

Review of Delivery Models for Works and Services

Final - 14 March 2012



Review of Delivery Models for Works and Services

		Opus International Consultants Ltd		
Prepared by:	Gary Porteous	Wellington Civil		
		Level 7 Majes	stic Centre, 100 Willis St	
		PO Box 12 00	03, Wellington 6144	
		New Zealand		
Reviewed by:	Rowan Kyle			
	Michael Darrell	Telephone:	+64 4 471 7000	
		Facsimile:	+64 4 471 1397	
Released By:	Tony Porter	Date:	14 March 2012	
	-	Reference:	5-C2190.00	
		Status:	Final	

Contents

Exec	utive	Summary	1	
1	Glos	sary of Terms	2	
2	duction	3		
3	Background			
	3.1	General	4	
	3.2	Roles in the Management of Roading Assets	5	
	3.3	Generic Delivery Model Forms	6	
4	Deliv	/ery Models	9	
	4.1	Overview	9	
	4.2	Day Works 1	0	
	4.3	Traditional1	0	
	4.4	Hybrid1	1	
	4.5	PSMC/ PBC1	2	
	4.6	Alliance1	3	
5	Deliv	verv Model Differentiations1	4	
	5.1	Characteristics	4	
	5.2	Resources Consumed	4	
	5.3	Functional Performance	4	
	5.4	Behaviours/ Motivators	4	
	5.5	Advantages and Disadvantages	4	
6	Curr	ent Contract Models	7	
•	61	State Highway Network	7	
	6.2	Local Authorities Networks	8	
	6.3	Other Jurisdictions	24	
7	Con	clusions2	!7	
Арре	endix	A: Delivery Model Selection	31	
	A1: 8	Selection Criteria	31	
	A2: [Delivery Model Selection Matrix	32	



Executive Summary

The Road Maintenance Task Force has been charged with improving the whole-of-life value of road maintenance operations and renewals. It sought some independent advice from Opus International Consultants (Opus) based their experience with delivery models for Works and Services within the roading industry.

One of the Task Forces objectives is to identify innovative services, products and methods of contract to achieve value for money and a safe network. This report has been prepared to assist with achieving this objective. That is to review the existing maintenance delivery models currently being used in the road maintenance industry.

To help understand the asset management process and the various delivery models in use, the asset management value chain is used. The value chain reveals that it can be used to identify the three distinct roles required for integrated roading asset management: Implementation, Management, and Governance. Typically, there are three parties engaged in the management of the roading networks: the road agency, the professional services consultant and the contractor undertaking the physical work.

In generic terms there are various forms of contract being employed these are: input driven; output based and outcome based delivery models. Over the last 20 years New Zealand has adopted a number of delivery models five distinct models, though others containing some elements of more than one of these exist. The contract models are: Day-works, Traditional, Hybrid, Performance Specified Maintenance (PSMC/ PBC) and Alliance Contracts.

Given all of the information and experience available we can draw conclusions around Payment Mechanisms; Size of Network; Shape of Networks; Performance Measures; Residual Life; Service Level Creep; Measuring Compliance; Delivery Model Selection; Risk; Culture and Duration of the Contract.

Each form of service delivery model has its strong proponents and detractors but there is wide agreement that the common success factor is having the right people involved to extract the best from the model and find ways to address and issues/ opportunities as they arise.



1 Glossary of Terms

Asset Management Plan: A document describing how the assets will be managed (both technically and financially) to provide the desired levels of service. A significant component of the plan is a cash flow projection for the activities.

Asset Preservation Performance Measure: A measure of the structural integrity of an asset over the long term (often referred to as a durability measure).

Desired Outcomes: The expected results of undertaking an activity, including condition of the asset, levels of service, reductions in life cycle costs, reductions in accidents and journey times

Input Driven Contract: A contract which pays for the inputs (labour, plant and materials) and where the client specifies the location and methods to be employed. The contractor is only responsible for responsible for the standard of the materials and workmanship..

Lump Sum: Total payment for all or part of a contract and generally paid monthly in equal instalments over the term of the contract.

Operational Performance Measures: A measure of performance of an asset on a day-today basis also known as Road User Service and Comfort Measures.

Operations and Maintenance Plan: A document setting down how the operation and maintenance of assets is to be undertaken.

Outcome Based Contract: A contract which requires the contractor to achieve specified outcomes or levels of service, with the contractor responsible for making the decisions in determining where to do work, and what methodology to adopt to achieve the specified outcome. Also known as a Performance Based Contract.

Output Based Contract: A contract that defines outputs by focussing on intervention criteria and the standard of the completed work. The contractor is paid for each completed output. The client carries the risk of outcomes and quantity of work required, while the contractor carries the risk of quality and inputs necessary to deliver the outputs.

Road Controlling Authority (RCA's): A for the agency that is responsible for the provision and maintenance of a road network. It may be a national, regional or local government agency.

Road User Service and Comfort Measures: A measure of performance of an asset on a day-to-day basis. Also known as Operational Performance Measures

Service Levels: The defined service quality for a particular activity or service area against which service performance may be measured. Service Levels usually relate to quality, quantity, reliability, responsiveness, environmental acceptability and cost.

Key Performance Measure (KPM): are the principal Performance Measures representing the principal outcomes in each service area of contract delivery.



2 Introduction

This report has been prepared for the Road Maintenance Task Force. The purpose of the Task Force is to identify opportunities for efficiencies in delivery of operations, road maintenance and renewals, including innovative services, products and methods of procurement, and to encourage their consistent uptake throughout the country.

Funding from the National Land Transport Programme is allocated for the operation, maintenance and renewal of both local roads and state highways. The levels of funding for these activities are set with the aim of ensuring the asset condition is maintained to achieve target levels of service, while at the same time providing funding pressure to realise efficiency gains. Anecdotal evidence suggests there are opportunities to create greater efficiencies, for example by fostering an environment that supports using innovative products, alternative delivery models, sharing best practice and standardising contract documentation.

One of the Task Forces objectives is to identify innovative services, products and methods of contract to achieve value for money and a safe network. This report has been prepared to assist with achieving this objective. That is to review the existing maintenance delivery models currently being used in the road maintenance industry.

The purpose of the review is to determine the advantages and disadvantages of the various contract models available at the time of report preparation for the delivery of best value for money road maintenance operations and renewal. The report has reviewed the current practice and focuses on what is seen as good practice in New Zealand and in any other jurisdictions that are seen to be leading in the road asset management field.

