



Tay Road Bridge

TAY ROAD BRIDGE JOINT BOARD

Asset Management Plan

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1. Introduction

1.1 General

Asset Management is a process whereby an organisation sets out the procedures and programmes by which it intends to prioritise maintenance and manage its collective assets. This process is normally applied where an organisation has a number of similar assets, in various conditions and Asset Management allows a formalised process to be adopted. The Tay Road Bridge Joint Board principally owns a single large asset, namely the Tay Road Bridge, but by adopting the principles of Asset Management it can demonstrate best value in maintaining this crucial asset in Scotland's Road Network.

1.2 Definition of Asset Management

The definition of Asset Management adopted by the Tay Road Bridge Joint Board (TRBJB) is that contained within the ADEPT (Formerly County Surveyors Society) Framework for Highways Asset Management:

“Asset Management is a strategic approach that identifies the optimal allocation of resources for the management, operation, preservation and enhancement of highway infrastructure to meet the needs of current and future customers”

Key elements of asset management are:

- **Strategic Approach** – taking a longer term view on how the TRBJB manages its asset, using a systematic approach which may look beyond the annual budget cycles in order to maximise long term benefits of available resources
- **Optimising Allocation of Resources** – in order to deliver best value, expenditure must be prioritised to ensure that assets can be maintained within budgetary constraints. Asset management assists this process by enabling allocation of resources based upon assessed need.
The use of lifecycle planning and decision making informed by an appreciation of risk and benefit are the key components that will help the TRBJB allocate resources to where they will provide the best long term benefits.
- **Users Needs** – as the TRBJB has a single asset then the strategies adopted must be aimed at maximising availability of the bridge at all times

1.3 Reasons for adoption of Asset Management

There are a number of reasons for the implementation of an Asset Management Plan which include:

- Evidence of strategic thinking and long term planning with regard to maintenance and management of the Tay Road Bridge
- Satisfactory explanation to stakeholders of how limited resources are allocated
- The introduction of Whole of Government Accounts (WGA) and Resource Accounting and Budgeting (RAB), used to provide financial forecasting and valuation information to central government

1.4 Asset Management Plan

The introduction of a fully developed asset management approach cannot be achieved overnight as time is required to collect and analyse data and to modify management practices to progressively improve skills and performance.

This plan represents the start of the process and has been developed by undertaking a thorough and rigorous review of current practice and where identified areas for improvement have been noted and used to prepare the Improvement Action Plan as shown in Section 9.

In common with other public asset owners the TRBJB is in the process of adopting Asset Management Plans using guidance prepared for UK public bodies.

The Asset Management Plan is a working document and as such will be subject to regular review and updated as required.

1.5 Objectives

The objective of the TRBJB is to operate and maintain the Tay Road Bridge in a safe and serviceable condition with minimal disruption to the travelling public and to deliver this service in a cost effective manner.

2. Asset description

2.1 TRBJB Asset

The road bridge asset owned and maintained by the TRBJB comprises of the following:

Asset Description	Sub Elements
Tay Road Bridge – Main Structure	Carriageway including joints and road markings
	Superstructure – Steel box beams and Concrete deck
	Substructure – Piers, Columns and Abutments
	Central Walkway
	Parapets – vehicular and pedestrian
	Self propelled access gantries
Tay Road Bridge – On/Off Ramps	Carriageway including joints and road markings
	Superstructure – Deck
	Substructure – Piers and Abutments
	Earth embankments
	Parapets - vehicular
Pier Protection	Reinforced Concrete aprons at Navigation Spans
Fife Underpass	Single Span Reinforced Concrete Box Structure
Ancillary Equipment	Street lighting columns
	Traffic signals, Barriers, Wig-Wags, controllers, cabling, Weather Monitoring Equipment (two anemometers and two temperature sensors)
	Variable Message Signs, control cabinets, cabling

	Close Circuit Television Cameras, control cabinets, cabling
	Navigation lights, fog horn control cabinets, cabling
	Impressed Current Cathodic Protection System

Other major assets owned and maintained by the TRBJB comprises of the following:

