perception. Commencing a camera expansion programme immediately following transfer may be seen as controlling and/or revenue gathering. This could lead to negative media coverage, poor public and stakeholder perception, and damage to the Waka Kotahi brand.	Cabinet decided to transfer responsibility for safety cameras to help to shift public perceptions. Public Attitudes to Road Safety Report 2020 found that 64% of people think speed cameras are operated fairly and 65% agree they help to lower the road toll. Public awareness campaigns are planned to change attitudes towards safety cameras. Fixed cameras will have clear signage to make it clear that the focus is on safety, not revenue generation. Cabinet decided to transfer responsibility for safety cameras to help to shift public perceptions. The Public Attitudes to Road Safety Report 2020 found that 64% of people think speed cameras are operated fairly and 65% agree they help to lower the road toll. Education and awareness activities will be planned to increase understanding of safety cameras as road safety tools alongside wider campaigns. Fixed cameras will have signage to warn drivers ahead of the camera, providing an opportunity to comply. This also assists in communicating that safety cameras are road safety tools.	Possible	Severe	High

ID	Description	Mitigation	Likeli-hood	Conse-quence	Risk level
R-221338	section 9(2)(g)(i)	The Police Association were invited to and attended vision / blueprint workshops and a recent Roadshow. A People Lead and a Change Lead have been appointed within the programme. A Change Management Strategy has been developed. A Roadshow has been conducted to meet affected Police personnel and introduce them to Waka Kotahi.	Possible	Severe	High
R-221339	If the procurement process for the infringement processing system is not managed under MBIE rules of procurement which gives suppliers equal opportunity to compete, rather than just going with tolling provider. Then Waka Kotahi could face reputational risk in the market place especially for not going to open market.	Procurement Plan and procurement activities with key decisions made need to be both legally and sound from procurement perspective to ensure Waka Kotahi doesn't breach the procurement rules it needs to meet.	Possible	Severe	High

44. Programme assurance arrangements

SCS Programme will de-risk programme delivery through several assurance reviews

44.1 A comprehensive assurance plan has been developed for the SCS programme. The plan is summarised in Table 60 and programme governance and oversight in Table 61. For more details, see the Assurance Plan.

Table 60: Programme Assurance Plan

#	Activity	Audience	Timing	Line	Provider	Status
	Programme Business Case review	Sponsor, Business Owner	Jul 2020	2. Investment Assurance 3. Independent quality assurance	Transport Services, Investment Assurance, Finance IQANZ	Complete
	Independent quality assurance	Sponsor, Business Owner	Oct 2020	3. Independent quality assurance	IQANZ	Complete
	Programme Business Case review	Steering Committee, Delegations Committee, Chief Financial Officer, Executive Leadership Team	Jul 2021	2. Investment Assurance	Transport Services, Investment Assurance, Finance	Complete

#	Activity	Audience	Timing	Line	Provider	Status
	Procurement Plan probity review	Steering Committee, Chief Technology Officer	Aug 2021	3. Independent probity audit	McHale Group	Date to be confirmed
	Definition phase stage gate IQANZ review	Steering Committee	Sep 2021	3. Independent quality assurance	IQANZ	13 Sept
	Gateway Review 1 (to be confirmed)	Steering Committee	Feb 2022	3. Independent quality assurance	Gateway review team	Date to be confirmed
	Detailed design IQANZ review	Steering Committee	Apr 2022	3. Independent quality assurance	IQANZ	Date to be confirmed
	Procurement process probity review	Steering Committee, Chief Technology Officer	Mar 2022	3. Independent probity audit	McHale Group	Date to be confirmed
	Detailed Business Case review	Sponsor, Business Owner, Delegations Committee, Chief Financial Officer, Executive Leadership Team	Mar 2022	2. Investment Assurance	Transport Services, Investment Assurance, Finance	Date to be confirmed
	Gateway Review 2 (to be confirmed)	Steering Committee	TBC	3. Independent quality assurance	Gateway review team	Date to be confirmed
	Build and test interim IQANZ review	Steering Committee	Sep 2022	3. Independent quality assurance	IQANZ	Date to be confirmed
	Security review Certification & accreditation Penetration testing Chain of evidence	Sponsor, Business Owner, Steering Committee Chief Security Officer Chief Technology Officer	Jul 2022 – Feb 2023	3. Independent security assurance	To be confirmed	Date to be confirmed
	Gateway Review 4 (to be confirmed)	Steering Committee	TBC	3. Independent quality assurance	Gateway review team	Date to be confirmed
	Go live 1 IQANZ review	Steering Committee	Mar 2023	3. Independent quality assurance	IQANZ	Date to be confirmed
	Go live 2 IQANZ review	Steering Committee	Jun 2023	3. Independent quality assurance	IQANZ	Date to be confirmed
	Go live 3 IQANZ review	Steering Committee	Sep 2023	3. Independent quality assurance	IQANZ	Date to be confirmed

Table 61: Governance and oversight for the programme

#	Activity	Audience	Frequency	Provider
1	Programme status reporting	Steering Committee	Monthly	Programme Director
2	Road to Zero status reporting	RtZ ESC	Monthly	Programme Director
3	Project status reporting	Programme Director	Weekly	Project Managers/Leads
4	Risk register reviews	Programme Director, Project Managers/Leads	Monthly	Programme Director/ Risk Assurance Advisor
5	Strategic risk review	Programme Director, Project Managers or Leads	Quarterly	Programme Director/ Risk Assurance Advisor
6	Lessons learned	Steering Committee, Programme Director, Programme Team	As part of stage gate reviews. At least, half yearly	Programme Director, Project Managers/Leads Enterprise Portfolio Management Office Guidance and Repository

SCS Programme deliverables are subject to quality assurance processes

44.2 Deliverables developed by the programme are subject to quality assurance and engagement processes to ensure they meet required quality standards. The key stages in the generic quality assurance and engagement process are as follows.[48]

- **Commissioning** – The team member and project manager/lead responsible for the deliverable identify the internal and external stakeholders who need to be involved in quality assurance and engagement processes, particularly, business reviewers (and their role in or 'lens' for the review process) and signatories (and their acceptance criteria). These requirements can be documented in the Commissioning Template.
- **Research and analysis** – The team member responsible for the deliverable conducts research and analysis, engaging with internal and external stakeholders as required through interviews and workshops. This process often involves the nominated business reviewers of the deliverable. The Programme Advisory Board may also be used at this stage; for example, if an interim decision is required that will fundamentally shape the further development of the deliverable.
- **Development** – A first complete draft of the deliverable is produced. Business reviewers may be informally involved during this stage.
- **Peer review** – One or more members of the programme team reviews the draft and provides feedback. This will typically be done using the review functions in Microsoft Teams and ensures all relevant subject-matter has been covered and that the deliverable is ready for business review.
- **Business review** – Nominated representatives from each team affected by the deliverable will review the revised draft, typically using Microsoft Teams. Further workshops or walk-throughs of the deliverable may be held at this point. Each reviewer will be advised of their specific role or the lens that are asked to view the deliverable through; for example, to check it meets Waka Kotahi technology standards or the policy intent. This is the stage where Programme Advisory Board is most likely to be involved.

[48] Specific deliverables (for example, technology) may have their own quality assurance processes and/or require additional steps to be undertaken.

- **Sign-off** – The nominated signatory (usually the chair of steering committee, a senior manager, or a general manager) from each team affected by the deliverable is advised that feedback from their team has been incorporated (or advised why it has not been incorporated). The signatory may specify caveats to their sign-off.

44.3 In addition, for business review, the deliverable feedback template can be used if a structured approach is required to capture and respond to feedback. Guidance as to when each team from Waka Kotahi needs to be involved in the deliverable business review process is in Table 62.

Table 62: Business review for different teams

Team	Business review required if …
Office of the Chief Executive	The deliverable may affect Waka Kotahi performance documents (such as the Statement of Intent, Statement of Performance Expectations, Output Classes).
Corporate Support	The deliverable: • includes details of one-off programme budgets or changes to on-going operational budgets • relates to the procurement of goods and services • specifies business support and/or property requirements • is likely to result in changes to processes, systems and/or workload in the Corporate Support team.
Legal	The deliverable: • is feedback to the Ministry of Transport or other agencies on the development of legislation or regulations • is an external publication • is a contract or memorandum of understanding • describes how specific parts of legislation or regulations are being applied by Waka Kotahi • contains decisions that may create legal risk for Waka Kotahi • is likely to result in changes to policies, processes, systems and/or workload in the Legal team.
Te Aukaha | Digital	The deliverable: • describes requirements, procurement, design, configuration, testing and/or implementation of technology • is likely to result in changes to policies, processes, systems and/or workload in Te Aukaha D&W team.
Te Mātangi | Māori Partnerships	The deliverable has implications for delivery of Te Ara Kotahi | Our Māori Strategy and its supporting action plan.
Te Waka Kōtuia | Engagement and Partnerships	The deliverable is: • an internal communication, external publication, web content, speech or media release • likely to result in changes to policies, processes, systems and/or workload in the Engagement and Partnership team.
Pūmanawa Tāngata | People	The deliverable: • contains recommendations or decisions about organisation design, headcount requirements, job design, remuneration, recruitment and/or training • is likely to result in changes to policies, processes, systems and/or workload in the People team.

Team	Business review required if …
Safety, Health and Environment	The deliverable: • directly affects achievement of the Road to Zero outcomes, the measurement of outcomes and/or achievement of the target reduction in deaths and serious injuries • is likely to result in changes to policies, processes, systems and/or workload in the Safety, Health and Environment team.
Te Roopu Waeture | Regulatory Services	The deliverable: • is feedback to the Ministry of Transport or other agencies on the development of legislation or regulations • describes how Waka Kotahi will use its statutory functions and powers to achieve regulatory outcomes • is likely to result in changes to policies, processes, systems and/or workload in the Regulatory Support team.
Transport Services	The deliverable is likely to result in changes to policies, processes, systems, technology and/or workload in the Transport Services team.

45. Next step – Detailed Business Case

SCS Programme will develop a DBC by September 2022

45.1 This IBC seeks formal approval from Waka Kotahi Board to proceed with the preferred option (Option 4 – Preferred Way Forward) and develop a DBC to validate this option for the 2021–24 NLTF cycle.

45.2 The DBC is expected to be completed by **30 September 2022** and will substantiate the elements noted in Table 63.

Table 63: Actions for Detailed Business Case development

Areas	Action areas for the DBC	Resolve the following concerns
Case for Change	• Confirm whether the case for change is still relevant for Waka Kotahi • Confirm whether the investment logic from the Indicative Business Case (IBC) is still relevant • Determine whether the benefits from the IBC are still relevant and whether other benefits can be quantified, tracked, baselined and monitored	• Does the case tell the story as to why this investment is required now? • Are the case for change, the strategic need, and outcomes sought still relevant?

Areas	Action areas for the DBC	Resolve the following concerns
Preferred Option	• Provide a more accurate breakdown of camera operating and capital costs for the next 10 years, sourced and validated from the market • Develop a camera strategy that illustrates which cameras will be installed where and the DSI benefits created • Review the preferred way forward from the IBC to confirm it remains the preferred option • Provide a detailed sensitivity analysis – P50 and P95 • Undertake a risk analysis using Monte Carlo simulation to provide a range of benefit–cost ratios for following inputs: costs, risks (P50, P95, and so on), benefit progression, other economic benefits, and a driver compliance benefit	• Is the preferred option still relevant based on more accurate costs, benefits, risks, and uncertainties associated with implementing this option? • Does the preferred option adequately confirm the efficiency rating and prepare delivery consenting, procurement, camera mix and camera site selection strategies as necessary?
Cost and funding for implementing preferred option	• Confirm the whole-of-life cost for the preferred option (20 years) • Confirm OPEX and CAPEX costs for delivering the preferred option • Confirm funding arrangements and affordability of the preferred option	• Does the case adequately confirm affordability and funding? • Is a supporting letter of commitment from the Waka Kotahi Finance team for funding provided?
Contractual arrangements and procurement activities required for implementing solution	• Confirm how design, implementation, and ongoing risks will be shared between Waka Kotahi and the supplier • Confirm procurement and evaluation processes to select the preferred supplier/s for safety cameras, the CMS, and IPS • Confirm the supplier chosen will provide value for money • Confirm contract management arrangements and ongoing performance monitoring	• Does the case establish risk allocation, payment mechanisms, and contracts?

Areas	Action areas for the DBC	Resolve the following concerns
Delivering the solution and ongoing management until handover to business as usual	▪ Confirm the delivery arrangement for transferring the SCS from Police to Waka Kotahi ▪ Confirm benefits realisation and how benefits will be managed ▪ Confirm programme delivery aligns with MSP and Prince 2 ▪ Confirm the programme team's ability to deliver the preferred option for: o Phase 1 Safety Cameras o implementation of the he CMS and IPS into Waka Kotahi.	▪ Does the case put in place plans for successful delivery (project, change, benefits, and risk management and post–project evaluation) that are unambiguous and form a clearly detailed, costed proposal for pre-implementation and implementation? ▪ Can the solution really be delivered – costs, risks, timeframes, governance and benefits?

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Note: This list includes referenced research and other reports as well as documents and statistics published by the Ministry of Transport and Waka Kotahi. It also includes other research that underpins this business case. See also Resources, p 6, which lists (with their location) various Waka Kotahi strategic, procurement, and programme management artefacts referred to in this IBC.

