

Appendix J: Asset Management Services and AMG Working Arrangements

Road Asset Management Contract (RAMC) – Gen 2

January 2020

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Contents

- 1 Introduction1**
- 1.1 Definition of Terms..... 2
- 1.2 Asset Management Services 2
- 2 The Asset Management Group.....3**
- 2.1 Objectives of the AMG 3
- 2.2 The Role of the AMG 3
- 2.3 Membership of the AMG and Roles and Responsibilities 4
 - 2.3.1 *Principal's Asset Management representative*4
 - 2.3.2 *Contractor's Asset Management representative*5
 - 2.3.3 *Other Members of the Asset Management Group*5
- 2.4 Working Arrangements of the AMG..... 5
- 2.5 Outputs 6
- 2.6 Inputs 7
- 3 Contractor's Tactical Asset Management Plan (CTAMP)7**
- 3.1 Road Infrastructure Asset Classes 8
- 3.2 Asset Management Services 8
- 3.3 Asset Inspections..... 9
 - 3.3.1 *Backlog Inspections*.....9
 - 3.3.2 *Pavements and surfacing*..... 10
 - 3.3.3 *Drainage*..... 10
 - 3.3.4 *Table Drains* 11
 - 3.3.5 *Other Road Infrastructure Assets*..... 11
- Attachment 1: Processes for developing the TAMP, CTAMP the FWP, the AWP and Design Briefs.....1**
- A1.1 Introduction 1
- A1.2 TAMP 1
 - A1.2.1 *Scope*1
- A1.3 Contractor's Tactical Asset Management Plan (CTAMP)..... 2
 - A1.3.1 *Scope of the CTAMP*.....2
 - A1.3.2 *Development of CTAMP*.....3
 - A1.3.3 *Annual Revision of CTAMP*.....4
 - A1.3.4 *Basis and assumptions for the CTAMP*4
- A1.4 Forward Work Program Development Process 7
- A1.5 Annual Work Program Development Process 8
 - A1.5.1 *Draft AWP*.....8
 - A1.5.2 *AWP*9
 - A1.5.3 *Design Briefs*9
 - A1.5.4 *Design Brief Amendments*..... 10
 - A1.5.5 *Design Review*..... 11
- Attachment 2: Summary of initial dTIMS set-up for pavement related assets.....1**
- A2.1 Introduction 1
- A2.2 Summary of available network level data 1
 - A2.2.1 *Scope*1
 - A2.2.2 *200 m dTIMS Analysis Output*.....2

Attachment 3: Project Scope and Design Brief.....1
A3.1 Project Scope..... 1
A3.2 Design Brief 2

1 Introduction

The ISO 550000 definition of Asset Management is “the coordinated activity to realise the value of the asset”.

It is envisaged that the Contractor will deliver Asset Management Services which:

- a) complement the Principal's Asset Management providing holistic strategies for the Road Infrastructure based on the principles of ISO 55000, and
- b) are in line with the Principal's Strategic Asset Management Policy and the District's Tactical Asset Management Plan (TAMP), and
- c) provide information about the Road Infrastructure including:
 - i. Current Performance
 - ii. Residual service life, and
 - iii. Residual safety risk.

In addition, the Contractor will provide:

- a) Advice about the outcomes achievable with various levels of investment
- b) Input into an asset management strategy, in particular the optimal timing and nature of interventions over the asset lifecycle, and
- c) The evidence the Principal will need to demonstrate its exercise of duty of care.

As the network steward, the Contractor will employ comprehensive, robust systems and processes for reviewing, developing and updating asset inventories, asset data collection, analysis, modelling, prioritisation and strategy development, while also considering political and community expectations, existing data, and funding.

An Asset Management Group (AMG) comprising members from the Principal and the Contractor will be established to assist the Principal to assess and monitor the health of the Road Infrastructure and to develop planned work under the Contract on a best for network basis. The AMG will develop the proposed Forward Work Programs (FWP) and Annual Work Programs (AWP) clearly defining the scope of each project proposed for inclusion in the AWP. The AMG will also prepare detailed Project Specific Design Briefs for approved projects.

This Appendix describes the operating arrangements for the AMG and is accompanied by the following attachments:

- a) Attachment 1 – Processes for developing the TAMP, CTAMP, FWP and AWP.
- b) Attachment 2 – Summary of the initial Deighton's Total Infrastructure Management System (dTIMS) set-up for pavement related assets.
- c) Attachment 3 – Project Scope and Design Brief

1.1 Definition of Terms

The terms used in this Appendix are defined in Table 1.1.

Table 1.1 Definition of Terms

Term	Definition
AADT	Average Annual Daily Traffic
AMG	Asset Management Group
AWP	Annual Work Program
CDT	Contract Delivery Team
CI	Condition Indices
CLT	Contract Leadership Team
CTAMP	Contractor's Tactical Asset Management Plan
Draft AWP	Draft Annual Works Program developed by the AMG, for the programmed maintenance works (PMW) and rehabilitation maintenance works (RMW) within the whole of the contract area
Draft FWP	Draft Forward Works Program: A 5 year program of programmed maintenance works (PMW) and rehabilitation maintenance works (RMW) for the whole of the contract area developed by the AMG and updated each year
dTIMS	Deighton's Total Infrastructure Management System
Final AWP	Final Annual Works Program: That portion of the approved Annual Works Program what will be delivered by the Contractor
FWP	Forward Work Program
LOS	Maintenance Levels of Service referred to in Attachment 2 of Appendix B
LRS	Location Referencing System
PCI	Pavement Condition Index
PMW	Programmed Maintenance Work
PRMW	Planned Routine Maintenance Work
RMW	Rehabilitation Maintenance Work
TAMP	Tactical Asset Management Plan – meaning the Principal's District's TAMP
TMR	Transport and Main Roads
TSAM	Transport System Asset Management
TTC	Total Transport Costs
WOLCC	Whole of Life Cycle Cost

1.2 Asset Management Services

The Principal, as the owner of the Road Infrastructure will determine the strategic direction for its Road Infrastructure. The Principal will provide the Contractor with the information currently available and through the AMG, will work closely with the Contractor to ensure the outcomes developed by the Contractor are in line with the Principal's strategic direction.

Requirements for the Asset Management Services to be provided include:

- a) Reviewing the current (Principal's) TAMP, and providing recommendations for developing, updating and implementing the (Principal's) TAMP, in collaboration with the Principal.
- b) Providing input into the ongoing development of the Principal's dTIMS model.
- c) Collection of asset data, analysis, modelling and prioritisation in areas such as:
 - i. Road pavements and surfacing, drainage and road furniture.
 - ii. Condition inspections and monitoring of the road network to identify / verify the condition of the Road Infrastructure, identify and monitor the performance of individual Infrastructure segments.
 - iii. Maintenance backlogging and safety inspections to identify and prioritise Routine and Planned Routine Maintenance Work to meet the Levels of Service.
- d) Developing programmes which integrate Asset Management Work with Planned Routine Maintenance Work to provide 'best for network' solutions and optimise the use of available funds in achieving the prescribed maintenance levels of service.

2 The Asset Management Group

2.1 Objectives of the AMG

The AMG is established with an overall responsibility to deliver 'best for network' solutions optimising the use of the resources available under this Contract.

