



Pavement Delivery System Review

For Waka Kotahi NZ Transport Agency

PDSR Authors

22 November 2022

V1 Final

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1.0 Executive Summary

This Summary Report describes the findings of the Industry Steering Group and the Workstream Teams created to investigate the recommendations of the Review of the State Highway Pavement Delivery Report.

The State Highway Pavement Delivery System in New Zealand has largely developed through ad hoc evolution since privatisation. This has resulted in a disjointed sector and in part led to a misalignment in its interpretation and resulting delivery expectations not always being met.

The creation of the Steering Group was an opportunity to work together to better understand areas of ambiguities and seek to provide clearer guidance.

The Steering Group brought together representatives from client, consultant, contractor and supplier organisations. The Group has taken an in depth look into the findings from the review. Seven workstreams were created to investigate the findings and recommendations in the Report. Where needed, wider sector participation was utilised to ensure the Steering Group fully understood current approaches and were then able to clarify where improvements could best be made.

The Steering Group have set out 37 *Required Responses* and presents an *Implementation Plan* of individual actions required to achieve their attainment.

This process is displayed in Figure 1 below: -

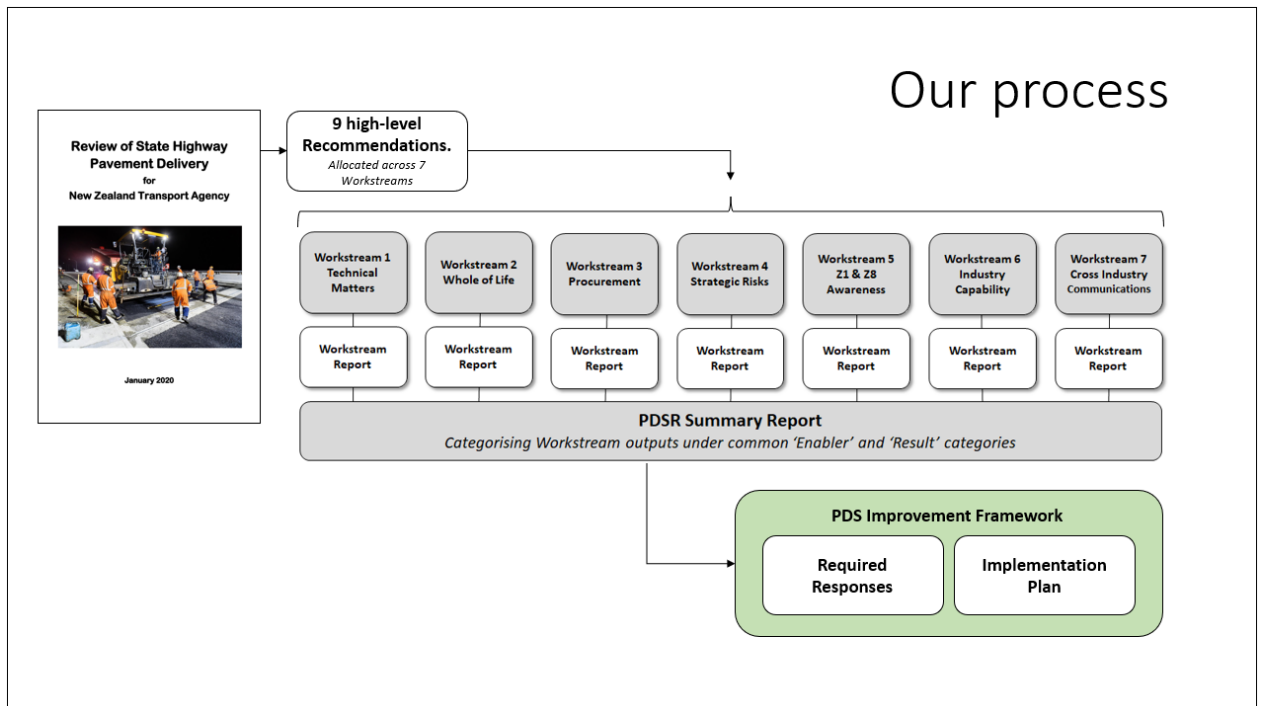


Figure 1: From Recommendations to Improvement Framework. The process used for developing responses and forming an implementation plan.

The Industry Steering Group has created Required Responses that will: -

- require the sector participants to work together;
- be implementable at a practical level;
- support delivery of quality pavements;
- offer value for money;
- enable enduring outcomes;
- support a thriving industry and competent workforce.

It should be noted, that although the Steering Group believe isolated benefits can be achieved from individual responses; the performance of the Delivery System as a whole will not improve until a significant number of responses are actioned. The main findings focus on changes needed in procurement, capability and communications:

Procurement

Ad hoc evolution of procurement models has created a reactive approach to the delivery system for pavements. Price competition and the structure of our standards has led over time to poor design choices and a conflict between good asset management and cost efficiency. Required responses propose a total change to client prescribed pavement designs for new and rehabilitated pavement works and removing of the competitively priced nature of these tenders.

Capability

Lack of structure has led to significant gaps in the capability of key people within the delivery system. This seems to have impacted on the profile and therefore attractiveness of the discipline as a career path. Not just tertiary institute programmes but also the knowledge sharing and succession planning has lacked energy and needs to be brought to the fore again. Industry needs to understand and work towards common goals.

Communications

A common thread across findings was identified around the need for a more pro-active approach to sector leadership from Waka Kotahi to ensure the sector understand priorities, expectations and requirements. There was joint agreement that we need to be better at sharing learnings with a focus on continual improvements for the delivery system.

The remaining findings focused on the areas of technical matters, whole of life, strategic risks and quality assurance.

Some of these areas are more easily adaptable to change, while others will have a longer lead time. Therefore, the improvements to the Delivery System should be seen as being addressed over the medium term. The Implementation Plan contains a detailed list of actions, that will require insight and input from across industry.

2.0 Introduction

The findings and recommendations from the 'Review of State Highway Pavement Delivery' were shared with New Zealand pavement industry representatives by Waka Kotahi in March 2020. This independent review considered the steps Waka Kotahi and the wider industry could take to improve their collective performance in the end-to-end delivery of new and rehabilitated pavement construction in New Zealand. The review was guided by Waka Kotahi's value for money investment principle; *"the delivery of the right outcomes, at the right time, at the right cost and financed at the right level of risk"*.

Whilst the review was not expected to generate a fundamental change to systems and processes, it did identify areas where further focus, refinement and discipline would improve design, delivery and reliability confidence. Opportunities to improve, clarify and supplement existing pavement specifications, design processes and construction delivery were also highlighted. These opportunities were summarised within nine recommendations that were subsequently endorsed by Waka Kotahi.