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APPENDICES

Appendix A Investment logic map

A facilitated investment logic mapping workshop was held between 6 and 20 October 2021 with key stakeholders. This appendix contains the main outputs from the workshop: an investment logic map (Figure 29) and a benefits map (Figure 30).

Figure 29: Investment logic map for the SCS Programme

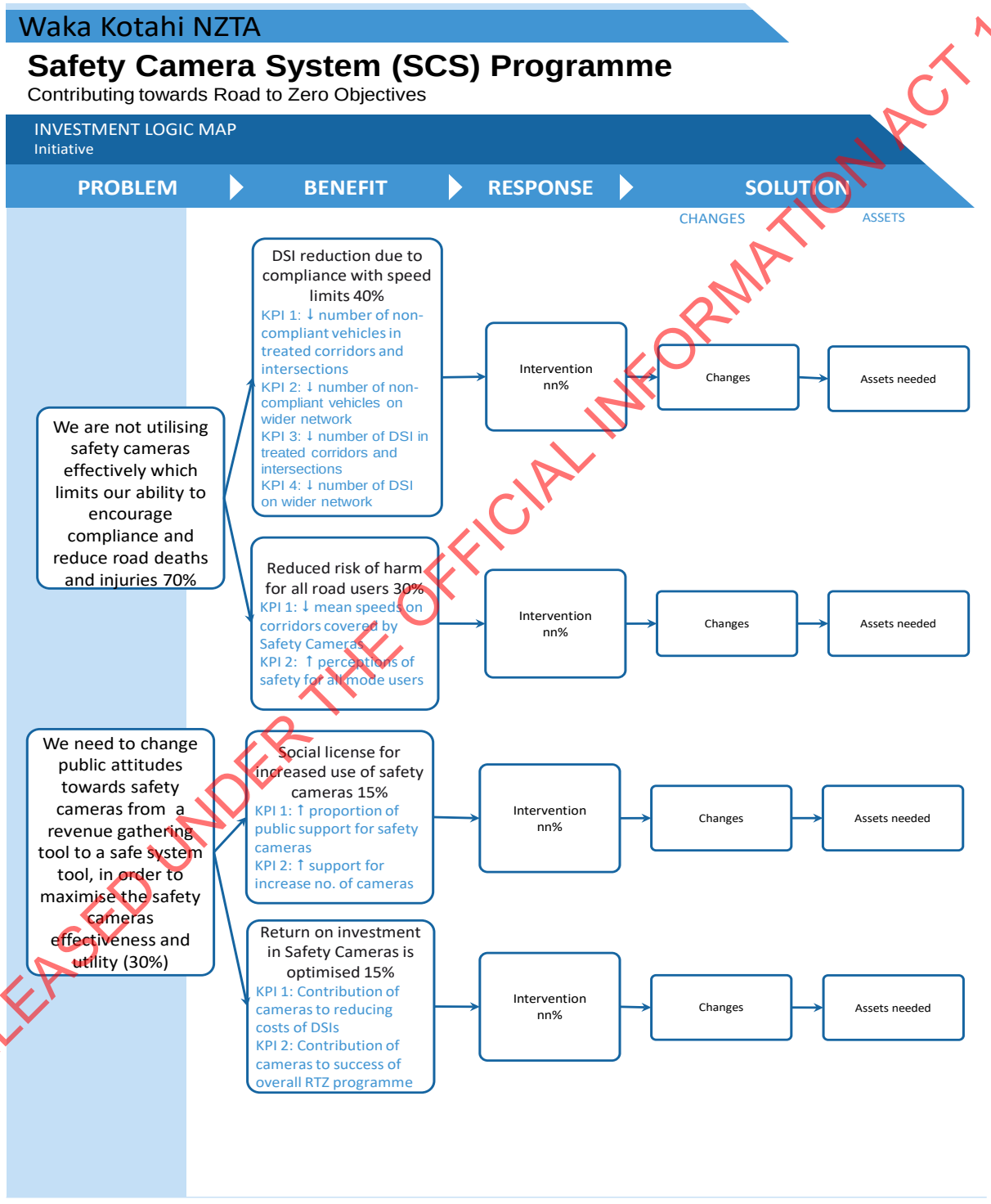
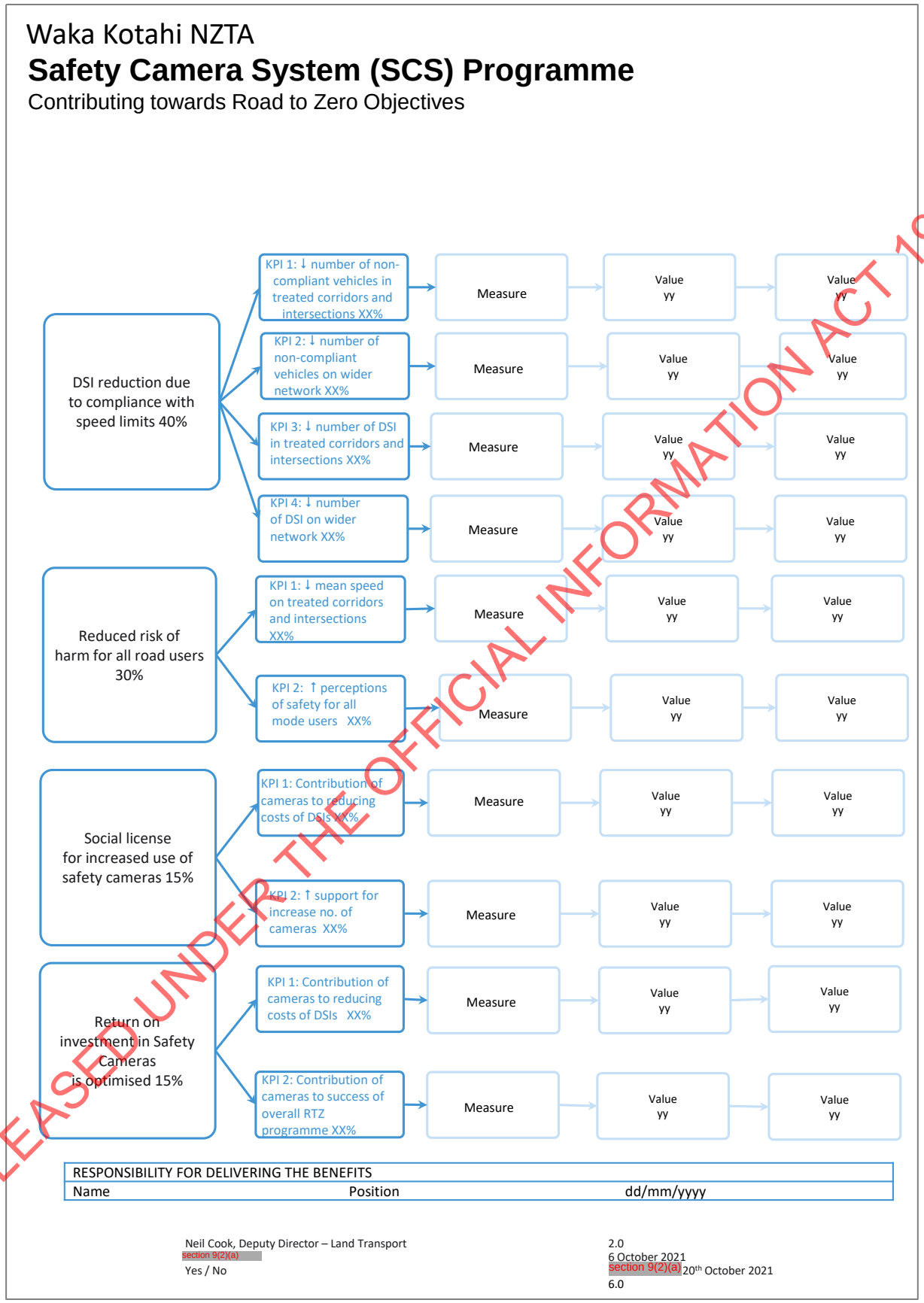


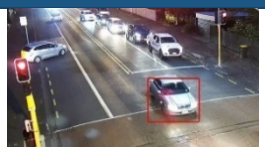
Figure 30: Benefits map for the SCS Programme



Appendix B Safety cameras overview

The main types of safety cameras – red-light or dual function red-light/speed cameras, average speed (point-to-point) cameras, static (fixed) cameras, and mobile cameras are described briefly in Table 64.

Table 64: Overview of the four main types of safety cameras

Type of camera	Description
Red-light or dual function red-light/speed safety cameras 	A red-light camera system typically uses radar or laser to track and capture vehicles running a red light. The primary radar or laser scans and tracks vehicles as they approach the intersection. If a vehicle crosses the stop line during a red-light phase, a camera photographs the rear of the vehicle. A second radar or laser (used for validation) ensures the photograph taken is of the breaching vehicle. Dual function cameras are capable of recording vehicles that run red lights or speed through intersections or both. Predicted effectiveness in reducing DSIs per year: 26%
Average speed (point-to-point) safety cameras 	Average speed safety cameras calculate and record a vehicle's average speed between two points along a stretch of road. Infringement notices are issued only if the average speed over the entire distance exceeds the legal limit. This gives an accurate reading of whether drivers are speeding over a sustained distance, rather than just at a single point. Predicted effectiveness in reducing DSIs per year: 48%
Static (fixed) safety cameras 	Static (fixed) safety cameras are the ones most people currently experience. These cameras use a dual radar or laser system. Signals reflect off vehicles and back to the camera. One radar or laser identifies speeding vehicles by measuring vehicle speed three times in quick succession and taking the middle speed. The second identifies the lane the vehicle is in and double-checks the speed reading. If the vehicle is speeding, the camera takes a picture. The camera is also able to differentiate between vehicles such as heavy trucks and cars, which have different speed limits. An infrared flash enables number plate information to be captured in the dark. Predicted effectiveness in reducing DSIs per year: 15%
Mobile safety cameras 	Mobile safety cameras are cameras that are housed inside a van, allowing the system to be mobilised across the network. The cameras include a radar or laser system that measures vehicle speed and a flash for night-time photography. Traffic camera operators run the camera equipment from inside the vehicles and can observe any images taken and adjust image quality when required. They cannot alter any of the settings or the speed at which a camera system takes a photograph. Predicted effectiveness in reducing DSIs per year: 11% (rural) – 23% (urban).

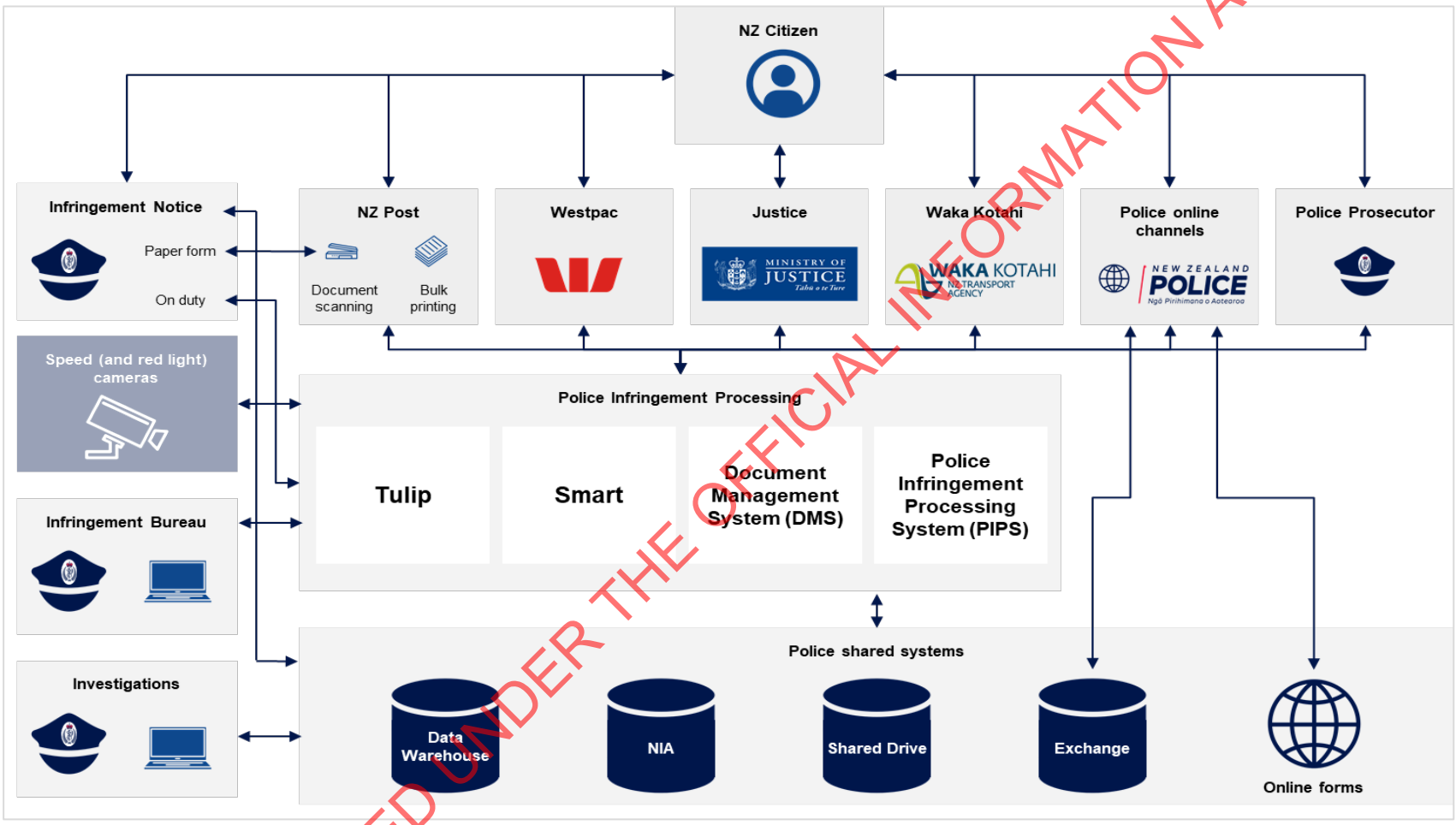
Appendix C New Zealand Police's vision

Illustrated below is the New Zealand Police vision.

