Project management manual

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More information

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Foreword

The NZ Transport Agency (NZTA) is charged with contributing to an affordable, integrated, safe, responsive and sustainable land transport system. We work in partnership with regional and local authorities, the New Zealand Police, the transport industry and communities to achieve this.

Within the NZTA the Highways and Network Operations group is responsible for developing state highway projects based on thorough analysis and, where appropriate, extensive consultation to ensure they can be implemented cost effectively while delivering immediate and long-term gains to road users and the economy as a whole.

Good project management is a key to ensuring that projects are managed effectively, to a high standard and deliver expected results. The NZTA does not undertake work in house and contracts out many aspects of its work. Project management is a key element of ensuring that projects are delivered on budget and on time to make sure that customers get the benefits that the transport project delivers as soon as possible.

This *Project management manual* covers all aspects of project management from feasibility to project completion and aims to guide project managers that are new to the organisation and act as a reference document for more experienced project managers. The guide is critical to ensuring there is consistency among our approach to undertaking projects and that the projects we undertake are successful.

I encourage the use of this manual by all project managers and people wanting to gain a better understanding about the elements of good project management.

We welcome suggestions from NZTA staff on how the *Project management manual* can be improved to ensure that it continues to meet the needs of all NZTA staff to deliver successful projects for our customers.

Colin Crampton

Document management plan

1) Purpose

This management plan outlines the updating procedures and contact points for the document.

2) Document information

Document name	*Project management manual*
Document number	SM011
Document availability	This document is located in electronic form on the NZ Transport Agency's website at www.nzta.govt.nz
Document owner	Emer Beatson
Document sponsor	Kevin Doherty

3) Amendments and review strategy

All corrective action/improvement requests (CAIRs) suggesting changes will be acknowledged by the document owner.

	Comments	Frequency
Amendments (minor revisions)	Updates incorporated immediately they occur.	As required.
Review (major revisions)	Amendments fundamentally changing the content or structure of the document will be incorporated as soon as practicable. They may require coordinating with the review team timetable.	At least annually.
Notification	All users that have registered their interest by email to sm011@nzta.govt.nz will be advised by email of amendments and updates.	Immediately.

4) Other information (at document owner's discretion)

There will be occasions, depending on the subject matter, when amendments will need to be worked through by the Review team before the amendment is actioned. This may cause some variations to the above noted time frames.

5) Distribution of this management plan

Copies of this manual management plan are to be included in the NZ Transport Agency intranet.

Record of amendments

Amendment number	Description of change	Effective date	Updated by

Process owners

The following post holders are responsible for the accuracy, review and periodic updating of the individual processes which constitute the *Project management manual.*

No	Process	Owner	Name	Date
1.1	Establishment	Chief Advisor Engineering Services	Peter Spies	July 2010
1.2	Resources	Chief Advisor Engineering Services	Peter Spies	July 2010
2.1	Scope definition	Manager Network Optimisation	Graham Taylor	July 2010
2.2	Consultation	Land Use and Transport Integration Manager	Dougal List	July 2010
2.3	Environmental and social	Development Services Manager	Carl Reller	July 2010
24	Resource management	Land Use and Transport Integration Manager	Dougal List	July 2010
2.5	Integrated planning/TDM	Integrated Planning Manager	David SIlvester	July 2010
2.6	Scope verification	Development Services Manager	Carl Reller	July 2010
2.7	Scope control	Manager Network Optimisation	Graham Taylor	July 2010
3.1	Risk	Assurance and Compliance Manager	Garry Butler	July 2010
4.1	Cost estimation	Project Services Manager	Richard Quinn	July 2010
4.2	Funding	Programming Manager	Cate Quinn	July 2010
5.1	Programming for time	Programming Manager	Cate Quinn	July 2010
6.1	Quality	Project Services Manager	Richard Quinn	July 2010
6.2	Value engineering	Project Services Manager	Richard Quinn	July 2010
6.3	Network operations review	Operations Manager	Dave Bates	July 2010
6.4	Peer reviews	Project Services Manager	Richard Quinn	July 2010
6.5	Road safety audit and inspection	Traffic and Safety Manager	Fabian Marsh	July 2010
7.1	Documentation	Project Services Manager	Richard Quinn	July 2010
8.1	Property management	National Property Manager	Malcolm Watson	July 2010
8.2	Procurement	Project Services Manager	Richard Quinn	July 2010
8.3	Tendering	Project Services Manager	Richard Quinn	July 2010
9.1	Contract management	Chief Advisor Engineering Services	Peter Spies	July 2010
9.2	Communication	Senior Communications Advisor	Janice McDougall	July 2010
9.3	Contract administration	Project Services Manager	Richard Quinn	July 2010
9.4	Financial management	PROMAN Team Leader	Jenni Horton	July 2010
9.5	Change control	Project Services Manager	Richard Quinn	July 2010
9.6	Cost control	Chief Advisor Engineering Services	Peter Spies	July 2010
9.7	Disputes resolution	Chief Advisor Engineering Services	Peter Spies	July 2010
9.8	Supplier performance	Project Support Team Leader	Ursula Cardiff	July 2010
10.1	Project close-out	Operations Manager	Dave Bates	July 2010
10.2	Contract close-out	Project Services Manager	Richard Quinn	July 2010

Review process

Each process owner is entitled to instigate a review of their process at any time. However, on an annual basis the manual owner will request that each process owner confirms the current validity of their process. Any changes that are required and signed off by the process owner will be updated on the intranet and issued to all controlled copy holders.

Should it be deemed by the manual owner that the manual requires a more thorough overhaul, then the SM011 Steering Group can be recalled to manage the change process or advise on points of discussion.

If you have any comments on this manual please email sm011@nzta.govt.nz.

Abbreviations

ACENZ	Association of Consulting Engineers New Zealand
AEE	Assessment of environmental effects
AMP	Asset management plan
ARRB	Australian Road Research Board
ATMS	Advanced Traffic Management System
Austroads	Association of Australasian Roading Authorities
BCR	Benefit cost ratio
BUDMT	Business Unit Decision-Making team
CAS	Crash analysis system (accident information)
CCCS	Conditions of contract for consultancy services
CE	Cost estimate
CMR	Cost management review
CoPTTM	*Code of practice for temporary traffic management* (SP/M/010)
CPI	Consumer price index
CPP	Competitive pricing procedures
CSvue monitoring system	The NZ Transport Agency consent database management tool.
CQP	Consultants/Contractors quality plan
DC	Design – construct
DE	Design estimate
DLP	Defects liability period
D&PD	Design and project documentation
ECI	Early contractor involvement
EIA	Environmental impact assessment
EOY	End of year
EVM	Earned value management
FAP	Funding allocation process
FE	Feasibility estimate
FMIS	Financial Management Information System
GIS	Geographical Information System
GL code	General ledger code
GPS	Government Policy Statement
HHA	Heavy Haulage Association
HCV	Heavy commercial vehicle

HNO	Highways and Network Operations group
HOV	High occupancy vehicle
I&R	Investigation and reporting
IFT	Information for tenderers
IPA	Independent professional advisor
IPENZ	Institute of Professional Engineers New Zealand
ISO	International Standards Organisation
KPI	Key performance indicator
KRA	Key result area
LAR	Limited access road
LGA	Local Government Act
LINZ	Land Information New Zealand
LLR	Lessons learned review
LRS	Location reference system
LTCCP	Long-Term Council Community Plan
LTMA	Land Transport Management Act 2003
LTP online	Land Transport Programme Online
LTPS	Long-term Procurement Strategy
MSQA	Management, surveillance and quality assurance
MOU	Memorandum of understanding
M&V	Measure and value (contract type)
NLTP	National Land Transport Programme
NoR	Notice of requirement (for designation)
NTC	Notice to contractor
NTE	Notice to engineer
NTT	Notice to tenderer
NZTA	NZ Transport Agency
OE	Option estimate
PACE	Performance assessment by coordinated evaluation
PADS	Property Acquisition and Disposal System
PAG	Project Advisory group
PE	Pre-design estimate
PET	Proposal Evaluation team
PFR	Project feasibility report
PROMAN	State Highway Project Financial Management System

PS	Professional services
PSMC	Performance-specified maintenance contract
PT	Passenger transport
PW	Physical works
QA	Quality assurance
RAMM	Road Assessment Maintenance and Management System
RAP	Risk-adjusted programme
RCA	Road controlling authority
RFT	Request for tender
RFP	Request for proposal
RMA	Resource Management Act 1991
ROI	Registration of interest
RoNS	Roads of national significance
RP&P	Regional Partnerships and Planning group
RSA	Road safety audit
RTC	Regional Transport Committee
SAR	Scheme assessment report
SE	Scheme estimate
SEA	Social and environmental assessment
SES	Social and environmental screens
SH	State highway
SHM	State highway manager
SHPRC	State Highway Programme Review Committee
SIA	Statement of intent and ability
STMS	Site traffic management supervisor
TDM	Travel demand management
TET	Tender Evaluation team
TLA	Territorial local authority
TMC	Traffic management coordinator
TMP	Traffic management plan
TTM	Temporary traffic management
UDP	Urban Design Protocol
USP	Utility service provider
VAC	Value Assurance Committee
VAT	Value Assurance team

VFM	Value for money
VPD	Vehicles per day
W&C	Walking and cycling
YTD	Year to date

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How to use this manual

Manual structure

This manual is in four parts and is designed for ease of use by both new and experienced project managers. Experienced project managers, once familiar with the content, should only need to reference part 1 of the manual. However, the rest of the manual contains more detailed information.

Part 1 of the manual is purely a **checklist** of what needs to be done for each of the four phases of a typical project:

- feasibility
- investigation
- design, and
- construction.

The remaining three parts of the manual are broken down into 32 processes, each of which describe what needs to be done, or indicate where information can be found, in order to satisfy the checklist in part 1.

Part 2 of the manual tells the project manager **what** has to be done in order to manage a compliant project.

Part 3 of the manual contains **forms** (and examples of forms), which project managers will need to complete to achieve the requirements described in part 2.

Part 4 of the manual contains information on **how** to achieve the requirements of part 2.

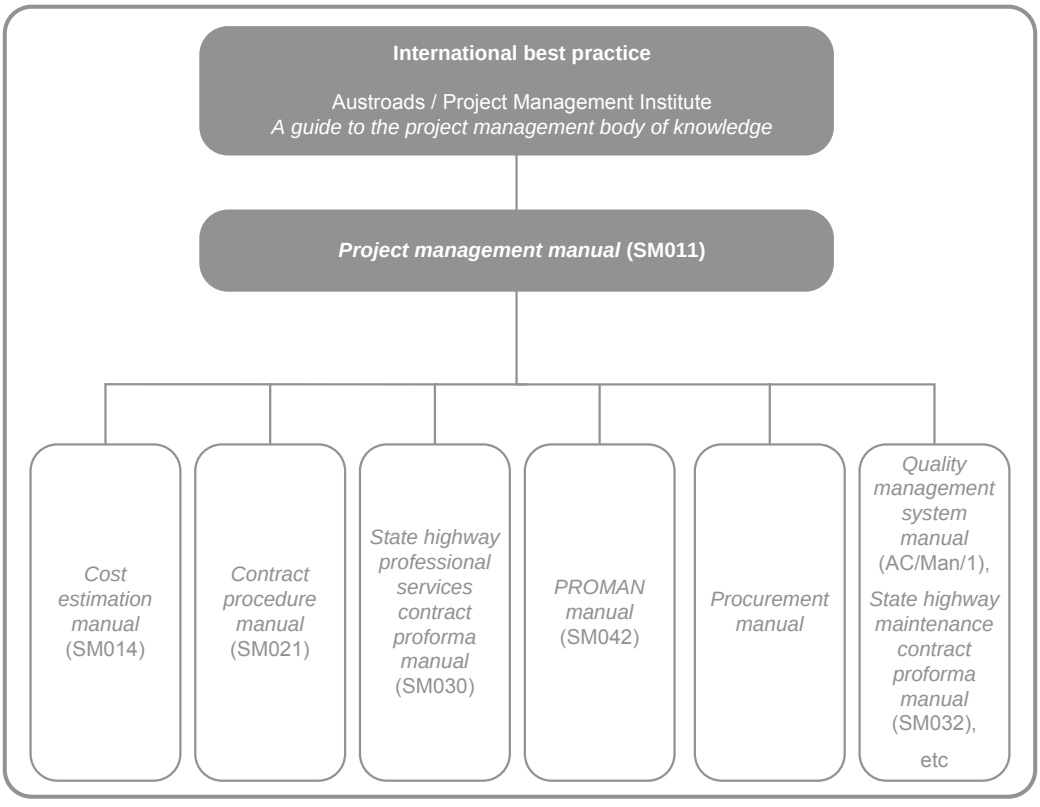
Introduction

The *Project management manual* (the manual) is for all NZ Transport Agency (NZTA) project managers to use to deliver their projects on time, to budget and to the required standard.

Context

This manual does not attempt to guide the project managers on general project management principles. Nor does it repeat details of the various processes which are documented in other NZTA's manuals (see *Standards and guidelines manual* (SM/P/21)). It is intended to provide guidance for users on where to find details of the various processes they are expected to follow for all sizes and procurement methods.

The manual sets out guidance on project management practice that is specific to the NZTA business and which has been developed over recent years by various NZTA project managers. This guidance attempts to document lessons learnt as we have developed and delivered projects and to provide advice on the best way to progress through various mandatory processes while avoiding pitfalls along the way. Any steps avoided should be clearly documented in the project plan, particularly for smaller projects.

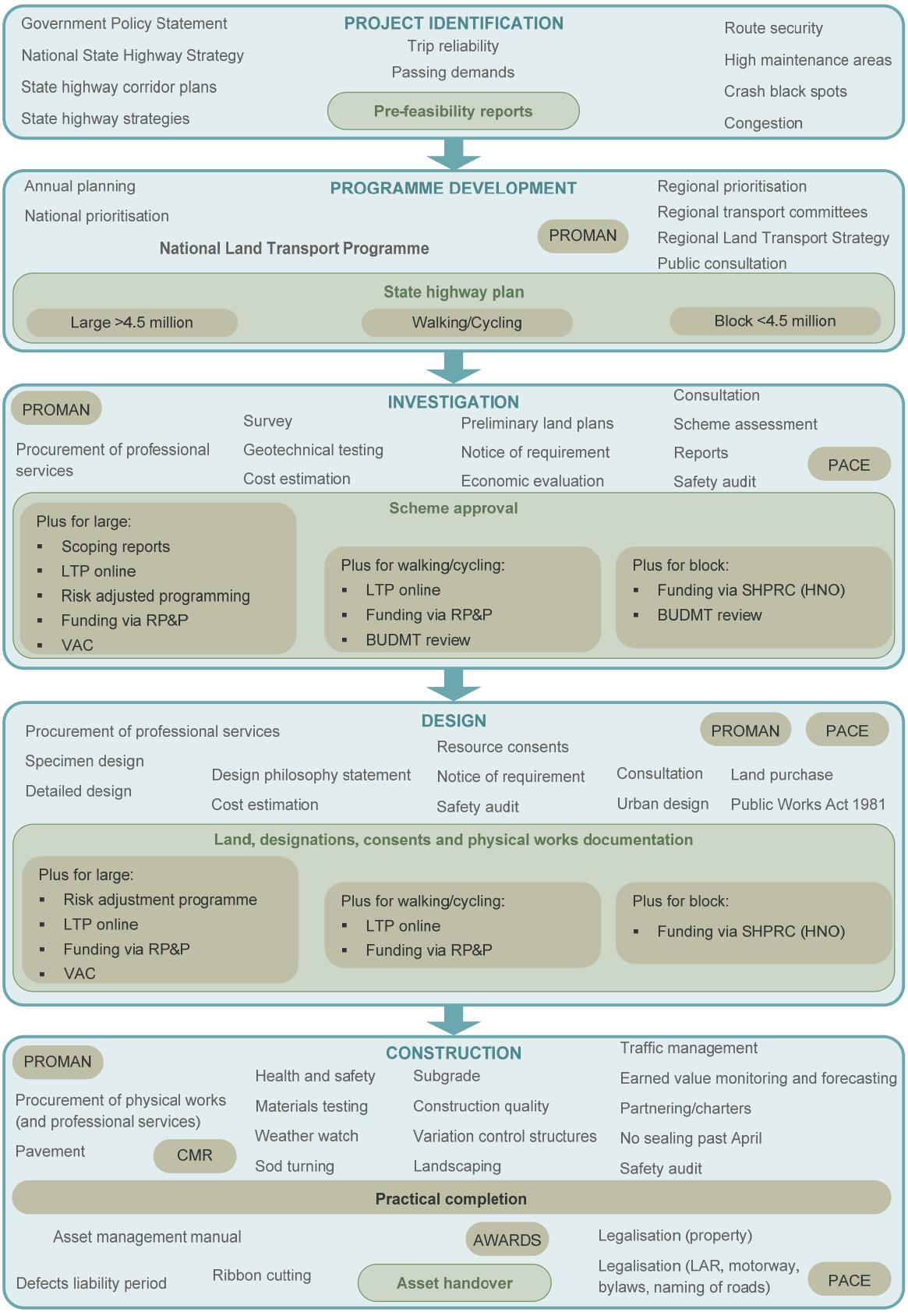


This manual should be read in conjunction with the Austroads' *Guide to project delivery* developed by an Austroads' committee in 2007 which included the NZTA representation. This guide sets out in detail general project management practices and processes relevant to the development and delivery of roading projects.

Flow charts

Project development flow chart	The flow chart broadly illustrates the four life cycle stages in the development and implementation of a project, together with the compilation and prioritisation of the overall programme. The flow chart is not conclusive, representing those key activities and outputs which comprise that stage of a projects life cycle. While the life cycle stages from feasibility, investigation, design and construction are generally consecutive, the programme development activities are undertaken on an annual basis and provide the forward outlook (programme/plan) for all remaining stages of any one project.
Process flow chart	The flow chart provides an overview of when each of the manual processes applies as a project progresses through the life cycle phases. As illustrated, some processes will have definitive periods of application within a phase (eg Establishment and Contract close-out), others will only have intermittent application (eg Network operations review and Supplier performance), and some which have continuous application throughout the entire project (eg Quality).

Project development life cycle



Process

Number	Process	Feasibility	Investigation	Design	Construction
1.1	Establishment				
1.2	Resources				
2.1	Scope definition				
2.2	Consultation				
2.3	Environmental and social				
2.4	Resource management				
2.5	Integrated planning/TDM				
2.6	Scope verification				
2.7	Scope control				
3.1	Risk				
4.1	Cost estimation				
4.2	Funding				
5.1	Programming for time				
6.1	Quality				
6.2	Value engineering				
6.3	Network operations review				
6.4	Peer reviews				
6.5	Road safety audit and inspection				
7.1	Documentation				
8.1	Property management				
8.2	Procurement				
8.3	Tendering				
9.1	Contract management				
9.2	Communication				
9.3	Contract administration				
9.4	Financial management				
9.5	Change control				
9.6	Cost control				
9.7	Dispute resolution				
9.8	Supplier performance				
10.1	Project close-out				
10.2	Contract close-out				

TIME

Part 1 – Checklist

Feasibility

1. Establishment		
1.1 Establishment	Recognise problem, need or opportunity.	☐
	Formulate goal and objectives.	☐
	Prepare project charter.	☐
	Obtain project number.	☐
	Prepare project plan.	☐
	Sponsor's approval of project plan.	☐
	Setup project file.	☐
	Option assessment.	☐
	Prepare feasibility estimate order of magnitude costs and benefits.	☐
	Identify assumptions and constraints.	☐
	Prepare business case (project feasibility report).	☐
	Appoint project manager.	☐
1.2 Resources	Plan resources for feasibility phase.	☐
	Appoint resources for feasibility phase.	☐
	Manage team during feasibility phase.	☐
	Plan resources for investigation, design and construction phases.	☐
	Prepare project handover report.	☐
	Arrange handover (if necessary).	☐

2. Development		
2.1 Scope definition	Confirm problem and/or opportunity.	☐
	Determine/confirm project objectives.	☐
2.2 Consultation	Consultation with the NZ Transport Agency (NZTA) and strategic partners.	☐
	Review consultant's consultation strategy.	☐
	Review consultant's preliminary statement of identified Māori interest.	☐
	Consultation with Tāngata Whenua.	☐
2.3 Environmental and social	Prepare professional services form (PSF) 13 Social and environmental management (PSF/13) provided in the NZTA's *State highway professional services contract proforma manual* (SM030) appendix 4. 2.	☐
	Prepare PSF 2a Checklist for statutory approvals, consents and agreements (PSF/2a) provided in SM030 appendix 4.2.	☐
2.4 Resource management	Review project feasibility report for scoping of potential statutory approvals.	☐
2.5 Integrated planning/travel demand management	Document the strategic context.	☐
	Contact regional integrated planning manager, regional transportation planning manager, environmental management specialist and urban design specialist.	☐
	Complete land use assessment report.	☐
	Complete urban design assessment report.	☐
	Complete environmental management assessment report.	☐
	Complete public transport assessment report.	☐
	Complete walking assessment report.	☐
	Complete cycling assessment report.	☐
2.6 Scope verification	Submit final strategic study/ feasibility report.	☐
	Air quality assessment.	☐
	Cycling, walking, public transport and land use impact assessment report.	☐
	Obtain feasibility report sign-off.	☐
2.7 Scope control	Review project scope.	☐
	Define scope change.	☐
	Analyse impacts.	☐
	Obtain approval to scope change.	☐

3. Risk		
3.1 Risk	Develop activity risk file (risk register and treatment plan).	☐
	Identify major risks and opportunities for the project.	☐
	Review risk assessment.	☐
4. Cost		
4.1 Cost estimation	Prepare feasibility estimate.	☐
	Review estimate (peer review or parallel estimate).	☐
4.2 Funding	State highway strategy studies procedure.	☐
5. Time		
5.1 Programming for time	Develop Highways and Network Operations (HNO) 'holistic' programme and set baseline.	☐
	Mark up for progress monthly.	☐
	Receive and approve consultants' detailed programme.	☐
	Review progress against detailed programme.	☐

6. Quality		
6.1 Quality	Define quality reviews and approvals timing.	☐
	Review and accept supplier quality plans.	☐
	Review project outputs for fitness of purpose.	☐
	Formally review each supplier's quality system.	☐
	Obtain required formal approvals.	☐
	Carry out quality inspections and/or audits of completed outputs.	☐
	Keep appropriate records.	☐
6.2 Value engineering	Not applicable.	
6.3 Network operations review	Agree with Operations team which project feasibility reports (PFR's) are worth doing.	☐
	Jointly review with Operations team all completed PFR's.	☐
	Agree with Operations team which PFR's should be developed as projects.	☐
	Ensure that all PFR's consider maintenance requirements.	☐
6.4 Peer reviews	Carry out review of professional services contract documents for strategy studies.	☐
	Carry out conceptual review.	☐
	Carry out cost review.	☐
	Carry out economic evaluation review.	☐
	Carry out review of professional services contract documents.	☐
	Carryout initial project review for strategic studies.	☐
6.5 Road safety audit and inspection	Commission feasibility/Concept road safety audit (RSA).	☐
	Complete decision-tracking form.	☐
	Apply for departure approval.	☐
7. Documentation		
7.1 Documentation	Prepare professional services contract documentation.	☐
	Review contract documents.	☐

8. Procurement		
8.1 Property management	Consider cost and social/environmental/cultural implications of scheme(s) on owners and neighbours.	☐
	Preserve the ability to design away from significant problem properties if required.	☐
	Provide preliminary land requirement plan or schedule of properties likely to be affected.	☐
8.2 Procurement	Prepare tender documentation.	☐
	Advertise tender (or call for registration of interest)l	☐
	Evaluate (or negotiate) tender.	☐
	Contact probity auditor, if necessary.	☐
	Arrange pre-letting meeting, if necessary.	☐
	Award contract.	☐
8.3 Tendering	Ensure that the correct procedures for tendering have been followed, reference the NZTA's *Contract procedures manual* (SM021).	☐
9. Project control		
9.1 Contract management	No specific contract management responsibility.	
9.2 Communication	Develop a communication plan and establish a budget for strategic studies.	☐
	Discuss communication matters at strategic studies project meetings and monitor.	☐
9.3 Contract administration	Complete procurement strategy.	☐
	Obtain contract number.	☐
	Complete approval to advertise.	☐
	Draft the request for tender (RFT) and consider page limits carefully.	☐
	Advertise contract (or call for registration of interest).	☐
	Provide master RFT to tenders secretary.	☐
	Tender queries.	☐
	Opening tender process.	☐
	Approvals to award.	☐
	Check appropriate insurance coverage.	☐
	PROMAN action.	☐
	Update LTP online information.	☐
	Approve payments.	☐

9. Project control continued		
9.4 Financial management	Create project structure.	☐
	Prioritise project and request inclusion in the regional annual planning process.	☐
	Apply for funding for strategic studies.	☐
	Maintain a project structure.	☐
	Verify supplier invoices for payment.	☐
	Notify contingent liabilities.	☐
	Verify forecast and accrual values and provide commentary on variances on a monthly basis.	☐
	Prepare and submit funding review changes as required.	☐
	Update project status and complete year end processing requirements.	☐
	Update annual plan data.	☐
9.5 Change control	Review the professional services contract.	☐
	Establish a baseline.	☐
	Review the minimum standards Z series in SM030.	☐
	Review all requests for additional services and ensure that they are justified and beneficial.	☐
	Look at the impact of the change and perform integrated change control.	☐
	Seek approval for the proposed change.	☐
	Adjust the baseline in a timely manner.	☐
	Manage the project to the new baseline.	☐
	Monitor the results of the change.	☐
9.6 Cost control	Review the contract.	☐
	Manage actual changes.	☐
	Design good cost reports to detect potential problems.	☐
	Forecast frequently.	☐
9.7 Dispute resolution	Ensure professional services contracts include dispute resolution provisions or reference to clause 10 Conditions of contract for consultancy services (CCCS).	☐
	Maintain regular and interactive communication with consultants/stakeholders to minimise any disputes.	☐
	Undertake dispute resolution process as required.	☐
9.8 Supplier performance	Complete interim performance evaluations.	☐
	Complete final performance evaluation if contracted services are concluded.	☐

10. Closeout		
10.1 Project close-out	Completed project: • Complete final summary report. • Pass actions to asset manager.	☐
	Suspended project: • Update project plan. • Update PROMAN financials.	☐
	Closed project.	☐
	Terminated project.	☐
	Forward memo to Business Unit Decision-Making team (BUDMT).	☐
10.2 Contract close-out	Complete performance reviews.	☐
	Obtain all expected deliverables.	☐
	Complete final payments.	☐
	Resolve any contingent liabilities.	☐
	Notify consultants that contract is complete.	☐
	Close contract files.	☐
	Update project plan.	☐

Investigation

1. Establishment		
1.1 Establishment	Develop project charter (sponsor's brief).	☐
	Appoint Highways and Network Operations (HNO) project manager and allocate internal resources.	☐
	Establish project register/document control.	☐
	Develop preliminary scope statement.	☐
	Write the project management plan.	☐
	Approve the project management plan.	☐
1.2 Resources	Appoint resources for the investigation phase.	☐
	Manage team during investigation phase.	☐
	Review design phase resources.	☐
	Prepare project handover report, if necessary.	☐
	Arrange handover, if necessary.	☐
2. Development		
2.1 Scope definition	Review/analyse the outcomes from the project feasibility report (PFR).	☐
	Review/analyse the outcomes from the scoping report (large projects).	☐
	Confirm/determine project objectives.	☐
	Undertake investigation and reporting (I&R) stage.	☐
2.2 Consultation	Review and approve consultation plan.	☐
	Establish consultation project in the stakeholder relationship management system.	☐
	Review and approve statement of identified Māori interests.	☐
	Ensure agreed consultation is undertaken appropriately.	☐
	Review and approve report on the outcome of consultation undertaken.	☐
2.3 Environmental and social	Prepare/update professional services form (PSF) 13 Social and environmental management form (PSF/13) provided in the NZ Transport Agency's *State highway professional services contract proforma manual* (SM030) appendix 4. 2.	☐
	Prepare/update PSF 2a Checklist for statutory approvals, consents and agreements (PSF/2a) provided in SM030 appendix 4.2.	☐

2. Development continued		
2.4 Resource management	Obtain resource consents for drilling, etc.	☐
	Review and approve consenting strategy.	☐
	Review draft assessment of environmental effects (AEE) to support statutory applications (notice of requirement, resource consents).	☐
	Finalise and lodge statutory applications if included in the investigation and reporting (I&R) contract.	☐
	Meet with submitters if required.	☐
	Prepare and present proposal at hearing if required.	☐
	Assess decisions and recommendations.	☐
	Seek approval to decisions and any conditions if required.	☐
	Negotiate with appellants if required.	☐
2.5 Integrated planning/travel demand management	Consult with planning and government agency partners, local authorities, rail, public transport, freight operators and other relevant road user groups.	☐
	Complete audit report for cycling, walking, public transport and priority lane connections.	☐
	Incorporate land use impact report recommendations.	☐
	Incorporate environmental management recommendations.	☐
	Incorporate urban design recommendations.	☐
	Incorporate integrated traffic assessment recommendations, eg where appropriate, priority lanes and traffic management.	☐

2. Development continued		
2.6 Scope verification	Seek approval for:	
	• air quality assessment report	☐
	• archaeological assessment	☐
	• erosion and sediment control management plan	☐
	• landscape plan	☐
	• procurement strategy	☐
	• for traffic and construction noise mitigation plan	☐
	• stormwater management plan	☐
	• urban design framework	☐
	• vibration management plan.	☐
	Incorporation of cycling, walking, public transport, priority land recommendations into the design phase.	☐
	Mitigate against land use impact.	☐
	Obtain strategic study/scoping report/scheme assessment report approval.	☐
2.7 Scope control	Review project scope.	☐
	Define scope change.	☐
	Analyse impacts.	☐
	Obtain approval to scope change.	☐
3. Risk		
3.1 Risk	Update risk register.	☐
	Develop option risks for comparison.	☐
	Finalise risk profile for preferred option.	☐

4. Cost		
4.1 Cost estimation	Prepare and submit funding application assessment (investigation and reporting (I&R)).	☐
	Prepare and review options estimate.	☐
	Prepare and review scheme estimate.	☐
	Prepare and review pre-design estimate.	☐
4.2 Funding	Complete LTP online funding application and collate required attachments.	☐
	Obtain approval to seek funds from Business Unit Decision-Making team (BUDMT).	☐
	Lodge application in LTP online and liaise with regional partnerships and programmes (RPP) case manager.	☐
	Apply for funds in PROMAN.	☐
5. Time		
5.1 Programming for time	Develop Highways and Network Operations (HNO) 'holistic' programme and set baseline.	☐
	Mark up for progress monthly.	☐
	Input into HNO Programming team risk adjusted programme process for large projects.	☐
	Receive and approve consultants' detailed programme.	☐
	Review progress against detailed programme.	☐
6. Quality		
6.1 Quality	List the standards, guidelines and specifications that apply to the contract.	☐
	Establish key performance indicators to define quality standards.	☐
	Define quality reviews and approvals timing.	☐
	Review and accept supplier quality plans.	☐
	Review project outputs for fitness of purpose.	☐
	Formally review each supplier's quality system.	☐
	Obtain required formal approvals.	☐
	Carry out quality inspections and/or audits of completed outputs.	☐
	Keep appropriate records.	☐

6. Quality continued		
6.2 Value engineering	Apply value management principles prior to preparation of options.	☐
	Apply value management principles prior to preparing the scheme estimate.	
	Undertake value management process prior to finalising the pre-design estimate.	
6.3 Network operations review	Agree who the Operations team representative is for the investigation and reporting (I&R) phase.	☐
	Jointly develop I&R request for tender (RFT) with Operations team representative.	☐
	Involve Operations team representative throughout development of scheme assessment report.	
	Involve Operations team representative in scheme approval process.	☐
	Agree all consent conditions with Operations team representative.	☐
6.4 Peer reviews	Carry out:	
	• cost review	☐
	• economic evaluation review	☐
	• scheme assessment review	☐
	• conceptual review if required	☐
	• review of professional services contract documents for design phase if applicable	☐
	• initial project review.	☐
6.5 Road safety audit and inspection	Commission scheme assessment road safety audit (RSA).	☐
	Sign off outstanding issues.	☐
	Complete decision-tracking form.	☐
	Assess departures required.	☐
	Apply for and confirm departure approval.	☐
	Additional RSA requirements for design and construct contract: • assemble contract documents • commission scheme assessment RSA review of contract documents • incorporate results of review in contract documents • commission scheme assessment RSA review of tender submissions.	☐
7. Documentation		
7.1 Documentation	Prepare professional services contract documentation. May include provision for design and construction phases.	☐
	Review contract documents.	☐

8. Procurement		
8.1 Property management	Make contact with landowners.	☐
	Obtain land entry agreement for investigation. Use compulsory purchase process if necessary.	☐
	Obtain landowners sign-off on notice of requirement.	☐
	Produce an approved land requirement plan.	☐
	Instruct senior project manager to appoint an acquisition supplier to acquire land.	☐
	Use advance purchase by negotiation for critical sites.	☐
	Assist property manager or acquisition supplier with negotiations with landowners.	☐
	Initiate compulsory purchase if necessary	☐
8.2 Procurement	Prepare tender documentation.	☐
	Advertise tender.	☐
	Evaluate (or negotiate) tender.	☐
	Award contract.	☐
8.3 Tendering	Ensure that the correct procedures for tendering have been followed, reference the NZ Transport Agency's *Contract procedures manual* (SM021).	☐
9. Project control		
9.1 Contract management	Check robustness of investigation and reporting (I&R) phase contract document.	☐
	Review consultant's contract deliverables.	☐
	Hold consultant to tender proposals.	☐
	Hold consultant to contract requirements.	☐
	Ensure consultant is paid on time.	☐
	Ensure consultant's performance is monitored.	☐
9.2 Communication	Develop a communication plan and establish a budget.	☐
	Discuss communication matters at project meetings and monitor.	☐

9. Project control continued		
9.3 Contract administration	Complete procurement strategy.	☐
	Obtain contract number.	☐
	Complete approval to advertise.	☐
	Draft the request for tender (RFT) and consider page limits carefully.	☐
	Advertise contract.	☐
	Provide master RFT to tenders secretary.	☐
	Tender queries.	☐
	Opening tender process.	☐
	Approvals to award.	☐
	Check appropriate insurance coverage.	☐
	PROMAN action.	☐
	Review and update LTP online	☐
	Approve payments.	☐
9.4 Financial management	Apply for investigation funding.	☐
	Maintain a project structure.	☐
	Verify supplier invoices for payment.	☐
	Notify contingent liabilities.	☐
	Verify forecast and accrual values and provide commentary on variances on a monthly basis.	☐
	Prepare and submit funding review changes as required.	☐
	Update project status and complete year end processing requirements.	☐
	Update annual pan data.	☐

9. Project control continued		
9.5 Change control	Review the professional services contract.	☐
	Establish a baseline.	☐
	Review the NZ Transport Agency (NZTA) standard professional services specification for investigation and reporting and contract management and Z series.	☐
	Review all requests for additional services and ensure that they are justified and beneficial.	☐
	Look at the impact of the change and perform integrated change control.	☐
	Seek approval for the proposed change.	☐
	Adjust the baseline in a timely manner.	☐
	Manage the project to the new baseline.	☐
	Monitor the results of the change.	☐
9.6 Cost control	Review the contract.	☐
	Manage actual changes.	☐
	Design good cost reports to detect potential problems.	☐
	Forecast frequently.	☐
9.7 Dispute resolution	Ensure professional services contracts include dispute resolution provisions or reference to clause 10 Conditions of contract for consultancy services (CCCS).	☐
	Maintain regular and interactive communication with consultants/stakeholders to minimise any disputes.	☐
	Undertake dispute resolution process as required.	☐
	Ensure professional services contracts include dispute resolution provisions or reference to clause 10 Conditions of contract for consultancy services (CCCS).	☐
9.8 Supplier performance	Complete interim performance evaluations.	☐
	Complete final performance evaluation if contracted services are concluded.	☐

10. Closeout		
10.1 Project close-out	Completed project: • Complete final summary report. • Pass actions to asset manager.	☐
	Suspended project: • Update project plan. • Update PROMAN financials. • Close project.	☐
	Terminated project: • Forward memo to Business Unit Decision-Making team (BUDMT) (project estimated cost <$4.5 million). • Submit a report to group manager Highways and Network Operations (project estimated cost >$4.5 million).	☐
10.2 Contract close-out	Complete performance reviews.	☐
	Obtain all expected deliverables.	☐
	Complete final payments.	☐
	Resolve any contingent liabilities.	☐
	Notify consultants that contract is complete.	☐
	Close contract files.	☐
	Update project plan.	☐

Design

1. Establishment		
1.1 Establishment	Review project charter.	☐
	Update project management plan.	☐
1.2 Resources	Appoint resources for the design phase.	☐
	Manage team during design phase.	☐
	Review construction phase resources.	☐
	Arrange handover (if necessary).	☐
2. Development		
2.1 Scope definition	Not applicable.	☐
2.2 Consultation	Review and approve consultation plan.	☐
	Review and approve updated statement of identified Māori interest.	☐
	Ensure agreed consultation is undertaken appropriately.	☐
	Review and approve report on the outcome of consultation undertaken.	☐
2.3 Environmental and social	Prepare professional services form (PSF) 13 Social and environmental management form (PSF/13) provided in the NZ Transport Agency's *State highway professional services contract proforma manual* (SM030) appendix 4. 2.	☐
	Update PSF 2a Checklist for statutory approvals, consents and agreements (PSF/2a) provided in SM030 appendix 4.2.	☐
2. Development continued		
2.4 Resource management	Finalise and lodge statutory applications.	☐
	Meet with submitters, if required.	☐
	Prepare and present proposal at hearing, if required.	☐
	Assess decision and recommendations.	☐
	Seek approval to decision and conditions, if required	☐
	Negotiate with appellants, if required	☐
2.5 Integrated planning/travel demand management	Mitigate against land use impact.	☐
	Incorporate cycling, walking, public transport, priority lane, traffic management and urban design recommendations into design plus other recommendations that arise through investigation phase.	☐
	Mitigate against land use impact.	☐

2. Development continued		
2.6 Scope verification	Pavement design plan.	☐
	Road safety audit.	☐
	Public transport, priority lanes, walking and cycling plans.	☐
	Structures specimen design.	☐
	Landscape planting plan.	☐
	Erosion and sediment control site plan.	☐
	Traffic and construction noise detail plan.	☐
	Stormwater management site plan.	☐
	Urban design plan.	☐
	Consent management system update.	☐
	Building consent(s).	☐
	Obtain design sign-off.	☐
2.7 Scope control	Review project scope.	☐
	Define scope change.	☐
	Analyse impacts.	☐
	Obtain approval to scope change.	☐
3. Risk		
3.1 Risk	Update risk register.	☐
4. Cost		
4.1 Cost estimation	Prepare and submit funding application assessment (design and project documentation (D&PD)).	☐
	Prepare design estimate.	☐
4.2 Funding	Complete LTP online funding application and collate required attachments.	☐
	Obtain approval to seek funds from Business Unit Decision-Making team (BUDMT).	☐
	Lodge application in LTP online and liaise with regional partnerships and programmes (RPP) case manager.	☐
	Apply for funds in PROMAN.	☐

5. Time		
5.1 Programming for time	Refine Highways and Network Operations (HNO) 'holistic' programme (if necessary).	☐
	Mark up for progress monthly.	☐
	Input into HNO programming team risk adjusted programme process for large projects.	☐
	Receive and approve consultants' detailed programme.	☐
	Review progress against detailed programme.	☐
6. Quality		
6.1 Quality	List the standards, guidelines and specifications that apply to the contract.	☐
	Establish key performance indicators to define quality standards.	☐
	Define quality reviews and approvals timing.	☐
	Confirm the suppliers comply with all contractual requirements.	
	Confirm the suppliers comply with all systems and processes.	
	Seek approval to change the project plan for all deviations from standards.	
	Review and accept supplier quality plans.	☐
	Review project outputs for fitness of purpose.	☐
	Formally review each supplier's quality system.	☐
	Obtain required formal approvals.	☐
	Carry out quality inspections and/or audits of completed outputs.	☐
	Keep appropriate records.	☐
6.2 Value engineering	Undertake value management process prior to finalising the design estimate.	☐
	Undertake value management process prior to finalising the contract estimate.	☐

6. **Quality** continued		
6.3 Network operations review	Agree who the Operations team representative is for the design and project documentation (D & PD) phase.	☐
	Involve Operations team representative throughout development of the project design.	☐
	Agree all consent conditions with Operations team representative.	☐
	Agree all land purchase conditions with Operations team representative.	☐
	Involve Operations team representative in physical works request for tender (RFT) approval process.	☐
	Agree with Operations team representative responsibilities for second coat seals.	☐
	Agree with Operations team representative maintenance responsibilities during construction.	☐
	Involve Operations team representative in review of alternative designs received as necessary.	☐
6.4 Peer reviews	Carry out cost review.	☐
	Carry out economic evaluation review.	☐
	Carry out physical works contract document review.	☐
	Carry out conceptual review if required.	☐
	Carry out other specialist reviews as appropriate, eg geotechnical, traffic signals.	☐
	Carry out probity audit review of evaluation.	☐
	Carry out review of professional services contract documents for management, surveillance and quality assurance (MSQA) phase if applicable.	☐
	Carry out initial project review if necessary.	☐
	Carry out progress project review.	☐
	Carry out cost review.	☐
6.5 Road safety audit and inspection	Commission detailed design road safety audit (RSA).	☐
	Sign off outstanding issues.	☐
	Complete decision-tracking form.	☐
	Assess departures required.	☐
	Apply for and confirm departure approval.	☐

7. Documentation		
7.1 Documentation	Prepare physical works contract documentation. Will most likely include provision for the construction phase.	☐
	Prepare professional services management, surveillance and quality assurance (MSQA) documentation for construction phase if not included in existing commission.	☐
	Review contract documents.	☐
8. Procurement		
8.1 Property management	Request that the property manager uses compulsory acquisition provisions (if necessary).	☐
	Ensure physical works contractor obligations to owners are included in schedule of works.	☐
8.2 Procurement	For all non-block capital improvement contracts, prepare and have approved a stage 1 project procurement strategy.	☐
	Prepare project procurement strategy.	☐
	Prepare tender documentation.	☐
	Advertise tender.	☐
	Evaluate (or negotiate).	☐
	Award contract.	☐
8.3 Tendering	Ensure that the correct procedures for tendering have been followed, reference the NZ Transport Agency's *Contract procedures manual* (SM021).	☐
9. Project control		
9.1 Contract management	Check robustness of design and project documentation (D&PD) phase contract document.	☐
	Review consultant's contract deliverables.	☐
	Hold consultant to tender proposals.	☐
	Hold consultant to contract requirements.	☐
	Ensure consultant is paid on time.	☐
	Ensure consultant's performance is monitored.	☐
	Ensure coordination with land acquisition consultant.	☐
9.2 Communication	Develop a communication plan and establish a budget.	☐
	Discuss communication matters at project meetings and monitor.	☐

9. Project control continued		
9.3 Contract administration	Complete procurement strategy.	☐
	Obtain contract number.	☐
	Draft the request for tender (RFT) and consider page limits carefully.	☐
	Complete approval to advertise.	☐
	Advertise contract.	☐
	Provide master RFT to tenders secretary.	☐
	Tender queries.	☐
	Opening tender process.	☐
	Approvals to award.	☐
	Check appropriate insurance coverage.	☐
	PROMAN action.	☐
	Review and update LTP online	☐
	Approve payments.	☐
9.4 Financial management	Apply for design funding.	☐
	Maintain a project structure.	☐
	Verify supplier invoices for payment.	☐
	Notify contingent liabilities.	☐
	Verify forecast and accrual values and provide commentary on variances on a monthly basis.	☐
	Prepare and submit funding review changes as required.	☐
	Update project status and complete year end processing requirements.	☐
	Update annual plan data.	☐

9. Project control continued		
9.5 Change control	Review the professional services contract.	☐
	Establish a baseline.	☐
	Review the NZ Transport Agency standard professional services specification for design and project documentation and contract management and Z series.	☐
	Review all requests for additional services and ensure that they are justified and beneficial.	☐
	Look at the impact of the change and perform integrated change control.	☐
	Seek approval for the proposed change.	☐
	Adjust the baseline in a timely manner.	☐
	Manage the project to the new baseline.	☐
	Monitor the results of the change.	☐
9.6 Cost control	Review the contract.	☐
	Manage actual changes.	☐
	Design good cost reports to detect potential problems.	☐
	Forecast frequently.	☐
9.7 Dispute resolution	Ensure professional services contracts include dispute resolution provisions or reference to clause 10 Conditions of contract for consultancy services (CCCS).	☐
	Maintain regular and interactive communication with consultants /stakeholders to minimise any disputes.	☐
	Undertake dispute resolution process as required.	☐
9.8 Supplier performance	Complete interim performance evaluations.	☐
	Complete final performance evaluation if contracted services are concluded.	☐

10. Closeout		
10.1 Project close-out	Completed project: • Complete final summary report. • Pass actions to asset manager.	☐
	Suspended project: • Update project plan. • Update PROMAN financials.	☐
	Closed project.	☐
	Terminated project: • Forward memo to Business Unit Decision-Making team (BUDMT) (project estimated cost <$4.5 million). • Submit a report to group manager Highways and Network Operations (project estimated cost >$4.5 million).	☐
10.2 Contract close-out	Complete performance reviews.	☐
	Obtain all expected deliverables.	☐
	Complete final payments.	☐
	Resolve any contingent liabilities.	☐
	Notify consultants that contract is complete.	☐
	Close contract files.	☐
	Update project plan.	☐

Construction

1. Establishment		
1.1 Establishment	Review project charter.	☐
	Update project management plan.	☐
1.2 Resources	Appoint resources for construction phase.	☐
	Manage team during construction phase.	☐
	Arrange handover, if necessary.	☐
2. Development		
2.1 Scope definition	Not applicable.	
2.2 Consultation	Inform the public of the timing and potential disruption associated with proposed works.	☐
	Review consultants' consultation strategy.	☐
2.3 Environmental and social	Update professional services form (PSF) 13 Social and environmental management form (PSF/13) provided in the NZ Transport Agency's (NZTA) *State highway professional services contract proforma manual* (SM030) appendix 4. 2.	☐
	Update PSF 2a Checklist for statutory approvals, consents and agreements (PSF/2a) provided in SM030 appendix 4.2.	☐
	Review minimum standard (MS) Z/4 Contractor's social and environmental management plan (MS Z/4).	☐
	Review contractor's quality plan – environmental management (provided in the NZTA's *State highway maintenance contract proforma manual* (SM032)	☐
	Final update of PSF/13.	☐
2.4 Resource management	Ensure works are undertaken in compliance with the statutory requirements/ conditions set out in decisions.	☐
	Ensure any required monitoring is undertaken and reported appropriately.	
2.5 Integrated planning/travel demand management	Mitigate against land use impact during construction.	☐
	Ensure non-car users are catered for and if they are diverted away from the main route that they are provided with a usable, practical facility.	☐
	Communicate disruptions with affected road users, local community and business groups.	☐
	Ensure non- car users are happy with design or if there are any modifications/enhancements necessary.	☐
	Undertake pedestrian and cyclist post-construction monitoring (especially if larger project).	☐

2. Development continued		
2.6 Scope verification	Request for tender (RFT) for physical works.	☐
	Environmental management plan (including noise, dust, erosion and sediment control, storm water, etc).	☐
	Post-construction.	☐
	Asset owner's manual.	☐
	Consent closure and handover.	☐
2.7 Scope control	Review project scope.	☐
	Define scope change.	☐
	Analyse impacts.	☐
	Obtain approval to scope change	☐
3. Risk		
3.1 Risk	Update risk register in collaboration with the contractor.	☐
	Update risk profile on a quarterly basis.	☐
4. Cost		
4.1 Cost estimation	Prepare and submit funding application assessment (construction).	☐
	Prepare construction estimate.	☐
	Update construction estimate following award	☐
4.2 Funding	Complete LTP online funding application and collate required attachments.	☐
	Obtain approval to seek funds from Business Unit Decision-Making team (BUDMT).	☐
	Lodge application in LTP online and liaise with regional partnerships and programmes (RPP) case manager.	☐
	Apply for funds in PROMAN.	☐

5. Time		
5.1 Programming for time	Refine Highways and Network Operations (HNO) 'holistic' programme (if necessary).	☐
	Mark up for progress monthly.	☐
	Input into HNO programming team risk adjusted programme process for large projects.	☐
	Receive and approve consultants' detailed programme.	☐
	Receive and approve contractors' detailed programme.	☐
	Review progress against detailed programme.	☐
6. Quality		
6.1 Quality	List the standards, guidelines and specifications that apply to the contract.	☐
	Establish key performance indicators to define quality standards.	☐
	Define quality reviews and approvals timing.	☐
	Review and accept supplier quality plans.	☐
	Review project outputs for fitness of purpose.	☐
	Formally review each supplier's quality system.	☐
	Obtain required formal approvals.	☐
	Carry out quality inspections and/or audits of completed outputs.	☐
	Keep appropriate records.	☐
6.2 Value engineering	Apply value management principles during the construction of the project.	☐

6. Quality continued		
6.3 Network operations review	Agree who the Operations team representative is for the construction phase.	☐
	Keep Operations team representative adequately informed during construction.	☐
	Involve Operations team representative in practical completion inspection.	☐
	Involve Operations team representative in agreement to grant practical completion.	☐
	Involve Operations team representative in defects liability inspection.	☐
	Agree with Operations team representative remedial treatment for defects.	☐
	Continue to manage the project throughout the defects liability period.	☐
	Ensure that all deliverables (as-built information, etc) is provided to the Operations team representative.	☐
	Supply information to the Operations team representative for: • state highway/motorway declaration • speed limit declaration • limited access road declaration.	☐
6.4 Peer reviews	Carry out economic evaluation review.	☐
	Carry out conceptual review if required.	☐
	Carry out other specialist reviews as appropriate, eg commissioning of traffic signals.	☐
	Carry out initial project review.	☐
	Carry out progress project review.	☐
6.5 Road safety audit and inspection	Commission post-construction road safety audit (RSA).	☐
	Address all issues raised.	☐
	Assess risks associated with serious or significant issues not resolved.	☐
	Report risk assessment associated with the above to the NZ Transport Agency National Office.	☐
7. Documentation		
7.1 Documentation	Not applicable	

8. Procurement		
8.1 Property management	Inform property manager of construction date to enable clearance of tenants for construction.	☐
	Manage work requirement for owners, fencing, etc.	☐
	Meet with owners to get contractor obligation sign off.	☐
	Ensure that legal boundary survey is completed to confirm land take.	☐
	Legalise land and status of the land held under the route, including gazettal.	☐
	Declare all property not required by the project as surplus and assist with disposal as required.	☐
8.2 Procurement	For all non-block capital improvement contracts, prepare and have approved a stage 2 project procurement strategy.	☐
	Prepare tender documentation.	☐
	Advertise tender or invite registration of interest.	☐
	Evaluate (or negotiate) tender.	☐
	Hold pre-letting meeting if necessary.	☐
	Seek approval to award contract.	☐
	Award contract.	☐
8.3 Tendering	Ensure that the correct procedures for tendering have been followed, reference the NZ Transport Agency's *Contract procedures manual* (SM021).	☐
9. Project control		
9.1 Contract management	Check robustness of physical works and management, surveillance and quality assurance (MSQA) contract documents.	☐
	Review consultant's contract deliverables.	☐
	Hold consultant to tender proposals.	☐
	Hold consultant to contract requirements.	☐
	Ensure consultant is paid on time.	☐
	Ensure consultant's performance is monitored.	☐
	Ensure consultant manages physical works contract as required.	☐
	Ensure contractor is paid on time.	☐
	Ensure contractor's performance is monitored.	☐
	Ensure all deliverables are provided to network operations at the end of the defects liability period.	☐
	Ensure contracts are closed as per process 10.1.	☐

9. Project control continued		
9.2 Communication	Develop a communication plan and establish a budget.	☐
	Discuss communication matters at project meetings and monitor.	☐
9.3 Contract administration	Complete procurement strategy.	☐
	Obtain contract number.	☐
	Draft the request for tender (RFT) and consider page limits carefully.	☐
	Complete approval to advertise.	☐
	Advertise contract.	☐
	Provide master RFT to tenders secretary.	☐
	Tender queries.	☐
	Opening tender process.	☐
	Approvals to award.	☐
	Check appropriate insurance coverage.	☐
	PROMAN action.	☐
	Approve payments.	☐
	Performance bonds and bond in lieu of retentions.	☐
9.4 Financial management	Apply for construction funding.	☐
	Maintain a project structure.	☐
	Verify supplier invoices for payment.	☐
	Notify contingent liabilities.	☐
	Verify forecast and accrual values and provide commentary on variances on a monthly basis.	☐
	Prepare and submit funding review changes as required.	☐
	Update project status and complete year end processing requirements.	☐
	On substantial completion update the project, phase and work unit status of the project.	☐
	On financial completion, update the project, phase and work unit status to reflect the project completion.	☐
	On financial completion notify the finance processing team leader to close project general ledger codes.	☐

9. Project control continued		
9.5 Change control	Physical works: • Review the contract documents. • Establish a baseline. • Identify change and potential sources of change. • Log in all change requests. • Document and categorise all change requests. • Evaluate and assess the value and benefit of the change. • Look at the impact of the change and perform integrated change control. • Seek approval for the proposed change. • Adjust the baseline and if necessary the project management plan. • Communicate the change to stakeholders. • Manage the project to the new baseline. • Monitor the results of the change.	☐
	Management, surveillance and quality assurance: • Review the professional services contract. • Review the NZ Transport Agency (NZTA) standard professional services specification for management, surveillance and quality assurance (MSQA). • Review the NZTA standard professional services specification for contract management. • Review all requests for additional services and ensure that they are justified and beneficial. • Look at the impact of the change and perform integrated change control. • Seek approval for the proposed change. • Adjust the baseline in a timely manner. • Manage the project to the new baseline.	☐
	Monitor the results of the change.	☐
9.6 Cost control	Physical works: • Establish a budget for the construction phase. • Align estimates with cash flow and schedule. • Monitor expenditures as work progresses. • Manage actual changes. • Examine cost trends and control impact of cost changes. • Calculate cost variance line by line to identify specific problem areas. • Forecast the cost of the remaining works to complete frequently. • Report real project status. • Take or recommend corrective action as necessary. • Update cost baseline. • Employ earned value technique.	☐
	Management, surveillance and quality assurance (MSQA): • Read your contract. • Manage actual changes. • Design good cost reports to detect potential problems.	☐
	Forecast frequently.	☐

9. Project control continued		
9.7 Dispute resolution	Ensure physical works contracts include dispute resolution provisions and reference to section 13, NZS 3910:2003 Conditions of contract for building and civil engineering constructions.	☐
	Maintain regular and interactive communication with consultants/contractors/stakeholders to minimise any disputes.	☐
	Undertake dispute resolution process as required.	☐
9.8 Supplier performance	Complete interim performance evaluations for professional services contracts.	☐
	Complete final performance evaluation for professional services contracts (at end of defects liability period).	☐
	Complete interim performance evaluations for physical works contract.	☐
	Complete final performance evaluation for physical works contract (at end of defects liability period).	☐
10. Closeout		
10.1 Project close-out	Closeout consents.	☐
	Complete pre-opening fit for purpose inspection.	☐
	Issue certificate of practical completion.	☐
	Complete project handover to area asset manager.	☐
	Review the project plan.	☐
	Forward outputs to be included in future projects.	☐
	Reconcile final project cost.	☐
	Obtain the project sponsor's sign-off on the final project plan.	☐
	Register the project closure on the project register.	☐
	File all records.	☐
	Close and archive project files.	☐
	Notify consultants that contract is complete.	☐
	Close contract files.	☐
	Update project plan.	☐

10. Closeout		
10.2 Contract close-out	Complete performance reviews for professional services and physical works contracts.	☐
	Obtain all expected deliverables for professional services and physical works contracts.	☐
	Complete final payments for professional services and physical works contracts, including retentions for the latter.	☐
	Release all bonds for physical works contracts.	☐
	Resolve any contingent liabilities for professional services and physical works contracts.	☐
	Close professional services and physical works contract files.	☐
	Update project plans.	☐

Part 2 – Processes

1 Establishment

1.1 Establishment

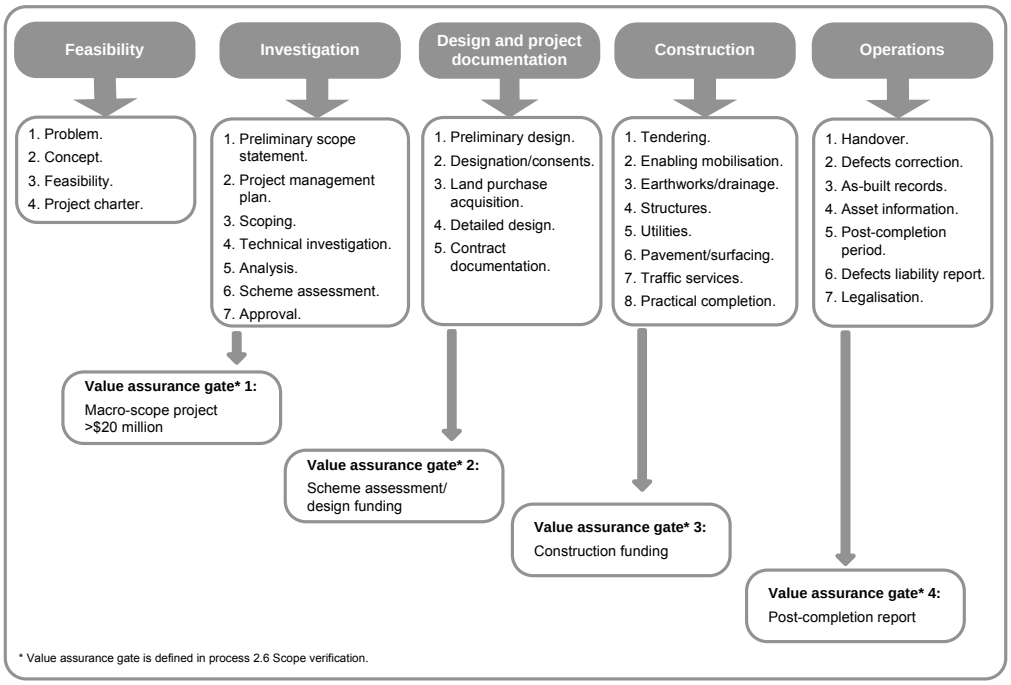
Introduction

Projects require a definition or a common starting point. The Project Management Institute (PMI) defines a project as a temporary endeavour undertaken to create a unique product, service or result.[1] Projects may arise from a problem, opportunity or compliance requirement. For many organisations however, projects are simply change initiatives.

For the NZ Transport Agency (NZTA), many projects are initiated via the annual planning process or strategy study. The reasons for a project may vary. A number of fatalities or serious injury crashes at a given location may indicate a problem with road geometry that needs correction. Other projects may originate from a long-term transport planning need, a strategic study or a corridor management plan. In some cases, the need for a project can arise directly from a government directive, eg the seven roads of national significance arose from the Government Policy Statement (GPS) on land transport funding.

The figure below show the overall project life cycle and stage gate review process.

Figure 1: Project life cycle and value assurance gate process



The establishment (or initiating) phase of a project is therefore a key step in the project life cycle. It is where the rationale for the project is documented for future reference by the project team. It is also where the project's feasibility and success criteria are established thus providing the foundation for the investigation, development and construction phases.

[1] *A guide to the project management body of knowledge* (PMBOK guide) PMI standard.

Feasibility

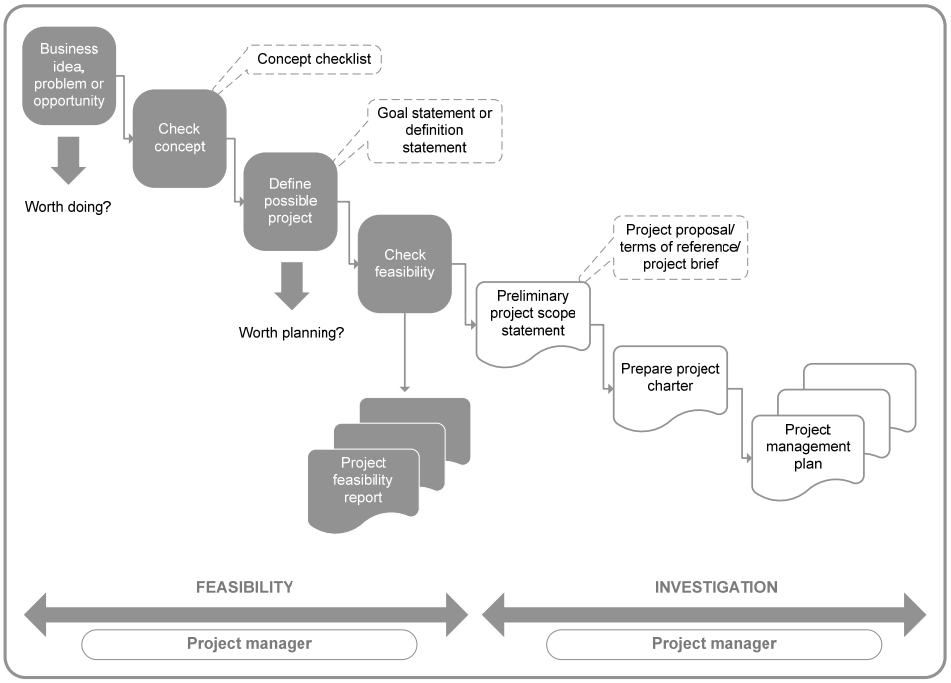
A feasibility study is used to develop a project in more detail. The idea, problem or opportunity is defined and then the concept is assessed for viability. This ensures that a solution is defined which delivers the organisation's needs and requirements whilst meeting the expectation of customers and stakeholders. The process steps will be as follows:

- define the problem/business need or opportunity (usually from a strategy or study)
- get project charter signed by the project sponsor
- check concept
- define possible project:
  - formulate the project's objectives and success criteria
- check feasibility:
  - option assessment and analysis
  - evaluate the costs and benefits
  - assess the project against the Land Transport Management Act 2003, the NZTA's and GPS objectives.

This will usually result in an assessment profile for the project against the Investment and Revenue Strategy.

The flow chart below (figure 2) shows how the steps above are linked together.

Figure 2: Feasibility process flow chart



The output from the feasibility phase will be the project feasibility report (PFR) which should contain the feasibility estimate and the economic benefit cost ratio (BCR) calculation.

The PFRs are generally prepared by the network management consultant under the state highway network management contract or hybrid contract management. A formal project management plan will not be required until the investigation phase where the Highways and Network Operations (HNO) project manager and internal resources are appointed.

Key assumptions made in the assessment of options should be clearly identified in the PFR.

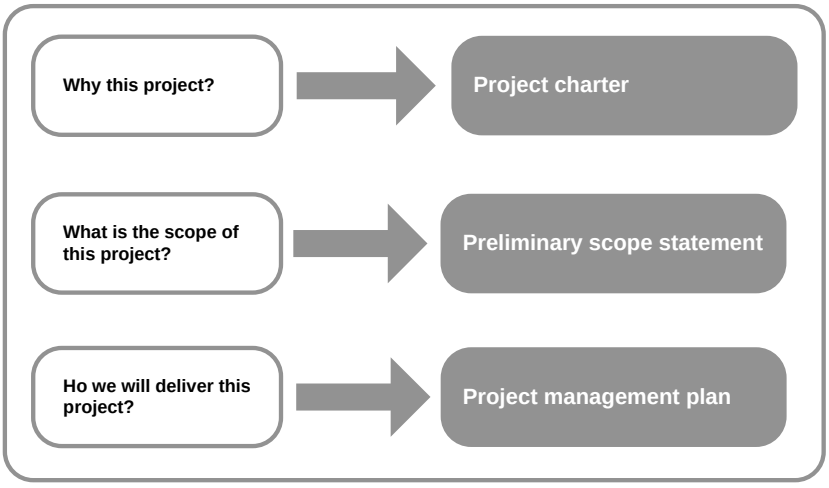
Investigation

Generally the investigation phase of a block project (ie under $4.5 million construction value), will be developed by the project management services section of the HNO group. In the case of large and/or complex projects, the investigation phase will be managed by the transport planning section. At the commencement of the investigation phase, and as a brief to the HNO project manager, the project sponsor will set out the project's goals and objectives in a **project charter.** This will describe the purpose of the project, the context or background, the budget, any assumptions or constraints, the expected timeline and reference to any relevant documents such as the PFR. This brief will also contain the key deliverables for the project.

At this time the project is formally entered onto the project register and document control is established.

In response to the project charter and to ensure the project is fully defined, the project manager will develop a preliminary project scope statement. This is essentially the brief for the later development of the project.

Figure 3: Establishment phase – key deliverables



A preliminary project scope statement includes:

- objectives
- service requirements
- acceptance (or success) criteria
- boundaries
- requirements and deliverables
- constraints
- assumptions
- initial organisation chart
- initial defined risk
- schedule milestones
- initial work breakdown structure
- order of magnitude cost estimate (feasibility estimate as defined in *Cost estimation manual* (SM014))
- configuration management requirements (how changes to scope will be documented).

As with the project charter it will provide the foundation for the planning and execution stages of the project.

The project manager will then develop a **project management plan** as a response to the project charter. It is a comprehensive document for the planning, executing, monitoring and control stages of the project. The project management plan will follow the outline of:

- project's goals and objectives (from the project charter)
- scope definition, verification and control
- schedule development
- supplier engagement and management
- stakeholder consultation
- property acquisition
- cost estimating and budget
- risk register and risk treatment plan
- resource management
- environmental management/Resource Management Act 1991
- quality management
- communications plan
- project closure.

Once approved by the project sponsor, the project management plan will be a 'live document', continually reviewed and updated over the project life cycle. Fundamental changes to the project's key deliverables will be documented using the **project change notice** procedure.

At the completion of the investigation phase, the project management plan should be reviewed to see if any of the assumptions or objectives have changed. Each version of the project management plan should be documented and distributed throughout the project team members. Major departures from the scope of the project should be submitted to the project sponsor for acceptance and sign-off.

Design

If there has been some delay in commencing the design development stage, eg prolonged consultation or reprioritisation, the project manager should together with the project sponsor undertake a review of the **project charter**. The project team may also have been disbanded in which case resources may have to be reallocated.

Any major departures from the project charter should be documented and changes signed off by the project sponsor before proceeding with the design phase.

Construction

It is essential to undertake regular reviews of the **project management plan** throughout the construction phase. In the event of a delay between the completion of design and the commencement of construction, the project team may need to be re-established and a review of the plan undertaken.

During project closure, the project management plan and the **project charter** should again be reviewed to ensure that the goal and original objectives have been achieved. This review should be documented in the post-construction report.

1.2 Resources

Introduction

It is important that resources are effectively and efficiently used and coordinated. Different-sized transport projects will have different requirements over how resources are organised. For smaller projects there might be a project sponsor, project manager and a project team. However, for larger projects there will be more people involved. Therefore, it is important for team members to understand what they are expected to do and what role other team members are expected to fill.

A key responsibility of a project manager will be to plan, organise and direct activities concerned with the management of the project. This will help projects to be completed within agreed time frames and budgets. For larger projects there will be a need to establish clear accountabilities for staff involved and this will need to be based on staff workload and resource availability. It is also important for project managers to motivate, develop and direct people as they work. Having a positive team dynamic will contribute to the success of any project.

Feasibility

Plan resources for feasibility phase

The project team typically involves a project manager leading a multidisciplinary team of internal and external people. Typically, resources in this phase of a project might consist of:

- the project manager
- the network consultant/contractor or strategic study consultant
- economic review specialist
- various NZ Transport Agency (NZTA) specialist technical reviewers and advisors such as travel demand management advisors
- various NZTA programme and funding managers
- the NZTA asset managers.

The project manager is responsible for the following tasks:

- Determining the project's resource and skill requirements, and assembling the project team, essentially identifying the best people for the job. The composition of the project team is an important consideration and will often require a range of personality traits, eg good communication skills. In establishing the team, the project manager must ensure a well-balanced mix of expertise in technical, administrative and communication skills.
- Ensuring project team member's current commitments allow them to fulfil their current project roles.

Ensuring all team members clearly understand their project roles and responsibilities and interact according to the project plan. The project plan should include a responsibility assignment matrix (RAM) diagram or schedule setting out each individual's role within the project.

Appoint resources for feasibility stage

Team members should be appointed after the project manager has determined the project's resource and skill requirements. Where missing resources or expertise is identified consultants can be employed to fill this gap. The national office independent professional advisors' contract contains the names of a number of experts in various disciplines that can be appointed under an existing contract. Where the necessary discipline is not provided, the NZTA's *State highway professional services contract proforma manual* (SM030) provides instructions for short-term contracts and includes the short-form contract agreement.

Manage team during feasibility phase

Team member responsibilities

All team members must understand their project role(s) and responsibilities as described in the project plan and:

- perform their assigned tasks effectively and efficiently
- involve the project manager in resolving issues affecting project deliverables and milestones
- provide regular status reports and updates to the project manager
- manage and report against budgets if provided.

Project team interaction

Team members will work between themselves, with other NZTA staff and also with external stakeholders. It is important that records are maintained and filed correctly to ensure that there is an audit trail of decisions made.

- Meetings

  It is good practice to hold and minute regular project team meetings each month. This will help maintain focus of the team. As part of the meetings:

  - a formal agenda should be followed (this should be prepared and issued prior to the meeting)
  - previous minutes should be confirmed or amended as appropriate. Follow-up actions should be clearly identified and recorded as completed at the next meeting or sooner if necessary, progress and deadlines should be reviewed
  - the team should focus on the management of issues, accountability for actions and deadlines for delivery. Where possible delving into detail should be avoided as it is often a less productive use of time.

  Ensuring good minutes are taken will enable absent team members to keep abreast of project developments.
- Telephone conversations

  For conversations that may affect the project, a communication record should be completed, minuted to the project manager and filed.

  Conversations that are considered critical to the project should be responded to via a formal letter from the NZTA.
- Discussions

  These should be treated in the same manner as telephone conversations.
- Emails

  These should be treated in the same manner as telephone conversations except a printed copy should be filed in lieu of a communication record.
- Letters

  This is the preferred form of correspondence for critical project communications. All correspondence:

  - must be on the NZTA letterhead
  - should be signed by the project manager.

Plan resources for investigation, design and construction phases

It will be important to plan resources and skill requirements for the investigation, design and construction phases at this stage.

Arrange handover for feasibility phase (where necessary)

For various reasons, it may be necessary to change the project manager or key personnel as the project progresses.

To ensure the transition is seamless and performance remains consistent, it is essential that changes are managed efficiently and effectively.

As part of the handover process the current project manager must:

a. update the project register, project plan and the State Highway Project Financial Management System (PROMAN), if applicable, to reflect the changes

b. formally notify all suppliers of the changes

c. bring all project correspondence up to date and ensure it is correctly filed

d. prepare a brief handover report for the new project manager, clearly documenting the project's current status. The report should address issues such as:

   - the project macroscope (if defined) and any relevant Value Assurance Committee (VAC) decisions
   - all aspects of the project's financial status. The agreed contract price(s), approved variations and unresolved issues should be highlighted
   - professional services' and physical works' contracts status, including time and financial commitments
   - resource consents, designation, approvals
   - stakeholder agreements, memorandums of understanding (MOU)
   - programmes, including outstanding deliverables
   - project personnel
   - all outstanding and unresolved issues
   - contact details for all stakeholders
   - property purchase status
   - temporary occupation agreements.

e. meet with the new project manager to provide a comprehensive briefing and to discuss in detail all relevant project aspects.

If possible, the outgoing project manager should be available after the handover to help the new project manager to resolve any outstanding issues.

Where **other key project personnel**, such as task managers are replaced, the incumbent should:

f. amend the project plan and any task plan(s) to reflect the changes

g. as a courtesy, advise relevant suppliers and/or stakeholders of the change and introduce the new person

h. bring all project correspondence up to date and ensure it is correctly filed

i. if appropriate:
   - provide the project manager with a brief report summarising the current status of assigned tasks, and documenting all outstanding and unresolved issues
   - complete a comprehensive briefing with the project manager and replacement person
   - provide update on any contractual commitments.

Investigation

Appoint resources for the investigation phase

Key resources in this phase of a project are likely to include:

- the project manager
- a lead investigation and reporting (I&R) consultant
- various specialist subconsultants involved in the assessment of environmental effects (AEE)
- economic review specialist
- cost estimate review specialist
- property advisor
- legal advisor
- expert peer reviewers (eg structural and geotechnical)
- road safety auditors
- various NZTA specialist technical reviewers and advisors
- the NZTA asset managers.

The project manager will need to develop and implement a procurement plan to bring on board the external resources needed to undertake the project.

Manage team during investigation phase

Refer to the feasibility phase above.

Review design phase resources

Refer to the design phase below for the key resources to be considered.

Arrange handover (if necessary)

Refer to the feasibility phase above.

Design

Appoint resources for the design phase

Key resources in this phase of a project are likely to include:

- the project manager
- a lead design consultant/contractor
- an economic review specialist
- a cost estimate review specialist
- a property advisor
- structural and geotechnical peer reviewers
- road safety auditors
- various NZTA specialist technical reviewers and advisors
- NZTA asset managers.

The project manager will need to develop and implement a procurement plan to bring on board the external resources needed to undertake the project. This plan will be influenced by the NZTA's wider strategy for procurement of the project in terms of the form of contract used, ie traditional, design–construct (DC) or early contractor involvement (ECI).

Manage team during design phase

Much of the management focus of the project manager in this phase will lie in monitoring the progress of consultants/contractors, controlling scope of works and services, negotiating variations and assessing evolving risks.

Review construction phase resources

Refer below to the construction phase for the key resources to be considered.

Arrange handover (if necessary)

Refer to the feasibility phase above.

Construction

Appoint resources for construction phase

Key resources in this phase of a project are likely to include:

- the project manager
- a lead contractor
- the engineer to contract
- the client's agents or Management, Surveillance and Quality Assurance (MSQA) team
- road safety auditors
- the NZTA asset managers.

The project manager will need to develop and implement a procurement plan to bring on broad the external resources needed to under take the project. This plan will be influenced by the NZTA's wider strategy for procurement of the project in terms of the form of contract used, ie traditional, DC or ECI.

Manage team during construction phase

Typically during the construction phase the project manager will have the support of a site-based client's representative or MSQA team who will monitor progress, programme, cost and quality of delivery. The project manager's focus will be on ensuring development of good working relationships between the various suppliers and stakeholders, and maintaining a strategic oversight of project budget risks and delivery.

Arrange handover (if necessary)

Refer to the feasibility phase above.

2.1 Scope definition

Introduction

This section describes the key stages in developing the scope of a project. The development of the scope is fundamental in ensuring that a project will deliver on its objectives and other success criteria.

The feasibility and investigation phases of a project are where the scope is developed and defining the scope is an evolving process through these phases. Refinements to the project scope are usually necessary as more detailed information on a wide range of issues becomes available.

Gaining approval for the scope and managing the scope through the design and construction phases is covered processes 2.6 and 2.7 in this manual.

Feasibility

A project is initiated to respond to identified problem(s) and/or opportunities. The problem and/or opportunity can be developed from a number of sources. In the majority of cases, especially with large projects, the problems and opportunities will have been identified through a strategic study or strategy.

The outcomes from the strategic study or strategy will feed directly into the development of the project feasibility report (PFR) and in some cases the PFR may have been completed as part of the strategic study or strategy.

Irrespective of how the project has been initiated the scope will be developed through the preparation of a PFR. The PFRs should be done in accordance with the NZ Transport Agency's (NZTA) *State highway professional services contract proforma manual* (SM030) and minimum standard (MS) Z/20 Project feasibility reports (MS Z/20) provided in SM030.

Investigation

The first step in the investigation phase is to confirm the outcomes from the PFR and either confirm or redefine the project objectives.

Progression of the project through investigation and reporting (I&R) stage should be done in accordance with SM030 section.

For large and/or complex projects the investigation phase should be undertaken in two stages:

- Stage 1 – the preparation of a scoping report.
- Stage 2 – the completion of the scheme assessment stage.

Guidance on when a scoping stage is required is given in SM030 section 3 and MS Z/18 Scoping report.

If a scoping report was prepared, the scheme assessment stage will refine the options further to a preferred option. Where no scoping report was completed the scheme assessment needs to identify and investigate options before recommending a preferred option.

Design

For guidance on the scope beyond the investigations phase refer to processes 2.6 and 2.7 of this manual.

Construction

For guidance on the scope beyond the investigations phase refer processes 2.6 and 2.7 of this manual.

2.2 Consultation

Introduction

The NZ Transport Agency (NZTA) has obligations under the Land Transport Management Act 2003 (LTMA) and the Resource Management Act 1991 (RMA) to identify and consult with parties who will be affected by our land transport development decisions, including the development and delivery of capital works projects.