It is worth highlighting that there have been a number of changes over the last three years which have influenced the industry in summary these have been:

- Introduction of a new NZTA Procurement Manual and greater flexibility in procurement
- 3 Year Funding Block
- Introduction of Government Policy Statement (GPS2) and NZTA Objectives
- Road of National Significance Initiative (RON's) and funding pressures arising
- Asset management plan development and increasing emphasis on targeted levels of service.



3 Background

3.1 General

As road agencies around the world have moved towards outsourcing their road management and maintenance activities, New Zealand has been at the forefront of this work. Indeed, as a requirement of securing funding from NZ Transport Agency (NZTA) Road Controlling Authorities (RCAs) have needed to ensure that all physical work undertaken on the country's roads is outsourced with some exceptions.

This requirement has applied to both local government and central government agencies since the early 1990s. The outsourcing of professional services involved in the management of the network has not been made mandatory; however, approximately 50% of local authorities have elected to outsource these activities to the consulting industry to varying degrees.

One of the drivers within the economic reforms has been to create an environment that would generate economic efficiencies, and this related to the delivery of roading services. Essentially the roading agencies have to learn to do more with less. Over a last decade road maintenance has been outsourced with the expressed aim of;

- Reducing costs
- Increasing efficiency
- Improving quality
- Speeding project delivery
- Spurring innovation
- Enhancing risk management; and
- Overcoming a lack of agency expertise.

NZTA is a Crown agency and manages New Zealand's 10,894 km's of state highways. This network makes up approximately 12% of the entire NZ road system but accounts for around half of the 36 billion vehicle kilometres travelled throughout the country each year. The Board of NZTA allocates funds to both the state highway network for improvements, maintenance and renewal activities as well as to regional and local RCAs for road networks and passenger transport.

Within the NZTA organisation the Highways and Network Operations Division (HNO) carries responsibility for building, maintaining and operating the state highway network with the objective of optimising the wider transport system and maximising the safe movement of people and freight. As part of its national service procurement strategy, HNO has subdivided the State highway network into 25 Network Management Areas, each managed by a network manager engaged through a variety of delivery models.



3.2 Roles in the Management of Roading Assets

To help understand the asset management process and the various delivery models in use, the asset management value chain depicted below in Figure 1 is used.





The value chain reveals that it can be used to identify the three distinct roles required for integrated roading asset management: Implementation, Management, and Governance as shown in Figure 2. Typically, there are three parties engaged in the management of the roading networks: the road agency, the professional services consultant and the contractor undertaking the physical work.



Figure 2: Roles in the Management of Roading Assets

While it is important that the road agency retains "ownership" of its assets and hence the governance role, the technical inputs for the vast majority of functions, including asset management, maintenance management, project identification, and contract supervision, can be either obtained from in-house or outsourced suppliers. Private industry, when given the opportunity, quickly gains the technical expertise and resources needed to undertake the work required to maintain the asset.



3.3 Generic Delivery Model Forms

Before moving on to examine the various delivery models it is worth defining, in generic terms, the various forms of contract being employed and where they stand within the Asset management value chain at this time (Figure 1 above).

3.3.1 Input Driven Delivery Models

Historical practice centred on input driven delivery models (Figure 3) which typically employed direct labour organisations undertaking works which had been tightly specified. This left little or no room for private sector innovation or efficiency savings to be made.



Figure 3: Historical Practice = Input Focused

Management and governance of the works was typically carried out by in-house design organisations with little thought to any holistic approach to management of the network as a whole. The contractor simply did what he was told to do and received payment for labour and plant by the hour and for materials by quantity delivered. The focus was on getting the best service level one could for the available budget, often with unwritten secondary goal of employing as many people as possible. As the benefits of outsourcing became apparent this model continued to find favour with the only change being the increasing use of contractors at the expense of in-house direct labour units. Those managing this form of delivery model have a strong focus on the efficiency of the work force but rather neglected the effectiveness and efficacy issues that good asset management practices demand.

3.3.2 Output Based Delivery Models

Output based delivery models (Figure 4) were developed to encourage contractors to take responsibility for, and carry the risk of, the efficiency of their workforce. Under this model the contractor is paid for each of the completed outputs. Typically payment is for each completed unit of work in place or for larger works per cubic metre of material in place. In more advanced models the contracting entity may be called on to take more of the risk so payment may be per square meter [with the contractor also carrying some of the design risk on depth]. While all the work on the network may be bundled up into one contract it is more common for the work to be broken down into a number of activity components such as





routine maintenance, resurfacing, rehabilitation, and drainage improvements and let as separate contracts.

Figure 4: Output Based Delivery

This model typically sees the separation of roles into three separate organisations (Figure 5) with the management role either being undertaken by the roading agency's staff or being out-sourced to the consulting industry. This model has become known as the "traditional" or "conventional" model and is still in wide use today. Initially the management role was focused on supervision of the contractor but as roading agencies have moved to embrace the principals of asset management the role has been extended to include data collection and analysis, condition assessments and predictions along with long term planning. At the same time increasing reliance has been placed on the contractors own quality assurance programmes and the level of supervision greatly reduced.



Figure 5: Traditional Model

Physical work is still tightly specified within this model form providing little room for innovation. Historically consultation with the contractor rarely took place before tenders were invited meaning that construction techniques, health and safety issues or construction programmes were often not adequately considered neither were the experience of buildablity that a contractor could bring to the project taken on board. As this model has evolved the specifications have increasingly introduced performance based requirements and lump sum elements into their pricing.



3.3.3 Outcome Based Delivery Model

The move to Outcome, or fully performance specified delivery models (Figure 6) provided a step change in the procurement of highway asset maintenance delivery. Arrangements are such that the Asset Owner simply enters into a single contract with a combined contractor/ consultant organisation and only specifies the desired outcomes [service levels] for the road network, placing full responsibility for all interventions including resurfacing and pavement rehabilitation, along with all routine maintenance operational activities, on the contracting entity.



Figure 6: Outcome / Performance Based Delivery Model

The required service levels are specified in performance based contracts through a series of performance measures which cover asset and contract management requirements, road user service and comfort measures as well as the long term durability of the asset. It is the later requirements that are the most contentious as agencies are understandably concerned about the consumption of their asset during the term of their contract. This aspect will be discussed more fully later in this report. Continuous improvement and innovation are at the heart of these contracts.

Robust outcome based delivery models demand good asset management practices. Indeed the preparation of these contracts necessitates the development of long term planning and robust asset management plans. It is essential to have a detailed inventory of the asset, an understanding of its current condition, what condition and service levels are affordable over the long term as these form the basis of the contract documentation. There is also a need to have an understanding of the network's risk profile so that management and mitigation of these risks can be equitably achieved.