The overarching objectives for the AMG are to:

- i. Optimise, within the available funding, the performance and sustainability of the assets that comprise the Road Infrastructure in the Contract in a cost effective and efficient manner, and
- ii. Assist the Principal to meet the Contract Objectives.

Adopting 'best practice' principles in Asset Management, and a 'whole of life cycle' approach, the AMG will lead the asset management for all of the Road Infrastructure asset classes included in the Contract. It will develop strategies for making decisions about how best to manage all infrastructure defects, including the Routine and Planned Routine Maintenance Works.

The AMG will assist with with the development, updating and operation of the (Principal's) TAMP. It will also assist the Principal with the development of Element Asset Management Plans which form part of the (Principal's) TAMP, and are based on inspections and the strategies developed from the outputs of the inspections.

2.2 The Role of the AMG

The role of the AMG is to:

- a) Prepare, review and update the Contractor's Tactical Asset Management Plan (CTAMP) detailing how the Contractor will:
 - i. Meet the requirements of the collection of inventory condition and performance
 - ii. Review and revise the initial CTAMP, and
 - iii. Use all available data to develop risk based inspection and monitoring regimes.

- b) Prepare a draft FWP and draft AWP, integrated with proposed Planned Routine Maintenance Work (M3).
- c) Prepare Project scopes for projects included in the draft AWP.
- d) Prepare Design briefs for projects on the approved AWP.
- e) Model proposed activities including Routine Maintenance Work, to understand and provide recommendations about the impact that current funding levels will have on the long term sustainability of the network.
- f) Recommend minimum and desirable investment strategies for works which will minimise maintenance effort, and / or improve asset sustainability and performance, taking into consideration that any funds allocated for the works will be from the available budget.
- g) Develop a risk based Routine and Planned Maintenance Program which takes account of the:
 - i. risk to road users, and
 - ii. sustainability of the Road Infrastructure.
- h) Develop and implement a plan of backlogging and other required inspections.
- i) Any other activities as may be required to provide the Asset Management Services.

2.3 Membership of the AMG and Roles and Responsibilities

The membership of the AMG will include:

- a) The Principal's Asset Management representative, and others from the Principal's team who may be required to assist the Principal's Asset Management representative from time to time
- b) The Contractor's Asset Manager, who has the responsibility and authority for decisions on behalf of the Contractor relating to Asset Management Services and Asset Management Works under the Contract
- c) The Contractor's Asset Manager shall be supported by other members from the Contractor's team who have the appropriate qualifications and suitable experience in the relevant disciplines required to carry out the Asset Management Services described in this Appendix J, and further defined and detailed in the Attachments.

2.3.1 Principal's Asset Management representative

The role of the Principal's Asset Management representative is to:

- a) Facilitate communication between the AMG and other groups within the Contract including the Principal's Representative, the CDT, the CLT, and the Principal.
- b) Provide information, advice and guidance to assist the Contractor's Asset Manager and the Contractor's team on the AMG to develop plans (including the CTAMP) and programs which are acceptable to the Principal and in line with its strategic direction.
- c) Carry out the initial assessment of the outputs from the AMG for suitability to achieve the required objectives, including for example, the CTAMP, Draft FWP, Draft AWP, draft plans, strategies, recommendations for treatment types, project scopes and design briefs, and either
 - i) Recommend and facilitate approvals or acceptance from the CLT, the Principal's Representative and / or the Principal, as applicable, or

- ii) Direct and provide advice with regard to revisions and amendments where required.
- d) Facilitate amendments to the (Principal's) TAMP based on the CTAMP.

While the Principal's Asset Management representative will provide advice and assistance to the Contractor's Asset Manager and the AMG, the Principal's Asset Management representative is not responsible for the delivery of the Asset Management Services required under the Contract.

2.3.2 Contractor's Asset Management representative

The Contractor's Asset Management Representative is responsible for the delivery of the Asset Management Services required under the Contract, and all other works and outputs required of the AMG.

The role of the Contractor's Asset Manager is to:

- a) Develop a close, cooperative working relationship with the Principal's Asset Management representative to assist in understanding the Principal's strategic direction and to agree and facilitate the work required under the Contract to fulfil the Principal's Objectives.
- b) Oversee the work of the Contractor's team on the AMG and directly supervise its members in undertaking the work required under the Contract.
- c) Present the required outputs to the Principal's Asset Management representative for information, discussion, approval, acceptance or direction as to suitability, as applicable.
- d) Prepare a monthly progress report for the Principal's Representative outlining how the AMG are meeting the Contract Objectives and delivering the Asset Management Services required, including developing best for network asset management plans which meet the maintenance levels of service and which are based on the funding available, recognising the functional, social, community and economic importance of the various parts of the network as agreed between the parties.

2.3.3 Other Members of the Asset Management Group

The other members of the AMG will be provided from within the Contractor's team.

The Contractor shall provide sufficient personnel who have the appropriate qualifications and suitable experience in the relevant disciplines to ensure the AMG has both the capability and the capacity to carry out tasks required to fulfil the Asset Management Services described in this Appendix J, and further defined and detailed in Attachment 1.

2.4 Working Arrangements of the AMG

The AMG will operate in a cooperative and collaborative working environment, with advice and oversight from the Principal's Asset Management Representative. The AMG will adopt the Principal's core values and embrace the Relationship and Stewardship Principles set out in Clause 2 of the General Conditions.

The AMG shall understand the Principal's internal timing requirements, and shall program and deliver its work to ensure these timeframes can be met.

The Contractor's Asset Manager, with input from relevant AMG members, shall take lead responsibility for providing input into the (Principal's) TAMP and shall directly manage the tasks and activities required to develop, submit, update and review the CTAMP, the Draft FWP, and the Draft AWP.

The CTAMP and the draft FWP must draw on whole of life cycle based analysis in accordance with established procedures and which optimise the use of available funds.

The Draft AWP must be consistent with the objectives of the CTAMP and the draft FWP and must be developed within the Principal's budgeted allocation for Projects or other approved budget limits.

For the purpose of the FWP development, dTIMS will be utilised as a tool for the evaluation of the maintenance and rehabilitation needs based on a configuration supplied by the Principal, an outline of which is provided in Attachment 2. Access to dTIMS Workflow will be provided free of charge through a web portal service.

The processes for developing the CTAMP, the Draft FWP and the Draft AWP from the program development stage through the approvals and project scoping to finalisation of the AWP and preparation design briefs are set out in Attachment 1.

During the first year of the Contract, the AMG must develop a whole of life cycle management regime for all of the road infrastructure assets under this Contract including the non-pavement assets. It is anticipated that the analysis processes will be informed by network level asset data provided by the Principal, and data acquired from asset inspections conducted by the Contractor in accordance with Clause 3.3 Asset Inspections of this Appendix J.

2.5 Outputs

The required outputs from the AMG include:

- a) Contractor's Tactical Asset Management Plan (CTAMP).
- b) Recommendations for a prioritised draft Asset Management Works project list.
- c) Recommendations for a draft annual works program for Asset Management Work (Draft AWP) for the network including:
 - i. A Project Scope for each project based on treatment type and location, using the template provided in Attachment 3
 - ii. A concept level cost estimate for each project which includes an allowance for identified risks and is indicative of likely total final cost
 - iii. Proposed timing for delivery of designs and construction for works proposed to be delivered by the Contractor.
- d) Recommendations for a draft rolling, five year, Forward Works Program (Draft FWP) for incorporation into the (Principal's) TAMP.
- e) Design Briefs using the template provide in Attachment 3, for each of the approved projects in the AWP.
- f) Assessments of completed final designs for compliance with approved Project Scopes and Design Briefs.
- g) A risk based inspection regime for all of the road infrastructure assets included in the Contract, and
- h) A risk based Routine and Planned Maintenance Program which ensures compliance with the Maintenance Levels of Service (LOS) and takes account of the:
 - i. risk to road users

- ii. sustainability of the Road Infrastructure and
- iii. other relevant considerations such as community or environmental considerations.

