



# Bridge inventory, inspection and condition rating - Policy

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## 1) Policy statement

The RTA's Bridge Information System (BIS) must be used as set out in this policy, to record for all RTA managed bridges;

- a) consistent, reliable and up to date bridge inventory data, and
- b) consistent, reliable and up to date bridge inspection and condition data.

## 2) Scope and coverage

This policy describes the RTA's bridge inventory collection, inspection and condition assessment regime. The policy applies to staff attached to Infrastructure Asset Management (IAM), Bridge Engineering, Regions and Road Services and covers all bridges and bridge size culverts controlled by the RTA, including DEEMED STATE WORKS.

This policy supersedes RTA Corporate Policy PNI58 version 1.0 '*Bridge Inspection and condition rating*'.

## 3) Purpose and intended outcomes

The purpose of this policy is to define, in a rigorous and systematic way; the requirement for the collection and updating of bridge inventory and condition data; the types of bridge inspections; typical bridge inspection frequencies; required inspector qualifications; data recording requirements; and staff responsibilities.

The RTA bridge inspection and condition assessment regime intends to ensure that the RTA collects consistent, objective and quantitative condition ratings for bridge elements in order to manage its bridge stock and maintain safe, effective and reliable access for the movement of people and goods.

## 4) Summary

The system to be used exclusively in the RTA for recording bridge information is the Bridge Information System (BIS). The BIS incorporates a corporate database. The resultant data is used for the management of bridges at all levels of the RTA, and particularly relates to the structural integrity of bridges and safety of users.

A detailed description of the inventory items to be recorded and the requirements for recording in the BIS is provided in *Appendix B*. The bridge inspection requirements are outlined in *Appendix C* and the specific requirements for the various levels of inspection are provided in *Appendix D*

## 5) Responsibilities

### 5.1) BIS ownership

IAM Branch, as the client, is the owner of BIS and is responsible for ensuring that the system is appropriately managed.

### 5.2) BIS System Coordinator

The SYSTEM COORDINATOR is an IT officer attached to the Information Technology Branch and is responsible for:

- .1 Coordinating requests and implementing approved requests from SYSTEM ADMINISTRATORS for software improvements or changes.
- .2 Maintaining the BIS software platform.

### 5.3) BIS System Administrator (Client)

The SYSTEM ADMINISTRATOR (CLIENT) is the Manager Bridge Assets, IAM, and is responsible for:

- .1 Approval for business cases, and funding maintenance and improvements to the BIS.
- .2 Ownership of the BIS data.

### 5.4) BIS System Administrator (Project Manager)

Bridge Engineering Branch shall provide a SYSTEM ADMINISTRATOR (PROJECT MANAGER) for the functions described below:

- .1 Maintenance of reference tables and element types.
- .2 Maintenance of user access.
- .3 Provision of assistance and training to users of the BIS.
- .4 Coordinate BIS user feedback and recommend improvements to the BIS System Administrator (Client)
- .5 Ensuring the integrity of data in the BIS
- .6 Implementing approved BIS enhancements

### 5.5) Principal Bridge Engineer

The PRINCIPAL BRIDGE ENGINEER shall be responsible for:

- .1 Provision of training for bridge inspectors generally and specific training in the RTA's Bridge Inspection Procedure
- .2 Maintaining a record of current accepted RTA TRAINED BRIDGE INSPECTORS

## **5.6) Senior Bridge Engineer (Assessment and Evaluation), Bridge Engineering Branch**

The SENIOR BRIDGE ENGINEER (A&E) shall be responsible for:

- .1 Planning and execution of Level 3 inspections, or specialist inspections of bridges or bridge elements as required, including entry of inspection data into the BIS
- .2 Providing inspection plans for bridges designated as “complex”.
- .3 Providing inspection guidelines for structural elements if necessary.
- .4 Conducting audits of BIS Level 2 inspections to ensure data integrity in accordance with this Policy.