The NZTA's statutory operating principles (LTMA section 96) require our functions to be carried out with a sense of social and environmental responsibility. This requires early engagement with local authorities in land use and resource planning processes, and with affected communities on state highway projects and activities. The early engagement will ensure that the concerns and needs of affected parties, and of the wider community are adequately addressed.

The project manager has the responsibility to ensure that the plans proposed to inform and consult with the public through the phases of a project will meet the statutory consultation requirements and ensure stakeholders are fully informed about the project. An effective consultation process will also assist the NZTA with advancing any statutory applications required under the RMA. To assist, the NZTA has included requirements in the *Professional services contract proforma manual* (SM030). The NZTA has also developed a range of guidance in the form of manuals, including minimum standards and guidelines, on how consultation should be undertaken.

As a project moves through the phases of development, the emphasis of consultation moves from engagement, to seeking community and stakeholder input into the available options and then informing on the timing and implications of the project.

Feasibility

At the outset of a project the consultation is generally focussed internally within the NZTA and with key strategic partners. As part of the project feasibility report (PFR) there is a requirement to assess the resource management issues, including an assessment of the consultation requirements. The project manager should ensure that the project consultant has identified all of the required parties and the internal NZTA staff to be included in the assessment process.

Investigation (including scoping)

At the scoping report stage of a project there is a requirement to include an assessment of the proposed consultation process to confirm that it will meet the NZTA's statutory consultation requirements.

This includes the preparation of a communication strategy and consultation plan as part of the consultant's project quality plan in the scheme assessment report (SAR). The consultation plan should be prepared in accordance with the NZTA's *Public engagement manual* and consider a range of potential mechanisms to engage with the community. Guidance on the options available for engaging with the community is provided in the NZTA's *Public engagement manual.*

As the investigation phase requires the NZTA to undertake detailed assessments of a range of potential options, it is during this phase that the input from strategic partners (iwi groups, New Zealand Historic Places Trust (NZHPT), ONTRACK, utility service providers (USPs)) and the wider community is essential. Depending on the specific issues of the project it is likely that ongoing consultation would be required with a number of these parties throughout the investigation phase and into the design and construction phases of the project. The SM030 manual requires USPs to be consulted during the investigation, design and construction phases of a project. The NZTA is also a signatory to the New Zealand Utilities Advisory Group (NZUAG) model partnering agreement between USPs and road controlling authorities (RCAs).

The NZUAG agreement seeks to provide a framework for partnering some RCAs and principal USPs to ensure that the works associated with the development and delivery of projects can be coordinated to achieve efficiencies and minimise disruption. All of the project-related consultation undertaken with the specific parties should also be designed to support any required statutory applications.

The NZTA has specific legal obligations to consult with Māori, iwi and hapū under the LTMA. The RMA also encourages consultation as part of the designation and resource consent process. To manage these obligations and to describe its expectations, the NZTA has:

- included guidelines for managing relationships and consultation with Māori in the NZTA's *Consultation manual*
- included Māori policy in the NZTA's *Corporate services manual*
- implemented the stakeholder relationship management system (SRMS) as a tool to manage the processes around project consultation. This system should be used to track all consultation outcomes for all project phases.

If additional information or guidance on Māori consultation is required project managers should contact the NZTA's Kaihautū Manager Māori Perspectives.

Where publications, newsletters, public notices and media releases are proposed as part of the consultation strategy these need to be drafted in compliance with the NZTA's *Visual identity guidelines* and approved for release through the NZTA Communications team. Where media engagement or comment is required the NZTA media engagement protocol should be followed.

The investigation phase would generally involve initial discussions with affected landowners. Where land entry is required this will generally be negotiated through the NZTA's land acquisition agent. Once the details of the land requirements are confirmed, more formal property acquisition discussions involving the NZTA's land acquisition agent are required. The details of the NZTA property acquisition and disposal processes under the Public Works Act 1981 are set out in detail in the *Property policy and information manual* (PR001), *Process for acquisition of property* (SM040) and *Process for disposal of property* (PR003). For further information on the requirements of the property acquisition and disposal processes please refer to process 8.1 in this manual.

Internally within the NZTA the involvement of the Regional Partnerships and Planning (RP&P) funding case manager at the investigation phase is also recommended. The case manager's role is to monitor and advise on aspects of a project that may affect funding, especially scope, cost and programme changes. In the investigation phase the points of contact would generally include:

- initial start-up meeting and project technical meetings/minutes of meetings
- Project Advisory Group (PAG) meeting attendance
- risk-adjusted programme (RAP) meeting attendance
- draft scoping/options report
- draft SAR
- funding application, and
- consultant's presentation of reports.

Design

As there is generally an overlap with the statutory approvals between the investigation and design phases of a project, there is likely to be a requirement of statutory consultation, as part of the notice of requirement and/or resource consent processes.

The details of the consultation undertaken and the outcome of any consultation should be detailed and included in the SAR and in the assessment of environmental effects (AEE) for statutory applications as appropriate.

The involvement of the RP&P funding case manager at the design phase is more focussed on exceptions and would generally include:

- RAP meeting attendance
- project manager report of funding-related issues by exception, and
- funding application.

Generally when a project has reached the design phase the consultation is focussed on presenting information on the detail of the preferred option to be delivered. Generally the potential for feedback from the public is limited to the details of the design being developed and any changes that have occurred since the consultation undertaken during the investigation phase.

Construction

Consultation at the construction phase of a project is generally related to providing public information regarding the timing and progress of a project, and the management of the disruption associated with construction activities.

The involvement of the RP&P funding case manager at the construction phase is again generally be limited to:

- RAP meeting attendance
- project manager report of funding-related issues by exception, and
- funding application.

Ongoing consultation with utility service providers will be required if services have not been relocated in advance of the construction works, and to provide information on the programme and potential issues associated with the project being constructed.

As the minimum standard Z/22 Accidental discovery procedure in SM030 will generally apply to the construction phase of a project, ongoing consultation with the NZHPT and local iwi/rūnanga representatives will be required.

2.3 Environmental and social

Introduction

The NZ Transport Agency's (NZTA) environmental policies are described within the *Environmental plan* (2008). The full social and environmental management assessment review process required for the NZTA projects is described in detail in *State highway professional services contract proforma manual* (SM030), minimum standard (MS) Z/19 Social and environmental management (MS Z/19).

The purpose of the MS Z/19 is to ensure new state highway projects comply with the NZTA's social and environmental:

- legal requirements, and
- policies, plans, standards, specifications and guidelines.

The MS Z/19 links to various professional service forms also contained in SM030 and the NZTA's *State highway maintenance contract proforma manual* (SM032). They aid in identifying social and environmental issues (effects and management solutions) associated with designing, constructing and managing state highways, together with cost estimates necessary to address these.

Feasibility

- Prepare social and environmental screen (SES) for option/s as per professional services form (PSF) 13 Social and environmental management form (PSF/13).
- Prepare PSF 2a Checklist for statutory approvals, consents and agreements (PSF/2a).

Investigation

- Prepare and implement social and environmental assessment (SEA) for option/s as per PSF/13.
- Update PSF/13 and PSF/2a where conditions of designation/resource consents are accepted by the NZTA as part of the chosen design.

Design

- Ensure requirements identified in PSF/13 are implemented within the design.
- Update PSF/13 and PSF/2a where conditions of designation/resource consents are accepted by the NZTA as part of the chosen design approval process and implement requirements.
- Link statutory compliance with the NZTA consent database management tool (CSvue monitoring system).

Construction

- Ensure PSF/13 requirements are dealt with during construction phase including MS Z/4 Contractor's social and environmental management plan.
- Update PSF/2a.
- Ensure contractor's quality plan – environmental management (provided in SM032) is linked to PSF/2a and PSF/13.
- Link statutory compliance to the CSvue monitoring system.

Post-construction

- Prior to signing off post-defects liability ensure all environmental and social mitigation as-builts are in place and functioning according to design requirements.
- Update PSF/13 with actual costs and any changes to proposed design mitigation.

2.4 Resource management

Introduction

The NZ Transport Agency's (NZTA) projects will generally require statutory approval under the Resource Management Act 1991 (RMA), and potentially the Historic Places Act 1993. The role of the project manager in relation to the requirements under the RMA is to ensure that the statutory requirements are scoped and identified, an appropriate strategy and timeline for delivering the required statutory approval is developed and adequate assessment is undertaken to support any required applications.

The statutory purpose of the RMA is to promote the sustainable management of natural and physical resources. The RMA defines sustainable management, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while:

a. sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations, and

b. safeguarding the life-supporting capacity of air, water, soil, and ecosystems, and

c. avoiding, remedying, or mitigating any adverse effects of activities on the environment.

The Environment Court case law has determined that the state highway network is a strategic physical resource that needs to be managed sustainably. The NZTA's statutory operating principles as set out under section 96 of the Land Transport Management Act 2003 (LTMA) also require our functions to be carried out with a sense of social and environmental responsibility.

Different parts of the RMA are administered by territorial (generally land use consents and designations) and regional councils (generally use of or discharge to land, water and air, and coastal activities). Sometimes there are overlaps between both.

The requirements of the RMA and the LTMA obligate the NZTA to develop and maintain the state highway network in a responsible way that minimises adverse impacts as far as practicable and requirements for resource consents should not therefore be seen as minimum requirements.

The NZTA's projects will generally require statutory approvals and therefore applications under the RMA to the relevant territorial or regional authority, or both. This may include:

- resource consents (section 88)
- notice of requirement for a new or altered designation (section 168 or section 181)
- outline plan for works within an existing designation (section 176A).

Feasibility

At the feasibility phase there is generally limited detail on the specifics of potential options being considered to address an issue, therefore the RMA input is generally limited to the identification of the relevant planning requirements, scoping of the potential consent and consultation requirements and any key constraints, environmental and cultural sensitivities.

Investigation

During the investigation phase the details of options being considered are refined as a result of a range of assessments. Included in the detailed assessment undertaken is consideration of the consenting requirements of the various options. As the investigation progresses this would result in a consenting strategy that considers the likely consents required, the complexity and sensitivity of the project, the outcome of the consultation undertaken, and the options available for pursuing the statutory approvals including joint proceedings where multiple applications and/or consent authorities are involved.

The changes to the RMA included in the Resource Management (Simplifying and Streamlining) Amendment Act 2009 (the Amendment Act) provide alternative processes for reaching decisions on notices of requirement and/or resource consents beyond the traditional process laid out in the Amendment Act. The consenting strategy should include an early consideration of the various statutory approval process options available to proposals of national significance (traditional consenting/notice of requirement process (section 88, sections 168/181), direct lodgement with the Environment Court (section 87D), ministerial call-in (section 142), and direct lodgement with the Environmental Protection Authority (section 145)).

The process steps, information requirements and time frames will vary depending on the statutory consenting which is to be pursued. Advice on the criteria for determining which of the process options is most appropriate for specific projects can be sought from the NZTA's:

- special projects advisor on call-in matters, or
- senior counsel.

For further detail on the time frame implications of the various statutory approval process options refer to process 5.1 in this manual.

The RMA output in the scheme assessment report (SAR) in the investigation phase requires enough assessment to fully understand the process and timing details of the statutory application processes for the option being recommended to take forward to the design phase. Depending on the specifics of the project and the details of the contract arrangements this would generally include the consenting strategy, a draft assessment of environmental effects (AEE) to support statutory applications (notices of requirement, outline plan, resource consents and archaeological authority) and potentially lodging applications.

Design

As the information required to effectively support statutory applications can be substantial, it is often the case that the design phase will need to have progressed before adequate details are available to lodge the required statutory applications (eg resource consents relating to storm water treatment designs, outline plan relating to the details of the works). Where a hearing is required within any of the statutory processes the level of preparation and coordination can be substantial.

Once a decision/recommendation is received the NZTA must undertake an assessment to ensure that any conditions are acceptable, and do not impose unreasonable requirements. With recommendations from territorial authorities on notices of requirement or outline plans the NZTA can address any issues through the final decision process (sections 172, 176 of the RMA). With decisions on resource consents the NZTA generally has to address any issues through an appeal to the Environment Court (section 120).

Construction

Before the construction phase of a project commences it is expected that all of the required statutory approvals are finalised. The role of the project manager in relation to the RMA matters during this phase is to ensure that there are adequate measures in place to confirm and report that the works are undertaken in compliance with the details and conditions of the statutory approvals. For complex projects this may require a compliance management plan which covers:

- details of the range of consent conditions and obligations
- time frames and locations for any specific activities
- information requirements
- reporting requirements, and
- specific staff responsibilities.

Consent conditions are managed by the NZTA's consent database management tool (CSvue monitoring system). For further information contact the NZTA.

Post-construction

Some projects will have ongoing RMA consent conditions compliance issues. As part of the handover phase of the project (phase 10.1), the role of the project manager is to check that any ongoing compliance matters have been identified and are handed over as appropriate.

2.5 Integrated planning/travel demand management

Introduction

Integrated planning aims to bring together transport planning, funding and land use to deliver an affordable, multi-modal transport system that supports a growing economy, vibrant communities and a healthy environment now and in the future. Integrated planning is a multidisciplinary approach, which takes into account all modes.

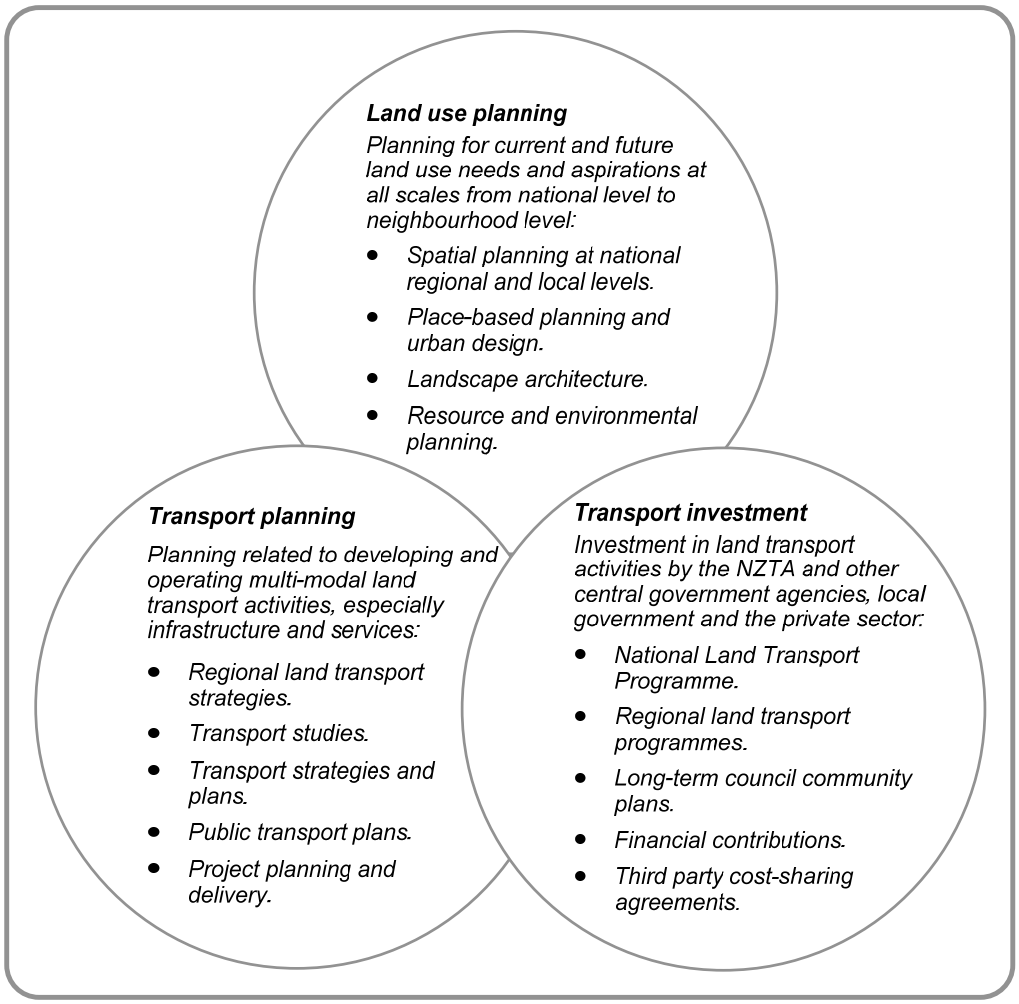
This section aims to advise the project manager on the key aspects of integrated planning (including travel demand management) that need to be considered when undertaking a project. This is not an exhaustive overview and it is recommended to refer to the guidance documents listed below. When developing a project it is crucial to consider the environment and make sure a project has the right resource consents. Environmental factors are covered in process 2.3 and the Resource Management Act 1991 issues are covered in process 2.4. Funding of projects and safety are also key considerations for ensuring integrated planning. They are covered in processes 4.2 and 6.5 respectively.

The Integrated Planning Strategy sets out the NZ Transport Agency's (NZTA) overarching strategy for achieving integrated planning. At a practical level the *Travel demand management toolkit* provides a wide range of transport and land use relevant tools, processes and concepts and assists with the application of integrated planning.

Integrated planning is a broad concept that covers the following areas:

- Travel demand management.
- The complex interactions between land use planning, transport planning and transport investvent.
- The role of transport investment in the built environment and consistent application of good practice urban design principles.
- The roles of different transport modes and how these combine and interact with local, regional and national networks.
- The timing of transport infrastructure projects with planned community growth and associated development infrastructure.

Core components of integrated planning



The following documents provide guidance on integrated planning:

- Integrated Planning Strategy.
- *Travel demand management manual* (TDM01).
- *Integrated planning toolkit.*
- *Planning policy manual* (SP/M/001).
- New Zealand Standard 4404:2004 *Land development and subdivision engineering* (NZS 4404:2004).
- Regional land transport strategies/sub-regional transport strategies and packages, long-term council community plans, regional public transport plans and associated operational plans.

Regional Partnerships and Planning (RP&P) group's input into projects

The RP&P group, integrated planning teams, can provide valuable input into considering the bigger picture and other considerations surrounding a project. The RP&P group should be represented on project teams or steering groups.

It is crucial to liaise with and involve the RP&P group at the initial inception of a project, during the initial scoping and feasibility of the project. The pegional integrated planning manager should be contacted in the first instance. This manager will either be able to assist or will be able to advise on a suitable RP&P delegate.

The regional integrated planning manager will be able to advise on all aspects of integrated planning and also be able to assist with a projects consenting strategy (for more information please refer to process 2.4).

Network plans

The key purpose of a network plan is to support ongoing planning and decision making for the roads of national significance (RoNS). This includes their integration with the local network and associated activities and infrastructure within the transport corridor and wider roading network and region, with a key purpose to identify, coordinate and assist in the delivery of these activities.

Network plans are living tools that inform the macroscope of a project and feed into the mitigation, assessment of environmental effects and the Resource Management Act 1991 consenting strategy of a project. They are important as they identify what the NZTA needs to do and what others, including local authorities need to do to make sure that the RoNS work optimally.

If the project is located on or near RoNS then the appropriate network plan will be a key document that should be continually referred to during the development of a project. Project managers need to ensure that the planner coordinating the network plan is a key part of the project team. The network plan will help document the wider context for a project.

Network plans are led and coordinated by the RP&P group. Other key contributors to network plans include:

- RoNS governance group
- RoNS project team
- network coordination group (growth management strategy groups and forums)
- political reference groups (eg mayor).

Feasibility

Documenting a project context

It is important to make sure that a project is developed with consideration of the 'bigger picture'. The overall context for a project should be included as part of the project documentation. The context should include how a project came to be.

The context section should include the following:

- Parent strategic study or package the project came from.
- If the project is part of RoNS – the relevant network management plan and how this is considered throughout the life cycle of the project.
- The planning background for the study, ie what issues the project addresses from the Long-term Council Community Plan or Regional Growth Strategy.

- How the project addresses the Land Transport Management Act 2003, Government Policy Statement (GPS), Regional Policy Statement, Regional Land Transport Strategy, regional and district policies.
- Parts of the project designed to address the outcomes or any issues identified in the relevant strategic studies.
- A summary of the options considered as part of the process for deciding on the preferred option/route.

As a guide the context write-up should range from one to three pages in length depending on the complexity of the project. The context of a project is required when funding is applied for as it sets the scene for why the project should go ahead.

Taking into account land use planning

Land use and transport planning processes should ensure that:

- the transport needs of future growth are considered in planning and developing the transport system
- future transport corridors are safeguarded from other development
- the long-term sustainability of land transport funding is secured through ensuring that urban growth meets the costs of the infrastructural impact that such growth generates for the wider transport network
- opportunities are created for better integration within and between transport modes.

In the first instance, the NZTA regional integrated planning manager should be contacted. This will be in line with the planning delegations (memorandum dated 15 October 2009). Once a project has progressed, a land-use planner and transport planner should be a core part of the project team.

Questions that should be answered and addressed, if necessary, include the following:

1. Is a project in an area of anticipated growth and development?
2. What are the local authorities' plans for future land use activities in the area?
3. What is the level of access to the road from surrounding land uses?
4. How will the project best integrate into its existing and future surroundings?
5. Does the project cause or contribute to community severance?
6. Does the project cause positive or negative impacts on the potential future uses of adjoining property?
7. Are the issues identified in any parent strategic study, network plans or state highway management plans adequately addressed?

A lot of this information will already be included in the relevant strategic study or network management plan, and should be referred to and updated if necessary.

Taking into account network planning

Integrated planning requires that the state highway network is developed and managed alongside local roads. Most local roads are managed by local authorities and are a key component of local mobility and utility networks. The way in which a state highway interacts with local roads has a strong bearing on the extent to which integrated planning objectives are met.

It is important to consider the use of traffic signals versus roundabouts. Traffic signals provide pedestrians with signalised crossing points whereas roundabouts reduce traffic delays and since they have fewer vehicle conflict points have a lower crash incidence rate. The pros and cons need to be weighed up for all users.

Strategic discussions with partners undertaken as part of planning exercises need to consider not just the presence or absence of state highways, but also factors such as:

- route
- capacity (level of congestion, journey times, safety)
- route alignment
- speed management
- urban design principles
- intersection spacing and design (network efficiency)
- future growth
- ability to accommodate other modes.

Taking into account urban design

The NZTA is a signatory to the New Zealand Urban Design Protocol. This means that the NZTA:

- must ensure that transport networks fit in sensitively with the landform and the built, natural and community environments through which they pass
- must ensure that all systems of movement along and across the transport corridor are integrated into the design of projects with good connections and access to communities
- where appropriate, rather than along the corridor, alternative transportation networks are provided to enable safe and efficient movement throughput the district and/or region.

During the feasibility phase contact should be made with the NZTA's urban design specialist. The specialist will be able to advise on how to incorporate good urban design into a project.

The following documents provide guidance on how to incorporate quality urban design:

- *Urban and landscape design frameworks – Highways and network operations guideline*
- *State highway professional services contract proforma manual* (SM030) (appendix 3, Professional service guideline 12 – Urban design professional services guide)
- SM030 chapter 14
- New Zealand Urban Design Protocol:
  - urban design policy
  - urban design principles:
    - underpass guidance notes
    - noise walls guidance notes
    - road bridge guidance notes
    - pedestrian bridge guidance notes
    - urban design frequently asked questions.

Taking into account travel demand management

It is important that projects account for all road users and that good provision for all modes is made either on the facility itself, or the adjacent network. The value gates approval process provides more information on the documentation and responsibilities of the project manager to take non-car modes into account (refer to process 2.6). Consideration should be given to how the traffic or roading projects recognise, and balances the needs of all the existing and forecast groups of users, and the potential of induced demand following the provision of new facilities. During the feasibility phase contact should be made with the NZTA's travel demand management specialist.

Cycling and walking

All schemes should consider existing and future pedestrians and cyclists. Please note that the introduction of cycling infrastructure is applicable to all schemes. Consideration should be given to local authorities cycling strategies. The project should integrate into the strategy.

On rural state highways, where there is current or likely future cyclist users of the network, there should be adequate and consistent shoulder widths, ie minimum of 1.5 metres but suggested 2 metres. However, for 10,000 to 25,000 vehicles per day (VPD) on state highways, either a shoulder or separate cyclist and pedestrian facilities should be considered. Where access for pedestrians and cyclists is prohibited (eg motorways) then separate cyclist and pedestrian facilities should be provided, especially where there are community severance issues. This often is provided as part of the adjacent local road network.

Consideration should also be given to the cycling facilities to and from new infrastructure with the aim to provide coherent, convenient and connected networks. A pedestrian and cycling specialist will be a core part of the project team for larger projects.

Different types of cyclists should be identified and catered for appropriately. Cyclists can be grouped into:

- recreational
- sporting
- tourist
- adult commuter
- adult utility (trips made for a purpose)
- child utility.

At the feasibility phase an inspection of the site should be undertaken and background information should be collected. Information to collect includes:

- the different groups of pedestrians and cyclists and their personal and mobility characteristics
- numbers of present and future predicted pedestrians and cyclists
- destinations of pedestrians and cyclists
- times of day when pedestrians and cyclists travel
- why pedestrians and cyclists may travel as they do.

Consultation with local user groups should be undertaken at the earliest possible stage of the project. The regional cycle champion is a key contact. Issues identified should be addressed in the project design and throughout the life cycle of the project.

Particular consideration to making sure that any infrastructure provided is accessible for people with disabilities. It is a good idea to test proposed solutions with people with disabilities that will be users of the infrastructure. Consideration should be given to mobility, hearing and visual impaired people and people with learning disabilities.

Examples of action include:

- Cycling:
  - wide shoulder
  - clip-on for bridges
  - signage (at crossing and warning)
  - activated warning signs
  - dropped crossings and hold rails where appropriate
  - widened traffic island to accommodate cyclists where cycle route crosses state highway
  - shared cycle/pedestrian crossing at traffic signals
  - grade separation.
- Walking:
  - connections to local road footways
  - signs (route signage and warning)
  - new or widened footway
  - traffic islands dropped crossings located to reflect pedestrian desire lines
  - raised crossings
  - signalised crossings
  - shortest pedestrian paths (desire lines).

The following documents provide more information on walking and cycling:

- *Non-motorised user review procedures: Review interim guidelines.*
- *Pedestrian planning and design guide.*
- *Cycle network and route planning guide.*
- *Travel demand management manual* (TDM01).
- Austroads' *Guide to road design* part 6A Pedestrian and cyclist paths.
- Austroads' *Guide to traffic engineering practice* part 14 Bicycles

Public transport

It is vital that the project team engages early with the regional authority to ensure good public transport design practices can be applied efficiently and cost effectively to best suit the needs of the users, planners, funders and that the design supports and complements the region's public transport aspirations.

Regional public transport plans and associated operational plans, regional land transport strategies/plans, long-term council community plans TDM01, *Pedestrian planning and design guide* should be investigated and measures should be systematically considered and documented in an assessment report, including recommendations for implementation. Where appropriate, rural school bus issues should be considered. Justification should be given if a measure is not applicable. Access to public transport modes should be considered, eg:

- bus, freight, high-occupancy vehicle or high-occupancy toll lane either through reallocation of existing road space or new construction to make certain modes more efficient and widen travel choice. Options include:
  - hard standings
  - build-outs into road at bus stop (except on district arterial or state highway routes)
  - bus shelter
  - school bus route signage (rural)
  - bus lay-bys
  - recessed bus bays
  - bus activated prioritised signal phasing
  - walking provision to access bus stops.

Priority lanes

- All schemes should consider priority lanes, eg toll lanes.
- Bus priority lanes.
- High-occupancy lanes.

Traffic management

Traffic management is the application of a variety of technologies designed to manage traffic flows and the effects of congestion on the network. Traffic management should be applied to all schemes. Potential for intelligent transport systems, variable message signing, variable speed management, ramp signalling, to convey information and widen travel choice.

Taking into account environmental issues

Please refer to process 2.3 for environmental factors and process 2.4 for the Resource Management Act 1991 factors.

Investigation

During the investigation phase of the project consultation should be undertaken with planning and government agency partners, local authorities, rail, public transport, and freight operators and other relevant road user groups. This should ensure that cycling, walking, public transport, urban design and priority lane connections are included. That land use impacts are avoided or mitigated, and consideration has been given to the use of priority lanes and traffic management.

Design

Incorporate cycling, walking, public transport, priority lane, traffic management and urban design recommendations into design plus other recommendations that arise through investigation phase.

Construction	Mitigate against land use impact during construction. During construction cyclists and pedestrians should be actively catered for and in cases of diversion from the main route, they should be provided with a usable, practical facility that reflects existing user types and travel patterns. This includes considering pedestrian and cyclist issues within temporary traffic management plans. We are also looking to reduce vehicle demand in urban areas, to help maximise efficiency across the network. The cyclists and pedestrians should be kept informed throughout the life cycle of the project. After construction any outstanding or new issues that arise should be addressed. It will be important to communicate disruptions with affected road users, local community and business groups.
Post-construction	Ensure non-car users are happy with design or if there are any modifications enhancements necessary. Undertake pedestrian and cyclist post-construction monitoring (especially if larger project). Ensure cycle paths are maintained ensuring smooth debris free surfaces, good drainage and ironwork, upkeep of signing, markings, and vegetation is cut back.

2.6 Scope verification

Introduction

In June 2009, the NZ Transport Agency (NZTA) senior leadership team (SLT) approved implementation of the value assurance gate (VAG) process. The VAG process provides confidence to senior management in the Highways and Network Operations (HNO) group when:

- implementing activities in a nationally consistent manner
- delivering on operational policy, and
- achieving optimal levels of quality and value.

For clarity the VAG process has been separated into two distinct categories - general and scope verification. The VAG process (general) applies to project specific technical areas such as structures and safety. The VAG process (scope verification) applies to scheme approvals. Both processes use risk-based criteria and devolve decision-making to appropriate levels. Project managers will record risk assessments on the electronic spreadsheet provided (VAG process.xls).

VAG process (general)

The VAG process (general) is:

- initiated at the strategic study/scoping report phase
- required of all capital works over $200,000, and
- devolves decision-making to Business Unit Decision-Making teams (BUDMT) where these decisions can be regarded as falling within the business as usual category.

The VAG process creates value gates appropriate for the level of risk at critical phases. A specific accountable individual, usually the project manager, must:

- be identified
- meet each value gate condition, and
- record appropriate evidence of compliance recorded for audit purposes before passing into the next phase.

The professional services business unit is responsible for the overall VAG process. The unit provides assistance to ensure all activities seamlessly transition through the VAG process.

One key area that needs to also be taken into account is the need to ensure any funding conditions are complied with such as sign off of the macroscope of the project. This is dealt with in the scope verification section, however, it often has an impact on the general process VAG gates.

VAG process (scope verification)

This process, also known as scheme approval, is significant to have a separate risk assessment process. Risk-based decision-making devolves to the various groups. However, it must be noted at the time of developing this manual the Board was still developing its process around sign-off of the scope of projects. However, at present the process is likely to be as follows:

- Board Planning Committee for strategy studies/scoping report total cost of identified projects of $200 million (delegation needs confirming)
- BUDMT for low-risk block projects (<$4.5 million) (still needs confirmation through delegations) Investment and Operations (I&O) Committee via Value Assurance Committee (VAC) for high-risk block (<$4.5 million)

- I&O Committee via VAC for large projects (>$4.5 to <$100 million), and
- Board via I&O Committee and VAC for all projects >$100 million or those of significance in accordance with the NZTA significance policy and delegation manual. Project managers will record risk assessment and value gate compliance on the electronic spreadsheet (VAG process.xls).

Two-stage VAG approval process

VAG approvals	Low-risk block projects <$4.5 million	High-risk block projects and/or >$4.5 million
BUDMT	approve	review
I&O Committee via VAC		approve

High-risk definition

For purposes of the VAG process (scheme approval) high risk is defined as:

a. block projects with estimates close to block limits and/or with ninety-fifth percentile estimates over the limit

b. projects requiring developer contributions/third party funding

c. a risk that benefit cost ratios (BCR) may go under one or where the BCR calculated with the ninety-fifth percentile estimates that are equal to or less than one

d. includes work off the state highway (not just local intersection)

e. projects with a low fit with Regional Partnerships and Planning (RP&P) strategies and packages

f. project is located within a high-risk sensitive receiving environment (environmental, social, cultural or historical)

g. projects that do not conform to traditional assessment through the NZTA's *Economic evaluation manual,* and

h. projects that do not comply with the NZTA standards, specifications, guidelines or professional services specialist recommendations.

The professional services specialist seconded to the BUDMT determines definitions of a high-risk sensitive receiving environment and a low fit with RP&P strategies and packages.

Technical assistance and audits

Technical assistance is available from professional service specialists. Where there is any doubt with respect to whether or not a project should be categorised as high risk or not these should be raised with the national manager in Professional Services group.

VAC approval process

The project manager initiates the scheme assessment report (SAR) approval process. The project manager:

a. liaises with the VAC secretariat to ensure the project is on the agenda

b. confirms one month before the proposed review that the project should remain on the agenda (VAC meets monthly)

c. prepares a PMM 2.6a form (part 3) and forwards it electronically to the VAC secretariat at least one week ahead of the meeting date

d. attends or video links to the review meeting to answer questions

e. reviews and approves SARs prior to submission according to the process outlined on the next page

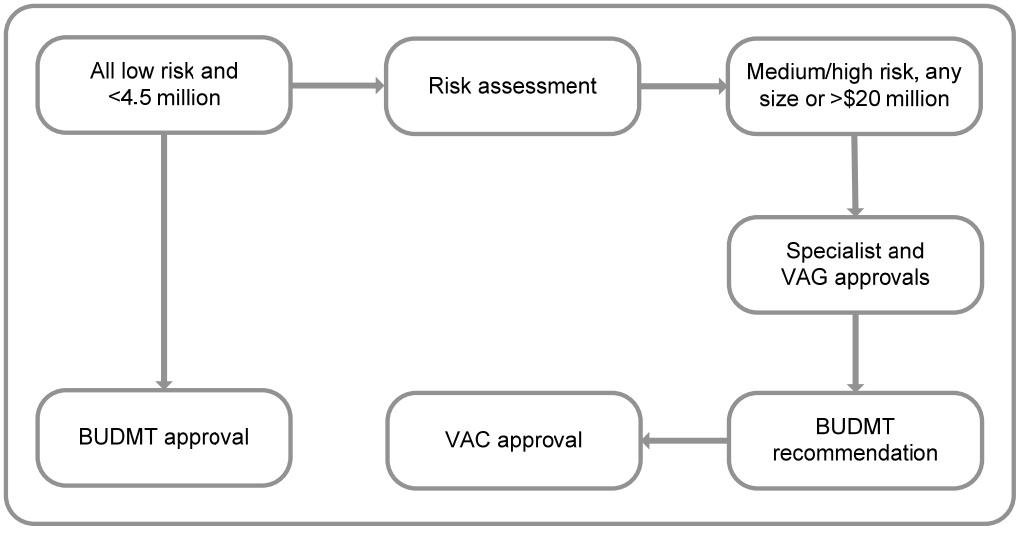
f. liaises with the VAC secretariat and the I&O Committee secretariat to timing of the committee and requirements (some VAC recommendations will go as a VAC report while the risks on other projects will justify their own paper)

g. prepares to attend the I&O Committee either my video conference or in person

h. develops any further papers that may be required as a result of VAC or I&O Committee or the need to prepare a paper for the full Board.

It should be noted that this process is still evolving and may well be refined in future so liaising with the VAC secretariat and the Professional Services team would be advisable, before starting the process.

SAR approval process



Macroscope approvals and changes to scope

When a paper, agreeing macrosope or alteration of scope, goes up to the VAC, the RP&P case manager should be given ample opportunity to input into the paper with respect to any funding implications that may arise, confirming that any conditions from previous approvals have been met and that any resultant changes to funding are in line with the RP&P group's requirements.

The same paper that goes to the VAC can then be used for the I&O Committee and where necessary (ie where conditions have been met or a statement that work towards meeting the condition is still on-going) can be co-signed by the group manager of HNO and the group manager of RP&P.

When a funding paper written by the RP&P group is going to the I&O Committee for approval that has significant implications to HNO activities, opportunity will be provided for the HNO group to input.

Please refer to the funding section for further guidance.

Economic reviews

Economic approval to be undertaken in accordance with the NZTA's *Economic evaluation manual*. Peer reviews required for project feasibility reports (PFRs) as well as SARs above $200,000 unless the case manager has agreed otherwise.

All projects must have an economic evaluation:

- completed, according to the NZTA's *Planning, programming and funding manual* (PPFM) and the *Economic evaluation manual*, and
- independently peer reviewed (state highway manager may waive the need for a project peer review if the total cost is less than $200,000).

It is important to ensure the results of the economic evaluation is kept up to date in the State Highway Project Financial Management System (PROMAN) since the evaluation is one of a number of factors that are used to prioritise the project on a national basis within the State Highway Plan.

Scheme approval status

Once the project has been through the scheme approval process, the project manager should update the scheme approval status in PROMAN by doing the following:

- Access the details for the project by opening screen – Projects > Project set-up.
- Enter project name > Edit.
- Click on Tracking tab and Scheme approval status (left-hand column).

Suspended projects

Projects are occasionally suspended, abandoned and not developed beyond the investigation phase for a number of reasons. In these situations, the above approvals are still required (form PMM 2.6b). The approval recommendations must include:

- reasons for the project's suspension
- description of the minor remedial works, if any, that must be completed in the meantime pending the project's progression, and
- forecast cost and programmed spending financial years.

VAG process audits

While the accountability for achieving the identified conditions for each VAG process remains with the individual identified to prove confidence that the process is working. The national manager in Professional Services group is still responsible for undertaking regular process audits. These will be selected to target other high-risk activities or randomly across the portfolio.

2.7 Scope control

Introduction

Once the project scope has been defined (process 2.5) and verified (process 2.6), the project manager is responsible to implement the project processes in order to achieve the defined project scope and thereby the project objectives.

Scope control

The project manager is to exercise scope control by eliminating scope creep. This involves monitoring the scope to ensure it remains constant. If and when there is a real need to change the scope the scope change control procedure must be followed, closed out, notified to interested parties and recorded.

What are scope changes

Scope changes involve significant changes to the:

- project's objectives
- work type or extent required to complete the project, and/or
- defined project product (facilities/services to be produced) as defined in the macroscope.

Scope changes involve significant changes to the project's objectives and/or significant changes to the work type or extent required to complete the project and/or the defined project 'product' (facilities or services to be produced) as defined in the macroscope as the main output of the project.

When and why do scope changes occur

Scope changes are usually motivated by the need to mitigate risks or opportunities to project outputs/performance. Changes can be initiated in any project phase. Needs for change occur often as a result of new or more information becoming available, as the project progresses, highlighting better ways to overcome new or existing issues or utilise new opportunities. Geotechnical, land survey and stakeholder inputs or resource consent processes often initiate change. Processes such as value and risk engineering on possible changes and their advantages.

Feasibility

The project manager should ensure that the following steps are completed:

1. Review the existing project definition and scope as described in the project plan.
2. Define the scope change proposed, the reasons for and description of the change.
3. Analyse the impacts and consequences of the change on project inputs and outputs, including at least the project product, extent, time to completion, budget/estimate, stakeholder satisfaction levels, benefits and benefit cost ratio (BCR), environmental outputs, and other performance criteria such as strategic fit and effectiveness.
4. Report to and obtain scope change approval from the project sponsor.
5. Obtain approval, if necessary, from the staff designated with the authority to make the change decisions. Additionally obtain agreement for the change from affected parties, including external and internal stakeholders where necessary.
6. Notify affected parties of the change where necessary.
7. Record the change on form PMM 2.7 (part 3 of this manual) and change the project plan accordingly.
8. Implement the change, including redevelopment of the project work breakdown structure and project programme, delegate new tasks to suppliers and/or staff, and provide the required funds for the new work.

Investigation	Refer to the feasibility phase above.
Design	Refer to the feasibility phase above.
Construction	Refer to the feasibility phase above.

3.1 Risk

Introduction

Risk management is inherent and fundamental in the NZ Transport Agency's (NZTA) business. The prescribed risk management process in *Risk management process manual* (AC/Man/1) provides a systematic and structured approach to manage and support the project delivery. Additional primary reference documents are the NZTA's:

- *Insurance and risk management manual* (SM013)
- *Cost estimation manual* (SM014).

There is no exact guideline to the depth and level of risk analysis. It must take a 'horses for courses' approach and match the level of complexity. On one end of the scale, the analysis needs to be simple and practical to encourage buy-in. At the other end, more advance analysis is reserved for complex reporting and decision-making.

At all stages of a project delivery, there should be an activity risk file (AC/Man/1, section 3.1). That file must contain all related risk documentation, especially the risk register and treatment plan. The activity risk file must be updated and maintained continuously throughout the delivery phases.

The level of risk management applied needs to match the level of complexity of the project. Quantitative assessments are required in general for cost estimation and funding applications, eg mean and ninety-fifth percentile. This can be done by using *@Risk* or a simple desktop calculation.

Refer also to the section 2.1 of AC/Man/1 for the specific responsibilities associated with the implementation of the risk management process.

For all phases, the risk profile will also influence the procurement methodology and contract form for the delivery of either professional services or physical works (refer to the NZTA's *Contract procedures manual* (SM021)).

Feasibility

The first risk register is created at this point. It is created either through workshops or a desktop exercise, and becomes the foundation for the phases to follow. It would be a high-level assessment, with the focus on stakeholders' consent, scheme development, scope risks and functional performance risks.

As a minimum, a qualitative assessment should be undertaken to support the development of the feasibility estimate (refer to SM014).

Investigation

As various options are derived, the risk register should be further expanded to take into account the different risk profiles with each option. Further quantitative analysis can be used to support the cost estimation, eg options estimate, scheme estimate, pre-design estimate (refer to SM014).

At this point, once a preferred option has been selected, the contract form and procurement options should be considered to ensure the best delivery model is selected for the appropriate allocation of risk (refer to SM021).

Design

The risk register is further updated and expanded to include design and construction risks, and more advanced quantitative analysis to support the development of the design estimate (refer to SM021).

For large and more complex projects, as part of the cost estimation process, a peer review or parallel estimate might be required. This would also include reviewing the risk register.

Dependent on form of contract and procurement method, the allocation of risk to the party best able to manage the risk should be looked at, and clearly embedded into the contract documents.

Issues surrounding insurances, liability and indemnities should also be considered and referred to the NZTA Highways and Network Operations Professional Services group if required (refer to SM013).

Construction

A well-developed risk assessment is vital to a successful tendering process. Foremost, it assists with the selection of the appropriate contactor best able to manage the specific risks of the project. This is evident, but not limited to, in some of the tender evaluation methods, especially the price quality method special. Risk knowledge should also be shared freely with the tenderers.

Prior to committing to the contract, refer to SM014 for guidelines on updating the construction estimate, as the risk profile might have changed as a consequence of tender offers.

During construction, the risk register and treatment plan needs to be monitored and updated, and used as a tool for proactively managing risks, threats and opportunities. The NZTA project manager should be the champion during progress meetings to ensure that key risks are identified and managed with treatment plans.

The NZTA project manager needs to be comfortable that there are sufficient indicators reported to be able to appreciate that key risks are understood and managed.

Additionally, any image and reputation risks to the NZTA should be communicated to the regional state highway manager or the NZTA Communication team.

4.1 Cost estimation

Introduction

The full cost estimation review process is described in detail in the NZ Transport Agency's (NZTA) *Cost estimation manual* (SM014). This manual was introduced to significantly improve the reliability of cost estimates at all stages of a project's development. It is a key reference manual for all consultants and project managers.

It should be noted that all estimates **exclude** escalation. However, all funding application assessments are out-turn estimates and should **include** escalation.

For details on sign-off delegations refer to the latest delegations schedule.

Note:

- Property costs to be estimated by the property acquisition agent.
- The NZTA to provide estimate for the NZTA-managed costs.
- Fees to be removed from estimates once they become sunk costs.
- Parallel estimates and cost peer reviews to be carried out as required (see process 6.4).
- Estimates are to derive a project out-turn cost, not just contract cost, thus include a raft of ancillary costs.
- SMO14 spreadsheets are available electronically via the following path: T:\Manual and Forms\ Cost Estimation Manual\.....

Feasibility

Prepare feasibility estimate in accordance with SM014 form A, as an output of the project feasibility report (PFR).

Investigation

Prepare and submit funding application assessment (investigation and reporting), including for large projects a separate construction phase estimate, in accordance with SM014 form G, prior to award of investigation commission.

Prepare options estimate as part of the investigation and reporting phase for each proposed solution, in accordance with SM014 form B. These estimates are used for comparing project options.

Prepare scheme estimate as part of the investigation and reporting phase for the preferred option, in accordance with SM014 form C, to support the notice of requirement and conduct a full parallel estimate for all projects exceeding $20 million.

Prepare pre-design estimate for the approved project option (updated to include any hearing or Environmental Court conditions) in accordance with SM014 form D, as an output of the scheme assessment report (SAR).

Design

Prepare and submit funding application assessment (including design and project documentation) for large projects as a separate construction phase estimate, in accordance with SM014 form H, prior to award of design commission.

Prepare design estimate, in accordance with SM014 form E, as an output of the design phase.

Construction

Prepare and submit funding application assessment (construction) including for large projects a separate construction phase estimate, in accordance with SM014 form I, prior to award of the construction contract.

Prepare construction estimate, in accordance with SM014 form F, as an output of the tender assessment process.

4.2 Funding

Introduction

Overview

All activities carried out by the Highways and Network Operations (HNO) group are funded from the National Land Transport Fund (NLTF). In order to receive funding for any activity, it must be assessed against the NZ Transport Agency's (NZTA) funding allocation process (FAP).

The FAP is defined in the NZTA's *Planning, programming and funding manual* (PPFM) and Investment and Revenue Strategy. These documents also bring to together the new Regional Land Transport Programme (RLTP) process (RLTP came info effect with the Land Transport Amendment Act 2008) and the National Land Transport Programme (NLTP) process. The documents also provide details as to the overall allocation of funding activities.

When approving any proposed activity or combination of activities for funding from the NLTF, the NZTA must be satisfied that:

- the activity or combination of activities is included in the NLTP
- the NLTP continues to meet the requirements of section 19B of the Land Transport Management Act 2003 (LTMA)
- the New Zealand Transport Strategy (NZTS) objectives have been taken into account in respect of the activity or combination of activities
- the activity or combination of activities contributes to the NZTA's objectives, including its social and environmental responsibility, in an efficient and effective manner
- the activity or combination of activities has, to the extent practicable, been assessed against other land transport options and alternatives
- the relevant consultation requirements of the LTMA have been complied with.

The NZTA must also take into account:

- the relevant Government Policy Statement (GPS)
- any national land transport strategy
- any relevant regional land transport strategies (RLTS)
- any national energy efficiency and conservation strategy
- any relevant national policy statement and any relevant regional policy statements that are for the time being in force under the Resource Management Act 1991.

The NLTP is the overarching document which brings together all the RLTPs into a single document, and lists all activities that may be carried out in the three-year period. For the purpose of this section, we will assume that all activities proposed for funding are listed in the NLTP, and that we have satisfied our legislative requirements under the LTMA. If an activity is not listed in the NLTP you should contact the Network Performance Programming team for advice.

The PPFM also considers activities by type. These are feasibility, generic, standard and complex projects. The steps required for each of these type will vary as the funding approval for generic projects (<$4.5 million construction cost (excluding walking and cycling)) is delegated to the HNO programme committee. Funding approval for other activities is given via the Regional Partnership and Planning (RP&P) group.

Funding source

There are a number of funding sources available to the NZTA under the umbrella of the NLTF. Most commonly these are national and regional funds, although others exist in specific circumstances.

The funding source of a project is determined by its profile. This is strategic fit (high, medium or low), effectiveness (high, medium or low) and efficiency (benefit cost ratio (BCR)) (high, medium or low). The process around the selection of the profile, and the resultant funding source is described in the NZ Transport Agency (NZTA) Investment and Revenue Strategy and PPFM.

A funding source is allocated at the time a phase is funded and is applicable to that specific phase. Generally projects maintain the same funding source throughout their development and construction, but it is possible for the funding source to change. This may happen if the profile changes through the development of the project.

Although the NZTA makes the final decision as to the funding source for all activities, for projects that require regional funding, the relevant regional transport committee (RTC) should be approached for their support in the decision to allocate regional funds. Where possible, this should be done before the formal funding application is made.

The types of activity mentioned in the PPFM can be linked to general terminology used within the HNO group:

- feasibility = strategy studies
- generic = block projects (<$4.5 million construction cost) and also includes walking and cycling, if under the same cost limit.
- standard and complex = large projects (>$4.5 million construction cost).

The PPFM also describes 'activities' and 'combinations of activities'. The HNO group refers to these activities as projects.

LTP online

The LTP online is a web-based system used by the RP&P group to prepare the NLTP, to receive and consider individual funding applications, and to manage the NLTP throughout the programme year.

The HNO group's funding applications for all large and walking and cycling projects are submitted through LTP online. The LTP online submission is our formal funding application which is assessed by the RP&P group prior to allocation of funds.

All activities listed in the NLTP appear in LTP online, and will have a certain number of mandatory fields already completed. These are the fields relating to section 16 of the LTMA which must be satisfied in order to appear in the NLTP. When we are applying for funding for a phase, further fields will require completing. These are the fields relating to section 20 of the LTMA which allow the RP&P group to assess the project against the LTMA and FAP.

At present, most regional offices only have read-only access to LTP online, and therefore cannot apply directly for funding. This has been done for a number of reasons:

- To better manage the large number of requests going through the system.
- To allow national coordination, and prioritisation of applications if necessary.
- To ensure consistency of applications.

The lodging of funding applications in LTP online is carried out by the large projects programme manager in the Network Performance group.

Case management

The RP&P group will assign a case manager to most, if not all, large projects. The purpose of case management is to allow the RP&P group to:

- respond in a timely manner to issues as they arise
- help optimise the outcome of activities in terms of achieving the targets specified in the NZTS and the GPS
- help facilitate cost-effective implementation
- act as liaison for scope verification approval (see process 2.6).

Case management is discussed in depth in the NZTA's PPFM chapter E4.2.

State Highway Programme Review Committee (SHPRC)

The HNO's funding applications for all block activities and HNO strategy studies are submitted to, and considered by the SHPRC (previously State Highway Review Committee). Strategy studies that encompass the whole of the NZTA are approved by the RP&P group.

Under delegated authority, the HNO group has the authority to approve funding for block projects and HNO strategy studies, and to manage the programmes on a monthly basis within the financial year and three-year period. The management of the programme includes:

- new works funding requests
- cash flow adjustments
- surpluses
- cost and scope increases.

The same criteria must be satisfied in the funding of block projects as for large projects.

Funding approval delegations

Delegations to approve project funding are dependant on the estimated cost of the project construction phase.

Construction cost <$4.5 million*	(Block)	SHPRC
Construction cost $4.5 million – $20 million **	(Large)	Group manager RP&P
Construction cost >$20 million	(Large)	NZTA Board

*excluding walking and cycling

** and walking and cycling <$4.5 million

Timing of applications

Dependant of the approval process for the funding request the timing of activities required for funding may vary.

For block projects applications should be submitted in the State Highway Project Financial Management System (PROMAN) in line with the standard monthly process.

The large projects, where there are more steps involved, should seek advice from the large projects programme manager. The timing for the submission of completed LTP online templates and completion of funding papers will vary dependant of dates of Board meetings or the general manager's RPP review meetings.

Feasibility

The initial identification of a project can come from a variety of sources (eg strategy studies, various network management strategies, and individual project feasibility reports (PFRs) from within a network management strategy.

For guidance on funding of strategy studies see part 4 of this process.

Investigation

Funding application

The funding application is generally specific to an individual project and the phase of the project being considered (ie investigation phase). The delegation to approve the phase funding (see above) and those matters taken into account (eg BCR and project profile) generally relate to the project as a whole.

This may not always be the case however, depending on the context and overarching procurement strategy for the project, or package of projects. Similarly, separate hold points may be necessary, with funding of the latter activity, depending on the outcome of the first (eg investigation scoping study versus full investigation). Such situations would typically occur within the Large project context, and for which funding strategies should be discussed with the RP&P case manager.

Funding application – Block projects

For block projects, which are generally lower cost and risk, and represent more standard activities, no formal LTP online submission of funding paper is required. Notwithstanding this, to provide assurance as to robustness and validity of funding applications, approval to seek funds must first be sought from a manager in project management services or state highway manager (or business unit manager for national office managed works).

The funding application then need only be entered into PROMAN, within the monthly review cycle (see process 9.4 in this manual), together with provision of a supporting new works funding request form (as provided in part 3 of this process) to the SHPRC via the proman.pads@nzta.govt.nz.

For guidance on funding of block project phases, see part 4 of this process.

Scope and total cost increases

In the event an application is required to vary the scope of the project which requires additional funding, or the approved allocation will prove insufficient to complete the works, the project manager shall apply for additional funds through a similar route to that of a new works request.

Block projects or HNO strategy studies	Price level increase requests are also managed through the PROMAN monthly review cycle (see process 9.4). Dependant on the extent of additional funding required, a supporting price level adjustment (PLA) report (as provided in part 3 of this process) may be required. Price increase thresholds for when these reports are to be provided are set out on the report form. These should be forwarded to proman.pads@nzta.govt.nz, concurrent to submission of the request in PROMAN. Where a PLA report is required, approval must first be gained from a manager in project management services or state highway manager. Where the price increase is to accommodate a scope change, that change must be first approved in the same manner in which the project scheme was approved (ie via the Business Unit Decision-Making team (BUDMT)).

Large projects, and walking and cycling	The requirements above for block project price level increases, apply to large projects also. The RP&P case manager must be contacted. Dependant on the extent of the additional funding required, the price level increase may need to be approved by either general manager RP&P, or may need the NZTA Board approval, requiring a jointly written paper to support the request. The PLA report is then needed as reference document in the preparation of this paper, or where a separate paper is not deemed necessary, may stand alone as the supporting document. Where the price increase is to accommodate an increase in scope, this should first be approved by the BUDMT, and potentially the Value Assurance Committee (VAC) (subject to in context with the original scheme approval).

Design

The process and requirements set out above for the investigation phase funding also apply to the design phase funding applications.

In addition, and as prompted by the new works funding request form, confirmation of investigation phase outcomes is required (ie that the scheme has been approved, and a peer review of the project economic evaluation has been undertaken). Further supporting information may be requested as a check that the project is both a worthwhile project to continue to with, and that it has been sufficiently developed to warrant progression to design.

Construction

The process and requirements set out above for the investigation phase funding also apply to the construction phase funding applications. Similarly, confirmation of the design phase outcomes is also required (eg confirmation of the BCR, review of cost estimate, attainment of land and land use statutory consents (designation/resource consents). And again, this application is a further check that the project is both a worthwhile project to continue to with, and that it has been sufficiently developed to warrant progression to construction.

For guidance on funding of strategy cycles see part 4 of this process.

5.1 Programming for time

Introduction

In order to ensure timely completion of a project the project manager must produce a robust programme or schedule for the works, against which progress can be monitored and recorded.

The programme should contain all relevant activities to be carried out, there sequencing relative to each other, including clear dependencies between activities, and a robust assessment of the duration of each activity.

The project manager should use this to set a permanent baseline for the project (or phase of project) and monitor and update the programme every month against the baseline.

Format

Although a simple tabular format can be sufficient to set up and monitor progress, it is preferable that the project manager establishes and maintains a more sophisticated timeline programme in Gantt chart format. This allows the linkages and dependencies across activities to be best displayed. The key issue once the programme is set, is to monitor the programme on at least a monthly basis and amend it if required, to ensure it ensure it reflects the project's current status.

Risk-adjusted programmes

The Highways and Network Operations (HNO) programming team also produces high-level risk-adjusted programmes for all large projects.

In addition to the standard expected activity durations risk-adjusted programmes show the following:

- Duration uncertainty, through the provision of a minimum and maximum duration in addition to the expected (or most likely) duration. This is through an assessment of the general uncertainty around how long an activity will take to complete, under normal pressures.
- Specific risk events that may impact of the timely delivery of the project. These are time-related risks such as interruptions, rework cycles, possible emerging tasks or other project-related quantifiable risks. Each risk is linked to its relevant activity, and assigned a probability of occurrence and an impact (additional time to complete the task if the risk occurs).
- The programmes also include all project delivery hold points and milestones.

These programmes are then run through a simulation model to determine the extent of time risk around the projects delivery, and provide an earliest (fifth percentile), most likely (fiftieth percentile), and latest (ninety-fifth percentile) completion date. The programmes are developed in conjunction with the project manager and Regional Delivery team and are owned by the project manager and are provided to them for their use.

An example of a risk-adjusted programme is provided in part 4 of this manual.

Consultants' programme

For much of HNO's work consultants are engaged to provide a range of services. As part of their contractual engagement they are required to establish and maintain programme details outside the project manager's more holistic view. It is appropriate to use the consultant's programme as the overall project programme, provided it meets and reflects the project's overall needs. In this case project plan should reflect this.

The consultant's programme must comply with HNO's:

- minimum standard Z/2 Consultant's programme (*State highway professional services contract proforma manual* (SM030))
- professional services specification for contract management
- *Risk management process manual* (AC/Man/1).

The project manager should ensure a permanent baseline is set at an early stage in the project development so progress can be effectively monitored against programme. As this is a permanent baseline, it may not be reset.

Programme and programme management

The project manager must ensure:

- all relevant tasks are identified in the project programme
- al specified deadlines are achievable and allow for all the tasks and associated deliverables to be completed and reviewed
- appropriate relationships (links) between the programmed tasks are specified
- programmes are risk adjusted using a suitable method to determine best/most likely/worst case completion dates
- appropriate stage and hold points are identified and included in the programme. These ensure stages or deliverables are completed as expected and appropriate reviews are completed at optimal times
- realistic time frames are set for the HNO group to review and approve deliverables. Specific attention must be given to:
  - property acquisition requirements, where the need for compulsory purchase under the Public Works Act 1981 can take a significant amount of time
  - project approval requirements. Typically, full approval of a scheme assessment could take one to two months, depending on the issues involved and the approval requirements
  - the programme being monitored each month and updated if required
  - agreement with the consultants' resequencing of critical path activities. This involves assessing and mitigating, if appropriate, any impacts due to programme changes for their implications on cost, quality, commitments to interested parties.

Capital improvements

The following milestones should, if applicable, be included into any capital project programme:

- letting professional service contract(s)
- completing the investigation phase
- granting designation
- granting resource consents
- completing land acquisition
- completing the design phase
- awarding physical works contract(s)
- practical completion and end of the defects liability period
- project deliverable (if assigned).

For larger, more complex projects, the project manager may include additional milestones to provide an adequate measure of the project's time performance.

A comprehensive example of tasks that might comprise a complex capital works project is provided in part 4 of this manual.

Statutory time frames

The project manager must recognise the various statutory requirements as applicable to the project and allow sufficient time to manage the impact of these in their project programming. In particular, the project manager must have an appreciation of those requirements, steps, and the time frames associated with each, as set out in the Resource Management Act 1991. The project manager should liaison with RRPs resource management planning staff to ensure due provision is made for this in the project planning and programming. Part 4 of this manual provides guidance of such requirements, steps, and time frames for :

- nominal designation procedures
- resource consent procedures
- progression via the Environmental Protection Authority procedures.

Land acquisition processes can also impact on project programming. The project manager shall liaise with the property acquisition agent to similarly recognise the requirements, steps and corresponding time frames involved in land acquisition, as set out in the Public Works Act 1981. Part 4 of this manual provides guidance on this.

6.1 Quality

Introduction

The purpose of this process is to ensure project development and delivery is subject to effective quality control. Quality applies throughout the life cycle of a project and is something that should be monitored and checked during each phase.

The NZ Transport agency's (NZTA) *Standards and guidelines manual* (SM/P/ 21) provides guidance to the standards, procedures and processes expected to be adhered to on any NZTA project.

Many of the documents referred to in the above manual have been developed with industry and local authority input. The manual establishes standards and guidelines for safe and cost effective state highway management practices.

The manual also lists the various standards, guidelines and specifications. These define the NZTA's quality requirements. However:

- sometimes there may be no recognised or industry standard(s) so the project manager must define the minimum acceptable quality standard within the project's scope or objectives, or
- alternatively, the project manager has to obtain approval to proceed with the project, because of an issue not meeting the required standards.

All the NZTA suppliers must have a quality assurance (QA) system in place to:

- develop a contract specific quality plan
- assure the NZTA, all deliverables comply with the specified criteria.

It should be noted that all projects may be subject to both internal and external auditing processes at any time, during any phase of the project, as well as contract management reviews and lessons learned reviews.

Feasibility

Planning procedure

Define quality reviews and approvals timing.

Management procedure

1. Review and accept supplier quality plans.
2. Review project outputs for fitness for purpose.
3. Formally review each supplier's quality system.
4. Obtain required formal approvals.
5. Carry out quality inspections and/or audits of completed outputs.

System audits

It is good practice to audit supplier's quality plans to ensure they are complying with their own documented systems. Spot checks should be undertaken at six-monthly intervals or more frequently if there is consistent under performance.

Records

Copies of the following documents must be retained:

1. Acceptance notification of suppliers' quality plans.
2. Documented quality review results.
3. Formal approval notifications.
4. Documented quality inspection/audit results.

Investigation

Identifying and documenting standards

When developing the project plan and, if appropriate, supplier contracts, the project manager must:

- list the standards, guidelines and specifications that apply to the project. This should be a specific list as opposed to a generic reference. If:
  - different levels or degrees of a standard can be applied, the minimum or specific level should be defined
  - there is the possibility of conflict between the various standards, guidelines and specifications, they must be listed in order of precedence
- include key performance indicators (KPIs) to help define quality standards
- document the scope and timing reviews and approvals to ensure:
  - quality targets are met
  - planned approvals are obtained.

Management procedure

1. Review and accept supplier quality plans.
2. Review project outputs for fitness for purpose.
3. Review and accept supplier quality plans.
4. Formally review each supplier's quality system.
5. Obtain required formal approvals.
6. Carry out quality inspections and/or audits of completed outputs.

System audits

It is good practice to audit supplier's quality plans to ensure they are complying with their own documented systems. Spot checks should be undertaken at six-monthly intervals or more frequently if there is consistent under performance.

Records

Copies of the following documents must be retained:

1. Acceptance notification of suppliers' quality plans.
2. Documented quality review results.
3. Formal approval notifications.
4. Documented quality inspection/audit results.

Design

Identifying and documenting standards

When developing the project plan and, if appropriate, supplier contracts, the project manager must:

- list the standards, guidelines and specifications that apply to the project. This should be a specific list as opposed to a generic reference. If:
  - different levels or degrees of a standard can be applied, the minimum or specific level should be defined
  - there is the possibility of conflict between the various standards, guidelines and specifications, they must be listed in order of precedence.
  - include KPIs to help define quality standards
- document the scope and timing reviews and approvals to ensure:
  - quality targets are met
  - planned approvals are obtained.

Standards compliance

As stated above, supplier contracts must also reference the standards, guidelines and specifications and deliverables that apply to the project. Where the request for tender (RFT) requires, the tender evaluation process should confirm:

- suppliers comply with these contractual requirements
- the systems and processes suppliers have in place to determine compliance.

Compliance with these requirements may also be reviewed through an audit or review, described in the quality processes (6.2 and 6.3).

Deviation from standards

In certain situations project managers may have to proceed with a design or outcome that does not meet the specified standards, due to economic, physical or other constraints. While the project may still improve the current situation, the project manager must:

- seek the sponsor's approval to change the project plan
- consider the long-term implications of adopting the reduced standards by answering questions like:
  - How long will it be before a future project might be feasible to correct the deficiencies
  - What is the forecast level of disbenefit that may be incurred due to the deficient standards?
  - Has a risk assessment been completed?
  - Have all options been explored for resolving the constraint? (For example, requesting a ranking benefit cost ratio for a roading project to achieve acceptable safety standards).

Process 2.6 describes the processes to follow to obtain formal project scheme approval where the scheme may incorporate deviations from standards. The process also describes the role of the Value Assurance Committee (VAC) which was set up to consider amongst other things, deviations from standards for projects costing over $3 million, or where there are major issues.

Application of multiple minimum standards

Care must be taken to ensure applying minimum standards to a number of aspects does not result in a substandard outcome.

Management procedure

1. Review and accept supplier quality plans.
2. Review project outputs for fitness for purpose".
3. Formally review each supplier's quality system.
4. Obtain required formal approvals.
5. Carry out quality inspections and/or audits of completed outputs.

System audits

It is good practice to audit supplier's quality plans to ensure they are complying with their own documented systems. Spot checks should be undertaken at six-monthly intervals, or more frequently if there is consistent under performance

Records

Copies of the following documents must be retained:

1. Acceptance notification of suppliers' quality plans.
2. Documented quality review results.
3. Formal approval notifications.
4. Documented quality inspection/audit results.
5. Road user audit.

Construction

Planning procedure

Define:

- the project's standards
- KPIs
- quality reviews and approvals timing.

Management procedure

1. Review and accept supplier quality plans.
2. Review project outputs for fitness for purpose.
3. Formally review each supplier's quality system.
4. Obtain required formal approvals.
5. Carry out quality inspections and/or audits of completed outputs.

System audits

It is good practice to audit supplier's quality plans to ensure they are complying with their own documented systems. Spot checks should be undertaken at six-monthly intervals or more frequently if there is consistent under performance.

Records

Copies of the following documents must be retained:

1. Acceptance notification of suppliers' quality plans.
2. Documented quality review results.
3. Formal approval notifications.
4. Documented quality inspection/audit results.

6.2 Value engineering

Introduction

Value for money, in the broadest terms, is a framework which assists decision-making in the design development process. It is the project manager's responsibility to ensure that the appropriate level of formal value management process has been applied to the project dependant upon its scope, risk profile and complexity. Guidance is provided in part 4 of this section but should further clarity be required, it is recommended that the project manager consult with the Professional Services team.

Feasibility

No specific formal value management process is required.

Investigation

Value management principles shall be broadly applied in assessing options prior to the preparation of the *options estimate*.

Value management principles shall be broadly applied in developing the scheme prior to the preparation of the *scheme estimate*.

A formal value management process shall be undertaken prior to the finalisation of the design for the *pre-design estimate*.

Design

A formal value management process shall be undertaken prior to the finalisation of the design for the *design estimate*.

A formal value management process shall be undertaken prior to the finalisation of the design for the *construction estimate*.

Construction

Value management principles shall be broadly applied in seeking a value for money outcome for the project in conjunction with the Delivery team.

6.3 Network operations review

Introduction

The professional services specifications require project consultants to liaise with network consultants throughout the development and delivery phases of projects. In addition, it is very important that internally we have good communications throughout the project life cycle between project manager and the Operations team. It is the responsibility of the project manager to involve the appropriate asset manager as necessary throughout the process. The guiding principle is that the Operations team must be given every opportunity to provide input to project development and delivery throughout the life cycle of the project, and not simply be asked to take over the final product at the end of construction.

Poor investigation, design and construction decisions:

a. could affect the project's future maintenance and the project's whole-of-life costs

b. can be seen through post-construction maintenance difficulties

c. may limit future developments such as:

   - providing insufficient space for future projects such as widening
   - ongoing problems for other industry sectors such as heavy haulage and utility providers

d. can result in unnecessary costs for the NZ Transport Agency (NZTA) and road user costs

e. can result in suboptimal traffic operations and safety for the network link.

Typically, the additional costs are hidden and do not become obvious for a number of years. Accordingly future maintenance and adjacent development need to be considered early in the project's life and allowed for in the detailed design.

The NZTA technical specifications should be referenced during these phases, as they include measures and/or details that promote cost effective maintenance.

This guideline will help project managers identify, and eliminate or reduce post-construction maintenance difficulties. In doing so, the project manager must consult the asset manager during the design and contract documentation phases to ensure the issues discussed in this guideline are addressed to the satisfaction of the Operations team.

Whilst it is desirable to manage the Capital Projects and Operations teams interface in a consistent manner nationally, there are likely to be some regional preferences for effectively working together. It is suggested that requirements/responsibilities not covered by the guidance in this manual, should be agreed through the development of a regional protocol to fit the local requirements. This will be achieved through the operation of the Regional Business Unit team.

The following key documentation set out requirements for adequately involving Operations team throughout the development and delivery of projects (refer to the NZTA's *State highway professional services contract proforma manual* (SM030))

Document	Source
Physical works contract document (minimum standard (MS) Z/7)	SM030
Asset owner's manual (professional services guidelines (PSG)/15)	SM030
Large and complex projects investigation and reporting to design and project documentation phase handover checklist (MS Z/21)	SM030
Asset management guide for project design (PSG/3)	SM030
Asset owner's manual (PSG/15)	SM030
Delivery of as-built documentation(PSG/9)	SM030
Maintenance responsibilities during construction (professional services forms (PSF/15)	SM030
Capital projects handover checklist (PSF/3g)	SM030

Additionally, SM030 and the NZTA's *State highway construction contract proforma manual* (SM031) outline standard specifications responsibilities of both the project consultant and project contractor during construction and the defects liability period.

It is important that the project manager ensures that both the project consultant and the project contractor do all the things they are required to do in these specifications but it is equally important that the project manager keeps the asset manager involved throughout project development and delivery.

Feasibility

Development of a project feasibility report (PFR) is done in accordance with MS Z/20 in SM030 by the network consultant briefed by the asset manager. In agreeing which PFRs are required and which are worthy of development into projects full collaboration is required between Project Management Services and Operations teams. Adequate effort must go into defining the scope of the project at PFR stage so that there is no significant scope change necessary when the project progresses through the investigation and reporting (I&R) and design and project documentation (D&PD) phases.

The PFRs should briefly consider future maintenance requirements, costs and strategies for each option considered. The Business Unit Decision-Making team (BUDMT) should make the decision upon which PFRs are to be done, ensuring adequate input from safety specialists.

Investigation

When the I&R phase of a new project commences the project manager should agree who the Operations team representative will be for the project. It is suggested that this would normally be the asset manager for the network where the project is located.

In defining and agreeing the scope of the project in the I&R contract document, the project manager and the asset manager should agree on what adjacent pavement works (if any) are to be included in the project for reconstruction as part of the project as an Operations team cost (eg existing pavement near the end of its operational life adjacent to a passing lane).

Additionally, if the project will result in existing infrastructure being handed over to the local authority (as local road), then the I&R contract document must include in the project scope the need for the consultant to report on what treatment of the existing asset is required before handover. When the scheme assessment report (SAR) is written it must document such work and indicate whether the construction cost responsibility lies with the project or Operations team. If this work is a project cost it must be allowed for in the scheme estimate and subsequently included in the physical works contract.

Similarly the SAR must recommend a surfacing type for the project and if this is a two-coat seal, provision should be made in the scheme estimate for this as a project cost. The SAR must also detail the pavement type required.

The asset manager must be given the opportunity to review the I&R contract document before the work is tendered. In addition the asset manager should be given the opportunity to provide input as the project options and proposals are developed. The asset manager should also be invited to attend all formal project progress.

Scheme approval can only be sought with the prior endorsement of the project proposals set out in the SAR by the Operations team. If the project manager has adequately involved the asset manager throughout development of the SAR then this should not be problematic.

Refer to part 4 of this manual for a comprehensive guidance note of key matters to be taken into account during project investigation or design phases.

Design

The asset manager must be given the opportunity to be involved in development of the project proposals throughout the D&PD phase. It is suggested that the asset manager be invited to periodic project meetings and be copied into important formal decisions throughout this phase. The asset manager should be consulted on the project proposals specifically in regard to their ease of maintenance after construction.

The asset manager must be given the opportunity to review the physical works contract document before the construction contract is advertised and reasonable concerns must be addressed before proceeding to tender. Appendix 2 of the NZTA's *Contract procedures manual* (SM021) requires the project manager to confirm that this has been done. Specifically for each project the project manager and asset manager must agree whether or not the second coat seal is to be included in the project and if so, how it will be funded. The timing of the works should be agreed to ensure that critical phases are not completed in the middle of winter.

All consent conditions (building and Resource Management Act 1991) and all property purchase conditions must be included in the physical works contract document. This will ensure that responsibilities and obligations are not overlooked and left for the Operations team to resolve after construction.

For projects that include a significant amount of landscaping the project manager should consider the specification of this work as a separable portion with an extended defect liability period. Maintenance of such planting during the defects liability period is included as a project cost.

The project manager and asset manager must agree which contractor (the project contractor or the maintenance contractor) is responsible for which maintenance activity during:

a. the project construction up to the issuing of the practical completion certificate

b. the defects liability period up to the issuing of the defects liability certificate.

These agreements must be formalised by developing a maintenance responsibilities during construction agreement (as per professional services form (PSF) 15 in SM030) which must be included in the physical works contract document.

Refer to part 4 of this manual for a comprehensive guidance note of key matters to be taken into account during project investigation or design phases.

Part 4 of this process includes management plan for maintenance during construction. This document outlines the procedures for ensuring that maintenance responsibilities are allocated, understood and unambiguous.

If any alternatives are received during the physical works tender then the project manager should ensure that the asset manager is given the opportunity to be involved in assessing these before they are accepted.

Construction

During the construction phase, the project manager must keep the asset manager adequately informed on progress of the contract. Similarly, the project consultant must keep the network consultant adequately informed, as required in the consultant's contract. (The project manager must ensure that this is happening.)

The asset manager and the network consultant must be invited to the practical completion inspection and given the opportunity to be involved with the development of the list of identified defects. It remains the engineer's responsibility to develop the defects list.

The asset manager must be given the opportunity to agree that the contractor has sufficiently advanced the work for practical completion to be granted before the engineer issues the certificate.

The regional traffic and safety engineer must be fully involved in all stages of the safety audit process (stages 1 to 4). As the safety representative for operations the regional traffic and safety engineer must also be involved in any pre-opening fit-for-purpose inspection as appropriate.

Throughout the defects liability period the asset manager must be consulted with by the project manager in regard to any further defects which are identified, and must be given the opportunity to be involved in agreeing the appropriate remedial treatment and timing before the contractor is instructed to proceed. Every effort must be made by the project manager to ensure that the contractor delivers a high quality maintenance free product as required under the contract.

In agreeing what remedial treatment is acceptable the project manager and asset manager must be focused on facility at the end of the defects liability period which is compliant with the approved design and is likely to achieve the design life without the need for early maintenance intervention. That is we have paid top quality money, we want a top quality job.

The asset manager and the network consultant must be invited to the handover inspection at the end of the defects liability period and be given the opportunity to review the status of any identified outstanding defects. The asset manager and the network consultant must agree on what further work is to be done by which party and when, before the defects liability certificate is issued. As a general rule, all work required by the contractor must be completed before the defects liability certificate is issued. By implication this means that final retentions are held until all defects have been remedied and until delivery of all required information.

Throughout the defects liability period the project manager must continue to manage the project requirements through to the issuing of the defects liability certificate. The project manager must also continue to manage all other outstanding project requirements (such as the legalisation survey process) up to the point where the project can be closed. During this period there may be responsibilities on the Operations team to be handing back sections of the old asset to the local authority (eg in the case of a bypass, or parts of a new asset such as new signals).

The project manager is expected to fully assist the asset manager with such requirements. The project manager should not be allocated to other projects at the time of practical completion leaving matters during the defects liability period to be dealt with by the asset manager. The timely delivery of asset information to the Operations team is important and should be a priority for the project manager during the defects liability period.

Value gate process

In addition to liaison with local staff about operational and maintenance issues, some key decisions on these areas will require sign off (advice and confirmation) for significant projects from the national office Professional Services team. This will usually be in the traffic and safety, structural, pavement, environmental and travel demand management areas.

6.4 Peer reviews

Introduction

Peer reviews

Peer reviews are an independent check or assessment of a component of work by an independent professional auditor.

Peer reviews are necessary to ensure the robustness of the information on which decisions are made to progress or archive projects. The peer reviews will range from internal peer reviews undertaken by the consultant delivering the work, through to review by the NZ Transport Agency (NZTA) project manager and if necessary an independent review by an external reviewer.

The table below gives guidance as to when a peer review maybe required. If the NZTA project manager is uncertain as to the exercise of this discretion then their manager should be consulted to assist with the decision.

Peer review	Requirement
Conceptual	Always at feasibility phase.
Cost estimate – External peer	Expected construction estimate is between $4.5 million and $20 million at scheme estimate, or where considered necessary by risks or complexity.
Cost estimate – Parallel estimate	Expected estimate exceeds $20 million at scheme estimate, or consider for $4.5 million to $20 million for risk or complexity.
Economic evaluation	Always at the end of scheme assessment.
Technical aspects of scheme assessment report , eg geotechnical	At the discretion of the project manager.
Contract document	At the discretion of the project manager.

The NZTA has a number of independent professional advisors available to project managers as described below:

- procurement and process
- risk management
- geotechnical
- construction methodology and programming
- independent engineer
- structural
- pavement
- environmental management
- integrated planning/travel demand management
- urban design
- economic/financial
- noise and vibration control
- road safety, and
- traffic modelling.

Consideration should be given to utilising these advisors when an external peer review is required on any aspect of a project.

Care needs to be taken to ensure that there are no potential conflicts of interest by ensuring peer reviews are totally independent of all project parties.