The nine high level recommendations from the review are listed in the table below: -

- 1. Reliability/Risk Guidance:** *The Agency reviews the NZ Guide to align performance expectations relative to Reliability Factor and Pavement Design Risks to better define pavement types most suited for sustainable transportation routes.*
- 2. Performance of Pavement Types:** *Review and upgrade risk profiles and better define integrated performance criteria for current subgrade, pavement and surfacing compositions, especially, unbound, cement modified, foam bitumen and HILAB treatments and OGPA surfacing integrity, with specific consideration for environmental and climate, as well as traffic loading.*
- 3. Technical Refinement:** *Address and refine technical matters of concerns from this review which are implied to influence integrity in design, aggregates, construction practices and conformance testing. (Recommendations 2 & 3 should ideally be undertaken in collaboration with industry practitioners and the National Pavements Technical Group).*
- 4. Design Leadership:** *The Reviewers are of mind that NZTA revert to industry expertise being engaged for design on capital projects in conjunction with robust longer term Performance Requirements, for benefits to commercial/performance procurement and sustaining industry expertise, collaboration and development.*
- 5. Procurement of Pavement Elements:** *Review and refine procurement type and procedures to highlight the importance of pavement elements and encourage conforming quality delivery over the longer term.*
- 6. Quality Assurance:** *Extend Quality Right processes, complemented with mitigated risk evaluation, as an end to end process through all pavement delivery phases and apply Quality Right as a highly preferred assurance discipline to include both new projects and rehabilitated pavements (i.e., NOC contracts).*
- 7. Quality Assurance:** *Review and incorporate the findings of Austroads "Review of the Delivery of Quality Assurance in Road Construction (2019)" to strengthen and extend Quality Right with particular emphasis on real time QC information and control action.*
- 8. Industry Leadership:** *Strategically, give importance to leadership for sustainable pavement industry through training, R&D, partnerships, economic aggregate availability, and personnel talent and construction capability.*
- 9. Industry Skills:** *Facilitate ongoing training in the use of the current Guides and Standards to raise the holistic capability industry wide (i.e., design to construction) and encourage technology and innovative methodologies, which contribute to the opportunity of efficient construction control, quality and productivity and adherence to best practice.*

In response to the Report, an Industry Steering Group was established to further explore the recommendations and determine the actions required to ensure their practical implementation, so as to maximise the benefits they bring and achieve sustainable improvement.

The Industry Steering Group, shown in Figure 2, agreed on seven workstreams, each targeting a different aspect of the pavement delivery system. The Industry Steering Group was chaired by Janice Brass, Manager Engineering Standards, of Waka Kotahi and was supported by senior industry representatives who lead its targeted workstreams.

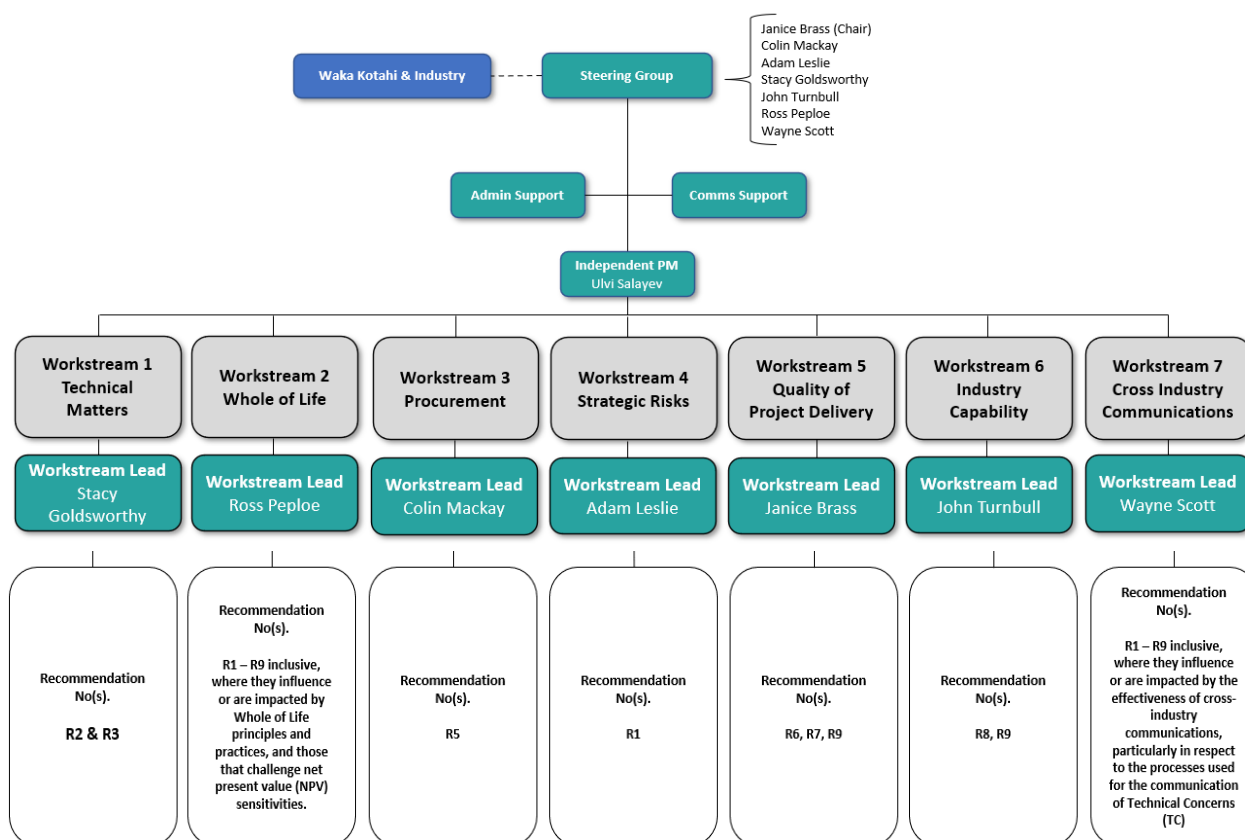


Figure 2: The formation of the Industry Steering Group and the targeting of the nine review recommendations.

Creating the Pavement Delivery System Improvement Framework

In order to provide a formal structure to this improvement process, the Industry Steering Group has developed the ‘Pavement Delivery System Improvement Framework’ (the *Improvement Framework*) as shown in Figure 3 below: -

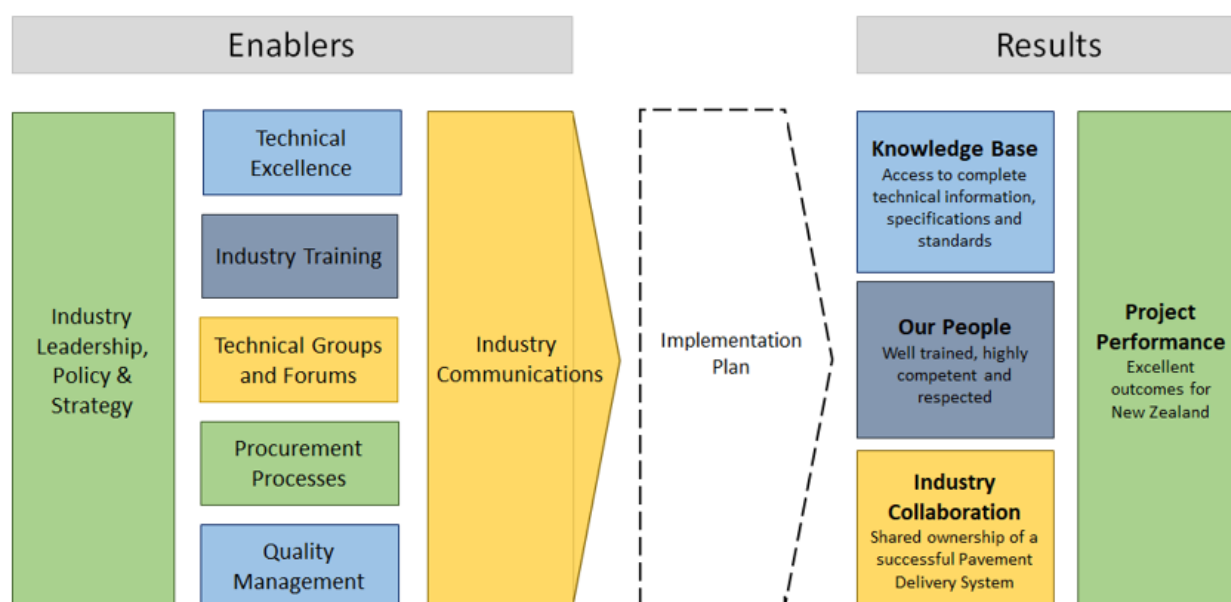


Figure 3: The Pavement Delivery System Improvement Framework

The Improvement Framework is built on the principle of resolving workstream 'Findings', with the creation of 'Required Responses'. The Required Responses will be achieved through the completion of a detailed set of practical actions, as contained in the Implementation Plan. The 37 Required Responses described in this report can be broadly aligned under a series of seven categories, or 'Enablers'. An Enabler is seen as being a common catalyst for improvement, and likely to provide mutually beneficial outcomes.