4 Delivery Models

4.1 Overview

Over the last 20 years New Zealand has adopted a number of delivery models five distinct models are discussed below, though others containing some elements of more than one of these exist. The contract models are: Day-works, Traditional, Hybrid, Performance Specified Maintenance (PSMC/ PBC) and Alliance Contracts. These are shown on a spectrum in Figure 7.

Each form of contract has its strong proponents and detractors but there is wide agreement that the common success factor is having the right people involved to extract the best from the model and find ways to address and issues/ opportunities as they arise.

Current models (with exception of the day-works) now have a strong focus on the principles of asset management and generating a "no surprises" environment. All but the PSMC/ PBC models select the professional service provider separately from the physical works provider in recognition of the importance of the quality of the asset management advice. Good governance and well document delegations are required in all models.



Figure 7: Delivery Models

Sophistication and the costs of procurement¹ tend to increase as we move from an input to an outcome based delivery model. Examples include:

- Increasing difficulty if contract 'unravels"
- Increasing need for certainty in clients requirements before outsourcing
- Increasing need for accuracy and reliability of asset information.
- Increased need for data, both asset information and condition data (current and historical)

Each of the delivery model are described and defined in detail below.



¹ In this context procurement refers to the process of selecting the suppliers establishment and managing the contract s and (if necessary) varying the scope or terms of contract.

Review of Delivery Models

4.2 Day Works

Day works models are simple contracts which are awarded as needed and the suppliers are paid on a time and materials basis. They require the RCA to manage a number of smaller contractors in-house under a traditional road engineering construction contract (Figure 8).

Contractors are paid for their inputs under the conditions and rates set out in the contract documents for labour, equipment and materials used for the execution of day works



Figure 8: Day Works

This model requires a considerable effort to administer as the RCA must verify the validity and accuracy of the inputs claimed by the contractor. The Traditional model discussed below will typically include day works to deliver difficult to measure works under a measure and value contract such as flood damage repairs.

4.3 Traditional

Traditional delivery model style can range from input to output to outcome based. Contracts have been historically awarded for maximum terms of 5 years (3+1+1) due to procurement limitations and involve consultants managing a number of suppliers who deliver physical works on the roading network, in a similar way to traditional road engineering construction contracts. The scope of work is limited to well defined work activities such as pavement repairs, emergency works, drainage, signage and delineation, litter control, vegetation control, and pavement marking (Figure 9).

This model relies on the consultant (or in-house professional services operation) developing and maintaining a successful contractual relationship with both the road agency and the Contractors. The supplier contracts often make use of performance based clauses to drive the appropriate outcome, for example the vast majority of resurfacing work that is commissioned under the traditional model is carried out under performance based specifications (i.e. Resurfacing using P/17).



Figure 9: Traditional Model



4.4 Hybrid

Hybrid delivery model is a mixture of Outcome and Output based contract form. The development of the hybrid model was initially considered as a stepping stone to the PSMC model providing suppliers with sufficient time to develop the alliances and experience necessary to successfully tender under the PSMC model. However this form of contract model has been retained on many networks as it has continued to provide a balance between a performance (Lump Sum) model while still permitting a degree of flexibility and road agency involvement without having to take the next step towards a PSMC. (Figure 10 and 11)

This model has historically been let with 5-year tenure (typically a 2 or 3 year term followed by annual performance based extensions); with performance review targets required to be met for annual roll over. Until recently the term of all contracts funded by NZTA was restricted to 5 years the PSMC granted model was special dispensation - but longer terms are now being considered as under permitted NZTA's Procurement Manual.



Figure 10: Hybrid Model

The consultants and contractors are procured under separate contracts but are required to work in a partnering arrangement to deliver the services. All the activities required to

manage the network "fence to fence" are included in these contracts and both the physical works and the consultancy services are tendered as lump sums. Under this model the road agency retains and manages the risk of pavement/surfacing asset consumption by specifying minimum quantities of resurfacing and rehabilitation works for each year of the contract. The contractor carries the risk of site selection (location), design, quality and delivery within this lump sum price. There are operational performance measures similar to those in the PSMC model which drive the day to serviceability issues and the dav maintenance of the prescribed levels of service.



Figure 11: Hybrid Model



4.5 PSMC/ PBC

Performance specified maintenance contracts (PSMC) or performance based contracts (PBC), consists of a single contract for providing all the works or services associated roading network maintenance and management. In a similar way to the Hybrid model the PSMC model utilises output based contracting, relying on external data collection and self-compliance by the supplier to ensure performance. It seeks to maximise the skills, expertise, innovation and systems of the roading industry so more efficient and improved value for money is attained.

The fundamental principle pertaining to this type of delivery model is the provision by the service provider of all technical support services and physical works for the maintenance of roading assets, for a period of 10 years, to prescribed Performance Measures for a lump sum price, with the Contractor carrying all risks except those specifically excluded. The service provider aims to maximise the reliability, safety and availability of the network to road users.

The performance levels are generally defined with both a specified intervention level with a specified maximum level (i.e. no more than). Under the contract the contractor is required to establish systems with which to measure and report on the condition of the asset. The Client retains an audit function on specific systems and outputs as well as annual audits covering all aspects of service delivery and achievement of the desired outcomes.

At the end of the contract the contractor must be able to demonstrate, through an agreed mechanism, that the network is being handed back with acceptable pavement and

surfacing residual lives. There is currently no reliable qualitative method of measuring this and consequently a series of surrogate measures are applied in an effort to provide a basis it's for determination.

Western Bay of Plenty District Council (Bay Roads) is currently the only Local Authority to embrace PBC however in recent times PBCs have been used by a lot of Local Authorities for their unsealed networks.



Figure 12: PSMC/ PBC Model



4.6 Alliance

This is a recent innovation (Figure 13) that changes the basis of a contractual arrangement from a 'master/servant' relationship into a relationship between equals. As a result the Alliance team is able to focus on the outcomes from the project. Incentives are built into the remuneration structure to encourage innovation, increase efficiency and other key non-cost outcomes. Under this model the road agency staff may take roles at all levels of the delivery team and are an integral part of the decision making process.

Accordingly this model requires parties to accept collective responsibility for risk, performance and outcomes (including sharing the financial pain/gain) all within a no blame culture. An Alliance contract does not depend solely on contract clauses but includes considerations such as trust, openness and a collaborative and constructive mentality. Conflict is avoided by defining the nature and extent of the co-operation between the parties at an early stage and by establishing an effective management/ alliance board which can intervene as an arbiter when circumstances dictate. Typically a culture change is required by all the parties involved.