Peer reviews can be split into two areas:

1. Peer reviews of cost estimates (this has a potential secondary component, namely parallel estimate).
2. Peer reviews of activities such as studies, strategies, scheme assessments, economic evaluations and reviews of other professional advice such as risk, procurement, geotechnical, structural.

The general procedure for conducting peer reviews shall be as follows:

1. Develop the review brief and document review request.
2. Engage reviewer and agree brief and time frame.
3. Receive review report and check it complies with brief.
4. Discuss its findings with appropriate parties and document agreed course of action.
5. Ensure agreed course of action is implemented.
6. Retain and file review request brief, review report, and agreed actions and follow-up notes.

Formal reviews

In addition to the peer review requirements detailed in this section, the project manager must formally review all significant project deliverables (eg reports, procurement and construction milestones) to ensure they comply with the specified brief. Formal reviews are an integral part of the NZTA quality management system.

Although the project manager often completes the formal review, there may be times when an internal or external reviewer will be engaged. This may be where:

- the subject matter requires a greater level of knowledge/experience
- the project manager has limited available time
- it is desirable to have a second opinion
- risk implications require a higher level of acceptance
- a client review is required.

The procedure for conducting formal reviews is generally the same as for peer reviews.

Note that safety audits are not covered in this process as the review and feedback aspects of safety audits are covered within the safety audit (process 6.5). However, it should be noted that safety audits are mandatory for all projects.

It should noted that the time and cost consequences of progressing on the basis of less than robust information invariably outweigh any short-term expediency.

Project reviews

The project review process involves the presentation of the project, by the project manager, to a review panel at various stages in the life of the project. The goal of this process is primarily two-fold:

1. To mentor the development and skills of less experienced project managers.
2. To improve the quality of the NZTA projects.

The project review will occur at project commencement and again at each change in phase throughout the project. The nature of the review will vary depending on the phase of the project. The review will generally focus on the project plan and the project managers understanding of the purpose, scope and risks inherent in the project.

Establishment of the review panel

The regional manager project management services is responsible for appointing the review panel. Typically the review panel will consist of a chair and two members. Membership would comprise experienced senior project managers from within the NZTA. Where suitable panel candidates are not locally available within the NZTA the panel could be supplemented with appropriately qualified external consultants.

Each region should select a pool of four to five reviewers for the appointment of review panels in order to maintain a consistency in the standard of project reviews throughout the project life.

The role of reviewers

The role of reviewers is to pass an experienced eye over the project at critical stages in the project development and to provide constructive feedback to the project manager.

The reviews should be conducted in a semi-formal manner with one of the reviewers chairing the panel and responsible for ensuring that a review report is written on completion.

It is not the role of the review panel to undertake detailed or technical reviews of the project. Rather the panel will confirm the adequacy of the manner in which the project plan has addressed these requirements.

The timing of reviews

The regional manager project management services determines the need for a project review. Where it is determined that a project review is required it will occur after project plan has been prepared, or updated, by the project manager.

Project reviews will occur at commencement and may occur at subsequent changes in phase of the project. The review panel should consider and recommend the need for, and timing of, subsequent project reviews in their commencement project review report.

The commencement review will be commissioned at the start of the project after the project manager has completed the draft project plan. Ideally this would occur near the start of the feasibility or investigation phases of the project but could occur at later phases if there has been no previous opportunity for review.

The emphasis of the commencement review will be on ensuring that the project purpose and goals are well understood. Subsequent reviews will check that the project purpose and goals remain relevant but will place a greater emphasis on other aspects of the project plan such as management of scope and risk.

Conducting the review

The review panel chairman will be responsible for setting up the meeting time and venue for the review. It is expected that a review might take one to two hours allowing for the following stages:

1. Pre-review review panel briefing

   A short preparatory discussion involving only the reviewers in which they determine their roles in the panel and agree amongst themselves how they will conduct the review.

2. The review

   At this point the project manager and any advisor (or lead consultant) will join the meeting. After introductions the project manager will have the opportunity to give a short presentation of the key features of the project, the project plan, project risks and stakeholders.

   The presentation will then be followed by an open discussion about all aspects of the project.

3. The wrap-up

   At the conclusion of the meeting, the reviewers will have a short discussion to draft and agree on the key points they wish to record in their review report.

The review report

The review report is the formal record of the review panel meeting. The reviewers will be responsible for preparing this short summary of their key conclusions of the meeting. Before finalising the report a draft should be provided to the project manager for their comments.

A copy of the final report signed by the reviewer should be provided to the project manager and the regional manager project management services.

Feasibility

Professional services contract document review for strategic studies

The project manager shall review the professional services contract documentation to ensure the contractual requirements are complete, current and appropriate for the type of contract. The documentation must provide the technical specifications that ensure the activities and deliverables provide the outcomes and meet the expectations of the project manager and the NZTA.

Conceptual review

As projects tend to develop a life of their own, formal conceptual reviews are required to compare the projects current form against the original scope, objectives and intent. These are described in the project plan.

Preparation for a review

In preparation for a project review panel the project manager will prepare a package of project information for the reviewers. The package will include the project plan and an executive summary level of background information about the project relevant to the current project phase along with a copy of any past project review reports.

This package of information will be circulated to the reviewers before the panel is convened in order that they can be adequately prepared for the review.

The review:

- will assess whether the projects' current objectives, status and direction are consistent with the current project plan
- must be documented in a report detailing the participants (which must include the project sponsor), timing, and the review process taken
- must document any findings and recommendations, as well as subsequent actions agreed with the project sponsor
- may identify any of the following actions or minor adjustments to project plan, changes or development of the project plan, course of action to bring the project back on track, rewriting the project plan, or terminating the project
- must be undertaken when set out in the project plan, or when required by the project sponsor, or when the project manager considers a review necessary.

Cost review

Confidence in cost estimates at the feasibility phase is critical to ensure investigation phase resources are allocated effectively.

The project manager shall consider undertaking formal or peer cost estimate reviews on feasibility studies as appropriate.

Economic evaluation review

Confidence in economic evaluations at the feasibility is critical to ensure investigation phase resources are allocated effectively.

The project manager shall consider undertaking formal or peer economic evaluations reviews on feasibility studies as appropriate.

Professional services contracted review

Refer to the feasibility phase above.

Project review

The project manager is not usually directly involved in the feasibility phase. The feasibility phase is a crucial in the project's life cycle because it is during this phase that the project is conceptualised. There is no requirement for a review in this project phase, however, a commencement project review early in the investigation and reporting (I&R) phase will pay particular attention to the executive summary of the project feasibility report (PFR) and to how well defined the project purpose and goals are in the PFR.

Investigation

Cost review

It is appropriate, particularly for large physical works contracts, to plan for and implement formal peer reviews. These may be undertaken in conjunction with formal risk reviews, and should consider whether:

- all the project components have been considered
- the contract schedules:
  - are appropriately structured
  - include accurate quantities and realistic rates.

Detailed information on the criteria for, and methodology of, undertaking cost estimate peer reviews and parallel estimate is described in the NZTA's *Cost estimation manual* (SM014) section 12.

Economic evaluation review

The project manager must obtain an independent peer review for all economic evaluations before the scheme assessment can be approved.

The NZTA's Economic evaluation manual provides detailed information on specific areas of the economic evaluation that must be addressed by the peer review. These include accident analysis, assessing modelling benefits and earthwork risks

Scheme assessment review (SAR)

All project scheme assessments must be independently reviewed before they can be approved. In addition to the economic evaluation and cost estimate peer reviews noted above, the project manager may consider it appropriate to undertake formal or peer reviews on one or more of the following technical areas:

- geotechnical investigation
- geometric design
- structural and pavement design
- risk management
- environmental aspects
- procurement
- integrated planning/travel demand management
- other technical areas as required.

If considered appropriate, the project manager may also get scoping reports independently peer reviewed.

If the peer review does not completely agree with the SAR recommendation, the:

- review should:
  - not recommend the preferred option and the benefit cost ratio (BCR)
  - list the issues that led to the review findings
- project consultant must analyse and resolve all the peer review's recommendations. If the review findings are:
  - accepted in their entirety, there is no need to return the SAR to the reviewer. The report can be updated with an addendum to update the data rather, than rewriting it
  - not completely accepted, the project consultant must explain why, update the SAR and return it to the reviewer.

The final review must recommend one option, its BCR and undiscounted cost, and be signed and dated. It is permissible for the review to recommend an issue be investigated during the design phase when additional investigation may resolve the issue.

If agreement can't be reached, a covering letter must be attached to the SAR and sent to the national development manager. The letter must:

- explain the reasons for the disagreement
- identify the option which should be recommended to the NZTA.

Conceptual review

Refer to the feasibility phase above.

Professional services contract document review

Refer to the feasibility phase above.

Project review

For many projects the procedures set out in this manual begin to take affect from the start of the investigation phase. At this point, the project manager will prepare a project plan. The project plan provides the first opportunity for a meaningful project review.

It is expected that a project review will be undertaken near the start of the I&R phase. One of the outcomes of this review would be a recommendation from the review panel as to when any subsequent reviews should be undertaken.

A project review at this phase would ensuring the clarity and interpretation of the project purpose and goals.

Design

Cost review

Although there is a rigorous peer review process at the scheme assessment stage, the project manager should also consider whether it is appropriate to undertake additional formal or peer reviews for the design estimate. A review may be required if:

- the design estimate has changed considerably from the scheme estimate
- the project has changed significantly from the scheme
- the phases are completed over many years
- other reason deemed significant by the project manager.

Economic evaluation review

Although there is a rigorous peer review process at the scheme assessment phase, the project manager should also consider whether it is appropriate to undertake additional formal or peer economic evaluation reviews during the design phase.

Physical works document review

The project manager must review the tender documentation to ensure completeness, accuracy and currency. The project manager or an independent person can undertake the review. The NZTA has in-house procurement experts available for this purpose. They should be involved in the procurement process for all large projects.

Refer to part 4 for a summary schedule of items typically found in a physical works contract document. This list is not exhaustive but does suggest the level of review expected in a physical works document review.

Conceptual review

Refer to the feasibility phase above.

Other specialist reviews

The project manager may consider it appropriate to undertake formal or peer reviews on one or more of the following technical areas:

- geotechnical investigation
- geometric design
- structural and pavement design
- risk management
- traffic signals
- safety audit
- environmental aspects
- integrated planning/travel demand management
- procurement
- other technical areas as required.

It is good practice where a project includes alteration to existing signals or installation of new signals to include peer review by an experienced designer/operator of traffic signals. Most regions will have a working relationship with such a person. The region's traffic and safety manager can provide assistance if the project manager is uncertain who to approach. The stages at which such a peer review is of most value are:

- during the final stages of design, and
- during preparation of the commissioning methodology.

Probity audit review of evaluation

An independent probity auditor is appointed on all contracts to overview the client's tendering process (up to contract award), and to verify that the procedures set out in the RFT are complied with. The probity auditor is not a member of the Tender Evaluation team.

A tenderer concerned about any procedural issue can contact the probity auditor and request a review. The probity auditor will undertake the review and document the outcome, and send to both the tenderer and to the client.

The project manager will coordinate with the probity auditor to provide all documentation and records as required.

For all large projects, a probity audit strategy is prepared, detailing the reviews and checks undertaken during the tender process by the probity auditor.

Project review

When a project moves from the I&R phase to the design and project documentation (D&PD) phase there can often be a time delay. The delay can also happen due to a handover between project managers or a transfer of the project between the NZTA sections.

It is usual at this point for the project manager to update the project plan. This provides an opportunity for a review of the progress of the project.

A progress review at this phase would confirm that the project purpose and gaols are being met and emphasise review of the procurement plan, stakeholder management, consenting, scope and other risk and opportunity management of the D&PD phase.

Construction

Conceptual review

Refer to the feasibility phase above.

Economic evaluation reviews

Once the final construction cost is known, the economic evaluation will need to be updated. The project manager may consider it appropriate to have the economic evaluation reviewed, eg if it is significantly different to previous economic evaluations.

Other specialist reviews

During, or at the end of construction, the project manager may consider it appropriate to undertake formal or peer reviews on one or more of the following technical areas:

- geotechnical investigation
- geometric design
- structural and pavement design
- risk management
- traffic signals
- traffic management
- environmental aspects
- procurement
- other technical areas as required.

Project review

When the project moves into the final construction phase, there is again a need for the project manager to update the project plan.

Similarly, to the design phase, a review at this phase would confirm the project purpose and goals and examine management of the risks in the preceding phase, including how the project manager intends to address ongoing procurement, stakeholders, consenting, scope and other risks in the construction phase.

6.5 Road safety audit and inspection

Introduction

Overview

A road safety audit (RSA) is a term used internationally to describe an independent review of a project to identify road or traffic safety concerns.

The objectives of the RSA are:

- to identify potential road or traffic safety concerns for all road users and others affected by a road project, and
- to ensure that measures to eliminate or reduce the concerns are considered fully.

The essential elements of an RSA are that the audit:

- is carried out by people who are independent of the NZ Transport Agency (NZTA), designer or contractor
- is carried out by people with appropriate experience and training
- is a formally documented process
- addresses only the road safety concerns of a road project.

Note that an RSA is not used as:

- a substitute for a design check or peer review
- a judgement of the quality of a project
- a check of compliance with standards or drawings and specifications
- a re-design of a project
- an informal check, inspection or consultation.

Reference documents

The primary reference document outside of this manual is the NZTA's *Road safety audit procedures for projects guideline* (TFM9). This includes checklists (appendix 2) for each stage of audit which should be reviewed, for appreciation of subject matters nominally expected to be considered within an RSA.

RSA requirements

The NZTA requires all new projects to undergo an RSA at the following key stages, unless an RSA exemption declaration in made:

1. Investigation:
    - feasibility/concept
    - scheme assessment/preliminary design.
2. Detailed design.
3. Post-construction.

Note that contracts using the design and construct procurement model have additional requirements for the audit of the specimen design and principal's requirements, as well as part of the tender evaluations.

Safety auditors must be totally independent of the project.

Additional RSA

There will be occasions where a project will benefit from additional RSAs. The project manager should consult the regional safety engineer and, if necessary, include additional audits in the project plan.

Project managers must ensure an RSA is completed early in the project's development to minimise the chances of the NZTA being committed to a project which has inherent end-user safety risks.

RSA exemptions

The project manager may request an RSA exemption in the following situations:

a. The work is required to maintain or restore the existing network to the specified maintenance standard. Activities range from vegetation control, sign maintenance, resurfacing, pavement smoothing through to structural bridge maintenance provided a process is in place to assure compliance with appropriate standards and specifications such as six monthly safety inspections.

   Network operation activities which affect traffic movements, the road environment or traffic control systems such as changes to traffic signal operation or Advanced Traffic Management System (ATMS) operation should be subject to an RSA or equivalent technical peer review.

b. The work does not significantly change the traffic environment such as seal widening, lighting installation, simple intersection improvements typically funded as minor safety or small capital works project.

c. The scheme definition within the initial project feasibility report (PFR) is not sufficiently developed for the NZTA's RSA policy to apply.

Prior to applying for the RSA exemption the project manager must document the reasons, complete the RSA exemption declaration and gain the regional safety engineer's endorsement. For complex or larger projects (>$4.5 million) RSA exemptions will not generally be applicable.

The RSA exemption declaration should be used to request an exemption (as found in part 3).

Feasibility

Commission feasibility/concept RSA

An RSA is this stage, is most appropriate where the project is being considered in broad terms, and will be primarily concerned with the provision for all network users in accordance with local strategies and the treatment of conflict points along the proposed route (eg the form of intersections and the associated treatment of pedestrians and cyclists) or where significant commitment on project scope is being considered.

For many projects (eg block projects), the first stage of audit will typically be from the Investigation phase. If undertaking an RSA at this stage, refer to the process and requirements as set out under the investigation phase below.

Escalation of unresolved issues

Issues that are unresolved and categorised as serious by the auditors, and unresolved issues of significant concern to the regional safety engineer, must be escalated to the NZTA National Office for consideration by the national traffic and safety manager. Depending on the severity of the issue and the intransient nature of the disagreement, this may culminate in consideration by the Value Assurance Committee (VAC).

Apply for departure approval

If any of the NZTA's decisions on the decision-tracking form represent additional risk to the NZTA, then endorsement of the decision must be sought from the NZTA National Office. Where the decision involves a departure from accepted standards or normal design practice, in particular, endorsement of the decision must be sought from the national traffic and safety manager.

Investigation

Commission RSA

This is the first stage, where unless an RSA exemption has been agreed, an RSA must be undertaken. This stage of audit is centred on those options as being developed and having potential to be selected as the potential scheme. It may therefore involve conducting an RSA on more than one option. Similarly it may be appropriate to undertake this RSA at an interim scoping or macroscope stage, within the investigations. It is a critical stage of safety audit, as any potential safety issues not identified and corrected at this stage, tend to be more difficult and costly to resolve as design features become 'locked-in'.

The auditors will produce a report both identifying any issues raised, and nominating in their view the severity of those issues (ie comment, minor, significant, serious).

Sign-off issues raised from feasibility/concept RSA

Issues raised in the RSA must be assessed against the response from the designer to those issues. These will fall into three broad categories:

1. Agree with the designer's response and accept the proposed resolution to the issue.
2. Agree with the designer's response with modifications to the proposed resolution to the issue.
3. Disagree with the designer's response and propose an alternative appropriate resolution to the issue.

Complete decision-tracking form

The decision-tracking form must be completed with the signatures of the project manager and the regional traffic and safety engineer.

It should be noted that the decision-tracking form should carry any unresolved issues forward from the previous audit(s).

Reconciliation of unresolved issues

Issues that are categorised as 'serious' by the auditors which are not able to be addressed/mitigated, and unresolved issues of significant concern to the regional safety engineer, must be escalated to the national traffic and safety manager, or the VAC depending on the context of the issue.

Where endorsement of decisions is required

If any of the decisions made represent additional risk to the NZTA, or involves a departure from accepted standards or normal design practice, endorsement of the decision must be sought in the same manner as reconciliation of unresolved issues. This process should also capture and validate previously endorsed departures.

Similarly, the project manager should reassess the need and validity of any departures previously endorsed, as arising from any previous stage RSA, in the context of the more detailed information being available.

Escalation of unresolved issues

Issues that are unresolved and categorised as serious by the auditors, and unresolved issues of significant concern to the regional safety engineer, must be escalated to the NZTA National Office for consideration by the national traffic and safety manager. Depending on the severity of the issue and the intransient nature of the disagreement, this may culminate in consideration by the VAC.

Apply for departure approval

If any of the NZTA's decisions on the decision-tracking form represent additional risk to the NZTA, then endorsement of the decision must be sought from the National Office. Where the decision involves a departure from accepted standards or normal design practice, in particular, endorsement of the decision must be sought from the national traffic and safety manager. This process should also capture and validate previously endorsed departures.

Design

Commission detailed-design RSA

The detailed-design RSA concerns itself with all aspects of the design. It represents the last opportunity to ensure a safe project outcome, whereafter correction of any safety issues can become a costly, protracted task, and potentially involving dispute or litigation. The project managers must plan ahead and allow time for this, as this can often unsuitably overlap with final document preparation and tendering for the physical works.

Address all issues raised

The process and requirements for this stage of RSA are equivalent to those of the investigation RSA.

Escalation of unresolved issues

Issues that are unresolved and categorised as serious by the auditors, and unresolved issues of significant concern to the regional safety engineer, must be escalated to the NZTA National Office for consideration by the national traffic and safety manager. Depending on the severity of the issue and the intransient nature of the disagreement, this may culminate in consideration by the VAC.

Assess departures required

The project manager should reassess the validity of all departures endorsed as part of the feasibility/concept and scheme assessment RSAs in the context of more detailed information available.

Apply for departure approval

If any of the NZTA's decisions on the decision-tracking form represent additional risk to the NZTA, then endorsement of the decision must be sought from the National Office. Where the decision involves a departure from accepted standards or normal design practice, in particular, endorsement of the decision must be sought from the national traffic and safety manager. This process should also capture and validate previously endorsed departures.

Additional RSA requirements for design and construct contracts

Introduction

The principle of the RSA process applies equally to design and construction contracts.

For projects where the works are procured under the advanced design and construction model, there are additional and more complex RSA requirements that apply to the pre-tender, tender and post-award stages.

Pre-tender RSA (Principal's requirements and specimen design)

This stage is similar in process to the scheme assessment audit. However, the pre-tender RSA process requires all serious and significant issues identified with the principal requirements and specimen design to be listed. This enables tenderers to develop their bids on designs which address these issues. To minimise delays to the tender process ensure the following is completed:

- Principal's requirements must:
  - define the project's required functionality
  - document the statutory consent conditions which apply
  - promote innovation
  - highlight the importance of safety in the consideration of any design variations.

By the end of the tender evaluation period, the NZTA will have indicated the extent of its willingness to accept varying levels of design safety. This can either be through the details provided in the principal's requirements, or during the tender evaluation process when determining the relative value of differing levels of safety offered by tenderers.

- Specimen design:
  - is not required to demonstrate full compliance with the principal's requirements
  - must list all departures from the principal's requirements
  - must include sufficient detail to demonstrate it could be developed into a final design, which will satisfy the principal's requirements.
  - must illustrate a reasonable expectation the project is buildable and, if adopted, could be built by the successful tenderer
  - must identify all recommendations by the RSA that have not been accepted or resolved.
- The RSA requirement applies to the principal's requirements and the specimen design. Any significant issues identified must be reconciled, through either:
  - amending the principal's requirements and the specimen design, or
  - referring the matter to the national traffic and safety manager, or the VAC, for endorsement.

  The principal must advise tenderers of any issues the NZTA expects them to resolve.

Tender period RSA (Tenderer concept design)

The level of detail required for this stage audit is similar to that of the scheme assessment report (SAR). Each tenderer's concept design must undergo an RSA. The project manager must nominate the RSA team in the request for proposal (RFP). Ideally there should be some level of consistency of membership with previous teams, and the team should include an NZTA representative.

Team leaders must be able to demonstrate independence from the NZTA, the specimen design's developers and any of the tenderers.

The NZTA representative is desirable to gain a better appreciation of the relative importance of design features in respect to the NZTA's applied practice and strategic direction, and in respect of probity matters.

Ensure the RSA team understands the need for confidentially between tenderers. The RSA team must:

- prepare audit reports which are unique to individual tenderers
- not present recommendations in a manner which assimilates how any other tenderer has resolved or avoided the same issue. Where there is any doubt, the issues must be raised with the NZTA and factually presented
- not enter into direct communication with the tenderer. It is not the RSA team's role to negotiate with a tenderer, or infer exemption on behalf of the NZTA, with respect to any safety issue raised.

Where the specimen design has been adopted by the tenderer, it is the responsibility of the tenderer to provide evidence that the issues raised by the auditors in respect of the specimen design have been addressed.

Entry and exit meetings

It is recommended that the project manager completes entry and exit meetings:

- Entry meetings give both the NZTA team (project manager and regional safety engineer) and the tenderer's representatives the opportunity to provide a fuller picture of their interpretation of the issues and their innovative solutions thereto.
- Exit meetings provide an opportunity to pre-warn the NZTA team and the tenderer of any significant issues for which a change in design criteria may be requested. Care must be taken by the RSA team to avoid negotiation of standards.

Any questions or concerns tenderers may have must be presented to the NZTA who should seek advice from the RSA team before responding to the tenderer.

RSA programming

Depending on the project's size and complexity, the RSA will normally take three to four weeks to complete. This allows one week for individual member pre-evaluation, team reconciliation and site visit, follow-up draft report preparation and the final report's release. An additional week may be required for larger projects, given the potential for tenderers' concepts all needing to be audited at the same time.

The project manager must:

- advise the RSA team leader as to when they may expect to receive individual tenderers concept design. The RFT must state the latest date for submitting the tenderers concept plans to ensure there is sufficient time reconcile their design and, if required, decide the NZTA's response
- coordinate the audit programme with the VAC calendar.

Award of contract

It is essential that each tenderer acknowledges the safety issues identified by the RSA and associated with their submitted designs. The NZTA must be satisfied that their proposed resolutions to these issues are compliant with the requirements of the contract.

Following the award of the contract it is essential that the RSA team reviews the tenderer's proposals as soon as it is practical, to ensure that the detailed-design phase is entered with a fully compliant design.

Post-award RSA (Detailed design and post-construction)

As issues of probity and tender evaluation equality no longer apply, the RSA team composition, function and output requirements is no different from standard RSA practice. For consistency however, some (or all) of the team members used during the tender stage should be used for these later audits.

One of the advantages of a design and construct contract is that it reduces the delivery time, which is partly achieved by overlapping the project's design and construction components. In this way construction can commence on elements where the detailed design has been completed, rather than waiting for the entire project's detailed design. However, this does create issues for the RSA team, as it is common for the designer to supply piecemeal designs as the project progresses, rather than a complete design for audit. Time must be allowed in the programme for the auditors to revisit aspects of the design that are affected by subsequent developments, eg assessing the impact of lighting proposals on traffic signs and safety barriers.

Although not set out in the proforma, the NZTA and the RSA team will need to accommodate requests to package deliver the detailed design for the RSA. This may result in the need for a number of audits as information becomes available, rather than waiting for all the information necessary for a single audit.

To avoid any undue delay, the project manager must facilitate timely responses to any determinations the NZTA requires on the contractor's behalf.

Assemble contract documents

Assemble the principal's requirements and specimen design.

Commission scheme assessment RSA review of contract documents

It should not be necessary to commission a full-stage RSA. However, a review of the specimen design, together with the principal's requirements should be used to confirm compliance.

Incorporate results of review in contract documents

The results of the RSA review should be appended to the contract documents.

Commission scheme assessment RSA review of tender submissions

A scheme assessment RSA review of tender submissions must be commissioned as part of the evaluation process. The RSA team should focus on the solutions to the issues outstanding from the feasibility/concept and scheme assessment RSAs proposed by the tenderers, together with any changes that they propose to the specimen design.

Construction

Commission post-construction RSA

In construction/implementation phase, the post-construction RSA is concerned with the translation and interpretation of the design and concepts into their physical state and the fitness for their intended purpose.

Pre-opening fit-for-purpose (safety) inspection

It is not often possible to undertake the post-construction RSA until after the project is opened up to public use; nor is credible to maintain temporary traffic management (eg speed limits) whilst waiting for the post-construction RSA. On many projects the construction activity is managed around live traffic flows, and even for 'green field' construction projects traffic is often diverted onto the new construction to allow tie-ins to be constructed. In practice a post-construction.

As an interim measure a fit-for-purpose (safety) inspection is required for all large projects (>$4.5 million) and larger block projects (generally in excess of $1 million), where the permanent speed limit is 100km/h. The project manager, in conjunction with the regional safety engineer, shall arrange for this inspection to be undertaken and identify any measures to be undertaken, prior to the uplifting of temporary traffic control measures.

A model form is provided in part 3, together with an example in part 4.

The project manager shall compile the report, and once endorsed by the region's safety engineer or state highway manager (required for motorway projects), the project manager may allow the contractor to open or otherwise uplift temporary traffic control measures.

Address all issues raised

The process and requirements for this stage of RSA are equivalent to those of the Investigation RSA, although as this is the final stage of audit there is an expectation that all issues are closed out.

Further, the project manager must address and resolve all issues raised by the pre-opening fit-for-purpose inspection before the road is opened, or mitigating temporary traffic control measures uplifted.

Safety audit learnings

The post-construction audit completes the audit process, from which useful learnings for auditors, designers and project managers can be gained. Dissemination of the audits, decisions, and comparison with the finished product, adds to the professional development and safety awareness of all those involved.

Address all issues raised

The project manager must address and resolve all issues raised by the pre-opening fit-for-purpose inspection before the road opens.

Complete decision-tracking form

The post-construction RSA decision-tracking form must be completed with the signatures of the project manager and the regional safety engineer.

Escalation of unresolved issues

Issues that are unresolved and categorised as serious by the auditors, and unresolved issues of significant concern to the regional safety engineer, must be escalated to the NZTA National Office for consideration by the national traffic and safety manager. Depending on the severity of the issue and the intransient nature of the disagreement, this may culminate in consideration by the VAC.

7.1 Documentation

Introduction

Guidance on the procurement of services and requirements for the development of contract documentation is described in the following NZ Transport Agency's (NZTA) manuals:

- *Procurement manual*
- *Contract procedures manual* (SM021)
- *State highway professional services contract proforma manual* (SM030)
- *State highway construction contract proforma manual* (SM031)
- *State highway maintenance contract proforma manual* (SM032).

These are the key reference manuals for all project managers and consultants engaged in the writing of contract documents.

For all contract documentation, checks are required to ensure documentation is thorough and unambiguous. Part 4 describes the checking process required prior to the release of contract documents Part 4 also includes guidelines for referral during the preparation of contract documentation for capital projects. These guidelines describe the problem areas as they may affect the management of the asset following completion of construction that should be considered during the contract documentation stage.

Where appropriate the use of a short-form contract agreement may be used for making a direct appointment the process for which is described in part 4.

Feasibility

Prepare professional services contract documentation for the feasibility phase of a project in accordance with minimum standard (MS) Z/20 Project feasibility reports (SM030).

Investigation

Prepare professional services contract documentation for the investigation and reporting (I&R) phase of a project in accordance with SM030 standard specification as described in part 4.

The I&R phase may include provision for the design and construction phases which will require the inclusion of the relevant SM030 standard specifications:

- design and project documentation (D&DP)
- management, surveillance and quality assurance (MSQA) of physical works contracts.

Design

Prepare professional services contract documentation for the D&DP phase of a project in accordance with SM030 standard specification (design and project documentation as described in part 4).

The D&PD phase will most likely include provision for the construction phase which will require the inclusion of the SM030 standard specification (MSQA of physical works contracts as described in part 4).

Special attention should be given to documentation for the design and construct (DC), early contractor involvement (ECI) and alliance contracts. In some areas contractors need to be responsible for providing an overall acceptable/best practice result, rather than just the minimum standards required by the design manuals and other specifications. This is particularly relevant in the requirement to satisfy the road safety auditors, who may require solutions deemed to be over and above the requirements of the NZTA's *Geometric design manual*.

MSQA

Prepare professional services contract documentation for the MSQA phase of a project in accordance with SM030 standard specification (MSQA of physical works contracts as described in part 4). The contract documentation for the construction phase will include the use of SM031 or SM032 depending on whether the project comprises of construction or maintenance.

Note: Refer to new guidance notes in process 7.1 (part 4 of this manual).

Construction

All documentation requirements during construction are covered under processes 6.1, 9.3 and 10.2.

8.1 Property management

Introduction

Property acquisition is the purchase of private property interests from owners for the NZ Transport Agency (NZTA) to use for state highway and/or motorway use (see part 4 for a detailed description). Refer to part 4 of this manual for a comprehensive account of the statutory processes and planning. For awareness of time frames involved refer also to process 5.1.

Feasibility

Consideration of land must include social/environmental or cultural implications of scheme(s) on third party properties, as well as cost to the NZTA. Where possible preserve the ability to design away from significant problem properties. The project's preliminary property acquisition strategy should identify such key property issues.

Investigation

Make contact with landowners

The project managers must:

- be aware that agreement difficulties with landowners are the second biggest cause of project delays, after consenting issues
- recognise landowners are important stakeholders in every project
- ensure appropriate communication occurs with all affected landowners and occupiers as the project develops.

Never discuss valuations, property exchanges or compensation matters with landowners or occupiers. These discussions are the responsibility of the Accredited Supplier and Property team.

Provide preliminary land requirement plan or schedule of properties likely to be affected

The project manager will provide a preliminary land requirement plan to the property manager, who may then instruct an accredited supplier to prepare a preliminary project property acquisition strategy documenting:

- the impacted property's legal description
- owner or occupier names and contact details
- estimated acquisition costs
- net property cost estimates
- acquisition timeline
- risk elements and critical sites.

Obtain land entry agreement for investigation. If necessary, use the compulsory purchase powers

The professional services consultant or project manager (having liaised with the property manager) deals directly with the accredited supplier to arrange land entry for inspection, survey, testing or investigation.

Produce an approved land requirement plan

The project manager must provide the land requirement plan to the property manager, including a property schedule and scale plans showing:

- the extent of work, affected property details, and the date entry is required
- designated routes, where they are in place
- for each property, contacts details of the owner and/or occupier, the type of interest to be acquired and the likely disruption to each property.

In most cases state highway managers are able to approve land requirement plans, and single property purchases up to $500,000. Property purchases of a higher value shall be referred to the national property manager in the first instance, or the manager from the Highways and Network Operations (HNO) group, or the NZTA Board pending the value and delegation at the time.

Instruction to appoint an acquisition supplier to acquire land

Timing for property purchase will depend on the project and requirement at hand and be discussed with the property manager. Refer also to the property flow charts in part 4, but normal prerequisites before a property purchase may proceed include:

- the project having an approved scheme (refer to process 2.6 in this manual)
- inclusion of the property purchase in the State Highway Plan, and/or a programmed construction start within three years
- approved land requirement plans.

Once instructed by the project manager, the property manager must instruct the accredited supplier to complete the acquisitions, monitor negotiations, ensure that the process is completed to the agreed timelines, and manage any required approvals for funding or purchase.

Use advance purchase by negotiation for critical sites

The project manager and the property manager should consider acquisition of key or risky property interests early, possibly in advance of design completion. Advance purchases (more than three years to construction) require a mandate from the national property manager *before* entering into negotiations. Each case is considered on its merits.

Assist property manager or acquisition supplier with negotiations with landowners

The project manager must assist the property manager by providing design and other details to the owner and the owner's legal and/or valuation advisors.

Obtain landowners sign-off on notice of requirement

In order to obtain route designation, landowner consent may be required. The project manager must organise this.

Design

Request that the property manager uses compulsory acquisition provisions (if necessary)

When requested by the project manager, the accredited supplier will implement the compulsory purchase process (by serving the appropriate notices and negotiating) when necessary in order to maintain acquisition progress. The need to use the process may have been identified in the project property strategy at the outset.

Ensure physical works contractor's obligations to owners are included in schedule of works

Agreements with owners may include work that will be undertaken as part of the project. This generally involves some element of make good or reinstatement. It should be documented clearly at the outset.

The agreed work must be documented in the owner's agreement and the regional property manager will specifically notify the work to the project manager in a contract obligations report.

Construction

Inform property manager of construction date to enable clearance of tenants

The project manager must give clear guidance on timing to the regional property manager. The regional property manager is responsible for ensuring that all property is cleared (of tenants) and ready for construction. This can involve serving notices on tenants and ensuring that all property is empty and ready for construction work to begin.

Manage work requirement for owners (fencing)

Where owners are to remain on their land, mitigation and alternative arrangements are generally made. These include re-establishing boundaries, site clearance, reconstruction of buildings and fencing.

The project manager must ensure on completion of the project, that each affected landowner is met on site to ensure the agreed works have been completed to the specified standard, and the final legal boundaries are agreed.

Whilst the project manager is responsible for undertaking the work, the property manager is responsible for liaising with the owner to ensure that they are satisfied and signed a contract clearance form.

Ensure that legal boundary survey is completed to confirm land take

The property manager will generally arrange for a surveyor to finalise boundaries and complete the legalisation survey.

The project manager must approve the surveyor's brief or work directly with the surveyor to ensure that the surveying is completed accurately.

Legalise land and status of the land held under the route, including gazettal

The manager or project consultant must prepare as-built plans to legalise and commission the road. At this stage residual property should be surveyed for sale.

Once the survey plan(s) have been approved and developed, the project manager must ensure that the surveyor and legal advisor or the accredited supplier:

- rationalises designations
- gazettes any new state highways.

Declare all property not required by the project as surplus and assist with disposal

Prior to project completion, the regional property manager and the project manager should consider strategies to dispose of residual property identified in the acquisition strategy, particularly where high value property has been identified.

The project manager should arrange a meeting with the consultant, the property manager and the accredited supplier to:

- identify blocks of surplus property and agree actions for disposal
- agree the surplus property's interim and ongoing management.

This meeting could take place before construction to maximise opportunities to accelerate disposal.

8.2 Procurement

Policies and processes

The policies and processes fundamental to procurement within the Highways and Network Operations (HNO) group are detailed in the following NZ Transport Agency's (NZTA) documents:

- Portfolio Procurement Strategy
- *Contract procedures manual* (SM021)
- *Procurement manual*.

Am I ready to procure?

In order to be in a position to commence the procurement for any activity, as a minimum, the following needs to be completed:

- Approve procurement strategy.
- Secure all necessary funding.
- Sign off the project plan by your manager and obtain approval to advertise.
- Organise the appropriate insurance and liability levels, where applicable.
- Prepare a tender and/or contract documentation and have this peer reviewed.

Project procurement strategies

A project-specific procurement strategy is normally prepared in advance of the commencement of procurement for both the design and construction phases. The level of detail required in the procurement strategy depends on the size and complexity of the project.

8.3 Tendering

Introduction

The full tender process is described in detail in the NZ Transport Agency's (NZTA) *Contract procedures manual* (SM021). Additional information is also included in the NZTA's *Procurement manual*.

SM021

This manual details the step by step process required to be completed in the administration and management of a tender process, and provides a detailed explanation of critical aspects of our approach to procurement, such as the supplier selection methods used, definitions for the non-price attributes, and the rules around weightings to be applied to the non-price aspects of a tender evaluation.

In addition it contains a series of forms and templates that must be used in the correct application of the tender process, and the delegations for various procurement-related approvals.

Procurement manual

The *Procurement manual* is to be used for activities funded through the National Land Transport Programme and contains procurement procedures approved by the NZTA for use by approved organisations when purchasing infrastructure, planning and advice, and public transport services.

The manual also provides guidance on the application of these procurement procedures and the strategic context within which they operate. The *Procurement manual* replaces the *Competitive pricing procedures manual* (PFM3).

Tenders secretaries

Each NZTA office has a tenders secretary. The tenders secretaries have experience in the tendering process and are key people in the administration of the tender process.

They should be used as your first point of contact for any tender administration process queries.

For assistance regarding the tender process, probity issues or any other non-standard tender query contact the Project Services team at the NZTA National Office.

9.1 Contract management

Introduction

Project management involves the management of a project through its life cycle of development, delivery and handover. Throughout this life cycle the project manager will use the services of internal practise area specialists and external suppliers (consultants and contractors) to provide expertise.

These various suppliers will be commissioned through formal contracts with the NZ Transport Agency (NZTA). Each of these suppliers needs to be managed in a formal and thorough way. Contract management is therefore a subset of project management and during the life cycle of any typical project the project manager will have a number of distinct contracts to be managed. Part 3 of the Austroads' *Guide to project delivery* (2007) provides good guidance on all aspects of contract management in general. What follows is additional guidance on good contract management practices for the NZTA's contracts specifically.

Project team interaction

Project interaction involves team members working with each other and suppliers using the following methods:

a. Letters

   This is the preferred form of correspondence for critical project communications. All correspondence:

   - must be on the NZTA letterhead
   - should be signed by the project manager.

b. Faxes

   These should:

   - not be used for critical project communication
   - be formatted using either form TTZ32 for handwritten faxes, or the Microsoft Word fax template.

c. Reports

d. Notices to suppliers

   This is the preferred form of correspondence for communicating with external suppliers. When preparing these notices the relevant contractual obligations and clauses should be referenced. For:

   - professional services contracts, the project manager should issue these notices
   - physical works contracts, the engineer to contract or engineer's representative issues these notices.

e. Meetings

   It is good practice to hold and minute regular project team meetings each month. As part of these meetings:

   - a formal agenda should be followed (this should be prepared and issued prior to the meeting)
   - previous minutes should be confirmed or amended as appropriate.

f. Telephone conversations

   - For conversations that may affect the project, a communication record should be completed, minuted to the project manager and filed.
   - Conversation that are considered critical to the project should be responded to via a formal letter from the NZTA.

g. Discussions

   These should be treated in the same manner as telephone conversations.

h. Emails

   These should be treated in the same manner as telephone conversations except a printed copy should be filed in lieu of a communication record.

The project manager must ensure the professional services contract is managed according to the contracted conditions. This includes, but is not limited to:

- reviewing and approving the consultant's quality plan and ensuring:
  - it is regularly updated as the project proceeds
  - non-compliances are raised whenever the need arises
  - the deliverables outlined in the agreed methodology are provided
- documenting all instructions, including advising the consultant of their delegated financial authority for managing physical works contracts
- documenting all contract changes, particularly material changes which affect the scope, pricing and deliverable schedule
- providing an expeditious turnaround on reviews and/or acceptances of all deliverables
- ensuring all performance reviews are completed
- ensuring all progress claims are thoroughly checked against services completed and payments made according to the contract payment schedule
- reviewing all monthly and other management reports, following up immediately on any inconsistencies or concerns
- filing all contract records
- documenting the contract's termination according to process 10.2.

Managing the NZTA's requirements

The NZTA is subject to various legal requirements when developing and delivering projects. It is the project manager's responsibility to ensure the NZTA meets all of its legal requirements. Of particular concern are those requirements relating to health and safety, and statutory consents.

Supplier meetings

Although the NZTA normally engages external suppliers to obtain statutory consents and to manage project's legal requirements the project manager must:

- discuss and minute these issues at project meetings to ensure the NZTA's obligations are being met
- always sight evidence of appropriate legal documentation, such as resource consents, and satisfy themselves they comply with any imposed requirements.

Legal and consent reviews

The project manager should:

- consider a formal review of the design for compliance with all resource consents and designations. This is particularly important between the design and construction phases to ensure the NZTA has fulfilled the necessary legal and consent requirements
- during construction, ensure regular compliance reviews are completed.

Construction Contracts Act 2002 (CCA)

To document the process for ensuring the NZTA complies with the CCA. The CCA's purpose is to:

- outlaw pay if paid, and pay when paid clauses in construction contracts
- facilitate regular and timely payments between construction contract parties
- speedily resolve disputes arising during the contract
- provide remedies for recovery of payments under the contract.

The CCA does not apply to professional services contracts and cannot be contracted out of.

Contractor's obligations to subcontractors

If the project manager believes the contractor is not paying their subcontractors according to the CCA, the project manager should:

- advise the regional manager of their concerns
- seek written confirmation from:
  - the subcontractors of any allegation of underpayment or non-payment
  - the contractor whether payment has or has not been made.

The engineer may request the contractor to supply reasonable evidence that a subcontractor has been paid according to the progress payment certificates, less any applicable deductions such as retentions. Evidence can include payment certificates and bank transactions.

If the contractor has not paid the subcontractor and there is no legitimate reason for payment not to have been made, the NZTA:

- is entitled to pay, the subcontractor part or all of the amounts previously certified on the contractor's behalf
- may deduct the amount paid to the subcontractor from the contractor's future payment schedules
- supply the following payment confirmation certificate to the contractor:

  Subcontractor payment confirmation certificate

  I/we [name of principal contractor]certify to the principal that [name of subcontractor] has received all amounts due according to previous payment certificates certified under clause 12.2 of the contract. This is evidenced by the attached copy of payment notification [identify payment statement].To the best of my/our knowledge no claim from the subcontractor remains outstanding except as separately disclosed to the engineer/project manager/principal.

  Signed for and on behalf of the contractor by its duly authorised representative.

Disputing payment claims

If the NZTA or the engineer disputes a payment claim made under the CCA, the NZTA must:

- advise the contractor within 20 working days of its intention not to pay the claim in full
- provide the contractor with the payment schedule outlining what is being deducted and why.

Failure to do this will result in the sum being claimed becoming a 'debt due' and payable to the contractor in full immediately. If not paid, the contractor is entitled to suspend work five working days after issuing a suspension notice.

In most instances the payment schedule will be prepared by the engineer or the consultant administering the contract. In this case, sufficient time must be allowed for the engineer to forward the payment schedule to the NZTA to meet the 20 working day deadline.

If the contractor disputes the amount deducted under the payment schedule, the contractor may initiate adjudication and serve the NZTA with a notice of adjudication. If this occurs, the group manager of Highways and Network Operations must be advised immediately.

Feasibility

Generally projects are regarded as live projects only once they enter into the investigation and reporting (I&R) phase. The assessment of whether or not there is a network improvement worthy of progressing is done through the project feasibility report (PFR) process. The responsibility for developing PFR is currently a responsibility of the network consultant under instruction from the area manager. Therefore, typically a project manager will not have any specific contract management responsibilities during the feasibility phase of a project. Having said this, there are instances where PFR are identified and developed through the strategic study process. Where a project manager is responsible for such a study and where feasibility options are an output from such a contract, then the project manager should follow the contract management process detailed for the investigation phase.

Investigation

The contract document

Good contract management commences with the development of a robust contract document. Effort put into the development of a robust request for tender (RFT) document, particularly development of the project specification, will ensure that the requirements of the contract are well scoped and that the document is unambiguous. This will significantly reduce the risk of the contract being difficult to manage after it is awarded. In preparing the RFT, the project manager should fully consider the scope of the service required under the contract, ie should the contract be for the investigation phase only or should it be for multiple phases. As a general rule large or complex projects or projects for which the likely improvement option is not well defined or understood at the commencement of the investigation phase, should commence with a contract for the investigation phase only. Inappropriate multiple phase contracts are often likely to become difficult to manage as the project development progresses through the design and supervision stages.

The consultants tendered proposal

The project manager should ensure that the consultant's tender proposal, including methodology, becomes part of the contract document and the project manager should thereafter ensure that the consultant actually does what they said they would do in their tender submission. The project manager also needs to ensure that the consultant provides the personnel for the contract as proposed in the tender document.

Contract requirements

The project manager must understand all the requirement of the contract as detailed in the various specifications and ensure that the consultant delivers each of these to the required quality and on time. Ultimately it is the responsibility of the project manager to ensure that the consultant delivers whatever is required in terms of the contract.

Review of contract deliverables

The project manager should not assume that any deliverable from the consultant under the contract is to the required standard. It is not the role of the project manager to check deliverables but to review all such deliverables and ensure that they are to the required standard. In doing so, the project manager should be adding value by interrogating all proposals for robustness and compliance with the contract requirements, and also by ensuring that the proposals are both buildable and maintainable. Whilst the project manager may use the services of others for specific comment or specialised input, ultimately the project manager must take responsibility for the final quality of all deliverables.

Property acquisition

This is normally not commenced until after completion of the investigation phase and scheme approval for the project. The project manager must ensure that property owners are consulted with but that nothing is promised to jeopardise or limit acquisition options to be negotiated during the design phase.

Ensure that the team leader leads

The project manager must ensure that all communications are viewed by the consultant's team leader and that this person has adequate control of the contract and the consultant's team. Often this role falls to others within the consultant's team which is contrary to our requirements. The project manager must ensure that the team leader communicates with the project manager as required by the contract document and that all reporting and invoicing is accurate and on time.

Project planning

The project manager is responsible for ensuring that the consultant has adequately thought through, planned and programmed all activities required under the contract.

Stakeholder management

The project manager must accept responsibility for representing the NZTA with all stakeholders. Whilst the consultant is responsible for consultation with such parties, the project manager must ensure that throughout the contract period he is fully informed of all discussion and interaction between the consultant and stakeholders.

Correspondence

For record purposes the project manager must ensure that all important discussions and agreements (including emails) are formally documented and that all such documents are printed and retained on the project files.

Project manager's obligations to the consultant

The project manager should act as a member of the team and strive to develop a sound working relationship with the team leader. The project manager needs to acknowledge obligations under the contract and if the contract is to progress effectively then the project manager must deliver on these obligations. Such obligations include:

- documenting receipt of all deliverables required under the contract
- reviewing and providing comments back to the consultant on all deliverables within the time frames indicated in the contract
- ensuring that the consultant's fee claims are processed on time and that payments are made in accordance with the contract
- providing constructive feedback on the consultant's performance as required under performance assessment by coordinated evaluation (PACE)
- fair consideration of any fee variation claims presented by the consultant
- not changing the contract scope without good reason and where this is necessary ensuring that the time and cost implications to the consultant are considered and dealt with fairly
- dealing with poor performance issues by the consultant and holding the consultant accountable for poor advice or poor service.

Coordination with others

The project manager must act as the coordinator between the consultant and others providing input to the project phases under separate contracts or commissions.

Timely elevation of issues

The project manager needs to ensure that the project sponsor is kept informed on all aspects of the project as the contract progresses and that issues of concern or poor performance by the consultant are elevated as soon as appropriate.

Design

The contract document

The design phase may have already been contracted under a multiple phase contract. If this was the case then the project manager should ensure the performance by the consultant under the investigation phase was acceptable before instructing commencement of the design phase. If not, then the project manager will need to prepare a design-phase RFT document and contract a consultant for the new phase. Either way the requirements for the project manager during the design phase are very similar to those detailed above for the investigation phase, which should be considered in managing a design phase.

Property acquisition

This will be an activity during the design phase through a separate contract with the acquisition agent managed by the NZTA property manager. The project manager must ensure cooperation and interaction between the acquisition agent and the design consultant.

Supervision of construction

The consultant to supervise the construction phase is decided at the commencement at the design phase, unless a three-phase contract (investigation, design and supervision) is already in place. As a general rule the project manager is advised to prepare a design contract in which the same consultant supervises the project through the construction phase. There are potential accountability issues in having different design and supervision consultants and the project manager should be aware of this risk.

The construction document

The design phase ends with the delivery of construction documentation. This is a critical output under the design contract and it is important for the project manager to ensure that the construction documentation is robust, accurate and unambiguous.

Construction

Two separate contracts

The construction phase is different to the development phase of the project in that the project manager has two distinct contracts to manage during this phase - the professional services contract under which the consultant is engaged to administer the construction contract, and the construction contract itself. The project manager must ensure that the management, surveillance and quality assurance (MSQA) contract is managed in much the same way as the investigation contract, discussed earlier.

In addition, the project manager must take responsibility for keeping control of the construction contract although day by day management of this is the responsibility of the consultant. The project manager must ensure that they are kept adequately informed on all aspects of the construction phase as it progresses. The project manager must be in a position to influence this contract where necessary. In doing this the project manager must be careful to not deal directly with the contractor to the extent that the responsibilities of the engineer and his representative are compromised. Whether or not the project manager attends all monthly site meetings with the contractor is to be decided on a project by project basis.

The defects liability period and contract closure

The project manager must remember that the construction phase ends on the issue of the defect liability certificate and not on the issue of the practical completion certificate. The project manager must therefore continue to manage both the professional services and physical works contracts through the defects liability period and thereafter ensure that all the contract and project closure procedures are followed and actioned as required.

9.2 Communication

Introduction

Effective communications are essential for managing risks and opportunities on a project and protecting and enhancing the NZ Transport Agency's (NZTA) reputation. The NZTA has a responsibility to ensure project partners, land owners, stakeholders and communities receive timely and appropriate information about its activities. A planned approach to communications is important.

Project managers are responsible for ensuring the communications requirements of a project are considered in the early stages of planning, including establishing a budget for communications.

Communications strategies and frameworks

Project communications must comply with the NZTA communications frameworks and strategies. Information on relevant frameworks and strategies is available from regional communications advisors or the national communications manager.

Policies and guidelines

Project communications must be developed and delivered in line with the following policies and guidelines, available on the NZTA intranet:

- media engagement protocols
- *Visual identity guidelines*
- *Style guide* (writing style)
- sponsorship policy and guide.

Communications planning

Project managers are responsible for ensuring:

- their project plan includes a communications plan which is followed and continually updated
- communications matters are discussed at all project meetings and monitored so everyone is aware of issues, requirements and deadlines.

In developing the plan advice should be sought from a communications professional. If the project does not employ a communications or stakeholder manager advice should be sought from the regional communications advisor.

The NZTA's current communications planning templates can be sourced from regional communications advisors.

Dealing with media

All proactive and reactive media engagement must comply with the NZTA media engagement protocol and any regionally specific media delegations or instructions issued by the regional director.

Contractors and consultants are not authorised to speak to media about the NZTA projects and project managers may act as spokespeople only if delegated by the regional director.

The media protocol includes advice on how to effectively manage media enquiries. All media enquiries should be referred to the regional communications advisor in the first instance.

Consultation

Communications and consultation are not the same thing and projects will have communications requirements independent of any consultation that is carried out. Any consultation plans developed should be consistent with the overarching communications approach agreed for the project. Consultation requirements are outlined in process 2.2.

9.3 Contract administration

Introduction

The *Contract procedures manual* (SM021) covers all the processes in relation to contract administration in detail. What follows is additional guidance on contract administration practices for the NZ Transport Agency (NZTA) Highways and Network Operations (HNO) contracts.

Feasibility

The contract administration tasks during the feasibility phase are as follows. These are for strategic studies. The project manager could also consider setting up project files at this stage (see corporate services):

1. Complete procurement strategy.
2. Obtain contract number from the tenders secretary.
3. Complete the approval to advertise (SM021 appendix I). The project manager should consider the complexity of the contract when selecting the closing date (normally 4pm on a Tuesday) to allow suppliers sufficient time to submit the tender.
4. Advertise the contract. The advert can be placed by the tenders secretary as long as appendix I has been completed and authorised by appropriate managers and the project manager provides the draft advertisement.
5. When the request for tender (RFT) has been finalised and checked by a reviewer, it should be handed to the tenders secretary to organise copies to be available for tenderers to collect. An electronic copy should also be forwarded to the tenders secretary.
6. Project manager to give tenders secretary all documentation available for viewing by tenderers. The tenders secretary will liaise with tenderers for viewing times.
7. Tenderers will send tender queries to the tenders secretary. The tenders secretary will forward these to the project manager. The project manager should draft a reply to the query which the tenders secretary will send back to all the tenderers in the form of a notice to tenderers.
8. After tenders close project manager must allow tenders secretary and witnessing officers to follow the opening tender process as laid out in SM021. Part of the process checks page limits set out in the RFT and if tenders exceed these limits the tenders secretary will remove and withhold this information until the initial evaluation has been completed (SM021 appendix VII). The lead Tender Evaluation team member must sight the removed pages to check for tags before requesting price envelopes to be opened.
9. Project manager to arrange all approvals to open price envelopes and award the contract as per delegations using the required forms and this information should be handed back to tenders secretary so that they can prepare acceptance and decline letters.
10. Project manager to check that there is appropriate insurance coverage as explained in the SM021.
11. The project can ask the tender to assist with setting up the general ledger code in the State Highway Project Financial Management System (PROMAN).
12. Project manager to approve payments in accordance with the RFT and PROMAN.

Investigation	Refer to the feasibility phase above.
Design	Refer to the feasibility phase above.
Construction	Refer to the feasibility phase points 1-6 and 9-12, and in addition the: • consultant will prepare the RFT and the project manager should check this. The consultants will then deal with the distribution of the RFT to the tenderers • consultants will forward the contractors performance bonds and bond in lieu of retentions (if contractor prefers). Consultants should request the release of these bonds. Performance bonds need to be release once the certificate of practical completion is issued, this will require project manager's approval. Bond in lieu of retentions (if applicable) will also need to be released when defects liability certificate is issued, the project manager will need to approval this as well • designer of any new structure/culvert/bridge or alteration thereof needs to contact the regional network bridge consultant to obtain the necessary forms so that Overweight Permit Management System (Opermit) can be updated.

9.4 Financial management

Introduction

The NZ Transport Agency (NZTA) Financial Management Information System (FMIS) is the suite of products used to enable the NZTA to complete all financial processing and reporting requirements. The FMIS enables to manage the business effectively and meet all external and internal reporting requirements for financial data. The key components of the FMIS that relate to state highway projects are the Epicor accounting application, the State Highway Project Financial Management System (PROMAN) and Property Acquisition and Disposal System (PADS).

Epicor FMIS is the accounting application of the NZTA. The system is used to manage supplier and customer invoicing and payments. All invoicing and payments are loaded in the Epicor FMIS by Highways and Network Operations (HNO) administrators in regional offices or financial processing staff in national office. Epicor FMIS has an automated interface to PROMAN application for project transactions, therefore enabling PROMAN to be the central tool for project managers to monitor and report project financial information.

PROMAN system used by HNO staff and contractors to manage the financial components of the state highway programme and the Organisational Support Finance team to report on the state highway programme.

The full PROMAN management process is described in detail in the NZTA's *PROMAN manual* (SM042), which covers processes in detail at all stages of a project's development. The purpose of SM042 is to ensure that all projects are systematically and effectively managed within PROMAN. It is a key reference manual for all consultants and project managers.

PROMAN has a modular design that provides functionality necessary for the effective planning, monitoring and control of projects. The following modules are provided within the PROMAN suite:

- Plans:
  - capital plans
  - maintenance plans.
- Projects:
  - information - dates, phases, forecasts
  - planning data – objectives, benefits, seriousness and urgency.
- Monthly updates:
  - Project accounts – actual, accrual, budgets, forecasts and reviews.
- Contracts:
  - contract administration information
  - supplier information.
- PADS.
- Standard reports.
- Consultant access.

The following tasks are performed by the project manager to ensure accurate update of PROMAN (all items listed below are covered in detail in SM042).

Contract initiation

Once awarded, the project manager must review PROMAN to:

- update the project's benefit cost ratio (BCR)
- review the allocation(s) to determine whether or not to release surplus funds. These should be released unless there is a good reason to retain them as additional contingency funds
- set up the base and contingency amounts. If the contract is programmed to be completed over a number of years the amounts must the held in the appropriate financial year. As projects are dynamic these forecasts may need to be reviewed from time to time.

For maintenance and block-funded capital project the total allocation should equal the contract price. No contingency amount is to be held. Ensure PROMAN work units:

  - are set up
  - have an approved allocation
  - are linked to a single supplier wherever possible. As this supplier is responsible for providing the base monthly financial information, the costs charged to each work unit should relate to an individual supplier only
  - have a realistic forecast monthly expenditure. The forecast should be updated monthly to reflect the project's progress.

If a general work unit is used to accrue various miscellaneous costs incurred by a variety of suppliers it should not be linked to an individual supplier. Rather the project manager is responsible for the monthly accrual reporting and validating this work unit.

PROMAN monthly cost control

As stated above, where a work unit is set up in PROMAN and linked to a specific supplier, the supplier will provide the updated financial information and document the reasons for any changes. Where there is no link, the project manager will provide the updated financial information.

The project manager must validate all PROMAN information each month by:

- verifying the :
  - accrual and forecast information is accurate and realistic
  - revised forecast cash flow for the remaining part of the financial year replaces the previous monthly cash flow (forecast to budget)
  - actual payments are tracked against the accruals
- ensuring no payment is made that exceeds the allocation
- adjusting work unit allocations when appropriate to match forecast year and expenditure, by completing:
  - an intraphase adjustment, by moving allocation(s) to/from work unit(s) within the same phase
  - a cash flow adjustment by moving an allocation to/from a future financial year
  - a contingency transfer, by moving allocation(s) to/from the base allocation to the contingency allocation

- a price level adjustment, comparing the total forecast expenditure for all work units to the approved allocation, and either declare surplus or request additional funds
- a surplus contingency funds declaration, reflecting the decreasing project risk.

The project manager must understand the monthly expenditure and forecasting for the current financial year as the consultant has no means of forecasting final contract values if contracts run over more than one financial year. In these cases the project manager must also monitor forecast contract expenditure as opposed to forecast financial year expenditure as reported in the consultants' monthly reports.

Contingent liabilities

Any ongoing liabilities which lie outside the contract or extend beyond the project should be managed as contingent liabilities within PROMAN (see part 4).

Feasibility

Project structure

Create the project structure in PROMAN in accordance with SM042. The project will be included in either the block or large annual plan based on the total estimated project cost (refer to process 4.2).

Project prioritisation and funding

Advice on project prioritisation and funding processes is set out process 4.2 of this manual. PROMAN is the key tool within the HNO group to support these processes, and is the means by which core project description, attributes and financial information are presented.

Details on how to update annual (or three-yearly) plans are included in the NZTA's *Annual plan instructions manual* (SM018).

Similarly, once the state highway plan is determined, PROMAN through the monthly review modules, is the means by which the transactions are presented and the outcome determined (ie showing as a corresponding change in project allocation and cash flow), within the wider funding approval process.

Maintain the project structure

The project structure must reflect the current contractual requirements of the project. At least one work unit is required for each phase. Multiple work units may be used to assist with managing the phase. Work units may be linked to a specific supplier to enable the supplier to enter into PROMAN updated financial information on a monthly basis. Work units also form the link between PROMAN and the performance assessment by coordinated evaluation (PACE) contract evaluation system. Therefore, at a minimum there should be one work unit per supplier.

Once the work unit is set up the project manager requests the contract administrator to link the work unit to the appropriate contract to create the job general ledger code. This code is then used to process all financial transactions relating to the work unit in the Epicor FMIS.

Verify supplier invoices for payment

It is the project manager's responsibility to ensure that invoices are coded correctly and approved in accordance with the NZTA delegations policy.

Notify contingent liabilities

Where a dispute arises and is not readily resolved, the project manager must identify and account for the associated contingent liability to the regional administration manager.

A contingent liability is a financial provision to cover the potential liability arising from a contractual dispute. Contingent liabilities form part of the project cost and provision must be made for the likely settlement value within the project allocation and cash flow.

See part 4 for further information on managing contingent liabilities.

Verify forecast and accrual values

The project manager must validate all PROMAN financial data each month to ensure effective cost control. Using the PROMAN monthly progress utility the project manager verifies forecast and accrual values and provides commentary on variances on a monthly basis in accordance with financial reporting deadlines set by the Finance group:

- Forecasts
  Ensure the forecast for each work unit is updated regularly in accordance with the monthly financial reporting timetable. It is important for portfolio management that all projects have accurate and up to date forecasts.
- Accruals
  Consultants and project managers must update and validate accruals for each work unit within the project structure on a monthly basis to ensure funding is claimed to cover the payment of invoices for the project. Accruals must be updated in accordance with the monthly financial reporting timetable.
- Variance analysis
  Monthly financial analysis variance commentary must be provided for each phase, where the exception criteria set out in SM042 have been exceeded. This is used to provide information for both internal (HNO) and external (Board, Ministry of Transport) reporting.

Funding review requests

Prepare and submit funding review requests as required, ensuring the appropriate funding is approved prior to expenditure being incurred. Payment must never exceed the approved allocation.

Create a funding review request for each project phase when the budget is different from the forecast year end out-turn and the out-turn is considered likely. The request is submitted to the State Highways Programme Review Committee (SHPRC) for endorsement before being passed to the manager in the Regional Partnership and Planning (RP&P) group (or designate) for approval in the LTP online database (refer to process 4.2).

Year end

Complete all tasks as set out in the year end instructions section of SM042, and the year end timetable issued by the Finance group. If required, project managers must inform regional corporate support administrators of any liabilities (amounts in dispute) as defined in part 4.

Update annual plan data

On completion of the project phase ensure that the annual plan data is updated in the PROMAN project screen in accordance with SM018 to reflect changes and outcomes of the project phase.

Investigation

Refer to the feasibility phase above.

Design

Refer to the feasibility phase above.

Construction

Refer to the feasibility phase above and note the following additional items:

- Substantial completion
  On substantial completion of the construction phase ensure that the project financials are reconciled, the project is marked as substantially complete and populated in the PROMAN system with the completion date. Ensure any surplus funding is released.
- Financial completion
  On financial completion of the construction phase check all final payments have been made, and retentions released. Complete a final reconciliation of the project, updating forecast and aligning allocation to final project expenditure. Ensure any contingency held is released and the project status updated to complete.
- Close project general ledger codes
  Advise the Financial Processing team leader to close all job general ledger codes related to the project.

9.5 Change control

Introduction

Managing change is one of the most difficult areas of project management. Most projects will be affected by change even on the most carefully planned. Any proposed change is likely to have an impact on cost and programme. The success therefore of a project delivery depends to a larger extent on the effectiveness of the organisation's change control process. It is a key to project success.

Definition of change control system

1. Change control system is the management process for requesting, reviewing or analysing, approving, carrying out, monitoring and controlling changes to the project's deliverables. It describes the procedures for change and includes paperwork, tracking system, processes and approval levels needed for authorising change, and must comply with contracts. The process also includes measuring the performance of the project to the project's baseline and if necessary, applying preventive, corrective actions and defect repair.
2. Change control process is a necessary project management activity in every phase of project development, ie feasibility, investigation, design and construction. But it must be most rigorous in the project construction phase since it is where most of the money will be spent.
3. Changes should be coordinated across knowledge areas (eg change in programme will impact cost, risk, quality and staffing). Change control in one knowledge area will impact other knowledge areas. Therefore, the project manager should be able to relate changes across knowledge areas. This is called an integrated change control and includes:
   - influencing the factors that create changes to ensure that change are agreed upon and if the change is actually required
   - actively looking for alternatives to the changes to minimise impact to the project
   - determining that a change has occurred
   - managing the actual changes as they occur
   - maintaining the integrity of the project baseline.

Change control system – What to do?

There is no prescribed way to manage the change process. The key is to build a process but be ready to adapt as circumstances dictate. The following offers practical strategies that will help project managers to manage change effectively and better monitor and control projects throughout their entire life cycle.

Feasibility

1. Review the professional services contract

   Review what the contract requires and what is included and not included in the professional services contract. Ensure that all proposed changes are necessary and in accordance with the project objective(s) outlined in the project charter. If the change does not fall within the project charter or if the change is not beneficial to the project then, it should be rejected right away.

2. Establish a baseline

   Establish an integrated project schedule and cost baseline to perform the work, by which consultant performance is measured. Once the baseline is frozen or established, it can only be reset due to cost and schedule changes processed through formal change control process.

3. Review the minimum standards Z series in the NZ Transport Agency (NZTA) *State highway professional services contract proforma manual* (SM030)

   Review the NZTA standard professional services minimum standards as detailed in SM030. This is to identify necessary change(s) or additional services not included in the original contract or are required to meet standards.

4. Review all requests for additional services and ensure that they are justified and beneficial

   Require the consultant to submit a professional services form (PSF) 4a form (SM030) if there is a need for an additional services. Review the submitted form and take steps to negotiate an agreement that all parties can live with and that minimises overall impact. Make sure that all proposed changes are clearly defined so that the impact on the project can likewise be estimated with accuracy. Document the change and show a clear business case for the change. Beware of any vague change requests for which there are few specifics provided.

5. Look at the impact of the change and perform integrated change control

   Evaluate the overall benefit of the change and its impact to the project schedule, cost, quality and risk, and in some case to the organisational operations.

6. Seek approval for the proposed change

   Any change should be approved by an NZTA-authorised committee or personnel delegated with an authority to make decisions, eg what types and amount of change that can be approved. Refer to the NZTA's intranet for the latest copy of delegations.

7. Adjust the baseline in a timely manner

   Incorporate all approved changes into the project baseline and adjust the integrated cost and schedule baseline. If the change has an effect on the way the project manager will manage the project, then the project management plan should also be updated to reflect the impact of the change on project work remaining to be done.

8. Manage the project to the new baseline

   Communicate change status and resolution to project team members and other appropriate stakeholders, including the project status report. Implement the change according to the new project baseline.

9. Monitor the results of the change

   Determine if the desired outcome has been achieved. Document any lessons learned why it is successful. If not successful, identify why and document any lessons and determine alternatives for future consideration.

Investigation Refer to the feasibility phase above.

Design Refer to the feasibility phaseabove.

Physical works

1. Review the contract documents

   Review what the contract requires and what is included and not included in the physical works contract. Ensure that all proposed changes are necessary and in accordance with the project objective(s) outlined in the project charter. The change should be rejected if it does not fall within the project charter or if the change is not beneficial to the project then.

2. Establish a baseline

   Establish an integrated project schedule and cost baseline to perform the work by which contractor's performance is measured. Once the baseline is frozen or established, it can only be reset due to cost and schedule changes processed through formal change control process. At that point, the original or current baseline becomes invalid and should not be compared with the current schedule.

3. Identify change and potential sources of change

   Identify problems early and look for changes. Discovering a change earlier will decrease the impact of the change. The later the change is addressed the greater the risk, cost and duration. Look actively for changes from stakeholders and continue to measure performances against the performance management baseline. Potential changes can surfaced through verbal or written means but it should be formally documented using change request form shown in part 3.

4. Log all change requests

   Log all change requests. Keep track of all updates while the change is opened, and keep copies of signed/approved changes.

   A sample change request log is attached in part 3. Sample change request log is also available in the NZTA's *Cost estimation manual* (SM014).

5. Document and categorise all change requests properly

   Categorised all changes during construction phase in accordance with New Zealand Standard 3910:2003 *Conditions of contract for building and civil engineering construction* (NZS 3910:2003) and properly document all change requests:

   - increase or decrease in the quantity of any work
   - omission of any work
   - change to the character or quality of any material or work
   - additional work to be done
   - change to the level, line, position, or dimensions of any part of the contract work.

6. Evaluate and assess the value and benefit of the change

   Provide detailed descriptions and rationales of the proposed changes. This will help approving body or person to better understand the need for the change. Most importantly, explain the benefits that these changes would provide.

   Clearly defined all proposed changes so that the impact on the project can be likewise estimated with accuracy.

   Review the value and benefit of the change to the project. Clearly document a clear business case for the change, ie on what basis changes should be approved.

7. Look at the impact of the change and perform integrated change control

   Perform integrated change control to determine the impact of the change to time, cost, quality, risk and customer satisfaction. Determine the best way to handle the changes (is it possible to crash or fast track).

8. Seek approval for the proposed change

   Any change should be approved by an authorised NZTA committee or personnel delegated with an authority to make decisions, eg what types and amount of change that can be approved. Refer to the NZTA's intranet for the latest copy of delegations.

   If conflict arises, determine how will the change be escalated for resolution, and who are the decision makers. Refer to the NZTA's intranet for the latest copy of delegations.

9. Adjust the baseline and if necessary the project management plan

   Incorporate approved changes into the project baseline and adjustments made to cost and schedule. If the change has an effect on the way the project manager will manage the project, then the project management plan should also be updated.

   Maintain the integrity of baseline. Prevent revisions to the project baseline except for authorised contractual changes/modifications.

   Note: Sometimes adjustments to the baseline are necessary for correction of errors and to improve the baseline integrity and accuracy of performance measurement data. When contract performance deviates from the plan to such an extent that the original plan no longer serves as a reasonable measurement device, formal reprogramming may be necessary. The remaining work and budget should be thoroughly analysed prior to reprogramming. An overrun contract and overrun projections are not the most important factors in the decision. Changing a baseline merely to compensate for current variances is inappropriate. The project manager should be consulted prior to reprogramming.

10. Communicate the change to stakeholders

    Communicate approved changes to the affected stakeholders. Inform customers about the implication of the changes. Communicate the need for the change to people who are not involved in the decision process. Explain why it was approved. Clarify the change when necessary and explain it in terms that the affected stakeholders will understand.

    Communicate change status and resolution to project team members and other appropriate stakeholders, including the project status report.

11. Manage the project to the new baseline

    Implement the change according to the new project management plan.

12. Monitor the results of the change

    Determine if the desired outcome has been achieved. If successful, document any lessons learned. If not successful, identify why and determine alternatives.

9.6 Cost control

Introduction

Cost is seen as a major measure of a successful project. Cost control, therefore is a necessary project management activity in every phase of a project. It is one thing to meet in a project deadline at any cost. It is another to do it for a reasonable cost. Project cost control is concerned with ensuring that project stay within budget, while getting the work done on time and with the correct degree of quality.

Cost tracking and cost control

Cost tracking is the act of recording what was spent in order to meet management accounting requirements. Cost control on the other hand is much more than just collecting expenditures and issuing reports. It involves measuring and comparing costs to budgets and prior forecasts in an attempt to learn what worked well and what did not in order to reduce future expenditures. It is also about measuring where you are, adjusting production method to improve results and bring the project within budget.

Cost control is a necessary project management activity in every phase of project development. But it must be most rigorous in the project execution phase since it is where most of the money will be spent.

Cost control has two parts:

1. How much should you be spending?
2. When are you supposed to be spending it?

Components of cost monitoring and control include planning, estimating, budget, control and forecasting.

Principles of cost control

There are two simple but essential principles of cost control system that must be clearly understood:

- there must always be a basis for comparison, and
- only future cost can be controlled.

Purpose of cost control system

A cost control system exists for two purposes:

1. To develop meaningful costs for historical record keeping (principally to aid in future estimating).
2. To keep track of a job so problems can be identified and corrected while they are still manageable.

Challenges in cost monitoring and control

There are number of challenges in cost control, ie the problem of managing project scope.

A clear and carefully described scope of works, reasonable schedule and approved method of project execution tailored to the type of project and the degree of risk involved, all go a long way to the goal of controlling costs. Without good estimate, there is no hope of completing the project within the budget. Often the biggest reason for budget failure is that the scope of the project is not clear or scope is incomplete thus subsequent scope changes are excessive and disrupt the work and budgets.

Feasibility

1. Review the contract

   Review what is and is not covered in the contract. By knowing the contract scope, the project manager will possess an important tool to ensure that only justified claims are approved.

2. Manage actual changes

   Require consultant to submit professional services form 4a Justification for additional services (the NZ Transport Agency's (NZTA) *State highway professional services contract proforma manual* (SM030)) first for evaluation and approval prior to starting any additional services. Do not agree to anything without proper documentation. Work done without prior agreement often ends up costly and settling these claims is harder.

3. Design good cost reports to detect potential problem

   Report real project status at regular intervals to provide an opportunity to address potential problems early in the project. Early detection of problems will result in possible resolution and may avoid cost overruns. Project cost reports shall include forecast final costs and period variances.

4. Forecast frequently

   Forecast frequently the cost of the remaining works to complete. Merely measuring the costs incurred against the work produced is not enough to determine if the desired results can be obtained. For example, if your cost to date is $100,000 and your budget is $150,000, apparent percent complete is 67 percent. But if the estimated cost to complete is $125,000, the actual percent complete is 44 percent. It is really important to determine the cost to complete on a regular basis so that appropriate action can be made to bring the project cost back on track to the desired result or at least minimise the overrun.

Investigation

Refer to the feasibility phase above.

Design

Refer to the feasibility phase above.

Construction

Physical works

1. Establish a budget for the construction phase

   First, establish a control budget. The contract estimate should be converted to a viable control budget. This budget must be consistent with how the money will be spent, ie consistent with the project's procurement strategy otherwise no comparison is possible. It is necessary to know the project scope and what the project budget covers. Once the contract is awarded and the tender price known the control budget can be refined using the tender schedule, the NZTA-managed costs, risk register allocations and funds declared surplus if applicable thereby potentially allowing other projects to proceed. Make sure that no commitments are made that exceed the budget allocation or, if they do, make immediate adjustments elsewhere.

2. Track estimates against cash flow and schedule progress

   Break the contract down into tasks that can be tracked. A time-phased budget should be prepared breaking the overall budget goal into time intervals of weeks, months, quarters or years. This can provide a budget baseline for tracking actual costs against periodic budget targets. When the cumulative budget of estimated project costs are plotted graphically over time, they usually result in the shape illustrated, which is sometimes called an 'S' curve, since it looks like an inclined 'S'.

3. Monitor expenditures as work progresses

   Ensure that the consultant measures performances against the approved project integrated baseline on a regular basis. A simple technique for tracking project costs is to develop a weekly or monthly cumulative budget spend plan and then track actual costs against the plan. The slope of the spend plan indicates the project expenditure rate, sometimes called the burn rate. By plotting actual costs against the budget spend plan, differences between actual spending and the spend plan can be seen. This technique provides a simple, top-level view of project financial performance that can be useful for briefings. Undertake a review if the percent of dollars spent exceeds the percent completion estimated for the project. (This type of measuring the accomplishment should be both included in the professional services and physical works tender documents and/or contract. A sample requirement for the physical works contract is attached in part 4.)

4. Manage actual changes

   Follow the professional services form 4b Request for extension of contract budget – Physical works (SM030) change control process to manage change requests, track cost and scope change. If scope changes are called for, changes to the budget must be processed so that a proper basis for comparison is maintained. Track budget change approval to finish project within approved budget and avoid unwelcome surprises.

5. Examine cost trends and control impact of cost changes

   Tracking cost trends serve as early warnings to impending problems. By observing costs, growing problems can be detected and appropriate changes to improve the project's cost performance can be implemented.

6. Calculate cost variance line by line to identify specific problem areas

   Determine the causes of positive or negative variances to the planned cost structure by calculating cost variances line by line. This will identify specific problem areas and by knowing what is going on your project, improvement can then be made where possible. Sum the totals to determine the overall total project cost variance status.

7. Forecast the cost of the remaining works to complete frequently

   Refer to the feasibility phase above.

8. Report real project status

   Maintain regular cost reports and record keeping. Design good cost reports that will allow you to track big items. Reporting requirements oblige the contractors and consultants to track costs and capture information that permits identification of problem while there is still time to correct it. Reports may include the following:

   - Status report to describe the projects financial performance versus the baseline.
   - Progress report describing what has been accomplished.
   - Trend report examining project results over time to see if performance is improving or deteriorating.
   - Forecasting report to predict future project status and performance.
   - Variance report comparing actual results to baseline.

9. Earned value report integrating scope, cost and schedule performance to assess project performance.

10. Take or recommend corrective action as necessary

    Look at alternative actions and determine if corrective action is required to bring expected future project performance in line with the cost management baseline. When significant differences exist, modification of the approach or changing the means of performing the work may be necessary to affect a different outcome but without decreasing the project functionality.

11. Update cost baseline

    Authorised changes must be incorporated into the baseline in a timely manner and reflected in both budgets and schedules. If the change has an effect on the way the project manager will manage the project, then the project management plan should also be updated.