A brief description of each of the Enabler categories is provided overleaf.

The Implementation Plan is presented in a spreadsheet format. A detailed description of the Implementation Plan, together with a reference copy, are provided in Section 4 of this report.

A brief description of each of the Enabler categories.
<p>Enabler 1: Industry Leadership, Policy and Strategy</p> <p>For many decades, Waka Kotahi and its predecessors have provided a leadership role for pavement technology and construction, as well as overseeing the provision of industry standards and specifications. This Enabler promotes the continuation of this position, in utilising Waka Kotahi's system leadership role and resources when establishing any changes to policy or strategy that may be required to implement identified Required Responses.</p>
<p>Enabler 2: Technical Excellence</p> <p>This Enabler captures the intent to improve the collection, collation, accessibility and use of the pavement industry's technical knowledge and experience. Across the industry's broad scope of work, from new major projects to the maintenance and refurbishment of existing assets, the opportunities for capturing and sharing technical knowledge, and for exploring new technologies is significant.</p>
<p>Enabler 3: Industry Training</p> <p>This Enabler highlights the critical importance of continuous improvement in the areas of technical competency, understanding and confidence of delivery system participants. Improved industry training will generate a workforce that has sustainable skills and greater prospects for long-term careers. This category also emphasises the significant influence that effective training has on achieving successful project outcomes.</p>
<p>Enabler 4: Technical Groups and Forums</p> <p>This Enabler strives to improve how those industry organisations such as Waka Kotahi, CCNZ, ACE NZ and EngNZ will work more collaboratively to develop a combined approach to the sharing of working group issues, outcomes and learnings with key stakeholders. Required Responses within this Enabler also include exploring and resolving the growing opportunities for alignment with the practices and standards developed by Austroads.</p>
<p>Enabler 5: Procurement Processes</p> <p>This Enabler covers Required Responses targeting the improvement of processes used for the procurement of pavement design, quality management and construction services. It highlights the importance of protecting a Principal prescribed design during a competitive procurement process but preserves opportunities for pursuing innovative or cost saving pavement solutions, outside the tendering and contract award period.</p>
<p>Enabler 6: Quality Management</p> <p>This Enabler recognises the significant role in which effective, well implemented quality management processes have on a successful project outcome. It targets the improvement of Quality Management within both technical specifications and standards, and the competency with which construction, verification, inspection and testing activities are undertaken on site.</p>
<p>Enabler 7: Industry Communications</p> <p>As with all improvement processes, success is reliant upon effective engagement and communication. This Enabler aligns those Required Responses which target improvement in the methods used for collaborative and clear communications.</p>

On the opposite side of the improvement process, are a series of 'Result' categories. These are Key Result Areas (KRAs) reflecting the specific outcome categories the Steering Group aims to improve through the delivery of the Implementation Plan actions. The Result headings use a written success statement to describe what a good outcome will look like, when a group of actions are fully implemented.

A brief description of each of the Result categories and their statement of success.
<p>Result 1: Knowledge Base: <i>Access to complete technical information, specifications and standards.</i></p> <p>In this context, the term 'Knowledge Base' is used to describe an easily accessible, managed and regularly updated body of technical information and practical experience. The Knowledge Base is delivered through a combination of tools, appropriate to its range of content.</p>
<p>Result 2: Our People <i>Well trained, highly competent and respected.</i></p> <p>Waka Kotahi's commitment to 'Our People' is demonstrated by its Tā Tātou Rautaki Akoranga Our Learning Strategy, which was updated on 1 March 2022. The strategy supports Waka Kotahi's entire network and symbolises the start of their journey to become a learning organisation, creating an environment where people can share, grow, adapt, and develop to successfully deliver Waka Kotahi's vision of Te Kāpehu¹. By implementing the Required Responses within the 'Industry Training' Enabler, we will work to ensure that these same commitments are used to influence all learning outcomes.</p>
<p>Result 3: Industry Collaboration <i>Shared ownership of a successful Pavement Delivery System.</i></p> <p>There are already a number of initiatives in place that champion the benefits of sharing technical knowledge and the lessons we learn whilst working in the pavement industry. These include the specialist technical groups and industry associations (both national and international), as well as the Quality Forums which Waka Kotahi are now implementing. This Result category seeks to appropriately formalise and align these endeavours within a recognised communication and engagement plan that reflects the shared ownership of a successful pavement delivery system.</p>
<p>Result 4: Project Performance <i>Excellent outcomes for Aotearoa/New Zealand.</i></p> <p>This is the most significant of the Pavement Delivery System Improvement Framework 'Result' categories. The successful implementation of our Required Responses will be demonstrated through the performance of our pavement assets and the success of the people and organisations who deliver them.</p>

2.1 Complementary Work

During the development of the Required Responses by the Industry Steering Group it was necessary to understand other key projects occurring to not duplicate effort. It was especially noted that Waka Kotahi are working on the delivery of a Pavement Strategy and are undertaking a review and update of the pavement design guidance. Both pieces of work are pivotal in the understanding of the approach Waka Kotahi is seeking to take with respect to the pavement asset. The work undertaken through these projects will have significant overlap with the work needed to address the Required Responses. Ongoing communication and engagement will be required between the various groups to ensure a unified outcome is achieved that addresses all matters related to the pavement delivery system.

¹ Waka Kotahi NZ Transport Agency Statement of Intent 2021-2026.

3.0 Primary finding of the Workstream Reports

This section of the Summary Report presents summarises reflecting the primary findings of each of the seven workstream reports. For each Finding shown in Column 1, a Required Response reference number is shown in Column 2. All Required Responses, together with the individual actions that support them are provided within the Implementation Plan that forms Section 5.0 of this Summary Report.

Full copies of each workstream report are accessible via the hyperlinked index provided in Appendix 1.

Column 1: 3.1 Findings of Workstream 1: Technical Matters	Column 2: Required Response Ref.
<p>Australian practice and recent New Zealand research potentially indicates that rutting incidence is reduced if denser basecourse grading is used as an alternative to the M/4 specification grading. The use of dense graded basecourses is well established in Australia. There is a view that they could perform well in some basecourse applications here in New Zealand. No use of the Australian specification of denser basecourse grading has been used to date in New Zealand.</p>	<p>WS1.1</p>
<p>Recent project based research has taken place into the medium to long-term performance of cement modified basecourses. These have traditionally been incorporated into a pavement design in order to provide initial strength and reduce moisture sensitivity. This research has highlighted that the longer-term performance of some cement modified pavements is not as expected. This is a concern as cement modification is a primary treatment for a number of pavements.</p>	<p>WS1.2</p>
<p>The use of high strength, low fines aggregate (HILAB) basecourse pavements have supply and construction complexities which may adversely affect reliability integrity, risk and economic viability. They do not yet have an established long term performance history. HILAB pavements are now in-service in New Zealand and are continuing to be specified for some capital projects where the contract form and procurement strategy determines that this is the preferred pavement option.</p>	<p>WS1.3</p>
<p>Evidence from research undertaken at the Waikato Expressway Cambridge to Tamahere Section, indicates that OGPA surfacing can present a reliability risk when it is used with modified basecourses. Research on the use of OGPA is continuing at the Canterbury Accelerated Pavement Testing Indoor Facility (CAPTIF).</p>	<p>WS1.4</p>
<p>An integral part of the pavement design process is assessing how well the design outcome will perform. The comparative risk relativities for different basecourse types that may be under consideration, are influencing the Reliability Factor. Further refinement of alternative basecourse properties may help mitigate risk.</p> <p>This topic is being investigated under Workstream 4: Strategic Risks.</p>	<p>WS1.5</p>
<p>As part of their research, the Industry Steering Group have received feedback from the National Pavement Technical Group (NPTG) and other interested stakeholders on the usability of the Technical Concerns process. The significance of this requirement has led to the formation of the Workstream 7: Cross-Industry Communication team, who are challenged to review, revise and re-issue a new Technical Concern process.</p>	<p>WS7.1 WS7.2 WS7.3</p>

Column 1: 3.2 Findings of Workstream 2: Whole of Life	Column 2: Required Response Ref.
A procedure for calculation of Net Present Values (NPVs) for chip sealed unbound (or modified) granular pavements is required. A secondary output is the recommendation that NPVs should be used as a ranking tool rather than a pass/fail test.	WS2.1 WS2.2 WS2.3 WS2.4 WS2.5
No standardised spreadsheets are available to automate the process of calculating NPVs.	
There are currently no training materials or courses available to educate practitioners in the calculation of NPVs.	