The AMG is also required to recommend the specific non-binding targets for the Shadow Performance Framework outlined in Appendix K, and report against the targets annually, taking into account funding allocations and the condition of the network.

2.6 Inputs

The Principal will make information available to the Contractor to assist in providing the Asset Management Services. This information includes:

- a) Handover information from the previous contract
- b) The Principal's asset inventory ARMIS
- c) The current TAMP
- d) The Principal's forward capital works program
- e) The Principal's link strategy and element strategy
- f) The Principal's annual network condition data collection
- g) The Principal's budget allocation for Asset Management Works
- h) The previous Contractor's defect identification and defect backlog records
- i) The previous Contractor's asset performance inspections records
- j) Other asset inventory collected in the performance of the Contract, and
- k) The previous Contractor's routine maintenance works records and maintenance management plans.

This information shall be provided to the Contractor, subject to Clause 4.4 of the General Conditions. The Principal does not guarantee the accuracy of the information provided. The Contractor should ensure it has systems in place to check the accuracy of any information it relies on to carry out any of the work required under this Contract.

It is envisaged that the Contractor will identify and source any other information it requires to carry out the Asset Management Services required under this Contract.

3 Contractor's Tactical Asset Management Plan (CTAMP)

The Contractor, with assistance and advice from the AMG, must develop and implement its own tactical plan (Contractor's Tactical Asset Management Plan) for the Road Infrastructure in accordance with Clause 15 of the General Conditions, Appendix D and Section A1.3 of Attachment 1 of Appendix J.

The CTAMP will provide details of how the Contractor will manage the Asset Management Services required under the Contract and how it will manage the Asset Management Work, the Routine Maintenance Work and the Planned Routine Maintenance Work being delivered by the Contractor. It will also propose works to be considered for in the Draft FWP and Draft AWP, suitable for inclusion in the (Principal's) TAMP.

3.1 Road Infrastructure Asset Classes

Unless otherwise directed by the Principal's Representative, The Contractor's Tactical Asset Management Plan will include the following Road Infrastructure asset classes: including:

- a) Road Surface
- b) Road Pavement, and
- c) Drainage structures including minor culverts, catch drains and table drains.

Other asset classes may be included by agreement during the Term of the contract.

The CTAMP will as a minimum, provide details of how the Contractor's will:

- i. Develop an inventory and / or validate the existing inventory for each asset class
- ii. Prepare a backlog of defects in accordance with the LOS
- iii. Assess the condition, performance and anticipated future deterioration of the asset
- iv. Develop inspection and monitoring regimes using a risk management approach
- v. Develop strategies in relation to Asset Management Work, Routine Maintenance Work and Planned Routine Maintenance Work, to manage the assets in each class
- vi. Develop a recommended list of works for each asset for the Principal's approval, and
- vii. Develop a program for the works which the Principal has approved for delivery by the Contractor, in collaboration with the Principal and the Contract Delivery Team.

The CTAMP must contain sufficient detail to provide the Principal with confidence that robust stewardship principles in managing the network have been adopted, and that all information, including the Contractor's own visual inspections of the network, political and community expectations and funding have been considered in its development.

3.2 Asset Management Services

In providing the Asset Management Services, the Contractor will:

- a) Formulate alternative maintenance strategies and project specific options which aim to make best use of available (non-lump sum) funding for Planned Routine Maintenance Work (PRMW), Programmed Maintenance Work (PMW) and Rehabilitation Maintenance Work (RMW), in order to optimise sustainability of the assets which comprise the Road Infrastructure, taking due account of data availability and the need to manage risks in the interests of users of the Road Infrastructure.
- b) Utilise best practice in the development of options, treatment selection, and coordinate, assess and recommend the application of alternative innovative solutions, including through desk studies, and laboratory and field performance trials to help inform future practice.
- c) Develop a five-year Draft Forward Works Program (Draft FWP) and a Draft Annual Works Program (Draft AWP) with formulated project scopes and cost estimates, and provide input into the TAMP.
- d) Model and assess the impact of varying Routine Maintenance work and Asset Management work on the condition of the network.

- e) Undertake asset performance inspections. A visual network inspection to assess condition information, performance and deterioration is to be performed biannually with the output of the dTIMS model validated annually.
- f) Develop Design briefs for all approved projects in accordance with Clause 15.2 of the General Conditions, including obtaining necessary input from representatives of the Contractor and Principal to estimate the Project Contract Sum.
- g) Verify inventory and develop inventory registers for classes of inventory detailed in Section 3.1 of this Appendix J.
- h) Develop and implement Planned Routine Maintenance Recommendations in accordance with Clauses 18.2 and 18.3 of the General Conditions, and
- i) Within 3 months, establish and operate a methodology which monitors the achievement of the binding and nonbinding asset performance targets set out in Appendix B (Compensation and Performance Framework) and in Appendix K (Asset Management Strategy and Related Shadow Performance Framework) aimed at the continuous improvement of the Principal's asset management practice.

3.3 Asset Inspections

In its CTAMP, the Contractor must develop a risk based asset inspection program based on the available data for the network, its own initial inspections and in consultation with the Principal. The inspections are in addition to inspections required to identify safety and hazard defects and meet the LOS.

The findings of the inspections are to be used in developing the management strategies for each of the assets in the Contractor's CTAMP, from which recommendations for treatments and forward works optimising the use of the available funds are to be developed.

The CTAMP must set out a risk based plan for carrying out this first and all future inspections, including justification for how the frequency of inspections has been determined, who will carry out the inspections, and how the plan will be assessed and amended to meet the Levels of Service.

The Contractor shall use the information collected in inspections and other available information, together with its understanding of asset performance and deterioration, political and community expectations, to recommend a prioritised program of short and longer term works to optimise the life and performance of the assets, which fits within the allocated funding.

Inspections which must be carried out, include as a minimum.

3.3.1 Backlog Inspections

Within six months of the Date of Award, and every six months following, the Contractor shall complete and present to the Principal a complete and verified backlog of the Network Infrastructure, in a format accepted by the Principal. This is to be achieved by reviewing the existing backlog, and undertaking a detailed inspection of all of the infrastructure, including a night time inspection of reflective components, where applicable.

3.3.2 Pavements and surfacing

Within six months of the Date of Award, the Contractor shall undertake inspections to validate /develop an inventory of pavement/surfaces in the Region /District and using available data and visual inspections validate or otherwise the existing AWP and FWP. During these inspections the Contractor will identify the performance of segments of the road pavement/surface (the length of segments is usually based on surface type/age), identify future resurfacing needs and record these either in a Contractor provided Asset Management System, a Principal provided database or some other agreed location. These inspections may be undertaken jointly with the Principal's Representative or separately to suit availability. In the case of the inspections being undertaken independently the findings will be reconciled at the AMG.