    To ensure the integrity of the project budget, prevent revisions to the project budget except for authorised contractual changes/modifications.

12. Employ earned value technique and reporting

    Earned value is a method for measuring project performance. It compares the amount of work that was planned with what was actually accomplished to determine if cost and schedule progress is as planned. It is a method of reporting project status in terms of both cost and time.

    Earned value integrates the scope, schedule and cost using work breakdown structure into a performance measurement baseline which accomplishment can be measured.

Management, surveillance and quality assurance (MSQA)

1. Read the contract

   Refer to the feasibility phase above.

2. Manage actual changes

   Refer to the feasibility phase above.

3. Design good cost reports to detect potential problems

   Refer to the feasibility phase above.

4. Forecast frequently

   Refer to the feasibility phase above.

9.7 Disputes resolution

Introduction

Disputes can happen at any stage of the project process. The process for responding to a dispute is generally the same for each stage of the project also. That is, there is some variation between professional service and physical works contracts, as disputes with the former are covered by Conditions of contract for consultancy services (CCCS), and the latter by New Zealand Standard 3910:2003 *Conditions of contract for building and civil engineering construction* (NZS 3910:2003).

For the NZ Transport Agency's (NZTA) contracts the contribution of each party is usually intertwined and the project components firmly linked. This makes it even more important to keep the contract alive and the project progressing to its rightful conclusion.

The project manager must promote successful project delivery by identifying potential problems early and addressing them before they impact on payment, delay the work or otherwise have an adverse effect on the relationships of the parties.

The NZTA's approach is to make all reasonable efforts in 'good faith' to resolve the dispute promptly and in a manner which minimises any impact on the performance of the contract and the positive working relationship between the parties.

It is intended that parties (ie the NZTA, contractor, consultant) use dispute resolution processes as a last resort when all efforts to resolve the situation by negotiation have been unsuccessful.

Feasibility

Dispute resolution processes for professional services contracts, which feature in standard form contracts (such as CCCS), involve third party intervention (mediator and arbitrator) and have a defined time constraint. The process provides parties with a clear and direct means for settling disputes that they have been unable to resolve between themselves (ie through direct negotiation).

Contract disputes that parties are unable to resolve themselves should be dealt with in accordance with clause 10 CCCS:

- 10.1 - covers the parties, which, in the first instant, will use their best endeavours to resolve the dispute themselves.
- 10.2 - sets out the options available to the parties to assist them to resolve the dispute
- 10.3 - covers the appointment of an arbitrator and the time frame of 15 days for making the appointment.

It is critical that all professional services contracts have dispute resolution procedures included in them or alternatively reference clause 10 CCCS.

The project manager should undertake early intervention, eg attempt to negotiate a resolution to the dispute, by discussing the issues with the other party.

Where negotiation is unsuccessful, document the dispute by:

- formally notifying the other party that a dispute exists. Include an outline of the dispute resolution process to be undertaken (as defined in the contract)
- preparing and forwarding a dispute notice to the project sponsor and chief advisor engineering assurance
- advising the regional administration manager of any contingent liability.

Resolve the dispute by undertaking mediation (in the first instance) or arbitration process.

Investigation

Refer to the feasibility phase above.

Construction

Professional services contracts

Refer to the feasibility phase above.

Physical works contracts

Dispute resolution processes for physical works contracts, which feature in standard form contracts (such as NZS 3910:2003), involve third party intervention (engineer, mediator, and arbitrator) and have a defined time constraint. The process provides parties with a clear and direct means for settling disputes that they have been unable to resolve between themselves (ie through direct negotiation).

Contract disputes that parties are unable to resolve themselves should be dealt with in accordance with section 13 in NZS 3910:2003:

- 13.1 - sets out the time limits for giving notice to the engineer
- 13.2 - sets out the requirements for the engineer to review disputes and the options available to the parties and the engineer to assist them to resolve the dispute:
  - 13.2.4 – states that the parties may require the engineer to make a formal decision (time limit is 20 working days from notice of the decision being required)
  - 13.3, 13.4 state that if any of the parties is dissatisfied with the engineer's decision, or the engineer makes no decision within the time frame, the dispute may be referred to mediation or arbitration.

It is critical that all physical works contracts have dispute resolution procedures included in them or alternatively reference to section 13 in NZS 3910:2003.

The project manager should undertake early intervention, eg attempt to negotiate a resolution to the dispute, by discussing the issues with the other party. It is often helpful for contractual issues to request the engineer to provide an informal review (clause 13.2.1) that can form the basis of discussion with the disputing parties

Where negotiation is unsuccessful, document the dispute by:

- formally notifying the other party that a dispute exists. Include an outline of the dispute resolution process to be undertaken (as defined in the contract)
- preparing and forwarding a dispute notice to the project sponsor and chief advisor engineering assurance
- referring the dispute to the engineer for a formal decision (if not already completed)
- advising the regional administration manager of any contingent liability.

Resolve the dispute by referring the dispute to the engineer for a formal decision (clause 13.2.4) which can either be accepted by all parties or if not, undertaking mediation (in the first instance) or arbitration process (clause 13.3 or 13.4).

9.8 Supplier performance

Supplier performance evaluation

Supplier performance evaluation is a formal process whereby the performance of both consultants (under professional services contracts) and contractors (under physical works contracts) are openly assessed. The process is described in detail in the minimum standard (MS) Z/11 Performance evaluation (the NZ Transport Agency's (NZTA) *State highway professional services contract proforma manual* (SM030)) and professional services guidelines (PSG)/2 Performance evaluation (SM030). The process also requires use of performance assessment by coordinated evaluations (PACE) PSF 9a-9d, as set out in SM030.

The performance evaluation process is managed through a web-based tool for the storage and access of evaluations, as well as serving to prompt project managers as to when evaluations are due. This tool is accessed through the Novell applications screen on your computer (presently the PACE icon).

Its mandatory for all professional service and physical works contracts to be evaluated using PACE forms. The project manager is responsible for completing evaluations.

The key objectives of supplier performance evaluation include the following:

- To provide the consultant/contractor with critical feedback as to their performance – prompting positive, neutral, and negative feedback – enabling corrective steps to be considered and implemented through the remainder of the contract.
- To record the overall performance of the consultant/contractor. This is then available for future reference in assessment of track record, or conversely may serve as a trigger for review of pre-qualification status.

10.1 Project close-out

Introduction

The purpose of this process is to define close-down procedures for projects which have been completed, suspended or terminated.

Feasibility

- Final summary report

  Ensure that all deliverables as specified in the professional services contract have been received. If the phase is terminated before all the deliverables have been received, it is recommended that a summary report is prepared and retained on file, to ensure that the work done is not lost, should the project be reopened at some time in the future.

- Pass on actions to asset manager

  If there are any actions or recommendations from the study that will not be taken up in the next phase, these should be passed to the asset manager for consideration and action as part of the maintenance programme.

Investigation

Refer to the feasibility phase above.

Design

Refer to the feasibility phase above.

Construction

- Close-out consents

  Ensure that engineer confirms all designation and consents (resource and building) conditions have been complied with.

  If any conditions are outstanding, the engineer must recommend a course of action for their completion, for approval by the project manager (eg can be included in defects liability snag list or should be included in asset owners manual).

  Check the NZ Transport Agency (NZTA) consent database management tool (CSvue monitoring system). Ensure any outstanding conditions of consent for which compliance is expected to occur within the construction activity (ie not ongoing) are closed out.

- Building consents

  For any structures, ensure the contractor has gained the necessary building consents prior to the structure being made available for public use (ie certificate for public use/ code of compliance)

- Pre-opening fit-for-purpose inspection

  Before the completed works are opened to public use or the speed limit is raised to 100km/hr, an interim safety review must be completed and any recommendations actioned. The purpose of this interim safety review is to ensure that there are no serious or significant road safety hazards when the project is returned to 100km/hr speed. See process 6.5 for further advice on requirements, forms and guidance on this.

- Certificates of practical completion and expiration of defects liability

  Ensure the engineer completes an inspection of the completed works and issues a certificate of practical completion in accordance with New Zealand Standard 3910:2003 *Conditions of contract for building and civil engineering construction* (NZS 3910:2003), and the specifications in the professional services contract. Nominally this shall occur once the constructed asset is made available and opened up to its intended use. Any remaining defects or outstanding consent conditions should be identified at that time, and assigned a defined period for prompt remedy. Defects of a nature that compromise the ability to make full use of the asset must be resolved prior to issue of practical completion.

  Following expiration of the contract nominated defects liability period (nominally 12 months), and following a further engineers inspection (including the project manager, and asset manager), and following satisfaction of any remedial works, the engineer shall issue the defects liability certificate. The defects liability certificate should not be issued where a fault/defect/or failure has been identified, until it is either redressed or deemed by the engineer not to be a responsibility of the contractor.

- Complete project handover to asset manager

  While the project handover occurs at the end of the defects liability period, the process of the handover begins as the construction works are approaching completion. The process and actions required are set out in part 4.

  - Upload as-built drawings.
  - Present asset management plan to the asset manager.
  - Review the project plan and make any final changes as appropriate (see part 4).
  - Forward outputs to be included in future projects, where applicable.
  - Close off all supplier contracts (see process 10.2).
  - Reconcile final project cost with approved funding allocation(s) (see part 4).
  - Obtain the project sponsor's sign-off on the final project plan.
  - Confirm the above actions are completed.
  - Report to the sponsor any issues, particularly in case of project termination, or on general interest items.
  - Register the project closure on the project register.
  - File all records including the final project plan and request the filing clerk to close files.
  - Delete or archive electronic records (see part 4).

Records

Ensure copies of the following documents are retained:

- final project plan
- contract completion notice – physical works
- contract completion notice – professional services
- project closure notice.

Pre-opening fit-for-purpose inspection

A fit-for-purpose (safety) inspection must be carried out for all motorway projects and road construction projects over $1 million unless an exemption has been agreed and documented by the project manager and regional safety engineer.

On many projects the construction activity is managed around live traffic flows and, even for 'green field' construction projects, traffic is often diverted on the new construction to allow tie-ins to be constructed. In practice the post-construction road safety audit (RSA) cannot be undertaken until the new construction is in full operation. It is also not credible to maintain temporary traffic management measures (eg speed limits) on a new construction whilst waiting for the post-construction RSA.

The purpose of the pre-opening fit-for-purpose inspection is to ensure the new construction is not opened or operated prior to addressing any serious or significant road safety hazards as defined in the NZ Transport Agency's (NZTA) *Road safety audit procedures for projects guideline* (TFM9). These instructions cover all new construction projects exceeding $1 million and must be carried out before the new construction can be opened or operated. A post-construction RSA, which would normally follow the practical completion, is still required.

Fit-for-purpose inspection format

Before opening the road to traffic or reinstating the permanent speed limit the project manager, in conjunction with the regional safety engineer, must inspect the new construction and prepare a brief report:

a. Outlining the extent to which the RSA process was applied and reconciled to date.

b. Confirming a code of compliance or public use certificate has been issued for all structures requiring building consent.

c. Confirming the construction consultant has approved the integrity of all structural road side furniture installations. These include overhead signs, traffic signals, or lighting columns, which may affect the live carriageway if they fail.

d. Recommending the new construction should be made available to traffic and public use without constraint.

Once the report is completed:

1. The regional safety engineer endorses the project manager's recommendation, and any necessary conditions to allow the new construction to be made available to traffic and public use. Any unresolved issues of significant concern to the regional safety engineer, must be escalated to the NZTA National Office for consideration by the national traffic and safety manager.
2. Project manager presents the recommendation, and the response to any conditions imposed by the regional safety engineer, to the state highway manager for approval:
   - If approved they will state which conditions, if any, apply.
   - If declined they will state the reasons why.

10.2 Contract close-out

Introduction

The purpose is to define close down procedures for physical works and professional services contracts which have been completed or terminated.

Feasibility

- Ensure all performance reviews have been completed and recorded appropriately (see part 4).
- Ensure all expected deliverables have been received (see part 4).
- Ensure final payments, have been made and accepted (see part 4).
- Ensure any contingent liabilities have been resolved (see part 4).
- Write letter to consultant to advise that the contract is complete.
- Close off all supplier contracts.
- Update project plan.

Investigation

Refer to the feasibility phase above.

Design

Refer to the feasibility phase above.

Construction

- Ensure all performance reviews have been completed and recorded appropriately (see part 4).Ensure all expected deliverables have been received (see part 4).
- Ensure final payments, including retentions have been made and accepted (see part 4).
- Ensure all bonds have been released and required warranties, as-builts and asset owners manual have been provided (see part 4).
- Ensure any contingent liabilities have been resolved (see part 4).
- Close off all supplier contracts.
- Update project plans for the file, noting the project is now complete.
- Handover to maintenance team.

Part 3 – Forms and examples

1.1 Establishment

Introduction	In addition to existing procedures, the following process documents (marked as *) will be required.
Feasibility	*State highway professional services contract proforma manual* (SM030) minimum standard Z/20 Project feasibility reports. *Cost estimation manual* (SM014) form A Project estimate: Feasibility estimate.
Investigation	Project charter.* Preliminary project scope statement.* Project management plan.* Updating the project management plan.
Design	Reviewing the project management plan.
Construction	Project closure checklist. Post-construction report example.

Highways and Network Operations (HNO) project charter – EXAMPLE

Prepared by	Andrew Quinn, Regional projects team leader
Date issued	12th August 2009
Project name	State Highway 1 Forrest Lakes Median Barrier

Project scope		
Business case	To improve the safety of the section of State Highway 1 from Waitohu Steam bridge to the Pukehou rail bridge.	
Objectives	Reduce the number of cross-centre line crashes by installing a median barrier.	
Customer	HNO.	
Customer needs	• Reduce the number of crashes at the intersection, particularly head-on crashes. • Improvements to the cross section of the highway to meet geometric design standards, eg clear zone, shoulder width, intersection design.	
Final deliverable	Construction report and handover documentation.	
Customer requirements	Completed improvements to State Highway 1 (geometric and design safety standards, without residual defects and including all asset information, handover documentation and as-built drawings).	
Life cycle stages	• Investigation and reporting (I&R). • Design and project documentation (D&PD). • Construction.	
Customer acceptance criteria	• Construction to geometric design standards. • Ten to 15 years pavement life (new works).	
Key stakeholders	• Kapiti Coast District Council. • Local residents and businesses. • NZ Police. • Heavy Haulage Association. • AA Association. • Network management consultant – Montgomery Watson Harza. • Network maintenance contractor – Fulton Hogan.	
Organisational deliverables	Complete the scheme assessment report by 30th June 2010.	
Organisational acceptance criteria	N/A	
Organisational goals		
Project assurance		
Scope risk limit	The organisation (HNO) has a low tolerance of meeting customer's requirements and these must be met in full.	Scope risk limit
Reviews and approvals	• At scheme assessment stage (scheme costs, scope and BCR confirmation). • At design phase (confirmation of scope/costs and construction programme). • Pre-tender (acceptance of contractor's contract). Post-construction (acceptance of completion, defects and post-construction safety audit).	Reviews and approvals

continued

Project assurance		
Status reports required	• Bimonthly report of progress in PROMAN throughout the project life cycle. • Review at the end of investigation phase (preferred option and request for design funds). • Review at the end of design phase (completion of tender documentation, confirmation of consents and land purchase). • Post-construction report.	Status reports required
Project resources		
Team assignments	• Project sponsor – Andrew Quinn. • Project manager – Larry Jones. • Network asset manager – Hugh McCutcheon.	Team assignments
Deadlines	• Investigation complete by 30th June 2010. • Design 2010/11. • Construction starts 2011/12.	Deadlines
Staff effort limit	None.	Staff effort limit
Spending limit	• Expected cost estimate $4.7 million, funding risk $6.7 million. • Funding profile: – 2009/10 – $192,600 – 2010/11 – $195,200 – 20011/12 to 2013/14 – $5,027.70.	Spending limit
Organisational constraints	• This project will interface with the Wellington roads of national significance (RoNS), ie north of Levin to Wellington Airport. The project manager is required to explain at each reporting stage how the project, as scoped, is impacted by the RoNS project and how the project can make provision without major increase in the scope and costs.	Organisational constraints
Project priorities	This project has a relatively high BCR, therefore the organisation may consider extending the scope of the project beyond Forest Lakes Road to the Pukehou rail bridge. The investigation phase should extend to cover this area.	Project priorities

1.2 Resources

Handover report – EXAMPLE

Project handover meeting of	< DDMMYY >
Project handover meeting of summary of points discussed	< list attendees >

e. The scheme assessment report (SAR) and risk assessment were sent to the NZ Transport Agency (NZTA) on the < DDMMYY >. Follow-up required on response from the NZTA

f. In November review, a request was made for $600,000 for the design phase, with $100,000 in 2008/09. Result should be available in two weeks, check with < name >.

g. Once the economics have been endorsed and the allocation confirmed, the consultant can commence the design phase. However, as there are significant Resource Management Act 1991 (RMA) issues delaying the project < list >, the consultant should be instructed to:

   - proceed with the additional geotechnical work required for R17 only
   - lodge the alteration to designation application as part of the investigation phase within the allocated funding
   - not start the detailed design until the alteration to designation has been confirmed. Seek advice of the regional planning manager.

h. The 2001 contract documentation for design is now superseded. Before instructing the consultant to start the design phase, a new design brief and fee structure needs to be negotiated.

i. The NZTA's property acquisition agent < name >:

   - is negotiating with affected owners for property purchase and will ensure the outcomes are documented and addressed as part of the alteration to the designation application
   - will assist with obtaining land entry agreements to enable the additional geotechnical investigations to proceed.

j. The invoice < provide invoice number > for the risk analysis has not been paid as the fee of $15,000 is in dispute < provide details >. The consultant < name of person this was agreed and date >:

   - has agreed to a reduced fee of $11,500
   - will either issue a credit note or provide a new invoice for which payment can be authorised.

k. Subject to confirmation of the alteration to designation and as the additional geotechnical work is to be funded from the design phase, the investigation phase can then be marked as complete in PROMAN.

l. The consultant < name > has been advised of the change in project manager.

2.1 Scope definition

Capital project brief (PMM 2.1)

NZ TRANSPORT AGENCY
WAKA KOTAHI

Checklist

Project

Note: The format of this scoping **capital project brief** exercise checklist is directed at either producing the individual pages of the scoping report, or checklist type items which come under generic headings.

Heading	Check Item	Considered	
		Yes	N/A
Description	Geography, geology, topography, demography, alignment nature.	☐	☐
	Road/vehicle operation problems.	☐	☐
Problem	Identify particular problem(s) to be solved by the project, eg high accident rate.	☐	☐
Objective Accurately identify the paramount objectives. The objectives should reflect the NZTA's mission statement and the strategic importance of the site within the roading network.	Describe the intended outcome of the project and the benefits or advantages the project requirements will achieve (note the negative benefits or disadvantages as well), eg increase in road user safety.	☐	☐
Success factors/benefits The success factors are those aspects for which a methodology could be drawn up, to measure their effectiveness.	Reduction in accidents.	☐	☐
	Time and vehicle operating cost reductions.	☐	☐
	Favourable public response.	☐	☐
	Environmental enhancements (noise and exhaust fumes reduction).	☐	☐
	Increased functionality.	☐	☐

continued

Heading	Check Item	Considered	
		Yes	N/A
Background/inputs The PFR should describe previous work and the history of the project to date, and then list the documents which record this. Indicate where these documents are and their availability.	Strategy studies.	☐	☐
	PFRs.	☐	☐
	Plans.	☐	☐
	Scheme assessments.	☐	☐
	Assessment of environmental effects.	☐	☐
	Research.	☐	☐
	Accident recording data.	☐	☐
	Maintenance records.	☐	☐
	Traffic data.	☐	☐
	Safety studies.	☐	☐
	RAMM.	☐	☐
	Bridge inventory.	☐	☐
	Route position book.	☐	☐
	Highway information book.	☐	☐
	Videos.	☐	☐
	Other.	☐	☐
Extent This attempts to set the project boundaries and by doing so establish the broad scope of the project.	Scoping report.	☐	☐
	Scheme assessment report.	☐	☐
	Statement of environmental effects.	☐	☐
	Geotechnical investigation.	☐	☐
	Consent document presentation.	☐	☐
	Design and specification.	☐	☐
	Construction supervision.	☐	☐
	Audits – safety and/or environmental.	☐	☐
	Special consultation.	☐	☐

continued

Heading	Check Item	Considered	
		Yes	N/A
Project criteria The various criteria for procedures and design are included in existing manuals which are listed in the NZTA's *Standards and guidelines manual* (SM/P/ 21). However other publications may also be relevant. Also any accepted relevant departures from the NZTA policy need also be included in the RFT. Consideration maybe required on specialist skills or materials and creation of the correct environment to allow innovation.	Departure from link widths or 5.1 feather edges.	☐	☐
	Trial of non-approved materials.	☐	☐
	Light-weight fill.	☐	☐
	Bridge structure incremental launching.	☐	☐
	Other.	☐	☐
Programming The scoping document shall have appended a draft Gantt chart setting out the proposed project tasks and milestones. Are there other factors which will effect programming? **Note:** Planning for major projects is to allow one year for each of: • scheme assessment and environmental effects • designation and design • management, surveillance and quality assurance (MSQA) .	Winter close down.	☐	☐
	Funding restraints.	☐	☐
	Associated projects.	☐	☐
	Are resource and designation consents notifiable? (Discuss with regional planner.)	☐	☐
Risk analysis The scoping document shall include an analysis of risk in terms of describing ranking and commenting on preventative measures, ie non-achievement of benefit cost ratio (4/10) sensitivity analysis required.	Undetected ground conditions.	☐	☐
	Undetected services.	☐	☐
	Natural disaster.	☐	☐
	Undetected archaeological features.	☐	☐
	Environmental sensitivities.	☐	☐
	Threats from adjacent developments.	☐	☐
	Political intervention.	☐	☐
	Technical complexity.	☐	☐
	Insufficient expertise.	☐	☐
	External pressures on project cost.	☐	☐

continued

Heading	Check Item	Considered	
		Yes	N/A
Other requirements	Contract type and bid evaluation method, plus associated attribute percentages.	☐	☐
	Setting the quality assurance level.	☐	☐
	Consent process: is it likely to be notifiable?	☐	☐
	Will the project cease if benefit cost ratio fails to reach cut-off?	☐	☐
	Traffic management level (*Code of practice for temporary traffic management* (SP/M/010)).	☐	☐
	Tender attribute methodology to include investigation testing detail and estimated cost.	☐	☐
	Peer review(s).	☐	☐
	Assessment and mitigation of project's effects on adjacent sections of state highways and side roads.	☐	☐
	Computerised data to be the NZTA's property and presented in hard and electronic copy.	☐	☐
	Opening ceremony arrangements.	☐	☐
	Long-term maintenance considerations.	☐	☐
	Special contract supervision requirements.	☐	☐
	Media releases.	☐	☐
	Letter drops.	☐	☐

continued

2.2 Consultation

There are no forms available for this process.

2.3 Environmental and social

Introduction	*Environmental plan* (www.nzta.govt.nz/resources/environmental-policy-manual/docs/environmental-plan.pdf.pdf).
Feasibility	Professional services form (PSF) 13 Social and environmental management form (PSF/13) in the NZ Transport Agency's (NZTA) *State highway professional services contract proforma manual* (SM030). PSF/2a Checklist for statutory approvals, consents and agreements (PSF/2a) in SM030.
Investigation	PSF/13. PSF/2a.
Design	PSF/13. PSF/2a.
Construction	PSF/13. PSF/2a. Minimum standard (MS) Z/4 Contractor's social and environmental management plan (MS Z/4) in SM030. Contractor's quality plan – environmental management in the NZTA's *State highway maintenance contract proforma manual* (SM032).

2.4 Resource management

There are no forms available for this process.

2.5 Integrated planning/travel demand management

There are no forms available for this process.

2.6 Scope verification

Request for approval of a capital project (PMM 2.6a) form must be used when submitting scheme assessment reports.

Suspended project (PMM 2.6b) form must be used for projects that are suspended, abandoned or not developed beyond the investigation phase.

Value assurance gate (VAG) process is intended to be used as a digital document. The VAG process and checkpoints are described in this form. Each project aspect, such as safety, structures, environment with high risk conditions and criteria identified when documentation is required to be produced and approved.

Request for approval of a capital project

with an expected construction cost estimate between $200,000 and $4 million **– PMM 2.6a**

NZ TRANSPORT AGENCY
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File:

Request for approval of a capital project by:

- BUDMT ☐
- VAC ☐

Project name

Region

Preferred option

Expected construction start date

Preferred option: Expected construction cost estimate $

BCR

State highway funding national ranking

Funding source: N funds ☐ R funds ☐ C funds ☐

Part of package Yes ☐ No ☐

If yes, please list related projects

Submitted by (project manager) Date

Request endorsed by

State highway manager

Sub-VAC specialist review:

- project services
- structures
- asset and operations
- integrated planning
- environmental and social

VAC

National manager professional services

Approval status: Approved ☐ Not approved ☐

Conditions

Recommendations

Signed Date

Signed copy to be returned to state highway manager and project manager (to be retained on project file).

2.6

Attach the following information to completed PMM 2.6a form:

1 Overview
- 1.1. Location, description and problem definition
- 1.2. Situation
  - 1.2.1. Existing (road geometry, traffic flows, land use, accident history, speed limit, walking/ cycling, known problems)
  - 1.2.2. Expected (traffic growth, surrounding land use changes)
- 1.3. Strategic context
  - 1.3.1. National Land Transport Plan
  - 1.3.2. State Highway Plan and National State Highway Strategy
  - 1.3.3. Joint agreements with local authorities (regional/district strategies and plans)
- 1.4. Objectives
  - 1.4.1. Overarching objective
  - 1.4.2. Secondary objectives
  - 1.4.3. Relationship to Government Policy Statement
- 1.5. Option analysis (summarise options and balanced requirements)

2 Preferred option
- 2.1. Plan (attach)
- 2.2. Profile (generic type and exceptions see *Annual plan instructions manual* (SM018) section 2 appendix 4)
- 2.3. Cost: Estimate (total of property, design, MSQA and construction costs), ninety-fifth percentile, BCR and incremental BCR)
  - 2.3.1. Minimum
  - 2.3.2. Preferred option
  - 2.3.3. Other options
- 2.4. Independent economic peer review
  - 2.4.1. Completed and no outstanding significant issues, or
  - 2.4.2. Regional manager determined peer review unneeded (<$200,000)
- 2.5. Independent safety audit
  - 2.5.1. Completed and issues resolved, or
  - 2.5.2. Road safety audit exception declaration form
  - 2.5.3. Crash history: fatal, serious, minor, and non-injury crashes for last five years
- 2.6. Other audits
- 2.7. Local authority support

3 Macroscope decisions (BUDMT/VAC/specialist recommendations and how addressed)

4 Compliance with VAG process requirements
- 4.1. Environmental and social (PSF/13 in State highway professional services contract proforma manual (SM030)
- 4.2. Integrated planning (PSF/14 in SM030)
- 4.3. Urban design (PSG/12 in SM030)
- 4.4. Asset and operations (attach pavement design plan)
- 4.5. Structures (attach specialist consultation)
- 4.6. Project services (attach procurement strategy)
- 4.7. Risk (summary of conclusions from activity risk file and risk analysis)

4.8. Property (cost and time)
4.9. Consents and designations (cost and time)
4.10. Funding (developer contribution cost and regional funding)
4.11. Engineering (engineering risks during construction and maintenance)
4.12. Statutory approvals
4.12.1. Regional authority
4.12.2. District/City
4.12.3. Department of Conservation
4.12.4. Historic Places Trust Authority
4.13. Land purchase
4.13.1. Area
4.13.2. Cost
4.13.3. Number of property owners
4.13.4. Other (such as compulsory purchase procedures being considered)
4.14. Consultation
4.14.1. Organisations/affected parties
4.14.2. Significant issues raised
4.14.3. Significant issues outstanding
4.14.4. Communications strategy (if high risk attach communication plan)

5 Attachments
5.1. State highway BUDMT minutes endorsing SAR
5.2. Locality plan (on aerial photo per MS Z/6 Scheme assessment report in SM030)
5.3. Safety audit and peer review sign-off
5.4. Cost estimate economic review and peer review sign-off
5.5. Land requirement and designation plan
5.6. Risk register
5.7. VAG requirements
5.7.1. Environmental and social (PSF/13 per PSG/12 and 13)
5.7.2. Communications plan (refer to the NZTA's *Public engagement manual*)
5.7.3. Integrated planning (PSF/14 per PSG/14)
5.7.4. Asset and operations (pavement design plan)
5.7.5. Structures (specialist comments)
5.7.6. Project services (procurement strategy)

Suspended project – PMM 2.6b

NZ TRANSPORT AGENCY
WAKA KOTAHI

File:

To:

- VAC specialist
- BUDMT
- VAC

Suspended project (Guidance note: Not all projects progress beyond the scheme phase. The purpose of this form is to seek endorsement of the recommendation to suspend or abandon the project, and not progress to detailed design.)

2.6

Project name

Region

Expected construction estimate

(Guidance note: If the project is being deferred there may be no proposed construction year, in which case this should be stated on this form.)

State highway funding national ranking

PROMAN forecast has been updated Yes No

Submitted by (project manager) Date

Request endorsed by (regional manager)

The reasons for the projects' suspension:

A description of the minor remedial works, if any, that must be completed in the meantime pending the project's progression:

(For national office use)

Approval status: Approved Not approved

Comments:

Signed Date

Signed copy to be returned to project manager (to be retained on project file).

2.7 Scope control

Project plan change notice – PMM 2.7

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Project register number | Project file number

Project name

Description of change

Attachments

Reason for change

Change authorised by:

Name and position | *Date*

Signature

Project plan amended?

Project manager's signature | *Date*

3.1 Risk

General risk reports	*Risk management process manual* (AC/Man/1): • appendix 1 Sample risk register • appendix 2 Sample risk register • appendix 3 Sample risk treatment plan • appendix 4 Sample significant risk report.
Feasibility	*Cost estimation manual* (SMO14) form A Feasibility estimate.
Investigation	SMO14: • form B Options estimate • form C Scheme estimate • form D Pre-Design estimate.
Design	SMO14 form E Design estimate.
Construction	SMO14 form F Construction estimate.

4.1 Cost estimation

Feasibility	The NZ Transport Agency's *Cost estimation manual* (SM014) form A Feasibility estimate.
Investigation	SMO14: • form G Funding application assessment (investigation and reporting). • form B Options estimate. • form C Scheme estimate. • form D Pre-design estimate.
Design	SMO14: • form H Funding application assessment (design and project documentation). • form E Design estimate.
Construction	SMO14 • form I Funding application assessment (construction). • form F Construction estimate.

4.2 Funding

New work request (Block only) – PMM4.2(a)

Price level adjustment – PMM4.2(b)

New work request (Block only) – PMM4.2(a)

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To	
From	
Subject	
File reference	Date

Name of project	
Region	

Project phase ☐ Investigation ☐ Design ☐ Construction ($4.5 million)

Summary of key issues

For example:

State brief project description, confirm project location and length, describe the background to the project and problem definition, eg accident record, narrow seal. What is the objective or objectives to be achieved by the project, eg how the problem will be addressed

Assessment – use the NZTA's assessment framework and determine assessment profile

Strategic fit			Effectiveness			Efficiently		
High	Medium	Low	High	Medium	Low	High	Medium	Low
☐	☐	☐	☐	☐	☐	☐	☐	☐

Has a risk and opportunity assessment been undertaken? ☐ Yes ☐ No

List significant opportunity or risks

Have all alternatives and options been considered, and a preferred option identified? ☐ Yes ☐ No ☐ N/A

Cash flow

		As previously advised	New
Expected construction cost (including property) $000's (as in current years state highway plan)			
BCR	Tangible		
	Ranking		

Cash flow	2010/11	2011/12	2012/13	2013/14	2014 +

continued

Readiness

Has designation been obtained?	☐ Yes	
Have resource consents been obtained?	☐ Yes	
Has all property been purchased or entry approvals obtained?	☐ Yes	
Is the phase a planned activity for the current years in state highway plan?**	☐ Yes	
Is the project phase listed in RLTP/NLTP?	☐ Yes	
Has a peer review of the economics been carried out?	☐ Yes	☐ No
Has the manager – Project Management Services or state highway manager signed off permission to request funds?	☐ Yes	☐ No

Name	
Title	
Date	
Signed	

** For a funding request for a phase that is not a planned activity, please ensure that when making your request in PROMAN use change code reason 'Project Brought Forward'.

Email completed form to: Account manager NLTP (National Office) – Proman.Pads@nzta.govt.nz

Price level adjustment – PMM4.2(b)

NZ TRANSPORT AGENCY
WAKA KOTAHI

To			
From			
Subject			
File reference		Date	

Name of project	
Phase under review	
Current approved total phase cost	$
Revised total phase cost	$
Construction cost (as current state highway plan)	$
Proposed construction cost	$
Current BCR	
Revised BCR	

Note:

For block projects

1 – projects between $200,000 and $1 million where the PLI is >25 percent phase cost

(*PLA reports for values less than $30,000 are not required but a brief explanation must be provided in PROMAN review request notes.)

2 - projects >$1 million where the PLI is PLI >10 percent phase cost.

(*PLA reports for values less than $50,000 are not required but a brief explanation must be provided in PROMAN review request notes.)

For large projects

3 - projects >$4.5 million where the PLI is PLI >10 percent phase cost or >$5 million.

(*PLA reports for values less than $50,000 are not required but a brief explanation must be provided in PROMAN review request notes. Refer also to the RP&P case manager, as group manager RP&P or the NZTA Board approval may be required.)

continued

Purpose

To seek approval for …

What happened

Explain what happened to give raise to the request for additional funds, and why these events could not be mitigated. Complete table detailing additional expenses requested.

Additional tasks identified	Cost
1.	
2.	
3.	
4.	

Contingency usage

Has all contingency been consumed prior to this application? What contingency is allowed for, for the remaining phase activities?

Could it have been prevented

In hindsight, could this have been prevented through better documentation or further investigation? Can lessons be learnt from this?

Actions to mitigate further increases

What actions have been taken to ensure no further increases are likely on this project?

BCR impact:

What effect does the increased cost to the project have on the BCR (including any follow on increases to the construction cost)?

Regional sign-off:

Confirmation that the manager project management services or state highway manager has seen this request, and has approved it proceeding to the SHPRC

Other unusual circumstances:

State as required

Name	
Title	
Date	
Signed	

Email completed form to: Account manager NLTP (National Office) – Proman.Pads@nzta.govt.nz

5.1 Programming for time

There are no forms available for this process.

6.1 Quality

There are no forms available for this process.

6.2 Value engineering

There are no forms available for this process.

6.3 Network operations review

Feasibility	Phase approval: corridor studies/strategic studies – PMM 6.3a. Phase approval: project feasibility report – PMM 6.3b.
Investigation	Phase approval: scheme assessment report – PMM 6.3c.
Design	Phase approval: design – PMM 6.3d. Phase approval: physical works contract document – PMM 6.3e.
Construction	Phase approval: construction complete and asset handed over to the Operations team – PMM 6.3f. Capital projects summary – PMM 6.3g. Project handover checklist – PMM 6.3h. Project handover agreement – PMM 6.3i.

Phase approval: corridor studies/strategic studies – PMM 6.3a

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	

View/Review/Endorsed

Project team manager	Date
Asset manager	Date
Transportation planning manager	Date

Phase approval: project feasibility report – PMM 6.3b

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	

a. Sighted incoming PFRs.
b. Reviewed (ie via formal workshop).
c. Endorsed PFRs to be submitted in annual plan for development as a project.

View/Review/Endorsed

	Project team manager		Date
	Asset manager/Operations manager		Date
	Transportation planning manager		Date
	Safety manager		Date

Scheme assessment report – PMM 6.3c

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	

a. Operations team reviewed scheme proposals.
b. Operations team endorsed recommended option for further development.
c. Road safety audit (stage II) completed.
d. Operations team components included as appropriate.
e. Work required on redundant asset (if applicable) identified and included in scheme estimate.
f. Requirements with respect to structures and pavements agreed and costed.

View/Review/Endorsed

Project manager	Date
Asset manager/Operations manager	Date
Transportation planning manager	Date
Safety manager	Date

Phase approval: design – PMM 6.3d

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	

a. Operations team reviewed design statement and final design.
b. Maintenance and operating costs detailed/confirmed/accepted.
c. Road safety review (stage III) completed.
d. Overall design acceptable and operable and 'where costs lie' confirmed.
e. Structures and pavements meet requirements.
f. Fit for purpose.

View/Review/Endorsed

	Project manager		Date
	Asset manager		Date
	Safety manager		Date

6.3

Phase approval: physical works contract document – PMM 6.3e

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	

a. Operations team reviewed document.
b. Overall construction requirements acceptable, includes timing and quality.
c. Operations funded components included as appropriate.

View/Review/Endorsed

Project manager	Date
Asset manager/Operations manager	Date
Safety manager	Date

Phase approval: construction complete and asset handed over to the Operations team – PMM 6.3f

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	

Endorsed

Project manager	Date
Asset manager/Operations manager	Date

Capital projects summary – PMM 6.3g

NZ TRANSPORT AGENCY
WAKA KOTAHI

State highway number	Project number	Project name	Project manager	Asset manager	Scheme assessment report (date)	Construction start (date)	Construction completion (date)	Handover (date)

Project handover checklist – PMM 6.3h

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name

		Sign-off AM	Sign-off PM
Nearing practical completion			
1	Advise asset manager (AM) of inspection.	☐	☐
2	Advise local authority or road controlling authority of inspection (if applicable).	☐	☐
Inspection for certificate of practical completion			
1	Copy AM draft asset owner's manual.	☐	☐
2	Attend inspection.	☐	☐
3	Agree to engineer's assessment of defects to be remedied.	☐	☐
4	Agree with engineer's assessment of the date on which practical completion can be granted.	☐	☐
Defect liability period			
1	Copy certificate of practical completion and defects list to AM within 2 weeks of practical completion inspection.	☐	☐
2	Ensure AM agrees that defects liability period has commenced and that the highway maintenance contractor is now responsible for maintenance of the site (excluding scheduled defects and those arising during this period).	☐	☐
3	Stage 4 safety audit has been completed and all identified deficiencies treated.	☐	☐
4	Notify AM of notice requesting final handover inspection.	☐	☐
5	Copy AM final detailed inspections records.	☐	☐
Nearing end of defects liability period			
1	Advise AM of inspection.	☐	☐
2	Advise local authority or road controlling authority of inspection (if applicable).	☐	☐
Handover inspection			
1	Copy AM final asset owner's manual.	☐	☐
2	Attend inspection.	☐	☐
Contract close			
1	Advise AM of contract close.	☐	☐
2	Ensure network consultant instructs the highway maintenance contractor that defects liability period has expired and they are fully responsible for maintaining the site.	☐	☐
3	Check (if applicable): • Bridge Data System updated. • Road assessment maintenance and management system (RAMM) updated. • Location reference system updated.	☐	☐
4	Any assets network that needs to be declared surplus/transferred to the local authority is actioned/gazetted.	☐	☐
5	Second coat seal programmed (if not already completed).	☐	☐

Project handover agreement – PMM 6.3i

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name	
Background	
Region	
Location	
Start reference station/route position	
End reference station/route position	

Practical completion

The project manager and the asset manager confirm and agree that construction of the above project, and stage IV Post-construction safety audit (or fit-for-purpose inspection) are completed. The scheduled defects are of a minor nature and do not compromise the safety or operation of the state highway, and the site of the above project is available for traffic and public use without temporary traffic management limitations. They agree that the defects liability period has commenced and that highway maintenance contractor is now responsible for maintenance of the site, excluding scheduled defects from handover inspection (professional services form 15 Maintenance responsibilities during construction).
It is the responsibility of the asset manager to inform the project manager of any known defects resulting from construction during defects liability period, so that appropriate action can be taken.

For capital projects:	For operations:
Project manager	*Asset manager/Operations manager*
Date	*Date*

Attachments

End of defect liability

The project manager and the asset manager agree and confirm that the defect liability period for the project has ended. The final inspection has been completed and all defects from previous inspection have been addressed. No further defects need to be addressed.
The highway maintenance contractor has been notified that defects liability period has expired and they are now fully responsible for all maintenance of the site.

For capital projects:	For operations:
Project manager	*Asset manager*
Date	*Date*

Construction documentation

The project manager and the asset manager confirm that all construction documentation listed below is completed and delivered to the standard outlined in *State highway professional services contract proforma manual* (SM030) (or as agreed):

- final asset owner's manual
- final construction report
- final as-built drawings
- road construction information sheets
- bridge data system update sheets
- final land requirement plans
- handover inspection records.

For capital projects:	For operations:
Project manager	*Asset manager*
Date	*Date*

6.3

6.4 Peer reviews

Peer reviews and parallel estimates

The NZ Transport Agency's (NZTA) *Cost estimation manual* (SM014) provides sample peer review forms and methodologies. There is also a current register of estimate peer reviewers and industry experts.

Peer reviews of activities

The NZTA's *Planning, programming and funding manual* also provides review templates (refer part G Peer review template for improvement projects).

Internal review request

Any internal review must be requested by using form PMM 6.4. The project manager requesting the review must prepare the form and, together with other relevant documentation, submit it to the reviewer. The form is used by the reviewer to record response to the review.

A copy of PMM 6.4 is included in this section.

Commencement

i. Project purpose and goals progress.
ii. Recap of purpose and goals.
iii. Recap of previous review and phase outcomes.
iv. Key risks and mitigation.
v. Key stakeholders.
vi. Project scope.
vii. Project programme.
viii. Procurement plan.

Internal review request – PMM 6.4

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project file number

Project name

To: From:

Project outputs provided for review:

Review brief:

Refer also to the attached brief [delete if not applicable]

A site visit is **required** **not required** **at your discretion**

The review output is required to be in writing, accompanied by the outputs provided and completed by/within:

(Project manager's signature) *(Date)*

Review completion

(Reviewer's signature) *(Date)*

6.4

Internal review example report

To: Project management services manager

Cc: Project manager/projects team manager/senior project manager (complex)

From: Internal review team

Date: 01 December 2009

Subject: Project review - 'Project A'

The review

A project review was held for the above project on 30th November 2009. The panel consisted of internal review team. Project manager attended, as project manager of 'Project A', to present the project and answer questions. Prior to the meeting a copy of the latest project quality plan (PQP) was provided to the reviewers.

Background

The project is currently in the detailed-design phase with the incumbent I&R consultants carrying out design. In parallel with the design, an assessment of environmental effects (AEE) is being developed for a variation to the designation that will provide for future proofing of the route. This will allow for future grade separation of a rail crossing.

Design is due for completion shortly with a target of calling tenders before February 2010. The contract form will be NZS3910 lump sum. A variation has been agreed to extend the scope of the current professional services commission to include management, surveillance and quality assurance (MSQA).

Matters arising

1. The team recognises the efforts of the new project manager who has taken over this project at a time when the decision was made to accelerate the project to commence construction in early 2010. However, many key items are still unresolved. Taking this into consideration, the Review team considered the project to be in good shape with the project heading in the right direction with effective management of designation and property issues, funding requirements, detailed design, agreeing insurance levels, peer reviews of economics, road safety audit (RSA) reviews and production of tender documents.
2. Noted that the existing designation may have lapsed, this is a significant concern, given proposed tender programme.
3. Deed of grant is still to be resolved with concerns over ONTRACK's current response times and ability to undertake level crossing design to meet current tender programme. ONTRACK project manager was replaced in September, which may hinder resolution of matters.
4. Noted that further geotechnical investigations are currently being undertaken to reinforce design to date and to reduce likelihood of variations due to unforeseen ground conditions given history of the ground conditions found during a previous immediately adjacent 'Project B'.
5. The latest PQP had been prepared by the transportation planning section and is in need of further development to reflect the current project stage, procurement plans and project management structure.
6. The strategic goals of the project were not that clearly defined in the PQP and many of the tasks, resources, stakeholders and risks were described in a generic way.
7. The project appears to still be at a point of partial hand over between transportation planning and project management services and some details of accountability, project management, project sponsors and governance require clarification.
8. The project risks described in the PQP appeared general and tended to relate to stakeholder and planning risks rather than the impending construction stage.
9. One property still to be purchased.
10. Current tender programme to tender in Jan/Feb 10 may be unrealistic given the number of key issues being resolved present and the Christmas/New Year window. These issues all need to be soundly resolved if lump sum delivery method to be used.
11. 1Noted that the benefit cost ratio (BCR) is only 1.0.

Recommendations

(i) That there be immediate clear handover of the project delivery responsibilities from transportation planning to project management services, to enable the project manager to have full control.

(ii) Appropriate level of pressure is applied to planners to resolve current designation lapse issue, with a realistic target date agreed.

(iii) That the PQP be updated to clarify the following:

- project strategic goals
- project sponsor and governance arrangements
- project management accountability
- details of resources, reviewers, etc
- details of stakeholders
- updated risk profile
- a summary of the procurement strategy
- produce a definitive list of all issues to be resolved before tender documents issued, with action dates and persons responsible.

(iv) That a workshop session be held as soon as practically possible to focus on the contract and construction stage risks, designation and property conditions, with a goal of enhancing the risk assignment and definition in the construction contract documentation currently under preparation.

(v) A robust independent review of the contract documents be undertaken, starting before the risk workshop through until issue.

(vi) Assessment is made on any quick-win value engineering opportunities. Perhaps hold a value engineering session for the current design, also involving the peer reviewer. Notable items for consideration are the pavement and retaining wall designs. Given the BCR of 1.0, this workshop may be even more prudent if the submitted funding application not successful.

(vii) That the future-proofing design work be undertaken prior to the lump sum physical works contract tender closing to ensure appropriate future tie-in.

(viii) A review is undertaken of the best way to manage and deliver the services relocations required, particularly North Power. Also review and summarise the formal paperwork around agreements/notices and who is paying for what facets.

(ix) The designers prepare a constructability report demonstrating how the future grade separation of the rail crossing might be undertaken to confirm the adequacy of the variation to the designation.

(x) meeting with ONTRACK needs to take place as soon as practically possible to discuss and clarify the current DOG application process and timelines for ONTRACK inputs/deliverables.

(xi) Given number of issues to still be resolved, going out to tender in January 2010 may be an unrealistic target given the number of unresolved key issues and the current proposed lump sum for contract. Suggest the tender timing and contract form is reviewed again in early January 2010.

(xii) Need to check timing of the other NZ Transport Agency tenders to avoid too many tenders with market at same time and ensure that closing dates are staggered.

(xiii) A review of the MSQA team make up and commitments be undertaken during the pre-letting period of the construction contract to establish appropriate level of resourcing.

6.5 Road safety audit and inspection

RSA report recommendations – Decision-tracking form – PMM 6.5a.

RSA exemption form – PMM 6.5b.

Fit-for-purpose (safety) inspection report – PMM 6.5c.

RSA report recommendations – Decision-tracking form – PMM 6.5a

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project title		RSA stage	
Project manager		Designer	
Road safety auditors			

Recommendation*	Report reference and severity*	Designer comments	Decision

* Audit team leader to complete, attach to the report, and send electronically to the project manager.

Signed by project manager		Date:	
Signed by traffic and safety engineer		Date:	
Project manager to send completed decision-tracking form to: designer, Audit team leader, traffic and safety engineer (NZTA), project file.		Date	

For additional rows, click in the bottom right cell of the table above, choose Table from the menu toolbar > Insert > Rows Above or Rows Below.

To delete a row, right-click anywhere in the row and then choose delete cells, delete entire row from the table menu.

6.5

RSA report recommendations – Decision-tracking form – PMM 6.5a (EXAMPLE)

Project title:		RSA stage:	Scheme stage (Stage 2)
RCA project manager:	RCA/NZTA project manager	Designer:	Consultants
Road safety auditors:	Auditor 1 (team leader), Auditor 2 , Auditor 3		

Recommendation *	Report reference and severity	Designer comments	Decision
Develop means to avoid naturally occurring or development generated (Power Station infrastructure) steam drift across or along the road alignment and establish suitable advance warning of the potential where it cannot be avoided.	*3.1.2* *Minor: Geothermal Steam*	*We propose that the road controlling authority undertake regular site inspections with a view to monitoring of hot spots and where necessary implement mitigation measures. These measures may range from a monitoring regime, warning signs, and/or emission management. There is one exclusion to our assessment. We propose to install warning signs, after consultation with Contact Energy.* *VMS an option post project construction. Designer suggests that steam warning signs will be implemented where required.*	*Agree with designer.* *Suggest we should have identified and assessed this risk at each site and consider the possibility of extending the VMS to assist with this.*
It is recommended that in the detailed design, consideration is given to drainage and culverts to ensure no ponding of water on the road or adjacent shared paths and all culvert end treatments are either traversable when within the clear zone, or protection to traffic provided	*3.1.7* *Comment: Culverts and Drainage*	*Agreed.* *Designer confirms that the two locations where culverts were placed within the clear zones have now been guard-railed. Given the size of the structures, it was not practical to construct traversable culvert entries/exits. With respect to pavement ponding, refer to item 3.3.2.*	*Agree with designer* *Generally agree with the designer's response. Does the specimen design show all culverts outside the clear zone. Are there any areas where water ponding on the pavement could be a problem?*
Consider provision of a berm at the top of the steep batters to provide the necessary clear zone for vehicles to recover prior to reaching the batter. Alternatively, consider the provision of a guardrail to shield vehicles from the steep batters.	*3.2.7* *Significant: Batters in Fill Areas >4m*	*Agreed.* *We propose to amend fill embankments containing additional widening for sight distance by considering the use of a guardrail, widening to meet clear-zone requirements or implementing traversable fill slopes, ie 4H to 1V or flatter.*	*Agree with designer to relax slopes to 4H:1V* *Generally agree. Subject to there being no obstacles within eh clear zone.*

Consider provision of a higher level of barrier protection on the bridge structures crossing the Waikato River and the gulleys / road between SH5 and the Waikato River.	*3.2.9* *Significant: Bridge Structure Barriers*	*Subsequent to the release of the Draft Outline Plan, discussions with Contact Energy has resulted in increasing significant lengths of the PROJECT, through the Contact Energy site (including one side of the proposed Waikato River Bridge), from TL4 barriers to TL 5 barriers. However, extensive sections of the PROJECT within the Contact Energy site, retain TL4 barriers. We propose to retain TL4 barriers through these locations as this meets the test level requirements as set out under the NZTA's Bridge Manual.*	*Agree with designer* *Agree with designer's response.*
a. *Ensure that the noses of all splitter islands are conspicuous to approaching vehicles and in particular, check the approach from SH5 where the splitter island commences midway through a left hand curve.* b. *Ensure island noses are appropriately offset from the path of approaching traffic.* c. *Consider visibility of islands at night (refer also to lighting comments).*	*3.4.15* *Serious: Roundabout Splitter Islands*	*We propose to offset the splitter islands on approach lanes to the roundabout. We have reviewed the form and layout of the proposed splitter islands on approach to the roundabouts and make the following comments in order of the recommendations as they appear in the Safety Audit:* • *Conspicuous splitter island noses particularly the SH 5 approach – The designers confirm that conspicuity of the noses will be reinforced with the use of such measures as lighting, reflectorised paint and implementation of Rg-17 signs. These additional features will be better defined under the detailed-design phase. The forward sight distance on approach to the splitter island on SH 5 has been checked and complies with safe sight stopping distance (SSSD) requirements.* • *Ensure island noses are appropriately offset from the path of approaching traffic – Agreed. We will ensure that the splitter island nose, on approach to roundabouts, is offset sufficiently so as not to cause a potential hazard for oncoming vehicles.* • *Consider visibility of islands at night – refer first bullet point.*	*Agree with designer* *Agree with the designer's response.* *Review again at detailed-design phase.*
Consideration be given to the access requirements to the pockets of land to enable maintenance to be undertaken, as required, or that appropriate traffic management measures are feasible to enable access when permanent safe access points cannot be provided	*3.4.2* *Minor: Access to Severed Land*	*This is currently being managed by the NZTAs Property Purchasing Agents. Access on the PROJECT will effectively be removed by provision of segregation strips along the PROJECT length combined with alternative access to adjacent properties. Where this is not practical, amalgamation of surplus property to adjacent parcels of land will be considered. The land locked islands within the Centennial Drive and Broadlands Road 'interchange' should be landscaped and maintained by the Road Controlling Authority. In these instances, private ownership should be avoided.*	*Agree with designer* *Agree with the designer's response.*

Consider revising the left deceleration lane alignment to ensure it is clear of the required visibility line for vehicles at the limit line	*3.4.3* *Significant: Left Turn Slip Lanes*	*We propose to retain the status quo. These intersections are no different to any other intersection in New Zealand where left turn vehicles partially obscure following though vehicles. The laws state that vehicles on a side road must give way to through vehicles and negotiate the intersection when it is safe to do so.* *Designer's position is that, significant widening on the approach structures, would be required to meet the safety Auditers intent. The adoption of such would come at a significant cost to Local Authority. Further, the turning movements to and from the Old Taupo Road, from/to PROJECT south is regarded as low. NZTA to review the need to move the decell lane further west to avoid sight lines. Action – NZTA to advise.*	*Agree with designer* *The NZ Transport Agency believes this issue needs further consideration however there is also a general concern over the safety of the SH1/5 intersection see below.*
Consider relocation of the Clay Target Club access further to the northwest of the intersection with Centennial Drive to ensure adequate sight distance is available for safe turning movements at this access	*3.4.5* *Significant: Entrance to Clay Target Club*	*Agreed. We propose to relocate the access to meet Local Authority District plan requirements of 60m to an adjacent intersection.*	*Agree with the designer, also need to ensure adequate sight distance* *Agree with the Designer's response.*
Any new access to these blocks of land will need to be detailed and audited in the detailed-design phase of the project. The accesses should be located so as not to conflict with turning movements associated with the east and west links and with grades appropriate for the type of traffic.	*3.4.6* *Minor: Existing Access on Broadlands Rd*	*Agreed.* *The detailed-design phase shall better define access arrangements onto Broadlands Road.*	*Agree with the designer* *Agree with the designer's response.*
Consider providing left turn widening for vehicles into the Contact Energy side road.	*3.4.9* *Minor: Contact Energy Side Road*	*Given the squeeze point introduced by the adjacent splitter island, we propose to locally widen the shoulder to 2.5m to accommodate decelerating vehicles accessing the approaching Contact Energy Access Road.*	*Agree with the designer* *Agree with the designer's response*

That the use of informal passing lanes on the exits to the roundabouts be re-considered, particularly on those legs where significant volumes of heavy vehicles are anticipated.	*3.4.11* *Significant: Roundabout Platooning*	*The designers agree in principle with the safety auditors concerns. However, the implementation of informal passing lanes was removed by the SSRC. NZTA to advise.* *Designer explained that the basis of the removal of the informal passing lanes was based on cost savings to the project. NZTA expressed a desire to retain the informal passing lanes, and as a minimum, ensure that the proposed PROJECT works does not preclude retrofitting some time in the future. NZTA to seek clarification from SSRC. Action – NZTA to advise.*	*Given the additional cost to the project of $320K to complete this work, we wish to retain the current design as we do not believe that the safety benefits gained justify this cost.* *What justification was provided to SSRC as the basis for removing these passing opportunities?* *There seems to be a reasonable benefit for a relatively moderate cost and it seems difficult to justify their removal.*
Consider further measures to provide the appropriate speed reduction of all vehicles on the approaches to the two rural roundabouts. Such features could include a kerbed shoulder in combination with the splitter island kerbing; appropriate signage; an increased profile of the splitter island median to provide conspicuity of the splitter island; raising the profile of the roundabout central island, to ensure the central island is conspicuous; provide a funnelling effect in the approach lanes by the use of narrower lanes and / or kerbing or barriers / posts / landscaping to provide a higher backdrop; pavement texture changes; and provide appropriate signage and marking.	*3.4.12* *Significant: Roundabout Approaches*	*The designers agree in principle with the safety auditors concerns and recommendations. The proposals, as outlined by the safety auditors, shall be better defined within the detailed-design phase.*	*Agree with the designer* *Agree with the designer's response*
It is recommended that the location of all large non-frangible plantings be checked and where necessary re-located beyond the clear zone requirements.	*3.5.1* *Serious: Large Trees in Clear Zone*	*The detailed-design phase shall ensure tree locations (non-frangible) are in accordance with the NZTA's Guidelines for Highway Landscaping in clear zones.*	*Agree with the designer* *Agree with the designer's response*

Remove plantings that restrict the desirable sight lines at each of the roundabout approaches and ensure that sight lines of each approach are similar.	*3.5.2* *Significant: Sight Lines at Roundabouts*	*The detailed-design phase shall ensure tree locations are in accordance with the NZTA's Guidelines for Highway Landscaping and that they do not impede on sight lines. Vegetation will also be added, to augment the existing earth bunds, to ensure consistency of sight lines.*	*Agree with the designer* *Agree with the designer's response*
Consider provision of safe shared use crossing facilities between Lake Terrace and the Airport Access Road.	*3.7.2* *Minor: Cycle & Ped Access to Airport.*	*The Design team were instructed by the NZTA, in terms of the location and extent of the proposed shared path. It is Designer's understanding, that the shared path locations were established as a result of extensive consultation with community groups. The NZTA to advise whether a shared path facility is required between Lake Terrace and Airport Road.*	*No need for cycle facility to airport as no demand. The demand is down to the lake front.* *Agree with the Designer's/LOCAL AUTHORITY response.*
Consider providing for safe cycle movements through the roundabouts either on or off the main carriageways.	*3.7.14* *Significant: Cyclists at Roundabouts.*	*Agreed. This will be better defined under the detailed-design phase.*	*Agree with the designer* *Will set design criteria as part of the specimen design.*

Signed by project manager		Date:	
Signed by traffic and safety engineer		Date:	
Project manager to send completed decision-tracking form to: designer, Audit team leader, traffic and safety engineer (NZTA), project file.		Date	

For additional rows, click in the bottom right cell of the table above, choose Table from the menu toolbar > Insert > Rows Above or Rows Below.

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RSA exemption form – PMM 6.5b

NZ TRANSPORT AGENCY
WAKA KOTAHI

File reference	
Project name	
Project stage	

Brief project description and location:

Exemption rationale:

Declaration:

Having checked the above project with reference to the relevant RSAs as laid down in TMF9 Road Safety Audit Procedures for Projects Guideline, 2004. I consider that the proposals will not have an adverse effect on the safety of road users over a significant period. Therefore I consider that an independent RSA is not required.

Recommended by (project manager):		**Endorsed by (safety engineer):**	
Name		Name	
Signature		Signature	
Date		Date	

Fit-for-purpose (safety) inspection report – PMM 6.5c

(tailor form to suit project context)

NZ TRANSPORT AGENCY
WAKA KOTAHI

To (project sponsor)	
From (project manager)	
Project	

Purpose

Background

RSA

Code of compliance (tick one)

Issue of code of compliance certificates is not applicable	
Code of compliance certificates as required have been issued	

Pre – opening inspection

Declaration by the consultant

6.5

Safety audit			
Recommendation			
Project manager		Date	
Endorsed by traffic safety engineer		Date	
Comments:			
Opening	approved	/declined	
State highway manager/Project sponsor		Date	

Fit-for-purpose (safety) inspection report – PMM 6.5c (EXAMPLE)

(tailor form to suit project context)

NZ TRANSPORT AGENCY
WAKA KOTAHI

To (project sponsor)	Regional manager
From (project manager)	Project manager
Project	Puhinui interchange fit-for-purpose (safety) inspection

Purpose

To seek approval to make the new road construction for traffic and public use available, without temporary traffic management limitations.

Background

This manual (SM011) requires the state highway manager or project sponsors approval to make all new road construction projects of value exceeding $1 million and with permanent speed limit of 100km/h available for traffic and public use, the same being recommended for lower permanent speed limit values also.

RSA

The project was subject to RSA at the scheme and design stages, and all serious or significant issues have been reconciled.

A post-construction RSA has been arranged and will take place in four weeks, once tie in work has been done and practical completion is expected.

Code of Compliance (tick one)

Issue of code of compliance certificates is not applicable	
Code of compliance certificates as required have been issued	X

Pre – opening inspection

Declaration by the consultant

I have received a statement from the consultant confirming:

- the construction is consistent with the design stage RSA
- the quality of the completed works complies with the quality assurance requirements specified in the contract, and these requirements have been audited for compliance
- there is no need for any temporary speed limit to be imposed for any reason.

A copy of the consultant's statement is attached to this memo.

Safety audit

I have undertaken a walkover of the site with the design/construction engineer, and the NZTA safety engineer to identify any significant issues.

During the walkover there were no significant issues or deficiencies identified.

Recommendation

The completed interchange, including the main carriageway, on/off ramps, and bridge made available for traffic and public use, without temporary traffic management limitation.

Project manager		Date	
Endorsed by traffic safety engineer		Date	
Comments:			
Opening	approved	/declined	
State highway manager/Project sponsor		Date	

6.5

7.1 Documentation

For each of the project phases (feasibility, investigation, design and construction) refer to:

- *Procurement manual*
- *Contract procedures manual* (SM021)
- *State highway professional services contract proforma manual* (SM030)
- *State highway construction contract proforma manual* (SM031)
- *State highway maintenance contract proforma manual* (SM032).

8.1 Property management

There are no forms available for this process.

8.2 Procurement

Refer to procurement strategy templates contained within the *Contract procedures manual* (SM021).

8.3 Tendering

There are no forms available for this process.

9.1 Contract management

There are no forms available for this process.

9.2 Communication

The NZ Transport Agency's policies and guidelines:

- Media engagement protocols.
- *Visual identity guidelines.*
- *Style guide* (writing style).
- *Sponsorship policy and guide.*

9.3 Contract administration

- Communication record – PMM 9.4a
- Document dispatch – PMM 9.4b
- Consultant notice – PMM 9.4c.

Communication record – PMM 9.4a

NZ TRANSPORT AGENCY
WAKA KOTAHI

Date: File:

☐ **Telephone notes** For Time

☐ **Visitor/Counter notes** Caller

Phone

☐ **File note** Project

☐ **Minutes of meeting**

☐ **Memorandum** To

From

Subject:

Notes:

Signed:

Action ☐ Referred to ☐ Circulation ☐

Signed:

9.3

Document dispatch – PMM 9.4b

NZ TRANSPORT AGENCY
WAKA KOTAHI

NZ Transport Agency office:
ADDRESS 1
ADDRESS 1
CITY
Phone (0X) XXX XXXX
FAX (0X) XXX XXXX

NZ Transport Agency file no: | Project no:

Issued to: | Attention:

Date:

Please find attached the following:

- ☐ Reports
- ☐ Sketches
- ☐ General circulars/instructions
- ☐ Financial date
- ☐ Other

Number of	Description

Sent by:

- ☐ Mail
- ☐ Courier
- ☐ Our messenger
- ☐ Your messenger

Receipt required:

- ☐ No
- ☐ Yes

If yes, return pink copy to:

Sent to you for the following reasons:

- ☐ Returned with thanks
- ☐ For your information
- ☐ As requested
- ☐ For your action
- ☐ Please reply
- ☐ Please return
- ☐ Please complete

9.3

Consultant notice – PMM 9.4c

NZ TRANSPORT AGENCY
WAKA KOTAHI

NZ Transport Agency office:
ADDRESS 1
ADDRESS 1
CITY
Phone (0X) XXX XXXX
FAX (0X) XXX XXXX

Name:		Date:	
Attention:			
Address:			
Project:			
File number:		Contract number:	

☐ *For action* ☐ *For information* ☐ *Additional service* ☐ *Response required*

Project manager:		Job code:	

☐ urgent	☐ 3 weeks	☐ 3 months
☐ week	☐ month	☐ 6 months
☐ 2 weeks	☐ 2 months	☐ year

9.4 Financial management

There are no forms available for this process.

9.5 Change control

The following forms are included in this part:

- Monthly control of contract value – PMM 9.5
- change request form *Cost estimation manual* (SM014)
- change request log.

Monthly control of contract value – PMM 9.5

NZ TRANSPORT AGENCY
WAKA KOTAHI

Contract number		
Contract name		
Accepted contract price [1] = $		A
Adjusted contract price [2] = $		B

Date	C Agreed contract variations to date (D)	D Revised adjusted contract price (B + C)

[1] As per pricing schedule from contract document and excluding contingencies.

[2] Excluding all supplementary schedule amounts (geotechnical testing, additional services, day works, etc) contingencies and provisional items but including provisional sums.

Change request form – EXAMPLE

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project Number: CA3204 **Project Name:** SH1 Newmarket to Greenlane Auxiliary Lane

VO Summary: VO # 1 - Change of pavement design from granular to structural asphalt

Change Category:

Regulatory Requirement:	☐
Design Error / Change:	x
Omission / Additional Scope:	☐
Unforseen Ground Condition:	☐
Unreasonable Increase/Decrease in Quantity of Work:	☐
Change in Character or Quality of Material of Work:	☐

Cost Impact Assessment

Code/Item No.	Description	Quantity	Unit	Rate	Amount
	Items to be deleted				
G.1.1	Subbase, 460mm AP 65 in 2 layers	-1,092.00	m3	68.76	-75,085.92
G.1.2	Basecourse, 200mm TNZ M/4	- 475.00	m3	94.59	-44,930.25
	Items to be added				
New Item	140mm rut resistant structural asphalt in two layers of 70mm	2,550	m2	74.66	190,383.00
New Item	250mm stablised basecourse (TNZ M/4 AP40)	475	m3	149.49	71,006.56
New Item	200mm GAP 65 subbase	475	m3	68.76	32,661.00
New Item	100mm subgrade improvement layer (brown rock)	2,550	m2	11.23	28,636.50
Total Estimated Cost Effect					**202,670.89**

Description and Reason For This Change: AMA recommended to adopt structural asphalt pavement on this portion of the motorway due to failures in number of sections along SH1.

Schedule Impact: ☐ Yes ☒ No (If Yes Please Give Details)

Risk Impact: ☐ Yes ☒ Yes (If Yes Please Give Details)

References: Pavement Design Report, September 2009; drawings 51-25997-C301 to C302

	Designation	Signature	Date
Prepared By: **Craig Fletcher**	Downer EDI Contract's Manager		
Reviewed By: **Peter Hebden**	Engineer's Representative		
Approved By: **Ronnie Salunga**	NZTA Project Manager		

Change Request Form

9.5

Change request log – EXAMPLE

Project Name: SH1 Newmarket to Greenlane Auxiliary Lane

Change Request Log

Project Manager: **Ronnie Salunga**
Publish Date: **30/09/2009**

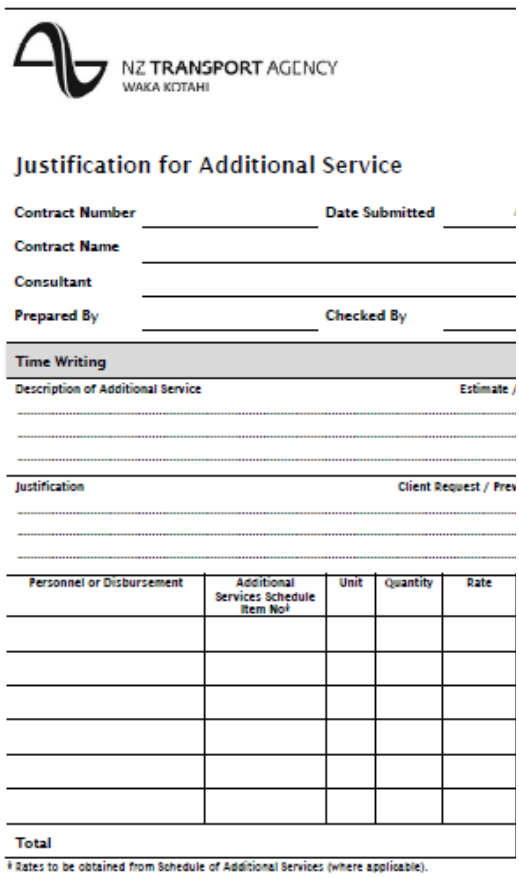
Summary					Change Definition			Approval			Resolution		
ID	Request Date	Change Requested By	Reviewed By	Change Status	Change Description	Project Impact	Impact Level	Change Approved By	Approval Status	Approval Date	Changes to Project Plan	Completion Date	Review Date
1	15/09/2009	B. Chappell	GHD Consultants Ltd.	Closed	Change in pavement design	Cost	Low	S. Eratne	Approved	25/09/2009	Yes	30/09/2009	2/10/2009

9.5

9.6 Cost control

Professional services form 4a Justification for additional services – EXAMPLE

(*State highway professional services contract proforma manual* (SM030))



NZ TRANSPORT AGENCY
WAKA KOTAHI

Justification for Additional Service

Contract Number _____ **Date Submitted** _____

Contract Name _____

Consultant _____

Prepared By _____ **Checked By** _____

Time Writing

Description of Additional Service Estimate /

.....

.....

.....

Justification Client Request / Prev

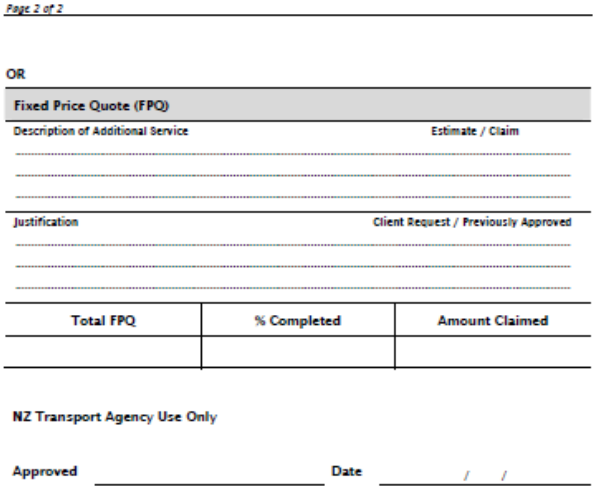
.....

.....

.....

Personnel or Disbursement	Additional Services Schedule Item No[1]	Unit	Quantity	Rate
Total				

[1] Rates to be obtained from Schedule of Additional Services (where applicable).



Page 2 of 2

OR

Fixed Price Quote (FPQ)

Description of Additional Service Estimate / Claim

.....

.....

.....

Justification Client Request / Previously Approved

.....

.....

.....

Total FPQ	% Completed	Amount Claimed

NZ Transport Agency Use Only

Approved _____ **Date** ____ / ____ / ____

9.6

9.7 Disputes resolution

The following form is included below:

- Dispute notification – PMM 9.7.

Dispute notification – PMM 9.7

NZ TRANSPORT AGENCY
WAKA KOTAHI

To sponsor: File:

Project name:

Project register number: Dispute notification number:

Parties in dispute:

(1) Contract number:

(2) Contract number:

(3) Contract number:

Dispute arguments: *(Continue on separate sheet if necessary)*

Party 1

Party 2

Party 3

Project manager's comments:

Contingent liability required: Yes ☐ No ☐ Amount $

Project manager's signature: Date:

Sponsor's comments:

9.7

9.8 Supplier performance

Consultant	Professional services form (PSF) 9a Performance evaluation of consultant (capital) in the NZ Transport Agency's *State highway professional services contract proforma manual* (SM030). PSF/9d Performance evaluation of consultant (maintenance) in SM030.
Contractor	PSF/9b Performance evaluation of contractor (capital) in SM030. PSF/9c Performance evaluation of contractor (maintenance) in SM030.

10.1 Project close-out

Forms

Project closure notice – PMM 10.1a.

Physical works contract completion notice – PMM 10.1b.

Suspended project – PMM 10.1c.

Pre-opening fit-for-purpose inspection report – PMM 10.1d (EXAMPLE)

Project closure notice – PMM 10.1a

NZ TRANSPORT AGENCY
WAKA KOTAHI

Project name:			
Project register number:		Contract number(s):	

Termination details *(if applicable)*

Reason(s) for termination	
Status of project at terminations	
Future action	

Final project tasks

☐	Initial project estimate $
☐	Final project cost $

- ☐ Contract completion notices (if any) completed and filed
- ☐ All outputs identified in project plan received and accepted
- ☐ Funding reconciled with costs
- ☐ Accounts closed and project records appropriately filed
- ☐ Arrangements made for ongoing maintenance/consent/other commitments
- ☐ Project plan completed and released by sponsor
- ☐ Closure recorded on project register

The above project is declared completed.

Project manager		Date	
Filing clerk			
Project files/dossiers closed		Date	
Relevant files achieved		Date	

10.1

Physical works contract completion notice – PMM 10.1b

NZ TRANSPORT AGENCY
WAKA KOTAHI

Contract name:			
Contract number:		General ledger code(s):	
Consultant:			
Contractor:			

Final contract tasks

☐	Accepted contract price $	
☐	Final contract price $	
☐	Final contract price reconciled to transactions in PROMAN	
☐	Practical completion certificate issued on	
☐	Defects liability certificate issued on	
☐	Supplier performance reports complete	
☐	Legalisation completed on	
☐	Contract retention monies and/or bond(s) released	

The above contract is declared completed.

Project manager		Date	
Filing clerk		Date	

Suspended project – PMM 10.1c

NZ TRANSPORT AGENCY
WAKA KOTAHI

File:

To:

- VAC specialist
- BUDMT
- VAC

Suspended project (Guidance note: Not all projects progress beyond the scheme phase. The purpose of this form is to seek endorsement of the recommendation to suspend or abandon the project, and not progress to detailed design.)

Project name

Region

Expected construction estimate

Construction financial year

(Guidance note: If the project is being deferred there may be no proposed construction year, in which case this should be stated on this form.)

State highway funding national ranking

PROMAN forecast has been updated Yes No

Submitted by (project manager)

Date

Request endorsed by (regional manager)

The reasons for the projects' suspension:

A description of the minor remedial works, if any, that must be completed in the meantime pending the project's progression:

(For national office use)

Approval status: Approved Not approved

Comments:

Signed

Date

Signed copy to be returned to project manager (to be retained on project file).

10.1

Pre-opening fit-for-purpose inspection report – PMM 10.1d (EXAMPLE)

(tailor form to suit project context)

NZ TRANSPORT AGENCY
WAKA KOTAHI

To (project sponsor)	State highway manager
From (project manager)	Project manager
Project	Puhinui interchange fit-for-purpose safety inspection

Purpose

To seek approval to make the new road construction available for traffic and public use without temporary traffic management limitations.

Background

Section 6.6 (SM011) requires the state highway manager's approval to make all new road construction projects of value exceeding $1 million available for traffic and public use without temporary traffic management limitations.

RSA

The project was subject to RSA at the scheme and design stages, and all serious or significant issues have been reconciled.

A post-construction RSA has been arranged and will take place in four weeks, once tie in work has been done and practical completion is expected.

Code of Compliance (tick one)

Issue of code of compliance certificates is not applicable	
Code of compliance certificates as required have been issued	X

Pre – opening inspection

10.1

Declaration by the consultant

I have received a statement from the consultant confirming:

- the construction is consistent with the design stage RSA
- the quality of the completed works complies with the quality assurance requirements specified in the contract, and these requirements have been audited for compliance
- there is no need for any temporary speed limit to be imposed for any reason.

A copy of the consultant's statement is attached to this memo.

Fit-for-purpose inspection

I have undertaken a walkover of the site with the design/constriction engineer and the NZTA regional safety engineer to identify any significant issues.

During the walkover there were no significant issues or deficiencies identified.

Recommendation

The completed interchange, including the main carriageway, on/off ramps and bridge be made available for traffic and public use without temporary traffic management limitation.

Project manager		Date	
Endorsed by traffic safety engineer		Date	
Comments:			
Opening	approved	/declined	
State highway manager/Project sponsor		Date	

10.2 Contract close-out

Forms (copies are attached)	Physical works contract completion notice – PMM 10.2a. Professional services contract completion notice – PMM 10.2b.

Physical works contract completion notice – PMM 10.2a

NZ TRANSPORT AGENCY
WAKA KOTAHI

Contract name:			
Contract number:		General ledger code(s):	
Consultant:			
Contractor:			

Final contract tasks

☐	Accepted contract price $	
☐	Final contract price $	
☐	Final contract price reconciled to transactions in PROMAN	
☐	Practical completion certificate issued on	
☐	Defects liability certificate issued on	
☐	Supplier performance reports complete	
☐	Legalisation completed on	
☐	Contract retention monies and/or bond(s) released	

The above contract is declared completed.

Project manager		Date	
Filing clerk		Date	

10.2

Professional services contract completion notice – PMM 10.2b

NZ TRANSPORT AGENCY
WAKA KOTAHI

Contract name:			
Contract number:		General ledger code(s):	
Consultant:			

Final contract tasks

- ☐ Accepted contract price $
- ☐ Final agreed contract price $
- ☐ Final contract price reconciled to transactions in PROMAN
- ☐ All deliverables received, reviewed and accepted.
- ☐ Consultant notified in writing of completion of contract

The above contract is declared completed.

Project manager		Date	
Filing clerk		Date	

Part 4 – Guidelines

1.1 Establishment

Project conception

Problem/opportunity definition

General

A project is initiated to respond to identified problem(s) and/or opportunities. To define the problem and/or opportunity it is best to consider the applicable specific and strategic issues.