Source: New Zealand Police. 2020. *New Zealand Police Statement of Intent 2020–2025.* Wellington: Author.

Appendix D Police Infringement Processing System

Illustrated below is a high-level overview of the Police Infringement Processing System (PIPS), which is at end of life.



Appendix E Internal stakeholders

Table 65: Internal stakeholders relevant to the investment in SCS

Internal stakeholder	Focus
Board	Is interested in how safety cameras will help to deliver DSI reductions, what the overall investment will be and what their options are. Approves programme funding through business cases
Waka Kotahi Chief Executive	Is interested in how safety cameras will help to deliver DSI reductions, what the overall impact on the organisation will be, and what the options are. Impacted Police staff will be interested to know who their new chief executive might be and what they are like
Executive Leadership Team	Is interested in how safety cameras will help to deliver DSI reductions, what the overall impact on the organisation will be and what the options are. Will make decisions that have organisation-wide implications, for example, high-level organisation design
Road to Zero Executive Leadership Sub-committee	Is accountable for delivery of DSI reductions from safety cameras
Director of Land Transport & General Manager Regulatory Services	Is accountable for delivery of the SCS Programme
Deputy General Manager	Is the Business Owner for the SCS Programme and accountable for delivery of outcomes
Senior Manager, Road Safety	Is accountable for delivery of outcomes
Road to Zero Portfolio Director	Is interested in ensuring the programme delivers the outcomes expected
Speed and Infrastructure Programme	Is coordinating and delivering SNP (state highways and local roads). Has a speed management planning role and road controlling authority interface re camera expansion. Is responsible for detailed site design and construction of camera sites
Speed Management Framework Programme	Is implementing a new framework for developing and approving speed management plans. Has a link to the Safety Camera Management Programme in terms of approved speed limits that must be enforced on safety cameras and incorporating the locations and effects of safety cameras on speed management planning
Transport Services – Safety Engineers, Safe and Sustainable Standards – Road Safety	Are responsible for Safety camera placement and guidance
Transport Services – Maintenance and Operations	Undertakes operations and maintenance of the state highway network. Will be responsible for camera siting through the NOC Management of professional and physical work services
Lead Advisor, Safety	Undertakes policy development and thought leadership when it comes to technical delivery for state highways

Internal stakeholder	Focus
E&P – Regulatory Services Practice Manager	Leads the Regulatory Services communications team
E&P – Media, Government Services, C&E	Needs to be familiar with the programme and key messaging – key channel for media and official correspondence, good links into other programmes of work and channels of communication
E&P – Directors Regional Relationships	Need to be familiar with the programme and key messaging, specifically those actions that require councils/road controlling authorities to work differently. Has strategic oversight of transport system development
E&P – Education and Advertising	Is responsible for delivery of the Waka Kotahi national road safety advertising and associated education programmes Is leading safety camera campaign development and delivery
Corporate Support – Risk and Assurance	Ensures the risk profile of programme is managed appropriately
Corporate Support – Organisational Performance	Ensures Waka Kotahi is meeting and reporting on its SPE deliverables
Regulatory – Contact Centre staff	Are the interface with the public – take customer calls on any Waka Kotahi related topic, general information and where to go for more information, including email correspondence via official correspondence team
Finance OPPP	Funding and cashflow requirements and investment accountability
GM People	Is accountable for people change and transfer process
People – ER	Is the key interface with unions/direct approach with unions
People – Rem/Org Capability/Business Partners	Is responsible for people change and organisational development
Enterprise Change	Is a specialist helping Waka Kotahi deliver change internally and with the sector
Portfolio Change Lead, Regulatory Services	Oversees Regulatory Services Change
Portfolio Director, Regulatory	Oversees Regulatory Services portfolio on behalf of Enterprise Change
Regulatory Services – Intelligence	Is responsible for data and intelligence for Regulatory Services
Regulatory Services – Risk and Assurance	Is responsible for assessing risk for Regulatory Services
Regulatory Services – Regulatory Policy	Writes policy (for example, to enable point-to-point cameras)
Regulatory Services – Operational Policy	Understands business process for new functions
Māori Partnerships team	Provides advice and guidance to Waka Kotahi
Safety Camera Programme Advisory Board	Provides advice and guidance over programme thinking and design
Safety Camera Steering Committee	Is a Waka Kotahi–Police governance committee
Digital Portfolio Group (Te Hau Ora)	Is responsible for governance across all digital initiatives across Waka Kotahi

Internal stakeholder	Focus
Chief Technology Officer	Is accountable for all technology implementation
General Counsel	Advises on legal process – programme needs to consult and follow advice
Corporate Property	Will store safety cameras and other assets transferring from Police. Assigns location and technology to new personnel. Security measures?
Financial Operations	Processes infringements
Finance OPPP	Needs to be assured the programme is accountable for funding
Business Support	Comprises the front-line and support staff impacted on by the functions and people coming into the organisation Deals with safety concerns from front-line staff with respect to new infringements impacts
Research & Analytics	Is interested in the customer journey – programme may need to engage for research and data purposes
Information Management	Is responsible for archiving, Infohub, library services, and file management
Procurement	Procures safety cameras and other assets/technology as required

Appendix F Supporting information for investment in the Safety Camera System Programme

This appendix contains is additional information about how the SCS Programme considers investment in the current proposal in terms of enabling technology, security considerations, privacy considerations, and future proofing.

Enabling technology

Waka Kotahi will be guided by eight principles when acquiring fit-for-purpose technology platforms.

- Incorporate innovation that can support new ways of working that are efficient and maximise the potential of automation.
- Invest in cloud-based or 'as a service' technology solutions with a proven track record, wherever practicable.
- Be supplier-agnostic to enable integration and operation of different supplier camera technologies and downstream processing.
- Be able to scale to accommodate additional cameras, their capabilities, and the processing of increased volumes of incidents and interventions.
- Provide the flexibility to accommodate additional types of infringements that Waka Kotahi may consider issuing, in the future, as part of its regulatory and network management functions.
- Provide or enable innovative and responsive ways of communicating with customers in real-time or near real-time, to support driver behaviour change.
- Comply with NZ and Waka Kotahi security standards, including review and approval by the Technical Architecture Governance Group of Waka Kotahi.
- Comply with NZ privacy standards and requirements.

In terms of security, Waka Kotahi recognises that:

- technology-enabled system, applications, and services must be designed and supported with appropriate levels of resilience, redundancy, and security
- system may need to integrate with and may affect existing system in and between Waka Kotahi and New Zealand Police
- secure data sharing between the two organisations will be required on an ongoing basis.

In terms of privacy, Waka Kotahi recognises that:

- the data and digital images captured by cameras, their storage, and their use all have privacy implications
- new issues will arise with new technologies that can be used for other than current safety-related purposes (such as average speed and mobile phone use detection)
- it must engage with the Office of the Privacy Commissioner, undertake Privacy Impact Assessments, and implement recommendations.

Security considerations

The programme includes the development or inclusion of technology-enabled system, applications and services that need to be designed and supported with the appropriate level of resilience, redundancy, and security. These systems will need to integrate with and may affect existing system in and between Waka Kotahi and New Zealand Police. (There will be a requirement to exchange data between the two organisations on an ongoing basis.)

All technology enabled will comply with NZ and Waka Kotahi security standards, including review and approval by the Technical Architecture Governance Group of Waka Kotahi.

Privacy considerations

The data and digital images captured by the cameras, their storage and their use will have privacy implications that need to be considered and addressed. Although some of the issues related to speed management with the current cameras have been addressed, new technologies can be used for other safety-related purposes (such as average speed and mobile phone use detection) that operate in a different way.

The programme will engage with the Office of the Privacy Commissioner, undertake requisite Privacy Impact Assessments, and implement recommendations so privacy issues are properly addressed as part of programme delivery.

Future proofing

ITS and infrastructure will be future proofed to enable Waka Kotahi to trial and adopt both proven and unproven technologies:

- **Mobile point-to-point cameras** – could be a game changer, enabling us to manage corridor speeds rather than spot speed. Indicatively, these cameras have potential to provide the lowest cost and network coverage when compared with traditional cameras. They also remove the 'kangaroo effect' of spot speed assets where drivers slow down abruptly before a camera and speed up again after passing the camera.
- **Smart cameras** – include a sophisticated camera and software that can perform processing at the roadside. In the past, a typical camera was only able to capture images. Now, with the smart camera concept, a camera will have the ability to generate specific information from the images it has captured. The built-in intelligent image processing and pattern recognition algorithms allow these cameras to detect motion, measure objects, read vehicle number plates, and recognise human behaviours. Smart cameras deployed at intersections can analyse the entire trajectory of vehicles and only create incidents for verification that are genuine offences, unlike the many false positives that are generated from the current fleet of red-light safety cameras.
- **CCTV and video analytics** – unlike smart cameras that have sophisticated software to identify specific offences at the roadside, Auckland Transport opted for CCTV cameras that live-stream video to a video-analytics platform to perform a variety of network management and road safety functions, such as detecting traffic violations and identifying congestion issues and parking problems. Auckland Transport also uses video analytics to remotely enforce traffic rules on special vehicle lanes.
- **Mobile trailers** – unstaffed mobile trailers are used across Australia and several European jurisdictions as another tool to address road safety risks. These could be particularly useful as average speed cameras to lower median speeds at roadworks, for example. At the request of Waka Kotahi, the New Zealand Police is already building trailer prototypes for testing. Therefore, potential exists to incorporate trailers relatively quickly depending on testing evaluation.
- **Intelligent speed adaptation** – is an in-vehicle system that uses information on the vehicle's position in a network in relation to the speed limit in force at that location. This can support drivers to comply with the speed limit everywhere in the network.
- **Event data recorders (Eroads)** – use GPS vehicle tracking to monitor the vehicle's speed across its entire route and can be used to understand whether the vehicle was speeding. Eroads can also provide immediate feedback to drivers if they are travelling over the posted speed limit.
- **Electronic vehicle identification** – uses infrastructure to vehicle technology that can uniquely identify a vehicle based on an electronic tag rather than a safety camera having to view the vehicle and licence plate. It is not capable of detecting other unsafe road uses such as distracted driving or not wearing a seat belt. An example is radio frequency identification (RFID).
- **Distracted driving and non-use of restraints identification** – a sensor system records the speed of vehicles and a specialised camera captures a high-resolution image of the vehicle, driver, and registration plate. The image can be used to provide evidence, for example, that a driver is using a mobile phone or not wearing a seatbelt. Camera-based enforcement can be invasive, as images are purposely taken of the driver and passenger compartment. Privacy issues could include how images are stored, accessed (and by whom), and disposed of.

Appendix G Stakeholders invited to the optioneering process

Role	Long-list workshop, 18 November 2021	Short-list packages workshop, 24 November 2021
Director of Land Transport	Y	
Programme Director, SCS Programme	Y	Y
Programme Manager, Strategy & Performance, SCS Programme	Y	Y
Project Manager, Design and Implementation SCS Programme	Y	Y
Strategic Technology Portfolio Lead	Y	Y
Senior Manager Road Safety	Y	
Team Lead Safe System Support	Y	
Project Manager Technology, SCS Programme	Y	Y
Project Manager, Change SCS Programme	Y	Y
Road Safety subject-matter expert	Y	
IQA Transport Services	Y	Y
Investment Advisor	Y	Y
New Zealand Police	Y	
New Zealand Police	Y	
Senior Manager Investment Assurance	Y	
New Zealand Police	Y	
Benefit Lead, SCS Programme	Y	
Camera subject-matter expert, SCS Programme	Y	Y
SBA Technology, SCS Programme	Y	Y
Investment Advisor IQA	Y	
Programme Development Manager, Speed and Infrastructure Programme	Y	
Programme Manager Speed Management Programme	Y	
Solution Architect	Y	
SBA Design & Implementation, SCS Programme	Y	Y
Enterprise Change Programme Manager	Y	
Senior Project Manager, Technology, SCS Programme	Y	
Senior Project Manager, Technology, SCS Programme	Y	
SBA, Technology, SCS Programme	Y	
SBA, Technology, SCS Programme	Y	

Appendix H Scoring of the long-list of options

Table 66: Long-list of options generated by stakeholders on 18 November 2021, with moderated scores observed (using Waka Kotahi seven-point scoring system)