## **5.7) Regional Asset Managers**

The REGIONAL ASSET MANAGER shall be responsible for:

- .1 Ensuring that RTA bridge assets within the Region are appropriately maintained, to manage risks to asset condition and road users, within constrained funding profiles.
- .2 Ensuring the effective management of the Region’s bridge asset management system, including the RTA’s *Bridge Inventory, inspection and condition rating policy*

## **5.8) Regional Bridge Maintenance Planners (RBMP)**

The RBMP shall be responsible for:

- .1 Managing the Region’s bridge asset management system.
- .2 Preparing the Region’s bridge inspection schedule, including determining the extent and frequency of inspections, and determining the the order and timeframe for inspections, to manage risks.
- .3 Recording the reasons in the BIS, where a decision is taken to vary the inspection frequency or other inspection requirement, as permitted under this Policy.
- .4 Auditing of the bridge asset inventory and condition data system to ensure its integrity
- .5 Identifying and managing risks arising from the deterioration of bridge assets by;
  - proposing and implementing bridge maintenance programs.
  - preparing and implementing interim risk management plans as required.
- .6 Ensuring bridge condition inspections are carried out by RTA TRAINED BRIDGE INSPECTORS and or structural engineers
- .7 Entry of maintenance history and element restoration costs into the BIS
- .8 Developing, implementing and maintaining appropriate safe work methods and supporting statements for inspection of bridges.

## 5.9) RTA Trained Bridge Inspectors

RTA TRAINED BRIDGE INSPECTORS shall be Regional Bridge Support Officers, Regional Bridge Inspectors, or others (as accepted by the PRINCIPAL BRIDGE ENGINEER), suitably trained in RTA bridge inspection procedures to inspect bridges constructed in a particular material type, and are responsible for:

- .1 Collecting inventory data for new bridge assets and changes to existing bridge assets
- .2 Carrying out bridge inspections in accordance with the Region's bridge condition inspection schedule and specific directions from the RBMP
- .2 Inputting inventory and inspection data in the BIS, and updating as required, to ensure the BIS database integrity.
- .3 Ensuring inventory and condition data, and the required maintenance actions held in the BIS database are up to date.
- .4 Reporting any critical and emerging bridge condition issues to the RBMP.
- .5 Assist in developing, implementing and maintaining appropriate safe work methods and statements for bridge inspections, and complying with them.
- .6 Allocating new Bridge Numbers for structures that qualify for inclusion in BIS, and notifying the RBMP of new allocations.

## 6) Exemptions to policy

There may be instances where conformance to some aspects of policy requirements cannot be achieved due to cost of access, safety or other considerations at some bridge sites.

For such a bridge, the RBMP;

- May prepare a 'Policy Exemption Approval' document detailing the issue, exemption required with proposed inspection management and the management of associated risks, with concurrence from the SENIOR BRIDGE ENGINEER (A&E). Where needed the Manager, Bridge Assets may be consulted.  
The 'Policy Exemption Approval' document shall be uploaded to the BIS.
- Or, obtain a bridge specific inspection plan from the SENIOR BRIDGE ENGINEER (A&E), to manage the bridge with acceptable risk.

## 7) Evaluation

The effectiveness of this policy will be evaluated by way of audits conducted by Bridge Engineering Branch and through reviews of yearly reports submitted to IAM. The audit methodology will consider application and the level of compliance of the policy by the Regions.

## 8) Related information

### Reference documents:

- *BIS User Guide and BIS Inventory Data Manual*
- *Roads Act 1993*
- *RTA Bridge Inspection Procedure*

**Records:** This policy statement is kept on file 5M3481

**Contact details:** Manager Bridge Assets, Infrastructure Asset Management Branch, Network Services Directorate.

**Effective date:**

**Review date:** 3 years after the 'Effective date' or as required by business needs.

**Policy replaces:** *Corporate Policy PN 158 dated 13 May 2008.*

## 9) Appendices

**Appendix A** – Definitions

**Appendix B** – Bridge inventory

**Appendix C** – Bridge inspections

**Appendix D** – Levels of inspection

### Recommended for approval:

*(signed)*

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## Appendix A – Definitions

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**BIS:** The RTA's Bridge Information System.

**BIS SYSTEM ADMINISTRATOR (CLIENT):** THE BRIDGE ASSETS MANAGER IAM and is tasked with ensuring the appropriate management of BIS.

**BIS SYSTEM ADMINISTRATOR (PROJECT MANAGER):** Is an officer attached to Bridge Engineering Branch and tasked with the maintenance and management of BIS.