Specific issues

When defining the problem or opportunity, specific issues and their causes need to be considered. Examples include:

a. Safety issues such as:
   - crashes due to poor visibility, road width, substandard curves
   - cyclists and pedestrian safety due to lack of shoulder width.
b. Construction opportunities such as:
   - lighting upgrades
   - increasing seal widths
   - network improvements as part of private developments.
c. Service level issues:
   - congestion issues due to insufficient capacity
   - lack of passing lanes.
d. Social and community issues due to route security and possible severance.
e. Environmental issues due to noise, vibration, emissions to air, land or water.
f. Insufficient office accommodation due to increasing staff numbers.

Strategic issues

To define the strategic problem and/or opportunity, consideration needs to be given to how compatible the current situation is in context with the project's strategic objectives. Further consideration must be given to promoting strategic issues when project objectives are defined. For transport projects, the following strategic issues must be considered:

a. Consistency with the New Zealand Transport Strategy (NZTS) objectives, Statement of Intent (SOI) and the Government Policy Statement (GPS) on transport funding 2009–12.
b. Compatibility with:
   - Regional Land Transport Strategy (RLTS)
   - regional/local growth strategies
   - National State Highway Strategy (NSHS), including functionality requirements such as services, accesses, intersections and over-dimensional traffic
   - any regional or area state highway strategies
   - corridor management plans.
c. Stakeholder requirements and opportunities such as:
   - territorial local authority desires
   - public transport and active transport integration
   - service infrastructure, such as sewer, telecommunications, power
   - commercial opportunities, such as motorway service centres
   - route security.
d. Innovative use of resources to manage energy use and reduce waste requiring permanent disposal.

Objectives

General

Once the problems(s) and/or opportunities are defined, the next step is to formulate the project's objectives. Each objective should:

a. relate to a defined problem or opportunity

b. incorporate a 'what' and 'how' analysis:

   - 'what' is the target outcome in terms of the problem/opportunity, and
   - show 'how' this stated outcome can be achieved.

c. include success criteria to measure whether the target outcome has been achieved.

Objectives

a. Avoid 'sweeping' statements, such as 'reduce crashes' or 'improve level of service'. These types of objective may result in an unsatisfactory outcome, as they can be achieved without dealing to the specific problem(s).

b. Give specific guidance as to the project's required outcome.

c. Individually address the stated problems.

d. Measure objectives by success criteria.

On large transport planning projects where designations are being sought, the project sponsor and project manager should seek the board's approval of the project's objectives.

Success criteria

The project manager must demonstrate the project's objectives have been achieved. The success criteria:

a. should be linked to individual supplier contracts to ensure that the broader project team is able to work collectively to achieve the specified objectives

b. must relate to each individual objective, be realistic and be measurable. This may require an independent party to complete the measurement process such as the:

   - crash reduction study consultant analysing the pre-/post-project crash data
   - network consultant assessing the future costs and liability of resurfacing programmes

c. can generally be evaluated at hold points as the project progresses and on completion. It will generally help to answer the following questions:

   - Is the project fit for its purpose?
   - Does the project meet its 'what' objectives?

Achievements relating to time, cost and quality are not regarded as appropriate success criteria. These are expected outcomes of good project management. However, in certain cases, time and budget are critical project drivers. In these cases they are appropriate success criteria.

Problem	Objective(s)	Success criteria
High crash rate.	Reduce crashes by improving visibility.	Achieve the assessed crash reduction within five years of the project's completion.
Social concerns due to community severance.	Reduce social concerns by providing a pedestrian underpass.	Ninety percent satisfaction in community survey following completion. No observed instances of 'illegal' crossing during two-hour peak use survey, undertaken six months after completion.
Insufficient office accommodation due to increasing numbers.	Reduce overcrowding by providing adequate accommodation.	Achieve ##m^2 per person. Allow for 10 percent future staff number growth. Do not exceed available budget. Complete by 1 December 2006.
Severe congestion at major intersection.	Reduce congestion by providing grade separated facility agreed by transport planning. Complete works prior to major event by utilising innovative project delivery method.	Achieve travel time savings assumed in project economics. Have improvements in place within 18 months, in time for the World Cup Rugby Final at Waikato Stadium.
Contaminated road run-off entering sensitive local watercourse.	Significantly reduce contaminated road run-off from entering sensitive receiving environment by: • containing road run-off • filtering contaminants from road run-off.	

Project definition

General

In most cases, a project will be initiated on the basis of a project feasibility report (PFR). These reports are broad assessments of the project's viability, and are typically based on experience and solutions used on other sites with similar problems.

Defining the project includes:

a. establishing the project's scope (ie what the project is all about – it's environment, parameters, constraints and strategic overview of how the objectives will be achieved)

b. presenting the project (ie how the project will be handled, eg via a 'super-contract' or in manageable size parts). This will help to determine the:

   - development and delivery methods
   - achievable time frame.

When scoping a project it is important to understand its likely outcomes. This will assist with subsequent supplier briefing(s) and help ensure the best possible option is selected to meet the project's objectives.

Understanding a project's scope is best gained by considering a number of possible solutions to generate viable options.

Preferred option

The preferred option is the option which the NZTA's Board, Value Assurance Committee (VAC) or the Business Unit Decision-Making team(BUDMT) has approved. No party may talk about a preferred option until this approval has been received, as in some cases the preferred option may not be the one recommended and presented to the Board or to the VAC.

Scope

When preparing the project's scope statement, the project manager must ensure the statement clearly:

a. includes a brief, comprehensive overview of the project's key issues, processes and outputs

b. describes the overall project, if applicable, and its extent

c. describes the project's development and delivery method

d. establishes the packaging of contracts, if applicable.

Overall project and this project

Generally, a project will be developed as follows:

a. The transport planning group responsibility includes:

   - identifying options
   - investigating those options
   - recommending the best option for the Board or BUDMT approval
   - developing the best option.

b. The HNO's responsibility includes providing a detailed design and implementing the best option. For complex projects or where the project outcome(s) are unclear, the project manager may choose to:

   - confine the project to developing the best or preferred an option, rather than implementing it at this stage
   - establish a second project to implement the best or preferred option.

Examples of when a project manager may choose to develop and implement the project in a two-stage process include:

- identifying a preferred option to meet global objectives, such as with large transport investigations
- implementing the preferred option as a completely separate project with its own project plan
- producing design drawings and specifications for a preferred option's approved scheme assessment report
- several unrelated projects contributing to an overall outcome.

Extent of project

The project plan must include a statement defining the extent of the project. This involves a variety of parameters and boundaries that limit the range of options available. The statement will:

a. identify all the work required to successfully complete the project

b. include the applicable quality/output minimum standards

c. describe the constraints and opportunities (feasibility, physical, environmental)

d. include a brief summary/specification of the project output(s).

Project development and delivery method

Project development covers:

a. the phase(s) where options to address the project objectives are identified, assessed and choices are made

b. development of each choice and the way it should be implemented. It is necessary to define a process for addressing these phases which:

   - considers risk assignment
   - assesses supplier availability, suitability and expertise.

The NZTA's *Long-term procurement plan* 2005 describes how to select the correct/appropriate delivery structure and model for maintenance and capital works projects.

Maintenance development and delivery

The maintenance delivery structure identifies whether the suppliers are working within a two-tiered (design-construct) or three-tiered (traditional) structure. These delivery structures are outlined in the following table.

Delivery structure	Number of tiers	The NZTA's current models
Traditional	A three-tiered structure: • client • consultant • contractor.	Traditional Hybrid
Design-construct	A two-tiered structure: • client • consultant and contractor (combined as a single supplier).	Performance specified maintenance contracts (PSMC).

The way traditional, hybrid and PSMC maintenance contract s are packaged is described below:

a. Traditional maintenance contracts

   - The NZTA and its professional services agent retain the asset management decisions.
   - In some NZTA regions there are separate contracts for each maintenance activity, while in others similar works are packaged together. The project manager must consider in consultation with the professional services agent and, possibly the wider industry, to determine which maintenance activities should be combined to generate the most efficient pricing.

b. Hybrid maintenance contracts

Like traditional maintenance contracts, hybrid project contracts include separate contracts for professional services and physical works. However unlike the traditional model:

- asset management decisions are shared between the suppliers
- the professional services supplier has a one-to-one or one-to-many relationship with the physical works supplier(s)
- physical works contracts typically bundle all maintenance activities into a single area-wide or sub-network contract
- depending on the project's location, market structure and maturity, consideration could be given to having separate general maintenance (comprising pavement and drainage maintenance, reseals and area wide treatment activities) and corridor contracts (comprising traffic services, vegetation control, pavement marking, etc).

c. Performance specified maintenance contracts

- The professional services and physical works are included within the one (usually ten-year) contract.
- The supplier makes the asset management decisions based on a defined set of performance measures or criteria.
- In determining the maintenance development and delivery structure the following must be considered:
- The physical works contracts must be of a size to generate efficient prices.

Care should be taken when establishing more than two sub-networks in a partnered environment. Experience suggests the parties struggle to treat all suppliers equally regardless of the scope of their individual services.

Capital projects development and delivery

The NZTA's contract types are traditional, design and construct, alliance and early contractor involvement. The selected contract type is a function of the project's delivery structure.

Project risk and the potential for innovation are the key criteria for selecting a project's delivery structure. While there is no definitive point for moving from one delivery method to the next, the trend is to move towards full delivery as the risk and potential for innovation increases. There is also room within each of the delivery models to develop alternative methods which best suit the complexity and risks associated with a particular project.

Each of the above delivery structures is described as follows:

d. Traditional method

This method depends on how well the scope of the works is defined:

- If the scope is well defined, then a single package for the investigation, design and construction phases is appropriate. This can be achieved by either making the design and supervision phases provisional for later negotiation, or by agreeing a lump sum at the start of the contract and allowing escalation to apply.
- If the scope is not well defined, it is preferable to procure a stand-alone investigation contract followed by the design and supervision in a single contract.

For complex projects, it may be appropriate to break investigation phase into two parts:

- scoping and option analysis to identify the best option, followed by
- analysis of the best option.

While it is preferable to have lump sum contracts and include the phase(s) provisional activities it may be appropriate to complete the subsequent phases on a time writing basis if there is substantial uncertainty.

e. Full delivery method (Alliancing)

This method comprises a single contract for taking the project from the current phase to completion. As a full delivery model can be implemented at any time it may be appropriate to use the other delivery methods to complete the preceding phases such as using the traditional method to complete the project's investigation phase.

f. Early contractor involvement (ECI)

This method comprises involvement of a contractor earlier in the development and design phases of a project where it is considered that this will bring constructability advantages. A typical ECI contract has three distinct phases:

- SP1 – investigation
- SP2 – design, and
- SP3 – construction.

Whether or not an ECI contract commences from SP1 or SP2 is a decision that needs to be made based on the current state of the project and an assessment of the constructability advantages. Where an existing professional services contract exists consideration should also be given to the value of novating the consultants' services into the ECI contract.

g. Design – construct (DC) method

The way to package a DC method depends on where the project is at in its life cycle. To decide this, find out if:

- a preferred scheme has been lodged for designation
- the preferred scheme is a fundable project (eg does it have a BCR greater than the current cut-off? What are the social and environmental issues?)

If the answers to these questions:

- are yes to the both questions, then complete an investigation contract and engage the principal's advisor to prepare specimen design, seek resource consents and procure and manage the DC supplier
- are no to the first question and yes to the second question, then renegotiate investigation contract to extend its scope (material changes) to include the principal's advisor's role. Prepare the specimen design and seek resource consents and designation as well as procuring and managing the DC supplier.

  This approach should be used if the project is being started at the PFR stage.
- are no to the both questions, then conclude the investigation contract at the point of confirming its designation.

Multiple projects

For efficiency, it is often good practice to package a number of smaller separate projects into a single project portfolio. In these cases:

- a single project plan must be developed to manage the overall project
- an individual task plans need to be prepared for each individual project.

Generally this approach is best suited to projects which are similar, geographically close or have other common aspects that allow them to be managed more effectively as a single overall project.

Project establishment

Sponsor's role and responsibility

General

In general the divisional group manager will be the project sponsor for all projects originating from within their division. However, the group manager may delegate this role at their discretion.

Primary responsibility

The project sponsor's primary responsibility is to successfully deliver the project to the chief executive. The project sponsor is also responsible for:

a. appointing an appropriate project manager

b. preparing the sponsor's brief

c. approving the project plan and any necessary material changes

d. providing the project's strategic direction and overview

e. monitoring progress against the project's objectives

f. ensuring risk is effectively identified and managed

g. approving any recommendations arising from a project conception

h. signing off the project plan when the project is completed.

Operational projects such as those associated with maintaining highway networks may be handled in a number of ways, including a:

a. single comprehensive network management project

b. discrete projects that split maintenance activities into separate projects over different areas and durations, or

c. combination of the above.

Appointing a project manager

When selecting a project manager, the project sponsor:

a. must ensure the preferred person is available and has the appropriate skills to deliver a quality project within time and budget expectations

b. may consult with other staff members, and should consider the following issues:
   - technical and non-technical nature of the project
   - project's risks, and
   - political sensitivity.

The project manager:

a. holds the key position in any NZTA project

b. must be empowered and authorised to scope, procure and manage the necessary resources and activities to ensure the project is successfully completed.

Sponsor's brief

The sponsor's brief will be used by the project manager to develop the project management plan. The sponsor's brief should:

c. describe the project's background, objectives and goals

d. establish the project's status, ie whether it is a new project or a subsequent phase of a previous project

e. outline the project's current budgets and expected timeline

f. reference relevant documents such as PFRs, scheme assessments, handover reports, etc

g. include a requirement for the project manager to prepare a handover report at the end of the project to enable subsequent sponsors to prepare a project brief for a following phase (refer to process 10.2 in this manual).

Approving the project management plan

The project sponsor is responsible for ensuring the project plan is consistent with the NZTA's policies and procedures. As part of the approval process, the project sponsor and project manager should discuss the project plan's content to identify and resolve questions or concerns about the plan's accuracy and completeness.

The project management plan can only be approved once all issues are resolved and the project sponsor is satisfied with the final document.

Team communications

The project sponsor must:

a. attend any appropriate meetings scheduled in the project plan

b. be provided with all reports identified in the project plan and so he/she can comment or take appropriate action.

Approving project plan changes

The project sponsor may approve any material changes to the project plan. Where higher authority is required, the project sponsor and project manager share the responsibility for ensuring the correct approvals are obtained.

Project closure

Projects can only be closed once all the project plan's activities and requirements (including those updated by the project manager) have been completed. The project sponsor is responsible for formally releasing or signing off the document.

Project manager's role and responsibilities

General

The project manager's role is to deliver a quality project on time and to budget. The project manager is responsible for implementing the procedures and tasks described in this manual including:

a. establishing the project in the office administration system

b. preparing, implementing and updating the project plan

c. managing the project according to the project plan.

Specific responsibilities

The project manager must:

- understand the project, its objectives and the project sponsor's role
- keep the project sponsor informed of the project's status and progress in a 'no surprises' manner
- identify the key processes by which the project's objectives will be met
- be fully acquainted with the technical standards, specifications, policies and legislation relevant to the project
- meet the project time, cost and quality targets described in the project plan
- proactively identify any risk (threat or opportunity) as it develops and take the necessary steps to manage it.

a. Team leadership

   The project manager must:

   - lead the project team enthusiastically and proactively
   - encourage team members to take ownership and accountability for their identified responsibilities
   - promote a team approach and provide timely feedback to team members
   - seek constructive feedback throughout the project.

b. Supplier management

   The project manager must:

   - ensure suppliers' quality plans comply with their obligations
   - ensure suppliers comply with their quality plans
   - adequately audit and check all key deliverables. Once accepted, the project manager becomes the deliverable owner
   - meet the expectations of suppliers in regard to timeliness and quality of the NZTA's input.

c. Communication

   The project manager must:

   - promote the NZTA and its business positively at every opportunity
   - build and maintain key stakeholder relationships
   - share experiences with other project managers as and when they occur.

Project register

General

Each NZTA office maintains an up to date project register. Its primary function is to ensure all projects have a unique identification number.

Register establishment

Once appointed the project manager must complete the project register. The minimum details required for the project to be included in a register are:

- unique registration number
- project's name
- sponsor's name
- project manager's name
- project's start and end dates.
- file number(s) and contract number(s) where these do not directly reflect the project registration number.

To assist with project management, the project register may include other fields and sort capabilities to facilitate and extend the range of its operation. These may include information to make responding to general enquiries easier or identify correspondence file references.

Project registration number

The project registration number is a unique number which references the office numeric identifier, current financial year and a sequential project number. For example:

- 2/05-005 - 2 refers to the NZTA's Hamilton office, 05 refers to the 2005/06 financial year and 005 refers to the 5th registered project
- 04-022 - 04 refers to the 2004/05 financial year and 022 refers to the 22nd project led by the NZTA's National Office (as this is a national office project an office identifier is not required).

Project closure

After the project sponsor has signed off the completed project, the project manager must ensure the project is closed on the project register.

Project document control

General

All project-related documentation, issued or received, must be controlled, referenced and stored for easy retrieval.

In additional to the general requirements established by the NZTA's *Corporate services manual* (FCS/Man/1) all issued or received project records, including electronic records must be:

- referenced with the project registration number and/or file, and/or contract numbers
- lodged on the appropriate project file(s) or dossier(s) or stored in the appropriate directory
- authorised for release by the project manager or delegated task manager
- archived and all electronic records must be removed from the computer and stored on disk with the hardcopy files.

The project manager must ensure all incoming information is managed, processed and passed on to the appropriate personnel.

Project files

In addition to the NZTA's Corporate services manual provisions all project files must include the:

- project's registration number and name
- project's file name
- volume/part number (where the file expands into two or more volumes)
- date of creation
- project manager's name.

File management

To facilitate easy retrieval, the project manager:

- may establish further files or subdirectories
- must brief the administration, in writing, to establish the required hard copy files and dossiers (This brief could include a flow chart where the structure is complex.)
- should ensure the file structure aligns with the project's nature and complexity. Typically, a project filing system may include separate files for:
  - the project plan and project contact list
  - general correspondence
  - statutory matters (designation and consents)
  - finances (allocations, forecasts, reviews, payment summaries)
  - communications (stakeholders, meetings, media, complaints)
  - reviews and audits
  - traffic management and safety
  - contracts
  - property
- must ensure:
  - the project register is updated with new file information
  - all project records are filed or stored according to the updated project register.

Incoming document control

- Written correspondence

  Must follow the procedures set out in the NZTA's Corporate services manual. All incoming correspondence must be:

  - opened and date stamped
  - annotated with the appropriate project registration number and/or file number
  - delivered to the addressee. In the case the addressee is not the project manager or appointed task manager, the project manager's name must be added to the circulation list.

- Faxes

  Incoming faxes must be handled in the same manner as written correspondence, except they should be forwarded immediately to the addressee.

- Electronic correspondence

  All electronic correspondence must be handled in the same manner as written correspondence except:

  - the electronic file must be stored in the appropriate project directory (not personal drives)
  - a printed copy, plus a copy of the accompanying material (the cover page only will suffice where large documents are involved) must be placed on the relevant project file.

- Incoming phone/visitor messages

  All verbal communications that may affect the project must be recorded in writing and filed in the same way as any other record. Where the communication requires a response or action, details of the response must also be recorded and filed.

- Outgoing document control

  All formal correspondence, in the form of typed and posted letters, or customised notice to consultant forms (PMM 9.4c) should be recorded in an outgoing correspondence register, including:

  - description of the material posted out
  - date sent
  - intended recipient's name and address.

  Before releasing project correspondence the project manager must ensure:

  - all outgoing correspondence is:
    - correctly dated, addressed ,file referenced and signed
    - reviewed and authorised before release
  - all correspondence, reports, plans and other material issued is:
    - individually numbered with the relevant project file number
    - accompanied by an appropriate covering letter or document dispatch notice (PMM 9.4b), which will specify the attached material
  - outgoing faxes are:
    - only used when the matter is of no significance but is pressing, eg confirming a meeting time
    - stamped as 'faxed', initialled by the sender and placed on the relevant project file. When faxing letters, the original letter must follow in the following mail
  - all electronically produced correspondence must be saved in the appropriate project directory. A printed copy plus a copy of the accompanying material (the cover page only will suffice where large documents are involved) must be placed on the relevant project file.

Project planning and management

Writing the project management plan

General

The project management plans define projects by establishing the relationship between the project parties and their responsibilities. The project management plans:

- are mandatory under the NZTA's ISO 9001 accreditation
- must meet the minimum administration and planning requirements necessary to complete the project on time, to budget and to the required quality standards.

The initial project management plan provides a preview of how the project is expected to develop and progress.

Timing

The project management plans must be:

- prepared when the project is initiated, provided the project is likely to proceed and no unauthorised financial commitment has been made
- updated when a substantial change occurs, rendering the current project management plan inoperative and necessitating the preparation of a new project management plan
- updated when a dormant project is reactivated. This might be at any point through the project life cycle.

A project management plan becomes operative once project funding is confirmed and the plan has the project sponsor's approval.

Project management plan format

Project managers may develop their own project management plan format and style, provided it complies with this manual's mandatory requirements. However, it is recommended each region develops regional project management plan and task plan templates that:

- comply with this manual
- suit each region's particular needs
- suit the type and scale of typical projects.

Typical formats may include essay-type and/or tabular, and/or graphical formats. The project management plan should include checklists enabling the project manager to monitor progress and sign off actions as they occur.

Consideration should also be given to how task plans (eg planning consents, property purchase, procurement, etc) will be used. Task plans can help assist the project manager in successfully completing the project.

Project management plan development and approval

In general, the development and approval process involves the following steps:

- Sourcing a copy of this manual, the regional project management plan template, the NZTA's *Standards and guidelines manual* (SM/P/21), existing project management plans and associated task plans.

- Drafting the proposed project management plan by working through the sponsor's brief. Care must be taken to ensure:
  - task managers are briefed to prepare their individual task plans according to project management plan guidelines
  - predetermined hold and review points are programmed
  - the relevant NZTA's policies and procedures are considered.
- Compiling the draft project management plan and seeking feedback and comments by circulating the draft project management plan within the project team. Blank spaces could be left to allow additional information that was not available at the time of the draft project management plan's preparation.
- Finalising the project management plan and arranging a meeting with the project sponsor to discuss and agree its scope and content. This may require making further amendments before the project sponsor formally approves the project management plan.
- Filing the approved original document and ensuring each tem member:
  - receives an uncontrolled copy of the approved project management plan
  - is advised once the project is 'live' and work has begun.

Sample project management plans

Appendix 2 includes some typical project management plan samples. Although this appendix is not available on the *Project management manual*'s internet version some project management plans are available to the NZTA project managers via the following path: T:Common\Manuals and Forms\SM011 Project Management Manual.

Managing the project management plan

General

As the project proceeds, the project management plan must be maintained to provide an overview of the project's current status. This includes achievements, outstanding actions, the approvals required. Active use of project management plans helps ensure projects are effectively managed and milestones, such as deliverables and financial obligations, are achieved.

The project management plan must be:

- updated with new information which may have been unknown at the time of its initial preparation
- monitored for progress against the programme, reviews and approvals, financial management, etc
- amended and, if required, reissued when changes occur.

Updating the project management plan

If new information becomes available it can be:

- recorded in the blank spaces left in the initial project management plan
- annotated into margins or paragraph spaces, or
- appended to the relevant page or to the project management plan itself.

Maintaining the project management plan

As the project progresses, the project manager must maintain project management plan to reflect the project's process. In all cases the project manager must initial and date any changes, and append or reference the appropriate records:

- If checklists are included, these should be completed as milestones are achieved.
- If a baseline programme is included, this should be updated to show current progress versus the baseline programme.
- If other record systems are referenced, such as State Highway Project Financial Management System (PROMAN), the project manager must ensure these systems are also maintained.

Change control

The two types of change affecting projects are:

- material change
- non-material change.

The project manager must determine whether a change is material or non-material. The following paragraphs describe the way these changes are managed.

Non-material change

If a non-material change occurs, all controlled copies of the project management plan must be amended in the following manner:

- The original item is crossed out and the new item written in, referenced or appended.
- The change is initialled and dated and the change control record is updated.
- Project team members who may be affected by the change are advised of the change and provided with a copy of the project management plan's amended relevant section.

In general it will not be necessary to reissue the project management plan unless there are so many changes that the amended plan may be difficult to comprehend.

Material change

If a material change occurs the project manager must:

- consider putting the project on hold while the event necessitating the change is evaluated. This may require the project manager to call a meeting with the project sponsor and/or with key project participants to analyse the events and assess the consequences
- develop a strategy for dealing with the change. This may include keeping the project on hold or limiting the work that can be undertaken concurrently. The strategy:
  - could include an analysis of the various options for dealing with the event
  - should be carefully considered and the preferred course of action decided upon
- agree the final strategy with the project sponsor who will ensure the appropriate decisions are made before approving the change

- document the change on the project management plan change notice (PMM 2.7) and update the project management plan. The change notice must be included in the project management plan by either:
  - updating the project management plan and appending the change notice, or
  - rewriting and reissuing the project management plan to include the change notice. The original project management plan and change notice must be filed.

Project conception reviews

In the event of major events requiring change control, or if there are many ongoing changes to the project, the project manager should review the need for a formal project conception review.

The outcome of a formal project conception review may result in the project:

- continuing under the current project management plan, perhaps with various non-material changes
- continuing under the current project management plan, but with material changes
- continuing, but a revised project management plan will be required. As this is a material change an updated version of the project management plan must be produced. The previous version must be filed and clearly marked that it has been superseded
- being terminated. The project management plan must be amended to record the closure process.

1.2 Resources

Sponsor's role and responsibilities

General

In general the divisional manager will be the project sponsor for all projects originating from within their division. However, the general manager may delegate this role at their discretion.

Primary responsibility

The project sponsor's primary responsibility is to successfully deliver the project to the chief executive. The project sponsor is also responsible for:

- appointing an appropriate project manager
- preparing the sponsor's brief
- approving the project plan and any necessary material changes
- providing the project's strategic direction and overview
- monitoring progress against the project's objectives
- ensuring risk is effectively identified and managed
- approving any recommendations arising from a project conception review
- signing off the project plan when the project is completed.

Operational projects such as those associated with maintaining highway networks may be handled in a number of ways:

1. A single comprehensive network management project.
2. Discrete projects that split maintenance activities into separate projects over different areas and durations.
3. A combination of the above.

Appointing a project manager

When selecting a project manager, the project sponsor:

a. must ensure the preferred person is available and has the appropriate skills to deliver a quality project within time and budget expectations

b. may consult with other staff members, and should consider the following issues:
   - technical and non-technical nature of the project
   - project's risks, and
   - politically sensitivity.

The project manager:

- holds the key position in any NZ Transport Agency (NZTA) project
- must be empowered and authorised to scope, procure and manage the necessary resources and activities to ensure the project is successfully completed.

Sponsor's brief

The sponsor's brief will be used by the project manager to develop the project management plan. The sponsor's brief should:

a. describe the project's background, objectives and goals

b. establish the project's status, ie whether it is a new project or a subsequent phase of a previous project

c. outline the project's current budgets and expected timeline

d. reference relevant documents such as project feasibility reports (PFRs), scheme assessments, handover reports

e. include a requirement for the project manager to prepare a handover report at the end of the project to enable subsequent sponsors to prepare a project brief for a following phase (refer to process 10.2 in this manual).

Project manager's role and responsibilities

The project manager's role is to deliver a quality project on time and to budget. The project manager is responsible for implementing the procedures and tasks described in this manual including:

- establishing the project in the office administration system
- preparing, implementing and updating the project plan
- managing the project according to the project plan.

Specific responsibilities

The project manager must:

- understand the project, its objectives and the project sponsor's role
- keep the project sponsor informed of the project's status and progress in a 'no surprises' manner
- identify the key processes by which the project's objectives will be met
- be fully acquainted with the technical standards, specifications, policies and legislation relevant to the project
- meet the project time, cost and quality targets described in the project plan
- proactively identify any risk (threat or opportunity) as it develops and take the necessary steps to manage it.

Team leadership

The project manager must:

- lead the project team enthusiastically and proactively
- encourage team members to take ownership and accountability for their identified responsibilities
- promote a team approach and provide timely feedback to team members
- seek constructive feedback throughout the project
- monitor the required resources
- delegate when necessary and follow up as required.

Supplier management

The project manager must:

- ensure suppliers' quality plans comply with their obligations
- ensure suppliers comply with their quality plans
- adequately audit and check all key deliverables. Once accepted, the project manager becomes the deliverable owner
- meet the expectations of suppliers in regard to timeliness and quality of the NZTA's input.

Communication

The project manager must:

- promote the NZTA and its business positively at every opportunity
- build and maintain key stakeholder relationships
- share experiences with other project managers as and when they occur.
- consider the applicability of the project as a candidate for a lessons learnt review.

2.1 Scope definition

Scope definition

General

In most cases, a project will be initiated on the basis of a project feasibility report (PFR). These reports are broad assessments of the project's viability.

Defining the project includes establishing the project's scope, ie what the project is all about, its environment, parameters, constraints and strategic overview of how the objectives will be achieved.

When scoping a project it is important to understand its likely outcomes. This will assist with the development of the project and help ensure the best possible option is selected to meet the project's objectives.

One way of understanding a project's scope is by considering a number of possible solutions to generate viable options before selecting a preferred option.

Preferred option

The preferred option is the option which is approved through the scheme approval process. The approval process is dependant on the value and scale of the project (process 2.6 discusses scheme approval).

Scope

The key influences on the scope of a project include:

- how well does the scope address the project objectives
- Land Transport Management Act 2003 compliance
- the NZ Transport Agency (NZTA) Investment and Revenue Strategy compliance
- Regional Land Transport Strategy compliance
- social and environmental screen
- economic assessment
- the NZ Transport Agency's (NZTA) *Planning, programming and funding manual* project assessment criteria (assessment profile) compliance.

The above is not a complete list. Reference should be made to the NZTA's *State highway professional services contract proforma manual* (SM030) section 3 Standard professional services specifications – Investigation and reporting, or a list of assessment criteria to be used when refining the scope.

Strategies, studies and plans

The primary function of the transport planning activity class (TPAC) is to assist with transport planning to meet future needs and demands on the transport system. While the Government Policy Statement (GPS) sets short to medium term priorities for transport funding, the planning horizon for activities funded within the TPAC need to consider the longer term. Strategies, studies and plans (please refer to table 1) are funded as part of the TPAC.

A strategy articulates the long term transport needs of the community, why these needs are likely to emerge and how the land and transport infrastructure might respond and adapt to these needs. An example of a strategy is the Hamilton Access Strategy. The NZ Transport Agency (NZTA) encourages approved organisations to request support for draft strategies and plans that require substantial funding for their implementation. Supporting a strategy does not commit the NZTA to funding any project or package at this stage. However it gives an approved organisation the acknowledgement that there is general support for the direction of the strategy and the process of gaining support also provides the opportunity for feedback and optimisation.

Plans describe the tactics to give effect to strategies and are specific in content and are action orientated.

The end purpose of undertaking studies is to develop packages and groups of activities that deliver on a communities' future transport aspirations. A study is used to look at an established problem or opportunity. Studies can inform and respond to future transport needs and support planned growth and regional land transport strategies. Studies generally have a medium to long term focus and are different from the investigation phase of a project, which focuses on detailing the macroscope of individual activities or groups/packages of activities.

In general there are two types of study:

- Network-wide studies are where more than one approved organisation has a material interest, responsibility or funding input. In general these studies and will be led by the relevant regional council with contributions from all involved parties, however they can be led by the NZTA and local councils where appropriate.
- Single approved organisations studies that involve one approved organisation (these include state highway corridor studies).

The terms of reference for strategies/studies/plans should be prepared by all approved organisations that have an interest in progressing them. Where costs are to be shared, a multiparty funding agreement is required and the lead approved organisation should prepare the terms of reference. In general, costs should be shared between those parties where the determined contribution is >20,000. The terms of reference need to be approved by the relevant NZTA Regional Director.

State highway studies

State highway studies can look at surrounding landuse impacts and integrated transport needs. Some Highways and Network Operations (HNO) studies that are broader in nature and look at land-use and integrated transport may be led by the Regional Partnerships and Planning (RP&P) group. Studies that are network-wide can also be led by the RP&P group.

State highway corridor studies

The purpose of state highway corridor studies is to look at future improvements necessary for specific state highway corridors. These corridors are determined by state highway lengths such as Auckland to Hamilton which are identified as having a number of trips starting at one point and finishing at another. These studies help inform the State Highway Plan.

To avoid looking at issues in isolation the corridor study approach looks at the corridor as a whole and includes safety/freight/tourism and optimisation. Network-wide studies focus on the function of the state highway such as the number of trips being generated. However, corridor studies focus on the form. In an ideal world network studies would always be undertaken before a corridor study, however, in practice the timing does not always link up. Once completed these corridor studies will be used to inform future network wide studies. The corridor studies have a 20-year lifespan but they require updating.

The corridors selected have built on the state highway classification work done to date. The classification work has identified key freight and tourism routes.

The output of the studies will be priced programmes of groups or packages of work. Project feasibility reports will be produced as part of the studies. These will not be detailed assessments but will provide sufficient information to feed into the investigation stage. As part of this process developer contributions will be identified where applicable.

Framework for advancing state highway corridor studies

The Group Manager RP&P has signed off accountability for state highway corridor studies to the HNO group. An in house charette will develop and deliver the studies. An in house charette is a group of people that meet to collaboratively draft a solution to a design problem. The charette will develop and approve the terms of reference. The RP&P group will be represented on the charette to ensure studies consider integrated planning. The issue, objective, scope, funding required and progress information for the study will be clearly documented against the activities.

The in-house charette will sign off the terms of reference, however there will be elevation of approval prior to public consultation for schemes that:

- have an estimated implementable value over $50 million
- could be controversial
- are situated in an urban location .

Final support

A recommendation for support from the Business Unit Decision-Making team (BUDMT) will be made following the below transport planning delegations:

- less than $10 million - regional director
- between $10 million and $50 million - Group Manager RP&P
- over $50 million - Planning Committee/Board depending on the significance of the issues that are likely to be covered by the studies.

At the conclusion of the studies a copy of the resultant report will be filed in the NZTA document management system. The study will be closed out of the State Highway Project Financial Management System (PROMAN) and any surplus funding declared.

Table 1: Definitions of strategies, studies and plans

Strategies	Studies	Plans
Definition		
• Articulate long-term transport needs of the community, why these needs are likely to emerge and how the land and transport infrastructure might respond and adapt to these needs • Are outcomes orientated approaches documents • Have a long-term (30 years plus) focus • Identify priorities from range of feasible future scenarios • Are wide in impact and reach	• Seek to inform and respond to future transport needs in comprehensive manner • Conducted to understand or respond to changes in transport demand, technological advances and impact of legislation • Are time bound, methodical and provide new insight, or adapt existing insight to new environment • Aim to understand the most likely needs of transport users, and how network can assist users	• Describe the tactics to give effect to strategy • Specific in content and action orientated • Outputs focussed. Result in tangible set of activities to be delivered within clear time frame
Requirements		
• Few in number, refreshed when material change in need, legislation or opportunity • States where the status quo *is* working , for whom and identifies major gaps/challenges / targets • Cohesive in content and direction (eg consider safety, access, efficiency issues – and with particular reference to safer journeys) • Regionally relevant and nationally informed • Use evidence to justify big interventions • Will include strategy elements of activity management plans	• Purpose is to directly inform or respond to strategies and plans • Not intended to be precursors to investigations – need to be wider in scope and reach • Studies do not always need to include use of complex transport models where other simpler, more cost effective methods, will do the job	• Consider efficient planning within the context of technological advances • Include Safety considerations • Involve risk assessment to inform resource use and sequencing

2.2 Consultation

Public engagement manual.

Environmental policy manual (SP/M/023):

- Environmental plan.

Media engagement protocol.

Visual identity guidelines.

Guidelines for managing relationships and consultation with Māori.

Corporate services manual.

- Māori policy.

Professional services contract proforma manual (SM030):

- Minimum standards:
  - Z/1 Consultant's project quality plan
  - Z/4 Contractor's social and environmental management plan
  - Z/6 Scheme assessment report
  - Z/17 Branding and communications standards
  - Z/18 Scoping report
  - Z/19 Social and environmental management
  - Z/20 Project feasibility reports
  - Z/22 Accidental discovery procedure.
- Professional services guidelines:
  - PSG/13 Social and environmental management.

ONTRACK memorandum of understanding which includes protocol for the management of the NZ Transport Agency projects which affect ONTRACK.

Property and information manual.

Property acquisition and disposal manual.

2.3 Environmental and social

Background

The NZ Transport Agency's (NZTA) *Environmental plan* (May 2008) guides staff, consultants and contractors who plan, design, build, maintain and operate the state highway network as well as making a commitment to local authorities, affected communities and interest groups.

The *Environmental plan* implements the NZTA's environmental policy embedding into our business the National State Highway Strategy goal to '*improve the contribution of state highways to the environmental and social well-being of New Zealand and prioritise and address environmental and social issues*' by developing approaches and implementation plans for each category of environmental and social impact.

The Land Transport Management Act 2003 objective and environmental policy, specifically in relation to adverse social and environmental effects, is included in all contract documentation and contract management procedures. These documents and procedures ensure consultants and contractors take account of the adverse environmental effects of relevant activities by completing the:

- minimum standard (MS) Z/19 Social and environmental management (MS Z/19) and subsequent professional services form (PSF) 2a Checklist for statutory approvals, consents and agreements (PSF/2a) and PSF 13 Social and environmental management form (PSF/13)
- MS Z/4 Contractor's social and environmental management plan (MS Z/4)
- contractor's quality plan – environmental management (*State highway maintenance contract proforma manual* (SM032)).

Contract management reviews will assess compliance with the above requirements.

Benefits

The NZTA benefits from applying the environmental and social principles of the *Environmental plan* by:

- reducing compliance, construction and maintenance costs
- demonstrating NZTA's social and environmental responsibility
- building public trust and confidence in the NZTA.

Promoting environmental considerations

To promote environmental considerations, the project manager should through the contracts:

- identify products and services that have the least human and environmental impacts
- promote fit for purposes rather than lowest price techniques
- select products that provide best whole of life solutions
- ensure capital costs are not reduced at the expense of ongoing maintenance costs
- ensure sufficient time frames, or staging of parts of projects, are provided to allow environmental considerations to be effectively addressed.

Communication of social and environmental expectations

To communicate the NZTA's social and environmental expectations the project manager should ensure the:

a. tender documents:
   - include the project-specific environmental issues and consent conditions that must be addressed in supplier's methodology
   - provide contract incentives for meeting and exceeding environmental performance criteria

b. project documentation:
   - records how social and environmental issues have been considered and addressed in the final design report
   - maintains records of environmental decisions and initiatives in monthly project reports, which can also be in project communications and reporting

c. project communications:
   - make sure contractors are aware of the resource consent conditions, environmental expectations and the reasons why these issues are important
   - keep project staff informed of the environmental and social requirements, progress and opportunities for improvement.

Suppliers' responsibilities

To promote the NZTA's social and environmental responsibilities, the project manager should ensure suppliers have relevant expertise and systems in place to promote the *Environmental plan* objectives by:

- analysing the social and environmental implications described in the contractors' proposed methodologies
- completing site inspections to review the appropriateness of methodologies for given site conditions
- implementing ongoing training programs to educate project staff on site safety issues
- ensuring all proposed environmental and social mitigation are built and functioning according to design.

2.4 Resource management

Planning policy manual (SP/M/001).

Planning practice guidelines (SM085).

Environmental policy manual (SP/M/023):

- *Environmental plan.*

Professional services contract proforma manual (SM030):

- Minimum standards (MS):
  - Z/1 Consultant's project quality plan
  - Z/4 Contractor's social and environmental management plan
  - Z/6 Scheme assessment report
  - Z/18 Scoping report
  - Z/19 Social and environmental management
  - Z/20 Project feasibility report.
- Professional services guidelines (PSG):
  - PSG/13 Social and environmental management.

2.5 Integrated planning/travel demand management

No guidelines are available for this process.

2.6 Scope verification

For guidance refer to a copy of value assurance gate process available as an electronic Excel workbook on the NZ Transport Agency' website (www.nzta.govt.nz/resources/project-management-manual/pmm.html).

2.7 Scope control

No guidelines are available for this process.

3.1 Risk

The guidance notes cover the following topics:

- risk management overview
- programme and risk contingency estimation
- communication and sharing experiences
- cost risk
- time risk
- risk insurance
- peer review and parallel estimate
- risk assessment principles
- risk workshops.

Risk management overview

Purpose

The purpose of risk management is to ensure all known risks (threats and opportunities) are identified, and appropriate risk assessment and treatment occurs.

Planning procedure

1. Locate and review any activity risk files created for the project or asset being managed.
2. Decide if a formal activity risk file is appropriate. If appropriate, identify any risks (threats and opportunities), assess them and develop a risk treatment plan describing actions to be taken to address the risks.
3. Ensure sufficient funding is available to implement the risk treatment strategies and contingency funding is available to cover the expected estimate.
4. Select the review team for any activity risk file reviews, and timetable the reviews.

Management procedure

1. Assemble the risk review team and undertake the review.
2. Update the activity risk file, ensuring assumptions are clearly recorded.
3. Check sufficient funding is available and included in the funding requirement to implement risk treatment strategies and identified contingencies.
4. Ensure all risks are managed according to risk treatment plans.
5. Ensure regular reviews and reports are completed for activity risks and to manage the contingency fund expenditure as the risks are realised.
6. Encourage a risk conscious culture and environment.

Records

Copies of all activity risk files must be retained.

Management manuals

The following management manuals and technical documents apply. Many of these documents have been developed with industry and local authority input. They establish standards and guidelines for safe and cost effective state highway management practices:

- *Risk management process manual* (AC/Man/1)
- *Insurance and risk management manual* (SM013)
- *Australian and New Zealand standard on risk management* (AS/NZS 4360:2004)
- *Cost estimation manual* (SM014)
- *Contracts procedures manual* (SM021)
- *Economic evaluation manual* (volume 1).

Programme and risk contingency estimation

General

To sensibly estimate project costs, it is vital to appropriately analyse possible project risks (threats and opportunities), that could occur during the project's life cycle.

Risks generally impact projects by either changing the out-turn cost and/or changing the completion date. Time-related risks also often have cost implications. Therefore, when reviewing project estimates it is important to:

- assess time and cost risks
- consider the provisions of SM014 and AC/Man/1
- consider process 5.1 statutory time frames (part 4 of this manual).

Effective risk management requires a systematic continuous approach to risk identification, assessment and control. In assessing risk impacts, it is important to consider both cost and programme. The AC/Man/1 manual provides guidance on assessing these risks.

Analysis of risk levels

The project manager must decide which analysis level is appropriate to the project under consideration:

a. The informal approach to risk management applies to projects which are:
   - low cost and short duration
   - routine and/or have a low impact on the NZ Transport Agency's (NZTA) business.

b. The general approach applies to all other projects.

c. The advanced approach applies to one-off applications within the continuous general approach and applies to projects which are:
   - high cost and long duration
   - complex and/or have a high impact on the NZTA's business.

General approach to risk management

The general approach to risk management includes the following:

a. A qualitative approach applied on a continuous basis. This results in risk being ranked consistently. It is targeted at achieving appropriate risk management through the systematic application of generalised risk management processes, which sets out risk management procedures. These include:
   - identifying
   - analysing
   - evaluating
   - treating
   - reviewing.

b. The NZTA's risk analysis method involves analysing risk by assigning it a consequence and likelihood rating to determine its overall risk score.

Risks ranked as high, very high or extreme must be treated immediately. The AC/Man/1 manual requires the advanced approach to be taken if there is one extreme risk or five very high risks.

c. Once ranked, the likelihood and consequence of each risk must be applied to the project programme. If project task durations are lengthened, this may affect other task's completion, creating a 'ripple effect' on the overall completion date. While the cost implication of a particular task risk is generally well considered, the ripple effect on other tasks, and their consequent cost increases can be overlooked. It is important to assign a time element to each task. Examples of questions to ask are listed below:
   - If this task duration runs over time, what other tasks will be affected?
   - How will this affect the project completion date and total project costs?

Advanced approach to risk management

The advanced approach follows the same process as described above, except it looks at the risks in more detail using a quantitative method based on:

- determining probabilities, likelihood and impacts in terms of cost, programme, quality
- applying these amounts to the project's estimate and programme and using Monte Carlo type simulation techniques to determine the range of out-turn costs and programme duration, against the probability of achieving it.

This approach allows the risks and opportunities that have the greatest influence on the final result to be identified. This in turn assists prioritising treatment actions.

The following table, extracted from SM014, shows the method to be used to calculate the contingency and funding risk at various project stages, where the:

- general approach roughly equates to the assessment method and can be based on percentages and lump sums, but allows the impact of risks to be considered without a direct cost impact
- advanced approach equates to the analysis method and uses Monte Carlo type simulation techniques.

Estimate	<$3 million	>$3 million < $10 million	>$10 million
FE	Assessment	Assessment	Assessment
OE	Assessment	Assessment/Analysis	Assessment/Analysis
SE	Assessment	Assessment/Analysis	Analysis
PE	Assessment	Analysis	Analysis
DE	Assessment	Analysis	Analysis
CE	Assessment	Analysis	Analysis

Communication and sharing experiences

Communicating risks is essential to their effective management. Refer to section 4.5 in AC/Man/1. Project managers and divisions need to avoid working in isolation on risk-related issues and encourage interdivisional talk instead. At a regional level this translates to operations, capital, planning and administrative teams coming together to discuss common issues.

Risk should be included in each weekly management meeting. Regional senior management teams should be prepared to share significant risks from their risk registers and to add any relevant risks to their risk registers.

Cost risk

The following key dimensions must be assessed when looking at cost risk:

a. Rates – Influenced by market factors, escalation, competitive pricing, availability, margins.

b. Quantities – Influenced by design, methodology, site conditions.

c. Productivity – Influenced by programme, planning, methodology, weather conditions, site conditions.

All these dimensions affect the out-turn cost of a project, and should be understood and managed by the NZTA project manager.

Time risk

The saying 'time is money' is fundamental to project delivery. Each task element of a programme contains uncertainty, and we need to account for the risk range for each task's duration in order to determine the potential risks to the project's contract.

The level of scrutiny should match the importance of delivering the project on time.

The NZTA project manager should pay attention to a consultant's programme or a tender submission to appreciate the structure and sensibility of the programme:

a. Identify the primary and secondary critical path, and the road blocks to achieving that.

b. Identify any parallel activities that are 'bunched up' and the supplier is unable to effectively resource for, thus leading to an unrealistic completion time.

c. Appreciate the risk exposure with the opening or commencement of new works/areas (learning curve, underground services, ground conditions).

d. Influence from external stakeholders.

If required, more advance risk tools should be used to model the range of outcomes.

Risk insurance

The NZTA arranges insurance at a national level. The SM013 manual sets out the NZTA's policy and procedures for insuring against risk. A list of approved insurers is included in SM021.

To ensure the NZTA meets its obligations to the insurance company, it is important to inform them about situations that could affect insurance cover. These situations cannot all be listed here, but examples include:

- risks which are outside the normal range (inform the insurance company immediately these are identified)
- a supplier failing to perform to the contract specifications
- an adverse incident that may implicate the NZTA. Do not under any circumstances admit liability to the insurance company, or suggest an NZTA supplier is liable. Refer to SM013 for guidance before completing the insurance form
- any risk-associated matter where the project manager is unsure.

The project manager must ensure their contractors' and consultants' policies match the contractual requirements before the work begins. Sighting the signed seventh schedule for contracts using New Zealand Standard 3910:2003 *Conditions of contract for building and civil engineering construction* (NZS 3910:2003) is the simplest way of checking their policies.

Peer review and parallel estimate

For large projects, when finalising the risk assessment, the project manager should seek peer advice before proceeding. If the project's value is greater than $50 million, a parallel estimator should be requested. This will provide an independent estimate, which is to be reconciled against the project estimate. The SM014 manual describes this process.

Network operations and maintenance

Network users judge the NZTA on the way networks are maintained, operated and administered. As a result, the NZTA:

- needs the network operations to be of a high standard and to be involved in events that enhance or prevent this
- is most likely to achieve its outcomes by adopting a business-like approach to risk management. If a project meets the requirements for implementing general risk management, activity risk registers should be established according to SM013.

As a general rule network operations activity risk registers are:

- living documents that should be regularly reviewed and updated, and available to all project personnel
- Established and owned by the network management consultant
- Simplified and added to at a regional level and national level.

Suppliers' risk registers should identify all risks, and report to the NZTA those risks that could affect the NZTA's business outcomes. The following is an example of the way significant risks should be handled:

- A region has a poorly performing contractor and the forecast is for this to continue and potentially adversely affect the expectations of the NZTA's customers.
- The performance is directly attributed to the contractors' ineffective management.
- A treatment plan that can be monitored by a performance indicator is developed. The performance indicator is graphed and visibly displayed.
- Weekly progress in resolving the situation is monitored by all personnel.

Contingency planning

When a major event occurs, each asset manager should have a generic strategy in place defining their personal response and involvement. It is likely the event will be weather or traffic incident related, causing disruption to the network and closing state highways.

These sorts of event need to be included in all asset risk registers, at both activity and regional level. Treatment plans for events such as these will also have been developed, but may not be detailed enough to otherwise guide the project manager's behaviour and involvement.

The following points need to be covered or considered in the project manager's own risk strategy:

a. Ensure they are included in the communication plan, and informed early of significant events occurring on their network

b. Know who else must be informed and when, eg regional managers, national office, the communications officer, New Zealand Automobile Association, 0800 line, etc.

c. Visit the site as soon as possible to determine first hand the extent of the event and the proposed remedial works to reopen the road.

d. Be part of the team of consultants and contractors managing the event.

e. Have correct facts and be prepared to talk to the media.

f. Make arrangements for someone in the office to cover, or postpone any previous appointments if an extended presence at site is required.

There will be others to consider depending on individual circumstances. These may include naming the stand-ins for site visits, or a strategy for seeing to providing/obtaining transport at very short notice.

The most important issue is to know how a major event will be handled before it occurs. The project manager's role, and how they fit into the team of consultants and contractors geared up to manage the event, needs to be identified and understood. In most circumstances, personal attendance at the event site is recommended, as this shows the NZTA's ownership of the problem and the network. It gives road users the assurance that the NZTA acknowledges the event is serious and is actively supporting its suppliers who are sorting it out.

Risk assessment principles

Introduction

Risk assessment is the analysis process used to determine the project's contingency costs and time. The assessment's conclusions set the bar for the project's successful delivery.

The AC/Man/1 manual:

- prescribes the risk assessment process
- has a two-fold purpose:

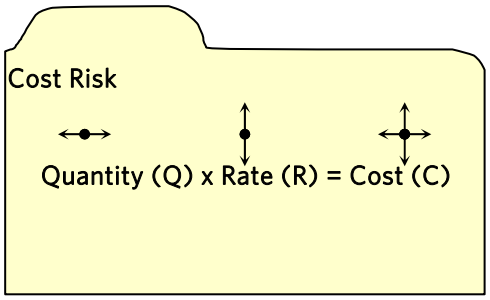
a. to act as the central repository for using, formal and structured risk management tools and mechanisms, and

b. to encourage project managers to use the risk management tools and mechanisms. Besides its general application, the manual is particularly relevant to those involved in policy setting and/or national, regional, asset or project management activities.

This process summarises the key risk assessment principles which project managers should be familiar with.

Cost risk

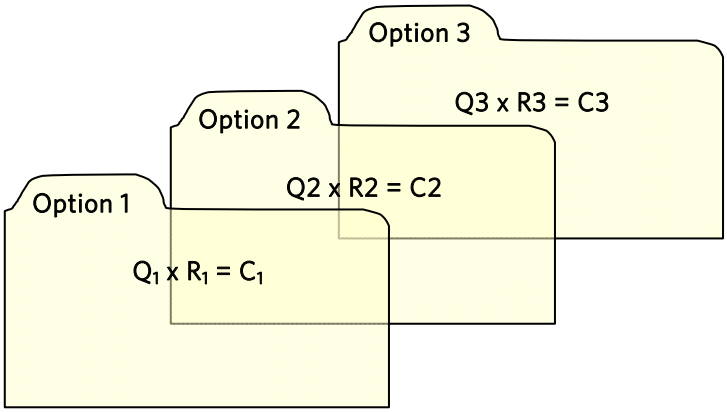
A fundamental principle in estimating cost risk is illustrated by the following equation:



Comprehensive project cost estimates cannot be calculated using whole-number quantity values and rates. In reality, all that can be predicted at a project's outset are *ranges* of quantities and rates (in effect mathematical functions or distributions).

These result in a corresponding range of costs for individual items, and a summation range (or distribution) of the project cost.

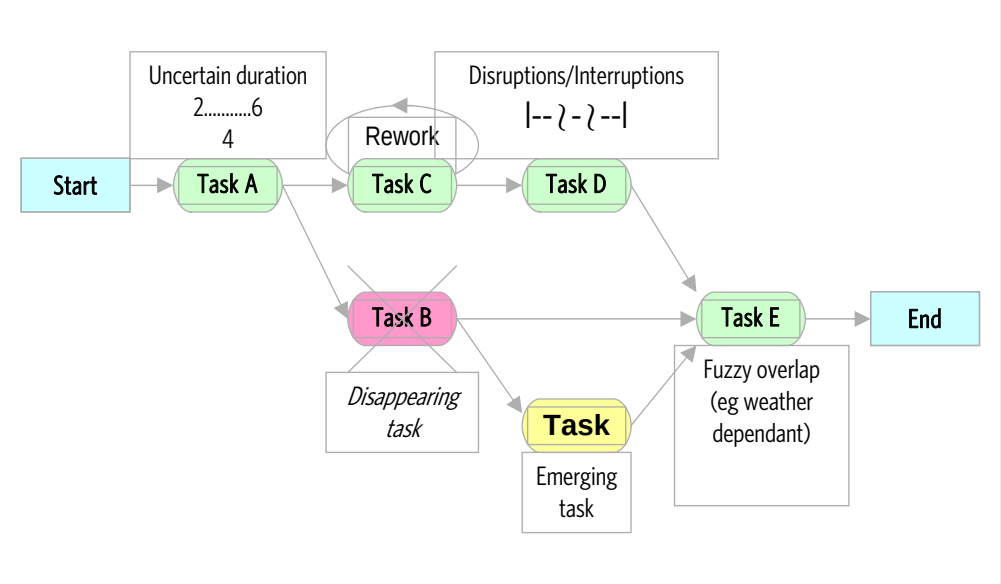
In the early stages of a project, there tend to be unresolved options on designs and construction methodologies. In effect, this results in a series of potential costs, each of which is built up from the ranges of quantities and rates. This is illustrated below:



In some instances, the unresolved items in relation to design or construction methodologies impact on subsequent cost items. A decision about whether a retaining wall is to be piled or will rely on gravity earthworks quantities and wall construction rates is an example of this. This example also illustrates the way the cost range operates, as the eventual decision about the retaining wall will also affect the construction duration. A longer construction period incurs more costs (eg overhead, plant hire, labour,etc) which need to be included in the risk analysis model. The AC/Man/1 manual identified others items which should be considered as part of the risk analysis.

Time risk

The project programme needs to show the risk range for each task's duration, and other potential risks on the task's end date and the project's contract period. This is illustrated in the example programme flow chart below:



The following principles are illustrated in the example above:

a. Uncertain duration (task A) – may take two weeks in summer but six in winter. The programme only allows for four weeks.

b. Disappearing task (task B) – some tasks become unnecessary, so disappear from the project timetable. For example the project programme may include placing geotextile , but during construction the soil material is found to be strong enough and so the geotextile is not required.

c. Rework task (task C) – increases the time risk. The task may take considerably longer than programmed if it needs to be reworked.

d. Interrupted task (task D) – increases the time risk. An example of this is where work is disrupted while underground services are being located.

e. Weather dependent tasks (task E) – tasks may be delayed or interrupted due to adverse weather conditions and the associated difficulties in working with wet or dry material.

f. Emerging tasks (task F) – a new task emerges when task B disappears. It is likely to have a different duration and cost from task B. For instance, using the task B geotextile example, granular material may be imported instead of using the geotextile to increase the in-situ soil material's bearing capacity.

Risk analysis inputs tools

The functions rate and quantity play in the analysis need to be modelled to determine the compound cost distribution. When working with distributions, it is not correct to undertake a simple multiplication of the most likely rate by the most likely cost. Instead, *@Risk* or other similar risk analysis software should be used to model the compounding of the quantity and rate functions to accurately determine the cost distribution. Similar modelling needs to be undertaken for time risk.

How the quantity, rate and duration functions may vary needs to be considered to decide cost estimates and the contract duration with a fair degree of confidence. The parameters can be modelled to vary according to some 100 different common functions. These include the normal (Gaussian) distribution (figure 1), Poisson distribution (figure 2), triangular distribution (figure 3) and uniform distribution (figure 4).

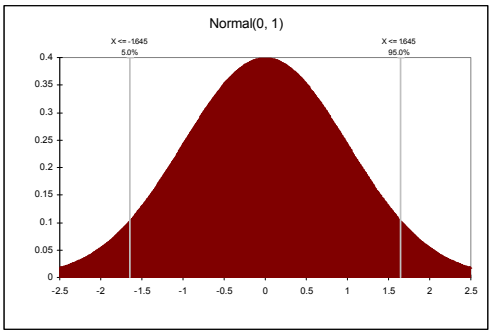


Figure 1: Normal distribution

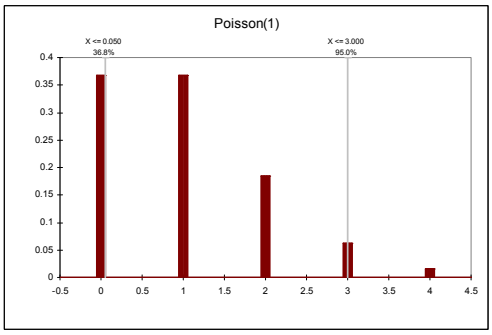


Figure 2: Poisson distribution

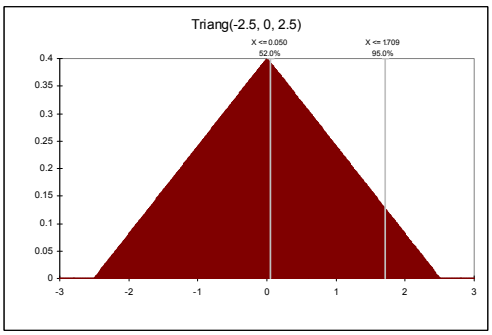


Figure 3: Triangular distribution

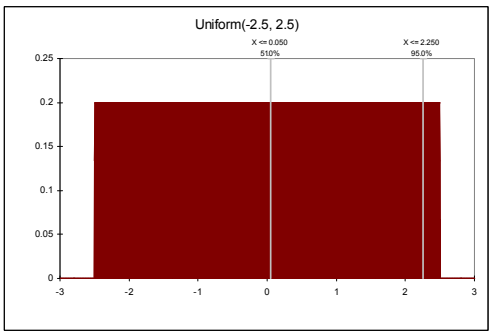


Figure 4: Uniform distribution

The type of modelling function that best suits the parameter needs to be duly considered to ensure effective risk analysis results.

The analysis also needs to consider dependencies such as co-variance. Further details can be found in the AC/Man/1.

Risk analysis outputs

The risk analysis outputs should result in a comprehensive risk model and risk report. The report needs to be a clear stand-alone document, and incorporate the risk register. The risks should be clearly described in the register, and include the modelling description, recommended mitigation and fallback options. Action dates and the name of the person best to manage each risk also need to be identified. The following table indicates the number of risks the project manager should expect to analyse.

Project value	Approximate number of risks analysed
$3 million -$10 million	20-30 cost risks and a similar number of time risks
$50 million +	50-100 cost risks and a similar number of time risks

The risk report should include the analysis outputs and:

- state the base and expected estimates and the ninety-fifth percentile estimate. A similar analysis also needs to be included in relation to the construction period
- interpret the analysis results. One useful interpretive output is to identify the risks that have potential to make or break a project's success.

The SM014 manual provides additional guidelines in relation to this.

Communicating risk ranges

The project manager needs to communicate the cost and duration ranges of individual projects. This means communicating the risk-adjusted cost and time throughout the NZTA's business. The objective is to move away from single targets, and aim instead to promote performance in terms of reliably achieving costs and durations within predetermined ranges

Risk workshops

General

Risk workshops systematically identify and assess risks, to develop and implement appropriate treatment strategies.

Typically, risk workshops may be held:

a. for capital projects:
   - at the beginning and end of each project phase (investigation, design and construction)
   - at key milestones during the current phase for major or high risk project development
   - if extraordinary circumstance arise

b. for network management projects on an agreed regular basis

c. to complete blue sky reviews and agree risk sharing

d. to update risk registers and associated treatment plans.

Pre-workshop procedure

As is the case for value management workshops (see process 6.2), the project manager needs to prepare for the workshop by procuring a facilitator and together with the project consultant:

a. establish the preliminary list of workshop objectives. The Facilitation team will refine and finalise these prior to the workshop

b. identify and invite stakeholder representatives who represent a broad cross section of the project stakeholders. These people should have adequate knowledge and skills to allow the workshop objectives to be adequately resolved and proposals implemented

c. compile and distribute the background documentation before the workshop. The documentation must include:
   - the venue, address, accessibility, etc
   - agenda for proceedings
   - an introduction to risk management
   - list of workshop objectives
   - project background data
   - list of participants.

Workshop process

The workshop will be conducted in two parts. The project manager must be actively involved in the entire process. The first part focuses on identifying, assessing, and rating risks (threats and opportunities), while the second part concentrates on identifying and reviewing risk treatment strategies and actions.

The workshop process includes the following topics:

- Identifying, analysing and assessing risks by:
  - establishing the context
  - identifying current working assumptions
  - analysing risks according to AC/Man/1
  - identifying and evaluating possible options to manage risk.
- Developing and/or updating the:
  - risk register to record and prioritise the known risks
  - risk treatment plan so the project can be continuously monitored to determine its susceptibility to risk
  - risk treatment strategy to either eliminate or mitigate or avoid the known risks
  - if a risk can not be avoided, the treatment strategy must be implemented as soon as the risk becomes apparent. If the risk does become a reality, the project manager must report according to AC/Man/1 (Insurance).
- Ensuring all participants understand the risk management objectives, and their roles in achieving these objectives.
- Preparing a workshop report which:
  - lists the top ten risks and their identified treatments
  - identifies any new or extraordinary risks
  - establishes the processes for ongoing monitoring and feedback and risk sharing
  - includes an action plan.

Monitoring and feedback

Effective monitoring enables the:

- risk register to be continuously updated
- detailed reviews to be made, at predetermined stages, of the project's assumptions, risks and uncertainties

Effective feedback enables:

- unprecedented events and lessons learnt to be captured in a typical project risk schedule
- the project team to comment on the:
  - risk management process' overall effectiveness
  - adverse events that occurred that were different from the risks recorded in the risk register.

Sharing risk

Risk sharing involves the NZTA and one or more parties identifying and assessing risks.

In many circumstances, acceptable solutions involve some risk taking:

- during the design phase
- during the construction phase, when the contractor comes across unforeseen circumstances which can be best managed by sharing the associated risk with the NZTA.

It is important to note there is substantial difference between shared risk and liability. This difference must be clear in the project manager's mind.

The risk sharing process requires the project manager to:

- encourage supplier innovation, while ensuring suppliers advise the project manager once a risk is contemplated
- assess the risk, and encourage the supplier to consider its full range of treatment options and potential consequences
- if required, arrange for the potential shared risk to be reviewed
- discuss the proposed shared risk with the project sponsor, and obtain the necessary approvals to enter into a shared risk arrangement.

Once approval has been obtained, the shared risk must be documented so both parties are clear on their respective obligations.

Blue sky reviews

This part of risk management is frequently forgotten, which results in new threats or opportunities often being overlooked.

Blue sky reviews enable the project team to review the project risk registers by considering events which have occurred since the last review at the project's local and global levels. The review process decides which of these need to be recognised as threats or opportunities.

The process:

- is necessary when events such as new legislation is enacted, a new contractor starting, staff movements, procedural changes, elections, resource price increases, contractual issues, or changes in project assumptions occur during a project
- requires all new risks (threats or opportunities) to be added the risk register with appropriate action plans developed.

4.1 Cost estimation

Professional services fees

General

This guideline is designed to assist project managers with:

- estimating project's professional services fee component
- providing fee estimates in the State Highway Project Financial Management System (PROMAN) as part of the annual planning process
- checking professional services contract estimates
- evaluating professional services fee estimates.

When estimating a professional services contract, its best to set out the proposed contract pricing schedule, and use that as a basis to build up the cost estimate for that part of the phase/project estimate.

Fee curves

The fee curves attached to this process were developed by interrogating PROMAN, and for each project type (passing lanes, block general and large projects) working out the:

- construction phase cost
- construction cost as a percentage of the out-turn construction cost
- design phase cost as a percentage of the out-turn construction cost
- investigation phase cost as a percentage of the out-turn construction cost.

The information was then tabulated and plotted for each project type as follows:

1. Percentage investigation fee (I) versus construction cost
2. Percentage design fee (D) versus construction cost
3. Percentage construction fee (M) versus construction cost
4. Percentage investigation and design fees (I + D) versus construction cost
5. Percentage total fee (I + D + M) versus construction cost.

Combining the investigation and design fees occurs because some project's investigation phase include work such as geotechnical testing, while others include this work in the design phase. However, all projects appear to include a similar amount of work by the end of design.

While trend lines have been plotted, they are not a particularly good fit and need to be used with caution.

It is expected the charts be reviewed and updated annually using current PROMAN data. This review may include assessing the data quality adjusting fees to reflect cost fluctuations.

Fee estimate guideline

Rather than relying on the fee curves alone, project managers should either base their fee estimates on the information provided in the following table, or use the fee curves and include an allowance for the project's complexity.

Project type	Investigation		Design		Construction	
	Project value (000)	Fee (%)	Project value (000)	Fee (%)	Project value	Fee (%)
Passing lanes	< $500,000	5	< $500,000	8	< $500,000	10
	> $500,000	10	> $500,000	5	> $500,000	5
Block general	< $750,000	10	< $750,000	10	< $1million	10
	> $750,000	5	> $750,000	5	$1 to $1.75 million	7.5
					> $1.75 million	5
Large	All	4	All	6	All	5

The data scatter, and the assumptions made to develop the charts means relying on the fee curves alone is likely to result in project managers underestimating the actual fee costs.

Assumptions, risks and limitations

The assumptions, risks and limitations associated with this analysis include (excluding apparently incorrect PROMAN data):

a. using PROMAN data that may not reflect the true or full project cost. This includes using data for a number of large projects that are only partially complete. While construction costs may increase it is unlikely these will change by a significant amount as the construction contract has already started

b. missing data, particularly in relation to large projects. There are several large projects where all phase costs are not available. This may be caused by significant delays between phases, or (I) phases being completed under separate professional services contracts

c. not allowing for costs fluctuations. This means the costs are real dollar costs for the year the phase was completed. If there has been a significant delay between phases, this may skew the data. However, given the data scatter and that most projects were completed in a reasonably stable cost environment, it is unlikely this will result in any significant changes

d. not attempting to value the impact on professional services fess and construction costs associated with changes to:

   - specifications and standards
   - the NZ Transport Agency's (NZTA) expectations and industry best practice
   - statutory provisions such as the Resource Management Act 1991 and the Land Transport Management Act 2003

e. not attempting to:

   - explain variations in data associated with variations in procurement method or work type
   - quantify any regional bias.

f. not making any allowance for design and construct projects.

As stated above, the analysis is based on project's out-turn construction cost. While this cost was unknown at the time the fees were estimated, no attempt was made to quantify this impact. Improved physical works.

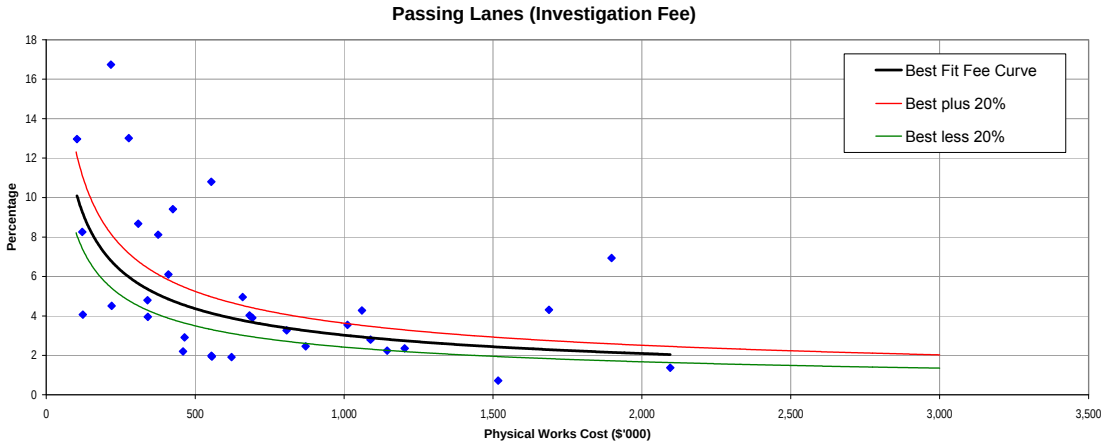
Association of Consulting Engineers New Zealand (ACENZ) fee curve comparisons

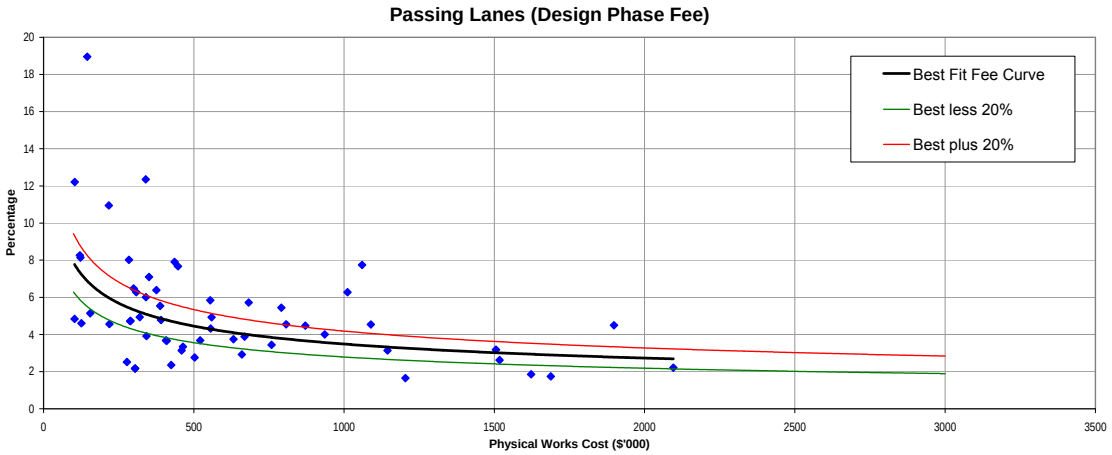
The ACENZ fee curves:

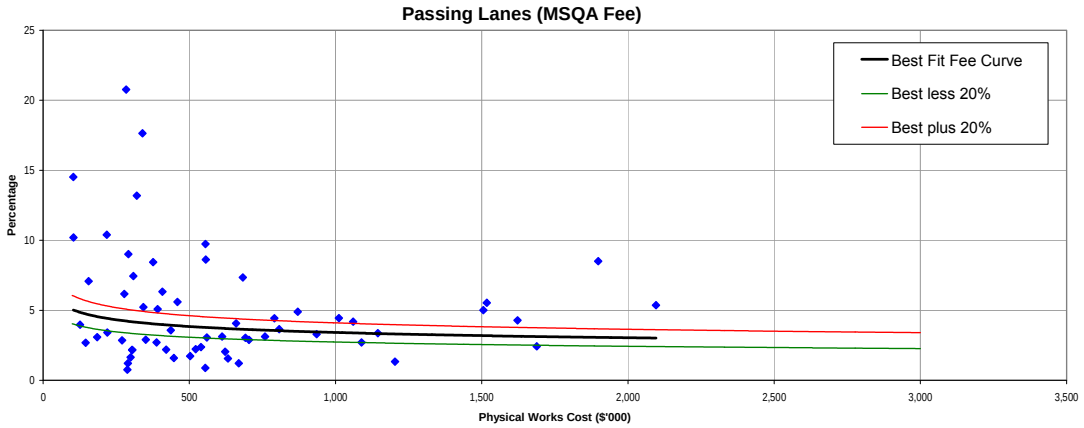
a. recommend class GG for design of state highway works, and class HH for design of motorway projects. These curves are substantially lower than the fee estimate guideline provided above. This is because the ACENZ curves only reflect the design cost and not the full cost of investigation and design

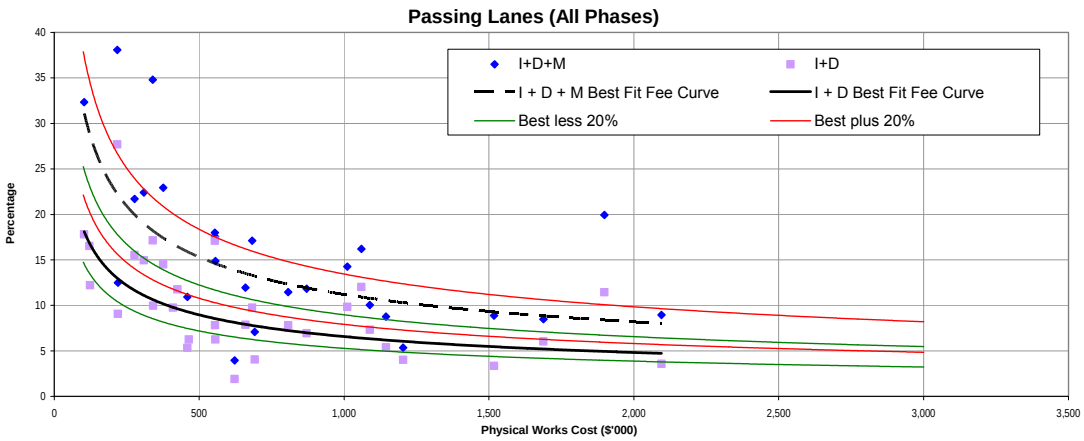
b. exclude amongst other things, feasibility studies, estimate preparation, geotechnical investigations, site surveys, evaluating different solutions, local authority liaison, building consents, economic studies, alteration and strengthening.

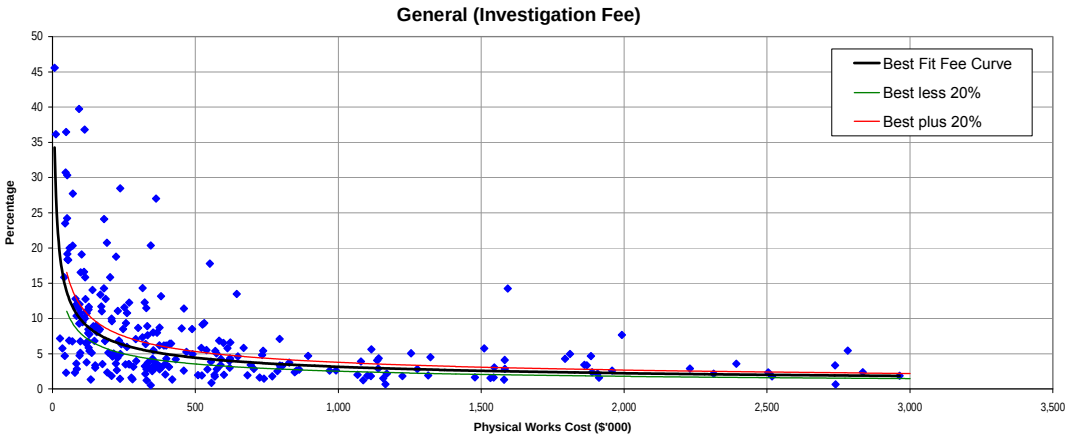
In terms of construction, the fee estimate guidelines lie somewhere between the ACENZ's CM4 and CM5 curves.