Alternative or option details					Investment objective					Critical Success Factors						Potential affordability	Supplier Capacity & Capability	Programme Timeline	Opportunities & Impacts							Programme-specific critical success factors	Limits/Constraints for each option			Summary of decision made	
Unique identifier	Choice Dimension	Name of alternative/option	Detailed Description	Brief Description	1. To reduce average speed on roads that are treated with safety cameras, leading to a reduction in DSIs by 2030 (from 2018 baseline)	2. To improve the quality of Safety Camera Systems (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline)	3. To improve road user compliance to speed limits through Safety Camera Systems that rededuces risk of harm for all road users by 2030 (from 2018 baseline)	4. To improve public attitude towards Safety Camera as part of safe system, measured as an increase in social license for safety cameras by 2030 (from 2018 baseline)	5. To Maximuse return on investment in Safety Camera Systems for public by reducing DSIs cost to the society by 2030	2.1 Meet business needs	2.2 Meets service requirements	2.3 Fits with Road to Zero strategy, Waka Kotahi Strategy, and MoT Transport objectives	2.4 Technical	2.5 Safety and design	2.6 Consentability	3.1 Capital/ Operational/ Maintenance Cost	4.1 Supplier Capacity & capability	5.1 Scheduling/ programming	6.1 Environmental effects	6.2 Social and cultural impacts	6.3 Climate change mitigation (mandatory)	6.4 Climate change adaptation	6.5 Cumulative impacts	6.6 Impacts on Te Ao Maori (mandatory)	6.7 Property impacts	6.8 Fatal flaws	7.1 Potential Value for Money	A1. Constraints the limitation we face	A2. Potential Dependencies - the things that must be in place and/or managed elsewhere	A3. Assumptions	Summary of decision made - SWOT	Progress or discontinue this alternative/option?
1	Scoping	Do nothing	0	Keep Operations at Police and Waka Kotahi continues to fund as-is. Note: has fatal flaw, as govt. has requested for WK to takeover the function	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No	0	<text>	Speed limit changes		0	Carried Forward
1.1	Scoping	Minimum	1. Lift & Shift from Police (replicate) 2. Minimum new signage investment 3. Almost little to none ICT investment (apart from whats required to keep Police functions going as-is) 4 section 9(2)(g)(ii) by 2030 5. Low level of investment	Lift & Shift Police functions as-is, with no camera expansion	0	-2	-2	-1	0	0	0	-1	0	0	0	1	3	3	0	0	0	0	0	0	0	No	0	<text>	Speed limit changes		1	Carried Forward
1.2	Scoping	Intermediate	1. Greater integration with Police and MoJ 2. Risk Based allocation of cameras by different mix 2. Medium level of investment 4. Increase scope for tech capabilities 5. Not as flexible as intermediate 6. Treat top 100 risk corridors 7. Some social change	Risk based treatment of high-risk corridors, section 9(2 cameras across high risk corridors	0	1	1	1	2	1	1	1	2	2	2	3	3	2	0	1	0	1	1	1	-1	No	1	<text>	Speed limit changes		26	Likely Way Forward (LWF)
1.3	Scoping	Internmediate + 1	1. Greater integration with Police and MoJ 2. Risk Based allocation of cameras by	Treat High to Med risk corridors section 9(2 by FY30.	0	2	2	2	3	2	2	2	1	1	2	2	1	1	0	2	0	3	3	3	-1	No	2	1. Nationwide Prosecution	Speed Limit changes Social Licensing		35	Likely Way Forward (LWF)
1.4	Scoping	Intermediate +2	1. Greater integration with Police and MoJ 2. Risk Based allocation of cameras by	Treat High to Low risk corridors with sec by FY30.	0	3	2	2	3	2	3	3	-1	-1	-1	1	1	0	0	1	0	1	1	2	-2	No	2	1. Nationwide Prosecution	Speed Limit changes Social Licensing		22	Likely Way Forward (LWF)
1.5	Scoping	Maximum	1. Enterprise level behaviour change 2. Maximum investment in technology 3. All capabilities of technology is turned-on 4. Saturation of network with cameras 5. Utilising cameras for other activities outside safe speeds 6. Driven by real-time data analytics and BI 7. Speed is now safe and all travel at mean speed limits	Treat all corridors across the country with Safety Cameras. Maximum investment, saturation of network with cameras with all technology turned on and BI driven in real-time	0	3	3	0	0	3	3	3	-2	-2	-3	-1	-1	-3	0	0	0	1	1	-3	-2	No	1	1. Nationwide Prosecution capability & capacity is a requirement upon the first tanche of speed cameras being	Legislation Technology available Speed limit Changes		1	Carried Forward
2	Service Solution	Do nothing	0	Keep Operations at Police and Waka Kotahi continues to fund as-is, no new ICT investment keep PIPs running. Note: has fatal flaw, as govt. has requested for WK to takeover the function	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No	0	<text>	<text>		0	Carried Forward
2.1	Service Solution	Minimum	1. Lift & Shift 2. New Offence Processing System 3. Same People (FTE Count same) 4. Same deployement and mobile capability 5. same System Integration 6. Face-to-Face Payment 7. Basic reporting with Police	1. Lift & Shift 2. New Offence Processing System 3. Same People (FTE Count same) 4. Same deployement and mobile capability 5. same System Integration 6. Face-to-Face Payment 7. Basic reporting with Police	0	0	0	-1	-1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	-1	No	0	<text>	<text>		0	Carried Forward
2.2	Service Solution	Intermediate	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System	0	1	1	1	1	1	1	1	3	3	2	2	3	2	0	0	0	0	0	0	-1	No	1	<text>	<text>		22	Likely Way Forward (LWF)
2.3	Service Solution	Internmediate + 1	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System 4. Risk Based Deployment of Cameras 5. Fibre + 5G CAM 6. Increase in People (FTE) by upto 40% max (but more technical people) 7. Different Mix of Cameras and mobile capability	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System 4. Risk Based Deployment of Cameras 5. Fibre + 5G CAM 6. Increase in People (FTE) by upto 40% max (but more technical people) 7. Different Mix of Cameras and mobile capability	0	2	3	2	3	2	2	2	2	2	1	1	1	1	0	1	0	0	0	2	-1	No	3	<text>	<text>		29	Likely Way Forward (LWF)
2.4	Service Solution	Intermediate +2	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System 4. Greater Social License to turn more of the capabilities of Cameras and tech platforms on to catch more then speed offences on the road 5. Straight through processing being utilised to greater degree and intelligence in business operations	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System 4. Greater Social License to turn more of the capabilities of Cameras and tech platforms on to catch more then speed offences on the road 5. Straight through processing being utilised to greater degree and intelligence in business operations	0	2	3	2	3	2	2	3	1	1	0	-1	-1	-2	0	-1	0	0	0	3	-1	No	1	0	0		17	Likely Way Forward (LWF)
2.5	Service Solution	Maximum	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System 4. Fully integrated realtime: (1) risk analysis, and (2) data	1. New Operating Model 2. New Offence Processing System 3. New Camera Management System 4. Fully integrated realtime: (1) risk analysis, and (2) data	0	3	3	0	0	3	3	3	-2	-2	-3	-3	-1	-3	0	-2	0	0	0	-1	-1	No	1	legal Challenge, Data sovereignty, Privacy	<text>		-2	Discount
3	Service Delivery	Do Nothing	0	Police delivers Safety Camera operations as-is	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No	0	<text>	<text>	<text>	0	Carried Forward
3.1	Service Delivery	Minimum	Functions provided as follows: 1. Police: - Look after Mobile Cameras - Prosecutions - Calibrations	Functions provided as follows: 1. Police: - Look after Mobile Cameras - Prosecutions - Calibrations	0	0	0	-1	0	1	1	1	2	0	0	0	1	2	0	-1	0	0	0	0	0	No	0	1. Nationwide Prosecution capability & capacity is a requirement upon the first tanche of speed	<text>	1. Outsourcing assumed cost-neutral 2. Outsourcing done with NZ	6	Likely Way Forward (LWF)
3.2	Service Delivery	Intermediate	Functions provided as follows: 1. Police: - Calibrations retain 50% and we partner 50% (if possible) - Cameras All - Offense Processing - Prosecustion 50% (and we partner 50% if possible) - Business Intelligence 2. Outsource or Partner: - Prosecution 50% (partner if possible) - Calibration 50% (partner if possible) Note: level of partnership to be developed further as not full developed currently	Functions provided as follows: 1. Police: - Calibrations retain 50% and we partner 50% (if possible) - Cameras All - Offense Processing - Prosecustion 50% (and we partner 50% if possible) - Business Intelligence 2. Outsource or Partner: - Prosecution 50% (partner if possible) - Calibration 50% (partner if possible) Note: level of partnership to be developed further as not full developed currently	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	-1	No	0	Prosecution capability & capacity is a requirement upon the first tanche of speed cameras being operated by Waka Kotahi, Police will need some clarity on how a 50% Prosecution model (outsourced) will work 2. Expanding cameras numbers/types is dependent on requiring new calibration and possibly testing capability and capacity to be in place first, and reassigning that this will take some time to establish 3. Funding to Police for camera activities will continue to be required for upto to one-year after the last camera was transitioned to Waka Kotahi, for Police management of cameras notices and prosecutions initiated whilst the cameras were in Police jurisdiction.	<text>	1. Outsourcing assumed cost-neutral 2. Outsourcing done with NZ suppliers and not external suppliers	4	Carried Forward
3.3	Service Delivery	Internmediate + 1	Functions provided as follows: 2. Waka Kotahi: - Cameras All - Offense Processing - Prosecustion 50% (and we partner 50%, if possible) - Business Intelligence 3. Outsource or Partner: - Prosecution 50% (Partner if possible) - Calibration 100% (Partner if possible) Note: level of partnership to be developed further as not full developed	Functions provided as follows: 1. Waka Kotahi: - Cameras All - Offense Processing - Business Intelligence 2. Outsource or Partner: - Prosecution 50% (Partner if possible) - Calibration 100% (Partner if possible) Note: level of partnership to be developed further as not full developed	0	0	0	0	0	1	1	1	-1	0	0	0	1	0	0	0	0	0	0	0	-1	No	0	Prosecution capability & capacity is a requirement upon the first tanche of speed cameras being operated by Waka Kotahi, Police will need some clarity on how a 50% Prosecution model (outsourced) will work 2. Expanding cameras numbers/types is dependent on requiring new calibration and possibly testing capability and capacity to be in place first, and reassigning that this will take some time to establish 3. Funding to Police for camera activities will continue to be required for upto to one-year after the last camera was transitioned to Waka Kotahi, for Police management of cameras notices and prosecutions initiated whilst the cameras were in Police jurisdiction.	<text>	1. Outsourcing assumed cost-neutral 2. Outsourcing done with NZ suppliers and not external suppliers	2	Likely Way Forward (LWF)
3.4	Service Delivery	Intermediate +2	Functions provided as follows: 1. Waka Kotahi: - Business Intelligence - 50% 2. Partner: - Cameras 100% (Fatal Flaw, can't do,as must retain core functions)	Functions provided as follows: 1. Waka Kotahi: - Business Intelligence - 50% 2. Partner: - Cameras 100% (Fatal Flaw, can't do,as must retain core functions)	0	0	0	-2	0	1	-1	1	1	0	0	0	-2	1	0	-2	0	0	0	-1	3	Yes	0	1. Nationwide Prosecution capability & capacity is a requirement upon the first tanche of speed cameras being operated by Waka Kotahi, Police	<text>	1. Outsourcing assumed cost-neutral 2. Outsourcing done with NZ suppliers and not external suppliers	-1	Discount
3.5	Service Delivery	Maximum	Functions provided as follows: 1. Waka Kotahi: - Cameras 100% - Offense Processing 100%	Functions provided as follows: 1. Waka Kotahi: - Cameras 100% - Offense Processing 100%	0	0	0	2	0	1	1	1	-1	0	0	0	1	-2	0	-2	0	0	0	1	-3	No	0	1. Nationwide Prosecution capability & capacity is a requirement upon the first tanche of speed	<text>	1. Outsourcing assumed cost-neutral 2. Outsourcing done with NZ	-1	Discount