Column 1: 3.3 Findings of Workstream 3: Procurement	Column 2: Required Response Ref.
There are further opportunities for Waka Kotahi to consult collaboratively with the industry to continue the development of appropriate standards, specifications and guidelines, for the design, construction and maintenance of road pavements.	WS3.1
Formal criteria should be developed for clarifying Waka Kotahi's use of Principal's prescribed pavement designs for new and rehabilitated projects.	WS3.2
For price competitive procurement models, that the focus of tenderers is on the lowest cost pavement design that meets the requirements of the specifications, and not necessarily, or primarily, on delivering a robust design that achieves the 25-year design life objective.	WS3.2 WS3.3 WS3.4 WS3.5
The challenges that contractors have in employing and retaining suitably experienced personnel, and the impacts this has upon the scoring of Non-Priced Attributes and PACE assessments requires further consideration and clarity.	WS3.6
There is a need for an industry-wide training initiative for pavement construction to be established. Given the significance of this finding, it was absorbed into the work undertaken by the Workstream 6: Industry Capability team.	WS6.3A WS6.3B

Column 1: 3.4 Findings of Workstream 4: Strategic Risk	Column 2: Required Response Ref.
<p>The <i>Review of State Highway Pavement Delivery</i> report highlighted that whilst pavement design is 'risk based', there are inconsistencies in both the appreciation of those risks and the manner in which they are managed. The following three issues are seen to combine to create this situation:-</p> <ol style="list-style-type: none"> 1. There is currently no single pavement based Risk Management System or common process operating in New Zealand. Practitioners currently align their risk management approach with the NZTA Z/44 guidelines, which is based on the principles and generic guidelines of ISO31000:2018. This is not a pavement-based standard, being aimed more at setting out the requirements for a risk management system. 2. Current risk management practices also lack transparency and lean towards the selection of pavement types primarily on a traffic demand basis. Other risks are often considered, but the extent of their consideration is too reliant upon the designer's level of knowledge of those risks. 3. A mixed approach to contract formation, where a prescribed design is combined with required performance outcomes, creating conflict between contracted parties. The inclusion of defects liability requirements within these mixed contracts can result in confusion over risk ownership, and the risk transfer conversations that often result. <p>There is a need for a risk management framework that can identify the various risks from throughout the different phases of pavement delivery at a system level that can inform those involved of the risks and the current means of mitigating those risks. The identification of system risks will ensure that there is adequate guidance and mitigation of risks that can then flow down to project level documentation and controls.</p>	<p>WS4.1</p>

Column 1: 3.5 Findings of Workstream 5: Quality of Project Delivery	Column 2: Required Response Ref.
<p>In practice, six existing projects were selected for trialling Quality Right. Whilst some gains were made, the use of existing projects for the trial caused challenges due to the fact that the roles, responsibilities and structure of the quality functions were already established on those projects.</p>	<p>WS5.1</p>
<p>Whilst the Quality Management Plan that a contractor organisation develops for a large scale capital project will be created using a unique, project specific template, those QMPs developed for smaller scale projects have historically been created using the organisation's standard QMP template. Given the use of short tender periods and the limited availability of operational resources during the tender, a project specific QMP may not be created until after a contractor organisation is awarded the contract. It is therefore imperative that the Minimum Standards for Inspection, Sampling and Testing requirements are easily identified by the contractor organisation, so early requirements can be established and prepared for in advance of programmed work. This has not always been the case.</p>	<p>WS5.2</p>

3.5 Findings of Workstream 5: Quality of Project delivery - continued	RR Ref.
<p>The Review of State Highway Pavement Delivery report highlighted the need to create more collaboration between Waka Kotahi and its supply chain. Whilst suppliers have an obligation to review and understand their contract obligations in respect to quality, the availability of the new versions of both Z01 and Z08 documents, and the quality framework they reflect, provides an opportunity for Waka Kotahi to engage with its supply chain and communicate their quality focus within a workshop setting. Such engagement will also work to provide the opportunity for broadening the knowledge of the Principal's site representatives, in their understanding of how the contractor works to efficiently align contract requirements with programme, methodology and other related considerations.</p> <p>It is apparent that there are now opportunities to create appropriate vehicles for this collaboration, such as the use of Quality Forums, where two-way feedback on good practice and lessons learned events can be discussed. Quality Forums would not only focus on sharing project specific information but could also be launched with Quality Management resources drawn from principals, designers and contractors nationally, with the purpose of improving standards as well as supplier competencies around quality aspects during pavement delivery.</p>	WS5.3
<p>There is a need to create a common 'theme' to pavement based training, educating practitioners on how to build pavements in accordance with Waka Kotahi requirements. Such training should be built around: -</p> <ul style="list-style-type: none"> a) A formal competency framework - based on individual roles, including the Client role. b) The use (award) of unit standards, micro-credentials and NZQA credits, with appropriate certification. c) The use of practical success stories - promoting the benefits that came from doing things right. d) Recognition between the individual and their employer's Certified Tender Evaluation - so that a proactive approach to training by the employer is recognised by Waka Kotahi. <p>Given the significance of this finding, it was absorbed into the work undertaken by the Workstream 6: Industry Capability team.</p>	WS6.3A WS6.3B
<p>There is a need to regularly review and update technical specifications and explore opportunities to adopt AustRoads standards and specifications.</p>	WS5.4
<p>Opportunities to explore the automatic generation of Inspection and Test Plans should be considered.</p>	WS5.5
<p>At a Principal level, we should consider the separation of responsibilities of monitoring quality control from that of commercial control.</p>	WS5.6
<p>The pavement industry needs to improve its 'lessons learned' processes, so that both good practice and those practices that results in mistakes and poor performance can be collaboratively shared.</p>	WS5.7