There are currently two types for Alliance

- a) Competitive Alliance A type of Shared Risk delivery model where the selection of suppliers to form an Alliance is on the basis of quality and price.
- b) Pure Alliance A type of Shared Risk delivery model where the selection of suppliers to form an Alliance is on the basis of quality only.

This alliance model was introduced three years ago for the operation and management of the Auckland Motorway network which had been managed under the Traditional model until that point of time. Interestingly the Auckland City Council also manages a portion of their network under an alliance model, albeit, the scope of their contract is more restrictive than NZTA's with the asset management and development of the forward works programme sitting outside the alliance. This is known locally as a "Delivery Alliance" with the NZTA model being known as a "Full Alliance".

As road agency staff are embedded in the alliance they feel better able to influence outcomes on a day to day basis. While a number of local authorities (Southland, Central Otago and Wanganui Districts) have established alliances for the management of their networks, NZTA have not brought any further state highway networks to the market under this model. We understand that the model is being reserved for "complex highly trafficked networks" at this point of time by NZTA.



Figure 13: Alliance Model

5 Delivery Model Differentiations

Table 1 below captures a high level summary of current practice for all the delivery models and the key differentiations between the models have been developed based on the following:

5.1 Characteristics

The delivery model characteristics include the following:

- Delivery model compensation structure the form of payment mechanism
- Risk transfer the ability to management risk through retaining or transferring to the appropriate parties
- Procurement duration the time taken to complete the procurement of the model, to select the suppliers and agree the details.
- Model duration the typical contract duration
- Type of network the type of network which is most suitable.

5.2 Resources Consumed

The resources consumed (by tenderers and the purchaser) by the model type including the following:

- Supplier selection method
- Procurement cost and complexity rated high, medium or low
- Flexibility to change ability to implement changes during the contract term.

5.3 Functional Performance

The functional performance includes the following:

- Risk management opportunity ability of the model to manage risk.
- Alignment of goals Alignment with RCA high level goals, vision and objectives
- Whole-of-life focus The drivers to manage assets for minimum whole of life cost.
- Level of Control the level of control that the RCA has in the management of the asset.
- Customer focus the ability to deliver a customer focus
- Social and Environmental the drivers for social and environmental responsibility

5.4 Behaviours/ Motivators

The behaviours and motivators that the delivery model developed in terms of the principal drivers to be efficient and effective.

5.5 Advantages and Disadvantages

Table 2 below captures a summary the delivery models advantages and disadvantages.



Review of Delivery Models

	Differentiator	Day Works	Traditional	Hybrid	PSMC/ PBC	Alliance
	Contract payment structure	Time and materials rates + overheads	Combination of Measure and value and Lump Sum	Lump Sum (with some limited scheduled rates)	Lump Sum	Cost reimbursement with incentive scheme
	Risk Transfer	RCA retains all	RCA retains majority	Majority of risk transferred	Risk transfer to supplier	Alliance retains all risk
Characteristics	Procurement Duration	Short	Short	Short	Medium/ Long	Long
	Contract Duration	No fixed term	3-5 years	5-7 years	10 years/ Evergreen	10 years /Evergreen
	Type of Network	Rural, low traffic volumes, low risk and low innovation potential.	Rural/ Semi-urban low risk and low innovation potential	Rural/ Semi-urban, High risk and high innovation potential	Rural/ Semi-urban high traffic volume, high risk, high innovation potential	Urban, high traffic volume, high risk, high innovation potential
	Supplier selection method	Lowest price conforming	High weighting on price	High to medium weighting on price	High to medium weighting on price	Selected on quality non- price attributes
Resources Consumed	Procurement process cost and complexity	Low	Low	Medium	Medium to High	High
	Flexibility to change	Very High	High	Medium to Low	Low	High
	Risk management opportunity	Low, RCA retains risk	Low, RCA retains risk	Medium risk transfer to the Contractor	High risk transfer to the Contractor	Retained by the alliance – best for project risk management
	Alignment of goals	High	Low to Medium	Medium	Medium (dependent on specification)	High
Functional	Whole-of-life focus	Low	Medium	Medium	Medium to high	High
Performance	Level of Control	High	High	Medium	Low (Has defined KPM, OPM & MPM's)	High, RCA inputs
	Customer focus	Poor managed by RCA	Moderate	Moderate	Moderate	High
	Social and Environmental	Low, RCA specific	Low, RCA specific	Low, RCA specific	Low to medium, RCA specific	Excellent
Behaviours/ Motivators	Principal drivers to be efficient and effective	As many inputs as possible, with no emphasis on efficiency	As many outputs as possible as efficiently as possible. No driver to be effective	As little work as possible to deliver specified outcomes. Suppliers seek to be both effective and efficient.		All parties seek to be both effective and efficient
Table 1: Contract Models Differentiators						



Review of Delivery Models

Model	Advantages	Disadvantages
Day Works	 Simple to use and understand Well understood by the industry RCA has control of all work and spending Capability of in-house staff Allows small contractors to compete 	 Large resource to administrator Difficult for suppliers to plan resources for long term Low cost certainty Extensive management by the Owner
Traditional	 Widespread use, experience and familiarity Clear roles assigned to each party Direct Owner participation and control Allows small contractors to compete 	 Low cost certainty and claims for extras very common Extensive management effort by the Owner Possible conflict between Contractor and Consultant Performance Specifications are not clearly defined Overlapping roles between Contractor and Consultant Contractors perceive limited relationship with Owner
Hybrid	 Performance Specifications are clearly defined Requires much less data be made available during the procurement phase than PSMC/ PBC Don't need a robust definition of long term outcomes Cost certainty with competitive bidding 	 Possible conflict between Contractor and Consultant Potential for short-term cost-saving strategies Potentially not best for the network approach No role for small to medium sized contractors as lead contractor
PSMC/ PBC	 Performance specifications are clearly defined Significant risk transferred to suppliers Single point of responsibility Aggregation of all work activities and co-ordination Potential cost certainty and savings Best for the network approach if set up well 	 Lengthy and expensive procurement process Requires extensive data for procurement and definition of outcomes No role for small to medium sized contractors as lead contractor Supplier judging quality and quantity of own work Lack of direct Owner participation, control and flexibility
Alliance	 Single point of responsibility Allows long-term strategic partnerships Cooperative team and best for the network approach Reduction in the usual adversarial relationships Sharing of risk rather than transfer 	 Lengthy and expensive procurement process Relatively complex and requires extensive coordination No role for small to medium sized contractors as lead contractor May be seen as non-competitive and difficult to show any price tension

 Table 2: Delivery Models - Advantages and Disadvantages



6 Current Contract Models

6.1 State Highway Network

NZTA currently has one alliance contract for the Auckland Motorways, five network areas operating in a Performance Specified Maintenance Contracts (PSMC) environment and six in a Hybrid environment with many nearing conclusion of their original tenure. Figure 14 shows the current status of NZTA State Highway Network Maintenance Contracts as at July 2011.