Alternative or option details					Investment objective						Critical Success Factors						Potential affordability	Supplier Capacity & Capability	Programme Timeline	Opportunities & Impacts							Programme-specific critical success factors	Limits/Constrants for each option			Summary of decision made	
Unique identifier	Choice Dimension	Name of alternative/option	Detailed Description	Brief Description	1. To reduce average speed on roads that are treated with safety cameras, leading to a reduction in DSIs by 2030 (from 2018 baseline)	2. To improve the quality of Safety Camera Systems (effectiveness) service to the public by reducing DSIs due to compliane with speed limits by 2030 (from 2018 baseline)	3. To improve road user compliance to speed limits through Safety Camera Systems that rededuces risk of harm for all road users by 2030 (from 2018 baseline)	4. To improve public attitude towards Safety Camera as part of safe system, measured as an increase in social license for safety cameras by 2030 (from 2018 baseline)	5. To Maximuse return on investment in Safety Camera Systems for public by reducing DSIs cost to the society by 2030	Please copy the scoring on the left to add on additional investment objectives	2.1 Meet business needs	2.2 Meets service requirements	2.3 Fits with Road to Zero strategy, Waka Kotahi Strategy, and MoT Transport objectives	2.4 Technical	2.5 Safety and design	2.6 Consentability	3.1 Capital/ Operational/ Maintenance Cost	4.1 Supplier Capacity & capability	5.1 Scheduling/ programming	6.1 Environmental effects	6.2 Social and cultural impacts	6.3 Climate change mitigation (mandatory)	6.4 Climate change adaptation	6.5 Cumulative impacts	6.6 Impacts on To Ao Maori (mandatory)	6.7 Property Impacts	6.8 Fatal flaws	7.1 Potential Value for Money	A1. Constraints - the limitation we face	A2. Potential Dependencies - the things that must be in place and/or managed elsewhere	A3. Assumptions	Summary of decision made - SWOT	Progress or discontinue this alternative/option?
4	Service Implementation	Do Nothing	0	Police runs Safety Camera Operations no implementation required	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	No	0	<text>	<text>		0	Carried Forward
4.1	Service Implementation	Minimum	No Camera Expansion but a slow transfer of cameras across to Waka Kotahi	No camera expansion, but a slow transfer of cameras across to Waka Kotahi	0	1	1	-1	-1		1	1	-1	3	0	1	1	2	3	0	-1	0	0	0	0	No	1	<text>	<text>		11	Likely Way Forward (LWF)
4.2	Service Implementation	Intermediate	Phase Implementation[section] cameras per year, and reaching[sector] by FY30)	Phased Implementation[sector] cameras p.a.)	0	1	1	-1	0		1	1	1	0	0	1	1	-1	-2	0	-1	0	0	0	0	No	1	<text>	<text>		3	Carried Forward
4.3	Service Implementation	Internmediate + 1	1. Phased Implementation[section 1] cameras p.a.) 2. Takeover Police functions by 2024 3. Expand cameras in prafe[sector] by 2030 4. Piggy back of other Road to Zero Programmes e.g. SIP 5. Perform Co-ordinated intervention across Waka Kotahi (look at all the programmes and what they are trying to do for that site treatment based on risk before installing cameras)	1. Phased Implementation[section 1] cameras p.a.) 2. Takeover Police functions by 2024 3. Expand cameras in prafe[sector] by 2030 4. Piggy back of other Road to Zero Programmes e.g. SIP 5. Perform Co-ordinated intervention across Waka Kotahi (look at all the programmes and what they are trying to do for that site treatment based on risk before installing cameras)	0	2	2	1	2		2	2	2	2	2	2	2	3	2	0	1	0	0	0	0	0	No	2	<text>	<text>		29	Likely Way Forward (LWF)
4.4	Service Implementation	Intermediate +2	1. Phased Implementation[section 1] cameras p.a.) 2. Takeover Police functions by 2024 3. Expand cameras in prafe[sector] by 2030 4. Piggy back of other Road to Zero Programmes e.g. SIP 5. Perform Co-ordinated intervention across Waka Kotahi (look at all the programmes and what they are trying to do for that site treatment based on risk before installing cameras)	1. Phased Implementation[section 1] cameras p.a.) 2. Takeover Police functions by 2024 3. Expand cameras in prafe[sector] by 2030 4. Piggy back of other Road to Zero Programmes e.g. SIP 5. Perform Co-ordinated intervention across Waka Kotahi (look at all the programmes and what they are trying to do for that site treatment based on risk before installing cameras)	0	2	2	1	3		2	-1	-1	-1	0	1	-1	1	2	0	1	0	0	0	0	0	No	2	0	0		13	Carried Forward
4.5	Service Implementation	Maximum	1. Big Bang expansion c[section] in one year 2. Transfer in the same year as expansion 3. Expand at the same time in same year Note: Fatal Flaw	Big Bang of Expansion	0	3	3	-2	3		3	3	-1	-3	-3	-3	-3	-3	-3	0	-2	1	0	0	0	0	Yes	3	<text>	<text>		-4	Discount
5	Funding	Do Nothing	0	Fund Police as-is	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes		<text>	<text>		0	Carried Forward
5.1	Funding	Minimum	Retain the revenue generated from Safety Camera Systems to fund SCS Operations at Waka Kotahi	Hypothetication	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<text>	<text>		0	Carried Forward
5.2	Funding	Intermediate	CAPEX - Road to Zero OPEX - Investment Management	NLTF Funded, CAPEX through RtZ and OPEX through Investment Management	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No		Road to Zero funding class is oversubscribed	<text>		0	Likely Way Forward (LWF)
5.3	Funding	Internmediate + 1	CAPEX - Road to Zero OPEX - Road to Zero	NLTF Funded, CAPEX and OPEX through RtZ	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	No		Road to Zero funding class is oversubscribed	<text>		0	Likely Way Forward (LWF)
5.4	Funding	Intermediate +2	Treasury funds all Fatal Flaw - Minister and The Treasury has said no	Treasury Funds all	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	-3	0	0		0	0		-3	Discount
5.5	Funding	Maximum	Public Private Partnership or Alternative procurement models	Alternative Procurement Models	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	-2	0	0		<text>	<text>		-2	Discount

Table 67: Final long-list options across MCA dimensions of choice after long-list workshop

Dimension	Do Nothing	Do Minimum	Intermediate	Intermediate + 1	Intermediate + 2	Maximum
1. Scope	1.1 – Keep operations at Police, and Waka Kotahi continues to fund as is. Note: Has fatal flaw, as government requested Waka Kotahi to take over the function	1.2 – Lift & shift Police functions as is with no camera expansion	1.3 – Risk-based treatment of high-risk corridors, implement section 9(2)(g)(ii) across high-risk corridors	1.4 – Treat high- to medium-risk corridors section 9(2)(g)(ii) by FY30 Note: May include legislative change, business intelligence enabled, and camera mixes	1.5 – Treat high- to low-risk corridors with section 9(2)(g)(ii) cameras by FY30 Note: May include legislative change, business intelligence enabled, and camera mixes	1.6 – Treat all corridors across the country with safety cameras Maximum investment, saturation of network with cameras with all technology turned on and business intelligence driven in real-time
2. Service Solution		2.2 includes: • Lift & Shift • New Offence Processing System • Same People (FTE Count same) • Same deployment and mobile capability • same System Integration • Face-to-Face Payment • Basic reporting with Police	2.3 includes: • New Operating Model • New Offence Processing System • New Camera Management System • Fibre + 5G CAM • No increase in people • Same mix of cameras • Same system Integration with Ministry of Justice as currently form Police • Face-to-Face Payment, and self-service payments • No customer experiences • No changes in business processes and automation	2.4 includes: • New Operating Model • New Offence Processing System • New Camera Management System • Risk Based Deployment of Cameras • Fibre + 5G CAM • Increase in People (FTE) by up to 40% max (but more technical people) • Different Mix of Cameras and mobile capability • System Integration with Ministry of Justice • Face-to-Face Payment, and self-service payments • Standard Customer Experience (uplift of 25%min) • Business intelligence enabled and automation (30% max) • Part-payments or alternative resolutions.	2.5 includes: • New Operation Model • New Offence Processing System • New Camera Management System • Greater Social Licence to turn more of the capabilities of Cameras and tech platforms on to catch more than speed offences on the road • Straight through processing being utilised to greater degree and confidence in business operations • Risk Based Deployment of Cameras • Fibre + 5G CAM • FTE predominately technical people, with manual processing reduced to bare minimum • Greater mix of high-risk cameras which deliver greatest ROI for example, average speed and others • Seamless Integration with Ministry of Justice • Face-to-Face Payment, and self-service payments	2.6 includes: • New Operating Model • New Offence Processing System • New Camera Management System • Fully integrated Realtime: (1) risk analysis, and (2) data sharing (100%) • Fibre + 5G CAM • Mostly technical FTEs (for example, Data scientists) • Different Mix of Cameras and mobile capability • Full integration with main government departments and crown agencies • Omni-channel payment suite • High level of customer experience (100%) • Centralised business intelligence process & standardisation (100%)

Dimension	Do Nothing	Do Minimum	Intermediate	Intermediate + 1	Intermediate + 2	Maximum
					• High level of Customer Experience (uplift of 25%min) • Business intelligence–led and greater automation of tasks (50% max) • Part-payments or alternative resolutions (support by AI & good governance)	
3. Service Delivery	3.1	3.2 Functions provided as follows: 1 Police in charge of: - Mobile Cameras - Prosecutions - Calibrations 2 Waka Kotahi in charge of: - Static Cameras - Business Intelligence Function 50% - Outsource or Partner: - Business Intelligence Function 50% *Note: Level of outsourcing/partnership to be developed further as not fully developed*	3.3 Functions provided as follows: 1 Police in charge of: - Calibrations retain 50% and we partner 50% (if possible) - Cameras All - Offence Processing - Prosecution 50% (and we partner 50% if possible) - Business Intelligence 2 Outsource or Partner: - Prosecution 50% (partner if possible) - Calibration 50% (partner if possible) *Note: Level of partnership to be developed further as not fully developed*	3.4 Functions provided as follows: 1 Waka Kotahi: - Cameras All - Offence Processing - Prosecution 50% (and we partner 50%, if possible) - Business Intelligence 2 Outsource or Partner: - Prosecution 50% (Partner if possible) - Calibration 100% (Partner if possible) *Note: Level of partnership to be developed further as not fully developed*	3.5 Functions provided as follows: 1 Waka Kotahi - Business Intelligence – 50% 2 Partner: - Cameras 100% (Fatal Flaw, can't do, as must retain core functions) - Offence Processing – 100% (Fatal Flaw, can't do, must retain core functions) - Prosecution –100% - Calibration – 100% (see, Limits & constrains below) - Business Intelligence – 50% *Note: Level of partnership to be developed further as not fully developed* *Note: Contains Fatal Flaw – can't move forward as can't outsource cameras*	Functions provided as follows: 1 Waka Kotahi: - Cameras 100% - Offence Processing 100% - Prosecution 25% (and outsource 75%) - Calibration 100% - Business Intelligence 100% 2 Outsource or Partner: - Prosecution 75% *Note: Level of outsourcing/partnership to be developed further as not fully developed*

Dimension	Do Nothing	Do Minimum	Intermediate	Intermediate + 1	Intermediate + 2	Maximum
4. Service Implementation		4.2 No Camera Expansion but a slow transfer of cameras across to Waka Kotahi	4.3 Phase Implementation (section 9(2)(g)(ii) per year, and reaching [redacted] by FY30)	4.4 Phased Implementation [redacted] cameras per year) • Takeover Police functions by 2024 • Expand cameras in parallel [redacted] by 2030 • Piggyback off other RtZ programmes (eg, Speed and Infrastructure – SIP) • Perform coordinated intervention across Waka Kotahi (look at all programmes and what they are trying to do for that site treatment based on risk before installing cameras)	4.5 Phased Implementation [redacted] cameras per year) • Takeover Police functions by 2024 3. Expand cameras in parallel [redacted] by 2030 • Piggyback of other Road to Zero Programmes for example, SIP • Perform coordinated intervention across Waka Kotahi (look at all the programmes and what they are trying to do for that site treatment based on risk before installing cameras)	4.6 Big Bang expansion [redacted] cameras in one year • Transfer in the same year as expansion • Expand at the same time in same year Note: Fatal Flaw
5. Funding	5.1 Fund Police as-is	5.2 Hypothecation – retain the revenue generated from Safety Camera Systems to fund SCS Operations at Waka Kotahi	5.3 NLTF Funded, CAPEX funded through RtZ and OPEX funded through Investment Management	5.4 NLTF funded, CAPEX and OPEX through RtZ	5.5 Treasury Funds all	5.6 Alternative Procurement Model – PPP

WMCA short-list options analysis

Table 68: Scores of WMCA short-list options analysis

Analysis criteria	Option 1: Do nothing	Option 2: Do Minimum	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
1. Investment objectives (30 points)	**0**	**6**	**19.2**	**26.4**	**30**
1.1 To reduce average speed on roads that are treated with Safety Cameras, leading to a reduction in deaths and serious injuries (DSIs) by 2030 (from 2018 baseline)		1.2	3.6	4.8	6
1.2 To improve the quality of Safety Camera Systems (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline)		1.2	3.6	4.8	6
1.3 To improve road user compliance to speed limits through Safety Camera Systems that reduces risk of harm for all road users by 2030 (from 2018 baseline)		1.2	3.6	4.8	6
1.4 To improve public attitude towards Safety Camera as part of Safe System, measured as an increase in social licence for safety cameras by 2030 (from 2018 baseline)		1.2	4.8	6	6
1.5 To maximise return on investment in Safety Camera Systems for public by reducing DSIs cost to the society by 2030		1.2	3.6	6	6
2. Strategic fit (12 points)	**0**	**4**	**7.2**	**10.4**	**10.4**
2.1 Meet business needs		0.8	2.4	4	4
2.2 Meets service requirements		0.2	2.4	2.4	2.4
2.3 Fits with Road to Zero (RtZ) strategy, Waka Kotahi strategy, and Ministry of Transport objectives		0.8	2.4	4	4

Analysis criteria	Option 1: Do nothing	Option 2: Do Minimum	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
3. Potential achievability (12 points)	**12**	**12**	**8.8**	**8**	**7.2**
3.1 Technical – people, process & technology	4	4	3.2	3.2	3.2
3.2 Safety & Design – for example, hazards, safety risk	4	4	2.4	2.4	2.4
3.3 Consentability – level of consenting, complexity/difficulty & risks	4	4	3.2	2.4	1.6
4. Supplier capacity & capability (12 points)	**12**	**12**	**12**	**8.4**	**4.8**
4.1 Camera supplier – capacity & capability	6	6	6	4.8	3.6
4.2 Other providers – capacity & capability	6	6	6	3.6	1.2
5. Programme Timeline (16 points)	**16**	**16**	**16**	**9.6**	**3.2**
5.1 Programme delivery by 2030	16	16	16	9.6	3.2
6 Social, cultural & property Impact	**0**	**0**	**1.2**	**3.6**	**3.6**
6.1 Social impact – social licence (for example, Safety specific campaign, alongside RtZ, funded through System Management)			1.2	3.6	3.6
6.2 Cultural Impact – Te Ao Māori			1.2	3.6	
7. Potential value for money	**3.2**	**3.2**	**9.6**	**12.8**	**3.2**
7.1 Potential value for money – public value (for example, Social, economic & environmental)	3.2	3.2	9.6	12.8	3.2
8. Fatal flaw (Yes/No)					
8.1 Fatal flaw	Yes	No	No	No	No
Final Weighted-MCA Score (110 points)	**44**	**54**	**76**	**84**	**63**

Appendix I Weighted multi-criteria analysis process for short-listed options

The weighted multi-criteria analysis (WMCA) process for short-list evaluation was conducted on 2 December 2021.