3.3.3 Drainage

Within six months of the Date of Award, the Contractor shall undertake an initial inspection of all such culverts and drainage structures which are classified as Minor Culverts in the Routine Maintenance Specification in Appendix M.

The Contractor shall validate the existing culvert/drainage structures inventory (where one exists), adding/removing culverts/drainage structures where appropriate. Where an inventory does not exist the Contractor shall develop the inventory and record the data in a location and format agreed with the Principal.

The Contractor shall use this information and other available information to establish a risk based inspection program of drainage inspections for these structures.

The Contractor shall maintain an inventory of all drainage structures on its network.

Details to be included:

- a) Chainage
- b) Structure type and description (for example 7/1200 x 600 RCBC)
- c) Length
- d) Condition rating, defects and comments on the main structure and the headwall, apron and toe wall on each side
- e) Date inspected and name of inspector
- f) Works required and estimated repair costs
- g) Works carried out, and
- h) date works completed.

The Principal shall provide the Contractor with a copy of a proforma ("Drainage Structure Inspection Report") for the Contractor to use in undertaking inspections.

The AMG shall develop a system to record the findings of these inspections, anticipated long term requirements and short term requirements of the drainage structures.

3.3.4 Table Drains

Within 12 months of the Date of Award, the Contractor will undertake inspections and develop an inventory including the condition of the table drains using the following rating system:

1. Table drain required and well formed
2. Table drain required, not well formed but not impacting the pavement
3. Table drain required, not well formed and impacting pavement
4. Table drain requires immediate attention.

These classifications are specifically about the drainage formation, and do not relate to siltation or other defects which would be rectified in the course of Routine Maintenance Work.

The inventory and assessment is to be updated at least every 2.5 years

3.3.5 Other Road Infrastructure Assets

Other road Infrastructure assets not already mentioned may be required to be included in the inspection regime by agreement.

Attachment 1: Processes for developing the TAMP, CTAMP the FWP, the AWP and Design Briefs

A1.1 Introduction

This attachment describes the scope and processes for the development of five of the outputs the AMG are required to deliver:

- a) Input to the TAMP, which comprises an overall plan detailing how the Road Infrastructure will be managed by the Principal into the future.
- b) Development of the CTAMP which is the Contractor's Tactical Asset Management Plan detailing how the Contractor will deliver the Asset Management Services. The CTAMP is to address the management of the Road Infrastructure identified in the body of Appendix J with sufficient detail to enable the Principal to incorporate the strategies into Part 5 District Element Strategy of the TAMP.
- c) The Draft FWP which comprises a rolling five year program for Asset Management Work for the Road Infrastructure in the area covered by the Contract. It will also identify those projects which the Contractor proposes to deliver the design and / or the construction in the first two years of the program.
- d) The Draft AWP, which comprises the annual program for Asset Management Work for the Road Infrastructure in the area covered by the Contract, and identifies that part of the draft AWP which the Contractor proposes to deliver.
- e) Design Briefs provide guidance to the designers, explaining the logic behind the selected treatment, providing information about the site and level of testing that is required, and also identify specific risks associated with the project. The AMG is required to develop a design brief for each of the projects in the (approved) AWP.

A1.2 TAMP

A1.2.1 Scope

The TAMP is an asset management plan developed by the Principal to meet the requirements of the Principal's TSAM branch.

The TAMP considers the District network in the context of the state-wide network, the element objectives and the state of the network. It covers a number of elements including but not limited to those covered by the Contract and contains strategies which address the life of the assets well beyond the life of the Contract.

A key aspect of the TAMP is the opportunity for the District to provide structured feedback to TSAM on the issues faced by the district, the relevance or adequacy of the funding and the ability to sustain the network.

While, the CTAMP must comply with the strategies of the TAMP unless otherwise agreed by the Principal, the ongoing development of the TAMP also relies on input from the Contractor through the CTAMP and the AMG.

The AMG will consider and assist with the development of the the entire TAMP in general terms, however its major focus will be on **Section 5 District Element Strategy** which contains "Network Link Strategy" and "Element Strategies".

The updating and finalisation of the TAMP and its subsequent approval is the responsibility of the Principal.

It is envisaged that where there is agreement that the CTAMP will vary from the TAMP, the TAMP will be modified at the next annual revision.

A1.3 Contractor's Tactical Asset Management Plan (CTAMP)

A1.3.1 Scope of the CTAMP

The CTAMP is the Contractor's Tactical Asset Management Plan.

The CTAMP will detail how the Contractor will undertake their asset management roles in accordance with:

- a) this Appendix J
- b) Clauses 14 and 15 of the General Conditions of Contract, and
- c) The TAMP, and in particular Section 5 District Element Strategy of the TAMP.

The CTAMP is to include:

- a) Routine Maintenance Work
- b) Planned Routine Maintenance Work, and
- c) Asset Management Work.

The CTAMP shall document how the Contractor will:

- a) Collect, store, analyse and use the maintenance backlog and other inspection data to develop a Routine and Planned Maintenance Program ensuring that this program adequately addresses all of the assets in the Contract taking account of risk, asset condition, asset deterioration, road tier funding levels and any other factors which the Contractor or the Principal, consider appropriate.
- b) Identify critical funding shortfalls if any, and model the impact of this shortfall.
- c) Develop a forward list of works which integrates Routine Maintenance work, Planned Routine Maintenance Work and Asset Management Work.

The CTAMP shall recommend Routine Maintenance Works, Planned Routine Maintenance Works, and Asset Management Works produced through implementation of the processes described in the CTAMP, or any revisions of those processes. The recommended Asset Management Works will form the basis of the Draft FWP and Draft AWP.

The CTAMP shall include the program to deliver the designs for the Projects agreed to be completed during the following year.

The CTAMP shall also include the program for the construction of the Projects agreed to be constructed during the second year following.

The CTAMP is to take account of:

- a) Asset information
- b) Levels of Service
- c) Risk management

- d) Life-cycle (optimised) decision making
- e) Financial forecasts
- f) Planning assumptions
- g) Other factors considered appropriate by the Contractor or the Principal, and
- h) outline improvement programs.

The CTAMP will also include the recommended specific non-binding targets for the Shadow Performance Framework, and the annual report as outlined in Appendix K.

The CTAMP will exist as a living document which will be amended and updated as required to reflect learnings and 'new' of changed information. It will also be reviewed and updated to meet the relevant requirements of the Contract.

A1.3.2 Development of CTAMP

The initial Contractor's Tactical Asset Management Plan is to be developed in two stages. The CTAMP (Stage 1) will form part of the Contract Plan, and is to be prepared by the Contractor and submitted to the Principal's Representative in accordance with Clause 13.1 of the General Conditions.

In developing Stage 2 of the CTAMP, the AMG will review and update the Stage 1 CTAMP incorporating both parts to form a complete, comprehensive, single document.

1. CTAMP - Stage One

The CTAMP Stage 1 will detail how the Contractor proposes to:

- a) Undertake the inspections, condition assessment and data analysis required to enable the Routine and Planned Routine Maintenance Activities and the Asset Management Works to be planned and prioritised to:
 - i. maintain the Road Infrastructure to a safe and acceptable level of service
 - ii. to preserve the Road Infrastructure, and
 - iii. optimise the use of the funds available by identifying treatment solutions and scopes which are appropriate and fit for purpose, taking account of the pavement condition and age, as well as other competing funding priorities.
- b) Develop risk based asset management plans for the Road Infrastructure asset classes in Clause 3.1 of this Appendix J.
- c) Assess the CTAMP, and revise and update the CTAMP to reflect the outcomes of the assessment.