Figure 14: NZTA State Highway Network Maintenance Contact Types

The NZTA also has a number of existing initiatives with RCA's for the joint management and maintenance of state highways together with local roads, including Marlborough Roads and Bay Roads. There has also been some limited sharing of physical works contractors to reduce tendering costs and gain some economies of scale.



6.2 Local Authorities Networks

Figure 15 shows New Zealand currently has 66 local authorities. There are 13 City Councils (which are largely urban); 53 District Councils; and six authorities (Auckland Council, Nelson City Council, Gisborne, Tasman, and Marlborough District Councils and the Chatham Islands Council) which also perform the functions of a regional council and thus are known as unitary authorities. The full range of delivery models is most evident on the State Highway networks however developments have taken place to implement Hybrid, PSMC/ PBC and Alliance type delivery models on several Local Authority roading networks.







Table 3 provides a	current status of	f models beina use	ed by	Local Authorities.
1 4010 0 010 1400 4	ourront otatao of	i inioaolo bollig aol		

		Delivery Model		Generic
#	RCA Name	Physical Works	Professional Services	Model Form
1	Ashburton District	Traditional model	Traditional model - obtained in-house	Input/ Output
2	Auckland Super City	Currently looking at how best to do – they are saying no to alliances b way.	o things – they are aggregating contracts out want to operate in a very collaborative	Output
3	Buller District	Uncertain Traditional model generally obtained in- house		Input/ Output
4	Carterton District	Traditional model with no real innovations	Traditional model – with seconded Roading Manager from consultant	Input/ Output
5	Central Hawkes Bay District	Traditional model Traditional Contract to date but are planning to engage a smaller PS team to co-locate with CHBDC personnel in collaborative team under a LS model in 2012.		Input/ Output
6	Central Otago District	One contract for the whole network for OM&R all included Vanguard' (Lean construction) model. Delivery model is shared risk. No pain / gain mechanism. No longer referred to as Vanguard.		Output/ Outcome
7	Christchurch City	Maintenance contracts procured using NEC3 model.	Traditional model - delivered in house.	Input/ Output
8	Clutha District	Traditional delivery through three tier arrangement	Traditional with outsourced Professional Services.	Input/ Output
9	Dunedin City	Traditional delivery model	Traditional model - asset management obtained in house	Input/ Output
10	Far North District	Traditional model	In-sourcing all for network maintenance and management. One off contract where specialist services required. This is the current model however success of this approach will be determined by attracting the appropriate staff. All to occur by March 2012.	Input/ Output
11	Gisborne District	Contracts all Traditional (staged delivery model). Described very collaborative but conventionally based (scheduled rates plus lump sum items)	Traditional contracts with in-house staff working closely (and directly) with the contractor	Input/ Output
12	Gore District	Traditional delivery, working closely with Southland District	Traditional delivery outsourced on a required basis	Input/ Output
13	Grey District	Traditional delivery of physical works	Generally obtained in house.	Input/ Output



щ		Delivery Model		
#	RCA Name	Physical Works	Professional Services	Form
14	Hamilton City	Relatively Traditional (staged delivery model). Contracts have scheduled rates plus lump sum items.		Input/ Output
15	Hastings District	Relatively Traditional (staged delivery model) contracts with the physical works providers.	Have an alliance type arrangement with in-house and consultant resources working closely together	Input/ Output
16	Hauraki District	Traditional (staged delivery model) contracts	Outsourced to a consultant	Input/ Output
17	Horowhenua District	Traditional model	Recently re-tendered- unsure of procurement process	Input/ Output
18	Hurunui District	Traditional delivery of physical works using NEC3 model	Professional Services generally done in house	Input/ Output
19	Hutt City	Unsure of Procurement - unaware of anything innovative	Traditional model - delivered in house.	Input/ Output
20	Invercargill City	Traditional model - outsourced Traditional model - delivered in house.		Input/ Output
21	Kaikoura District	Traditional delivery Generally obtained in house		Input/ Output
22	Kaipara District	Traditional model	Traditional model, just appointed new Professional Services provider to deliver large majority of works and services includes (Roads, Water, Wastewater, Storm water, Resource consents, solid waste).	Input/ Output
23	Kapiti Coast District	Traditional model	Traditional model - delivered in house with some outsourcing	Input/ Output
24	Kawerau District	Traditional model –with small scale works generally by direct appointment	el –with small Generally obtained in house	
25	MacKenzie District	Procured through Traditional contracts	Generally delivered in house	Input/ Output
26	Manawatu District	Traditional model	Generally done in house	Input/ Output
27	Marlborough District	Marlborough Roads which is an alliance model. This is an example of the central government road agency taking on responsibility for local roads as the territorial authority's 'agent'. Contracts are Traditional (staged delivery model) and have moved from the state highways 'traditional' contracts to 'hybrid' contracts.		
28	Masterton District	Contracts all Traditional model a collaborative but conventionally based (scheduled rates plus lump sum items)	Contract with the in-house staff working closely (and directly) with the contractor calling on expert technical advice when required.	Input/ Output



		Delivery Model		
#	RCA Name	Physical Works	Professional Services	Model Form
29	Matamata-Piako District	Traditional delivery	Generally obtained in house	Input/ Output
30	Napier City	Traditional model Partially outsourced for RAMM Professional Services but otherwise traditional procurement		Input/ Output
31	Nelson City	Traditional model	Generally obtained in house	Input/ Output
32	New Plymouth District	Traditional model	itional model Traditional procurement models but Council pursuing a more collaborative approach between Consultant and Contractor	
33	Opotiki District	Traditional (lowest price)	Traditional model with in house	Input/ Output
34	Otorohanga District	Traditional model	Generally obtained in house	Input/ Output
34	Palmerston North City	Traditional model	Unsure of Procurement but the Council is innovative and willing to adopt new tools	Input/ Output
36	Porirua City	Traditional delivery	Partially outsourced for Asset Management Professional Services	Input/ Output
37	Queenstown-Lakes	Use NEC3 contract model. They have had a different approach using a panel (delivery model) for all the small project work	EC3 contract model. ave had a different ich using a panel (delivery for all the small project	
38	Rangitikei District	Traditional delivery	Unsure of Procurement - unaware of anything innovative. Collaborative arrangement with Manawatu DC. Manawatu in-house staff manages both networks.	Input/ Output
39	Rotorua District	Traditional model	Traditional delivery – outsourced. Rotorua DC has delegated role for State highways but not combined with local roads.	Input/ Output
40	Ruapehu District	Traditional model	Traditional model	Input/ Output
41	Selwyn District	Procured through Traditional Generally delivered in house contracts		Input/ Output
42	South Taranaki District	Traditional model	I Traditional model	
43	South Waikato District	Traditional model	Traditional model	Input/ Output