WMCA took stakeholders through a five-step process.

- Step 1: Agree the list of critical success factors (CSFs) factors (similar to the long-list).
- Step 2: Rank each CSF from 1 to 10, giving a 1 to the criterion that is most important to the programme and a 10 to the least important.
- Step 3: Assign each CSF category a group weight by allocating 110 points among the seven categories. The more important the criterion, the higher its weight.
- Step 4: Assign each CSF (sub-criterion) its own weight – weights can be taken on any value, agreed by stakeholders between zero and the maximum of weight given to that group. For example, if stakeholders assigned a group weight of 30 to the investment objective group, the sub-criteria in that group can range from 0 to 30.
- Step 5: Moderate and assign scores to each option from 1 to 5 with 1 being low and 5 being high.

Appendix J Qualitative benefits

The Safety Camera System's (SCS's) contribution to the Road to Zero (RtZ) death and serious injury (DSI) reduction targets, resulting from reduced speeds on treated corridors and intersections are the core of the expected monetary and non-monetary benefits.

Benefit recommendations can be discarded early in the definition phase when they are viewed as non-core to the investment objectives of the programme. These benefits are typically either qualitative in nature – or direct attribution to SCS enablers is viewed as tenuous.

Qualitative benefits are neither absent, nor insignificant. Aggregated, these provide sizeable benefit to New Zealanders, road users, as well as the broader NZ economy:

- reduced emissions
- network efficiency
- improved processes
- emergency response
- cost avoidance
- overall network safety

Reduced emissions

The potential to improve vehicle emissions from vehicles on treated corridors and intersections will be positively impacted as a result of the SCS interventions. Non-uniform speeds, acceleration, braking and excess speed all contribute to the range of emissions which Waka Kotahi has signed up to proactively improve.

Under these considerations, the SCS Programme has a strong likelihood of contributing to these improvements. The improvements to the above should result from over the 20 years to 2042.

To what extent, and how attributable these improvements are to the SCS Programme is more difficult to quantify. Additional external factors such as improving the NZ vehicle fleet, road controlling authority programmes, and other speed management initiatives confound the results likely attributable to SCS.

Improved processes

Improved processes are, in part, a dependency for realising the benefits identified in the investment logic mapping workshops. Process efficiencies can result in ability to increase per-camera operating hours, increased throughput of infringement notices, and improved customer service and satisfaction.

International studies also show that reducing the time from a non-compliance event to receipt of infringement notification drive increased compliance from road users. Improved processes have potential to increase cumulative DSI reductions, as well as further securing social licences for the safety camera programme.

Emergency response

Deploying safety cameras expects to reduce (at a minimum) 120–140 road crashes per year.[49] The key assumption is that each DSI crash requires the attendance of emergency services to the scene.

Removing the need to attend as many scenes, in turn, provides the ability to improve the allocation of these scarce resources. Whether attending non-roading emergency incidents or other critical

[49] These are just the DSI-related crashes, it is likely there are additional crashes where emergency services are deployed. Once the cameras are fully deployed (July 2020); that is, assuming a fully deployed network section 9(2)(b) (existing plus expanded) cameras.

activities, NZ's emergency service system benefits from the reduced number of crashes facilitated by the SCS Programme.

Network efficiency

Crashes introduce disruptions into the roading system – depending on the location and time of day, week, or year these disruptions can be significant. As argued above, the SCS Programme's and RtZ's considerable reduction of accidents and crashes (site dependent) lead to a smoother-running network.

These potential improvements have not been evaluated or quantified. The programme agrees that network efficiency isn't the basis for the investment decision in the SCS. If network efficiency benefits can be directly attributable to the programme, details will be developed to measure and accrue these benefits.

Cost avoidance

It is unclear whether potential cost avoidance has been confirmed. Cost avoidance benefits are typical from programmes such as the SCS Programme and can be considerable. Such benefits accrue in the broader system. In the case of SCS will be the reduced capital and operational requirements – Police being the beneficiary.

Reducing the Police overhead and capital requirements of operating the (approximately 135) cameras will result in adjustments to Police budget lines. Budgetary (and non-budgetary) cost avoidance should be considered as it is likely directly attributable to the SCS Programme.

Overall network safety

Benefits highlighted in the investment logic mapping workshops rightly focus on reducing speeding, which, in turn, reduces DSIs. The ability to drive compliance against safety factors such as use of restraints and cellphones has potential to further reduce serious crashes and associated DSIs. These benefits have been included under the catch-all 'contribution of cameras to success of overall RtZ programme' benefit. Further work will be required to elaborate the measurement and baselining for overall network safety benefits.

Hypothecation of revenue gathered from infringements should also be explored as a qualitative enabler, as well as driving overall network safety benefits in its own right.

Appendix K Role of speed in deaths and serious injuries

Table 69: Casualties from all road crashes and where excess or inappropriate speed was identified as a contributing factor, 2011–2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Deaths										
Total road deaths	284	308	253	292	317	327	378	378	350	320
Speed main factor for road deaths	84	85	85	85	104	97	103	116	96	113
% of road deaths, speed is factor	30%	28%	34%	29%	33%	30%	27%	31%	27%	35%
Serious injuries										
Total serious injuries	2,088	2,102	2,022	2,074	2,166	2,548	2,862	2,600	2,510	2,713
Speed main factor for serious injuries	469	419	446	460	523	542	667	551	499	508
% of serious injuries, speed is factor	22%	20%	22%	22%	24%	21%	23%	21%	20%	23%
Minor injuries										
Total minor injuries	10,588	10,118	9,912	9,229	10,182	10,233	11,177	12,098	12,243	10,663
Speed main factor for minor injuries	1,686	1,536	1,474	1,497	1,872	1,844	1,996	2,164	2,083	2,024
% of minor injuries, speed is factor	16%	15%	15%	16%	18%	18%	18%	18%	17%	19%

Appendix L Scope for the safety cameras, CMS, and IPS

Table 70: Scope for safety cameras and safety camera management system

In-scope
a) **Safety cameras –** procurement of an additional section 9(2)(g)(ii) cameras required to support the first phase of expansion of the safety camera network across the highest risk part of the road network through to the end of the current National Land Transport Plan in June 2024. The additional new cameras will be new generation advanced multi-purpose system safety cameras of the following types: – Halo single camera system for red-light or fixed speed enforcement (up to 3 lanes) – Halo dual camera system for red-light enforcement (up to 6 lanes) – Halo side fire Average Speed (P2P) (3 lanes) – Halo Distributed over the lane Average Speed (P2P) (3 lanes) – Radar cam mobile speed, includes auxiliary camera and flash for front/rear plate capture
b) **Safety camera management system (CMS)** – a system that enables the management (including secure data transfer) and monitoring of the safety camera network as the current manual management processes employed by New Zealand Police are unsustainable with the planned expansion of the safety camera network. The system will include the following key capabilities: – Management of the safety camera network – Monitoring of the health of the safety camera network – Automated download of incident data from safety camera network and transfer to the back-office infringements processing system – Reporting on the safety camera network to meet agreed SLAs
c) In alignment with the agreed date of operationalisation of transferred functions from New Zealand Police to Waka Kotahi, the ownership of existing New Zealand Police Operational Safety Cameras – approximately 100 safety cameras comprising the older generation NK7 model safety cameras of the following types: – Fixed/static speed – Red-light (speed dual purpose capability) – Mobile
Out-of-scope
a) Procurement of a back-office infringements processing system which is the subject of a separate procurement plan that has been submitted for approval.
b) Safety cameras calibration and certification services – these services may continue to be provided by New Zealand Police, or established within Waka Kotahi or out-sourced to a third party. However, this is subject to the definition of the future state operating model, organisation design and governance decisions an agreed service and cost model.
c) Mobile camera enforcement services – these services will be transferred and established within Waka Kotahi including people (traffic camera operators) and mobile camera vehicles (including fitout). This is subject to the definition of the operating model, organisation design and governance decisions.
d) Business Process Outsourcing (BPO) options that outsource the people and process components for the Safety Camera Management and Infringement Processing capabilities.

Table 71: Scope for Infringement Processing System

In-scope
The procurement scope includes technology systems and services to support a back-office infringements processing platform that provides capabilities in: • incident verification • adjudication • customer management • processing and issuance • court file preparation • self-service • case management and workflow • payments tracking • business rules configuration and implementation • reporting.
Out-of-scope
a) section 9(2)(b)(ii) [redacted] b) Procurement of a Safety Camera Management System – a technology system that provides management, monitoring, reporting and automatic download of event data (incidents and survey data) from the safety camera network. section 9(2)(b)(ii) [redacted] c) Safety cameras calibration and certification services – these services may be established within Waka Kotahi or out-sourced to a third party. However, this is subject to the definition of the future state operating model, organisation design and governance decisions an agreed service and cost model. d) Mobile camera enforcement services – these services will be transferred and established within Waka Kotahi including people (traffic camera operators) and mobile camera vehicles (including fitout). This is subject to the definition of the operating model, organisation design and governance decisions. e) Business Process Outsourcing options that outsource the people and process components for the safety camera management and infringement processing capabilities.

Appendix M Additional information about the SCS programme workstreams

Workstream	Role
Design and Implementation	Support the Design and Implementation workstream with change management plans to support the successful delivery of its scope. Change management activity will address the potential impacts to people while change interventions, tools and options will support an effective and smooth transition process, prepare people and mitigate the associated risks, including: • Stakeholder analysis and engagement plans. • Detailed impact assessments for the new or changed processes, policies and procedures. • Organisational readiness criteria and assessments to gauge preparedness. Develop and deliver plans to close readiness gaps. • Design & Implementation change management plan to manage the people aspects of the workstream.
People and Organisation	When the design principles and critical success factors have been determined and the operating model options have been developed and considered, a decision can be made on future operating model of Waka Kotahi. Subsequently, more detailed impact assessments and stakeholder analysis and the next iteration of change and transition planning can be developed. Change management activity will address the impacts of the operating model chosen. Change interventions, tools and options will support an effective and smooth transition process, prepare people and mitigate the associated risks, including: • Detailed impact assessments (Waka Kotahi and New Zealand Police), and transition, workforce and people change planning. • Organisational readiness criteria and deliver assessments to gauge preparedness. Develop and deliver plans to close readiness gaps. • Transition strategy will include composition of the transition team using strategic inter-agency secondments, working groups etc. • High level organisation design development based on the operating model, high level processes and delivery area workforce and capability planning. Identify design issues and implications. • Support the delivery area to develop an integrated transition plan which coordinates readiness and transition activity across the workstreams for an effective and smooth transition process. • Support the due diligence process working with Waka Kotahi and New Zealand Police. There is also work that will need to be developed in conjunction with or under the guidance of other parties such as ER in the Waka Kotahi People Group. This includes developing a legally compliant people change and transfer process, detailed related planning, job matching, developing an appropriate employment offering and related offer documentation etc.

Workstream	Role
Technology and Infrastructure	The high-level change impact assessment assessed the technology and infrastructure workstream to have a high impact rating due to the comprehensive process and system impact. The new technology that will be implemented comprises three projects: • Safety Camera Management system • Offence Processing system • Camera Network expansion. Technology and Infrastructure planned change interventions: • Each project will need change planning to support the delivery of an integrated people, process and technology solution to deliver on programme objectives. • Business readiness criteria and plans will need to be developed covering technology deployment, data migration, capability gaps and solutions (induction, training and engagement activities). • Organisational readiness and support for change adoption will be required for the operationalisation of the new automated camera management and infringement processing systems, establishment of new asset management approaches, and customer interaction for infringements. • Develop and deliver plans to close gaps in readiness prior to going live. • Support for the design and establishment of an interim transition management team and approach to ensure effective testing of new systems and processes and a smooth transition process to business as usual. • Develop and define new digital and/or physical processes. Conduct detailed assessment of capability and capacity impact on current state. • Conduct a learning needs analysis per project and develop a learning plan to ensure that users are competent, feel confident and know how to access additional guidance and information. Support the development and ensure the appropriateness of operator guide materials including techniques, tools and enhanced skills. • Support the delivery area to develop an integrated transition plan which coordinates readiness and transition activity across the workstreams for an effective and smooth transition process.
Transition/ Expansion	Camera transition and expansion requires a dedicated change plan. Change management will support the development of key messages for the Stakeholder Engagement and Communications strategy to support effective engagement with external and internal stakeholders. Significant stakeholder engagement and consultation is necessary to facilitate the selection process for site confirmation, consents and development. Stakeholders include iwi and hapū, road controlling authorities, local government, AA and the public in the local communities of proposed sites.
Strategy & Performance	The Strategy & Performance workstream is an enabler for the programme outlining strategy that will be delivered by the other workstreams. Because of this the change impact of the Strategy & Performance workstream will be minimal and will not have a dedicated Change Management plan.