This plan will form the basis of the inspections and development of asset management strategies which will be undertaken under the guidance of the AMG.

2. CTAMP - Stage Two

Upon completion of the required initial inspections and using all available data, the Contractor, with guidance from the AMG and Principal's Asset Management representative will complete, maintain and update the Contractor's Tactical Asset Management Plan as required in Clause 14.5 of the General Conditions, so that it:

- a) Contains a risk based inspection and monitoring regimes plan (including backlogging and network inventory condition and performance inspections) which meets the requirements of the Contract.
- b) Includes a management plan for the Road Infrastructure inspected as listed above, for approval by the Principal.
- c) Recommends minimum and desirable investment strategies which optimise the use of the funds available for the works.
- d) Contains sufficient detail to provide confidence that all road related assets will be inspected and effectively maintained during the currency of the Contract.
- e) Develops processes to identify upgrading and replacement needs (that is Programmed Maintenance or Rehabilitation Works) for the non-pavement assets, and for providing recommendations including recommending programs for the Principal's consideration.
- f) Using whole of life cycle cost (WOLCC) analysis, provides recommendations for works required to be carried out as planned routine maintenance as well as programmed maintenance and rehabilitation works to be considered for inclusion by the AMG in the Draft FWP and Draft AWP for pavement assets.
- g) Using whole of life cycle cost (WOLCC) analysis, provides recommendations for works required to preserve and maintain non-pavement assets in a safe and serviceable condition.
- h) Contains processes for the review and revisions of the CTAMP.

A1.3.3 Annual Revision of CTAMP

The CTAMP is a living document subject to ongoing development.

It is to be formally reviewed and revised annually to reflect the relevant inspections and other available data. The revised CTAMP is to be submitted to the Principal's Representative for assessment of its suitability by 1 August of each year.

A1.3.4 Basis and assumptions for the CTAMP

a) Asset information

The asset information refers to the information listed in Clause 2.6 of this Appendix J.

Network level asset information currently held by the Principal will be provided as a suite of database tables made accessible through MS Access or Chartview and used as input to dTIMS as described in Attachment 2. This will provide a single source of data supplied by the Principal which will be updated by the Principal on an annual basis.

The data is tied to the Principal's Location Referencing System (LRS), and this system shall be applied in all cases for the supply of data by the Principal and the Contractor.

The Principal and the Contractor are to work together to ensure information is kept up to date and shared appropriately. Any changes to the Principal or Contractor supplied asset information is to be notified to the other party in a timely manner, with all databases subject to version control. The relevant version of the applicable database or information must be referenced in any data supplied by and/or used in any analysis by the Principal or Contractor.

Information provided under or in connection with this Section A 3.4(a) constitutes Asset Information to which Clause 4.4 of the General Conditions applies.

b) Maintenance Levels of service

The Maintenance Levels of Service (LOS) which are applicable to the Contract are contained in Appendix B.

The Contract is also subject to a Shadow Performance Framework (Appendix K) which covers measures outside the Compensation and Performance Framework, including those related to the long term performance of the Road Infrastructure.

Whilst the Shadow Performance Framework includes non-binding targets under the Contract, they form a key part of the Contract requirements and the development of the third generation contracts which will follow this Contract, and are the targets which the AMG should utilise for planning purposes.

c) Risk management

The following risks must be addressed in the CTAMP:

- i. The risks to road users from inadequately maintained infrastructure
- ii. The risks to the asset by failure to prioritise preservation strategies
- iii. The risks to the budget from inappropriate intervention strategies (such as too late too early, too little, too much)
- iv. The risks to delivery of a robust program from variations in funding, and
- v. The risks stemming from works on the network being delivered by others.

As part of the assessment of risks associated with budget allocation and distribution, the AMG will assess the effect on network performance of possible increased allocations resulting from the use of Planned Routine Maintenance allocations (Schedules M3A and M3B) or their transfer to fund Planned Maintenance Works and Rehabilitation Maintenance Works projects in accordance with Clause 18.2 and Clause 18.3 of the General Conditions, and the effect of a possible reduced allocation which may occur where it is judged beneficial by the Principal to increase allocations to non-pavement assets.

d) Life-cycle (optimised) decision making

The CTAMP must be developed using whole of life cycle cost (WOLCC) analysis, based on the procedures in Attachment 2 of this Appendix J, to identify a rolling package of Projects to be prioritised for construction during the Contract Term and in future years. It must also consider and recommend the best use of the Network Schedule Total (Planned Routine Maintenance), that is the funding attached to Planned Routine Maintenance Works.

Within five months of the Handover Date (or as otherwise agreed by the AMG) the AMG must develop the basis for undertaking the WOLCC analysis used in dTIMS.

e) Program Funding Forecasts

The forecast program funding allocations for the duration of the Term for non-Lump sum schedules available for works by the Contractor must be reviewed and documented by the AMG at six-monthly intervals from the Handover Date based on information supplied by the Principal.

The review by the AMG must account for actual expenditure and projected outturn costs and include an estimate of the balance available for future PRMW, PMW and RMW. This will be used as an input to the WOLCC exercise, and to inform the preparation and updating of the draft FWP and the Draft AWP.

The Principal will supply estimates for beyond the end of the Term for input to the provisions within the TAMP relating to optimising funding for work beyond the end of the Term.

f) Updates to Planning Data

Prior to initiating any analysis and program development, the AMG will assemble and update all relevant data in relation to the Road Infrastructure. The Principal will provide information in relation to committed projects and any other work planned by the Principal, including work funded from other sources. The AMG must consider and document the following planning data in the development of the CTAMP:

- i. General network and planning information:
 - a) List of roads (by type, length, start and end points, etc.), and by network (Blue or Green)
 - b) List of Projects
 - c) Existing and committed road improvement plans
 - d) Traffic category by road
 - e) The Maintenance Levels of Service and any Intervention Criteria for PWM and RMW
 - f) Maintenance norms and intervention criteria for non-pavement related assets, and
 - g) The Routine Maintenance Schedule of Rates.
- ii. Other general network data and assumptions:
 - a) Full network inventory and condition information, updated based on most recent surveys,
 - b) Maintenance activity data,
 - c) Traffic volumes, composition and growth rates,
 - d) Speed zones,
 - e) Vehicle operating cost updates, and
 - f) Road Infrastructure and works effects model updates.

g) Outline improvement programs

The AMG must review the TAMP and associated process to develop the CTAMP, draft FWP and draft AWP at 6 monthly intervals, and where applicable, make improvements and recommendations to enhance asset planning during the Term.

In reviewing the TAMP and making important recommendations, the AMG must give priority to the following:

- i. areas where Asset Information and decision processes are weak or non-existent,
- ii. areas where cost-reductions could be achieved without sacrificing asset performance,
- iii. areas where significant performance improvements could be gained by optimising the use of available funding resources between categories of work under the Contract, and
- iv. combinations of the above.

Improvement proposals developed by the AMG must consider and justify the method and responsibilities for delivering the improvement, and provide an estimate of the resources and cost of the proposed work or activities to implement the improvement.

Improvement proposals can also embrace specific innovations in asset planning and management, and physical trials of alternative road maintenance products. This is particularly encouraged early in the Term to maximise the duration of any performance monitoring.