Column 1: 3.6 Findings of Workstream 6: Industry Capability	Column 2: Required Response Ref.
<p>In order to perform and maintain its leadership role, Waka Kotahi needs to retain a sustainable skills base within its organisation. While Waka Kotahi does not do the work directly, it must have the capacity to specify its requirements accurately and then provide the assurance that these requirements are being consistently achieved.</p> <p>To do this Waka Kotahi, as a Government Agency, needs to remain proficient in the following Core Capability Requirement areas: -</p> <ul style="list-style-type: none"> • Pavement Investigation • Pavement Design • Pavement Materials Technology • Pavement Construction Methodologies • Pavement Performance Measurement • Pavement Deterioration Modelling • Failure Mode Analysis • Pavement Treatment Selection • Pavement Quality Assurance • Assessment and management of risk <p>As an industry leader, Waka Kotahi must continue to employ and utilise the right people, with the appropriate succession plans in place to maintain this level of leadership function, supplementing these resources with external subject matter experts (SMEs) where required.</p>	<p>WS6.1</p>
<p>The scale of local government organisations varies significantly. The large metropolitan councils having well-resourced teams to manage their assets, but many others are small organisations in provincial towns that have difficulty in attracting and retaining appropriately qualified people. Further budget control measures can limit succession planning and the creation of career pathways for engineering graduates.</p> <p>This drift of staff away from councils can act as a disincentive to invest in the training and development of their staff. The Road Efficiency Group (REG) is actively looking at this challenge and is developing a capability framework to assess the asset management skills in local authorities. This work needs to be supported.</p>	<p>WS6.2</p>
<p>Waka Kotahi must develop and retain a sustainable pool of skills to enable it to continue to function as the entity responsible for the continued maintenance and development of the State Highway system. To do this, it needs to ensure that those responsible for supervising the construction, maintenance and renewal of the pavements systems, have a base level of competency.</p>	<p>WS6.3A WS6.3B</p>
<p>Operations of the CAPTIF Centre requires highly skilled engineers to develop research programmes, to implement and operate them and to then analyse the data and interpret the results. The knowledge created through these projects is essential for the future operation of the network, both in assessing its future use as well as understanding pavement design solutions. However, these real-life pavement laboratories also create opportunities for engineers looking to deepen their knowledge in pavement engineering. Post graduate students have worked with the Road Research Centre team to conduct research leading to Masters and Doctorate degrees, thus deepening the pool of knowledge in pavement engineering. The Road Research Centre works with the Universities of Canterbury and Auckland and this linkage should be encouraged further will all NZ Tertiary Institutes.</p>	<p>WS5.7</p>

3.6 Findings of Workstream 6: Industry Capability - continued	RR Ref.
<p>In order to address concerns regarding the ability to efficiently carry out economic evaluation and prioritisation, people working in the Government sector need to have the skills to forecast future needs and be able to project future maintenance and renewals needs through the following processes:</p> <ul style="list-style-type: none"> • To understand the development of pavement forward works programmes to forecast future pavement renewal needs, including an understanding of pavement deterioration and intervention treatment options. • The ability to apply net present values to future costs. • Have proficiency in the use of risk management practices to identify and assess future uncertainties. • The ability to develop renewals priorities using multi criteria analysis. <p>Training in these processes should not be limited to people in the Maintenance and Operations group within Transport Services. People involved in the long-term network planning and design groups also need to understand these issues so that they can be addressed early in the lifecycle of a project.</p>	<p>WS6.3A WS6.3B plus: - WS2.1 WS2.2 WS2.3 WS2.4 WS2.5</p>
<p>The current system is weakened by a failure to accurately define the skill sets needed for specific roles. As a consequence of this, capability across sectors is not aligned. The determination of how training is conceived and then developed is sometimes fragmented, due to the isolation that occurs between those that hold the knowledge, those that develop the guidance and those that develop the educational material. This has led to a piecemeal approach that more commonly results in the reliance on in-house training courses and mentorship to improve the knowledge of employees. This can lead to gaps in learning and/or the misalignment of industry accepted good practice.</p>	<p>WS6.3A WS6.3B</p>
<p>Constant feedback received from the organisational sector highlights that graduates of learning institutions have a lack of work-ready skills that are relevant to an employer. A recent review by CCNZ identified that people coming into the industry are not considered to be 'work ready'.</p> <p>Once the outputs of Required Responses WS6.3A and WS6.3B are known, industry and organisational sectors should work collaboratively with education and training providers to review and challenge the balance of theory and practical training within the courses undertaken by those entering the pavement delivery system.</p> <p>In order to achieve the outcomes targeted by Required Responses WS6.3A and WS6.3B, further emphasis should be placed on creating quality training packages that improve skill levels and efficiency, in order to: -</p> <ul style="list-style-type: none"> • Attract, retain and reward competent people. All sectors should work together to elevate the image of the pavement industry, to reflect it as being a challenging, stimulating, socially important and ultimately well rewarded career. • Build better pathways for people to join the industry. • Improve the retention of the existing workforce. • Explore more ways to promote diversity. • Maximise the use of technology to improve project efficiency. <p>The use of Partnering Agreements should be explored, between education and training providers, contractors and design consultants, to provide a course participant with the opportunity to complete an appropriate level of practical work experience. While input</p>	<p>WS6.3A WS6.3B</p>

3.6 Findings of Workstream 6: Industry Capability - continued	RR Ref.
<p>into the review should be industry wide, there is also the opportunity to seek formal recognition of newly developed training courses via the allocation of NZQA Skills Standards. This will be achieved with the guidance of Waihangara Ara Rau. Once requirements and Skills Standards are known, the responsibility for content and format development best sits with an education and training provider such as TePūkenga or independent training providers. Content development should be supported by select senior representatives from the industry and organisational sectors. Dedicated resourcing should be allocated to ensure that contributors have the ability to achieve required outputs. This will allow for the coordination of activities as well as the administration of a 'shared-ownership' based delivery programme.</p>	
<p>We are not maximising the benefits offered by modern media tools. Modern media allows for a range of mediums through which information can be produced and disseminated through various channels. The style of delivery can be adjusted to meet the needs of the intended audience. In recent times, online learning and information platforms have been the primary means of education.</p>	WS6.4
<p>Industry groups and technical forums (as identified in Section 4.2.4 of the WS6: Industry Capability Report) tend to work autonomously. Each has been formed using the resources of willing participants drawn from the public and the private sector. The terms of reference of each group have been drafted by the individual group, to address the issues they believe require discussion and resolution and explore the opportunities for sharing of the science and practice of road engineering. Whilst each group may operate with an open agenda, there is no formal mechanism in place for the sector to collectively have input into the work and priorities of these groups.</p> <p>The groups, while effective in their own right, do not have a systematic means of connection, needed to understand the issues that are being tackled. This autonomy does not allow for sharing of information, knowledge, issues or learnings.</p> <p>There are growing opportunities for alignment with the practices and standards developed by Austroads and other international forums.</p>	WS6.5
<p>The wider communication of these outcomes is not delivered in a structured way to the wider sector, resulting in learning outcomes sometimes failing to reach those that could best benefit. There is too much reliance on information being shared through the Waka Kotahi public website which can result in limited coverage across the wider sector.</p>	WS6.4 WS5.7
<p>It is critical that everyone in the industry carries out their roles with a high level of professionalism, integrity, skill and attention to detail. These behaviours must start at the top of the organisation and must be promoted through all parts of the business.</p>	WS6.6
<p>To achieve the ambition of improving industry skills, capability and integrity, senior construction staff should continually monitor less experienced staff and offer constructive advice where needed, such that the working environment becomes a place of learning.</p>	WS6.7
<p>Achieving professional membership provides recognition that a consultant understands and abides by industry ethics as well as having achieved a suitable level of technical competence. Ongoing professional membership also requires regular maintenance and/or the updating of a consultant's skills. EngNZ membership provides a means to manage this by way of Continuing Professional Development (CPD) records and a formal periodic reassessment process.</p>	WS6.8

3.6 Findings of Workstream 6: Industry Capability - continued	RR Ref.
The limited courses available at New Zealand's Tertiary Institutes may in part be due to pavement design not being seen as an overly attractive career path for students. However, the reasonably small nature of the pavement design industry means that skilled people are highly sought-after and therefore they have the opportunity to advance their careers quite quickly.	WS6.9
Pavement designers must have at least a reasonable understanding of construction activities as all designs must be constructable in terms of efficiency, quality, safety and sustainability. Spending time on-site during the construction phase of a project is the best way to acquire constructability experience. There is an opportunity to extend the secondment concept to the client's office for both Central and Local Government authorities. This would have the benefit of increasing the knowledge and experience of staff members from each sector while also fostering relationships between the respective parties.	WS6.10
Specialist pavement design and analysis courses are relatively scarce in New Zealand. Online courses are currently available through various Australian training providers, but a range of New Zealand based courses would be beneficial.	WS6.3A WS6.3B
There is an opportunity for pavement designers and others within the pavement delivery system, to make significant improvements by the sharing and dissemination of 'lessons-learned' information.	WS5.7

Column 1: 3.7 Findings of Workstream 7: Cross Industry Communication	Column 2: Required Response Ref.
There is a need to re-launch the Technical Concern (TC) process using a clear Process Map and supporting Guidance Note that defines positions and their responsibilities. This includes the need for a new TC Form template and the wide communication of the new process.	WS7.1 WS7.2 WS7.3

4.0 The Implementation Plan

The Required Responses made by the Industry Steering Group were prioritised, using a simple definition of the timeframe proposed for its implementation. This timeframe is shown below: -

Priority Level	Definition
Priority Level 1	For commencement within 6 months of release of this report.
Priority Level 2	For commencement once the Level 1 Required Responses have been implemented or in some cases substantially underway.