Appendix N Appraisal summary tables for short-listed options

Table 72: Appraisal summary for Option 4 – Preferred Way Forward

Appraisal Summary Table Template - Preferred Way Forward for SCS (Silver Option)

Date:	21/12/2021	**Evaluation Period: (baseline and forecast year) e.g 2020 - 2060**	20 year from FY2021-2040	**Option Name:**	**Preferred Way Forward (PWF) - Option 4 (referred in IBC as the Silver Option).** **- New Operaton Model** **- New CMS & IPS System** **- New cameras on high to med risk corridors** section 9(2 **FY30)**

This is the preferred option ☑

Problem/opportunity statement:	Investment objectives:	How project gives effect to GPS:	How project gives effect to local community outcomes:
Problem 1: We are not utlising safety cameras effectively which limits our ability to encourage compliance and reduce road DSIs Problem 2: Positive public attitudes towards accepting camera as part of safe system are required to ensure their utility and effectiveness is maximised.	1. To reduce average speed on roads that are treated with safety cameras (where safety cameras are deployed) leading to a reduction in DSIs by 2030 (from 2018 baseline) 2. To improve the quality of SCS (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline) 3. To improve road user compliance to speed limits through SCS that reduce risk of harm for all road users by 2030 (from 2018 baseline) 4. To improve public attitude towards Safety Camera as part of safe system, measured as an increase in social license for safety cameras by 2030 (from 2018 baseline) 5. To maximise return on investment in SCS for public by reducing DSIs cost to the country by 2030.	This project delivers on GPS 2021 by: **1. Improves 'safety'** – The SCS Programme is expected to improve compliance and reduce average speeds across the network thereby reducing deaths and serious injuries **2. Develops 'better travel options'** – The SCS Programme will improve compliance to road safety (speed and driving behaviour), which will allow people to feel safer on the road and consider using alternative mediums of transport (other than cars) such as bicycle, e-bikes, scooters and others. **3. Improves 'climate change'** – The SCS Programme will improve network speed across treated corridors (roads), which is expected to create uniform speeds and reduce amounts of - acceleration, de-acceleration, braking and over-taking. This change will lead to a reduction in greenhouse gasses and emission and improve climate change outcomes on NZ roads. **4. Improves 'freight connections'** – The SCS Programme will support	National Project, which will impact local communities across the country in following ways: - reduce social cost to community through reduced DSIs - likely to create local roles as and when installing safety cameras across the regions.

1. Summary of Non-Monetised Impacts (Description)	2. Summary of Financial Impacts (nominal, non-discounted)		3. Summary of Monetised Option Impacts (present value, discounted)	
$ Non-monetised benefits noted below are still beind developed, and are expected to be finalised by DBC: 1. Reduced emissions 2. Network efficiency 3. Improved processes 4. Emergency response 5. Cost avoidance 6. Overall network safety	Capital Costs: FY21-FY40	section 9(2)(b)(ii)	Total Monetised Benefits, excluding Wider Economic Benefits (WEBs) - NPV of Benefits at 4% Disc. Rate	section 9(2)(b)(ii)
			Total Monetised Benefits, including Wider Economic Benefits (WEBs)	
	Operating Costs: FY21-40		Total Economic Costs - NPV of Costs at 4% Disc. Rate	
			BCR (excluding WEBs)	
	Total Financial Costs: FY21-40		BCR (including WEBs)	

Transport Outcomes		Non-Monetised Impact: (description in numerical or narrative terms)			Monetised Impact: (non-NPV Benefit) (description in dollar terms in real terms, non-discounted)	
Name of Benefit (Select the row above)	Name of Measure:	Baseline:	Do Minimum Impact: by FY30	Option Impact: PWF by FY30	Do Minimum Impact:	Option Impact: PWF
Healthy and safe people						
1.1 DSI reductin due to compliance with speed limits	1.1.4 Decrease in number of non-compliant vehicles (speed) in treated corridors and intersections		We expect little to no change in 'non-compliant vehicles' (speeding) in treated corridors and intersections	Expect around 20% decrease in non-compliant vehicles (speed) in treated corridors and intersections. Evidence: (1) Tang, C. K. (2017). Do Speed Cameras Save lives Evidence: (2) mackett et al. (20170. Fatal footseps: understanding the safe system context behind NZ pedestrian road trauma.		
	1.1.5 Decrease in number of non-compliant vehicles on wider network		We expect little to no change in the number of 'non-compliant' vehicles on wider network	Expect around 20% decrease in number of non-compliant vehicles on wider network Evidence: (1) Tang, C. K. (2017). Do Speed Cameras Save Lives Evidence: (2) Blais, E., & Carnis, L. (2015). Improving the safety effect of speed camera programme through innovations: evidence from the French experience.		
	1.1.6 Decrease in number of DSI in treated corridors and intersections		We expect little to no change in the number of DSI in treated corridors and intersections	Expect around 20% reduction in DSI in treated corridors and intersections Evidence: see pg. 19, *Table [x]: Evidence of DSI reduction by different safety cameras*		
	1.1.7 Decrese in number of DSI on wider network	Baseline from 2018 DSI No's: 378 Deaths and 2600 Serious Injuries = 2978 DSIs	By 2030 expected to have DSI savings of 4.1 p.a.	By FY2030 expected to have DSI saving of 114 p.a.	section 9(2)(b)(ii)	
1.2 Reduce risk of harm for all road users	1.2.1 Decrese in mean speed on treated corridors and intersections		We expect little to no change in mean speed on treated corridors and intersections	Expect around 20% reduction in mean speed on treated corridors and intersections evidence: see pg.		
	1.2.2 Increse in perception of safety for all road users		We expect little to no change in perception of safety for all road users	Expect around 10% increase in perception of safety for all road users Evidence: Ellen D Pauw et al. (2014). An evaluation of the traffic safety effect of fixed speed cameras		
1.3 Social license for increased use of safety cameras	1.3.1 contribution of cameras to reducing costs of DSIs		We expect little to no change in costs of DSIs from SCS	Expect SCS to contribute to around 4% reduction in DSIs by FY2030 for RtZ		
	1.3.2 Increase in support for increase in number of cameras		We expect little to no change in support for more cameras	Expect a minor increase in support for safety cameras, between 2% to 5%, from the public as they see the benefits or reduction in DSIs, coupled with a safety campaign		
1.4 Return on investment in safety cameras is optimised	1.4.1 Contribution of cameras to reducing costs of DSIs		We expect little to no change in cameras reducing costs of DSIs	Expect costs of DSIs to decrease by 4% and more post FY30		
	1.4.2 Contribution of cameras to success of overall RtZ programme		We expect little to no contribution from cameras for RtZ programme	Expect SCS to contribute 4% towards RtZ programme		
Resilience and security *(Please copy the row below to add an additional benefit or measure, and delete rows as appropriate)*						
		... type	... type	... type	... type	... type
Economic prosperity *(Please copy the row below to add an additional benefit or measure, and delete rows as appropriate)*						
		... type	... type	... type	... type	... type
Environmental sustainability						
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	... type	... type	... type	... type	... type
Please copy the row above to add an additional benefit or measure, and delete rows as appropriate.						
Inclusive access						
12.1 Impact on Te Ao Māori	12.1.1 Te Ao Māori	... type	... type	... type	... type	... type
Please copy the row above to add an additional benefit or measure, and delete rows as appropriate.						

Rationale for option selection decision

Option 4 (Silver option in the IBC) was recommended by Stakeholders as the preferred way forward for SCS programme. The rationale for option 4 includes:
- scores the highest in weighted multi-criteria analysis, score of 84 points
- contributes directly towards reducing DSIs and assists RtZ meet its 40% DSI objectives by 2030. This option has an appropriate level of investment and scale to create halo effect across the network to reduce DSIs. Creates and indirect benefit on public attitudes as by reducing DSIs significantly on the network the public in turn views the intervention as positive.
- align strategically to Waka Kotahi's GPS and MoT healthy & safe people outcomes
- achievable within timeframe of getting new cameras installed by 2030section 9(2) new cameras)
- supplier has the capability & capacity to support WK achieve this objective
- create a positive social license as public will see the benefit of DSI reduction on high risk corridors coupled with a new education campaign to make them aware of safety cameras.

Table 73: Appraisal summary for Option 3 – Less Ambitious Way Forward

Appraisal Summary Table Template - Less Amibitious Way Forward (Bronze Option)

Date:	21/12/2021	**Evaluation Period: (baseline and forecast year) e.g 2020 - 2060**	20 year from FY2021-2040	**Option Name:**	**More Ambitious, Preferred Way Forward (PWF) Option 5 (referred in IBC as the Bronze Option).** **- transfer SCS from Police to WAK** **- New Operating Model** **- New CMS & IPS System** **- New Cameras on high risk corridors only** section 9(2)(	**This is the preferred option** ☐

Problem/opportunity statement:	**Investment objectives:**	**How project gives effect to GPS:**	**How project gives effect to local community outcomes:**
Problem 1: We are not utlising safety cameras effectively which limits our ability to encourage compliance and reduce road DSIs Problem 2: Positive public attitudes towards accepting camera as part of safe system are required to ensure their utility and effectiveness is maximised.	1. To reduce average speed on roads that are treated with safety cameras (where safety cameras are deployed) leading to a reduction in DSIs by 2030 (from 2018 baseline) 2. To improve the quality of SCS (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline) 3. To improve road user compliance to speed limits through SCS that reduce risk of harm for all road users by 2030 (from 2018 baseline) 4. To improve public attitude towards Safety Camera as part of safe system, measured as an increase in social license for safety cameras by 2030 (from 2018 baseline) 5. To maximise return on investment in SCS for public by reducing DSIs cost to the country by 2030.	This project delivers on GPS 2021 by: **1. Improves 'safety'** – The SCS Programme is expected to improve compliance and reduce average speeds across the network thereby reducing deaths and serious injuries 2. **Develops 'better travel options'** – The SCS Programme will improve compliance to road safety (speed and driving behaviour), which will allow people to feel safer on the road and consider using alternative mediums of transport (other than cars) such as bicycle, e-bikes, scooters and others. 3. **Improves 'climate change'** – The SCS Programme will improve network speed across treated corridors (roads), which is expected to create uniform speeds and reduce amounts of - acceleration, de-acceleration, braking and over taking. This change will lead to a reduction in greenhouse gasses and emission and improve climate change outcomes on NZ roads. 4. **Improves 'freight connections'** – The SCS Programme will support uniform speed across the network, reduce crashes	National Project, which will impact local communities across the country in following ways: - reduce social cost to community through reduced DSIs - likely to create local roles as and when installing safety cameras across the regions.

1. Summary of Non-Monetised Impacts (Description)	**2. Summary of Financial Impacts (nominal, non-discounted)**		**3. Summary of Monetised Option Impacts (present value, discounted)**	
Non-monetised benefits noted below are still beind developed, and are expected to be finalised by DBC: 1. Reduced emissions 2. Network efficiency 3. Improved processes 4. Emergency response 5. Cost avoidance 6. Overall network safety	Capital Costs: FY21-FY40	section 9(2)(b)(ii)	Total Monetised Benefits, excluding Wider Economic Benefits (WEBs) - **NPV of Benefits at 4% Disc. Rate**	section 9(2)(b)(ii)
			Total Monetised Benefits, including Wider Economic Benefits (WEBs)	
	Operating Costs: FY21-40		Total Economic Costs - **NPV of Costs at 4% Disc. Rate**	
			BCR (excluding WEBs)	
	Total Financial Costs: FY21-40		BCR (including WEBs)	

Transport Outcomes		**Non-Monetised Impact:** (description in numerical or narrative terms)			**Monetised Impact: Benefit (non-NPV)** (description in dollar terms in real terms, non-discounted)	
Name of Benefit Select the row above	**Name of Measure:**	**Baseline:**	**Do Minimum Impact: by FY30**	**Option Impact: PWF by FY30**	**Do Minimum Impact:**	**Option Impact: PWF**
Healthy and safe people						
1.1 DSI reductin due to compliance with speed limits	1.1.1 Decrease in number of non-compliant vehciles (speed) in treated corridors and intersections		We expect little to no change in 'non-compliant vehicles' (speeding) in treated corridors and	Expect around 10% decrease in non-compliant vehciles (speed) in treated corridors and intersections.		
	1.1.2 Decrease in number of non-compliant vehicles on wider network		We expect little to no change in the number of 'non-compliant' vehicles on wider network	Expect around 10% decrease in number of non-compliant vehicles on wider network Evidence: (1) Tang, C. K. (2017). Do Speed Cameras Save Lives Evidence: (2) Blais, E., & Carnis, L. (2015). Improving the safety effect of speed camera programme through innovations: evidence from the French experience.		
	1.1.3 Decrease in number of DSI in treated corridors and intersections		We expect little to no change in the number of DSI in treated corridors and intersections	Expect around 10% reduction in DSI in treated corridors and intersections Evidence: see pg. 19, *Table [x]: Evidence of DSI reduction by different safety cameras*		
	1.1.4 Decrese in number of DSI on wider network	Baseline from 2018 DSI No's: 378 Deaths and 2600 Serious Injuries = 2978 DSIs	By 2030 expected to have DSI savings of 4.1 p.a.	By FY2030 expected to have DSI saving of 114 p.a.	section 9(2)(b)(ii)	
1.2 Reduce risk of harm for all road users	1.2.1 Decrese in mean speed on treated corridors and intersections		We expect little to no change in mean speed on treated corridors and intersections	Expect around 10% reduction in mean speed on treated corridors and intersections evidence: see pg.		
	1.2.2 Increse in perception of safety for all road users		We expect little to no change in perception of safety for all road users	Expect around 5% increase in perception of safety for all road users Evidence: Ellen D Pauw et al. (2014). An evaluation of the traffic safety effect of fixed speed cameras		
1.3 Social license for increased use of safety cameras	1.3.1 contribution of cameras to reducing costs of DSIs		We expect little to no change in costs of DSIs from SCS	Expect SCS to contribute to around 2% reduction in DSIs by FY2030 for RtZ		
	1.3.2 Increase in support for increase in number of cameras		We expect little to no change in support for more cameras	Expect a minor increase in support for safety cameras, between 0% to 2.5%, from the public as they see the benefits or reduction in DSIs, coupled with a safety campaign		
1.4 Return on investment in safety cameras is optimised	1.4.1 Contribution of cameras to reducing costs of DSIs		We expect little to no change in cameras reducing costs of DSIs	Expect costs of DSIs to decrease by 2% and more post FY30		
	1.4.2 Contribution of cameras to success of overall RtZ programme		We expect little to no contribution from cameras for RtZ programme	Expect SCS to contribute 2% towards RtZ programme		
Resilience and security *(Please copy the row below to add an additional benefit or measure, and delete rows as appropriate)*						
		... type	... type	... type	... type	... type
Economic prosperity *(Please copy the row below to add an additional benefit or measure, and delete rows as appropriate)*						
		... type	... type	... type	... type	... type
Environmental sustainability						
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	... type	... type	... type	... type	... type
Please copy the row above to add an additional benefit or measure, and delete rows as appropriate.						
Inclusive access						
12.1 Impact on Te Ao Māori	12.1.1 Te Ao Māori	... type	... type	... type	... type	... type
Please copy the row above to add an additional benefit or measure, and delete rows as appropriate.						