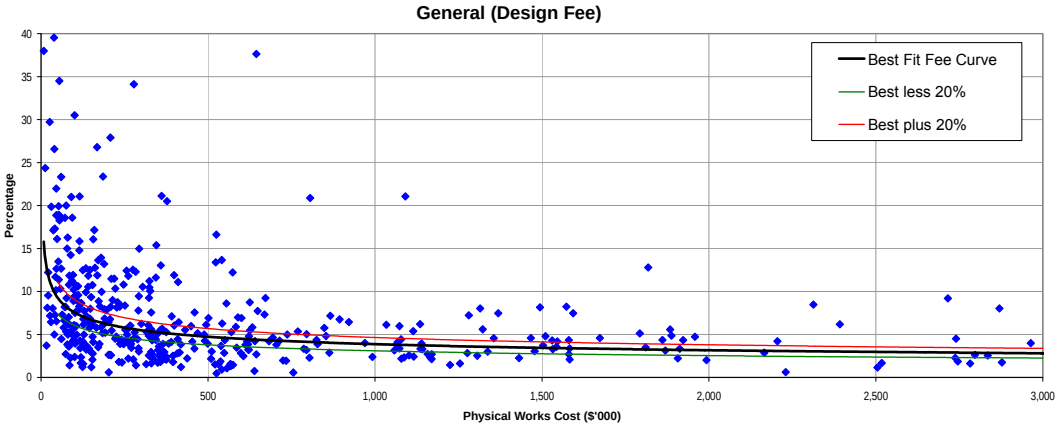

Passing Lanes (Investigation Fee)
Best Fit Fee Curve
Best plus 20%
Best less 20%
Percentage
Physical Works Cost ($'000)

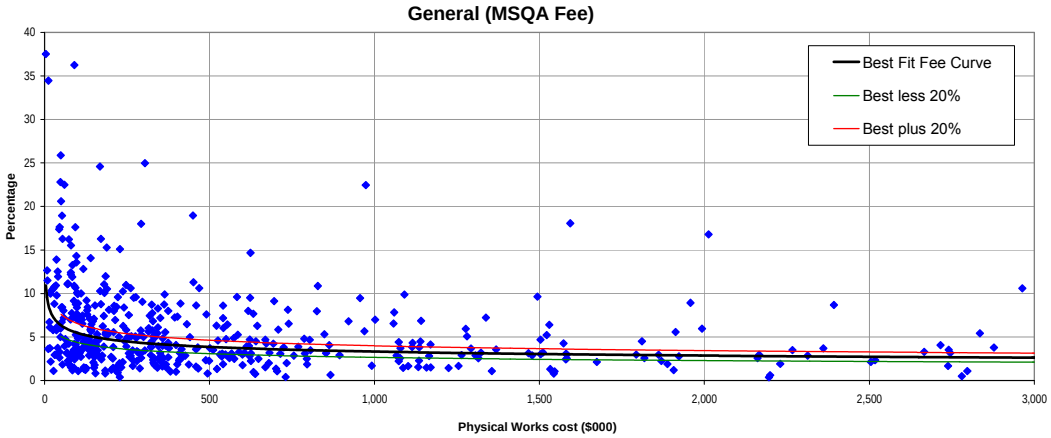

Passing Lanes (Design Phase Fee)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Percentage
Physical Works Cost ($'000)

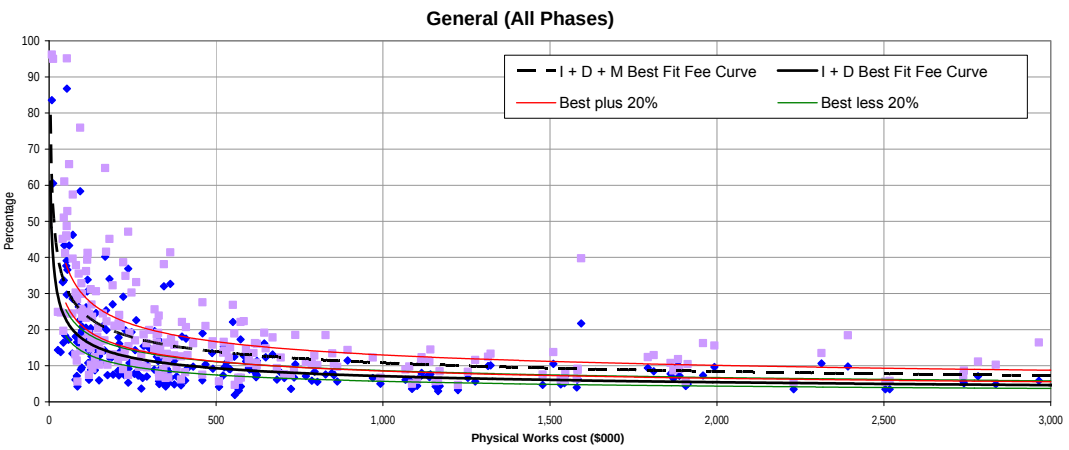

Passing Lanes (MSQA Fee)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Percentage
Physical Works Cost ($'000)

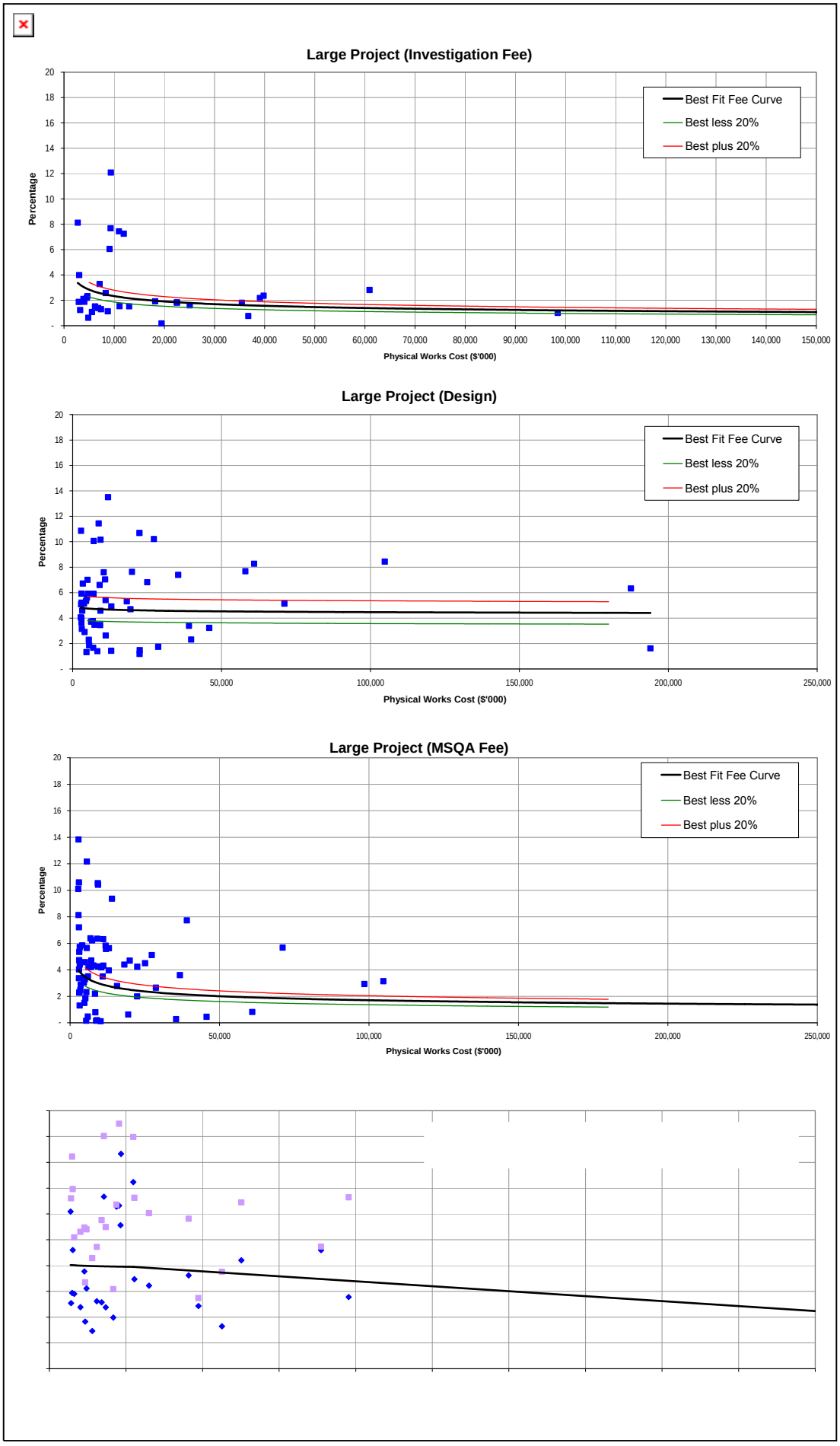

Passing Lanes (All Phases)
I+D+M
I+D
I + D + M Best Fit Fee Curve
I + D Best Fit Fee Curve
Best less 20%
Best plus 20%
Percentage
Physical Works Cost ($'000)


General (Investigation Fee)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Percentage
Physical Works Cost ($'000)


General (Design Fee)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Percentage
Physical Works Cost ($'000)


General (MSQA Fee)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Percentage
Physical Works cost ($000)


General (All Phases)
I + D + M Best Fit Fee Curve
I + D Best Fit Fee Curve
Best plus 20%
Best less 20%
Percentage
Physical Works cost ($000)


Large Project (Investigation Fee)
Percentage
Physical Works Cost ($'000)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Large Project (Design)
Percentage
Physical Works Cost ($'000)
Best Fit Fee Curve
Best less 20%
Best plus 20%
Large Project (MSQA Fee)
Percentage
Physical Works Cost ($'000)
Best Fit Fee Curve
Best less 20%
Best plus 20%

Construction costs

General

This guideline is designed to assist project managers with:

- estimating project's construction costs
- providing construction estimates in PROMAN as part of the annual planning process
- checking construction contract estimates.

Construction estimates

While it is a task of the consultant to prepare the estimate, it is an expectation of project managers to do their own sanity check. Parallel estimates and cost reviews are covered in process 6.4. However, each office holds a raft of contract rate information, for which comparison can often be made with previous like (or like environment) projects.

4.2 Funding

LTP online

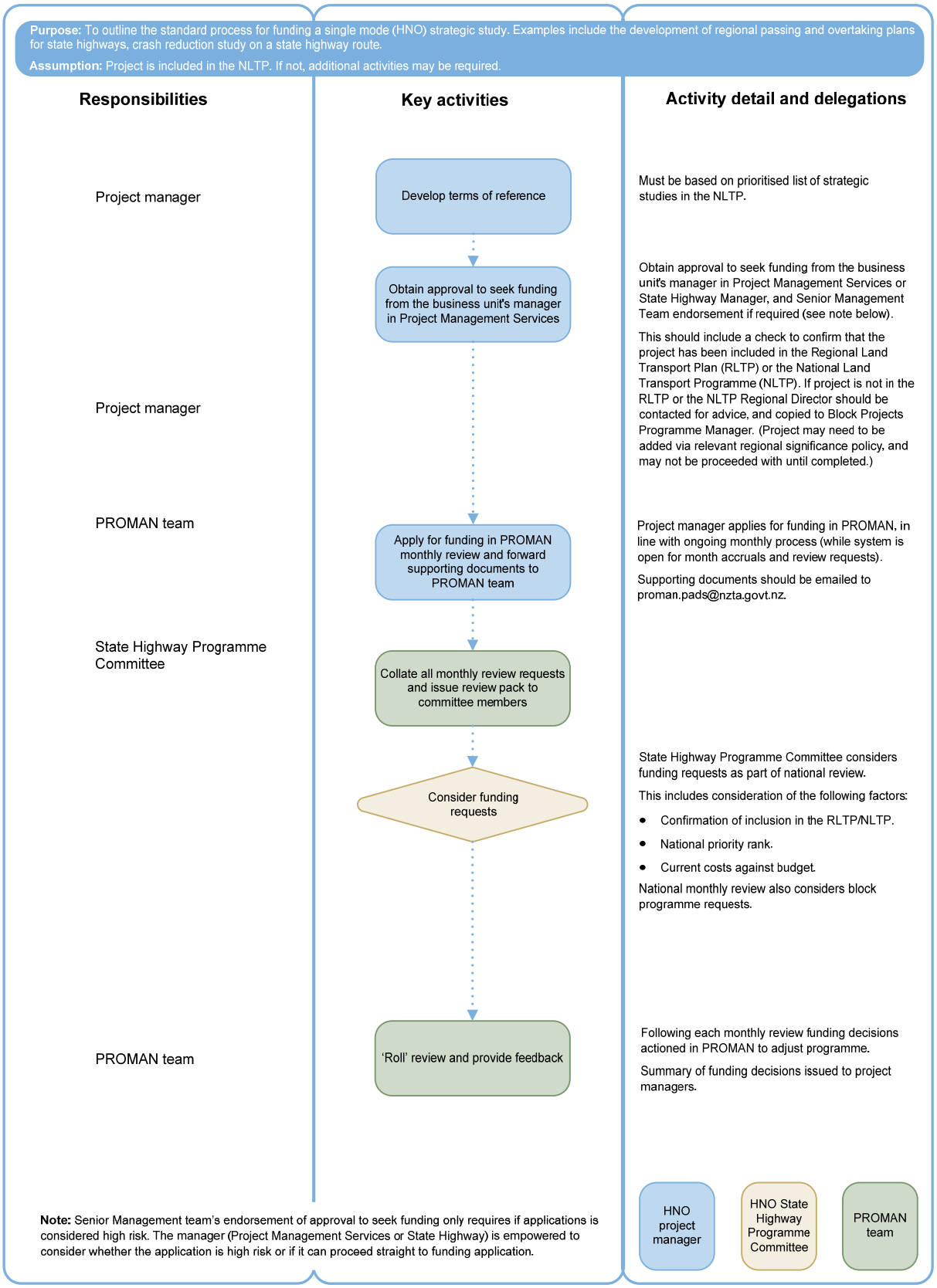
Guidance notes are available via the help fields in LTP online when completing funding applications.

As the questions in LTP online are updated from time to time, to reflect current priorities and issues. The large project programme manager is to be contacted for an up to date extract of the current LTP online questions and relevant guidance notes on their completion.

Funding application process

The following flow charts represent the activities required and process flow around the funding application process.

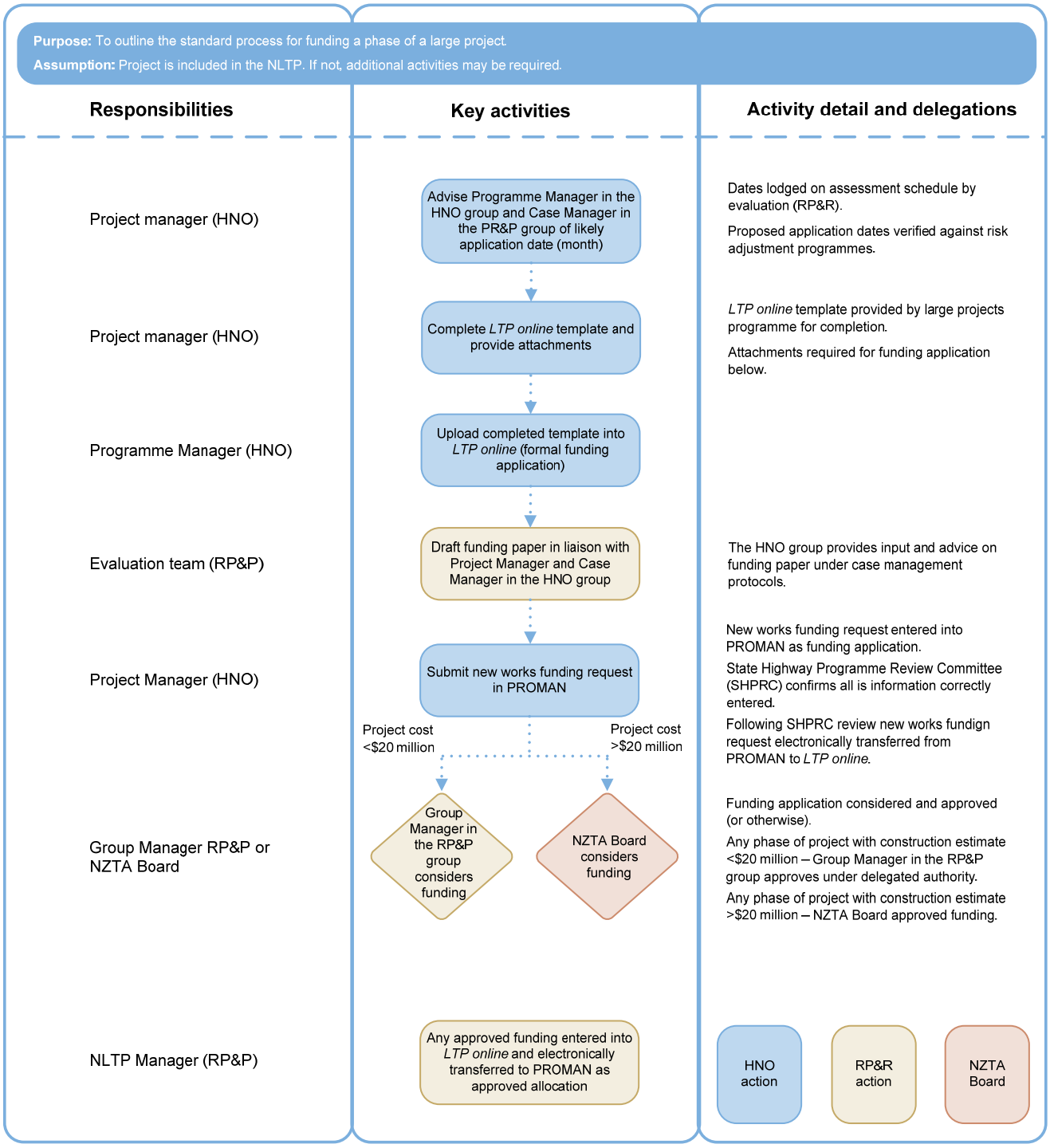
HNO strategy studies funding



Strategy study attachments:

- Terms of reference are required to be attached to funding requests.

Large project funding – all phases

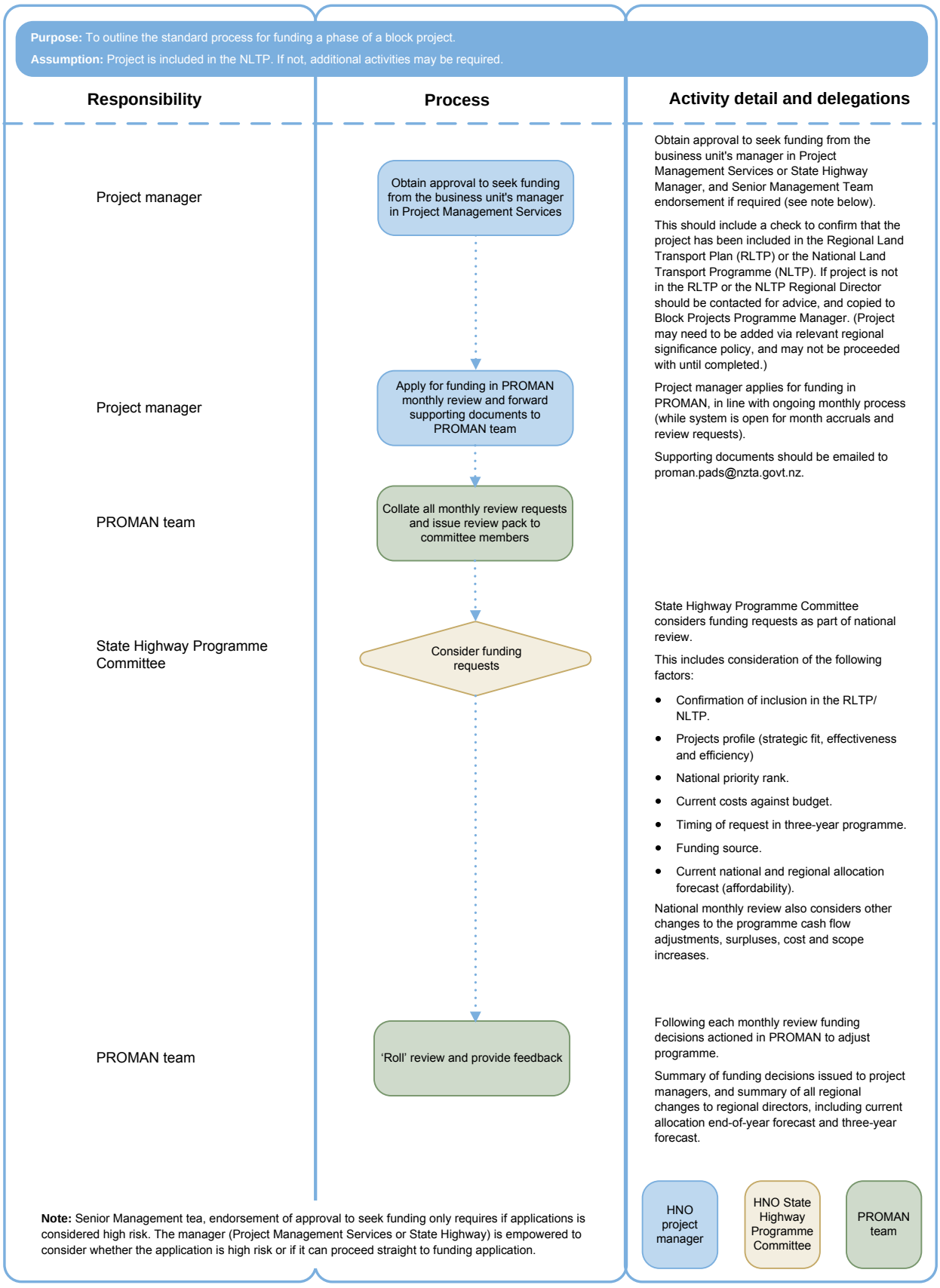


Large projects attachments

The following attachments are required to be attached to LTP online funding requests:

- Investigation phase:
  - location map
  - project feasibility report (PFR)
  - risk analysis and management plan
  - benefit cost ratio (BCR) calculations
  - other specific documents may be requested in individual circumstances.
- Design phase:
  - location map
  - scheme assessment report
  - risk analysis and management plan
  - updated BCR calculations
  - economics peer review (independent)
  - other specific documents may be requested in individual circumstances.
- Construction phase:
  - location map
  - risk analysis and management plan
  - updated BCR calculations
  - economics peer review (independent)
  - other specific documents may be requested in individual circumstances.

Block project funding – all phases



Block projects attachments

The attachment of any documentation to LTP online for block projects is arranged or undertaken in liaison with the block programme manager, and generally shall be limited to the new works request and any price level adjustment forms. Additional information may be requested from time to time.

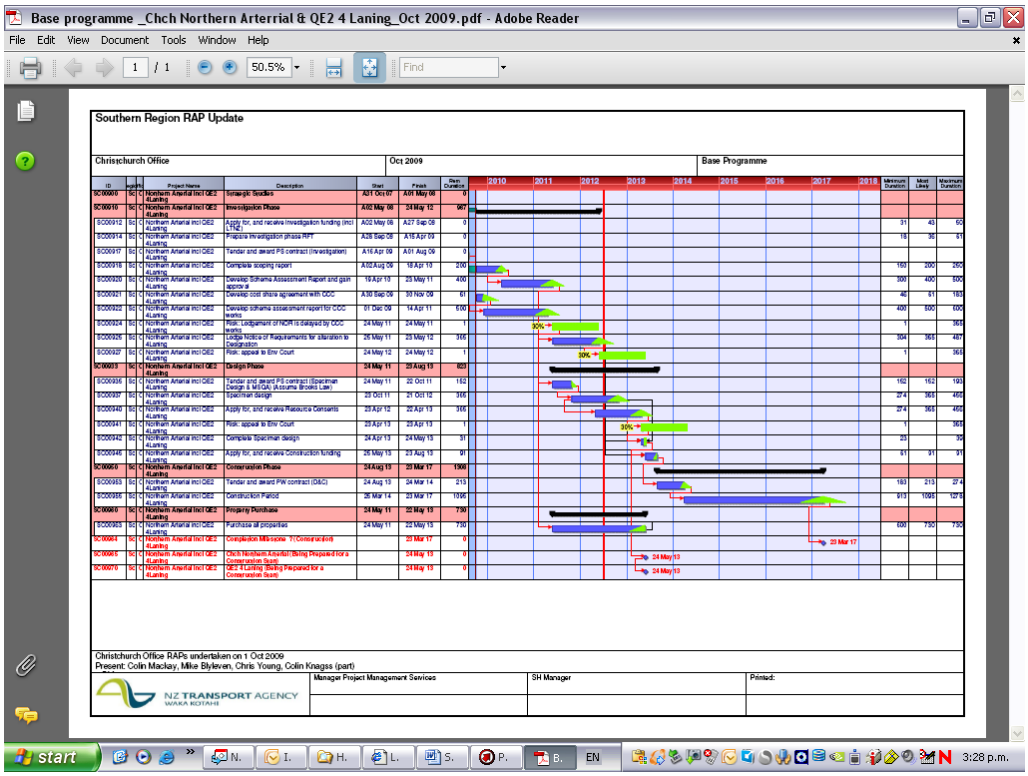
5.1 Programming for time

5.1(a) Example of risk-adjusted programmes

Examples of base- and risk- adjusted programmes, how they are produced, what they show, and how to read them.

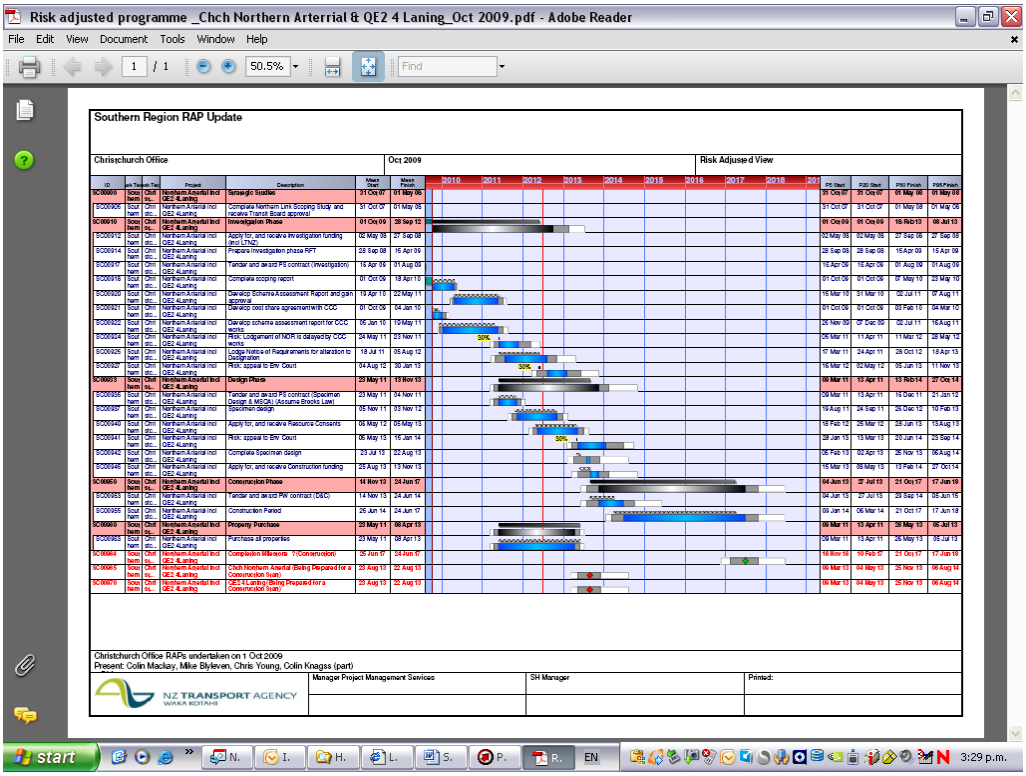
Typically, a standard Gantt chart is produced, based on most likely durations. In order for the chart to become risk-adjusted additional information is required:

- minimum and maximum duration added
- specific risk events entered, linked to existing tasks and assigned probability and consequence.

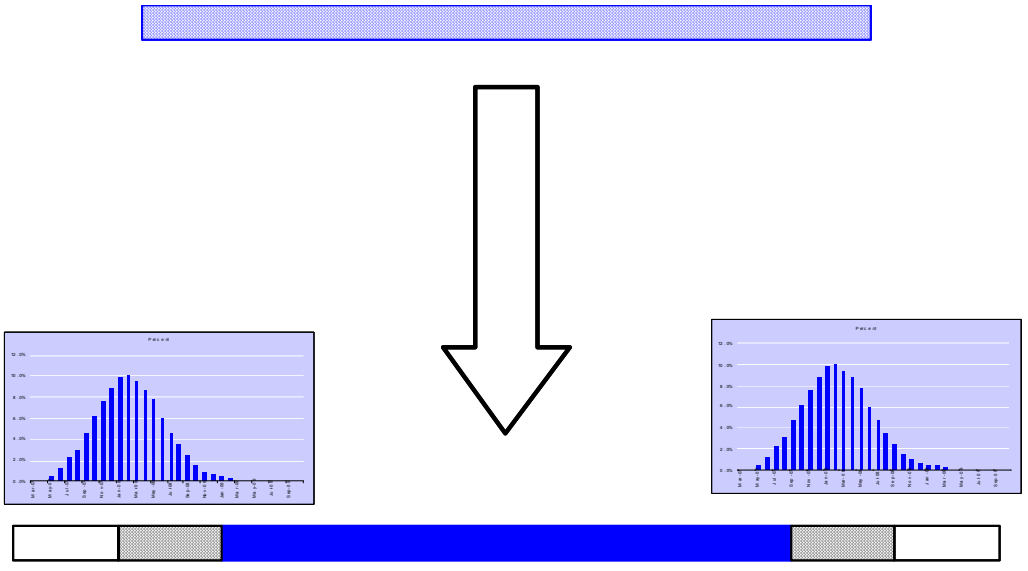


The Gantt chart can then be run through a simulation model and a risk-adjusted view can be produced which shows the extent of risk around each individual activity (based on the input parameters), and the risk exposure around completion of the project.

5.1



The risk-adjusted bar lines then become 'fuzzy' with the most likely start and completion shown as solid bar, with the early start (fifth percentile) and late finish (ninety-fifth percentile) shown through the grey and white graduation. This also applies to milestone and summary tasks.



P5 P20 P50 (expected start) (expected completion) P50 P80 P95

5.1(b) Example of project tasks

The following list identifies an example set of tasks that might comprise a complex capital works project. Summary tasks are shown in bold.

A similar approach should be followed for identifying tasks and tracking progress through the strategic study (feasibility) phase of a projects development.

Reference	Task name	Reference	Resources
1.0	Project establishment		
1.1	**Project initiation**		
1.1.1	Appoint project manager		
1.1.2	Obtain project number		
1.1.3	Preparation of project plan		Project manager (PM)
1.1.4	Sponsor's approval of project plan Project file setup		Professional services (PS)
1.2	**Prepare and tender professional services contract**		
1.2.1	Obtain contract number		
1.2.2	Prepare professional services contract documents		PM
1.2.3	Contract document review		Transport planner/Transport planning manager (TPM)/National Office (NO)
1.2.4	Prepare contract estimate		Project manager
1.2.5	Approval to proceed with contract		PMSM
1.2.6	Risk management committee approval		
1.2.7	Notify probity auditor		
1.2.8	Invite registration of interest		PM
1.2.9	Tender period		PM
1.2.10	Evaluate tender		Tender Evaluation team (TET)
1.2.11	Pre-letting meeting		
1.2.12	Approval to award contract		
1.2.13	Award contract		Traffic signal (TS)/ *Contract procedures manual* (SM021)
2.0	Investigation & reporting (I&R)		
2.1	**Project review and updating**		
2.1.1	Review and update (if necessary) project feasibility report (including project estimate and economics)		
2.1.2	Has the project been established, if not follow task 1.1 above		
2.1.3	Review and update project plan.		
2.1.4	Review and update the State Highway Project Financial Management System (PROMAN) and LTP online information		
2.1.5	Application and approval of investigation funds		
2.1.6	Has a professional services provider been engaged, if not follow task 1.2 above		

Reference	Task name	Reference	Resources
2.2	**Contract management**		
2.2.1	Set-up PACE frequency and complete pace evaluations at required frequency Consultants monthly report		PM
2.2.1	Review consultant's programme		PM
2.2.2	Review consultant's quality assurance and health and safety plans		PM
2.2.3	Accept consultant's consultation strategy		PM/TPM
	Prepare communications plan		
2.2.4	Preliminary statement of Māori interest		PM/TPM
2.3	**Survey and investigation**		
2.3.1	Obtain land entry for survey and investigation		PM/Property Acquisition Manager (PAM)
2.3.2	Preliminary geotechnical appraisal report		PSC
2.3.3	The NZ Transport Agency acceptance of preliminary geotech report		PM
2.3.4	Obtain resource consents for drilling		PM/TPM
2.3.5	Undertake field investigations		Professional Services Consultant (PSC)
2.4	**Scoping report**		
2.4.1	Draft scoping report		PSC
2.4.2	The NZ Transport Agency review of draft scoping report		
2.4.3	Final scoping report		PSC
2.4.4	The NZ Transport Agency acceptance of final scoping report		PM
2.5	**Consultation**		
2.5.1	Consultation with territorial authorities		PM/TPM
2.5.2	Consultation with general public		PM/TPM
2.5.3	Consultation with users/landowners Consultation with service authorities		PM/TPM
2.5.4	Consultation with tāngata whenua		PM/TPM
2.6	**Scheme assessment**		
2.6.1	Submit draft scheme assessment report (SAR)		PSC
2.6.2	Submit draft assessment of environmental effects (AEE)		PSC
2.6.3	The NZ Transport Agency review of draft SAR and AEE		PM/TP/TPM/NO
2.6.4	Risk assessment (review quarterly) Estimate review (peer review or parallel estimate)		
2.6.5	Update estimate (review quarterly) Bridge design statements		
2.6.5	Independent economic review		PM
2.6.6	Stage II safety audit		PM
2.6.7	Macroscope approval Submit final SAR and AEE		 PSC

Reference	Task name	Reference	Resources
2.6.8	Regional scheme approval		PM
2.6.9	National office scheme approval		TP
2.6.10	The NZ Transport Agency acceptance of SAR and AEE		PM
2.6.11	Prepare project handover report		
2.7	**RMA: designation/resource consent**		
2.7.1	Lodge notice of requirement/resource consents		PM/TPM
2.7.2	Consenting authority process period		PM/TPM
2.7.3	Notification		
2.7.4	Submission period		
2.7.5	Meetings with submitters		PM/TPM
2.7.6	Hearing		PM/TPM
2.7.7	Council recommendations/decisions		PM/TPM
2.7.8	The NZ Transport Agency consideration/acceptance		PM/TPM
2.7.9	Appeal period		PM/TPM
2.7.10	Negotiations with appellants		
2.7.11	Environment court hearing		
2.8	**Land acquisition**		
2.8.1	Prepare land acquisition strategy		PSC/PM
2.8.2	Endorsement by property consultant		Prop
2.8.3	Instruct property consultant		PM/PAM
2.8.4	Property negotiation		Prop
2.8.5	Initiate compulsory purchase (if necessary)		
2.8.6	Submission of report and recommendation		
2.8.7	Approval (by RM or subcommittee)		
3.0	Design and project development		
3.1	**Project review and updating**		
3.1.1	Review project handover report (including project estimate and economics)		
3.1.2	Has the project been established, if not follow task 1.1 above.		
3.1.3	Review and update project plan		
3.1.4	Review and update PROMAN and LTP online information		
3.1.5	Application and approval of design funds		
3.1.6	Has a professional services provider been engaged, if not follow task 1.2 above		

Reference	Task name	Reference	Resources
3.2	**Contract management**		
3.2.1	Review pace frequency and complete pace evaluations at required frequency		PM
3.2.2	Consultants monthly report		
3.2.3	Review consultant's programme Review and update communications plan		PM
3.2.4	Review consultant's quality assurance and health and safety plans		PM
3.3	**Design**		
3.3.1	Design philosophy statements		PSC
3.3.2	The NZ Transport Agency acceptance of design philosophy statements		PM
3.3.3	Preliminary design report and drawings		PSC
3.3.4	Risk assessment (review quarterly)		
3.3.5	Update estimate (review quarterly)		
3.3.6	External peer review of key elements		
3.3.7	The NZ Transport Agency's review of drawings		PM
3.3.8	Asset management review		NO
3.3.9	Final design report and construction drawings		PSC
3.3.10	Stage III safety audit		PM / SE
3.3.11	The NZ Transport Agency acceptance of design and drawings		PM
3.3.12	Building consents New Zealand Historic Places Trust (NZHPT) authority Procurement strategy		
3.3.13	Draft tender documentation, design estimate and updated benefit cost ratio		PSC
3.3.14	The NZ Transport Agency review of tender documents, design estimate and updated benefit cost ratio		PM
3.3.15	Update environmental effects register		PSC/PM/TPM
3.3.16	Maintenance during construction defined		NO/PM
3.3.17	Final tender documentation		PSC
3.3.18	The NZ Transport Agency's acceptance of final tender documentation		PM
4.0	Physical works		
4.1	**Project review and updating**		
4.1.1	Review design report. (including project estimate and economics)		
4.1.2	Has the project been established, if not follow task 1.1 above		
4.1.3	Review and update project plan		
4.1.4	Review and update PROMAN and LTP online information		
4.1.5	Application and approval of construction funds		
4.1.6	Has a professional services provider been engaged, if not follow task 1.2 above		

Reference	Task name	Reference	Resources
4.2	**Professional services contract management**		
4.2.1	Review pace frequency and complete pace evaluations at required frequency		PM
4.2.2	Consultants monthly report		
4.2.3	Review consultant's programme		PM
	Review and update communications plan		
4.2.4	Review consultant's quality assurance and health and safety plans		PM
4.2.5	Schedule verification, sampling and testing		
4.3	**Prepare and tender physical works contract**		
4.3.1	Obtain contract number		
4.3.2	Review physical works contract documents		PM
4.3.3	Contract document review		TP/TPM/NO
	Prepare contract estimate		PM
	Approval to proceed with contract		PMSM
	Risk management committee approval		
	Notify probity auditor		
	Invite registration of interest		PM
	Short-listing (SIA)		
	Tender period		PM
	Interactive tendering		
	Evaluate tender		TET
	Update cost estimate		
	Pre-letting meeting		
	Approval to award contract		
	Award contract		TS/CPM
4.4	**Physical works contract management**		
4.4.1	Review pace frequency and complete pace evaluations at required frequency		PM
4.4.2	Contractors monthly report		
4.4.3	Review contractors programme		PM
	Review contractors environmental management plan		
	Review contractors traffic management plan		
	Review contractors quality assurance and health and safety plans		PM
	Risk assessment (review quarterly)		TET
	Update estimate (review quarterly)		PM

Reference	Task name	Reference	Resources
4.5	**Project completion and opening**		PM
4.5.2	State highway/ motorway declaration		
4.5.3	Speed limit declaration		
4.5.4	Pre-opening inspection		PM/NO
4.5.5	Network operations handover and list of defects		
4.5.6	Practical completion certificate issued		PM
4.5.7	Stage IV safety audit		PM/SE
4.5.8	Contractor rework		
4.5.9	Defects liability period		
4.5.10	Defects liability inspection		
4.5.11	Defects liability certificate issued		PSC
4.5.12	Handover to network operations		PM/NO
4.6	**Post-construction documentation**		
4.6.1	Final land take plans prepared		PM
	Land purchase completed		PM/PAM
	As-built drawings and owner manual		PM
	road assessment maintenance and management system (RAMM) updates		PM
	Final pace evaluations completed		PM
	Legalisation brief		PM/PAM
	Legal survey		PM/TPM
	Declare limited access road		PM/TPM
	Rationalisation of designation		PM/TPM
	Declare property surplus		PM/PAM
5.0	Project closure		
5.1	**Closure of project files and archiving**		PM
5.2	Release project plan		PS

5.1(c) Statutory time frames

The project manager must:

- recognise the impact of statutory time frames on the project duration, (resource consent, coastal permits, designation, compulsory land purchase)
- allow sufficient time in the project programme to complete the required activities
- note the following are generally statutory time frames, and it is important the Highways and Network Operations (HNO) group meets them. However, current experience suggests the HNO group cannot rely on other parties meeting the statutory time frames, so allowance must be made for these delays in the project programme
- refer, if required, to HNO's legal consultants about likely Environment and High Court time frames.

Indicative time frames

To enable the project manager to allow sufficient time in the project programme, the following tables provide indicative time frames (in working days) for achieving several statutory approvals. These time frames should not replace project specific or regional information that may be available.

a. Designation procedure and time frame (except projects to be progressed via Environmental Protection Authority (EPA) processes)

Stage	Description	Time frame
1	The HNO group lodges notice of requirement (NOR) with consent authority (CA) s168 RMA.	Consent authority has 10 days to determine whether to notify.
1a	Further information required s169 RMA (cross references to s92(1) RMA).	Fifteen working days for the HNO group to respond to request. Go to stage 4 if non-notified. Go to stage 5 if non-notified and no hearing.
2	Public notification of NOR by CA (ss95 to 95F RMA).	Ten working days to notify affected parties.
3	Submissions received by CA for notified NOR.	Affected parties have 20 working days to notify the CA.
3a	Further information required.	Fifteen working days for HNO to respond to request. Ten working days advance notice of hearing.
4	Hearing.	Duration of hearing may vary, but will generally be over a 5 – 10 day period.
5	Ca recommendation (s171 RMA).	Fifteen working days following hearing (20 working days after nor lodged if non-notified and no hearing).
6	HNO's decision on CA recommendation (s172 RMA).	HNO (with the Regional Partnership and Planning (RP&P) group's input) must comment and reply advising the NZ Transport Agency's (NZTA) final position within 30 working days of the CA's recommendation.
7	CA's public notification of HNO's decision (s173 RMA).	Within 15 working days following HNO's reply to CA recommendation/s.
8	Appeal to Environment Court (s174 RMA).	Objectors have 15 working days to appeal to the Environment Court if they are not satisfied with HNO's decision.
9	Environmental Court proceedings.	Variable - average 6 – 12 months.

a. Resource consent procedure and time frame (except projects to be progressed via EPA processes)

Stage	Description	Time frame
1	HNO lodges application with consenting authority (s88 RMA).	Consent authority has five days to determine if application is complete. If it isn't it will be returned.
1a	Further information required (s92 RMA) and notification decision (ss95A and 95B RMA).	Fifteen working days for HNO to respond to request. If non-notified, go to stage 4 (ss95A and 95B RMA). If non-notified, after 20 working days and no hearing - go to stage 5 (ss95A and s115).
2	Public notification decision (ss95A, 95B RMA).	Ten working days to notify the affected parties (s95 RMA).
3	Submissions received by CA (s96 RMA). CA to provide copies of all submissions to applicant as soon as reasonably practicable (s98 RMA).	Objectors have 20 working days lodge submissions with CA (s97 RMA).
3a	Further information required (s92 RMA).	If all information is provided, 25 working days until hearing (s101 RMA). CA may request further information from HNO (s92 RMA). HNO has 15 working days to respond to request.
4	Hearing (s101 RMA).	The duration of the hearing may vary, but will generally be 5 – 10 days in duration. Ten days advance notice of hearing date to be given by CA.
5	Council decision (s105 RMA).	Fifteen days following hearing (s115 RMA) (or 20 days after date the application was lodged if non-notified and no hearing).
6	Appeal to Environment Court (s120 RMA).	Objectors have 15 days to appeal to the Environment Court (ss120 and 121 RMA).
7	Environmental Court proceedings.	Variable - average 6 – 12 months.
8	Appeal to High Court (ss299 and 300 RMA).	Within 15 working days.
9	High Court proceedings.	Variable - average 4 – 6 months.

b. Projects to be progressed via EPA processes (NOR and/or resource consent) procedure and time frame

Stage	Description	Time frame
1	The HNO group via regional office project team (HNO and RP&P input) prepares business case for seeking use of EPA process (most likely referral to a board of inquiry). Group manager (GM) HNO and GM RP&P sign-off.	
2	HNO advises EPA of candidate project/s for EPA process.	At least six months prior to anticipated formal lodgement date. Required to enable EPA to ensure logistical arrangements (including council input) is in place, and to confirm pre-application processes.
3	Project team provides full draft of application to EPA for pre-application peer review and assessment.	Three months prior to formal lodgement of application.
4	HNO lodges application with EPA (s145 RMA).	

Stage	Description	Time frame
5	EPA further information required (s149 RMA).	Successful pre-application process should mean this step is not activated. If it is activated then there are 15 working days for the NZTA to respond.
6	EPA recommendation to minister for the environment (s146 RMA).	From formal lodgement date, or the day after receipt of response to further information request the EPA has 20 Working days to recommend either: • call-in by the Board of Enquiry • direct referral to the Environment Court. Referral back to council for hearing.
7	Minister's decision on EPA recommendation.	This step is not time bound. It is considered most likely to be in the range of 10 working days. Steps described below assume a direction for a BOI hearing process.
8	Public notification (s149c RMA).	Not time bound for EPA to notify the affected parties. Assumed most likely to be 10 days.
9	Submissions received by EPA (s149e (9) RMA).	Submitters have 20 working days to notify the EPA (s149E RMA).
10	BOI further information required (s149I RMA which confers powers under ss92 to 92b and 99 to 100 RMA).	Fifteen working days for the NZTA to respond. BOI may request consent of the NZTA to commissioning of a further report on aspects of matter before them. (Note: Successful pre-application work with EPA should minimise risk of this being required.) Completion of this step is not time bound. The NZTA could refuse consent but this could be counter productive in terms of the BOI consideration of the matter.
11	Pre-hearing meetings and/or mediation. (**Note:** Considered low probability step but is available to BOI.)	With agreement of the NZTA as applicant, the BOI may in some circumstances seek pre-hearing meetings or mediation. This step is not time bound if the NZTA agreement is given.
12	BOI hearing (s149I RMA). Hearing length (s149RMA)	Nine months is starting assumption. Runs from date of the Minister's public notice to 'call-in' to release of BOI written decision. Up to 18 months can be sought by the BOI (Minister for Environment's approval required). With applicant's agreement more than 18 months can be provided by the Minister.
13	Draft decision.	Twenty working days for the NZTA to respond to draft on minor or technical aspects (**Note:** This is a subset of the overall nine month period or whatever extension is granted by the Minister).
14	Final decision.	Release of final decision by BOI.
15	Appeal on point of law (ss149v and 140 RMA).	Objectors have 15 working days to appeal to the High Court (ss149V, 300 RMA).
16	High Court proceedings.	Variable - average 4 to 6 months.

c. Property purchase procedure and indicative time frame. The compulsory purchase process cannot commence until the designation is in place.

Stage	Description	Time frame
1	Issue instruction to acquire.	HNO identifies the required property and advises the landowner in writing. This should occur within two weeks.
2	Negotiate in good faith.	Negotiate with the landowner for a variable period, usually approximately 4 – 6 months, or until the designation is approved. This time period of good faith negotiation must have been completed prior to compulsory purchase proceedings, allow 6 months.
3	Issue notice of desire (NOD).	Commence compulsory purchase proceedings - HNO to issue NOD to landowner. Allow time to obtain approvals, needed from the highways board and Land Information New Zealand – one month.
4	Negotiate with landowner following issue of NOD.	Five months should be allowed in order to prove that every effort has been expended to reach agreement. Note that if no progress is made or no contact occurs in three months, we can proceed to the next step.
5	Issue notice of intention (NOI).	If negotiations are unsuccessful, HNO issues a NOI to landowner. Allow time to obtain approvals – one month.
6	Period of appeal by landowner to Environmental Court.	One month.
7	Attend Environment Court.	Variable - approximately three months, if under urgency to attend court and receive judgement.
8	Appeal to High Court.	The landowner has three weeks following the Environment Court judgement to appeal to the High Court. If the landowner does not appeal, go to stage 10.
9	Attend High Court.	Variable - approximately six months to attend High Court and receive judgement.
10	Proclamation issues, register interest on title and enter onto land.	Variable - approximately one week for the NZTA to lodge these with the district land registrar.

d. Property purchase procedure and indicative time frame. The compulsory purchase process cannot commence until the designation is in place.

Stage	Description	Time frame
1	Issue instruction to acquire.	HNO identifies the required property and advises the landowner in writing. This should occur within two weeks.
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6.1 Quality

Quality plan purpose

A quality plan's purpose is to define how the quality criteria will be met during the contract.

The quality plan should include and:

- identify the contract identification, establish the project's objectives and cover the baseline contract programme
- describe or reference all inputs, outputs, resources and procedures required to successfully complete the contract
- confirm the contract team and the organisational structure
- confirm the roles, responsibilities and delegated authority of the nominated team members, including those responsible for statutory, environmental and health and safety requirements. It will also name team members responsible for
  - approving traffic management plans
  - approving site safety plans
  - maintaining the environmental effects register, etc
- confirm the supplier's methodology including, if appropriate, details of:
  - site testing and monitoring procedures
  - review procedures such as design change procedures and subconsultant quality controls, as well as checking procedures
  - client, stakeholder and subconsultant communication and consultation/liaison strategies.

Design philosophy statement

General

The design philosophy statement (statement):

- describes how the consultant envisages the project will be built
- should assess the proposed construction method, specify standards to be used, state the design assumptions, parameters, criteria and loadings and, where applicable, also detail the landscape and bridge design philosophy and associated lifetime maintenance issues
- should also be reviewed by network operations to ensure design assumptions do not have an adverse impact on future maintenance needs.

Once the project manager approves the statement, the design phase can start. As part of the design phase the design consultant produces a design report. This report should be compared to the approved statement and all differences identified and explained.

Statement review

As part of the review process the project manager should seek appropriate advice from internal experts including safety and bridging experts. In some cases a preliminary design philosophy statement may have been included in the scheme assessment report. In these cases the project manager's review should consider the:

- preliminary design philosophy statement, if prepared, and identify and explain the differences between the two statements

- design philosophy statement requirements. These include the:
  - consultant's design philosophy and proposed construction methodology
  - proposed standards to be used such as longitudinal and transverse alignment, cross section requirements, etc
  - design assumptions, parameters, criteria, sub-grade California Bearing Ratio and loadings together with associated risk levels, see the NZ Transport Agency's (NZTA) *State highway professional services contract proforma manual* (SM030)
  - landscape design philosophy and associated lifetime maintenance issues
- asset management requirements by ensuring the proposed standards and design assumptions do not result in increased maintenance costs over the project's design life. Many of the processes provides guidance on how to reduce or eliminate future maintenance issues and costs
- project's programme as a design specifying a chip-sealed surface may fail prematurely if the final surfacing is constructed during cold and/or wet periods
- scheme assessment report's assessment of environmental effects in relation to resource consent and archaeological constraints, as these may affect the project's design and construction phases. Consent and authority conditions can require specific methods, materials or specify time periods when work can only be performed. These issues can include:
  - batter-slopes
  - riverbeds and waterways
  - landscaping
  - noise and dust
  - stormwater runoff and drainage
  - erosion and sediment control
  - environmental management plan.
- bridge design statement, if one is required. This statement should be prepared according to the NZTA's *Bridge manual* (SP/M/022).

6.2 Value engineering

Overview

Background

The NZ Transport Agency (NZTA) has experienced a number of budget overruns in the large project programme, predominantly resulting from scope changes and price level increases. There are also instances where the scope of projects have been reduced from the original intent to keep the project within 'budget' and that in some instances this reduction in scope may have resulted in not achieving the best value for money, even though the project was delivered within the budget.

As a result of this, there is a strong belief within the NZTA that best value for money is not always being achieved on projects and there is an opportunity to better manage the value to be obtained. It is believed that adopting value management will assist in identifying opportunities that add value and will support the NZTA to achieve better value for money.

Value management is intended to concentrate on identifying areas where the project objectives can be delivered in the most cost effective manner. This process should not be seen as a cost cutting exercise where scope is reduced in order to lower the out turn cost or to meet budget. The project scope identified in the investigation and reporting (I&R) phase, no more and no less, is the target outcome for successful delivery. Value management will have achieved its purpose when the project objectives have been delivered in the most cost effective manner.

Objectives

The objective of the introduction of formal value management processes into the NZTA's capital projects programme are as follows:

- Develop and implement systems and processes with the purpose of optimising value for money in the NZTA's capital projects.
- Enhance the NZTA's in-house awareness and competence in adding value to capital projects.
- Better ensure that a capital project, as delivered, fulfils its approved functionality envisaged in the original scheme.

Value management scope

The systems outlined in this plan are generally for the major capital projects with an expected out-turn construction cost in excess of $10 million. However, where the procedure would differ for smaller projects then alternative systems will be referenced.

It should be noted that the potential commercial gains derived from the value management process are significantly influenced by factors other that the project's scale. For example:

- Projects with a relatively high risk profile and with complexity through design, construction constraints and/or methodology, offer greater opportunities for gains through value management and lower expected out-turn cost. Therefore, fewer gains may be derived from a low-risk project with simple design requirements.
- The nature of the project works can influence the potential gains from value management. For example, in certain circumstances projects with a significant earthworks component and/or retaining walls can offer potentially greater percentage gains than projects with a higher quantum of structural components.
- The delivery model used to procure suppliers. Some delivery models, such as design – construct, incentive the testing value assumptions as part of the procurement process. The challenge under these circumstances is to ensure only good value management initiatives are permitted as part of the competitive process.

Value management process stages

Each value management process shall have a milestone stage in conjunction with the *Cost estimation manual* (SMO14) estimate stages, ie:

- pre-design estimate
- design estimate
- construction estimate.

The application of these processes shall be implemented broadly in accordance with the following stages of development for a large project:

Feasibility

No formal value management process is required at this stage of a project's life cycle, as the alternative design solutions for determining the scope has not been identified at this stage.

The NZTA value management process is intended to test the proposed design solution employed. Consequently it is dependent upon this straw man first being proposed by the Design team.

Investigation

It is recognised that the application of value management techniques can generate substantial benefits when applied early in the project development. During the selection process for the preferred option, each outcome alternative is subjected to the usual design process of cost benefit analysis. After the preferred option has been formalised it is then appropriate to test the design process with a value management session. It is expected that this value management session will rigorously examine the outcome of the I&R design process through a structured format, drawing upon the expertise of both external and internal resources.

It is expected that the timing of this value management session be programmed in ensure that any outcomes can be accommodated into the preferred option design prior to the development of the pre-design estimate. Each project has its own programme characteristics dependant upon its scope and complexity, therefore no arbitrary time frame is specified. However, it is recommended that this value management session be held at least three months prior to the finalisation of the pre-design estimate. This will ensure that the outcomes can be thoroughly examined and incorporated into the design and hence the estimate.

For major projects the project manager may elect to undertake a value management session prior to the scheme estimate depending upon the nature of the project and the design options.

Design

For a major capital project with a pre-design estimate for a total out-turn cost greater than $10 million two value management sessions will be required. Each of these can be broadly tied to the development of the design and construction estimates as described below.

For projects that have an expected out-turn cost of less than $10 million the project manager may elect to have one value management session during the design and project documentation (D&PD) phase. It is recommended that this session follows the process identified below. However, it should be programmed after the initial geotechnical investigations have been completed such that design effort is still largely in its infancy.

Therefore, each non-block project will be assessed on a case-by-case basis for potential to add value through a formal value management process, The level of treatment will be commensurate with this assessment. The project manager shall assess the appropriate level of value management for projects with an estimated out-turn cost of less than $10 million in consultation with the Professional Services team.

This session should be targeted at the interrogation of the design concepts and specific elements that are central to achieving the design intent. In this way it is expected that the maximum benefit can be obtain through value management and the outputs can be fully integrated into both the design estimate and the construction estimate.

Design estimate

During the initial period of the D&PD phase the project's consultant will be getting to know the design developed during the I&R phase. As part of this process it is usual that a risk management session is held for the development of the risk register and transition the intellectual property of the project issues from the previous consultant. It is during this period that the approach to the design philosophy and the programme for the project are developed. After the Design team has been brought up to speed and design concepts are being developed, it is then appropriate to prepare for the first value management session.

It is intended that this value management session be timed to occur when the D&PD team has a sufficient understanding of the I&R design and associated issues, and having formed some preliminary views on the process for developing the design but prior to the update of the pre-design estimate. This value management session is intended to interrogate the project for the dual purposes of developing a more robust basis for the design estimate as well as identifying potential design alternatives worthy of future design investigation.

It is recognised that it is unlikely that the D&PD geotechnical investigations and associated interpretive reports will have been completed at this stage. However, this should not be considered as an impediment to the advancing the value management session, as the focus should be on testing the proposed design concepts proposed by the incumbent Design team with a rigorous examination. In fact this value management session may provide alternative potential solutions that may require validation by the proposed geotechnical investigations.

It is at this stage of the project's life cycle that value management has the potential to provide the maximum potential benefit to the project.

Construction estimate

This value management session shall be held at the latter stages of the D&PD design development phase. As the design progresses during the D&PD phase, the process of design development is continually tested by the myriad of design decisions on the basis of costs versus benefits. The purpose of the second formal value management session during the D&PD phase is to test the outcome of these individual decisions as well as the direction that the design has taken as a result of the collective outcome of these decisions.

The construction estimate value management session must be timed to ensure that its outcomes can be incorporated into the final design of this phase and the benefits reflected in the construction estimate. The timing of this session shall be programmed to occur when:

- all geotechnical reporting has been completed
- prior to the design being finalised
- prior to the commencement of the scheduling (in the case of a measure and value project), and
- the construction estimate construction estimate has been started.

While each project has its own scale, scope and programme issues it is anticipated that in general this should occur at least three months prior to the completion of the construction estimate. This will ensure this estimate can fully reflect the outcomes of this session.

This value management session will tend to concentrate on testing specific design solutions developed through the D&PD phase. As a consequence the issues tested will be of a more specific nature than the previous value management session of this phase.

Construction

It is not expected that formal value management sessions be held at this stage of a project's life cycle. Generally the drivers for achieving value rest with the Delivery team, however, the NZTA has a policy of continually striving to enhance value for money. Attention is drawn to the cost share incentive scheme that the NZTA has in place. Many construction suppliers are not fully conversant with the benefits that this policy can provide them and project managers are encouraged to actively engage with their suppliers in seeking out cost savings to the advantage of both.

Value management sessions

As a minimum, the value management sessions shall follow the job plan and guidelines described in AS/NZS 4183:2007 or as modified herein.

The form of any value management session will be specifically tailored to depending upon:

- the stage of the project within its life cycle
- the scope of the issues likely to be encountered and the scale of the project itself
- effort (and therefore potential costs) will be expended commensurate with the potential returns.

However, a typical value management session for a large-scale project will contain the following four elements:

1. Data collection
    - Base data for the project shall be provided by the project manager to the coordinator of the value management session. This project data should broadly describe the current design, scope and objectives, principal's requirements, risk register and the current estimate.
    - The coordinator shall disseminate the base data to the Value Management team together with briefing notes for the session. These briefing notes will be complied on the basis on consultation with the project manager, the NZTA in-house specialist resource and external resources that may or may not be included in the Value Management team, and the project design manager. It is recommended that the project manager liaises closely with the Professional Services team for assistance with the provision of internal and external advisors, facilitation and planning. The briefing document will describe the scope of the investigation, identify key elements and the schedule for the value management session.
    - The Value Management team shall have sufficient time to review the documents in order to fully familiarise themselves with the project prior to the session. This phase is expected to include liaison between the Value Management team, the design manager and the project manger testing the design assumptions. This liaison will be managed direct through the coordinator and the design manager. The liaison will have the additional benefit of engaging the design manager in the benefits of external review for the purposes of value management.

2. Value management session

   - The coordinator will bring the project manager, design manager (and design team leaders, as appropriate), the NZTA in-house specialists and external specialists together in a workshop environment. Depending upon the scale and complexity of the issues to be addressed the time required for the workshop may vary between a half day and up to a maximum of two days.
   - The selection of these specialists will be on a case-by-case basis depending upon the demands of the projects being investigated. It is intended that there will be representation of both design and construction expertise. The specialists will be selected on their ability to think both laterally and logically in solving problems and seeking alternative solutions in an inclusive brainstorming environment engaging all the participants.
   - Facilitation will generally be by the coordinator or an external professional facilitator.
   - Value management sessions will vary depending upon both the nature of the project and stage it is at within its overall life cycle. The project is broken down into its constituent disciplines and areas of high cost, risk and areas of problematic design are identified. The design manager should have the most comprehensive knowledge of the project at this point to provide input to assist the team in flagging these issues. Constructability issues are addressed in parallel with the discussion on the design elements so that the disciplines are systematically addressed by the team.
   - Controlled facilitation is essential to maximise the potential gains in the above environment. There is typically a tendency to design proposed solutions in too greater detail once they have been identified and the facilitator must focus the participants input in order to maximise the value of the session. The purpose of the value management sessions is to identify areas for future investigation by the Design team. The input from experienced participants that are new to the project and its constraints is intended to provide a fresh perspective to the assistance of the Design team. The Design team is responsible for determining the viability and appropriateness of ideas generated in the session therefore must buy-in to both the process and the implementation of the output from the session.
   - At the end of each discipline session the outputs will be prioritised by the team future investigation. At the end of the value management session the outputs shall be collected, collated and summarised into an outputs report by the coordinator. The initiatives identified as having promise for future investigation shall be presented in spreadsheet format for future development by the Design team. The preliminary report shall be circulated to all participants for comment prior to finalising.

3. Design evaluation

   - The finalised outputs report shall be distributed by the commercial manager to the project manager. The project manager shall manage the process of developing the design concepts and pricing their cost implications. Adoption of the ideas generated in the value management session into the final design shall be at the consideration of the project manager.
   - Close-out of the outputs report shall only be affected when each scheduled item in the report has been either adopted or an explanation provided as to the reasons for omission.
   - Challenge to the NZTA's standards shall be encouraged in the value management sessions if savings can be identified that can be justified against any potential loss in the level of service to the NZTA. Generally the development of such initiatives shall reside with the project and be managed, costed and taken to review by the Value Added team. However, in certain circumstances where a viable challenge to our standards or technical specification is identified and is beyond the scope of the individual project to carry then the commercial manager may be tasked with implementing the challenge through the NZTA's procedures.

4. Lessons learnt

   - The ideas generated through the value management process on individual projects shall be captured in order to advance the development of the NZTA's overall business. The closed out outputs report shall contain a distillation of the advances made at one particular stage of one particular project and shall be provided to the project manager for dissemination throughout the NZTA as appropriate.

6.3 Network operations review

Guidance notes 6.3.1

Investigation

Below is a list of problem areas that have been encountered on other completed projects in the past. These issues should be considered in scoping the investigation and reporting (I&R) phase requirements in the contract document and throughout development of the scheme assessment report (SAR):

a. **Landscaping** proposals requiring mowing of large tracts of grass, which in motorway and expressway environments is expensive. Alternatives to grassing such as those suggested in the NZ Transport Agency's (NZTA) *Guidelines for highway landscaping* (SP/M/020) should be considered. However if grassing is preferred:

   - a slow/low growing species should be selected
   - access to and final contours of grassed areas must allow the area to be traversed by tractor-mounted mowing plant
   - gradients should be less than four horizontal to one vertical, so the tractor-mounted plant can complete the works. Steeper slopes can be either mown with hydraulic arm mowers or manually with weed eaters, but this is more expensive.
   - cost of undertaking maintenance safely must be considered. Creating a narrow grassed median with little or no shoulder is hazardous and may be more expense to maintain because of the associated traffic management costs. An alternative would be to construct permanent median surfacing during the construction phase.

     If planted areas are preferred, the establishment period is longer. Care needs to be taken to ensure the:

     - selected species as suitable for the environment
     - site is well prepared and maintained, particularly during the first one or two growing seasons.

     Options include:

     - using native species as ground cover or low-growth grass
     - providing benches at six-metre centres for hydraulic arm mowers
     - using wild flowers. The SP/M/020 manual appendix 4 sets out the criteria that must be followed for all wild-flower plantings
     - reducing the specified grass-cutting requirement
     - widening formations
     - providing drain crossings for mowers
     - having a two-year maintenance period for all landscape planting. The maintenance specification should address mowing, watering, fertilising, weed control, pruning and insect and disease control requirements.

b. **Maintenance access** is needed for a variety of maintenance activities such as vegetation control, clearing silt ponds, drainage works and storage and stockpile sites. The final design must allow for safety access to these areas and severance or isolation from that described above must be avoided. Ease of access for maintenance inspections and remedial work to structures is also important to consider.

c. **Barrier design** – Barrier types and profiles must:

   - allow for subsequent pavement surface treatments, including lifts of thin asphalting surfaces
   - allow for ready repair if damaged. This may mean specifying a barrier type that is commonly used and has a ready supply of spare parts.

d. **Skid resistance** – Various factors, either in isolation or more often in combination, result in insufficient skid resistance. These factors include:

   - loss of micro-texture due to polishing
   - geometry such as tight radii with insufficient superelevation and areas that allow surface water to pond
   - change in driver behaviour
   - vehicle type.

e. **Cycle track maintenance –** Cycle paths need to be adequately constructed and maintained, to prevent cyclists having to swerve in order to avoid surface irregularities thus creating a hazardous situation:

   - Maintenance should concentrate on the provision of smooth, debris free surfaces, that are free from vegetation and are clearly marked and signed.
   - Sweeping should be programmed so that it is undertaken regularly, ideally weekly at the end of the weekend, given broken glass often appears after weekend activities.
   - It is important that there is adequate drainage from cyclist tracks, drainage grates and service covers should be flush with the pavement surface and should be a cycle friendly design with gully opening at right angles to the direction of travel.

f. **Drainage maintenance** – Drainage channels and structures such as sumps, manholes, culvert ends and subsoil drains, must:

   - be located so they can be readily accessed for maintenance
   - have their location referenced and well marked.

g. **Landscape plantings** should be consistent with SP/M/020 and *State highway geometric design manual*. It is particularly important to ensure:

   - shrubs, that may have trunks over 100 millimetres (mm) in thickness, are kept at least nine metres from existing traffic lanes or any foreseeable pavement widening
   - adequate clear and recovery zones are provided.

h. **Pavement design** – Ensure that the:

   - brief is clear on the type of pavement envisaged to manage the principals risk
   - likely surfacing to meet the noise, skid, etc requirements is spelled out.

i. **Bridge design** should:

   - allow sufficient space for maintenance access and utilities, and provide sufficient space for future works such as widening
   - have adequate drainage. In general, sumps are preferred, provided they are able to catch the majority of water and debris that may block outlet pipes and can be readily cleaned. If it is not practical to use sumps, it must be shown that water will not overshoot and drainage pipes will not normally block. To simply provide access for unblocking pipes, although important, is not sufficient if there are likely to be frequent blockages
   - make available a clear list of requirements with respect to clear widths, bridge joints, seismic loadings.

j. **Heavy haulage** – Structural designs need to ensure heavy haulage is not compromised in terms of weight or dimension. For bridges on heavy haulage routes, this includes providing structures that handle vehicle crossings, without imposing crossing conditions such as 'travel central on beam'.

k. **Emergency services** – These require barrier crossings or median barrier gates.

l. **Intelligent transport systems** – Development of these systems requires design provisions to be made.

m. **Interchanges** – These enable traffic to be diverted via on and off ramps, allowing work to be carried out on the pavement between ramps and on the bridge itself. They also provide an alternative path for over-dimension loads, if the underpass height is less than six metres. Ramps with tight radii have a higher skid demand and are not desirable.

n. **Consent conditions** – Sufficient land needs to be designated to accommodate formations with moveable slopes. Allowance should also be made for future services by consulting utility companies and where appropriate service corridors adjacent to the carriageway. All conditions offered in designation and resource consent applications should first be discussed with the Operations team as many of them will have long-term maintenance implications.

   Any changes to the proposed conditions or any new conditions recommended or imposed by consenting authorities, should be discussed with the Operations team before they are accepted.

o. **Signage** – Signage requirements should be fully detailed in the SAR.

Design

Specific issues to be considered in the detailed design are as follows:

- Landscape design should include:
  - movable batters
  - adequate access to grassed areas, silt ponds, etc
  - planted areas consistent with landscape concepts.
- Maintenance access should allow ready access to:
  - silt ponds
  - culvert ends
  - subsoil pipe ends
  - sumps and manholes
  - bridge inspection areas
  - areas for staging of maintenance activity
  - median gates for contraflows and emergency vehicles.
- Structural designs should allow for:
  - access including hatches, pads for ladders, lighting, access tracks, etc
  - future demolition – consider how the structure may be safely raised or removed in the future

p. aesthetics, such as provided textured/profiled finishes and completing architectural review.

- Surface drainage should:
  - eliminate any flat spots where water ponds
  - concentrate surface water to collecting structures and outfall points
  - include features that enable hazardous spills to be controlled
  - include structures which are effective, easy to maintain and, will not cause significant damage if it overflows.
- Graffiti protection should:
  - be consistent with systems specified in the maintenance contracts
  - consider landscape planting and screening to deter tagging.
- Lighting facilities should consider locating the lighting in the median and using the median barrier to run the cables.
- Utilities considerations should allow for the forecast growth of services.
- Advanced transit traffic operation management system (ATTOMS) and emergency response should allow for:
  - future fibre optic installations
  - emergency access, such as median crossings
  - off-road parking for emergency service.
- Skid resistance – The NZTA's T/10 specification establishes skid resistance requirements. Careful whole of life analysis of reduced surfacing life is necessary if geometric standards are compromised.
- Design report – This report should:
  - document elements of the design that must be included in the physical works contract
  - form the basis of the owner's manual which documents project elements such as consent conditions that require monitoring and construction elements which require specific ongoing maintenance.
- Appropriate pavement and sealing types
  - Consideration should be given to noise and ease of maintenance in deciding this.

Construction

The project manager must keep the asset manager informed of progress during construction. Any concerns during construction should be raised with the project manager.

Guidance note 6.3.2

Purpose

To document the procedures for ensuring the continuation of maintenance needs during capital construction.

Principles

The NZTA is always responsible for the safe and efficient use of the network, regardless of its status in relation to whether it be under maintenance or construction. In terms of the end-user, the difference between these should be seamless.

Unless under a temporary speed restriction, the standards, service levels and response times must be consistent with those published in the C series specifications and other operating manuals.

When a temporary speed restriction is in place, the operating standards may be varied. Any variation must be specifically documented and agreed.

If a problem arises our motivation should be primarily focused on getting the work done to ensure these standards are maintained. Figuring out who pays comes second. The suggested principles are concerned with getting the person best able and equipped to do the work. This may not always be the same person that we have classically seen as appropriate in our current contracting paradigm.

The operations manager will retain ownership of all issues relating to the operation of the entire network affecting the safe and efficient passage of goods and customers. In most cases, the involvement of the operations manager will be to influence other managers to ensure that agreed standards are maintained.

The network consultant will always have responsibility for ensuring safe and efficient travel regardless of network status (capital/maintenance). Where urgent work is required this may involve:

- organising works directly with suppliers, or
- others to do this.

  Similarly, the network consultant cannot deny responsibility for the asset just because it is under construction.

The maintenance contractors will:

a. remain responsible for executing all maintenance works within an area affected by capital construction, unless individual works are specifically excluded

b. where individual works are specifically excluded, remain responsible for monitoring response times and, where these are not met, with the approval of the network consultant, proceed with works to reinstate the service level or protect the motorist. Specific maintenance responsibilities during construction of a project and during the defects liability period are agreed by developing professional services form 15 Maintenance responsibilities during construction (*State highway professional services contract proforma manual* (SM030)).

The default service levels and standards to be applied will be those described in the C series specifications and in:

- *Manual of traffic signs and marking* (MOTSAM)
- State Highway Asset Management Plan
- *State highway geometric design manual*.

  If any of the standards, response times or service levels that the documents imply are to be varied during construction (eg during the temporary speed restriction phase), then the revised standards must be documented and agreed between the Operations team manager and the project manager.

Under these principles, it is accepted that there may at times be some tension. For example:

- Highway maintenance suppliers may execute works where there is a need to pursue cost recovery:

a. from the capital project budget, or

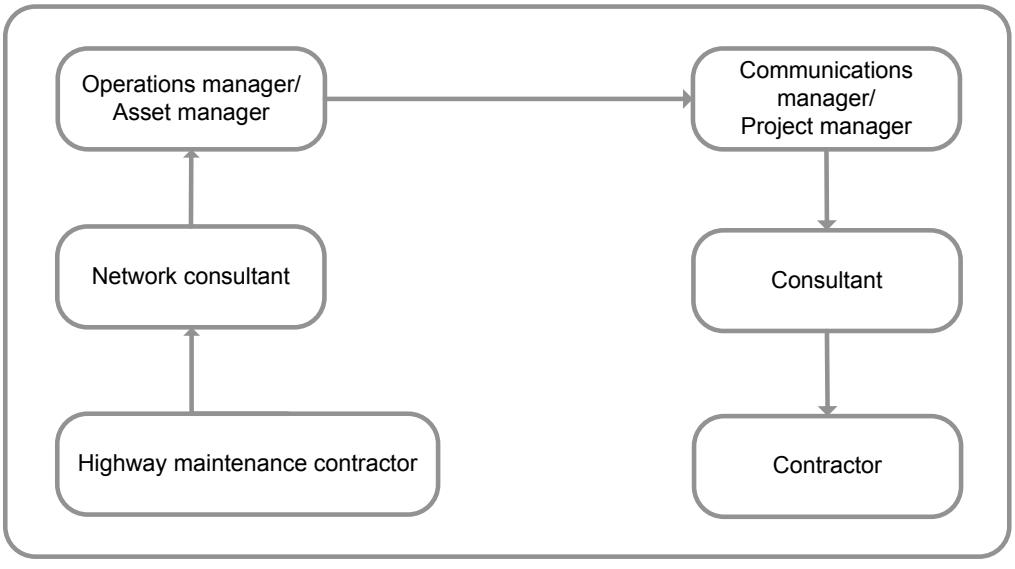
b. from the capital project contractor.

- Highway maintenance suppliers (contractors and consultants) are expected to pursue 'others' to carry out work.
- Highway maintenance suppliers will, in some cases, be attending to other supplier's deficiencies.

  It is felt that tension such as this will ultimately result in a better performance by all in the long term.

Communications

The suggested communication model for addressing worksite needs, identified by maintenance suppliers is outlined below:



However, depending on the nature and urgency of the need it is acceptable for the network consultant or operations manager to communicate directly with the capital consultant and contractor. Essentially these people have the first opportunity to get it right. Where urgency requires direct contact between the Operations team and the project consultant or contractor, the project must be advised as soon as possible.

Procedure

Prior to tendering the physical works contract, the asset manager and project manager agree on the standards and responsibilities which are to be developed into a schedule of maintenance responsibilities during construction.

The schedule of maintenance responsibilities during construction shall include:

- Recipients/Parties

  All contact details for each group, with 24/7 contact details for specifically nominated individuals with direct responsibility for the particular project (ie project manager).

- Project description

  The works site is to be described by reference station, project title and specific worksite description (eg northbound lanes only).

- Project period

  The project period must indicate the estimated start and finish dates of the contract, and any extended periods where occupancy of the site should be noted.

- Effective dates

  It is expected that the schedule will be reviewed on an ongoing basis by the project manager, as the site conditions change.

- Table of responsibilities
  - The template of the table of responsibilities should include a list of all current activities carried out by the maintenance contractor.
  - The intent is that the supplier responsible for each of these activities will be assigned and modified as the project proceeds.
  - The table specifies the standard/level of service by reference to the appropriate maintenance specification. (These are the default standard and response times.)
  - A variation to these default standards must be specified in terms of service level and response time. For example:
    - 30kp/h speed limit implemented, potholes can now be 75mm deep before repair within 24 hours
    - earthworks initiated, no vegetation control required
    - site under temporary traffic control. Delineation as outlined in *Code of practice for temporary traffic management* (SP/M/010) (CoPTTM) rather than C/18 specification.
  - Additional special instructions will generally contain information about communications and any special requirements.

During the construction phase, the objective of the procedure is to assign responsibility for works as it comes under the control of the capital contractor.

After construction, the process will manage the progressive handover of works back to the Operations team. For example:

- Pavement works complete but defect liability in force. Construction contractor remains responsible for C/4 type digout repairs.
- Work incomplete but temporary speed restriction lifted and all marker posts in place. Maintenance contractor assumes responsibility for marker posts, as per C/18.
- Litter control - Highway maintenance contractor will remain responsible but special conditions redefining what litter will be collected.

Reporting

The responsibility schedules will form the basis of auditing and reporting role of both the maintenance contractor and the network consultant.

The maintenance contractor shall continually monitor the levels of services as recorded in the agreed schedule of maintenance responsibilities, and where necessary, make the intervention required. These interventions are then reported in the schedule format, to the network consultant on a monthly basis, giving detail of:

- intervention type
- date
- response time, and
- costs.

The network consultant shall receive the monthly schedules from the maintenance contractor and issue the appropriate instructions. The network consultant is further required to audit selected capital projects for compliance of this maintenance regime.

The network consultant shall report to the operation manager/asset manager on a monthly basis, the issues arising and associated costs with respect to the process.