Several of the Required Responses seek to either build upon or re-energise initiatives which may already be in place. Their re-inclusion emphasises the need for higher levels of cross-sector engagement, collaboration and ownership, helping to ensure that the improvements we all strive for are achieved in a coordinated way.

The Implementation Plan is presented as a live spreadsheet that contains the following information: -

- The Required Responses, with referencing to show the Workstream Report of which it forms part.
- The Enabler category for the Required Response.
- The action(s) established to implement the Required Response.
- The Priority status (P1, or P2) of the action.
- The Organisation Owner of the action.
- The Role Owner of the action, within the stated organisation.
- The target date for the completion of the action.
- The organisation needed to be engaged with in order to implement the action.
- The current status of the action.

A reference copy of the Implementation Plan is provided within the following 6 pages of this Summary Report.

4.1 Implementation Plan Page 1: WS1 Technical Matters and WS2 Whole of Life

PDSR - Implementation Plan for Required Responses														
						Written By	Revision	V1A - Final	Date	31.10.22				
						Ian McNally	All revisions described under 'Latest Edits' tab.							
Count	WS Report	Final RR Ref. Number	Final Action Ref.	Required Response	ENABLERS	Enabler	Priority	Action Owner (Organisation)	Action Owner (Role)	Target Date of Action Completion (unless stated)	Engage With (see abbrev. under Action Owner)	Action Status		
												Proposed	Approved	Completed
1	1	WS1.1		The AQA Technical Committee is to investigate the use of dense graded basecourses in New Zealand.		2								
	1	WS1.1	1.1.1	Request be provided to the AQA.			1	CCNZ	TM	Done	AQA	06.09.22	25.10.22	
	1	WS1.1	1.1.2	Provide ongoing progress reports of the AQA Dense Graded Basecourse Development Plan.			2	AQA	TCC	Ongoing	AQA	06.09.22	25.10.22	
	1	WS1.1	1.1.3	Support the implementation of field trials. Work with the AQA and clients to find suitable sites to undertaken field trials.			2	AQA	TCC	31.12.22	AQA, AT, WK	06.09.22	25.10.22	
2	1	WS1.2		Waka Kotahi to complete research and produce guidance on best practice for specifying modified and bitumen treated pavement layers.		2								
	1	WS1.2	1.2.1	Waka Kotahi to include a comprehensive cement and bitumen guidance within the NZ rehab guide review			1	WK	PLA	31.03.23	WK	06.09.22	25.10.22	
3	1	WS1.3		Waka Kotahi to continue monitoring the performance of existing HILAB pavements and provide updated information as it becomes available.		2								
	1	WS1.3	1.3.1	Waka Kotahi to provide an annual summary report on the performance of Hi-lab pavements.			2	WK	MES	31.12.22	WK	06.09.22	25.10.22	
4	1	WS1.4		The application of OGPA in New Zealand, as an application on thin surfacing's, has been solely undertaken on larger State Highway projects to date. Therefore, any perceived reliability risks should be considered by Waka Kotahi whenever this treatment is specified for future projects. Once CAPTIF have completed their research, the findings are to be presented to industry.		2								
	1	WS1.4	1.4.1	Waka Kotahi produces and distributes a report on the CAPTIF trials.			2	WK	MES	31.12.22	WK	06.09.22	25.10.22	
6	2	WS2.1		Expand on the current work to include NPV calculations for pavements with a thin asphalt surface, and for structural asphalt pavements.		2								
	2	WS2.1	2.1.1	Prepare a brief for specialist consultant to expand on the research project carried out to date in WS2. Scope of research to involve interrogation of RAMM with respect to surfacing lives and maintenance strategies for pavements with thin asphalt surfacings and for structural asphalt pavements. Output to include recommended NPV calculation inputs for pavements with thin asphalt surfacings and for structural asphalt pavements.			1	WK	LTA	20.12.22	WK	06.09.22	25.10.22	
	2	WS2.1	2.1.2	Engage consultant under Waka Kotahi SME project management. Methodology to include weekly progress meetings and internal/external peer review.			1	WK	MES & LTA	01.11.22 - 31.05.23	SME	06.09.22	25.10.22	
	2	WS2.1	2.1.3	Engage internal and external peer reviewer and receive feedback.			1	WK	MES & LTA	31.05.23	SME	06.09.22	25.10.22	
7	2	WS2.2		Carry out a wider assessment of the use of the proposed NPV input parameters using actual project information taken from a range of NOCs.		2								
	2	WS2.2	2.2.1	As per actions 2.1.1 to 2.1.3 but researcher to carry out wider assessment of recommended NPV inputs by using case studies from a minimum of ten NOC rehab sites covering a range of pavement and treatment types.			1	WK	LTA	01.11.22 - 31.05.23	SME	06.09.22	25.10.22	
8	2	WS2.3		Adopt the proposed input parameters for calculation of NPVs for chip sealed unbound granular (or modified granular) pavement treatments (based on satisfactory results from Required Response WS2.1).		2								
	2	WS2.3	2.3.1	Create and publish a Technical Advice Note (TAN) describing recommended NPV inputs and procedures based on the outcomes of Required Responses WS2.1 and WS2.2.			1	WK	LTA	30.06.23	SME	06.09.22	25.10.22	
9	2	WS2.4		Resolve that NPV figures should be used in terms of a ranking tool as opposed to a pass/fail criterion.		2								
	2	WS2.4	2.4.1	To be included in preparation of TAN – see Required Response WS2.3.			1	WK	LTA	01.11.22 - 31.05.23	SME	06.09.22	25.10.22	
10	2	WS2.5		Develop a Technical Advice Note (TAN) and deliver training to designers and Waka Kotahi staff with respect to the proposed NPV input parameters.		2								
	2	WS2.5	2.5.1	Develop webinar training course material covering the content of the TAN.			1	WK	SME	01.11.22 - 31.05.23	SME	06.09.22	25.10.22	