Rationale for option selection decision

Option 3 (Bronze option in the IBC) ranked 2 in the weighted multi-criterai analysis, and scoed 76 points. This option:
- supports the investment objectives and has very high probability for treating all high-risk corridors by 2030.
- likely to generate the greatest social license from public as treats high risk corridors without putting a lot of cameras around the country
- supports in meeting Waka Kotahi 4% DSI target reduction by 2030 but doens't meet it completely. In addition supports WK Safe System outcome and MoT's health & safe people outcomes
- requires less consenting as instally cameras on high-risk corridors only
- can be delivered and achieved on time, given only one supplier in the market

Table 74: Appraisal summary for Option 5 – More Ambitious Way Forward

Appraisal Summary Table Template - More Ambitious Way Forward Option for SCS (Gold Option)

Date:	21/12/2021	**Evaluation Period: (baseline and forecast year) e.g 2020 - 2060**	20 year from FY2021-2040	**Option Name:**	**More Ambitious, Preferred Way Forward (PWF) Option 5 (referred in IBC as the Gold Option).** **- transfer SCS from Police to WAK** **- New Operating Model** **- New CMS & IPS System** **- New Cameras on high to low risk corridors** section 9(2)(g)

This is the preferred option ☐

Problem/opportunity statement:	**Investment objectives:**	**How project gives effect to GPS:**	**How project gives effect to local community outcomes:**
Problem 1: We are not utlising safety cameras effectively which limits our ability to encourage compliance and reduce road DSIs Problem 2: Positive public attitudes towards accepting camera as part of safe system are required to ensure their utility and effectiveness is maximised.	1. To reduce average speed on roads that are treated with safety cameras (where safety cameras are deployed) leading to a reduction in DSIs by 2030 (from 2018 baseline) 2. To improve the quality of SCS (effectiveness) service to the public by reducing DSIs due to compliance with speed limits by 2030 (from 2018 baseline) 3. To improve road user compliance to speed limits through SCS that reduce risk of harm for all road users by 2030 (from 2018 baseline) 4. To improve public attitude towards Safety Camera as part of safe system, measured as an increase in social license for safety cameras by 2030 (from 2018 baseline) 5. To maximise return on investment in SCS for public by reducing DSIs cost to the country by 2030.	This project delivers on GPS 2021 by: **1. Improves 'safety'** – The SCS Programme is expected to improve compliance and reduce average speeds across the network thereby reducing deaths and serious injuries **2. Develops 'better travel options'** – The SCS Programme will improve compliance to road safety (speed and driving behaviour), which will allow people to feel safer on the road and consider using alternative mediums of transport (other than cars) such as bicycle, e-bikes, scooters and others. **3. Improves 'climate change'** – The SCS Programme will improve network speed across treated corridors (roads), which is expected to create uniform speeds and reduce amounts of - acceleration, de-acceleration, braking and over taking. This change will lead to a reduction in greenhouse gasses and emission and improve climate change outcomes on NZ roads. **4. Improves 'freight connections'** – The SCS Programme will support uniform speed across the network, reduce crashes	National Project, which will impact local communities across the country in following ways: - reduce social cost to community through reduced DSIs - likely to create local roles as and when installing safety cameras across the regions.

1. Summary of Non-Monetised Impacts (Description)	**2. Summary of Financial Impacts (nominal, non-discounted)**		**3. Summary of Monetised Option Impacts (present value, discounted)**	
$ Non-monetised benefits noted below are still beind developed, and are expected to be finalised by DBC: 1. Reduced emissions 2. Network efficiency 3. Improved processes 4. Emergency response 5. Cost avoidance 6. Overall network safety	Capital Costs: FY21-FY40	section 9(2)(b)(ii)	Total Monetised Benefits, excluding Wider Economic Benefits (WEBs) - **NPV of Benefits at 4% Disc. Rate**	section 9(2)(b)(ii)
			Total Monetised Benefits, including Wider Economic Benefits (WEBs)	
	Operating Costs: FY21-40		Total Economic Costs - **NPV of Costs at 4% Disc. Rate**	
			BCR (excluding WEBs)	
	Total Financial Costs: FY21-40		BCR (including WEBs)	

Transport Outcomes		**Non-Monetised Impact:** (description in numerical or narrative terms)			**Monetised Impact: Benefit (non-NPV)** (description in dollar terms in real terms, non-discounted)	
Name of Benefit Select the row above	**Name of Measure:**	**Baseline:**	**Do Minimum Impact: by FY30**	**Option Impact: PWF by FY30**	**Do Minimum Impact:**	**Option Impact: PWF**
Healthy and safe people						
1.1 DSI reductin due to compliance with speed limits	1.1.4 Decrease in number of non-compliant vehciles (speed) in treated corridors and intersections		We expect little to no change in 'non-compliant vehicles' (speeding) in treated corridors and intersections	Expect around 30% decrease in non-compliant vehciles (speed) in treated corridors and intersections. Evidence: (1) Tang, C. K. (2017). Do Speed Cameras Save lives Evidence: (2) macket et al. (20170. Fatal footseps: understanding the safe system context behind NZ pedestrian road trauma.		
	1.1.5 Decrease in number of non-compliant vehicles on wider network		We expect little to no change in the number of 'non-compliant' vehicles on wider network	Expect around 30% decrease in number of non-compliant vehicles on wider network Evidence: (1) Tang, C. K. (2017). Do Speed Cameras Save Lives Evidence: (2) Blais, E., & Camis, L. (2015). Improving the safety effect of speed camera programme through innovations: evidence from the French experience.		
	1.1.6 Decrease in number of DSI in treated corridors and intersections		We expect little to no change in the number of DSI in treated corridors and intersections	Expect around 30% reduction in DSI in treated corridors and intersections Evidence: see pg. 19, *Table [x]: Evidence of DSI reduction by different safety cameras*		
	1.1.7 Decrese in number of DSI on wider network	Baseline from 2018 DSI No's: 378 Deaths and 2600 Serious Injuries = 2978 DSIs	By 2030 expected to have DSI savings of 4.1 p.a.	By FY2030 expected to have DSI saving of 114 p.a.	section 9(2)(b)(ii)	
1.2 Reduce risk of harm for all road users	1.2.1 Decrese in mean speed on treated corridors and intersections		We expect little to no change in mean speed on treated corridors and intersections	Expect around 30% reduction in mean speed on treated corridors and intersections evidence: see pg.		
	1.2.2 Increse in perception of safety for all road users		We expect little to no change in perception of safety for all road users	Expect around 20% increase in perception of safety for all road users Evidence: Ellen D Pauw et al. (2014). An evaluation of the traffic safety effect of fixed speed cameras		
1.3 Social license for increased use of safety cameras	1.3.1 contribution of cameras to reducing costs of DSIs		We expect little to no change in costs of DSIs from SCS	Expect SCS to contribute to around 6% reduction in DSIs by FY2030 for RtZ		
	1.3.2 Increase in support for increase in number of cameras		We expect little to no change in support for more cameras	Expect a minor increase in support for safety cameras, between 5% to 10%, from the public as they see the benefits or reduction in DSIs, coupled with a safety campaign		
1.4 Return on investment in safety cameras is optimised	1.4.1 Contribution of cameras to reducing costs of DSIs		We expect little to no change in cameras reducing costs of DSIs	Expect costs of DSIs to decrease by 6% and more post FY30		
	1.4.2 Contribution of cameras to success of overall RtZ programme		We expect little to no contribution from cameras for RtZ programme	Expect SCS to contribute 6% towards RtZ programme		
Resilience and security *(Please copy the row below to add an additional benefit or measure, and delete rows as appropriate)*						
		... type	... type	... type	... type	... type
Economic prosperity *(Please copy the row below to add an additional benefit or measure, and delete rows as appropriate)*						
		... type	... type	... type	... type	... type
Environmental sustainability						
8.1 Impact on greenhouse gas emissions	8.1.1 CO2 emissions	... type	... type	... type	... type	... type
Please copy the row above to add an additional benefit or measure, and delete rows as appropriate.						
Inclusive access						
12.1 Impact on Te Ao Māori	12.1.1 Te Ao Māori	... type	... type	... type	... type	... type
Please copy the row above to add an additional benefit or measure, and delete rows as appropriate.						

Rationale for option selection decision

Option 5 (Gold option in the IBC) ranked 3 in the weighted multi-criterai analysis, and scoed 63 points. This option:
- meets the investment objective of reducing DSI by 4% by 2030. Has the highest level of investment and scale
- likely to erode social license from the public as section 9(2)(g)(ii) will be installed in a very short-span of time across the country (by FY30)
- supports WK GPS and MoT Transport objectives
- requires lots of consenting
- carries the highest delivery risk and will be challending to be achieved by a single supplier in the market, even if they have the capability but will lack capacity.

Appendix O Detailed capital and operation costs

Detailed capital and operational costs for the short-listed options are set out in Table 75 and Table 76 respectively.

Table 75: CAPEX costs – short-listed options

CAPEX items Cost ($m)	Option 1: Do Nothing	Option2: Do Minimum	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
1. Camera network costs (over 20 years)					
New camera set-up costs	-				
Mobile cameras renewal costs	-				
Mobile camera site signage & safety costs	-				
2. Programme and technology costs (over 20 years)					
Programme change team costs	-				
CMS – vendor implementation costs	-				
CMS – ICT professional implementation costs	-				
IPS – vendor implementation costs	-				
IPS – ICT professional implementation costs	-				
Payment processing – Ministry of Justice implementation costs	-				
Payment processing – vendor implementation costs	-				
Waka Kotahi overheads	-				
Total CAPEX costs	**-**				
Total expected CAPEX costs (NPV)	**-**				

section 9(2)(b)(ii)

Table 76: OPEX costs – short-listed options

OPEX items Cost ($m)	Option 1: Do Nothing	Option2: Do Minimum	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
1. Camera network costs (over 20 years)					
Camera operating costs	section 9(2)(b)(ii)				
Camera network costs					
Verification costs					
Enforcement costs					
Peak load penalty costs					
Infringement payment processing costs					
Calibration technology costs					
Operation cost – Police current cost					
2. Programme and technology costs (20 years)					
CMS – ongoing maintenance & support costs					
IPS – ongoing maintenance & support costs					
Waka Kotahi overheads					
Total OPEX costs					
Total expected OPEX costs (NPV)					

Appendix P Additional Costs of Each Option from Baseline

Outlined below are breakdown of costs in relation to the do minimum option for economic comparison of each option i.e. the additional cost and benefit produced by the option.

Table 77: Additional Costs for each option

	Option 1: Do Nothing	Option 2: Do Minimum (Baseline)	Option 3: Less Ambitious Way Forward	Option 4: Preferred Way Forward	Option 5: More Ambitious Way Forward
	Leave the SCS with Police and continue to fund as is	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, new cameras on high-risk corridors	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, and new camera on high- to medium-risk corridors	Transfer the SCS from Police to Waka Kotahi, new operating model, new CMS, new IPS, new cameras on high- to low-risk corridors
WMCA scores	44	54	76	84	63
WMCA %	**42%**	**51%**	**72%**	**79%**	**59%**
Number of Police cameras	139	139	139	139	139
Number of new cameras	0	0	section 9(2)(b)(ii)		
Total cameras	**139**	**139**			
Additional cost on top of 'do minimum' option)			section 9(2)(b)(ii)		
Total costs*, FY21–40 (20yrs)					
Additional benefit on top of 'do minimum' option)					
Total benefits*, FY21–40 (20yrs)					
DSIs by 2030	32	32	57	130	183
4% target (% of DSI target achieved)	1.12%	1.12%	1.99%	4.55%	6.96%
NPV costs*			section 9(2)(b)(ii)		
NPV benefits*					
BCR (non-PV)					
BCR (NPV)					

*Costs and Benefits are total, which include the additional cost of the option in them.