**RTA TRAINED BRIDGE INSPECTOR:** RTA TRAINED BRIDGE INSPECTORS shall be Regional Bridge Support Officers, Regional Bridge Inspectors or others (as accepted by the PRINCIPAL BRIDGE ENGINEER), suitably trained in RTA bridge inspection procedures to inspect bridges constructed in a particular material type.

**DEEMED STATE WORKS:** A road or work deemed by section 4(5) of the former *Roads Act 1986* to be a State work, is declared to be a State work pursuant to section 267(18) of the *Roads Act 1993*.

**PRINCIPAL BRIDGE ENGINEER:** The Principal Bridge Engineer attached to RTA Engineering Technology Branch.

**Senior Bridge Engineer (A & E):** The Senior Bridge Engineer (Assessment and Evaluation) attached to RTA Bridge Engineering Branch.

**REGIONAL ASSET MANAGER:** The Asset Manager attached to Infrastructure Services Directorate in each Region.

**REGIONAL BRIDGE MAINTENANCE PLANNER (RBMP):** The Bridge Maintenance Planner attached to Infrastructure Services Directorate in each Region.

**REGIONAL BRIDGE SUPPORT OFFICER/REGIONAL BRIDGE INSPECTOR:** The Bridge Support Officer/Bridge Inspector attached to Infrastructure Services Directorate in each Region.

**SYSTEM ADMINISTRATORS:** Either the BIS SYSTEM ADMINISTRATOR (CLIENT) or the BIS SYSTEM ADMINISTRATOR (PROJECT MANAGER).

**SYSTEM COORDINATOR:** Is an IT officer attached to the Information Technology Branch.

**Bridge Assessment Committee:** Is a committee, convened by Bridge Engineering with representatives from Network Services and infrastructure Services Directorates, responsible for making recommendations on appropriate management actions for bridges with load capacity concerns.

## Appendix B – Bridge inventory

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### B1) Scope

The following inventory items are included in the BIS:

- .1 Bridges and culverts which carry State Roads over depressions and obstructions such as waterways, roadways, or railways. They must have an opening of six metres or more when measured along the road centre line, or spring lines of arches, or extreme ends of openings for multiple cells.
- .2 State Assets that are defined as bridges controlled by the RTA and located on Regional or Local Roads including border bridges.
- .3 Special structures under State Roads, eg. pedestrian subways, utility tunnels and wildlife and stock access, regardless of the six metre length limit.
- .4 Railway level crossings on State Roads.
- .5 Vehicular ferries managed by the RTA.
- .6 Other structures as determined by IAM.

With reference to this document, all the above inventory is referred to as “bridges”.

### B2) Unique bridge number

A unique number is required to identify each bridge. It is allocated using the Bridge Information System by the REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR. For a new structure, it shall be allocated when requested at the design stage. For an existing structure that qualifies for inclusion in the BIS, a new number shall be allocated and updated with relevant data in the BIS.

The Bridge Number is included in bridge name plates as BXXXX. (eg. B10586).

The REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR shall enter in the BIS the Road No, the Local Government Area (LGA), and a general description of the bridge (including the name of feature crossed and its location).

The RBMP must be notified of any new bridge number allocations and changes to the BIS inventory data.

Bridge numbers shall **not** be reused in any circumstance.

### B3) Inventory data recording

Bridge inventory data shall be entered via the *Inventory Detail* window in the *General Information* window of the BIS.

For each bridge, initial data from the approved Drawings shall be entered into the BIS by the REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR. Within 12 weeks following hand over of new asset, the REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR shall complete

entry of inventory details into the BIS from the approved Works as Executed drawings, or the latest available construction drawings.

Reference shall be made to the *BIS Inventory Data Manual* for definitions of data fields to ensure integrity of data.

In cases of changes in route, changes of use, proclamations of new roads, de-proclamations of existing roads, or changes in local government boundaries, the REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR is to update the relevant details within the BIS of the effect to the bridge inventory.

When a structure in the BIS is decommissioned, the REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR shall, within 4 weeks, forward details of the effect on the bridge inventory to the SYSTEM ADMINISTRATOR (PROJECT MANAGER) who will archive the data for the structure in BIS.