6.4 Peer reviews

Physical works document review

Document review

The project manager's review should ensure the consultant has used the latest version of *State highway construction contract proforma manual* (SM031) or *State highway maintenance contract proforma manual* (SM032), as appropriate when reviewing the following:

c. Instructions for tenderers section, the review should:

- confirm all consultant specified inputs been completed, are consistent throughout the document and align with the agreed procurement programme
- confirm the delivery models and tender supplier selection methods appropriateness and consistency with the approved procurement strategy. If tendered under the NZ Transport Agency's (NZTA) pre-qualification process, it should ensure the appropriateness of the requested non-price attributes
- ensure the Tender Evaluation team includes a qualified tender evaluator in accordance with the *Contract procedures manual* (SM021)
- ensure, if required, the contract's estimate is included and the probity auditor's details are confirmed
- in addition to the non-price attribute and price requirements, ensure the tender documents require the tenderers to provide a construction programme.

d. General and special conditions of contract, the review should:

- ensure the contract type is specified (eg measure and value or lump sum)
- ensure insurance and bond requirements comply with the provisions of SM021 and are appropriate
- nominate any separate contractors
- stipulate deadlines for receipt of the contractor's programme and quality assurance plan
- confirm whether an operation and maintenance manual and/or as-built records, including drawings and Road Assessment Maintenance and Management System (RAMM) updates, are required
- confirm the construction period and wet weather provisions are reasonable. If the project includes resurfacing work, this work should be completed annually between 1 October and 31 March. If completed outside this period, there is an increased risk of premature failure
- confirm the liquidated damages provision is a genuine pre-estimate of costs and is reasonable
- ensure the defects liability period reflects the project risks. The NZTA typically requires a minimum of 52 week period for road construction contracts
- ensure producer statements are stipulated if required
- confirm retention provisions
- confirm cost fluctuation provisions (generally cost fluctuations apply after 12 months)
- stipulate provisional, prime cost and contingency sums
- confirm the engineer is described as a person, not a company or body corporate.

e. Schedule of prices, the review should:

   - ensure the preliminary and general sections cover establishment, quality assurance, programming and reporting, environmental management, temporary traffic management and health and safety
   - ensure the balance of the schedule lists all required work.

f. Basis of payment, the review should:

   - ensure the method of measuring for each unit is appropriate. Where possible ensure measurement provisions link to the quantities defined by the drawings
   - ensure there is a payment clause for each item in the schedule of prices. The payment clause needs to accurately describe what the tendered rate covers by referencing the appropriate technical specification provision and when payment will be made. Obscure or incomplete payment provisions may lead to variations to the scope of work.

g. Technical specification

   The technical specification sets out the preliminary and general requirements as well as the technical requirements for constructing the project. Where possible the technical requirements should reference rather than repeat the provisions of the NZTA's technical specifications.

   Depending on the project's complexity the specification may include the following sections:

   - Preliminary and general requirements, including:
     - scope
     - contractor's personnel
     - working hours
     - contract meetings
     - communication
     - public complaints
     - publicity
     - contractors establishment
     - liaison with adjacent landowners
     - inspections
     - utilities
     - plant and equipment
     - other contractors
     - publications and standards including scheme assessment, design and geotechnical reports
     - stockpile and disposal areas
     - survey and setting out
     - land entry agreements
     - archaeological sites (accident discovery procedures)
     - project management board

- partnering
- risk and value management
- performance evaluation
- contract management reviews
- post construction value review
- temporary buildings and services
- restoration and tidy up
- construction site signage.

– Quality assurance requirements, including:
  - quality assurance levels
  - quality plan content and submission requirements
  - site acceptance criteria such as roughness, texture and skid resistance requirements
  - performance evaluations - performance assessment by coordinated evaluation (PACE).
– Programming requirements and constraints such as:
  - hold points where approvals or inspections are required before the works can proceed
  - time periods where certain works such as resurfacing must be completed
  - resource consent constraints
  - cash flow projections.
– Reporting requirements such as:
  - monthly reports, including progress claims, updated programmes, cash flows and financial reports
  - site records such as daily dairies and work-site accident reports
  - as-built records including RAMM updates, operating and maintenance manuals
  - construction report.
– Site safety and traffic management requirements including the approved traffic management plan.
– Environmental requirements:
  - resource consents compliance
  - dust suppression
  - sediment control
  - construction noise management
  - vibration management,
– Earthworks including:
  - site clearance
  - disposal sites
  - cut and undercut to waste
  - cut and borrow to fill
  - sub-grade preparation.

- Drainage including:
  - surface water channels
  - culverts, including inlet and outlet structures
  - subsoil drains
  - kerb, kerb and channel and dish channel
  - sumps
  - manholes and catchpits
  - outfall protection.
- Pavement construction including:
  - seal widening
  - materials
  - stabilisation
  - construction, including construction performance targets.
- Surfacing including:
  - materials - chip sealing and asphaltic surfacing
  - construction - performance targets such as roughness, texture and skid resistance.
- Traffic services including:
  - signs and pavement marking
  - raised pavement markers
  - edge marker posts.
- Maintenance responsibilities
- Technical requirements:
  - texture
  - graffiti control
  - piles
  - prestressing
  - concrete
  - guard rail certification
  - torqueing of lighting column bases
  - practical completion.
- Site restoration including:
  - fencing
  - planting, mulching and weed control
  - topsoiling grassing and hydro seeding
  - entrance ways.

h. Drawings

The drawings describe the extent of the project works. In general they should contain sufficient information to allow the contractor to complete the bulk of the site works without specific reference to the technical specification. This means the contractor's staff should be able to build the project from the drawings.

Internal review structure

Pre-read: Project plan

1. Reason for project:
   - purpose
   - goals
   - definition of project scope of works.
2. Current project status.
3. Handover from transport planning.
4. Estimate and funding.
5. Procurement plan and status.
6. Detailed design: MSQA, client's agents.
7. Project risks including:
   - scope
   - designation
   - property
   - consents
   - departures
   - utilities
   - road safety audit
   - communication with stakeholders
   - other.
8. Enabling early works.
9. How will success of the project be measured?
10. Round the table final questions.

6.5 Road safety audit and inspection

No guidelines are available for this process.

7.1 Documentation

Documentation checks

The NZ Transport Agency (NZTA) incurs most of its project costs from professional services or physical works contracts. To minimise variations occurring during the project, the project manager should ensure the request for tender (RFT) or information for tenderers (IFT) documentation is thorough and unambiguous. This involves verifying the following:

a. Before the contract is advertised, there is a confirmed allocation which equals or exceeds the contract estimate. It must also include contingencies, as a contract can not be awarded if the accepted price exceeds the current allocation.

b. The latest documentation is used and reflects current standards and procedures.

c. The schedule of prices includes items which:

   - cover all the work required by the contract, with each tendered item supported by specific payment and specification provisions. These must clearly describe what the payment includes and what the rate must allow for
   - are realistic and supported by drawings and specifications
   - are typically 'measure and value' items. Lump sum items should be reserved for work that is very well scoped, where there is a high level of confidence the items will not change during the contract
   - work that may be required (provisional items) and/or was difficult to scope (provisional sums) at the design phase. These items must not be treated as hidden contingencies, as these are intended to cover unforeseen costs
   - cover contingencies which have been assessed and allowed for in the project estimate but not included in the schedule of prices.

Tender documentation

General

All professional and physical works services will be procured by formal contract. The NZTA holds a number of proformas that must be used to compile tender documents. The proformas:

- allow varying degrees of customisation
- are regularly reviewed and updated so they reflect current best business practice
- can be downloaded from the NZTA's website.

Relevant proforma manuals

The following current proforma manuals must be used to develop tender documentation. They establish the minimum requirements for compiling tender documents and are designed in a series of independent modules which can be pulled together to form a single tender document:

- *State highway professional services contract proforma manual* (SM030) contains the NZTA's proforma RFT document and standard specifications, including minimum standard documents and the standard forms as appendices.
- *State highway construction contract proforma manual* (SM031) contains the NZTA's suite of physical works procurement models. Each document includes the instructions for tendering, conditions of contract (principals requirements for design and construct), basis of payment and schedule of prices.
- *State highway maintenance contract proforma manual* (SM032) contains the NZTA's standard maintenance contract documentation for traditional, hybrid and performance specified maintenance contract (PSMC) procurement models.

Compiling professional services contract

The NZTA's contracting out professional services (COPS) software system has been developed to help project managers prepare professional services contracts with ease, accuracy with considerable time savings. The COPS software system:

- provides an electronic version of the professional services contract proforma (PDF)
- prompts the user to enter project specific information into a schedule of pre-defined fields
- automatically updates proforma documentation ensuring the project manager is using the latest version.

Each regional office will have designated document creators, reviewers and tenders secretaries as COPS users. For further information your regional tenders secretary will be able to assist you in the first instance.

To compile a professional services contract the project manager must:

- select the tender evaluation method (refer to process 8.3)
- decide if a standard form or short-form contract is applicable. The direct appointment contract proforma would normally be used for negotiated contracts (refer to the Procurement manual, appendix C Supplier selection method)
- prepare the tender document using COPS for standard form contract agreements, following the prompts to enter the basic contract data
- write the contract scope according to the project conception described in the project plan (see process 1.1).
- ensure the NZTA's:
  - objectives and the project's inputs and outputs are adequately defined and include reference to reports, drawings, etc
  - *Procurement manual* obligations are met
- use the scope of services to develop the:
  - deliverables and time schedule
  - pricing schedule
- use the pricing schedule to develop the payment schedule
- review the draft tender document to ensure:
  - it accurately reflects the project plan
  - the schedule items are correctly scoped
  - advertising the tender once the required approvals have been obtained.

Compiling capital physical works contracts

Capital works contracts are usually prepared by a professional services consultant engaged for this purpose by the NZTA. In this role, the consultant helps the project manager compile the physical works tender documentation by:

- assessing the contract's complexity (simple or complex)
- determining the appropriate contract model according to the SM031 instructions
- establishing the contract scope and deciding the supplier selection method (see process 8.3)

- selecting and tailoring the appropriate contract proforma to meet the contract's requirements
- compiling a current Microsoft Word format version of the selected proforma
- reviewing and agreeing the tender document's format, scope and content
- advertising the tender once the required approvals have been obtained.

Compiling physical works maintenance contract

Maintenance documents are usually prepared by a network management consultant engaged for this purpose by the NZTA. The consultant helps the project manager compile the physical works tender documentation by:

- establishing the contract scope and deciding on the supplier selection method (see process 8.3)
- selecting and tailoring the appropriate contract proforma to meet the contract's requirements. To develop the specific project document the consultant will use the relevant NZTA proformas for:
  - standardisation of maintenance allocation contracts (SOMAC) – traditional maintenance documents
  - hybrid and PSMC – long-term/performance-based maintenance documents
- reviewing and agreeing the tender document's format, scope and content
- advertising the tender once the required approvals have been obtained.

Future works (Provisional sums)

Where elements cannot be clearly scoped in the tender documents, the *Procurement manual* allows these elements to be defined as the works proceed, by including the works under provisional sums.

For professional services contracts for instance, it is sensible in some cases to include future work in the initial scope such as the design and management phases in an investigation contract. This enables the project manager and consultant to fully understand what has to be designed and built provided:

- The advantages of adopting this approach are clearly explained and the required approvals granted.
- Adequate records are kept of all negotiations and the negotiations do not change the original contract's scope.
- Costs are managed within the set budget.
- The pricing structure describes a sound basis for pricing and negotiating the work's final scope and actual amount to be paid under each provisional item.
- It includes sufficient information, such as competitive personnel rates, to provide a sound basis complete the price negotiations.
- It includes a clear provision for the contract to be terminated if:
  - a satisfactory agreement for completing the work covered by the provisional sum items cannot be reached
  - the work changes significantly from that originally envisaged.

Cost fluctuations

For the contract periods:

- of less than 12 months, cost fluctuation provisions should not be included in the contract unless there is a good reason not to transfer the risk of price increases to the supplier
- greater than 12 months, the contract should include provisions for payment of cost fluctuations.

Communicating social and environmental expectations

To communicate the NZTA's social and environmental expectations, the project manager should ensure the:

- tender documents:
  - include the project-specific environmental issues and consent conditions that must be addressed in the suppliers' methodology
  - provide contract incentives for meeting and exceeding environmental performance criteria.

Contract dispute resolution

It is important for physical works and professional services tender documents to include dispute resolution procedures. The aim of any dispute resolution is to ensure disputes are quickly resolved in partnership with the supplier. The project manager must monitor all elements of the project's progress to ensure potential dispute(s) are identified as early as possible.

While the NZTA prefers negotiation and/or mediation settlements, these methods are best suited to resolving disputes where agreement can be reached through a process of discussion and concession-making. Arbitration and/or litigation are better suited for the resolution of points of law that the parties are unable to agree upon.

Insurance claims

Professional services contracts require suppliers to have professional indemnity insurance in place to an amount stated in the contract documents.

Physical works contract documents require suppliers to have contract works and materials, contractor's plant, public liability and motor vehicle liability insurances to an amount stated in the contract documents.

Most third party claims will be covered under the consultants' or contractors' policies. However, the NZTA retains insurance for amounts in excess of the amounts specified in the contract documents. The *Insurance and risk management manual* (SM013) provides details of the NZTA's insurers, insurance cover and claims' handling procedures.

Probity auditor

The NZTA has appointed a probity auditor for all NZTA contracts. The auditor is available to overview the tender process and verify the procedures set out in the tender documents are followed. The probity auditor is not a member of the Tender Evaluation team.

Any tenderers concerned about the tender process may contact the probity auditor and request a review of the process.

The auditor will investigate the issue and document the findings. Copies will be sent to the NZTA and the tenderer who raised the issue.

Consultant partnering

The project manager must promote partnering between the project team and consultants. Tender documents should, as appropriate, provide for the following:

a. Meetings with tenderers during the tender period to discuss tender documents to:
   - iron out any ambiguities
   - provide consultants the opportunity to comment on issues such as the scope and procurement methodology.

   Following these meetings, the project manager may need to amend the tender documents through notice to tenderer or reissue the tender document to address issues raised by tenderers. This will ensure all tenderers are given the same information and that the contract clearly represents the project objectives.

b. Pre-letting meetings to encourage consultants to:
   - identify any specific concerns they may have with the contract
   - establish the principals for resolving potential variations before the contract is awarded.

c. Monthly project meetings for face-to-face discussions between the project manager and consultant to:
   - identify and resolve any differences or technical aspects of the project
   - promote innovation, lateral thinking and good ideas, which may bring about more timely service delivery or other project benefits
   - review and update the status of the value management and partnering actions
   - comment on reports developed at partnering or value management workshops
   - ensure all specified actions are implemented.

Contractor partnering

Contractor partnering is not required on every contract. In general partnering between the client, consultant and contractor is only considered for high value or technically difficult contracts to reduce the likelihood of disputes by:

- ensuring there is a common level of understanding of the contract requirements
- promoting teamwork
- promoting an environment where the contractor can discuss and resolve issues.

Tender documents should, as appropriate, provide for the following:

- Pre-tendering meetings to give contractors the opportunity to discuss any constraints or variables that may affect their methodology, contract extent and duration. This approach recognises contractors have the greatest knowledge of plant and resources, and provides the NZTA with an improved understanding of realistic time frames, risk/cost trade-offs, etc.
- Pre-letting meetings to encourage contractors to discuss and resolve difficulties they identified during the tendering process before the tender is awarded.

- Regular meetings to encourage face-to-face discussions, so the project manager:
  - has the opportunity to assist the consultant and contractor to identify and resolve any potential disputes associated with differences or technical aspects
  - is encouraged to promote innovation, lateral thinking and good ideas, which may bring about the more timely service delivery or other project benefits
  - can review and update the status of the value management and partnering actions.
- Handover meetings and inspections to encourage the contractor to provide as much feedback as possible for the benefit of future projects.

Liquidated damages

Liquidated damages (LDs) are daily amounts deducted from contract payments when practical completion is not achieved by the contract completion date. LDs generally only apply to physical works contracts and:

- should be calculated according to the SM031 instructions and approved by state highway managers
- must be applied according to the provisions of the physical works contracts. Generally this requires LDs to be deducted from money owing to the contractor if the contract continues
- must be returned if the contractor is granted a time extension. If a time extension is not granted, the LDs may be waived or varied if the project manager obtains the state highway manger's approval.

Physical works variation negotiations

To document the process for negotiating large variations to existing physical works contracts, the contract must allow for large variations to be included. For variations initiated:

- during the tender process, a notice to tenderers is issued to advise additional work may be added to the contract
- after the contract is awarded, the contract documents must allow for work to be added to the contract.

The NZTA Board approval may be required before the negotiations are initiated. The Board's approval is required if the value of the proposed work exceeds the existing contract value. The *Procurement manual* explains the policy and procedure in these situations.

Pre-tender – Providing the framework for alternatives

Tender documents encouraging tenderers to consider alternative tenders are beneficial, as the NZTA may achieve a better result. To promote this objective, the project manager should consider the following questions before deciding whether alternative tenders are appropriate:

- Are alternative tenders likely to be of interest to the NZTA, ie does potential exist for an alternative tender to provide an enhanced whole-of-life solution?

- Does the project have significant programme, logistical or other constraints that would reduce the likelihood of an alternative tender being accepted? For example, it may not be possible for tenderers to prepare, or for the NZTA to consider, complex alternative tenders if the tender period and/or tender evaluation period is compressed to allow construction to commence without delay. Similarly, alternative tenders requiring new consents, or alterations to existing consents, may be precluded by the tender and/or the construction programme.
- What types of alternative tender will benefit the project, and how can they be accommodated/ encouraged in the tender documents? To promote this objective the tender period must allow tenderers adequate time to explore alternative tender possibilities.
- What types of alternative tender will not be of benefit to the project, and how can this be communicated in the tender documents? For example, explain the design of high-risk portions of the contract works are based on conservative safety factors to limit the NZTA's risk exposure.
- What types of alternative tender will have undesirable programme, cost and/or risk implications for previous or subsequent contracts in a multi-contract project delivery strategy?

The types of alternative tender that will not be considered must be specified in the tender documents. In general these should only be alternative tenders precluded by the NZTA's *Procurement manual*, such as those that change the project's scope and/or term.

Placing unnecessary restrictions on the types of alternative tender that may be offered may preclude the best value for money solution.

Post-award incentive schemes

To meet the NZTA's goal of providing best value for money, it may be appropriate for project incentive schemes to be introduced after the contract is awarded. These schemes can be used on any delivery model. Project managers must seek advice from the Project Services team before considering any post-award incentive schemes.

The basic principal of post award incentive schemes is to reward the suppliers (contractors and/or consultants) with 50 percent of the savings, less administration costs. This applies to any design or innovation that creates project savings without reducing the project's:

- functional performance
- whole-of-life performance
- scope.

Payments will not be made for savings achieved by reducing the project's scope, whole-of-life performance and functional performance.

In all cases the project manger:

- must seek appropriate advice and approvals before developing and implementing incentive schemes
- should set up additional job codes to record administration costs so these can be deducted before the savings are shared.

Closed procurement processes

General

A formal contract must be entered into for all works and services. For closed approaches to procurement, such as direct appointment and limited invitation to tender a short-form contract may be appropriate, refer to:

- short-form contract (SM030)
- physical works – Expedited proforma (SM031).

Compiling the short-form contract

The short-form agreement comprises the contract agreement and annexure 1 (SM030), which details the scope of services, payment provisions, inputs and deliverables, etc.

The short-form proforma includes a suggested format for compiling the final contact. The required information which may be referenced or appended:

- details of the scope of services
- names of the NZTA project manager
- names of the consultant's representative and key personnel
- subconsultant's details, if any
- inputs including the project programme, information supplied by the NZTA or other consultants
- outputs including deliverable schedule and reporting requirements
- the agreed fees and payment provisions.

Contract execution

The project manager must compile the contract document and forward it to the tenders secretary for processing through the normal contract execution procedures. Two copies will be sent to the consultant for signing. These must be returned to the NZTA for execution according to SM030. The NZTA will retain one signed copy, and the other will be returned to the consultant.

Physical works – Contract document review

General

While the NZTA has established standard document requirements and formats, different suppliers tend to show their own organisational style in the payment provisions and technical specifications. This diversity can make reviewing the draft documents more difficult for the project manager.

Document structure

Physical works contract documents must be prepared according to SM031 or SM032 (see Tender documentation above) and generally include the following sections:

a. Information to tenderers: instructions for tenderers, conditions of tendering, non-price attributes (including, if required tender evaluation marking forms), tender evaluation procedure, tender form.

b. Schedule of prices and basis of payment.

c. General and special conditions of contract.

d. Technical specification and appendices.

e. Drawings.

Document review

The project manager's review should ensure the consultant has used the latest version of SM031 or SM032, as appropriate. For larger contracts, a review by the Project Services team may be required prior to the publication of the request for tender (RFT).

- **Instructions for tenderers** section, the review should:
  - confirm all consultant specified inputs been completed, are consistent throughout the document and align with the agreed procurement programme
  - confirm the procurement model's and tender evaluation method's appropriateness. If tendered under the NZTA's pre-qualification process, it should ensure the appropriateness of the requested non-price attributes
  - ensure the Tender Evaluation team includes a qualified tender evaluator according to the *Procurement manual*'s requirements and the NZTA's *Contract procedures manual* (SM021) part 1, section E
  - ensure, if required, the contract's estimate is included and the probity auditor's details are confirmed
  - in addition to the non-price attribute and price requirements, ensure the tender documents require the tenderers to provide a construction programme.
- **General and special conditions of contract**, the review should:
  - ensure the contract type is specified (eg measure and value or lump sum)
  - ensure insurance and bond requirements comply with the provisions of SM021 and are appropriate
  - nominate any separate contractors
  - stipulate deadlines for receipt of the contractor's programme and quality assurance plan
  - confirm whether an operation and maintenance manual and/or as-built records, including drawings and Road Assessment Maintenance and Management System (RAMM) updates, are required
  - confirm the construction period and wet weather provisions are reasonable. If the project includes resurfacing work, this work should be completed between 1 October and 31 March annually. If completed outside this period, there is an increased risk of premature failure
  - confirm the liquidated damages provision is a genuine pre-estimate of costs and is reasonable
  - ensure the defects liability period reflects the project risks. The NZTA typically requires a minimum of 52 week period for road construction contracts
  - ensure producer statements are stipulated if required
  - confirm retention provisions
  - confirm cost fluctuation provisions. Generally cost fluctuations apply after 12 months
  - stipulate provisional, prime cost and contingency sums
  - confirm the engineer to the contract is described as a person, not a company or body corporate.

- Schedule of prices, the review should ensure:
  - the preliminary and general sections cover establishment, quality assurance, programming and reporting, environmental management, temporary traffic management and health and safety
  - the balance of the schedule lists all required work.
- Basis of payment, the review should ensure:
  - the method of measuring for each unit is appropriate. Where possible, ensure measurement provisions link to the quantities defined by the drawings
  - that there is a payment clause for each item in the schedule of prices. The payment clause needs to accurately describe what the tendered rate covers by referencing the appropriate technical specification provision and when payment will be made. Obscure or incomplete payment provisions may lead to variations to the scope of work.
- Technical specification:

  The technical specification sets out the preliminary and general requirements as well as the technical requirements for constructing the project. Where possible the technical requirements should reference rather than repeat the provisions of the NZTA's technical specifications.

  Depending on the project's complexity the specification may include the following sections:

  - Preliminary and general requirements including:
    - scope
    - contractor's personnel
    - working hours
    - contract meetings
    - communication
    - public complaints
    - publicity
    - liaison with adjacent landowners
    - inspections
    - utilities
    - plant and equipment
    - other contractors
    - publications and standards including scheme assessment, design and geotechnical reports
    - stockpile and disposal areas
    - survey and setting out
    - land entry agreements
    - temporary buildings and services
    - restoration and tidy up
    - construction site signage.

- Quality assurance requirements including:
  - quality assurance levels
  - quality plan content and submission requirements
  - site acceptance criteria such as roughness, texture and skid resistance requirements
  - performance evaluations (PACE).
- Programming requirements and constraints such as:
  - hold points where approvals or inspections are required before the works can proceed
  - time periods where certain works such as resurfacing must be completed
  - resource consent constraints
  - cash flow projections.
- Reporting requirements such as:
  - monthly reports, including progress claims, updated programmes, cash flows and financial reports
  - site records such as daily dairies and work-site accident reports
  - inspection records, as-built drawings, road construction information forms, asset owner's manual.
- Site safety and traffic management requirements including the approved traffic management plan.
- Environmental requirements including resource consents compliance.
- Earthworks including:
  - site clearance
  - disposal sites
  - cut and undercut to waste
  - cut and borrow to fill
  - sub-grade preparation.
- Drainage including:
  - surface water channels
  - culverts, including inlet and outlet structures
  - subsoil drains
  - kerb, kerb and channel and dish channel
  - sumps
  - manholes and catchpits
  - outfall protection.
- Pavement construction including:
  - seal widening
  - materials
  - stabilisation
  - construction, including construction performance targets.

  - Site restoration including:
    - fencing
    - topsoiling and grassing
    - hydroseeding
    - entrance ways.
- Drawings

  The drawings describe the extent of the project works. In general they should contain sufficient information to allow the contractor to complete the bulk of the site works without specific reference to the technical specification. This means the contractor's staff should be able to build the project from the drawings.
- Contract documents need to ensure:
  - all issues covered by the design report are covered by the construction drawings and technical specifications
  - drainage features including subsoil drains, etc are referenced with the Government Policy Statement (GPS), and outlets marked
  - the contractor updates design report and drafts the owner's manual for the project consultant to finalise and forward to the project manager for approval
  - all landscaped areas are effectively maintained.

Asset management guide for capital projects

General

The NZTA is aware poor investigation and design decisions:

- affect the project's future maintenance and the project's whole of life costs
- can be seen through post-construction maintenance difficulties
- may limit future developments such as:
  - providing insufficient space for future projects such as widening
  - ongoing problems for other industry sectors such as heavy haulage and utility providers
- create unnecessary agency and economic costs.

Typically, the additional costs are hidden and do not become obvious for a number of years. Accordingly future maintenance and development need to be considered early in the project's life and allowed for in the detailed design. While there may be additional costs, these appear to be limited to investigation and design phases. Many future issues can be addressed by good detailing at the design phase with little increase in construction costs. The NZTA's technical specifications should be referenced during these phases, as they include measures and/or details that promote cost effective maintenance.

This guideline will help project managers identify and eliminate or reduce post-construction maintenance difficulties. In doing so project managers must consult the regional network operations representative during the design and contract documentation phases to ensure the issues discussed in this guideline are addressed to network operation's satisfaction.

It can also be applied to safety auditing, a specific design for whole of life cost issues and to ease post-construction maintenance.

Problem areas

Problem areas identified with projects that should be considered during the contract documentation stage include the following:

- **Landscaping** plans requiring mowing of large tracts of grass, which in motorway and expressway environments is expensive. Alternatives to grassing, such as those suggested in the NZTA's *Guidelines for highway landscaping (*SP/M/020*),* should be considered. However if grassing is preferred the following should be considered:
  - A slow/low growing species should be selected.
  - Access to and final contours of grassed areas must allow the area to be controlled by tractor-mounted mowing plant.
  - Gradients should be less than four horizontal to one vertical, so the tractor-mounted plant can complete the works. Steeper slopes can be either mown with hydraulic arm mowers or manually with weed eaters, but this is more expensive.
  - Access should be provided away from the carriageway, guardrail, steep batters and drainage features or combinations of these.
  - Safety must be considered. Creating a narrow grassed shoulder with little or no shoulder is hazardous and may be more expense to maintain because of the associated traffic management costs. An alternative would be to construct permanent median surfacing during the construction phase.
  - If planted areas are preferred, the establishment period is longer. Care needs to be taken to ensure:
    - the selected species are suitable for the environment
    - the site is well prepared and maintained, particularly during the first one or two growing seasons.

  Options include:

  - using native species as ground cover or low growth grass
  - providing benches at six-metre centres for hydraulic arm mowers
  - using wild flowers. The SM/P/020 appendix 4 sets out the criteria that must be followed for all wildflower plantings
  - reduce the specified grass-cutting requirement
  - widen formations
  - provide drain crossings for mowers
  - having a two-year maintenance period for all landscape planting. The maintenance specification should address mowing, watering, fertilising, weed control, pruning and insect and disease control requirements.
- **Maintenance access** is needed for a variety of maintenance activities such as vegetation control, clearing silt ponds, drainage works and storage and stockpile sites. The final design must allow for safety access to these areas and severance or isolation from the described above must be avoided.

- **Barrier design** - barrier types and profiles must:
  - allow for subsequent pavement surface treatments, including lifts of thin asphalting surfaces
  - allow for ready repair if damaged. This may mean the specified barrier is the one that is commonly used and has a ready supply of spare parts.
- **Skid resistance** – various factors, either in isolation or more often in combination, lead to premature loss of skid resistance due to loss of micro texture (polishing). These factors include:
  - geometry such as tight radii with insufficient superelevation, and areas that allow surface water to pond
  - traction demand due to geometry, heavy vehicle acceleration and breaking
  - accident migration
  - change in driver behaviour
  - vehicle type.
- **Drainage maintenance** – drainage channels and structures, such as sumps, manholes, culvert ends and subsoil drains, must:
  - be located so they can be readily accessed for maintenance
  - have their location referenced and well marked.
- **Landscape plantings** - should be consistent with SP/M/020 and the NZTA's *State highway geometric design manual*. It is particularly important to ensure:
  - shrubs, that may have trunks over 100 millimetres (mm) in thickness, are kept at least nine metres from existing traffic lanes or any foreseeable pavement widening
  - adequate clear and recovery zones are provided.
- **Bridge design** must:
  - allow sufficient space for maintenance access and utilities, and provide sufficient space for future works such as widening
  - have adequate drainage. In general, sumps are preferred, provided they are able to catch the majority of water and debris that may block outlet pipes and can be readily cleaned. If it is not practical to use sumps, it must be shown that water will not overshoot and drainage pipes will not normally block. To simply provide access for unblocking pipes, although important, is not sufficient if there are likely to be frequent blockages.
- **Heavy haulage** – Structure designs need to ensure heavy haulage is not compromised in terms of weight or dimension. For bridges on heavy haulage routes, this includes providing structures that handle vehicle crossings, without imposing crossing conditions such as travel central on beam.
- **Emergency services** require parking areas for tow trucks, ambulances and police vehicles. It also includes barrier crossings, access from side streets and median barrier gates.

  Advanced Transit Traffic Operation Management System (ATTOMS) – development of these systems require design provisions to be made
- **Diamond interchanges** enable traffic to be diverted via on- and off-ramps, allowing work to be carried out on the pavement between ramps and on the bridge itself. They also provide an alternative path for overdimension loads if the underpass height is less than six metres. Due to tight radii, ramps have a higher skid demand and are not desirable.

Suggested solutions

During the project's contract documentation development future maintenance issues can be minimised by careful investigation, design and detailing.

- **Strategy studies** provide background information which may affect the project. They should be referred to for traffic data, land use implications, and potential risk to route security.
- **Project feasibility studies** (PFRs) cover future maintenance requirements, costs and strategies that should be considered.
- **Scheme assessment reports** (SARs) encompass:
  - designation – sufficient land needs to be designated to accommodate formations with mowable slopes
  - liaison – the network management consultant and/or maintenance contractors should be consulted to identify existing maintenance issues
  - services – allowance should be made for future services by consulting utility companies and encouraging them to jointly designate service corridors adjacent to the carriageway. In general at least twice the identified capacity should be allowed for.
- **Design phase**:
  - Landscape design should include:
    - mowable batters
    - adequate access to grassed areas, silt ponds, etc
    - planted areas consistent with landscape concepts.
  - Maintenance access should allow ready access to:
    - silt ponds
    - culvert ends
    - subsoil pipe ends
    - sumps and manholes
    - bridge inspections
    - areas for staging of maintenance activity
    - median gates for contraflows.
  - Structure designs should allow for:
    - access including hatches, pads for ladders, lighting, access tracks, etc
    - future demolition. Consider how the structure will be safely removed
    - aesthetics, such as providing textured/profiled finishes and completing architectural review.
  - Surface drainage should:
    - eliminate any flat spots where water ponds
    - concentrate surface water to collecting structures and outfall points
    - include features that enable hazardous spills to be controlled
    - include surface drainage (including structures) which is effective, easy to maintain and, if overflows, will not cause significant damage.

- Graffiti protection should:
  - be consistent with systems specified in the maintenance contracts
  - consider landscape planting and screening to deter tagging.
- Lighting facilities should consider locating the lighting in the median and using the median barrier to run the cables.
- Utilities considerations should allow for the projected growth of services.
- ATTOMS and emergency response should allow for:
  - future fibre-optic installation
  - emergency access, such as median crossings
  - off-road parking for emergency service.
- Skid resistance – the NZTA's T/10 specification establishes skid resistance requirements. Careful whole of life analysis of reduced surfacing life is necessary if geometric standards are compromised.
- Design report:
  - documents elements of the design that must be included in the physical works contracts
  - forms the basis of the asset owner's manual which documents project elements such as consent conditions that require monitoring and construction elements which require specific ongoing maintenance.
- Contract documents need to ensure:
  - all issues covered by the design report are covered by the construction drawings and technical specifications
  - drainage features (including subsoil drains) are referenced with the GPS and outlets marked
  - the contractor updates the design report and drafts the asset owner's manual for the project consultant to finalise and forward to the project manager for approval
  - all landscaped areas are effectively maintained.

- **Post-construction** - it is important the project is maintained according to the asset owner's manual. Specific attention must be given to ongoing consent compliance and any specific maintenance that is required.

Consultant's supervision of construction

General

It is important that our consultants add value during the construction phase of our projects through delivery of the requirements detailed in our management, surveillance and quality assurance (MSQA) specification in their professional service contracts. This guideline sets out some best practice guidance for maximising their value added.

The contractual framework for procuring MSQA services

The standard MSQA specification provides only a general framework for the services required of our supervising consultants. As it is intended to cover the NZ Transport Agency's (NZTA) entire range of projects, ie small to large, and simple to complex – it has to be general in nature. It sets out default of service suck as minimum frequency of site visits and compliance checking requirements.

It is unreasonable tp expect consultants to have to make assumptions about what the NZTA requires and to then carry the financial risk of having interpreted these requirements incorrectly.

The project manager therefore needs to ensure that the project specific surveillance requirements are clearly set out in section D of the RFT – the project specification to ensure that ambiguity and uncertainty of the NZTA's requirements doesn't carry through to the construction phase of the project.

Specifically the project manager should specify in the project specification the repid of construction to be assumed by the consultant when tendering the professional services contract and make provision for subsequently adjusting the tendered MSQA fee up or down according to the actual construction period that eventuates. Additionally it is important that the minimum required level of consultant presence on site and level of compliance testing be set out in the project specification by the project manager, or alternatively that the adequacy of the default levels set out in the MSQA are confirmed in the project specification.

Make appropriate use of provisional sums in contracting MSQA services

It is not generally sensible to procure the MSQA services of a consultant under a tendered lump sum model under a three-phase professional service contract before the investigation and reporting (I&R) phase has even commenced as the project option to be constructed and/or the timing of construction is not known by the NZTA, or the consultant. Generally such an approach to procurements of MSQA will only result in renegotiation of the MSQA fee prior to construction commencing. In such cases the pricing schedule should include a realistic NZTA-specified provisional sum for the MSQA section of the contract with provision for negotiating the MSQA as a lump sum prior to construction commencing.

The manager must consider and decide what consultant presence on site is appropriate for the particular project. In doing this the project manager should consider:

- project value and durations
- project complexity and risk
- project site remoteness form consultants' office.

For example on a low-risk, low-cost project on a remote site, the project manager may consider twice weekly site visits by one consultant representative and a 10 percent compliance level (to be appropriate on a $1 million passing lane project). At the other end of the scale on a high-value, high-profile, high-risk project, the project manager may require a team of consultants on site full time (eg Greenhithe project).

Where sites are remote from the consultants' office it is sometimes necessary to pay the consultant approximately six hours travelling for two hours on site. The project manager should look for opportunities to avoid time consuming and costly travel to remote sites. An opportunity exists in such cases for the supervising consultant to make an arrangement with the network consultant (who is often passing the site daily) to assist with site visits.

Level of service

The amount of time spent on site by the consultant doesn't in itself guarantee value added. The NZTA only realises the potential level of service required if the consultants visiting site understand intimately the requirements of the contract documents and ensure that the contractor is complying with all aspects of these requirements. The project manager should therefore accept only appropriately skilled and experienced consultants for the role of site supervision. The project manager must also add value by auditing the value being added by consultants during construction to ensure that they understand what is required and are in fact providing the services specified in the MSQA contract. The project manager must be proactively reviewing and auditing the consultants' methodology and quality plan during construction to be satisfied that the consultant is performing at a high level and must intervene early through appropriate action when this is not the case.

8.1 Property management

Overview

The acquisition process is set out below, with a focus on the responsibilities of the NZ Transport Agency (NZTA) participants.

The property interest taken is generally the freehold or leasehold title. Other interests taken are air or strata rights, spoil disposal, easements, temporary entry or survey access.

All acquisition and disposal processes take place in accordance with the Public Works Act 1981. Acquisition and disposal negotiations can only be undertaken by specialists accredited by Land Information New Zealand (LINZ). The overall process is shown in the flow chart Property acquisition at the end of this process.

LINZ sets standards, controls the process, and must approve every purchase or disposal. The NZTA Board (or delegated authority holder) must also approve each transaction. The identity of the approvers is also in the appendix flow chart.

Regional property managers oversee all property work and manage the contracts in place with the accredited suppliers. The regional property managers also manage the regional acquisition programmes.

In addition to negotiating with landowners, the accredited suppliers provide property advice, input to feasibility studies and prepare property acquisition strategies. Provided they liaise with the regional property manager, project managers may access the accredited supplier directly for property advice and arranging access to properties.

Time frame

Property acquisition typically takes 12–24 months from first approach to the owner until settlement. Time frames vary greatly depending on the complexity of the transaction and the owner's response:

- Land entry agreements may take several weeks, if not longer, if the owner objects. In this case section 110 or 111 notices must be served under the Public Works Act 1981. This period is longer if the owner appeals to the District Court.
- The NZTA *Process for acquisition of property manual* (SM040) sets out the compulsory acquisition process. The process is described in the second flow chart of those appended to this document.
- If compulsory acquisition is required and a designation is in place:
  - negotiation in good faith must be attempted, for at least three months
  - section 18(1) notice of desire is served, at least three months further negotiation takes place, and
  - section 23 notice of intent is served. If unopposed, the property will be taken in the time specified in the notice and the amount of compensation will be agreed or litigated after acquisition.

Each notice requires high level NZTA approvals, LINZ approval and must be served by the Minister of Land. Typical duration with compulsory purchase is a year, though could be two years or more if valid objections are raised.

Costs

The NZTA is responsible for meeting all property acquisition costs, compensation and the owner's associated costs, and fees associated with the transaction. All costs, including the owner's advisor's costs are approved by LINZ and paid by the NZTA.

The majority of costs, including re-establishing boundaries are funded from the property acquisition budget as are any specific mitigation measures such as replacement of outbuildings. Other actions such as tree removal and site clearance are funded by the project.

Landowner information and liaison

Project managers must:

a. be aware that agreement difficulties with landowners are the second biggest cause of project delays, after consenting issues

b. recognise landowners are important stakeholders in every project

c. ensure appropriate communication occurs with all affected landowners and occupiers as the project develops

d. never discuss valuations, property exchanges or compensation matters with landowners or occupiers. These discussions are responsibility of the Accredited Supplier and Property team

e. ensure on completion of the project, that each affected landowner is met on site to ensure the agreed works have been completed to the specified standard, and the final legal boundaries are agreed.

Land entry, feasibility and strategy development

The implications of project choices on the property interests and property acquisition programme need to be considered from the outset.

In general, the professional services consultant or project manager deals directly with the accredited supplier to arrange land entry for inspection, survey, testing or investigation.

Note that the land entry negotiation is often the first contact with the landowner and can set the tone for the relationship. These contacts need to be handled sensitively.

The project manager will provide a preliminary land requirement plan to the accredited supplier and instruct them to prepare a preliminary project property acquisition strategy which documents the:

- impacted property's legal description
- owner or occupier names and contact details
- estimated acquisition costs
- net property cost estimates
- acquisition timeline
- risk elements and critical sites.

It may be appropriate to consider acquisition of key or risky property interests early, possibly in advance of design completion. Advance purchases (more than three years to construction) require a mandate from the national property manager *before* entering into negotiations. Each case is considered on its merits.

Property acquisition

Once the project is approved and the property acquisition budget has been allocated, the property acquisition process requires the:

a. project manager to provide the property manager with the land requirement plan, including a property schedule and scale plans showing:
   - the extent of work, details of the affected properties and the date entry is required
   - designated routes, where they are in place
   - contacts details of the owner and/or occupier, the type of interest to be acquired and the likely disruption to each property

b. property manager to instruct the accredited supplier to complete the acquisitions, monitor negotiations, ensure that the process is completed to the agreed timelines, and manage any required approvals for funding or purchase

c. accredited supplier to negotiate the acquisition in compliance with the Public Works Act 1981, from evaluating compensation through to negotiating the sale and purchase agreement

d. accredited supplier to agree additional items such as short term leases of the property, work to be undertaken on the owner's land during the project, resolution of issues around entry agreements or project impact

e. accredited supplier to implement the compulsory purchase process (by serving the appropriate notices and negotiating) when necessary in order to maintain acquisition progress. The need to use the process may have been identified in the project property strategy at the outset

f. project manager or professional services consultant to assist by providing design and other details to the owner and the owner's legal and/or valuation advisors

g. property manager to ensure that all properties are handed to the property management contractor when acquired. This ensures that properties are managed to keep them secure, income and access for the NZTA if required

h. property manager to ensure that properties are cleared (of tenants) for construction and that the project manager is adequately briefed on the project work required for affected owners

i. project manager to ensure that the contractor leaves all surplus property in a tidy state with gates and fences intact ready for disposal

j. project consultant to prepare as-built plans to legalise and commission the road. At this stage residual property identified in the acquisition strategy, particularly high value property, should be surveyed and sold.

Prior to project completion, the regional property manager and the project manager should consider strategies to dispose of residual property identified in the acquisition strategy, particularly where high value property has been identified.

Project construction

Provided the project manager gives clear guidance on timing, the regional property manager is responsible for ensuring that all property is cleared (of tenants) and ready for construction. This can involve serving notices on tenants and ensuring that all property is empty and ready for construction work to begin.

Where owners are to remain on their land, mitigation and alternative arrangements are generally made. These include re-establishing boundaries, site clearance, reconstruction of buildings and fencing.

The agreed work must be documented in the owner's agreement and the regional property manager will specifically notify the work to the project manager in a contract obligations report. Whilst the project manager is responsible for undertaking the work, the property manager is responsible for liaising with the owner to ensure that they are satisfied and sign a contract clearance form.

Fencing of the new boundaries may take place immediately after settlement or at some later date if convenient to the owner and the project team.

Prior to project completion, the regional property manager and the project manager should consider strategies to dispose of residual property identified in the acquisition strategy, particularly high value property.

Property legalisation

Legalisation is the process of surveying to generate clear title drawings so that the property titles can be created.

The regional property manager will generally arrange for a surveyor to finalise boundaries and complete the legalisation survey.

The project manager must approve the surveyor's brief or work directly with the surveyor to ensure that the surveying is completed accurately.

Once the survey plan(s) have been approved and developed, the project manager must ensure that the surveyor and legal advisor or the accredited supplier:

- rationalises designations
- gazettes any new state highways.

Property disposal

See the last flow chart at the end of this section for the standard disposal process.

The project manager should arrange a meeting with the consultant, the property manager and the accredited supplier to:

- identify blocks of surplus property and agree actions for disposal
- agree the surplus property's interim and ongoing management.

The property manager should:

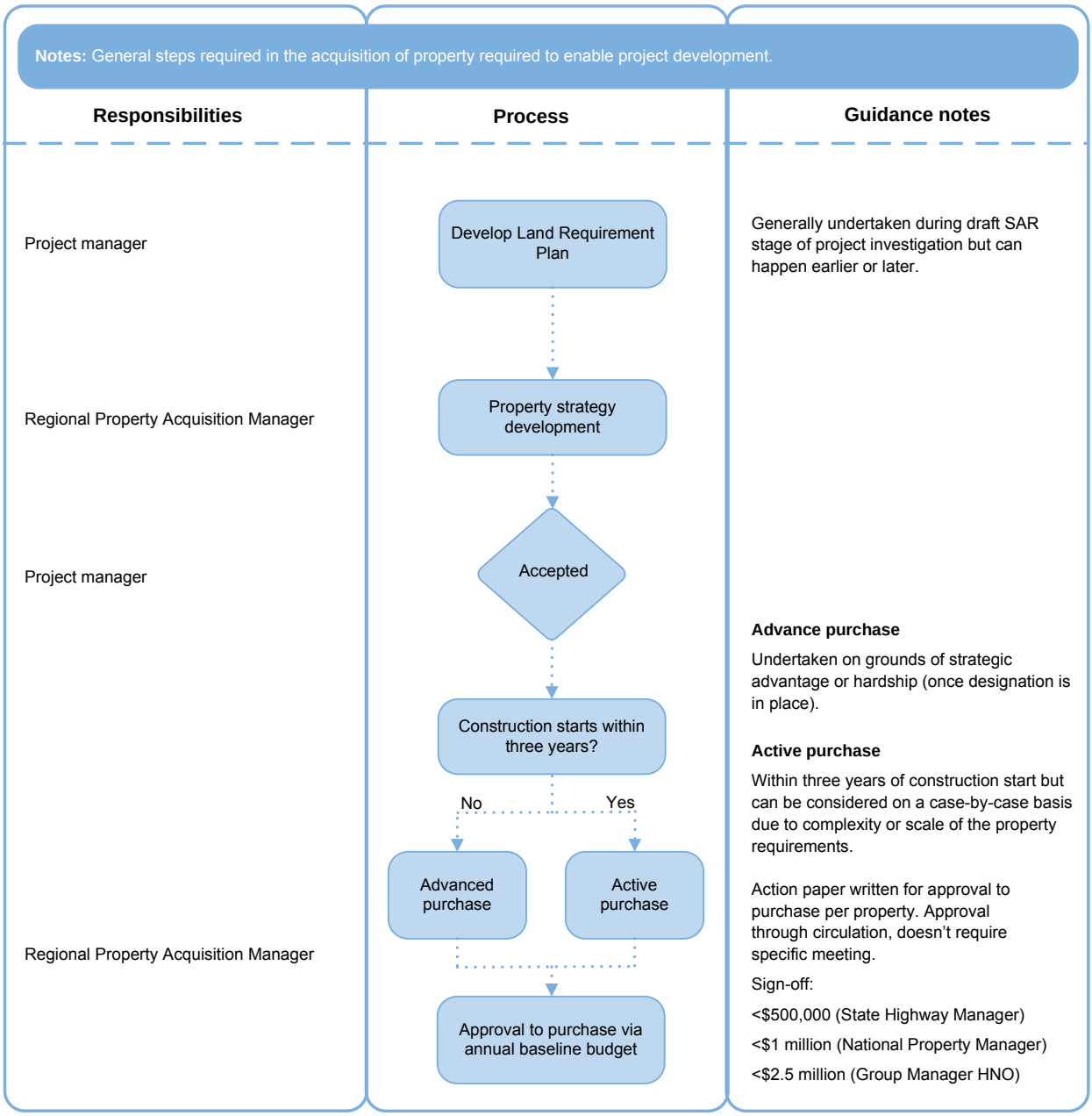
- facilitate the early disposal of surplus property during staged construction
- survey and legalise smaller lots of property
- drive the disposal process and liaise with the accredited supplier or consultant to arrange the surveying, legalisation and disposal of the property according to the property disposal flow chart at the end of this section. The associated costs and charges remain a project cost and as such the project manager should always look for opportunities to dispose of surplus property.

Further information

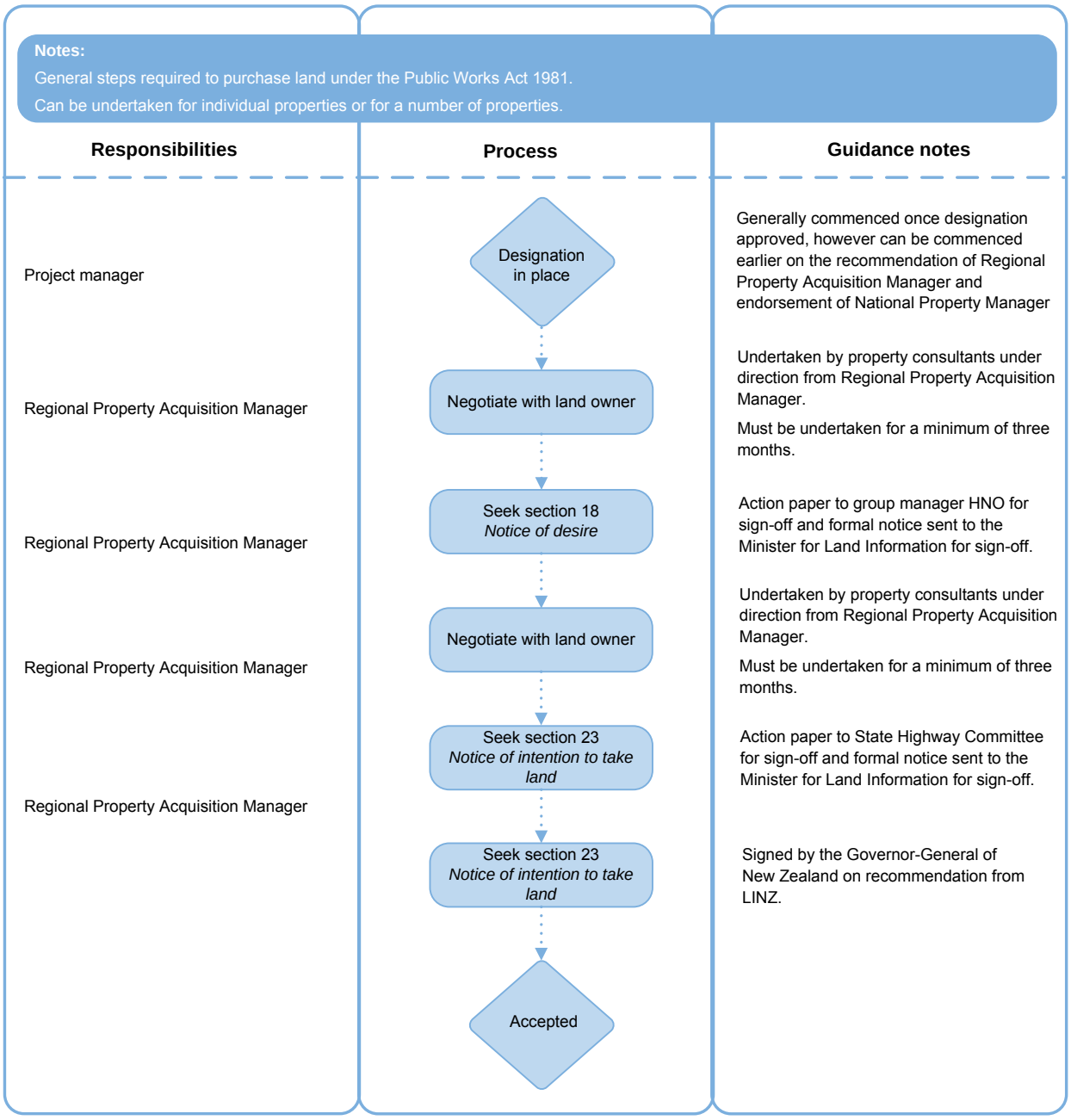
To obtain further detail or information, project managers should talk to the property managers in their region. It is also possible to view other more detailed property manuals, as listed below:

Manual number	Title
PR001	*Property policy and information manual*
PR002	*Property division management systems manual*
SM040	*Process for acquisition of property*
PR003	*Process for disposal of property*

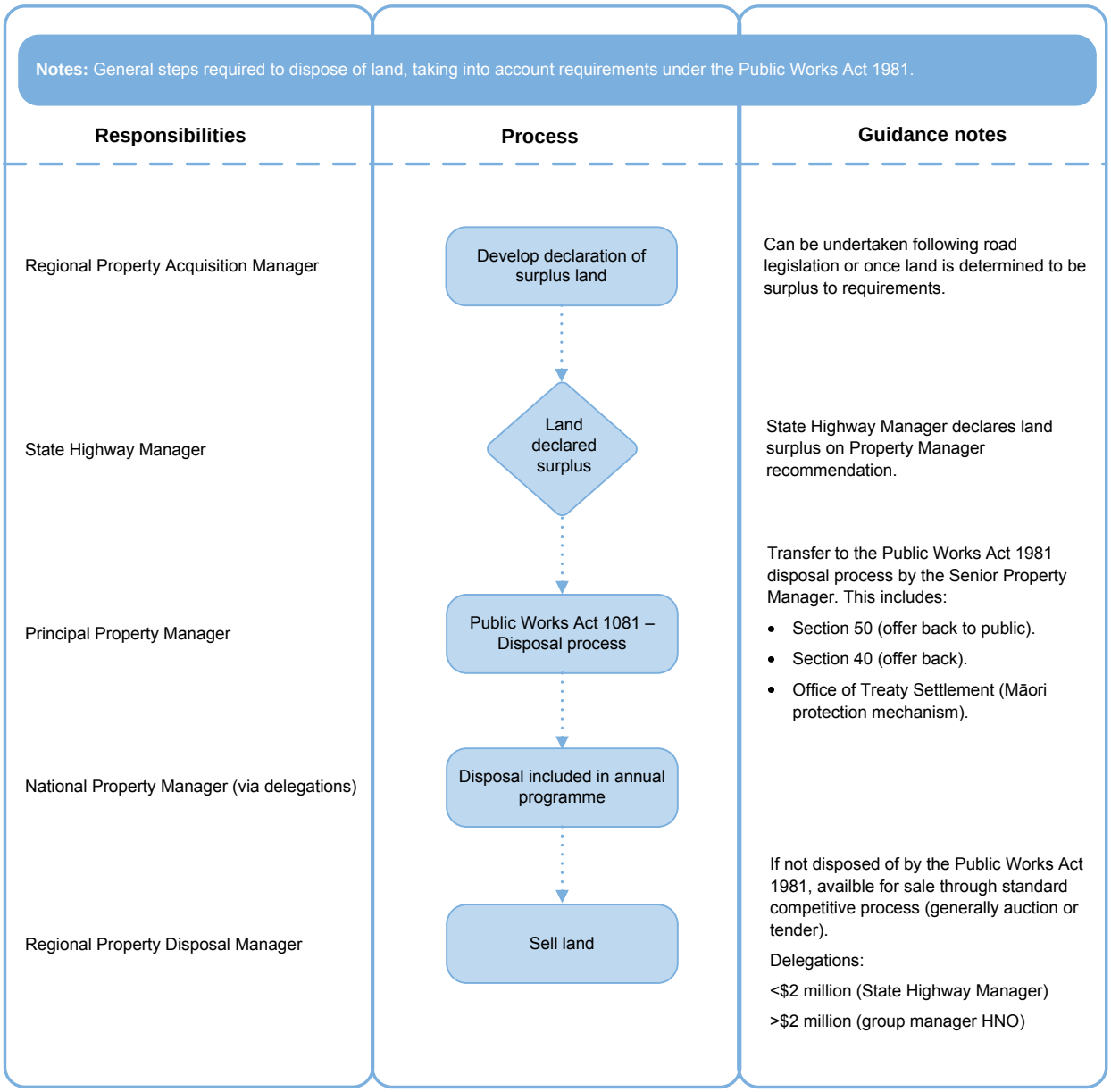
Property acquisition



Property acquisition under the Property Works Act 1981



Property disposal



8.2 Procurement

Framework for a project procurement strategy

To develop a procurement strategy for your activity it is recommended that you include as a minimum a discussion on the following:

- Purpose
  Why is the project required?
- Objectives
  What is the purpose of the project?
- Background
  What is the history behind the project and key decisions that have been made in the past?
- Project status
  What is the status of aspects like designation or property? What is the current estimate of the project, and is funding secured?
- Project portfolio assessment
  An assessment of other projects, with planned procurement processes, that may impact on the procurement plans of your specific project.
- Key project risks
  A summary of the key project specific risks, including considerations such as third party stakeholders, consultation with Iwi, and utilities.
- Procurement model assessment
  Look at the suite of contract delivery models available. Make an assessment of the strengths and weaknesses of each model in your particular application, and select a prefer delivery model.
- Supplier selection method
  An assessment of the supplier selection methods available and the method you propose to use, including the specific weightings that will be adopted in the non-price attribute.
- Document the specific process steps proposed in your approach to procurement, eg:
  - Registration of interest (ROI)
    A process to gauge the level of interest in the project in the industry, and whether there is a need to shortlist prospective tenderers.
  - Statement of interest and ability (SIA)
    A shortlisting process, utilised where there are more than four ROIs.
  - Interactive tendering process
    A series of meetings during a tender period designed for direct interaction with individual tenderers to gain alignment on project issues and improve the general standard of tenders received.
- Tender evaluations
  Nominate the proposed Tender Evaluation team members and confirm which of them is a qualified evaluator.
- Procurement time frames
  Summarise the key dates in the procurement programme, including the process to contract award.

Project procurement strategy templates are available from the Project Services team at the NZ Transport Agency (NZTA) National Office.

How do I prepare a tender document?

A set of draft contracts covering the majority of contract types (including a standard approach to tendering) used within the Highways and Network Operations (HNO) group are included within the following manuals:

- *State highway professional services contract proforma manual* (SM030)
- *State highway construction contract proforma manual* (SM031)
- *State highway maintenance contract proforma manual* (SM032).

For professional services contracts, the NZTA project manager normally prepares the tender document or is actively involved in the development process.

For physical works contracts, our consultants prepare the tender document, and the NZTA project manager is responsible for reviewing and approving. For larger contracts this will require that the project manager engages with various internal specialists, management and the Professional Services team at the NZTA National Office. The purpose of such peer reviews is to ensure the quality of tender documentation is appropriate and that it complies with all client objectives and policies.

Maintenance contracts types

The maintenance delivery structure identifies whether the suppliers are working within a two- (design - construct) or three- (traditional) tier structure.

The way traditional, hybrid and performance specified maintenance contracts (PSMC) maintenance contract s are packaged is described below:

- Traditional maintenance contracts
  - The NZTA and its professional services agent retain the asset management decisions.
  - In some NZTA regions there are separate contracts for each maintenance activity, while in others similar works are packaged together. The project manager must consider in consultation with the professional services agent and, possibly, the wider industry, to determine which maintenance activities should be combined to generate the most efficient pricing.
- Hybrid maintenance contracts

  Like traditional maintenance contracts, hybrid project contracts include separate contracts for professional services and physical works. However unlike the traditional model:
  - asset management decisions are shared between the suppliers
  - the professional services supplier has a one-to-one or one-to-many relationship with the physical works supplier(s)
  - physical works contracts typically bundle all maintenance activities into a single area-wide or subnetwork contract
  - depending on the project's location, market structure and maturity, consideration could be given to having separate general maintenance (comprising pavement and drainage maintenance, reseals and area wide treatment activities) and corridor contracts (comprising traffic services, vegetation control, pavement marking, etc).

- PSMC

  In these contracts the:

  - professional services and physical works are included within the one, ten-year contract
  - supplier makes the asset management decisions based on a defined set of performance measures or criteria.

  In determining the maintenance development and delivery structure the following must be considered:

  - The physical works contracts must be of a size to generate efficient prices.
  - Care should be taken when establishing more than two subnetworks in a partnered environment. Experience suggests the parties struggle to treat all suppliers equally regardless of the scope of their individual services.

- Maintenance alliance

  In these contracts the:

  - professional services and physical works are included within the one, ten-year contract
  - single contract team including client representatives makes all asset management decisions.

  In determining the maintenance development and delivery structure the following must be considered:

  - The physical works contracts must be of a size to generate efficient prices and have complex issues requiring a highly-skilled team to manage them.
  - A market conditions assessment should be carried you to ensure that by establishing an alliance the existence of other consultants/contractors in the region would not be significantly affected.
  - The HNO group has the required staff to populate various positions in the team to deliver the learnings.

Capital contracts types

The NZTA's capital project contract types are traditional, design and construct, alliance and early contractor involvement. The selected contract type is a function of the project's delivery structure.

Project risk and the potential for innovation are the key criteria for selecting a project's delivery structure. While there is no definitive point for moving from one delivery method to the next, the trend is to move towards full delivery as the risk and potential for innovation increases. There is also room within each of the delivery models to develop alternative methods which best suit the complexity and risks associated with a particular project.

Each of the above delivery structures is described as follows:

- Traditional method

  This method depends on how well the scope of the works is defined. If the scope is:

  - well defined, then a single package for the investigation, design and construction phases is appropriate. This can be achieved by either making the design and supervision phases provisional for later negotiation, or by agreeing a lump sum at the start of the contract and allowing escalation to apply
  - not well defined, it is preferable to procure a stand-alone investigation contract followed by the design and supervision a single contract.

  For complex projects, it may be appropriate to break investigation phase into two parts:

  - scoping and option analysis to identify the best option, followed by
  - analysis of the best option.

  While preferable to have lump sum contracts and include the phase(s) provisional activities it may be appropriate to complete the subsequent phases on a time writing basis if there is substantial uncertainty.

- Full delivery method (Alliancing)

  This method comprises a single contract for taking the project from the current phase to completion. As a full delivery model can be implemented at any time it may be appropriate to use the other delivery methods to complete the preceding phases such as using the traditional method to complete the project's investigation phase.

  Project alliancing is an approach aimed at creating mutually beneficial relationships between all parties to ensure best project outcomes. Unlike traditional forms of contract where risk is allocated to different parties, under a 'pure' project alliance the alliance participants take collective ownership and equitable sharing of all risks associated with the delivery of the project.

  The risk:reward arrangements are designed so that exceptional performance will deliver excellent outcomes for all parties while poor performance will result in poor outcomes for all parties.

  Alliance principles are founded on the following core principles:

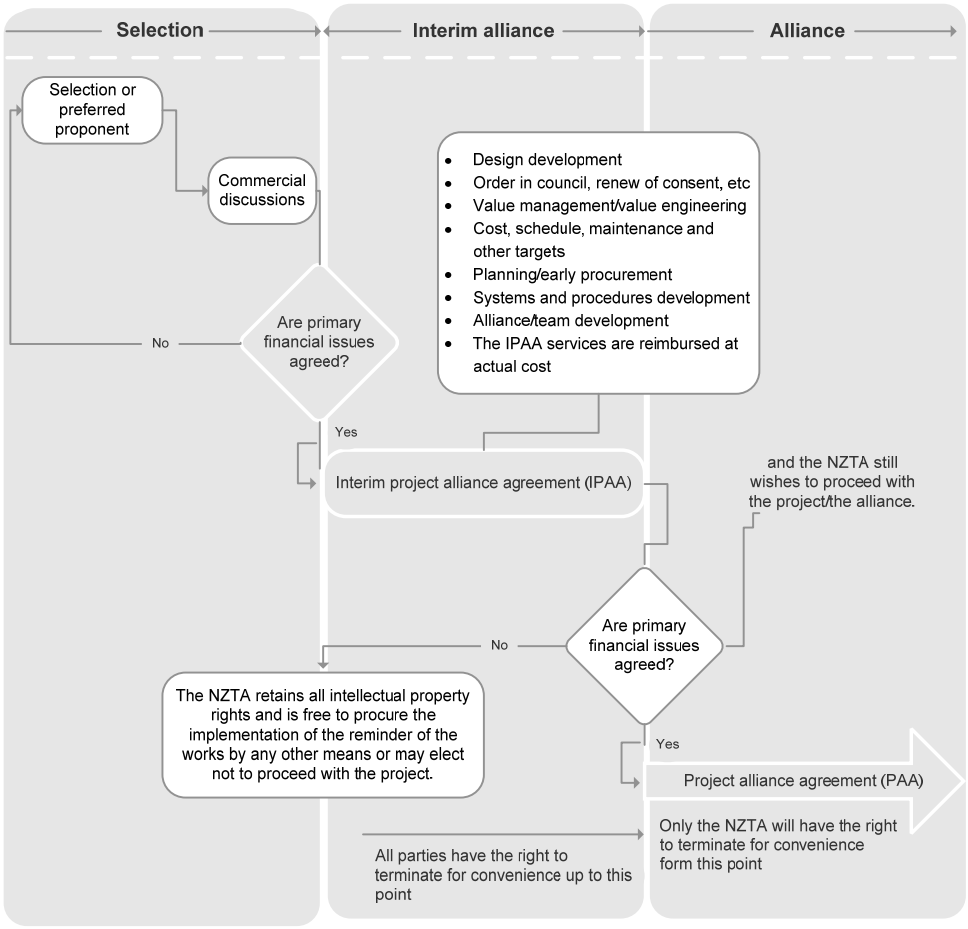
  - Primary focus on business outcomes whereby all parties either win or all parties lose.
  - Collective responsibility for performance with an equitable sharing of risk and reward.
  - A peer relationship where all participants have an equal say.
  - All decisions must be best for the project.
  - Clear responsibilities within a no-blame culture.
  - Full access to the resources, skills and expertise of all parties.
  - All transactions are fully transparent.
  - Innovative thinking with a commitment to achieve outstanding outcomes.
  - Open and honest communication - no hidden agendas.
  - Visible/unconditional support from all levels of each participant.

Project alliances are governed by project alliance boards (PABs) made up of two senior representatives from the NZTA and one or more senior representatives from each of the non-owner participants, as illustrated below.

Under project alliance agreements all decisions of PABs are required to be unanimous. The PABs appoint alliance project managers who may come from any of the alliance participants, to head up integrated alliance management teams (AMTs). An ATM is a group of senior project personnel, including representatives from all alliance participants, who will be responsible for the day-to-day execution and management of the project.

Alliances are developed and implemented in two stages		
Selection (no contract in place)	Selection of a preferred proponent. Commercial discussions/negotiations with the preferred proponent.	
Implementation (contract(s) in place)	IPAA	Interim project alliance agreement during which the NZTA and the preferred alliance participant(s) develop a target programme and target cost estimate and undertake intensive work on design, planning and other pre-construction activities.
	PAA	Full implementation of the delivery of the project.

Alliances are formed in stages as illustrated below.



The commercial/ legal framework

The interim project alliance agreement (IPAA), akin to a simple form consultancy agreement, will provide the legal vehicle through which the non-owner participants will be reimbursed for their services during the interim alliance period.

Once the target cost, target programme and the remaining details of the pain-share /gain-share regime are agreed, and provided the NZTA still wishes to proceed with the project under an alliance, then the participants will enter into a single project alliance agreement (PAA). The PAA sets out the participant's collective and respective rights and obligations under the fully formed alliance.

- Design – construct (DC) method

  The way to package a DC depends on where the project is at in its life cycle. To decide this, find out if:

  - a preferred scheme been lodged for designation
  - the preferred scheme is a fundable project (eg does it have a benefit cost ratio greater than the current cut-off? What are the social and environmental issues?)

  If the answers to these questions:

  - are both yes - complete an investigation contract and engage the principal's advisor to prepare specimen design, seek resource consents and procure and manage the DC supplier
  - are no to the first question and yes to the second question - renegotiate investigation contract to extend its scope (material changes) to include the principal's advisor's role. Prepare the specimen design and seek resource consents and designation as well as procuring and managing the DC supplier.
  - This approach should be used if the project is being started at the project feasibility report (PFR) stage.
  - are both no - conclude the investigation contract at the point of confirming its designation.
- Early contractor involvement (ECI) method

  The flexibility of the ECI method ensures that you are well-equipped to deal with change, as the scope will not be completely defined.

  An ECI method should be considered if:

  - you are looking to fast track a project and the expected estimate is generally under $50 million
  - there is uncertainty around scope and there could an opportunity for staged design and construction to occur allowing an earlier start on some enabling works
  - there is a strong probability that you might need to add other package(s) of work during the design phase
  - it is felt that the involvement of construction expertise in the development of a project could ensure that decision-making in the planning and designing is appropriately balanced with constructability issues (eg complicated traffic movements).

  As this is a quality based procurement method to ensure value for money is achieved you will need to engage with an independent parallel estimate peer review and conduct a reconciliation process.

  Additionally you may also need to engage with an external design peer reviewer to ensure the best value design is selected from an independent perspective.

8.3 Tendering

Understanding the role of the probity auditor

The NZ Transport Agency (NZTA) appoints a probity auditor to overview the tender process and verify the procedures set out in the tender documents are followed. In addition they are to be contacted to lodge any potential conflicts of interest with any of the evaluation or project team.

The probity auditor is not a member of the Tender Evaluation team.

Any tenderers concerned about the tender process may contact the probity auditor and request a review of the process. The probity auditor will investigate the issue and document the findings. Copies will be sent to the NZTA and the tenderer who raised the issue.

Tender communications – General

General

During the tender period, the project manager must make every effort to ensure:

- a tenderers:
  - understand the tender document's requirements
  - receive the same information and guidance
- issues raised by tenderers are addressed in a timely and concise way and:
  - all tenderers are advised of the outcomes
  - the tender documents are amended
- there are no conflicts of interest between the Tender Evaluation team and tenderers.

Notices to tenderers

Aside from general phone enquiries, tenderers must answer specific tender-related questions or concerns in writing. This is transmitted via mail, facsimile or email and must be addressed to the contact point nominated in the tender documentation.

The response must then be provided in writing by notice to tenderers (refer the *Contract procedures manual* (SM021) template for notice to tenderers). These must be issued to all registered tenderers, and a copy retained and included in the contract documentation.

For some tenders, commercial in confidence responses to individual tenderers may be permitted.

Pre-letting meetings

The project manager may hold a pre-letting with the preferred tenderer. The project manager and project consultant as well as the tenderer and their key personnel, such as the estimator and contractor's representative, should attend.

The meeting's purpose is to:

- address any contractual issues that may have been identified during the tender evaluation, clarify the scope of works, and confirm:
  - the tenderer's methodology, and/or
  - details of alternative tenders, and/or
  - any value engineering proposals.

This meeting must be minuted and included in the contract documents.

- discuss the project's risks including:
  - reviewing the risk register
  - discussing uncertainty ranges for individual risk.

This will enable the project manager to confirm the adequacy of the project's financial allocation. These discussions should be conducted on a without prejudice basis, ie not be binding on either party.

Capital contingency management

Capital project estimate must include contingency allowances according to *Cost estimation manual* (SM014) process 4a.

The project manager should be aware that:

- the contract will not be advertised if the expected estimate, which is based on the construction estimate, is greater than the allocation
- the contract will not be awarded if the expected estimate is greater than the allocation
- a separate work unit should be set up for contingency management.

9.1 Contract management

General

To document the process of negotiating large variations resulting from a significant change in the project scope to existing physical works contracts, the contract must allow for large variations to be included. For variations initiated:

- during the tender process, a notice to tenderers is issued to advise additional work may be added to the contract
- after the contract is awarded, the contract documents must allow for work to be added to the contract.

The NZ Transport Agency's (NZTA) Board approval may be required before the negotiations are initiated. The NZTA's *Procurement manual* explains the policy and procedure for approving large variations.

Consultant notice

Effective contract management is underpinned by clear, concise and auditable communication. In general, all communication should be in writing on a sequentially numbered and signed consultant notice (form PMM 9.4c). The form may be adapted to suit the individual project or project manager and should be issued by the project manager. As a minimum, consultant notices must be sequentially numbered and:

- state:
  - the issue date
  - the contract number and name
  - the consultant's name and address
- include the instruction/information and response time
- for additional work, include a general ledger code (GL code) and deliverable timetable.

A consultant notice must be used when a project change occurs. This documents the nature of the change, affected contract provisions and the associated impact on cost, time and quality.

While notices may be prepared by other team members, it is essential the project manager signs all notices, particularly those with cost implications. This will ensure the project manager is aware of the project's progress, and limits the opportunities for conflicting instructions and budget overruns.

Construction Contracts Act 2002 definitions

- Adjudication
  A binding determination of a dispute arising under the contract. The amount is determined by an independent third party adjudicator but may be reviewed and amended by the court.
- **Construction work** (section 6)
  This includes construction and maintenance of any road or motorway, as well as any work to utility services or Advanced Traffic Management System (ATMS).
- **Payment claim** as a contractor's payment claim made to the NZTA in the form prescribed in the Construction Contracts Act 2002 (CCA).
- **Payment schedule** as the NZTA's response to a contractors payment claim, outlining the reasons for non payment of any portion of the claim.

- **Payer** as the NZTA.
- **Payee** as the head contractor (ie company with whom the NZTA has a roading contract agreement).
- **Charging order** as the order over the construction site's title. This only applies if the NZTA does not pay the value of the adjudicator's determination. The CCA is unclear over the status of Crown-owned land. This is gazetted and the title cancelled (ie the land has no title). In these cases, the contractor may not be able to obtain a charging order and may need to seek an alternative solution.

  Charging orders prevent the NZTA from selling land until any adjudicator's determinations have been paid. Charging notices expire after two years, but may be extended if the contractor applies to the district court. A contractor may also apply to the district court to have a charging order elevated to the high court, requiring the site to be sold and the proceeds used to pay the debt.

  Any contractor intending to seek a charging order must advise the NZTA in their notice of adjudication. This will initiate the adjudication process. Charging orders are only available to the head contractor, who is the only party able to initiate adjudication process.

  If the adjudicator allows a charging order to be issued, the contractor must apply to the district court to:

  - have the adjudicator's determination entered as a judgement
  - request for a charging order over the site to be issued. This will be registered on the property's title. If this happens, the NZTA has 20 working days to apply to the court for the adjudicator's ruling to be reviewed.

Key things to remember

Key things to remember about the CCA include the following:

- Not every claim for payment a contractor submits is a **payment claim** defined under the CCA.
- A **payment claim** made under the CCA must be served on the NZTA and not the engineer to the contract (engineer).
- To trigger the CCA **payment procedures**, a contractor must specifically advise the NZTA they are making a claim under the CCA. Otherwise a contractor's claim payment should be processed in the same way as if the CCA claim had not been made
- If a **payment claim** is made by the contractor under the CCA, and the NZTA (and the engineer) do not comply with the **payment schedule's** requirements:
- the NZTA will become immediately liable to pay the full amount claimed by the contractor
- the contractor will be lawfully entitled to serve notice to suspend work
- A **payment claim** made under the CCA establishes a compulsory fast track **adjudication process** to resolve disputes arising under a construction contract in 35–45 days unless an alternative dispute resolution process has been agreed. As this time frame s very tight, project manager and the engineer need to:
  - agree on a strategy as soon as possible if any notice of adjudication is served
  - immediately advise the regional manager and appropriate general manager.

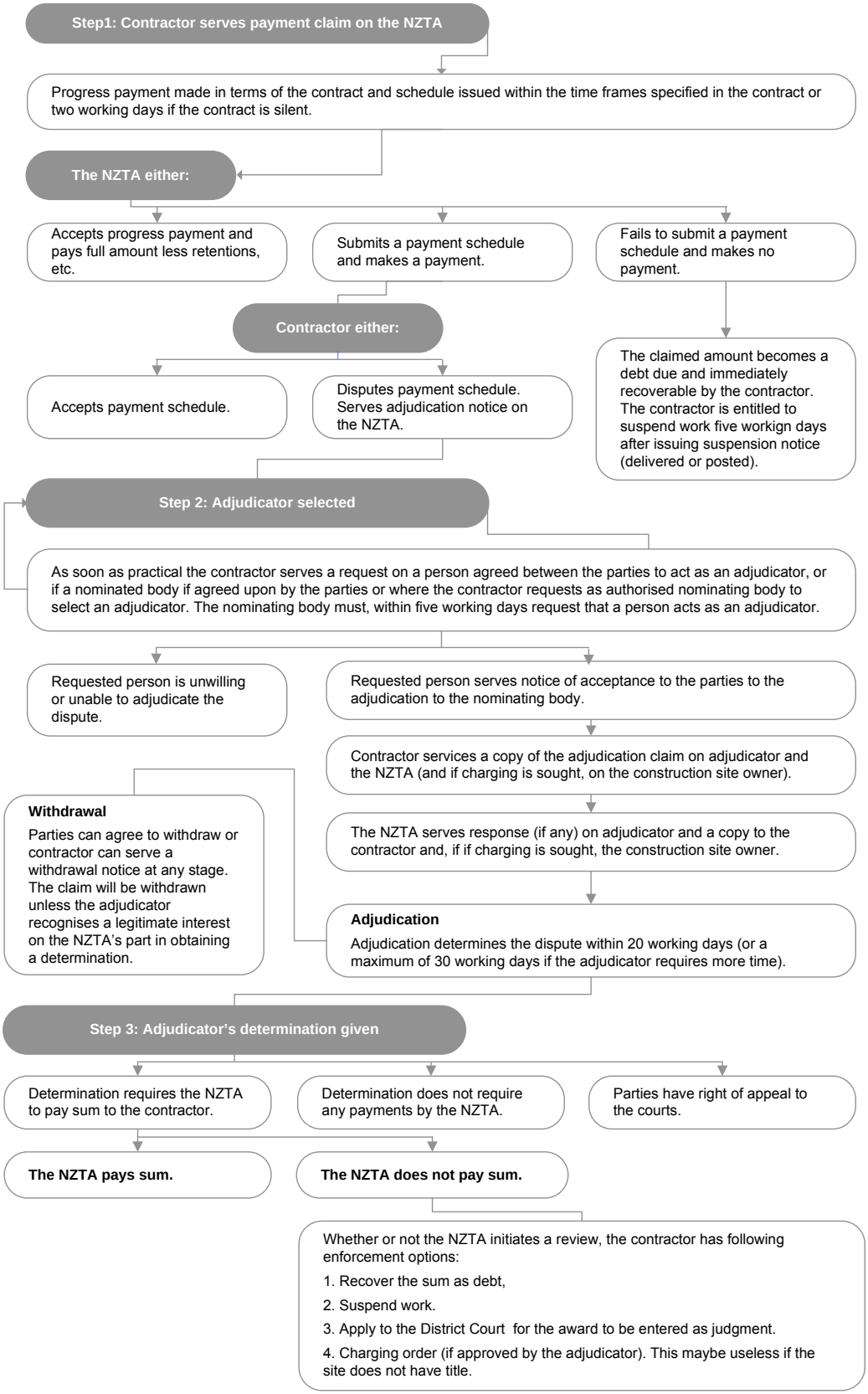
- **Adjudication** may be instigated by either the NZTA or the contractor and may commence at any time after the contractor receives the NZTA's **payment schedule**.