		Delivery Model		Generic
#	RCA Name	Physical Works	Professional Services	Model Form
44	South Wairarapa District	Traditional model	Traditional model	Input/ Output
45	Southland District	Alliances (shared risk delivery mo authorities. No pain / gain mechar Doing more in house and in Allian	Alliances (shared risk delivery model). Working with other territorial authorities. No pain / gain mechanism. Doing more in house and in Alliances.	
46	Stratford District	Traditional model Traditional delivery		Input/ Output
47	Tasman District	Traditional model Consultant also used to partially manage overlapping SH's under a traditional model. Also Golden Bay Alliance		Input/ Output
48	Tararua District	Traditional model	Generally obtained in house	Input/ Output
49	Taupo District	Traditional model	Generally obtained in house	Input/ Output
50	Tauranga District	Traditional model	Traditional delivery - outsourced	Input/ Output
51	Thames-Coromandel District	Traditional (staged delivery model) contracts,	Traditional delivery - outsourced	Input/ Output
52	Timaru District	Traditional model	Traditional delivery - generally obtained in house.	Input/ Output
53	Upper Hutt City	Traditional model	Partially outsourced for RAMM Professional Services but otherwise traditional procurement	Input/ Output
54	Waikato District	Traditional model	Traditional delivery. Outsource RAMM and asset management related professional services, including bridge and other structural inspections	Input/ Output
55	Waimakariri District	Procured through Traditional contracts.	Professional Services have been outsourced in the past, but are being taken back in house.	Input/ Output
56	Waimate District	Procured through Traditional contracts	Generally delivered in house. But do have a panel for procuring external work.	Input/ Output
57	Waipa District	Traditional model	Traditional delivery, with all in-house PS except for RAMM professional services only.	Input/ Output
58	Wairoa District	Traditional model	Professional Services were taken back in-house in 2010. Moving to more of a panel arrangement for procurement of specialist services, using Consultants for specialist technical advice as	Input/ Output



	564 N	Delivery Model		
#	RCA Name	Physical Works	Professional Services	Model Form
			required. Shares NZTA Napier SH resurfacing contractor.	
59	Waitaki District	Traditional contracts Partially outsourced for RAM Professional Services		Input/ Output
60	Waitomo District	Traditional model,	Traditional delivery - with all in-house Professional Services except for structural inspections	Input/ Output
61	Wanganui District	LR Alliance - shared risk delivery	model and uses a pain/ gain mechanism.	Output/ Outcome
62	Wellington City	Traditional model - outsourced Traditional model - in-house		Input/ Output
63	Western Bay of Plenty District	Performance based contract (PBC) model – delivery model is 'design and build'. PBC contract involving SHs and LRs evident use of partnering within what is a lump sum contract model. Also traditional capital works delivery model.		
64	Westland District	Traditional model	Generally obtained in house.	Input/ Output
65	Whakatane District	Traditional model	Traditional delivery - outsourced	Input/ Output
66	Whangarei District	Currently in state of flux, however change is predicted. The current model is to form an internal business unit of council staff (in-source) and then complement this with RAMM Profession Services in areas of asset management and specialist services. This will be in the form of a seconded role (AM stuff) in the business unit using this as an access to the greater Profession Services skill base for specialist services. The contractor will also have a hot seat within the business unit to work in a more collaborative way. Some of the maintenance contracts are being broken into small packages and will be directly run by the business unit. In general the business unit will become the management contractor for delivering maintenance works through the contractors. Greater control on decision making by council. All to be in place by July 2012.		Input/ Output

Note: This table has been prepared based on limited consultation with RCA's and information has not been verified. Those LA's shaded are the authorities that were visited by NZTA in November/ December 2011.

Table 3: Local Authorities Current Models



6.3 Other Jurisdictions

6.3.1 The Integrated Service Agreement [ISA] Delivery Model - Western Australia

The ISA concept utilises a contracting arrangement in which the private sector and Mainroads Western Australia (MRWA) staff work together to deliver, in an integrated manner, a range of services including Operational Asset Management, Road Maintenance, Improvement Delivery and Network Operations. In essence the ISAs will 'in-source' private sector partners to help deliver the range of integrated services that are core to the MRWA business. To do this the ISAs will adopt a performance specified outcome based approach and include many characteristics and benefits associated with the Alliance form of contract. It will also have many unique features that reflect the integrated nature of service delivery by a team comprising Main Roads and the Integrated Service Provider (ISP).

It has been concluded that ISAs will integrate a number of services that are now being delivered by a range of different methods and will enable MRWA to regain much more control and influence on when and how the services are delivered, particularly in regard to asset management decisions for maintenance. They will also assist in building skills within the Main Roads organisation that have been diluted during the time that the Term Network Contracts have been in operation. The detail of each ISA network model will vary to accommodate local difference.

It is expected that the ISA approach will incorporate the beneficial features of outcome based maintenance contracting such as outcome based performance measures with a strong emphasis on value for money and on a transparent governance framework.

There will be 7 ISAs throughout the State with one covering the entire metropolitan region and six covering the rest of the State.

The first ISAs (Metropolitan Perth and South West) commenced in July 2010 and have led to improved outcomes for the maintenance of the road network and better value for money.

The new model will allow them to adopt a much more hands on approach where there are clear drivers for MRWA staff and industry providers to work closely together to solve problems and encourage the use of the best resource, experience and expertise from the wider team to achieve "best for network" outcomes

6.3.2 New South Wales Roads and Traffic Authority (RTA) - Contract Models

Despite being the world leader in the development of performance based contracts, the RTA only outsource the management of one network, the North Sydney Network, to an external supplier and they continue to operate it under the PSMC model. The rest of the RTA's network is managed through negotiated contracts with the local authority in the area or by their in-house work unit Road Services. This choice of model outside of North Sydney is very driven by local politics and seems unlikely to change in the near future.