A1.4 Forward Work Program Development Process

The draft FWP comprises a rolling five year program of Asset Management Works for Road Infrastructure which shall be prepared by the AMG, and following endorsement by the Principal's Representative, shall be forwarded by the AMG to the CLT for approval in accordance with Clause 15.1 of the General Conditions.

Upon approval by the CLT or the Principal as applicable, the Draft FWP becomes known as the Forward Works Program (FWP).

The AMG must develop the draft FWP using WOLCC principles (including output from dTIMS), network condition data and all other available data. The process begins with the supply of data and ends with the identification and approval of Projects for design.

The development of an approved AWP and underlying FWP involves:

- a) Preparing of a draft rolling, five-year Forward Works Program (FWP) which will include committed Projects and potential Projects with the aim of delivering best for network outcomes and achieving the targets set in the Shadow Performance Framework.
- b) Using WOLCC principles and utilising the network inspections, output from the dTIMS model and all other available data.
- c) Undertaking a 20 year analysis using WOLCC principles which take into account the TAMP, CTAMP and Shadow Performance Framework defined in Appendix K.

- d) Developing a program for works 2 years in advance of the targeted financial year for implementation, which will form the basis of the Draft AWP. This program is to comprise a set of candidate sections of roads selected under budget constrained conditions amounting to a value of the total annual allocation for Asset Management Work (PMW and RMW) together with a contingency amount and taking account of anticipated future funding. This total value will be advised and amended or adjusted annually by the Principal.
- e) Utilisation of observations from the network inspections, dTIMS and all other available pavement condition and history data, employed to develop an indicative work program which will be subject to a field validation process by the Contractor. This field validation process includes consideration not only of projects identified by dTIMS but also projects which have not been identified by dTIMS but which otherwise appear to warrant treatment.

Agreed Planned Routine Maintenance works (PRMW) identified by the AMG are not required to be used to develop the draft FWP and draft AWP due to timing constraints, but are to be integrated with the draft FWP when identifying projects which are to be delivered by the Contractor.

In developing the draft FWP the AMG must consider:

- i) The case for committing the Network Schedule Total for Planned Routine Maintenance Works, as contemplated by Clause 18 of the General Conditions to specific roads and locations,
- ii) Recommending revising the allocations for Asset Management Work
- iii) The possible referral of additional projects for execution in accordance with Clause 18 of the General Conditions, and
- iv) The funding needs, and the benefits of investing in non-pavement assets, including maintenance and/or provision of improved shoulders, drainage assets, or others.

As each year's draft FWP is developed it will be used as input as a committed works program to develop future year's programs.

In using dTIMs the Contractor recognises that it is a model which is dependent on the quality of:

- a) Input data including condition data
- b) Deterioration models
- c) Resets used once a treatment is applied, and
- d) Treatments and triggers used.

and is considered to be under ongoing development. The Contractor shall interpret the output in recognition of this and shall provide feedback on incrementally improving the model.

A1.5 Annual Work Program Development Process

A1.5.1 Draft AWP

From the draft FWP, the Contractor shall produce of a draft AWP.

The draft AWP will consist of:

- a) A program of Programmed Maintenance Works (PMW) and Rehabilitation Maintenance Works (RMW) proposed to be delivered in the program Year, which should comprise the first year of the FWP, and additional projects equivalent to approximately 50% of the annual allocated budget, or other amount as advised by the Principal.

- b) A Project Scope for each of the projects in the Draft AWP, developed using the template provided, and approved through the process described in Section 3.1 of Attachment 3 of this Appendix J.
- c) A concept level cost estimate for each of the projects in the Draft AWP which includes and estimate for both the design and construction cost, with an allowance for identified risks and is indicative of likely total final cost.
- d) Recommendations for works to be designed and / or constructed by the Contractor taking account of proposed Planned Maintenance Works which where possible shall be integrated with the program.
- e) Programs nominating time-frames for the delivery of:
 - i. The whole package described in Clause A1.5.1 a) of this Attachment A of Appendix J
 - ii. The Works proposed to be delivered by the Contractor
 - iii. The Works that will be delivered by the Principal
 - iv. The Designs proposed to be delivered by the Contractor, and
 - v. The Designs that will be delivered by the Principal.

The programs must identify major milestones, early and late start and finish dates for and must allow reasonable times for review and approval processes.

The AMG shall also identify projects for which designs have already been undertaken as well as additional projects which will be delivered in future years but for which designs are to be prepared.

A1.5.2 AWP

The proposed program of works (Draft AWP) shall be submitted by the AMG, following endorsement by the Principal's Representative, to the CLT for approval in accordance with Clause 5.1A of the General Conditions.

Upon approval by the CLT or the Principal as applicable, the Draft AWP becomes known as the Annual Works Program (AWP). The Contractor's AWP is that part of the AWP which the CLT or the Principal has approved to be delivered by the Contractor.

A1.5.3 Design Briefs

Design Briefs shall be prepared by the AMG (with assistance and oversight from the Principal's Asset Management representative(s)) in accordance with Clause 15.2 of the General Conditions, as follows:

- a) Design Briefs shall be prepared for all projects in the (approved) AWP for which designs have not already been prepared, using the template provided in Section A3.2 or Attachment 3, or another format as may be agreed from time to time for particular projects.
- b) The Design Brief must provide guidance regarding the level of investigation and design needed, particularly where resurfacing is recommended.
- c) When developing the Design Brief the AMG must also review and amend where required, the project cost estimate developed with the Project Scope as part of the Draft AWP. The amended cost estimate, with an explanation for any changes, must be included with the Design Brief.

- d) The Design Briefs must be developed in a timely manner and meet the time-frames set out in approved AWP.

The Principal's Asset Management representative shall forward completed Design Briefs to the Principal's Representative, with a recommendation that it be accepted. The Principal's Representative may accept the Design Brief or return to the AMG for revision, correction or amendment with reasons in accordance with Clause 15.2 of the General Conditions.

Once accepted, the Principal's Representative shall:

- forward the Design Briefs for those projects to be designed by the Contractor to the Contractor's Representative and request a fee proposal in accordance with Clause 15.3 of the General conditions, and
- arrange for delivery of the designs for the other projects in the Approved AWP.

Note that some projects designed by the Principal, may be referred to the contractor for delivery under Clause 18 of the General Conditions.

A1.5.4 Design Brief Amendments

Final designs, and other documentation required for Construction, including Schedules, Technical Specifications and / or Annexures to Technical Specifications, may be prepared by the Contractor's designers, where approved by the CLT or the Principal as applicable, or for other works in the AWP, by designers engaged directly by the Principal.

Designs carried out by the Contractor must be carried out in accordance with Clause 15.3 and Clause 16 of the General Conditions.

All designs, (including those delivered by the Principal), must adhere strictly to and comply with the accepted Design Brief.

An amendment to the design brief must be sought if it is not possible, practicable or feasible to comply with the accepted Design Brief. An amendment may also be sought if the designer considers it necessary or desirable to deviate from the accepted Design Brief.

Proposed amendments to the Design Brief should initially be discussed between the designers, and others as applicable, including for example, the Principal's nominated design manager, the Principal's Asset Management representative, the Contractor's Asset Manager and the relevant technical experts on the AMG, the Principal's Representative and the Contractor's Representative to reach an agreement or practical solution.