4.2 Implementation Plan Page 2: WS3 Procurement

PDSR - Implementation Plan for Required Responses														
								Written By		Revision	V1A - Final	Date	31.10.22	
								Ian McNally		All revisions described under 'Latest Edits' tab.				
Count	WS Report	Final RR Ref. Number	Final Action Ref.	Required Response	ENABLERS	Enabler	Priority	Action Owner (Organisation)	Action Owner (Role)	Target Date of Action Completion (unless stated)	Engage With (see abbrev. under Action Owner)	Action Status		
												Proposed	Approved	Completed
11	3	WS3.1		That Waka Kotahi continues to consult collaboratively with the industry in the development of appropriate standards, specifications and guidelines, for the design, construction and maintenance of road pavements. All new specifications and guidance material should include online advice and / or training resources.		3								
	3	WS3.1	3.1.1	Advise ACE NZ, CCNZ and other relevant groups of our re-commitment to do this.			1	WK	PPM	30.11.22	ACENZ & CCNZ	06.09.22	25.10.22	
	3	WS3.1	3.1.2	Provide an online listing of a master register of all specifications and guidance materials.			2	WK	MA	28.02.23	ACENZ & CCNZ	06.09.22	25.10.22	
12	3	WS3.2		That Waka Kotahi provides Principal prescribed pavement designs for new and rehabilitation projects subject to the following criteria: a) That industry concerns in respect of the pavement design standards are discussed and considered through collaborative consultation with the industry, as per Required Response 3.1. b) That the pavement designs be carried out by independent Principal appointed pavement designers. c) That design responsibility be retained by the independent Principal appointed pavement designers. d) Provision of a separate construction prequalification category for pavement construction, potentially to be included within a surfacing category.		3								
	3	WS3.2	3.2.1	D&C, ECI and Alliance Proformas are amended to indicate that pavement designs will generally be provided by the Principal .			1	WK	SM031 Steering Group	31.03.23	ACENZ & CCNZ	06.09.22	25.10.22	
	3	WS3.2	3.2.2	Principal Advisor Specification is updated to indicate that this consultant provides detailed design (rather than specimen design) for all pavement designs under the D&C, ECI and Alliance Contract models unless otherwise specified. This includes that the Principal Advisor will carry out construction monitoring during construction.			1	WK	SM030 Steering Group	31.03.23	ACENZ & CCNZ	06.09.22	25.10.22	
	3	WS3.2	3.2.3	The NOC proforma is updated to indicate that all pavement rehabilitation designs will be provided by the Principal.			1	WK	SM032 Steering Group	31.03.23	CCNZ	06.09.22	25.10.22	
	3	WS3.2	3.2.4	Pre-qualification process is modified to create a new pre-qualification category for pavement construction and advise all current pre-qualified contractors that we are accepting applications for this new category.			1	WK	Procurement Team	31.03.23	CCNZ	06.09.22	25.10.22	
13	3	WS3.3		The Steering Group is reluctant to encourage tenderers to nominate alternative pavements during tendering. Instead, it has recommended that the Principal remains open to considering innovative pavement ideas, that should be raised at any time outside of the tender process.		3								
	3	WS3.3	3.3.1	Advise ACENZ and CCNZ as to why WK is taking this approach.			1	WK	PPM	31.12.22	ACENZ & CCNZ	06.09.22	25.10.22	
	3	WS3.3	3.3.2	This principle to be written into the Contract Procedures manual.			1	WK	SM021 Steering Group	31.03.23	CCNZ	06.09.22	25.10.22	
	3	WS3.3	3.3.3	This principle to be written into the Project Management Manual.			1	WK	SM011 Steering Group	31.03.23		06.09.22	25.10.22	
14	3	WS3.4		That for contractor-led procurement models, excluding Principal prescribed design, pavement design and construction be: a) Scheduled as a Provisional Sum b) Designed and priced in conjunction with the Principal, Principal's Agent, and an Independent Estimator following contract award.		3								
	3	WS3.4	3.4.1	D&C, ECI and Alliance proformas are amended to indicate that where pavement design is to be contractor led, then the design and construction costs will be tendered under PS items.			1	WK	SM031 Steering Group	31.03.23	ACENZ & CCNZ	06.09.22	25.10.22	
	3	WS3.4	3.4.2	D&C, ECI and Alliance proformas are amended to include the process to be followed in considering, approving and pricing the design and construction of pavements. when the design is contractor led.			1	WK	SM031 Steering Group	31.03.23	ACENZ & CCNZ	06.09.22	25.10.22	

4.3 Implementation Plan Page 3: WS3 Procurement and WS4 Strategic Risk

|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-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4.4 Implementation Plan Page 4: WS5 Quality of Project Delivery

PDSR - Implementation Plan for Required Responses												
Count	WS Report	Final RR Ref. Number	Final Action Ref.	Required Response	ENABLERS	Enabler	Priority	Action Owner (Organisation)	Action Owner (Role)	Target Date of Action Completion (unless stated)	Engage With (see abbrev. under Action Owner)	Action Status
					1. Leadership 2. Technical Excellence 3. Procurement 4. Technical Groups & Forums 5. General Industry Training 6. Quality 7. Cross Industry Communications			WK = Waka Kotahi CCNZ = Civil Contractors NZ ACENZ = Assoc. of Consultant Engineers NZ EngNZ = Engineering NZ AQA = Aggregate & Quarry Assoc. PDS SG = Pavement Delivery System - Steering Group PLT = Pavement Leadership Team NPTG = Nat. Pavement Technical Group	TM = Technical Manager TCC = Technical Committee Chair LTA = Lead Technical Advisor PLA = Pavement Lead Advisor MES = Manager, Engineering Standards MA = Manager, Assurance PPM = Principal Project Manager SMP = Senior Manager, Procurement LACP = Lead Advisor Contract Perf. PLT = Pavement Leadership Team NPTG = Nat. Pavement Technical Group SME = Subject Matter Expert REG = Road Efficiency Group			Proposed Approved Completed
18	5	WS5.1		Having considered its outcomes, it has been decided to end the promotion of the Quality Right approach as a stand-alone initiative, and instead embed Quality Right principles into the Z01 document (May 2021, Version 5), so that all new projects can use the principles as consistent requirements when determining their quality approach.	6		1	WK	MA & WK Quality Mgr.	Q2 2022		06.09.22 06.09.22 06.09.22
	5	WS5.1	5.1.1	This work is deemed completed. No additional actions are required.								
19	5	WS5.2		The Z08 document (Dec 2020, Version 5) has now been updated to provide far greater clarity over the minimum standards for inspection, sampling and Testing. Appendix 1 of the document describes the test and frequency of test for the materials and component parts of the relevant construction process.	6		1	WK	MA & WK Quality Mgr.	Q2 2022		06.09.22 06.09.22 06.09.22
	5	WS5.2	5.2.1	This work is deemed completed. No additional actions are required.								
20	5	WS5.3		Waka Kotahi will explore the creation of a suitable Quality Forum as a vehicle for engaging with industry groups, designers and contractors on quality matters, and raising the profile of quality across the pavement delivery system.	6		1	WK	MA & WK Quality Mgr.	Q2 2022		06.09.22 06.09.22 06.09.22
	5	WS5.3	5.3.1	This work is deemed completed. No additional actions are required.								
21	5	WS5.4		Update the contents of Technical Specifications and explore opportunities to adopt AustRoads standards and specifications.	2		1	WK	MA	31.03.23		06.09.22 25.10.22
	5	WS5.4	5.4.1	Develop a process for ensuring that Technical Specifications are regularly reviewed.			1	WK	Chief Engineer (WK)	31.10.22		06.09.22 25.10.22 28.10.22
	5	WS5.4	5.4.2	Follow Waka Kotahi's recently created process for the review of AustRoads standards and specifications.			1	WK				
22	5	WS5.5		Develop tools that enable the automatic generation of ITPs that are reflective of project specifications.	6		2	WK	MES	31.03.23		25.10.22 25.10.22
	5	WS5.5	5.5.1	Investigate the feasibility of creating an automated ITP system.			2	WK	MES	31.03.23		25.10.22 25.10.22
	5	WS5.5	5.5.2	Review outputs and determine adoption.			2	WK				
23	5	WS5.6		Implement the use of an independent REVIEWER to separate the monitoring of quality control from commercial control. Use this change to promote the greater awareness and higher performance of: - a) Contract requirements b) Quality Assurance based training c) Role definition for those responsible for project QA - including how these roles are presented / scored within procurement models d) Process, Standards and Testing management.	6		1	WK	MES	31.12.22	ACENZ	25.10.22 25.10.22
	5	WS5.6	5.6.1	WK to work with ACE NZ to develop the concepts for (a) to (c) above.			1	WK	MES	31.03.23		25.10.22 25.10.22
	5	WS5.6	5.6.2	Adoption through publishing via SM030.			1	WK	MES	31.03.23		25.10.22 25.10.22
24	5	WS5.7		The pavement delivery industry is to improve its Lessons Learned processes - providing a sustained reflection on how we're doing, through the use of: - a) established collaborative forums, b) the faster promotion of key successes.	6		2	WK / ACENZ / CCNZ	LTA	31.12.22	ACENZ & CCNZ	06.09.22 25.10.22
	5	WS5.7	5.7.1	Agree wording for a policy (to be shared amongst Construction Category Contractors) agreeing to the sharing of lessons learnt (opportunities & risks) that result from pavement performance - to be shared amongst consultants, contractors and suppliers.			2	ACENZ / CCNZ	LTA	31.01.22	ACENZ & CCNZ	06.09.22 25.10.22
	5	WS5.7	5.7.2	All parties are to continually promote the learning culture required for improvement. WK, CCNZ and ACENZ to discuss the level of formality required.			2	WK / ACENZ / CCNZ	WK / ACENZ / CCNZ	31.03.23	ACENZ & CCNZ	06.09.22 25.10.22
	5	WS5.7	5.7.3	Use existing events, such as Quality Forums (undertaken by WK, CCNZ, ACENZ etc) for the sharing of lessons learnt.			2	WK / ACENZ / CCNZ	WK / ACENZ / CCNZ	31.03.23	ACENZ & CCNZ	25.10.22 25.10.22
	5	WS5.7	5.7.4	Explore the appropriate use of Waka Kotahi web-pages as a vehicle for summarising lessons learnt outcomes.			2	WK / ACENZ / CCNZ	WK / ACENZ / CCNZ	31.03.23	ACENZ & CCNZ	25.10.22 25.10.22