The CCA provides for a contractor to have an adjudicator's award enforced through the courts. If enforced, the NZTA would have very limited rights of set-off or counterclaim. In limited instances a contractor can obtain a **charging order** against the site to secure payment of an adjudicator's award

Frequently asked questions

Question	Answer
If **payment claims** are made under the CCA every month by a contractor, does the **payment schedule** have to cover items not being paid from just the current month's claim, or cumulative amounts not being paid too?	**Payment schedules** must detail the cumulative amount not paid to a contractor.
If **payment claims** are made under the CCA every month by a contractor, and the engineer notices in month 6 that an item paid in month 1 should not have been paid, can the amount be deducted in month 6 or is it too late?	If the engineer realises a previous item has been overpaid the engineer shall reduce the payment immediately, and advise the contractor through the **payment schedule.**
If **payment claims** are made under the CCA, every month by a contractor, can the contractor elect to elevate only certain items in dispute to adjudication, and defer others?	There is no time constraint on contractors to raise a dispute to adjudication.
If the contractor disputes a **payment schedule** amount, is there a time limit when the contractor must instigate adjudication?	The contractor may instigate adjudication proceedings at any time after receiving the **payment schedule** from the NZTA.

Payment and adjudication timetable



To initiate negotiations, the project manager in conjunction with the construction consultant should prepare a heads of agreement document setting out the framework. Once this has been completed, the project manager and contractor need to agree the negotiation methodology.

The negotiation framework should:

- document its:
  - objectives including the scope of work
  - programme and submission requirements
- establish the proposed commercial arrangements such as the:
  - price structure and payment provisions – lump sum, measure and value or cost plus, with an agreed cost structure, overheads and margin provisions
  - work packaging – a single package or a number of separable portions
  - insurance and bond requirements
  - construction programme
  - value engineering requirements
- require the:
  - contractor to achieve pre-agreed performance standards before proceeding with the negotiations
  - contractor's negotiation team to be separate from its construction team
- allow the NZTA to terminate the negotiations at any time and tender the work on the open market if:
  - the contractor has not met the pre-agreed performance standards
  - the NZTA does not believe it is getting value for money.

In addition, the framework should say if the contractor's costs will be reimbursed and if so, the timing of payments.

Negotiation methodology

Once the negotiation framework is agreed, the project manager in conjunction with the construction consultant and contractor need to agree the negotiation process or methodology. This will document:

- the NZTA's and the contractor's objectives
- the general methodology covering:
  - issuing drawings, specifications and schedules of quantities
  - reviewing project requirements and expectations
- the organisational structure, including team structures and contract people
- the risk-adjusted programme, allowing for most likely and worst case scenarios
- the reconciliation process by working with the contractor and the NZTA's independent expert (if applicable) to compare and reconcile the:
  - contractor's conforming construction methodology, programme and price, with the Independent expert's parallel estimate which should be prepared according to *Cost estimation manual* (SM014)

- the value engineering process. This should not result in reducing standards as savings are often shared
- the risk assignment, and whether and independent risk assessment will be initiated as part of the negotiations to establish the risk profile and risk assignment. If risks are transferred to the contractor, they should be quantifiable and able to be managed by the contractor
- commercial arrangements confirming payment provisions, apportionment of value engineering savings.

Value for money

The project manager needs to consider how value for money will be promoted. This can be achieved by:

- requiring contractors to nominate off-site overhead and profit margins in their submissions
- including an exit clause allowing the NZTA to stop negotiations and publicly tender the work
- requiring the contractor's estimate to sit within a pre-determine range of the independent expert's parallel estimate. If outside the range, the reconciliation will not proceed.

The project manager should refer to process 6.2 which deals further with value for money.

Probity audit

A probity auditor should be commissioned to oversee the process and ensure the agreed methodology has been followed.

Partnering

General

Partnering aims to:

- foster an atmosphere of understanding and cooperation between the NZTA and its suppliers and stakeholders
- establish effective working relationships through a mutually developed strategy of commitment, cooperation and communication with the goal of improving quality, productivity and stakeholder value by minimising disputes.

While partnering is intended to develop effective working relationships, it is not intended to dilute the contractual or legal relationships between the parties. However, experience has shown effective partnering can reduce the need to resort to formal contract process to resolve disputes.

Fundamental components

The value to be gained from partnering increases with project complexity, value and risk. As such the NZTA seeks a partnering agreement that drives the working relationship between the parties, both suppliers and stakeholders by:

- formalising mutual objectives
- agreeing problem solving and resolution methods
- actively searching for continuous measurable improvement
- gaining commitment from all parties to work together for each other's success
- ensuring all parties understand the project's objectives and the issues that affect it
- introducing new and/or reviewing existing project process.

It requires an ongoing commitment from all parties to enable a process for cooperation throughout the project regardless of the pressures. This is achieved by creating teamwork amongst the participants at all levels.

Project criteria for partnering

Although not mandatory, it is desirable to undertake formal partnering processes during the construction phase of all projects with a construction phase budget of over $4.5million.

For construction phases with a budget exceeding $20 million, the project manager and manager project management services or another appointed representative, should attend the partnering workshop and subsequent partnership meetings.

Subject to approval, the project manager is responsible for commissioning the partnering workshop as early in the construction phase as is practical. The workshop should ideally be held within a month of the physical works contract award date.

The project manager may commission additional partnering workshops during the course of the construction phase if necessary. These may be required, for example, to update or resolve concerns with partnering arrangements or to validate strategies.

Pre-workshop procedure

During the pre-workshop session, the project manager and/or facilitation team will:

- identify the partnering workshop objectives
- establish the workshop structure, agenda and venue
- identify the workshop participants including a cross section of the stakeholders involved in the project. It is hoped stakeholders will benefit from being involved in the process through greater understanding of the project's drivers, constraints, etc. The NZTA case managers should be invited to those partnering workshops
- distribute background documents communicating the above information to all workshop invitees.

Workshop procedure

The NZTA's objectives for partnering workshops are to ensure they follow the five value management phases – information, analysis, creativity, judgement and development. These contribute to:

- gaining top management commitment from each participant
- forming a cohesive team with a single set of objectives by:
  - acknowledging each other's agendas
  - focusing on common goals
  - clarifying expectations
  - establishing ground rules for doing business with one another that enables the participants to identify, discuss and resolve project issues
- expanding project commitments to include other significant project stakeholders, such as regulatory authorities, neighbours and community groups
- producing a report and a partnering charter documenting the workshop's proceedings, agreements and recommendations. As a minimum the following information should be included:
  - project name and target completion date
  - names of the persons and organisations involved
  - mission statement
  - goals
  - objectives

- strategies or tactics
- communication protocols and dispute resolution framework processes
- performance monitoring and evaluation framework and processes
- a commitment to treat all parties fairly
- workplace health and safety
- an action plan of all items to be followed up, the name(s) of the person(s)
- responsible for completing the work and the deadline
- schedule of future partnering meetings.

Partnering charter

The project manager and/or facilitation team will prepare the partnering charter and distribute it to all workshop participants. In addition to the information requirements described in the workshop procedure above, the partnering charter will provide the space for the:

- individuals who participated in the workshop to sign the charter
- logos of participating organisations wishing to be incorporated into the final document.

Action plan implementation

The project manager:

- will oversee the partnering workshop's action plan implementation
- should endeavour to help parties to comply with the agreements and recommendations established during the workshop
- if beneficial, may appoint an external consultant or facilitator at an agreed price to perform some or all of the above tasks
- will ensure the:
  - partnering relationship evaluations are completed regularly
  - resulting lessons and potential improvements are acted upon.

Follow-up partnering meeting

Holding a partnering workshop and developing a project charter does not in itself fulfil the intent of partnering during the construction phase of large projects. The participants from the initial workshop should be invited to follow-up partnering meetings to be held no less frequently than every three months. The project manager will organise and chair these meetings. The objectives of follow up partnering meetings are to:

- dialogue with partners and strengthen the relationship
- allow SP organisations to the project charter to raise issues or concerns regarding any aspect of the construction phase
- monitor the health of relationships and performance towards achieving agreed common objectives.

9.2 Communication

There are no guidelines available for this process.

9.3 Contract administration

Project document control

General

All project-related documentation, issued or received, must be controlled, referenced and stored for easy retrieval. In additional to the general requirements established by the NZ Transport Agency's (NZTA) *Corporate services manual* (FCM/Man/1), all project records, including electronic records:

- issued or received, must be referenced with the project registration number and/or file and/or contract numbers
- must be lodged on the appropriate project file(s) or dossier(s) or stored in the appropriate directory
- issued, must be authorised for release by the project manager or delegated task manager
- must be archived. All electronic records must be removed from the computer and stored on disk with the hardcopy files.

The project manager must ensure all incoming information is managed, processed and passed on to the appropriate personnel.

Project files

In addition to FCM/Man/1 provisions all project files must be include the:

- project registration number and name
- project file name
- volume/part number (where the file expands into two or more volumes)
- date of creation
- project manager's name.

File management

To facilitate easy retrieval, the project manager:

- may establish further files or subdirectories
- must brief the administration, in writing, to establish the required hard copy files and dossiers. This brief could include a flow chart where the structure is complex
- should ensure the file structure aligns with the project's nature and complexity. Typically a project filing system may include separate files for:
  - the project plan and project contact list
  - general correspondence
  - statutory matters (designation and consents)
  - finances (allocations, forecasts, reviews, payment summaries)
  - communications (stakeholders, meetings, media, complaints)
  - reviews and audits
  - traffic management and safety
  - contracts
  - property.
- must ensure:
  - the project register is updated with new file information
  - all project records are filed or stored according to the updated project register.

Incoming document control

Written correspondence
Must follow the procedures set out in FCM/Man/1. All incoming correspondence must be:

- opened and date stamped
- annotated with the appropriate project registration number and/or file number
- delivered to the addressee. In the case the addressee is not the project manager or appointed task manager, the project manager's name must be added to the circulation list.

Reports and other documents
If reports or other documents arrive accompanied by a covering form or letter the:

- reports must be individually date stamped and annotated with the project file number
- number of reports will be noted or highlighted on the covering letter
- the project manager is responsible for circulating such reports, collating feedback and formally responding.

Faxes
Incoming faxes must be handled in the same manner as written correspondence, except they should be forwarded immediately to the addressee.

Electronic correspondence
All electronic correspondence must be handled in the same manner as written correspondence except:

- the electronic file must be stored in the appropriate project directory (not personal drives)
- a printed copy, plus a copy of the accompanying material (the cover page only will suffice where large documents are involved) must be placed on the relevant project file.

Incoming phone/visitor messages

All verbal communications that may affect the project must be recorded in writing and filed in the same way as any other record. Where the communication requires a response or action, details of the response must also be recorded and filed.

Outgoing document control

Outgoing documents include all formal correspondence, in the form of typed and posted letters, or customised notice to consultant form (PMM 9.4c). To maintain an effective paper trail, an outwards correspondence register should record the:

- description of the material posted out
- date sent
- intended recipient's name and address.

Before releasing project correspondence the project manager must ensure the following steps are completed:

- All outward correspondence is:
  - correctly dated, addressed ,file referenced and signed
  - reviewed and authorised before its release.

- All correspondence, reports, plans and other material issued will:
  - individually carry the relevant project file number
  - be accompanied by an appropriate covering letter or document dispatch (PMM 9.4b) form which will specify the attached material.
- Outward faxes are:
  - only used when the matter is of no significance but is pressing such as confirming a meeting time
  - stamped as faxed, initialled by the sender and placed on the relevant project file in their entirety. If letters have been faxed, the original letter will be posted out in the following mail.

All electronically produced correspondence is saved in the appropriate project directory. A printed copy plus a copy of the accompanying material (the cover page only will suffice where large documents are involved) must be placed on the relevant project file.

NZS 3910:2003 insurance certificate approval

Purpose

To guide project managers to interpret contractor's insurance policy coverage answers on the NZTA's insurance information certificates (see *State highway construction contract proforma manual* (SM031) and *State highway maintenance contract proforma manual* (SM032)).

Background

These notes have been drafted to help project managers interpret the significance of a 'no response' on the New Zealand Standard 3910:2003 *Conditions of contract for building and civil engineering construction* (NZ 3910:2003) insurance certificates used in SM031 and SM032. In most cases, a 'no response' is unacceptable, as is leaving the space blank.

However, there are some situations where the issue is not relevant to the contract and leeway may be granted. In cases of doubt, the NZTA's insurance advisor, AON New Zealand (AON) should be contacted. The insurance schedules are as follows.

Seventh schedule – Contract works insurance

Question	Description
We advise the 'special' terms, copy attached, have been applied to this policy.	If a 'yes response', refer to AON risk services for advice and include a copy of the special terms.
Policy cover terms included are **- automatic reinstatement.**	A 'no response' is not acceptable under any circumstances.
Policy cover terms included - **no cancellation for non-payment without prior notification.**	
Policy cover terms included **- severally insured.**	A 'no response' is acceptable.
Policy cover terms included - **no settlement delay due to exercise of subrogation**	A 'no response' is not acceptable under any circumstances.
Project specific policy.	If 'yes response', the policy must be valid for the construction period up to the issue of the defects liability certificate. A 'no response' is acceptable provided an annual run-off policy is in place.
Annual run-off policy.	If this is an annual policy, is there run-off cover for work that started before the expiry date? A 'no response' response is not acceptable under any circumstances for an annual policy, but is acceptable for a project specific policy.
Annual cut-off policy	This is acceptable provided the policy expiry date is current. Note, a certificate will have to be produced when the previous one expires

Eighth schedule – Public liability insurance information

Question	Description
Annual policy.	This is acceptable provided the policy expiry date is current. **Note:** A new certificate will have to be produced when the previous one expires.
8.3.1 Sublimits The policy covers liability arising out of: vibration, removal or weakening of support the Forest and Rural Fires Act underground services.	Sublimits of less than the full amount specified are not acceptable where the contract: • involves work which carries the risk of vibration to neighbouring properties in urban areas, or where such work may be very closely adjacent to strategic property (such as railways and underground services) belonging to others • involves working near forestry • involves working near high risk underground services, eg fibre optic cable. Note: Insurers will often limit this cover to a maximum of $250,000, which is inadequate based on the above guidance. A limit of $250,000 is acceptable in all other cases, however if in doubt this should be referred to AON for advice.
We advise additional terms have been applied to this project.	If a 'yes response', refer to AON risk services for advice and include a copy of the special terms.
The policy covers liability arising out of **the ownership/use of construction machinery not required to be registered for road use.**	A 'no response' is not acceptable under any circumstances.
The policy covers liability arising out of **the use of hired plant.**	
The policy covers liability arising out of **the ownership/use of watercraft up to eight metres.**	A 'no response' is not acceptable where the contract involves work over water involving watercraft over eight metres, therefore refer to AON for advice and include relevant details. A 'yes response' is acceptable in all other cases.
The policy covers liability arising out of **the ownership/use of aircraft.**	A 'no response' is not acceptable where the contract involves work involving the use of aircraft. Refer to AON for advice and include relevant details. A 'yes response' is acceptable in all other cases.
The policy covers liability arising out of **the use of explosives.**	A 'no response' is not acceptable where the contract involves work involving the use of explosives. Refer to AON for advice and include relevant details. A 'yes response' is acceptable in all other cases.
Policy cover terms included are **automatic reinstatement.**	A 'no response' is not acceptable under any circumstances.
Policy cover terms included - **No cancellation for non-payment without prior notification.**	
Policy cover terms included - **Severally Insured.**	
Policy cover terms included - **No settlement delay due to exercise of subrogation.**	

Ninth schedule – Construction machinery insurance information

Question	Description
Annual policy.	This is acceptable provided the policy expiry date is current. Note: A new certificate will have to be produced when the previous one expires.
We advise special conditions have been applied to this policy.	If a 'yes response', refer to AON risk services for advice and include a copy of the special terms.
Policy cover terms included are automatic reinstatement.	A 'no response' is not acceptable under any circumstances.
Policy cover terms included – no cancellation for non-payment without prior notification.	
Policy cover terms included – no settlement delay due to exercise of subrogation.	

Tenth schedule – Motor vehicle insurance information

Question	Description
Annual policy.	This is acceptable provided the policy expiry date is current. Note: A new certificate will have to be produced when the previous one expires.
We advise special conditions have been applied to this policy.	If a 'yes response', refer to AON risk services for advice and include a copy of the special terms.
Policy cover terms included are automatic reinstatement.	A 'no response' is not acceptable under any circumstances.
Policy cover terms included – no cancellation for non-payment without prior notification.	
Policy cover terms included – no settlement delay due to exercise of subrogation.	

Eleventh schedule – Professional indemnity insurance information

Question	Description
Annual policy.	This is acceptable provided the policy expiry date is current. Note: A new certificate will have to be produced when the previous one expires.
The policy covers the number of automatic reinstatements.	One reinstatement will be generally acceptable. Refer to AON if the contract is for more than 12 months. It is possible that more than one reinstatement may be desirable for a long contract, but insurers may not wish to provide this cover or will do so only at a significant cost.
We advise additional terms, copy attached have been applied to this project	If a 'yes response', refer to AON risk services for advice and include a copy of the special terms.

9.4 Financial management

Contingent liability

Definitions

A contingent liability is where the amount to be paid is not certain.

The following definitions apply:

- Maximum liability - total value of the claim made by the claimant.
- Minimum liability - minimum value necessary to be paid to settle the claim.
- Likely settlement value - best estimate of the value that the claim will be settled at.
- Minor category - maximum liability is below $100,000.
- Major category - maximum liability is $100,000 or more.

Process

When a dispute arises and is not readily resolved, the project manager must identify and account for the associated contingent liability to the regional administration manager.

The following information is required:

- Name of the claimant and the project the claim relates to.
- What the contingent liability is for.
- When settlement or resolution might be expected.
- Job number/code.
- Maximum liability.
- Minimum liability.
- Likely settlement value.

Contingent liabilities are usually registered against the financial year in which the dispute arises.

Note: The project cannot be flagged as complete until the contingent liability is settled.

At year end

At year end, project managers need to update the regional contingent liability schedule to show the situation as at 30 June for any contingent liability noting:

- new claims
- changes to existing contingent liabilities
- settled claims.

This may require liaison with the relevant consultants to provide/update the information.

At settlement

When a dispute with an associated contingent liability is settled/resolved, the details need to be provided to the regional administration manager. This information should include:

- what contingent liability is being settled
- claimant details
- amount to be paid
- contingent liability general ledger code 600-900-820 (not the job number/code).

Updates of contingent liabilities settled should be provided each quarter.

A liability is a present obligation of the entity arising from a past event, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits and the amount can be measured.

Processes

The following:

- diagrams describe the process for identifying, registering managing and terminating contingent liabilities
- flow chart illustrates the process for terminating contingent liabilities.

Contingent liability registration

Project manager action

Advise regional network operations manager of any new contingent liabilities and provide the following information for reporting purposes:

- Name of the claimant and the project the claim relates to.
- What the contingent liability is for.
- Whether it is construction or maintenance.
- What action has been taken.
- What action is planned, ie how it will be advanced.
- When can expect settlement or resolution.
- Job number/code.
- Maximum liability.
- Minimum liability.
- Likely settlement value (LSV).

(All comments should be of action paper standard.)

Ensure forecast expenditure, including the contingent liability's LSV is within the current year's allocation. If:

- above, request funding or a cash flow adjustment (whichever is appropriate) for the difference
- below, declare a surplus or a cash flow adjustment (whichever is appropriate) for the difference.

(If the source of the contingent liability is a bulk funded maintenance activity, no attempt should be made to adjust the allocation.)

Do not flag the project as complete in PROMAN until it is physically complete and the contingent liability is settled.

Regional administration manager action

List any new claims on the regional contingent liability schedule (in either major or minor section) and check that the following information has been provided:

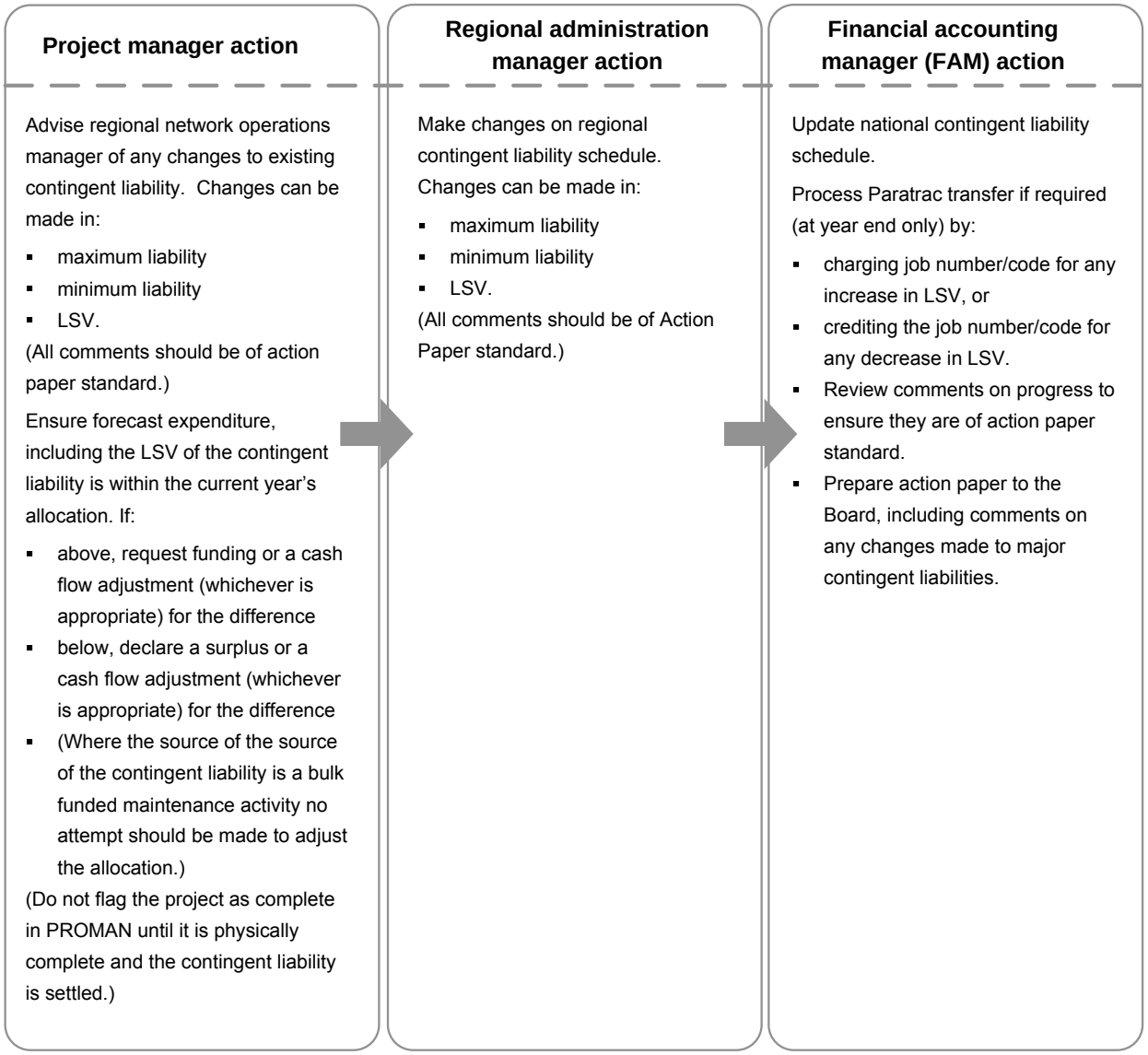
- Name of the claimant and the project the claim relates to.
- What the contingent liability is for.
- What action has been taken.
- What action is planned, ie how it will be advanced.
- When settlement or resolution can be expected.
- Job number/code.
- Maximum liability.
- Minimum liability
- LSV.

(All comments should be of action paper standard).

Financial accounting manager (FAM) action

- Update national contingent liability schedule.
- Process Paratrac transfer charging job number/code with the amount of the LSV (at year end only).
- Review comments on progress to ensure they are of action paper standard.
- Prepare Board action paper, including comments on any new major contingent liabilities.

Existing contingency liability management



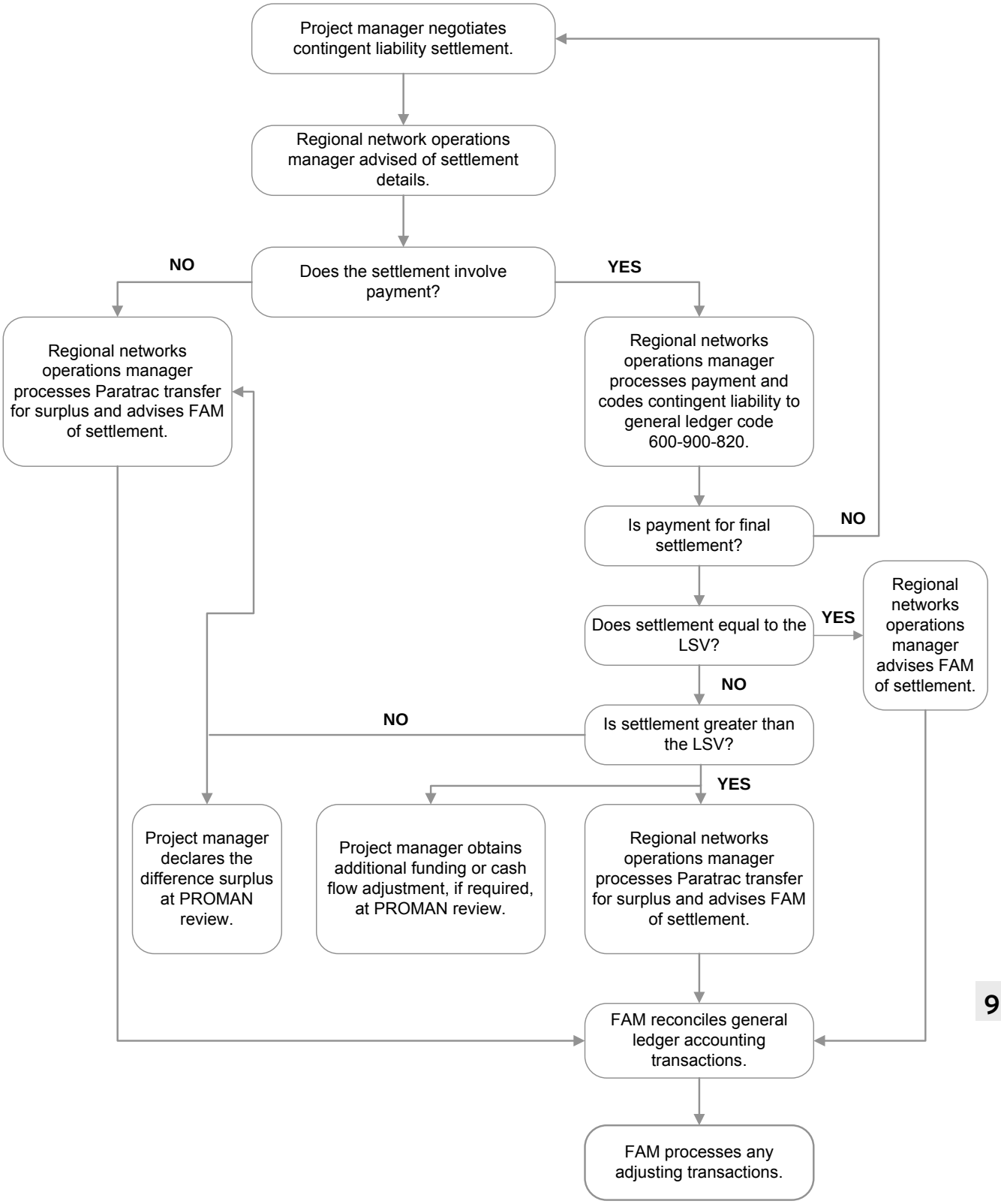
Terminating contingent liability

Project manager action	Regional administration manager action	Financial accounting manager (FAM) action
Advise regional network operations manager of the settlement details of a contingent liability. This should include: ▪ What contingent liability is being settled. ▪ Claimant details. ▪ Amount to be paid. ▪ Contingent liability general ledger code 600-900-820 (not the job number/code). Ensure the forecast expenditure, including the settlement value of the contingent liability, is within the current allocation. If: ▪ above, request funding or a cash flow adjustment (whichever is appropriate) for the difference ▪ below, declare a surplus or a cash flow adjustment (whichever is appropriate) the difference. (Do not flag the project as complete in PROMAN until it is physically complete and the contingent liability is settled.)	Process payment to claimant, and check that it is coded to the contingent liability general ledger code 600-900-820 (not the job number/code). Process Paratrac transfer if required: ▪ charging the job number/code for the difference, if the amount paid is above the LSV (this should only be done once the additional funding has been approved), or crediting the job number/code if the amount paid is less than the LSV.	Update national contingent liability schedule. Process Paratrac transfer if required (at year end only) by: ▪ charging job number/code for any increase in LSV, or ▪ crediting the job number/code for any decrease in LSV. ▪ Review comments on progress to ensure they are of action paper standard. Prepare action paper to the Board, including comments on any changes made to major contingent liabilities.

Contingent liability quarterly reporting

Project manager action	Regional administration manager action	Financial accounting manager (FAM) action
Advise regional network operations manager of all contingent liabilities settled in the quarter ensuring that the following information is provided: ▪ What contingent liability is being settled. ▪ Amount that was paid.	Update regional contingent liability schedule for any settlements of contingent liabilities, by transferring claim from major or minor section in schedule to settled section. List amount paid/settled for in paid column.	▪ Update national contingent liability schedule. ▪ Reconcile contingent liability schedule with the contingent liability general ledger code, by checking each settlement has been recorded correctly. ▪ Process Paratrac transfers required as a result of the reconciliation. ▪ Prepare Board action paper, including comments on any new settlements of major contingent liabilities.

Contingent liability settlement process



9.5 Change control

Elements of an efficient change control system

1. Change control process to be defined properly

   The project change process has to stand on its own legs and is simple enough to be managed by the consultant and contractor.

   Effective change control involves a carefully planned procedure for reviewing, analysing and accepting or rejecting change requests in order to limit the potential damage to the scope. There needs to be a balance between flexibility and control. If the process is too onerous, either valuable changes will be lost or the participants will ignore the rules leading to uncontrolled scope. If the process is too easy, then many changes may be applied with insufficient thought given to their merits and consequences.

2. Change request and log forms to be in place

   Key components of any change process are the change log and the change request form. Available forms of consultant/contractor used to manage and run projects can be adopted so as not to reinvent the wheel.

3. Approval levels to be defined

   Every documented requested change must be either accepted or rejected by some authority within the project management team or an external organisation representing the initiator, sponsor or customer. Many times the change control process includes a change control board, steering committee or other group with the authority to approve or reject the required change.

Project manager's responsibilities in implementing change control system

1. Project manager to know the project scope
   The project manager should know what is included and not included in the contract scope in order to assess change. The project manager should use project scope to define change requests.

2. Project manager to prevent the root cause of change
   The project manager should not just focus on managing changes but should proactively eliminate the need of change. The project manager should plan and anticipate changes and reach beyond the boundaries of the project. The way change is managed will have a positive and lasting impact on the project.

3. Project manager to identify change and potential sources of change
   The project manager must find problems early and look for changes to prevent problems from occurring. Discovering a change earlier will decrease the impact of the change. The later the change is addressed the greater the risk, cost and duration. The project manager should actively be looking for changes from stakeholders and continue to measure performances against the baseline. Potential changes can surface through verbal or written means but it will be formally documented using the change request form.

4. Project manager to pay attention in managing changes
   The project manager should pay a great deal of attention in managing changes. Allowing the project's scope to change mid-course usually means added costs, greater risks and longer duration. Many projects fail due to poor scope management. Very often it is a large number of small scope changes that do the damage, rather than the big, obvious ones. Rigorous scope control is an essential part of the change control process to deliver projects on time and on budget. To effectively manage change, the project manager should ensure that all proposed changes are necessary.

5. Project manager to optimise the project benefit
   The project manager should not only deliver the agreed scope on time and on budget, but to optimise the benefit that is generated by the project as well. If that means allowing the scope to change then that change is a good thing, not a bad thing. It is wrong to resist all change. This means that when a change generates improved benefit, it should be proposed to the project's decision-making body. Make it clear the positive and negative impacts of allowing the change and make sure that the impact is fully reflected in the project's definition and performance criteria.

6. Project manager to ensure that procedure for implementing change is in place
   The project manager should ensure that procedures for managing the actual implementation of a change are in place. Changes that have been analysed and agreed upon must be implemented at the most convenient point in time to minimise its potential impact. The detailed procedures, forms, tools, etc will be used to support and manage the process.

7. Project manager to ensure implementation of the agreed change control process
   The project manager must constantly remind the consultant and contractors about the importance of adhering to the change control process. While change process can help to manage changes, the bigger issue is whether or not the change process will be followed. Implementation of the change control process is a challenge. Having a process in place is only part of the picture. The project manager has to make sure that the change process is utilised and enforced. If a project manager misses a change or fails to see any adjustment by a consultant to a process, this can create major problems as the project progresses.

8. Project manager to communicate the change
   The need to communicate the change is one of the key elements to manage change effectively. Stakeholders need to know why a change has been approved and the reasoning behind the change. The effective project manager communicates the issue and provides an explanation why it has been approved.

Change management activities to be included in a change control process

The following activities are to be part any change control process but in differing levels of details:

1. Identifying that a change needs to occur or has occurred.
2. Reviewing and approving requested changes.
3. Ensuring that only approved changes are implemented or managing the approved changes when and as they occur.

4. Documenting the complete impact of requested changes.
   Proposed changes can affect other project deliverables. Request change may require new or schedule activity sequences, schedule dates, resource requirements, revised cost estimates, analysis of risk response, etc. These changes can require adjustments to the project management plan, project scope statement or other project deliverables.
5. Maintaining the integrity of baselines by releasing only approved changes for incorporation into the project and maintaining their related planning documentation.
6. Reviewing, approving all recommended corrective and preventive actions or validating defect repair.
7. Controlling project quality to standards based on quality reports.

For guidance on scope control, programme control and cost control, refer to processes 2.7, 5.1 and 9.6 respectively.

Change request should be supported by the following applicable documents

1. A record of when the alleged extra work took place, ended or when it is estimated to end.
2. Photographs taken before and after may be used if relevant.
3. Relevant contract sections and drawings.
4. Relevant statement, correspondences, emails, faxes, etc.
5. Proper backup of quantity calculations, time cards for labour used, equipment utilization records, wage rates and equipment rates.
6. Cost of labour, material and equipment involved in the claim.
7. Actual quantities of material used (or projected to be used) for the claimed work in terms of volume, number, lengths, etc invoices/quotations of materials used.
8. Details of human resource used (or will be used) for the extra work in terms of numbers, hours, rates, trade, etc.
9. Related correspondences, minutes of meetings, etc.
10. Related notice to engineer and notice to contractor.
11. Contract milestones, schedules in case of a claim for time extension to the contract completion or other milestone date.
12. Inspection reports.
13. Other appropriate documents.
    Track all detailed estimates provided by the vendor and all documentation used by the vendor to complete their estimates. Documents contributing to a change decision, any emails exchanged in which change decisions were taken should be saved in PDF format.

Guidance on approving or rejecting proposed changes

Every documented requested change must be either accepted or rejected by some authority within the Project Management team or an external organisation representing the initiator, sponsor or customer. Many times the integrated change control process includes a change control board responsible for approving and rejecting the required changes. A decision to accept or reject the change would be based on a number of factors. The fundamental logic should be based around the following:

1. The change is unavoidable (eg policy changes, mergers).

2. The change increases the overall benefit to the organisation (taking into account any impact on the costs, benefits, timescales and risks).
3. The consultant/contractor are able to make such a change.
4. The change is best done now, or it would be more beneficial to defer it until the current work is complete.
5. The change does not fall within the project charter or if the change is not beneficial to the project, then it should be rejected.
6. The proposed change is not necessary for the survival of the project, and the work needed to make the change outweighs the benefits, then the proposed change must be rejected.

9.6 Cost control

Project control using earned value

General

Project cost control is concerned with ensuring that projects stay within their budgets, while getting the work done on time and with the correct degree of quality. It is one thing to meet a project deadline at any cost. It is another to do it for a reasonable cost. One system for measuring these factors is called earned value analysis. It is considered the correct way to monitor and control almost any project and is applicable to the execution phase of a project where the product is tangible and measurable.

Earned value management (EVM) is a project management system that:

- integrates schedule and cost performance to answer the question 'what did we get for the money we spent?'
- makes it possible to examine detailed schedules, critical path programmes, technical milestones and cost data.

Earned value management (EVM) makes it possible for the project manager to see the project's overall status at a glance. The system also includes an opinion to set a variation threshold. When projects exceed this, a warning is generated and an explanation and corrective action requested. This is an improvement on the traditional cost management approach.

Definitions and formulas

Planned value (PV): The value of work planned to be done. It answers the questions – How much work should be done? or What is the estimated value of the work planned to be accomplished?

Earned value (EV): The value of work done. It answer the questions – How much work has been completed? or What is the estimated value of the work accomplished?

Actual cost (AC): The actual cost of doing the work. It answer the questions – How much the work cost? or What is the actual cost incurred for the work accomplished?

Note that some programming software like Primavera P3 and Microsoft Project 2003 use the following old acronyms and terms.

Old Acronym	Old Term	New Acronym	New Term
BCWS	Budgeted cost of work scheduled	PV	Planned value
BCWP	Budgeted cost of work performed	EV	Earned value
ACWS	Actual cost of work performed	AC	Actual cost

Formulas

Name	Formulas	Interpretation
Variance analysis		
Cost variance (CV)	EV-AC	Value of the cost against the work completed. Negative means over budget, positive means under budget.
Schedule variance (SV)	EV-PV	Value of the work against the plan. Negative is behind schedule, positive is ahead of schedule.

Performance indices		
Cost performance index (CPI)	EV/AC	The efficiency of work in relation to the cost. How much $___ worth we are getting out of every dollar spent?
Schedule performance Index (SPI)	EV/PV	The efficiency of the work in relation to the planned work. We are only progressing at ___ percent of the rate originally planned.
Forecasting		
Budget at completion (BAC)		The total project budget. How much is the budget for the total project effort?
Estimate at completion (EAC)		Final estimated cost based on cost performance. What is currently the expected total project to cost?
	BAC/CPI	Used if no variances from BAC have occurred or you will continue at the same rate of spending.
	AC + ETC	Actual plus a new estimate for remaining work. Used when original estimate was fundamentally flawed.
	AC + (BAC-EV)	Actual to date plus remaining budget. Used when current variances are thought to be a atypical of the future. AC plus remaining value of work to perform.
	AC + (BAC-EV)/CPI	Actual to date plus remaining budget modified by performance. Used when current variances are thought to be typical of the future.
Estimate to complete (ETC)	EAC-AC	How much more do you need to finish the project? How much more will the project cost?

EVM benefits

In traditional cost management systems, the PV and AC are compared without taking into account physical progress. This comparison does not:

- indicate what has been actually achieved, the EV for the amount spent or whether it is being produced according to programme
- relate the project's time and cost performance with achievement and often gives a misleading result.

For example, comparing actual cost with planned cost may suggest the project is under budget. However, if an analysis considering time is undertaken, the project manager may find the comparatively low actual costs are a result of the project running behind programme.

In summary, EVM expands on the traditional two-dimensional analysis of 'has the project spent more or less money than planned' by adding the third dimension, EV. In this way, it answers the question 'what did we get for the money spent'.

What does EVM measure

EVM makes it easy for project managers to analyse both schedule and cost performance. It makes possible to determine how a project has been performing and to predict future performance.

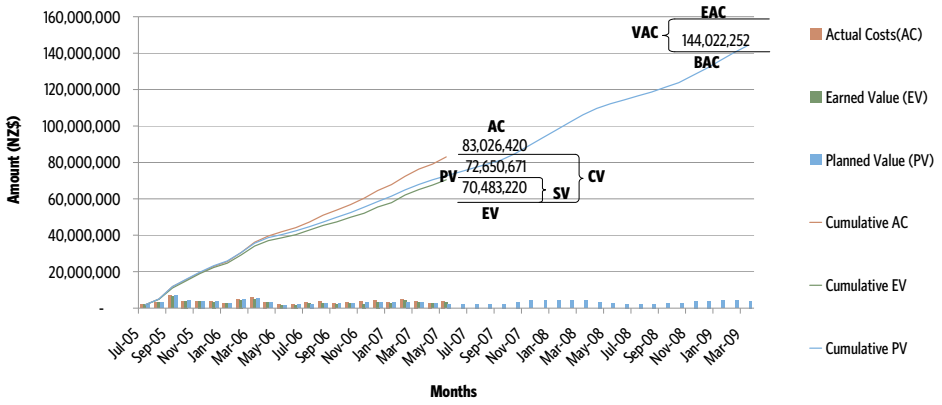
EVM measures the following:

- PV - portion of the project costs planned to be spent on a project between start date and status date (ie now – the time of the EVM analysis). The PV calculation is based on the baseline programme progress.
- EV - percentage of budget that should have been spent for a given percentage of work performed on a project. This calculation is based on the actual programme progress.
- AC - actual cost of doing the work.

Once EV and PV results are known, they can be used to determine schedule and cost variance at a particular status date.

The following graph illustrates the EVM measures

Earned value report ending May 2007



Schedule variance (SV):

Is the difference between what was planned to be completed compared to what was actually completed.

SV = EV - PV. If this value is:

- positive at the time of measurement, the project is on or ahead of programme
- negative, the project is behind programme.

Cost variance (CV):

Is the difference between the work that has been achieved and amount spent to achieve it -

CV=EV - AC. If this value is:

- positive at the time of measurement, the project is forecast to be under budget
- negative, the project forecast to be over budget.

Getting started

Prepare a baseline programme as discussed below. This involves defining the work and assigning costs for each activity.

Define the work

1. The project must be broken down into work packages or into distinct discrete manageable tasks. Each work package has a short duration, or can be divided into a series of milestones whose status can be objectively measured. Each work package can be assigned a start and finish date, a budget value, and can be integrated with higher level schedules. This activity is referred to as developing the work breakdown structure (WBS).
2. Establishing the WBS is the first step in defining the project and in establishing the baseline. It maybe necessary to structure the schedule of prices during the request for tender (RFT) preparation to allow alignment and linking with the construction programme.
3. It is important to balance the level of detail in the WBS with the needs of the project, with the ultimate goal being the ability to realistically estimate the cost of accomplishing each task (earned value). Providing too much detail creates an overload of data but lack of detail may mask vital information. Guidelines on EVM suggest that three to four levels in the WBS are sufficient for most projects, but complex projects may require five or six levels.

Assign costs

4. The budget and schedule for accomplishing the work is then prepared. Details of budgeting and scheduling are beyond the scope of this document but essentially involve identifying what resources are needed and how much effort will be required in what time frame to complete each of the tasks in the WBS. This is called cost loading of programme. It is critical to be able to track earned value to allocate for each work package a budget that comprises the WBS and that the WBS adequately defines all work necessary to meet the agreed project requirements.

   In other words, based on the project scope and available resources, the work activities in the work breakdown structure are scheduled to establish the schedule baseline. And based on the project scope, the project budget is allocated across the scheduled activities and across time.

   The allocation of cost across the schedule for each element of the project's scope is what creates the project's integrated baseline. The scope, cost, and schedule must be fully integrated so that earned value management as a tool of cost control can be performed. Each task should have an associated schedule and time phased cost. Example baselines are shown overleaf.

Baseline example

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Budgeted Cost
SH1 NORTHCOTE TO SUNNYNNOK AUX LN							
SEPARABLE PORTION A							
NS 02 - ENVIRONMENTAL COMPLIANCE							
110	Temporary Erosion and Sediment Control	11	11	0	27FEB08*	12MAR08	89,330.75
NS 03 - EARTHWORKS							
120	Site Clearance	1	1	0	01AUG07	01AUG07	22,242.00
130	Excavation	1	1	0	01AUG07	01AUG07	129,118.96
140	Backfill	1	1	0	01AUG07	01AUG07	226,270.90
NS 05 - DRAINAGE							
145	Stormwater Drainage	171	171	0	01AUG07	26MAR08	543,139.60
150	Stormwater Device # 1	103	103	0	01AUG07	21DEC07	310,000.00
160	Stormwater Device # 2	79	79	0	01AUG07	19NOV07	210,000.00
NS 06 - PAVEMENT AND SURFACING							
170	Mod. Agg. Base Course Stabilized (CH 1400-2670)	18	18	0	12NOV07*	05DEC07	564,832.21
175	Mod. Agg. Base Course Stabilized (CH 50-1200)	64	64	0	01AUG07	29OCT07	420,173.47
180	Leveling course, OGPA Surfacing	8	8	0	01AUG07	10AUG07	503,536.10
190	Unbound Granular Pavement (Ch 1200-1400)	39	39	0	25FEB08*	17APR08	46,891.13
195	Unbound Granular Pavement (Ch 2670-2865)	1	1	0	01AUG07	01AUG07	46,105.88
200	Structural Asphalt Pavement	2	2	0	01AUG07	02AUG07	155,455.03
NS 07 - BRIDGES							
+ NS 07.01 - SUBSTRUCTURE WORKS							
		71	71	0	12NOV07	18FEB08	630,000.00
+ NS 07.02 - SUPERSTRUCTURE WORKS							
		173	173	0	21AUG07	17APR08	763,200.00
NS 09 - TRAFFIC SERVICES							
+ NS 09.01 Gantries and Roadsigns							

Update progress and actual costs for the end of the reporting period.

To calculate earned value or monthly accomplishment, the portion of a task or assignment that has been completed must be determined using percentage of duration completed or using percentage of work completed.

This activity focuses on performance, not just planned versus actual spending. It involves tracking a number of measures starting very early in the project, and analysing the data to determine real project status. Examples of cost tracking against the integrated baseline are shown on the next page.

Monthly cost tracking example

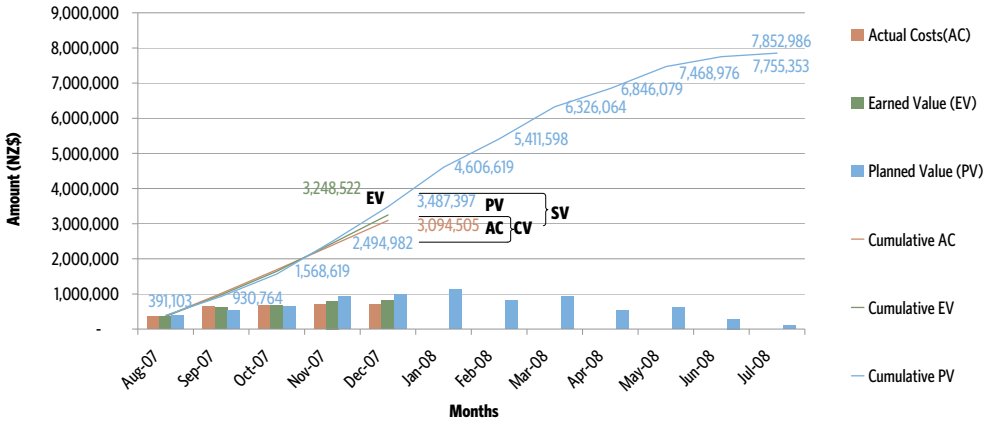
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Budgeted Cost	Earned value cost (BCWP)
SH1 NORTHCOTE TO SUNNYNNOK AUX LN								
SEPARABLE PORTION A								
NS 02 - ENVIRONMENTAL COMPLIANCE								
NS 110	Temporary Erosion and Sediment Control	11	0	100	14NOV07A	28NOV07A	89,330.75	89,330.75
NS 03 - EARTHWORKS								
NS 120	Site Clearance	4	0	100	09AUG07A	15AUG07A	22,242.00	22,242.00
NS 130	Excavation	21	0	100	15AUG07A	11SEP07A	129,118.96	129,118.96
NS 140	Filing	30	0	100	12SEP07A	23OCT07A	226,270.90	226,270.90
NS 05 - DRAINAGE								
NS 145	Stormwater Drainage	120	34	72	04SEP07A	08OCT07	543,139.60	391,060.51
NS 150	Stormwater Device # 1	103	57	45	28SEP07A	29NOV07	310,000.00	139,500.00
NS 160	Stormwater Device # 2	79	40	50	06NOV07A	18DEC07	210,000.00	105,000.00
NS 06 - PAVEMENT AND SURFACING								
NS 170	Mod. Agg. Base Course Stabilized (CH 1400-2670)	28	17	40	18DEC07A	22NOV07	564,832.21	225,932.88
NS 175	Mod. Agg. Base Course Stabilized (CH 50-1200)	24	0	100	24OCT07A	26NOV07A	420,173.47	420,173.47
NS 180	Leveling course, OGPA Surfacing	26	26	0	05DEC07	09JAN08	503,536.10	0.00
NS 190	Unbound Granular Pavement (Ch 1200-1400)	6	0	100	10DEC07A	20DEC07A	46,891.13	46,891.13
NS 195	Unbound Granular Pavement (Ch 2670-2865)	6	6	0	05DEC07	12DEC07	46,105.88	0.00
NS 200	Structural Asphalt Pavement	12	12	0	13DEC07	28DEC07	155,455.03	0.00
NS 07 - BRIDGES								
NS 07.01 - SUBSTRUCTURE WORKS								
NS 210	Sheet Pile Driving	8	0	100	12NOV07A	21NOV07A	58,250.05	58,250.05
NS 220	Working Area preparation	7	0	100	21NOV07A	30NOV07A	17,250.50	17,250.50
NS 230	Piling Works	20	0	100	04DEC07A	31DEC07A	305,000.00	305,000.00
NS 240	Excavate, install box form	4	4	0	01AUG07	06AUG07	27,492.03	0.00
NS 250	Drilling and install of starter bars	7	7	0	07AUG07	15AUG07	22,315.32	0.00
NS 260	Rebar and concrete for pile cap/column	21	21	0	16AUG07	13SEP07	187,350.45	0.00

Once the first two steps are complete, the project manager needs to plot AC, EV and PV. The baseline programme is used to calculate the cumulative PV. This becomes the projects baseline cash flow and can be analysed at the time of measurement.

One of the most meaningful ways to analyse earned value data is to examine trends and tendencies. Tracking the earned value data graphically over time allows the ability to see and assess trends in earned value over the life of the project. Graph provides the ability to see the trend in the variances to see whether things have been getting better or worse. It helps assess what type of corrective measures ones need to take to meet the project goals or helps to assess whether your corrective measures are working. This is illustrated on the next page.

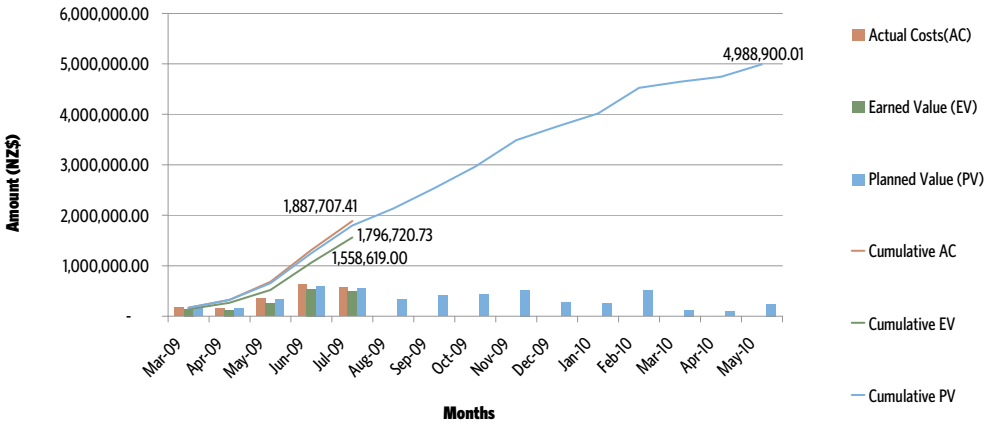
Northcote to Sunnynook auxiliary lane

Earned value report ending 31 December 2007



State Highway 16 - Punganui stream bridge project

Earned value report ending July 2009



Forecasting future performance trends

Future performance trends are based on current progress measurements. The estimate at completion (EAC) = AC divided by the actual percentage complete (PC).

Using this formula to calculate EAC assumes the same performance trend for all activities. However, when forecasting the project manager should consider the following:

a. Will the same performance be maintained?

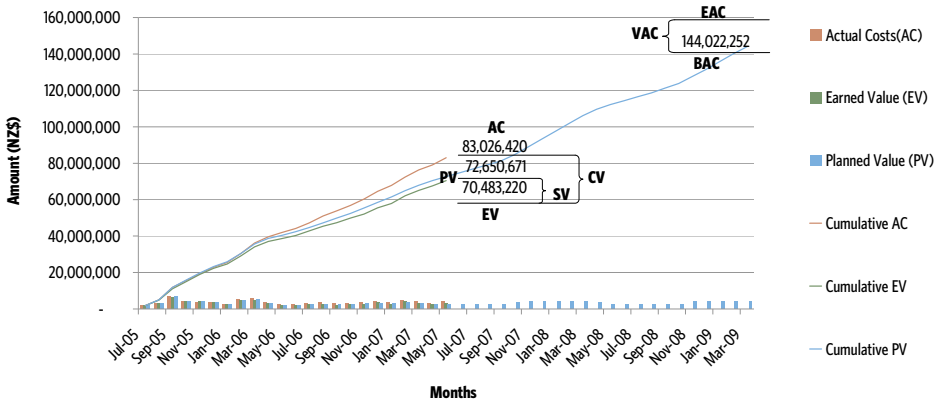
b. Will the performance improve because of lessons learnt?

c. Will the performance reduce?

To forecast the final outcome, the project manager must use their judgement to extrapolate the PV and AC graphs to forecast the final outcome.

State Highway 20 – Mount Roskill extension

Earned value report ending May 2007



BAC =	144,022,252	
EV =	70,483,220	
PV =	76,650,671	
AC =	83,026,420	
SV =	EV - PV =	(6,167,451)
CV =	EV - AC =	(12,543,200)
SPI =	EV/PV =	0.92
CPI =	EV/AC =	0.85
EAC =	AC + ((BAC - EV)/CPI) =	169,652,465
VAC =	EAC - BAC =	25,630,213

Sample construction requirements

1. General

   The contractor shall prepare and submit a detailed construction programme to the engineer for his approval within two weeks following the date of acceptance of tender in accordance with clause 5.10.1 in the General conditions of contract, clause 7.4.10 in the Instructions for tendering, and other information provided with the tender. The programme shall be based on that submitted with the tender, and shall comply with all requirements of the contract identified in the tender documents. Should the engineer not approve the construction programme as a result of programme deficiencies, the contractor shall, within three working days, resubmit an updated programme for the engineer's approval. The construction programme when approved by the engineer shall form the baseline programme for the work.

The construction programme shall be prepared using Primavera 6 or 3 or any other programming software provided that the software is capable of integrating the scope, schedule and cost elements of the project to produce earned value reports similar to the one shown in appendix VI in the Instructions for tendering. The construction programme shall be cost loaded and must be aligned and linked to the schedule of prices (SOP) which have been structured to implement earned value management system effectively. The use of this system is required to integrate the work scope of the project with the schedule and cost elements for optimum project planning and control.

2. Content and format of programme

The construction programme shall be a single coordinated programme encompassing all components of the contract and shall show the contractor's intentions for the work, including those works being undertaken by subcontractors and shall clearly demonstrate and include the following features:

- The proposed sequence of the work required to construct and complete the contract works within the periods specified in clause 10.2.1 of the first schedule of the conditions of contract.
- The duration, earliest and finish dates of each activity.
- The cost of each activity and summing up to the contract amount.
- The critical path for the project.
- The free float for each activity.
- The projected value of work to be completed or planned value for each month of the contract period. The system will automatically provide the planned value for each month when the update is done.
- The EV certified for monthly progress payment by the engineer.
- Performance indices, schedule performance index (SPI) and cost performance index (CPI) for each month.
- Estimate to complete (ETC) and estimate at completion (EAC).

The above list shall not limit the contractor from including additional features in the programme, nor shall it limit the engineer from directing further details or reports that can be generated from the programming software.

The contractor shall decompose further any work activity to a level lower than those appearing in the SOP to execute the job to a more manageable level. However when rolled up, it should match the cost element of that activity in the SOP.

In preparing and submitting the programme, the contractor's attention is drawn to the requirements of the conditions of contract, project specifications and the basis of payment sections of the contract documents such as but not limited to the following:

- wet weather allowance for the entire duration of the contract and is only applicable to critical path activities relative to earthworks and sealing during the summer period (1 November to 30 April inclusive)
- inspections
- liaison with the principal, the police, territorial authorities, service authorities, iwi and the public

- publicity advice notices
- initial handover and final inspections by the engineer
- all constraints and deadlines in terms of the contract.

3. Management of programme

   The contractor shall implement and manage the programme such that the contract works are completed within the specified times and comply in all respects and at all times with the contract documents.

   The programme shall be updated on a monthly basis. The actual physical accomplishment of each activity in each month shall be entered in the earned value column of the programme. The total earned value determined by the engineer in a particular month shall be the amount to be certified in the progress payment. The earned value report in a classic schedule layout similar to that provided in appendix VI of the instruction for tendering (IFT)or any other appropriate layout that the software is capable of generating including a graphical report in Microsoft Excel format showing the PV, EV and AC shall be included in the monthly construction report.

   In case of an approved variation, the baseline programme shall be updated and the additional work shall be added in an appropriate location in the programme. The new work shall be linked to any predecessor and successor activities, and the duration, start date, end date, cost and other applicable elements as enumerated in the content and format of programme section above shall be incorporated in the revised programme.

   If it is found that the contractor's progress or schedule performance index has fallen below 0.95 or to a threshold to the judgement of the engineer warrants a corrective action, the engineer may request a written explanation from the contractor stating how the delays occurred and what action is to be taken to bring the work back on schedule. Once the corrective action has been agreed, a new conforming programme shall be submitted for approval within three working days of the engineer's request. The contractor will be required to submit a weekly report so that the construction programme can be monitored. The weekly report is to detail, on a day-to-day basis, construction works that have been carried out during the period until the progress is back on track.

9.7 Disputes resolution

Early intervention

The key to resolving disputes is to avoid them arising in the first place. Be alert to issues that may become potential disputes and discuss these at project meetings in the earliest possible stage. Too often parties avoid or delay raising issues and consequently problems increase in number and relationships deteriorate.

Parties should take advantage of early intervention processes (negotiation, facilitation) rather than waiting for disputes to escalate and positions to get entrenched.

Another technique for specific major projects (eg the roads of national significance (RoNS)) is to include a dispute resolution practitioner in project meetings from the outset. This person is then briefed as to the project issues and is available at short notice to assist the parties in negotiating any problems during the course of the contract.

The easiest way to accommodate the early disclosure of issues or problems is to have acknowledged the probability of disputes and agreed ways to deal with these when they arise. Conditions of contract for consultancy services (CCCS) and New Zealand Standard 3910:2003 *Conditions of contract for building and civil engineering constructions* (NZS 3910:2003) have dispute clauses which are a standard contract item.

Dispute resolution process

If a dispute is established, the project manager must do the following:

a. Scope the dispute by:
   - establishing what contract provisions are being invoked
   - ensuring the correct procedure has been followed.

b. Understand the dispute's likely direct and indirect costs:
   - Direct costs include the amount claimed, legal costs and project manager's time.
   - Indirect costs include project delays, adverse publicity and reputation damage.

c. Determine contingent liabilities for the dispute amounts (refer to process 9.4).

d. Develop a dispute resolution strategy that creates parameters for the dispute's settlement:
   - The project manager has authority to settle the dispute where this can be achieved within the approved funding allocation and time and quality constraints.
   - Where the settlement is likely to be outside the approved funding allocation, time or quality constraints, approval must be gained from the project sponsor.
   - The project manager must ensure that their strategy has been endorsed by the chief advisor engineering assurance where settlement is likely to be outside of funding allocation or considered to be precedent setting.

e. Follow the procedures outlined in the contract documents. This includes communicating all issues in writing.

f. Complete the Dispute notification form and forward it with supporting documentation and contingent liability details to the project sponsor, chief advisor engineering assurance and AON New Zealand.

g. If appropriate, engage legal services in according to the procedures outlined in the NZ Transport Agency's (NZTA) *Corporate services manual* (FCS/Man/1).

Third party disputes

A third party (non-contractual) dispute usually occurs when a project decision is disputed by the third party. Many third party disputes relate to third party vehicle and other property damage, land purchase, cost share arrangements and public liability. Such disputes are generally dealt with through insurance claims.

The project manager must never admit or suggest any one of the project supplier(s) may be liable.

Insurance requirements

Professional services contracts require suppliers to have professional indemnity insurance in place to an amount stated in the contract documents.

Physical works contract documents require suppliers to have contract works and materials, contractor's plant, public liability and motor vehicle liability insurances to an amount stated in the contract documents.

Most third party claims will probably be covered under the consultants' or contractors' policies. However, the NZTA retains insurance for amounts in excess of the amounts specified in the contract documents.

9.8 Supplier performance

Guidance as why, when and how to undertake a supplier performance evaluation is set out in minimum standard (MS) Z/11 and professional services guidelines (PSG)/2 in the NZ Transport Agency's *State highway professional services contract proforma manual* (SM030). These are reasonably comprehensive and should be read in the first instance. In addition, the information described below is also offered.

Contract linkage

The supplier performance evaluation database – performance assessment by coordinated evaluations (PACE) has linkage with the State Highway Project Financial Management System (PROMAN). This means that whenever a new contract is logged in PROMAN, this is captured into PACE, and prompts are issued to the project manager nominated in PROMAN to initially set the evaluation frequency, and then to undertake the interim and final evaluations.

The project manager will only be prompted to set up frequencies when PROMAN contract set-up status has been changed from 'tendered' to 'awarded' for interim evaluations. Once set up the system will prompt the project manager as and when interim evaluations are due. Only when the project manager changes the contract set-up status from 'awarded' to 'completed' the system will prompt the project manager to conduct a final evaluation.

Only one evaluation is undertaken per contract.

Sometimes a single contract may encompass multiple projects/phases which progress over differing time frames. Therefore it is desirable to undertake a separate evaluation for each project. This is possible by suitable pre-fixing of the contract number as recorded in the contracts tab, which is unique for each project. In this way PACE will recognise a separate contract for each project.

Similarly, some of the information that appears on the database form is drawn directly from PROMAN (eg contract value). To make correction to these values, the value in PROMAN must be corrected. The value in PROMAN must be expressed in $000's.

Interim versus final assessments

It is the responsibility of the project manager to ensure that the supplier understands the process before the evaluation commences.

Project managers are able to download the PACE forms (PSF 9a and 9b) via from the NZTA's website through SMO30 and once completed, upload/transfer this into PACE.

Final assessment is required for all contracts, and this is done at the end of contract, not at the end of each phase within a contract.

If there is significant disagreement between the parties or the supplier refuses to sign the PACE form, then each of the parties may comment, and also have the opportunity to attach any supporting documentation to the evaluation in PACE.

All evaluations must be uploaded within a reasonable time period.

Note: You may want to put a time frame, eg three within three months.

Interim assessments

Generally interim assessments will only be of the period under evaluation, and as such could be highly variable during the course of the contract. They provide a formal platform for real and critical feedback and as an alert to the consultant or contractor as to where they could, or need to improve. It is a very poor outcome for all parties involved to have a low final performance evaluation issued, where there had be no feedback on the issues presented during the course of the contract.

Final assessments

The final assessment is not simply a tally and average of the interim evaluations. The database does not do this, and nor should the evaluator. While interim evaluation should be considered, the final assessment takes a holistic view over the contract and the finished outcome/product.

For contractors the final assessment is undertaken upon issue of the defects liability certificate. Throughout the defects liability period, there is little scope for a contractor to improve upon performance – although there is scope to reduce performance. During this period however, there is risk of memories fading or people changing/leaving, and therefore it is advisable to evaluate the assessment at the time of practical completion, as though it was the final. In this way, provided there are no poor performance issues during the defects liability period, the interim assessment undertaken at the time of practical completion can be re-issued as a final with little or no change.

It is encouraged that interim and final assessment also include a memo covering the key influences behind the evaluation. This is to enable future readers of the evaluation to understand the basis behind the scoring (eg when interpreting interim evaluations to derive the final or interpreting the final when evaluating future tenders).

A commentary (sentence or paragraph as appropriate) must also be made against each of the standard NZTA's *Procurement manual* attributes for the appropriate contract type summarising the:

- specified performance criteria and level of attainment (exceptional, satisfactory, marginal)
- general overall performance.

For small contracts, a half page summary will be sufficient. However for larger contracts, several pages will be expected.

Performance evaluation process

The contractor's performance assessment process:

- normally requires the consultant to complete the appraisal and then forward copies to the contractor for comment, and to the project manager for information
- the contractor either:
  - agrees with the assessment, signs it and returns it to the consultant, or
  - presents factual information to challenge the assessment and returns it to the consultant.

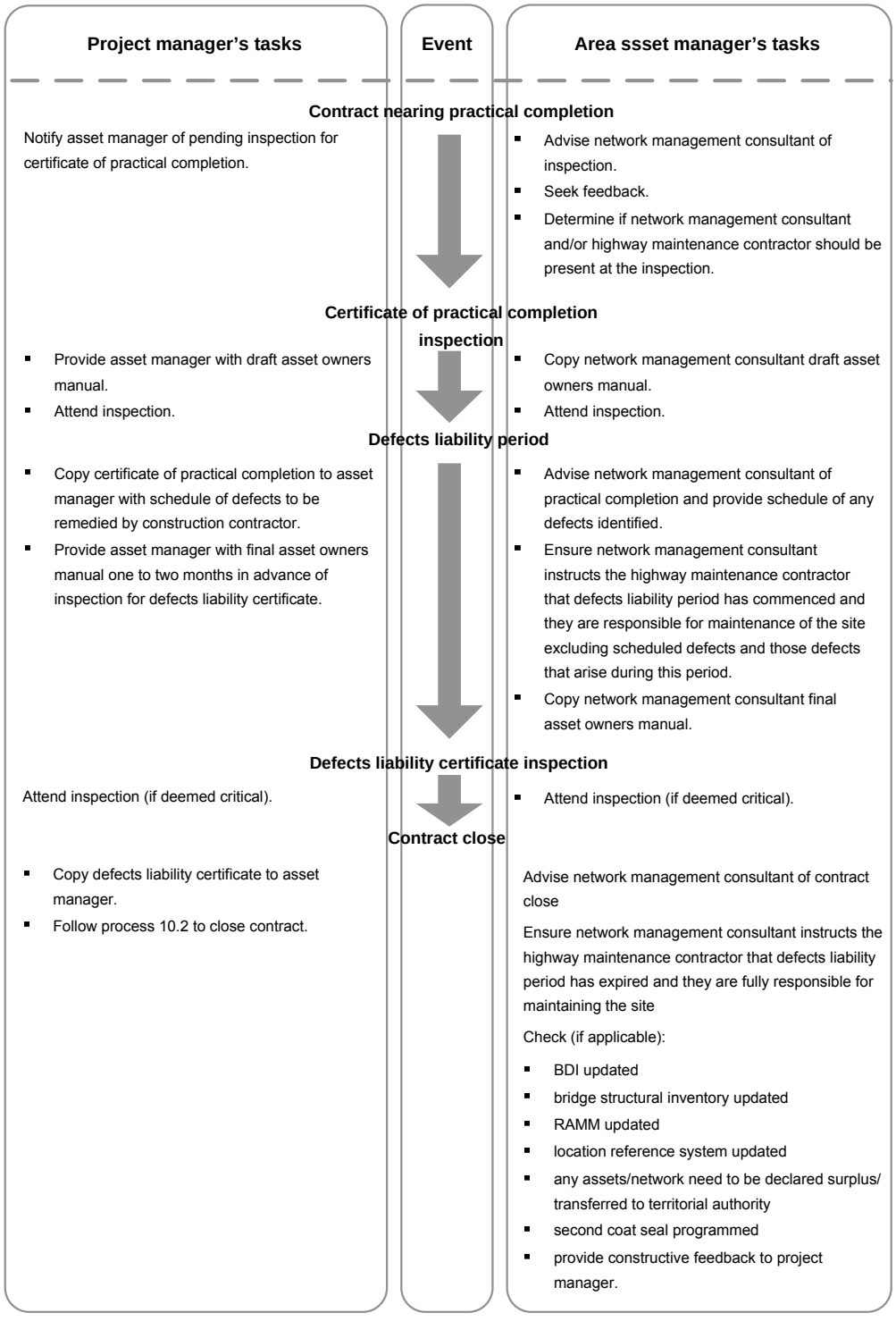
The two parties would then meet to discuss the assessment to see if they can agree and amend it as appropriate and forward it to the project manager who:

- may comment, particularly if there is significant disagreement between the parties
- arranges for the information to be entered into the NZTA's PACE database.

10.1 Project close-out

Capital project handover

This guideline reflects changes to the NZ Transport Agency's (NZTA) operational structure resulting in capital projects being managed by teams from those fulfilling the asset management roles. The following handover framework identifies the key processes and necessary tasks to successfully transfer a project from the capital to the Asset Management team.



Project closure

General

Projects must be closed in a timely manner to ensure that:

- all information is readily available for future works
- all administrative requirements are completed within 12 months of the project's completion unless the state highway reviews committee approves the project manager's request to leave the project open for an extended period. This is requirement is required to avoid the management of many contracts with small allocations.

When closing projects, the project manager must ensure the NZTA's ongoing responsibilities, such as resource consent or designation compliance, are transferred from the capital group to the asset management group.

Due to other priorities, many projects are incorrectly or incompletely closed. This may result in:

- being unable to find inputs for future works
- contingency sums being locked up in finished projects, so they cannot be reallocated to other works
- contractual disputes arising through non-payment and incomplete records.

Close down procedure

The *Project completion notice* form (PMM 10.1) lists the key requirements that must be completed before a project is closed. Project closure is initiated when the project is:

- completed, by achieving the specified objectives and outcomes
- terminated, as all of the specified objectives and outcomes have not been achieved
- suspended.

To close a project the project manager must do the following:

- Review, amend and update the project plan by considering the following questions:
  - Is the project's scope still appropriate? If not, why not?
  - Have the project's objectives been met? If not, why not?
  - Have all supplier deliverables been provided? If not, why not?
  - Have all reviews and inspections been completed?
- Close all supplier contracts by:
  - reconciling and closing the project's finances including reconciling the State Highway Project Financial Management System (PROMAN) and releasing surplus funding
  - ensuring all expected deliverables, including warranties, as-builts, Road Assessment Maintenance and Management System (RAMM) records have been received, reviewed and accepted
  - completing all performance reviews, including PACE
  - ensuring all disputes have been resolved
  - checking that final payments have been made and retentions and bonds released.

- Ensure all:
  - land designations including local authority designation and legalisation, have been completed. This includes consulting with transport planning to decide whether the property is surplus or may be required for a subsequent project
  - all gazetted action to declare or revoke state highways and/or limited access roads has been completed
  - future project inputs have been collated, and either filed or forwarded to the appropriate project manager
  - project records are filed, and electronic records either deleted or archived as appropriate.
- Provide the owner's manual to the Asset Management team.
- Prepare a brief project summary report that can be presented to other project managers highlighting the:
  - reasons for terminating or suspending the project
  - items of general interest, such as unusual project features or innovative ideas that were either developed or implemented, or key problems that were encountered and the actions taken to resolve them
  - recommend improvements to the NZTA's standard documentation and processes (such as those described in this manual). The project sponsor will determine whether the report and its recommendations have national implications. If so, they will arrange for the appropriate actions to be completed.
- Obtain the project sponsor's sign-off of the final project plan, and arrange for all records and files to be archived.
- Update the project register.

Terminated projects

If the project has been terminated, a state highway management report must be prepared to:

- outline the reasons for the termination and recommended follow-up actions
- document the project's final status, what objectives were achieved, the deliverables received.

If the project's estimated cost is less than $4.5 million and/or a scheme assessment report has not been prepared, a memorandum report to the Business Unit Decision-Making team (BUDMT) is sufficient. Otherwise a formal report is required to be submitted to the group manager of Highways and Network Operations (HNO).

Suspended projects

If the project is suspended and the:

- suspension is expected to be less than a year, then no action apart from updating the project plan to ensure the milestones reflect the project's current status and adjusting the PROMAN cash flows is required
- suspension is expected to be longer than one year, then the project must be closed. However the project's files and financial records must remain open and a file note attached to the project plan which:
  - outlines the project's status, reasons for suspension and likely resumption date
  - documents the key issues or consequences of the delay in relation to the suppliers' contracts, such as exit costs, termination dates.

10.2 Contract close-out

Provisional services contracts

General

Professional services contracts generally do not have a definite completion point.

The consequences of not systematically closing off a contract can include:

- unexpected claims
- outstanding deliverables
- incomplete performance reporting and dissatisfaction by other professional service suppliers.

Contract closure

The professional services contract completion notice (PMM 10.2b) lists the key requirements to be completed before a professional services contract is closed. Contract closure may be initiated by:

- accepting of the last contracted deliverable
- a significant change in contract scope. In this case the a new contract must be considered
- the project not meeting current priority and/or funding thresholds
- contract termination.

To close a professional services contract the project manager must complete the following actions:

Element	Project manger's actions:
Financial	• Confirm the final payment certificate has been issued. • Confirm all disputes have been resolved. If there are any outstanding disputes refer to process 9.7 before proceeding with contract closure. • Confirm all variations to the initial contract price and reconcile the final contract amount with the total shown on the contractor's final payment certificate. • Reconcile the final contract price with the State Highway Project Financial Management System (PROMAN) transactions by: – recovering any overpayments – making any missed payments – arranging necessary transaction journals. • A good practice is to attach a copy of the PROMAN transaction records to PMM 10.2b. • Identify any surplus contract funding. • Notify the accounts clerk the contract is complete and no further costs should be accrued against the related general ledger codes.
Deliverables	• Ensure all specified or subsequently requested deliverables have been received/completed, reviewed and accepted. • Ensure all deliverables that will become an input into a future contract are complete, provided in hard as well as electronic formats and, most importantly, are stored where they can be retrieved easily. • Ensure all deliverables that require further attention are forwarded to the appropriate party with appropriate instruction, such as resource consent conditions and monitoring cost data relating to a completed capital improvement work, are forwarded to the network management consultant as soon as possible.

Element	Project manger's actions:
Performance	• Ensure the required performance reviews have been completed and filed. • Complete the PACE evaluations and ensure this information is available for evaluating future tender.
Notification	• Notify the consultant in writing: – the contract is complete – no further instructions should be accepted in relation to the contract.
Administrative	• Notify the filing clerk the contract file(s) may now be closed and archived according to the office systems. • Update the project plan for the file, noting the project is now complete.

Physical works contracts

General

Physical works contracts terminate once the defects liability period has ended and the contractor's final claim has been processed and paid.

The consequences of not systematically closing off a contract can include:

- missed and/or substandard deliverables
- overpayments
- leftover retention monies
- incomplete records.

Contract closure

The Physical works contract completion notice (PMM 10.2a) lists the key requirements to be completed before a physical works contract is closed. Contract closure will be initiated by issuing the defects liability certificate, or by terminating the contract.

To close a physical works contract, the project manager must complete the following actions:

Element	Project manger's actions:
Financial	• Confirm the final payment certificate has been issued. • Confirm all disputes have been resolved. If there are any outstanding disputes refer to process 9.7 before proceeding with contract closure. • Confirm all variations to the initial contract price and reconcile the final contract amount with the total shown on the contractor's final payment certificate. • Reconcile the final contract price with the PROMAN transactions by: – recovering any over-payments – making any missed payments – arranging necessary transaction journals. • A good practice is to attach a copy of the PROMAN transaction records to PMM 10.2a. • Identify any surplus contract funding. • Notify the accounts clerk the contract is complete and no further costs should be accrued against the related general ledger codes.
Deliverables	• Ensure all specified or subsequently requested deliverables have been completed, inspected and accepted. • Ensure all required records relating to the completed works are complete, in an appropriate format and, most importantly, are expeditiously forwarded to the relevant parties as soon as possible. • Ensure all ongoing or special maintenance requirements relating to any aspect of the completed works have been properly documented, and arrangements are in place to ensure that they will be completed.
Performance	• Ensure the required performance reviews have been completed and filed. • Complete the PACE evaluations and ensure this information is available for evaluating future tenders.
Administrative	• Notify the filing clerk the contract file(s) may now be closed and archived according to the office systems. • Update the project plan for the file, noting the project is now complete.