Asset Description	Sub Elements
Tay Road Bridge – Bridge Office Building	Fabric of building and workshops
	Electrical systems
	Drainage
	Administration Office Car Park
Tay Road Bridge – Fife Car Park	Surfacing including road markings
	Street furniture
	Street lighting
Tay Road Bridge – Kiosk and Toilet Building	Fabric of buildings
	Extraction/Ventilation System
	Electrical systems
	Drainage and Septic Tank
Telford Beacon	Monument to Telford located adjacent to bridge landfall in Dundee (riverside esplanade west side of bridge)

Inspection of buildings, car park etc carried out by TRBJB staff. PAT Testing is undertaken through a H & S contract with Dundee City Council.

2.2 Assets not covered by AMP

In addition to the bridge structure and buildings the TRBJB owns and operates the following assets:-

- Various vehicles including Double Cab Transit Vans, an Impact Protection Vehicle (a 10 tonne lorry), a Pickup and a 4x4 mini tractor/snow plough

3. Community Requirements

3.1 Community Requirements

The Tay Road Bridge serves the communities in the immediate vicinity to the north and south and provides a strategic transport route between North East Fife and the City of Dundee.

The basic requirements relating to the community is to maximise availability to users and to minimise disturbance during periods of works whether in terms of traffic restrictions or environmental issues such as noise etc.

When major elements of works are planned that may affect the local community, press releases and the use of the TRBJB social media (currently Twitter) account which is linked to the TRBJB website are used to maximise the notice of any likely disruption and inconvenience. Use of the TRBJB Variable Message Signs (VMS) to display notices of upcoming works is also used to share information with bridge users.

4. Future Demands

4.1 Traffic Growth

Approximate composition of traffic using the bridge since bridge counters were reintroduced in 2016 is as follows:-

Vehicle Type	% Traffic
Cars/Light Vans	95.7%
Heavy Goods Vehicles (7.5 tonnes and above)	2.6%
Public Transport Vehicles	1.7%

Average daily traffic crossings of approximately 27,000 vehicles are recorded, approximating to 9,855,000 vehicles a year. The composition of Cars /Light Vans is 96%.

The daily crossing during 2020 were reduced by approximately 35% following a “lock-down” by the Scottish Government that saw a “stay-at-home” order for all workers apart from those seen as “essential” or “key” workers because of the Covid-19 pandemic. Traffic figures returned to approximately 95 % of pre-pandemic levels by the last quarter in 2021.

Records of pedestrian usage is not currently available, but cycle usage on the shared walkway is reported to the TRBJB quarterly as part of the Operational Restrictions and Closures standing reports. Cycle use varies throughout the year and peaked at over 200 cycles per day in 2020.

The asset management process will be aimed at maximising the availability of the bridge to all users.

4.2 Changes in Legislation

The TRBJB will review its Asset Management Plan in light of future legislation as it arises.

5. Levels of Service

5.1 Establishing Levels of Service

At present the Bridge Manager reports to the Tay Road Bridge Joint Board (TRBJB) members on the availability of the bridge to road users over a three-month period, however there is no recognised statutory or non-statutory indicators for level of service to compare these figures against. A Strategic Plan was introduced on 3 December 2018 that identifies several Key Performance Indicators (KPI's) to measure general performance. The TRBJB's Strategic Plan is on the TRBJB's website and will be reported on annually within the Bridge Manager's Commentary contained within the Annual Accounts presented to the TRBJB.

6. Lifecycle Planning

6.1 Purpose of Lifecycle Planning

The Lifecycle Plan provides definition of the standards that are applied to the management of the Tay Road Bridge and of the process used to ensure that these standards are met. Production and updating of the Lifecycle plan enables a large amount of data to be collected, which will then be developed through time to inform the decision making and budgeting process.

The Lifecycle plan forms the core approach to Asset Management planning

6.2 Output from Lifecycle Planning

The output from the Lifecycle Plan process is long term prediction of the continued operation and management of the asset and will be in the form of financial projections.