Proposed amendments to the Design Brief must be forwarded to the Principal's Asset Management representative, who will refer them to the AMG for consideration.

The AMG shall assess the proposed amendment and make a recommendation, assist with or make amendments to the Design Brief as applicable.

The AMG shall forward the amended Design Brief to the Principal's Representative for acceptance or otherwise, following the same process as for the Design Brief, and in accordance with Clause 15.2A of the General Conditions.

The AMG does not have a role in managing the delivery of the Final Designs or documentation, except if an amendment to the Design Brief is proposed or becomes necessary.

A1.5.5 Design Review

The Principal's representative shall request the AMG to review the completed final design and verify its compliance with the Project Scope and Design Brief (or accepted amendments). The review of the final design shall be a **Hold Point**.

For some designs, at the sole discretion of the Principal's Representative, the AMG may also be asked to review the design at 50% completion.

The AMG, through the Principal's Asset Management representative, shall advise the Principal's representative of the compliance or otherwise of the final design. The Principal's representative shall:

- i. Arrange for complaint designs to be approved for construction, or
- ii. Return the noncompliant Final Designs to the Designer, who will:
 - Correct or amend the designs, or
 - Propose an amendment to the Design Brief so that the Final Design becomes compliant, and can be approved for construction.

The Principal's Representative at their sole discretion, may also seek technical advice from relevant parties in the Principal's or the Contractor's team about aspects of the final design, such as constructability, traffic impacts, environmental impacts, community issues in order to be satisfied that the final design is 'fit for construction'. The Principal's Representative may, as a result of such a review, direct the designer to address the concerns raised in the review and amend the final design including amending the Design Brief if required.

The Principal's Representative shall arrange for those final designs and associated documentation which are compliant with the Design Brief (or accepted amendments) and the Project Scope, have been certified in accordance with Clause 16.1C of the General Conditions and are considered 'fit for construction' to be approved for construction.

Once approved for construction, the Principal's representative shall:

- i. Refer the Final Designs, for those projects to be delivered by the Contractor, to the Contractor's Representative who shall prepare and submit a Project Proposals in accordance with Clause 17.1 of the General Conditions; and
- ii. Arrange delivery of those projects being delivered by the Principal.

Implementation of the process set out in Clauses 15 to 17 of the General Conditions must be consistent with Principal's On-Q Project Management Framework.

Key elements of this system shall be adopted by the AMG to ensure that principles of good planning, effective scoping and resourcing, realistic expectations of outcomes and strong management support are applied to the extent necessary for the size and complexity of Projects.

Attachment 2: Summary of initial dTIMS set-up for pavement related assets

A2.1 Introduction

An asset management appraisal of pavement assets in the Southeast Queensland region has been carried out to assist in defining a realistic base-line in terms of achievable levels of services and sustainable funding. The main products of this project were:

- a) a comprehensive database on pavement assets drawing on Transport and Main Roads' (TMR) ARMIS and other data sources,
- b) a tool (i.e. the dTIMS setup) that can be used for further investigation and later for the management of the critical components of the maintenance contract, and
- c) a network level cost – performance evaluation of the maintenance needs.

The available data and set up, and example condition charts and the output of the tool, are described below.

The DTIMS model has been developed during the first RAMC contract. The development of the model is ongoing and that contractor feedback as to the accuracy and the appropriateness of the model is an important part of the Contract. This will not necessarily require a knowledge of dTIMS as the Principal is moving towards a setup which can be used for:

- a) tactical purposes to optimise the use of funds on the network, and
- b) strategic purposes which can be used to identify funding needs.

and therefore there is little room for changes to the overall setup.

While the work on dTIMS is ongoing it is envisaged that access to the model will only be available through the Workflow module. At this point in time the extent to which the contractor will be able to change the setup is yet to be determined however it is envisaged that they will be able to change:

- i. construction rates
- ii. committed works
- iii. condition indices, and
- iv. triggers.

The information provided by the Principal under or in connection with this Attachment 2 is provided as an example of the information relevant to the development of the CTAMP, FWP and AWP. That information constitutes Asset Information to which Clause 4.4 of the General Conditions applies.

The Tables and Figures referred to in this Attachment 2 are included at the end of the document.

A2.2 Summary of available network level data

A2.2.1 Scope

The following data will be provided by the Principal:

- a) 100 m Pavement Condition Data
- b) 200 m dTIMS Analysis Segments Data
- c) List of Roads (by type, length, start and end points, etc.), and required future surface when resurfacing each segment

- d) Average construction rates for each treatment type by road tier
- e) List of On-Going and Committed Programmed Maintenance and Rehabilitation Maintenance projects, and
- f) List of capital works.

The data contents are similar to an HDM-4 road network file, and contain sufficient information as input to HDM Technology road deterioration models.

The data was derived from the ARMIS database and is compatible with the quality of analysis undertaken for network level analysis of programme maintenance and rehabilitation maintenance needs. Similarly detailed 100 m data is also available and will be issued during the Contract including for the use in Chartview. A list of fields available from ARMIS are included as Figure 1 however not all fields are populated for all segments of road (for example, Benkelman Beam Rebound Deflection). Details of annual data collection can be provided on request.

This data is derived from more specific data, in some cases at a finer resolution such as the pavement condition data, and from data whose characteristics apply over different lengths of road.

A2.2.2 200 m dTIMS Analysis Output

The current practice is to run dTIMS in 200 m segments and to then aggregate these sections to a project based on other data. DTIMS is currently setup using the following key input data:

- a) Roughness
- b) Rutting
- c) total cracking
- d) remaining useful life (calculated from Scenario)
- e) Surface Type
- f) Surface age, and
- g) Speed environment.

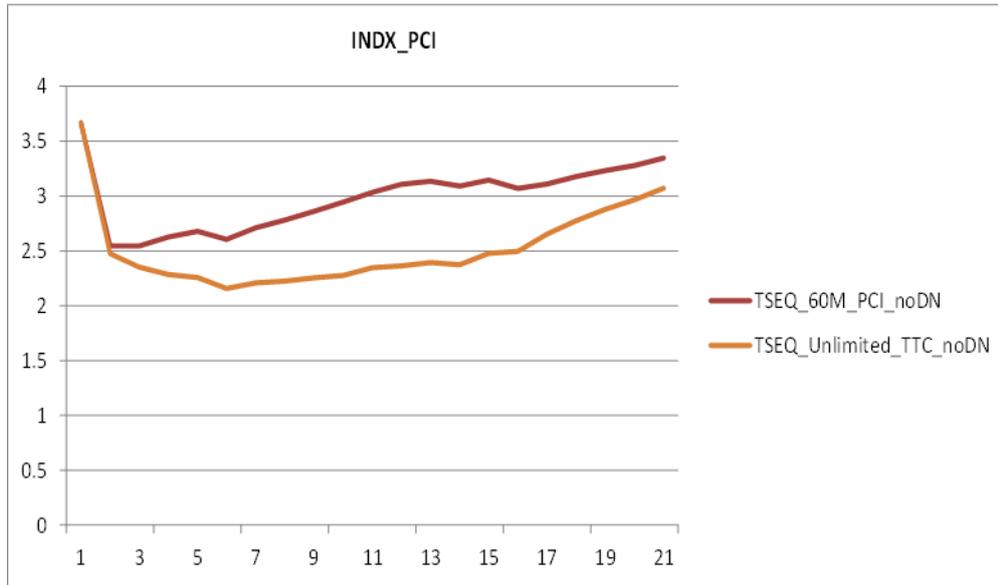
The current treatments are:

- a) AC overlay
- b) AC overlay with correction
- c) Open graded AC
- d) Open graded OG with correction
- e) Open graded OG with Rehabilitation
- f) AC Rehabilitation
- g) Ultrathin asphalt
- h) Reseal
- i) Reseal with shape correction
- j) Reseal Rehabilitation, and
- k) Reseal over AC.