4.5 Implementation Plan Page 5: WS6 Industry Capability

[illegible]

4.6 Implementation Plan Page 6: WS6 Industry Capability and WS7 Cross Industry Communication

PDSR - Implementation Plan for Required Responses														
								Written By	Revision	V1A - Final	Date	31.10.22		
								Ian McNally	All revisions described under 'Latest Edits' tab.					
Count	WS Report	Final RR Ref. Number	Final Action Ref.	Required Response	ENABLERS	Enabler	Priority	Action Owner (Organisation)	Action Owner (Role)	Target Date of Action Completion (unless stated)	Engage With (see abbrev. under Action Owner)	Action Status		
												Proposed	Approved	Completed
30	6	WS6.6		Professional membership should be promoted and facilitated by organisations for all professional and technical staff, so that professional development can be monitored and maintained. Professional membership goals should be considered for inclusion within employment Key Performance Indicators (KPIs).		2								
	6	WS6.6	6.6.1	Create a comms piece for the purpose of recommending that company leaders encourage and facilitate professional membership and continued professional development for all design and technical staff, particularly junior and intermediate staff. Also suggest how employment KPIs around professional membership objectives could be included in employment contracts.			2	WK	Comms Mgr.	31.12.22	EngNZ, ACENZ	25.10.22	25.10.22	
	6	WS6.6	6.6.2	Submit article to EngNZ and ACENZ for inclusion in their regular electronic digital mail and/or web pages.			2	WK	Comms Mgr.	31.12.22	EngNZ, ACENZ	25.10.22	25.10.22	
31	6	WS6.7		It is critical that all senior staff see mentoring as an important part of their role. Industry groups should consider the use of Annual Performance Reviews to promote and assess the performance of Senior construction staff in mentoring those who report to them. The Organisational Sector could look to introduce an Industry Awards based system that identifies and celebrates those senior leaders who champion the importance of passing on key skills and experience in their day-to-day duties.		2								
	6	WS6.7	6.7.1	Create a comms piece reinforcing the importance of mentoring in the development of construction staff. Distribute to construction company leaders via CCNZ EDMs and/or CCNZ web page.			2	CCNZ	Comms Mgr.	31.12.22	CCNZ	25.10.22	25.10.22	
	6	WS6.7	6.7.2	CCNZ to consider the implementation of an award that celebrates mentorship in the construction sector. Award winners to be decided by CCNZ leadership group and presented at annual awards function. CCNZ to facilitate sponsorship, terms of reference and naming of the award.			2	CCNZ	TM	31.12.22	CCNZ	25.10.22	25.10.22	
32	6	WS6.8		Consulting companies should continue to assist staff with maintaining a high level of Continuing Professional Development.		5								
	6	WS6.8	6.8.1	Include in comms piece described in WS6.6.			2	WK	Comms Mgr.	31.12.22	EngNZ, ACENZ	25.10.22	25.10.22	
33	6	WS6.9		Industry organisations (such as ACENZ, EngNZ and NPTG) are to work with regional universities and other tertiary institutes to develop a programme of guest lectures, which can be used to promote the importance of the pavement design industry.		2								
	6	WS6.9	6.9.1	WK to request NPTG liaise with Auckland, Waikato, Canterbury Universities and other tertiary institutes to organise guest lectures to be delivered by appropriate professional personnel, as identified by NPTG (on a volunteer basis).			2	NPTG	Chair	31.03.23	Auckland, Waikato & Canterbury Uni	25.10.22	25.10.22	
34	6	WS6.10		Seconding design staff to a contracting company is to be encouraged and reciprocated with construction staff spending time in the design office. Seconding design staff to a client office could take the form of cadetships where inexperienced staff spend (say) six months in each of the design office, construction site and client's office, with mentors assigned at each.		2								
	6	WS6.10	6.10.1	WK, CCNZ and ACENZ are to continue to consider the implementation of this recommendation on a collaborative rather than a mandated basis, possibly best enabled through NOC, TLA maintenance contracts or major projects. Initially to be led by WK, CCNZ or EngNZ/ACENZ.			2	WK / ACENZ / CCNZ	NOC	Ongoing	WK NOC	25.10.22	25.10.22	
35	7	WS7.1		Re-launch the Technical Concern process using a clear Process Map and supporting Guidance Note that defines positions and their responsibilities.		2								
	7	WS7.1	7.1.1	Implement system operationally within WK		2	1	WK	LTA	15.10.22		06.09.22	25.10.22	28.10.22
	7	WS7.1	7.1.2	Add current technical issues being considered to the system so they can be tracked.		2	2	WK	LTA	31.10.22		06.09.22	25.10.22	28.10.22
36	7	WS7.2		Create and make available online, the Technical Concern Form Template and the Technical Concern Tracking System.		2								
	7	WS7.2	7.2.1	Establish the format (form) for submission of technical concerns		2	1	WK	LTA	30.09.22		06.09.22	25.10.22	28.10.22
37	7	WS7.3		Communicate the availability of the Technical Concern process to the wider Pavement Industry, using workshops, meetings etc. Once the Technical Concerns process has been in operation for a period of six months, seek user feedback from the LTA-P, TC Owners, Technical Groups / Forums / SMEs and amend as required.		7								
	7	WS7.3	7.3.1	Communicate the TC process to the WK Technical groups, CCNZ, CETANZ, EngNZ and AQA through guidance note or workshop.		7	2	WK	LTA	20.12.22	WK Tech Groups, CCNZ, AQA	06.09.22	25.10.22	

Appendices

Appendix 1: Links to Workstream Reports

Workstream No.	Report Title
1	Technical Matters
2	Whole of Life
3	Procurement Processes
4	Strategic Risks
5	Quality of Project Delivery
6	Industry Capability
7	Cross Industry Communication