While the RTA was happy with the management of their network under the new model a number of lessons have been learnt from the original contract, as might be expected from a "world first". In addition to the thorny issues of residual life and response time other areas of particular interest are:

- The need to have a good flow of information back to the road agency. The first contracts [and not just in NSW] had very few management performance measures and naturally the incumbent contractor considered the information they were gathering on the network as their intellectual property. This made it very difficult for the Authority to prepare a new contract that could be competitively bid. The RTA overcame this problem by granting the incumbent an extension of time on the condition that the information was forthcoming.
- The danger of managing condition through averages as the contractor is able to manipulate their work programme to deliver the average without necessarily achieving the desired service level. Cumulative distributions are much better, or alternatively as a minimum an average condition along with a never to be exceeded limit.

6.3.3 UK – Current Contract Models

Since the demise of Local Authority Agency Agreements for the management of the trunk road network in the late 1990s, significant steps have been taken to improve the standard of service delivery and to raise the level of value for money being achieved. The management of the trunk road network was thus privatised in the late 1990s with the creation of 24 areas, each with a Managing Agent (MA) and a Term Maintenance Contractor (TMC). These MA/TMC contractual arrangements generally covered a period of 3 years and improved the level of service delivery, raised consistency and brought efficiency benefits as a result of having a larger network area to maintain which, in turn, brought economies of scale. Further refinements were introduced by the Highways Agency (HA) in 2001 with the creation of, in one area of the network, a Managing Agent Contractor (MAC) contract. This form of contract was subsequently rolled out across the remainder of the trunk road network over the following few years.

The MAC contract is based on a single organisation taking responsibility for maintenance of their part of the network with the Employer, HA, entering into a single contract. This is in contrast to the MA/TMC arrangement where two separate contracts were required and where each party, the HA, MA and TMC each had two interfaces to manage. Progression to the MAC contract sought to remove any duplication of the activities that occurred under the MA/TMC arrangement (e.g. checking and supervision of the works) taking as its central core a quality management system certified to international standards. MAC organisations are required to align their systems to the Agency's key outcomes and objectives of improving road safety, reducing congestion and improving reliability, seeking and responding to feedback from customers, improving efficiency and respecting the environment. To monitor the effectiveness of the MAC's systems and procedures, HA have developed their 'Motivating Success – A Toolkit for Performance



Measurement' which measures the client's satisfaction of the delivered product, the service provided, the effectiveness of the arrangements to manage quality, cost control, time control and health and safety. HA's own performance is monitored via 360 degree feedback reports.

Self certification forms a key component of the MAC contract with regard to works completed and payments due. Key Performance Indicators have been developed to form the basis for benchmarking all the MAC organisations across the entire network. Financial and repeat business incentives incorporated into the contract encourages the MAC to achieve a 'right first time' strategy and to show continuous improvement through its own systems and procedures and through effective management of its supply chain partners.

Since the introduction of the MAC form of contract significant benefits and efficiency savings have been realised and these include:-

- Reduced mobilisation and demobilisation costs as a result of the longer 5 to 7 years contract duration
- Efficiency savings in vehicle and IT costs as their lifespan aligns more closely with that of the contract period
- Clearer lines of responsibility as a result of a single contractual relationship
- Benefits resulting from a consultant/contractor union where design and construction issues can be addressed at an early stage
- Efficiency savings resulting from a co-ordination of routine and cyclical maintenance with the construction of individual schemes



7 Conclusions

Given all of the above these are the conclusions we draw:

Payment Mechanism

With the introduction of both lump sum payments and schedule of rates activities within one contract it is understandable that contractors will try to shelter their lump sum work activities in favour of promoting as much work as possible under the schedule of rates. This results in increased Road Controlling Authority organisation cost and resources to assess whether this work is both appropriate and effective.

However. it is considered that as much work as possible, including rehabilitation and resurfacing, should be brought under the umbrella of the lump sum. The Alliance, PSMC/ PBC and Hybrid can all accommodate this Lump Sum approach as long as adequate performance measures are specified and benchmarked.

Size of Network

The size of the network should be based on annual expenditure rather than length of carriageway. It is important when sizing the network to recognise that as more robust asset management regimes become established and work practices become more effective and efficient then the size of the network needs to increase in order to ensure the contractor's maintenance team has sufficient work to be gainfully employed at all times.

The size of the network/ value of contract also have an influence on the level of interest and degree of competition between tenderers and there is no doubt that it is competition that drives innovation and efficiency gains.

It can be shown that as contract areas / sizes have increased efficiency gains and cost savings have been achieved. The constant concern from the RCA's perspective is the potential loss of competition with any aggregation and bundling of activities. None the less there is still scope to combine contract areas between adjacent RCA's and RCA's/NZTA to more effectively / efficiently deliver physical works outcomes. However there is a limit to size and contracts will become inefficient if they become too large and may lose customer focus.

Shape of Networks

Dense networks are more efficient to manage than long linear networks and limit "dead running" and overlap. This may encourage amalgamation of State Highway and Local Authority networks.

Performance Measures

Performance measures are continuing to evolve but a significant step forward seems to have been made with the introduction of a system to record faults in the asset rather than specifying response times to define service levels. It is recognised that this system cannot be universally adopted as a number of safety issues need to be controlled using the response time technique.



Performance measures should be considered under the following three headings:

- a) *Management Performance Measures*: these drive contract management and the flow of asset management information.
- b) **Operational Performance Measures**: these drive the day to day performance of the network
- c) **Preservation**/ **Durability Performance Measures**: these drive the preservation and sustainable management of the asset over the term of the contract.

There appears to be merit in performance based contracts, less is spent per km than in traditional models as they only seek to achieve a targeted level of service and no more under the Lump Sum.

NZTA /LGNZ should be promoting a greater consistency between respective service levels for TLA's and for SH's i.e. driving good asset management behaviour. This appears to be an area where significant cost savings could be achieved.

Residual Life

It is vital to ensure when preparing and managing performance based contracts that the asset is not consumed during the term of the contract. The asset owner should not rely on pavement strength [deflections] as the sole basis for measuring residual life. At present the use of tradable, minimum lengths of pavement rehabilitation and resurfacing work to be completed during the term of the contract [as per the hybrid model] is seen as the best means of giving authorities the necessary assurance that their assets will not be consumed.

There also needs to be an increased emphasis on post construction testing and verification that design parameters have been met. This would lead to an increased focus on checking consistency of construction, longer defect liability periods etc. to get better outcomes from the funds being invested.

Service Level Creep

It is important to strike a balance between the cost of service and level of service. It is all too easy to specify "what usually happens" at present as "what must always happen" under a new contract. A review mechanism should thus be incorporated into the contract to allow for adjustments to be made and levels of service tuned to road user expectations and budget constraints.