As a result of the Traffic Speed Defelctograph data being available consideration is now being given to incorporating deflection and curvature function as inputs into the decision making model.

The output from dTIMS will be in the form of an MS Access database which contains the optimised 20 works program. The output can be customised to provide any intermediate calculation required (such as reason treatment was triggered, condition index by year for each road segment).

Figure 1: Example output showing predicted network condition



Attachment 3: Project Scope and Design Brief

A3.1 Project Scope

Project Scopes are to be developed for all Projects proposed for inclusion in the Draft AWP, including the 'additional 50% projects'.

As each Project Scope is prepared by the AMG, it must be presented to the Principal's Asset Management representative who will forward it to the Principal's Representative with a recommendation that it be accepted for use, or return it to the AMG with a request for it to be revised, amended or corrected as applicable.

Once accepted by the Principal's Representative, the Project Scope may be included in the Draft AWP.

A copy of the current template for "Project Scope Identification for Type 3 Projects" is included here for reference as most of the projects included in the FWP and AWP will be identified as "Type 3 Projects". The template may be adjusted with approval from the Principal's Asset Management representative to suit the circumstances of individual projects. For Projects which are not "Type 3 Projects, the applicable template must be used.

Project Scope Template

- ## Project Scope Identification for an Infrastructure Type 3 project



QUEENSLAND
GOVERNMENT

Source of funds:
(Program, line item in RIP)

Region/District:

Local Government:

Road Name (Section):

Project Location:

Start (Ch/TDist/Co-ord)	Finish (Ch/TDist/Co-ord)	Site No	Distance

Project Number:

Existing conditions:	
Need for Project:	
Date of any damage:	
•Crash history: <i>(over last 5 years)</i>	
•AADT (% of heavy vehicles) (date):	
•Deficiencies:	(Consider geometry, width, vehicle use, terrain etc then delete this)
•Political and community issues:	
•Any associated works/projects:	
•Other: <i>(provide photos where applicable):</i>	
Program Benefits/ outcomes of proposed works:	<p><i>Consider the following & add/delete as appropriate</i></p> <ul style="list-style-type: none"> • <i>Driver safety (road carriageway& intersection)</i> • <i>Pedestrian safety</i> • <i>Freight efficiency and heavy vehicle management</i> • <i>Driver fatigue management (e.g. rest areas)</i> • <i>Environmental improvements (e.g. noise reduction)</i> • <i>Minor improvements (for example, upgrade floodway)</i>
Concept Level Cost Estimate:	<i>Show inclusions, assumptions and risks considered in calculating the Cost estimate.</i>
Checked and presented by:	<i>Contractor Asset Manager</i>
Recommended by:	<i>Principal's Asset Management representative</i>
Accepted for Use by:	<i>Principal's Representativie for the Contract</i>

A3.2 Design Brief

The the AMG must further develop the Project Scope and prepare comprehensive Design Briefs for all projects approved as part of the AWP, including the 'additional 50% projects.

As each Design Brief is prepared by the AMG, it must be presented to the Principal's Asset Management representative who will forward it to the Principal's Representative with a recommendation that it be accepted for use, or return it to the AMG with a request for it to be revised, amended or corrected as applicable.

The Principal's Representative will then arrange for the designs and subsequent construction projects to be delivered. For those projects being delivered by the Contractor, the Principal's Representative will forward the accepted Design Brief will also be presented to the Contract Manager, who will arrange for a fee proposal for the design services to be prepared for the Principal's Representative approval.

The Design Brief must use the format included here, unless it is agreed to be modified by the Principal's Asset Management representative for individual projects.

It is not intended that the design brief include all data necessary for the design, rather it should explain the underlying logic of the selection of the project and the anticipated scope of works. The designers are however required to provide a professional design service and, as the design develops, to be critically reviewing the scope and outcomes of investigations and assessments. Where there is doubt that the proposed treatment is appropriate, the designers are to inform the AMG.

The Design Brief should include details on the following:

- a) Project description and location
- b) Road conditions and historical data
- c) Current traffic
- d) Proposed treatments
- e) Design strategy and underlying logic
- f) Scope of the works
- g) Implementation constraints and issues including:
 - i. Bridges and Culverts
 - ii. Services
 - iii. Adjacent properties and access, and
 - iv. Environmental and cultural heritage issues.
- h) Design requirements.

A draft form with a checklist of items to be used for preparation of the Brief is provided below.

Design Brief Template

Project location and description					
Road no.	Road name	Road class	Carriageway	Start	End
Description:					
Summary of proposed scheme					
Road conditions and historical data					
Relevant condition or other data underlying the decision to undertake the project					
<ul style="list-style-type: none"> • Network level survey data from ARMIS and dTIMS • Carriageway, seal and shoulder widths • History of major treatments and pavement maintenance • Crash history • Typical photographs • Other relevant data 					
Current and projected traffic					
AADT and % CV					
Proposed treatments					
Any comments regarding					
<ul style="list-style-type: none"> • Type and thickness (if applicable), location (start and end chainage), quantities • Pavement repairs, as type and quantity • Other treatments, e.g. shoulder, drainage and cross section improvements 					
Design strategy and applicable standards and guidelines					
Design class in accordance with Appendix E Supplementary Guidelines for Design					
Additional Requirements e.g.					
Are any amendments to Appendix E or the applicability of other standards and guidelines required?					
<ul style="list-style-type: none"> • Design exceptions • Safety related treatments • Road furniture and delineation requirements • Investigation of options, including lesser work • Possible future treatments under QTRIP programs 					
Implementation constraints and issues					
<ul style="list-style-type: none"> • Bridges and Culverts • Services • Adjacent properties and access • Traffic management • Environmental and heritage management • Other 					

Preliminary design	
<p>Is the failure mechanism known?</p> <p>Any knowledge of the soundness of existing pavement, or historical performance issues?</p> <p>Any restrictions on specific treatments?</p> <p>Update of cost estimate required based on Contract rates</p> <p>Is an economic analysis of options relevant?</p>	
Final design	
<p>Confirm variations to design, documentation and other information requirements if appropriate</p>	
Project management and review arrangements	
<p>Project Organisational Structure</p> <p>Work Assignment and Responsibilities</p> <p>Project Program</p> <p>Project Filing System and Correspondence</p> <p>Design Documentation and Document Control</p> <p>Design Review and Verification</p> <p>Coordination meetings</p>	
List of supplied data	
<p>As required</p>	
Revised Cost Estimate:	<p><i>Show inclusions, assumptions and risks considered in calculating the Cost estimate.</i></p> <p><i>If different from Project Scope cost Estimate, include an explanation of changes.</i></p>
Checked and presented by:	<i>Contractor Asset Manager</i>
Recommended by:	<i>Principal's Asset Management representative</i>
Accepted for Use by:	<i>Principal's Representative for the Contract</i>