7. Financial Summary

7.1 Sources of Funding and Budget Allocation

Since the abolition of the Bridge Tolls in 2008 all funding has been provided directly from the Scottish Government by way of a grant. This funding covers both day-to-day operational costs and routine/cyclic and winter maintenance costs under a Revenue Budget and larger improvement and replacement works under a Capital Budget.

Prior to the abolition of the Bridge Tolls, the TRBJB was self funded for Revenue expenditure from toll income and the surplus from the bridge toll income was used to fund major capital works by borrowing or with Grant funding from the Scottish Government if required.

The Revenue Budget requirements are determined annually by the Bridge Manager on an annual basis and these requirements are used as the basis for application for a grant to the Scottish Government. The annual Revenue Budget is submitted to the TRBJB for approval.

The Capital Budget requirements are determined annually by the Engineer to the Board and the Bridge Manager and are set out in a rolling 10-20-year programme. A shorter 3 year programme is produced for application for Grant from the Scottish Government. The Capital Budget is submitted to the TRBJB for approval.

The TRBJB has a nominal income from the lease of a TRBJB property but this is of little significance to the overall Revenue Budget.

8. Risk Management

8.1 Major Asset Risks

The full list of major risks affecting the TRBJB are given in the TRBJB Strategic Risk Register. The Strategic Risk Register is reviewed annually and the findings reported to the TRBJB.

Risks identified are prioritised in the following manner:

- a Risk score determined through multiplication of probability and severity scores as follows:-

Score	Probability	Severity
1	Rare	Insignificant
2	Unlikely	Minor
3	Possible	Moderate
4	Likely	Major
5	Certain	Catastrophic

The Matrix produced using the above scores is shown below:-

Probability

5	10	15	20	25
4	8	12	16	20
3	6	9	12	15
2	4	6	8	10
1	2	3	4	5

Severity

The major risks specifically associated with Asset Management are:-

Risk	Probability (P)	Severity (S)	Inherent Risk (R) = (P) x(S)	Existing Controls	Residual Risk		
					(P)	(S)	(R)
Effects of changes to Economy – budget limitations Lack of funding could lead to a backlog in works and a deterioration of asset condition	3	4	12	None	3	4	12
Lack of inventory information may lead to lack of funding	3	4	12	Full inspection and reporting to back up funding requests	2	3	6

9. Improvement Plan

9.1 Improvement Plan Action Milestones

The initial implementation of the Asset Management Plan is in itself an Improvement Plan. The items below are the main areas where improvements are required and are prioritised from 1(High) to 5(Low).

No.	Milestone	Priority
1	Consider future use of appropriate Computer Asset Management systems for needs of TRB if/when available.	5
2	All Tay Road Bridge Inspectors are working towards obtaining the recently introduced (2018) Bridge Inspector Certification qualification, certified by Lantra on behalf of the UK Bridges Board and supported by Transport Scotland.	3
3	One area for Service Improvement is to improve the bridge inspection capabilities and reliability with the planned introduction of new bespoke and more efficient under carriageway inspection gantries from 2023/24.	3

9.2 Progress Reporting

The Bridge Manager will report progress to the Engineer to the Board at quarterly meetings as part of the regular cycle of management meetings. Updates on progress on major milestones will be reported to the Board as and when required.

10. Management and Control of the Asset Management Plan

10.1 Ownership of AMP

The Asset Management Plan will become a controlled document with a designated officer responsible for:

- Distributing to appropriate Officers and Consultants acting on behalf of the TRBJB
- Monitoring of improvement actions
- Authorising and updating the Plan

The persons charged with the delivery of the AMP and their roles within the process are detailed below:-

Position	Role
TRBJB Members	Approval of AMP
Engineer to the Board	Overall responsibility for AMP and its implementation
Bridge Manager	Day to day implementation of AMP, monitoring improvement actions, informed decision making and ensuring updates to the documents are made. Producing forward work programmes, both short and long term. Updating Lifecycle Plan
Maintenance Manager	Preparing and implementing inspection programmes, assisting in preparation of forward work programmes and updating documentation

10.2 Updating the AMP

The AMP will be reviewed annually by the Engineer to the Board and the Bridge Manager. The Bridge Manager shall be responsible for the updating of the AMP as required and re-issuing as necessary.