Measuring Compliance

The use of response times should, where possible, be avoided when road user service and comfort levels are being set. Response time measures require at least two visits to be made to site when performance is being monitored. Limiting the number of faults in a given length of carriageway provides a more cost effective measure and encourages a more proactive approach from the contractor.



Compliance Measures

Three compliance measures have been identified as having particular merit, namely:

- a) The non-compliance bucket similar in a number of respects to the Quality Management Points System but has greater financial implications. In recognition of the fact that we operate in an imperfect world and that it is almost impossible to have a conforming network 100% of the time, a small number of non-conformances can be allowed and can be managed through a "non-compliance bucket' system.
- b) **Liquidated Damages** can be applied if the contractor fails to complete the specified programme of rehabilitation or resurfacing in any year.
- c) Zero Tolerance Regime ensures the contractor constructs the works to the required standard/ quality and the expected residual life is delivered at the end of the contract. No payment without full compliance, partial payments for limited lives have proved very difficult

Contractor and Consultant conflict

The consultancy industry is driven by the delivery model which it operates within. There is no doubt one of the advantages of outsourcing Professional Services is to also transfer some risk (as consultants carry Professional Indemnity Insurance) which then drives a degree of conservatism which probably does not result in value for money outcomes, especially where the Client is also overly risk averse.

Alternative mechanisms need to be considered that would facilitate the development of a risk profile (agreed with the Client) and allow the consultant to put forward solutions with higher (but quantified) risk to deliver significant long term savings to the Client and ultimately the tax payers.

This could be used (for example) to increase the lifecycle of assets, such as pavements and surfacing, with the RCA holding a contingency fund to address any unexpected failures.

Delivery Model Selection

Appendix A includes delivery model selection criteria that can be used for decision support to assisting decision makers in evaluating, rating, and comparing different delivery models based on multiple criteria.

Risk

Sharing of risk is a significant element of the delivery models where clear boundaries are specified and where road agencies clearly appreciate what is reasonable for the contracting entity to take on board. As these current models have been in existence for over 10 years, the contracting industry also now understands the extent of risk transfer that occurs within each of them. Equitable management of risk is a key to the success of performance based contracts in particular. Risk boundaries should be clearly defined and managed through the contracts this can be done using project risk registers.



Culture

Performance based contracting requires a collaborative approach where both the Road Controlling Authority and the contracting organisation feel comfortable providing relevant inputs and encourage innovation. The Road Controlling Authority role becomes much more 'hands off' and focussed on the outcomes being delivered to stakeholders. All contracts should have well defined mechanisms including governance and non-conformance processes to ensure the right culture is developed and sustained. However collaboration is about relationships and relationships are about people.

Duration of the Contract

There should be alignment with asset life cycles or age such as surfacing life and time for contractor to depreciate plant and equipment. Also time to live with the consequences of workmanship and to understand the behaviour of the asset which are being managed. Whilst the term of the commission is considered to be less important for network management and maintenance contracts, it is consider that 8-12 years would be more appropriate duration rather than the 5-7 years. "Ever Green" contracts should also be considered. The NZTA should investigate where these would be appropriate and what should trigger reviews and re-negotiation of prices. For this to occur the contract would need to ensure confidence / transparency over price validity.



Appendix A: Delivery Model Selection

A1: Selection Criteria

Delivery model selection criteria are used for decision support to assisting decision makers in evaluating, rating, and comparing different delivery models based on multiple criteria. The following generic criteria relate to any specific roading network. These criteria are based on the NZTA State Highway Portfolio Strategy 2010².

- a) **Scale:** the overall scale or value of the works completed in maintaining the network.
- b) **Network size and shape:** the number of kilometres of road included within the network area and the accessibility/ remoteness or other geographical influences on the management of the network and the interconnectivity of the network.
- c) **Network complexity:** the complexity of the maintenance requirements within the network, considering for example the extent of urban/rural highways and associated variance in operational requirements such as traffic management, current condition, network data availability, personnel skills base and experience.
- d) **Supplier market conditions:** consideration of the current supplier market conditions, including the number and depth of possible suppliers in the market.
- e) **Level of client involvement:** consideration of the demands on RCAs personnel throughout the contract. This will include an assessment of the level of control required, the experience and capability of available staff.
- f) Flexibility to deal with change: consideration of the potential for level of service changes due to factors such as changing operational needs, changes in funding levels, or changes in the characteristics of traffic volumes and the varying degree to which each of the available delivery options will handle such changes.
- g) **Innovation potential:** the ability to enhance the outcomes sought through supplier innovation. The opportunities to increase value for money through minimising risk, increasing efficiency and increasing the quality of outcomes.
- h) Risk profile: consideration of the overall quantum and nature of risks and opportunities for the activity and who is best placed to manage them – maximising opportunities and minimising the impact of risks.
- i) **Stakeholder involvement and customer requirements:** this recognises the variability of the number and nature of stakeholders and the level of influence they might have on achieving the desired activity outcomes.
- Focus on non-cost areas: the extent to which incentivisation of performance is required in non-cost areas such as environmental, social, sustainability, communications and customer/ public relations.



² NZTA State Highway Portfolio Strategy 2010 - http://www.nzta.govt.nz/resources/state-highway-portfolio-procurement-strategy/

A2: Delivery Model Selection Matrix

As existing maintenance contracts come up for renewal, an analysis should be undertaken by RCA's in conjunction with NZTA to assess the most appropriate delivery model to put in place. This analysis will be based on the attributes associated with maintenance delivery models and the various key network characteristics. The following selection matrix has been developed to assist model selection process.

Selection Criteria	Day Works	Traditional	Hybrid	PSMC/ PBC	Alliance
Scale	<\$1m	<\$15m	<\$15m	>\$15m	>\$15m
Network Size &	<100km	<500km	>500km	>500km	>500km
Shape	Accessible	Accessible	Accessible	Accessible	Accessible
	Simple	Moderate	Moderate	Complex	Complex
Network Complexity	Very Basic Data	Good data available	Good data available	Excellent data available	Good data available
	Rural	Rural/ Urban	Rural/ Urban	Rural/ Urban	Rural/ Urban
Supplier Market Conditions	Excellent	Very Good	Good	Limited Suppliers	Limited Suppliers
Level of Client Involvement	High	Medium	Medium	Low	High
Flexibility to deal with change	High	High	Medium	Low	High
Innovation Potential	Low	Medium	Medium	High	High
Transfer of Client Risk	Low	Medium	Medium	High	High
Stakeholder and customer requirements	Low	Medium	Medium	Medium	High
Focus on Non- Cost Areas	Low	Medium	Medium	Low	High

Table 4: Model Selection Matrix