The RBMP must be notified by the REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR of any new bridge number allocations and changes to the BIS inventory data.

The REGIONAL BRIDGE SUPPORT OFFICER/BRIDGE INSPECTOR shall be responsible for ensuring all relevant inventory data fields are populated in BIS and for ensuring the data in the BIS is current and consistent.

The RBMP is responsible ensuring the integrity of the bridge asset inventory and condition data system by periodic auditing.



## Appendix C – Bridge inspections

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### C1) Scope

The scope of the bridge condition inspection is the inspection of all bridge components in order to complete the following activities:

- .1 Conduct an assessment of condition state using the *RTA's Bridge Inspection Procedure*.
- .2 Review and update of bridge inventory data as appropriate.
- .3 Identify and record required maintenance activities.
- .4 Recommend changes to the next inspection date if other than the regular interval for that type of structure is planned.

These details shall be entered in the *Inspection Detail* windows of the *General Information* window.

### C2) Types of inspections

The RTA's bridge inspection regime includes four levels of inspections. These are described in more detail in *Appendix D*:

- .1 Level 1 inspections are drive-by inspections which identify obvious safety issues on a bridge.
- .2 Level 2 inspections are condition rating inspections that are carried out in accordance with the Bridge Inspection Procedure by RTA TRAINED BRIDGE INSPECTORS.
- .3 Level 3 inspections are structural engineering inspections carried out by an experienced structural engineer with a RTA TRAINED BRIDGE INSPECTOR from the relevant Region.
- .4 Level 4 inspections involve load assessment due to proposed changes in legal loading, new vehicle types, or the need to confirm the structural capacity of a bridge.

Other specialist inspections may be required from time to time and will be arranged by the RBMP in consultation with SENIOR BRIDGE ENGINEER (A&E) as required.

### C3) Bridge inspectors

Only persons qualified to carry out bridge inspections as given below shall carry out bridge inspections:

- .1 Level 1 Inspections – Work Supervisor / Bridge Inspector/Network Inspector/Contracts Manager
- .2 Level 2 Inspections – RTA TRAINED BRIDGE INSPECTOR trained in the *RTA Bridge Inspection Procedure* and accepted as current.
- .3 Level 3 Inspections – Experienced Structural Engineer trained in the *RTA Bridge Inspection Procedure*
- .4 Level 4 Inspections – Experienced Structural Engineer

## C4) Visual assessment

The BIS is based on a visual assessment process, and the only requirement is that the RTA TRAINED BRIDGE INSPECTOR can observe the bridge elements sufficiently, to enable a reliable assessment to be made against set condition state criteria.

Where observations are obscured by debris, staining, and corrosion products, etc, these materials must be removed prior to making condition assessments.

Where a RTA TRAINED BRIDGE INSPECTOR is concerned about making a reliable condition assessment of a bridge element, the Inspector shall refer the concern to the RBMP for direction.

However, it should be noted that each complex bridge will be provided with a bridge specific inspection plan, which details the inspection requirements, access requirements and inspection personnel competencies.

## C5) Complex bridges

Bridges with complex or unusual structural forms or materials and known significant issues shall be designated in the BIS as “complex”. Bridges to be classified in the BIS as “complex or unusual” are generally identified from the following categories of structures: -

- .1 Wrought iron lattice trusses
- .2 Steel trusses (under and through)
- .3 Arch Bridges
- .4 Balanced cantilever
- .5 Suspension bridges
- .6 Fibre reinforced composite (FRP)
- .7 Lift spans (vertical and bascule)
- .8 Cable stayed

However not all structures that belong to any of the above categories automatically become ‘complex’ structures.

It is the degree of complexity relating to; the structural form; the scale; and accessibility for inspection of its structural elements, that is considered in identifying whether a structure is as ‘complex’ bridge. The RBMP in consultation with Bridge Engineering Branch shall assign a bridge as ‘complex’.

These bridges require special inspection protocols to ensure the structural implications of any deficiencies are properly assessed.

Accordingly, Level 2 inspections of inspections of bridges designated as “complex” shall be carried out by a RTA TRAINED BRIDGE INSPECTOR in accordance with bridge specific inspection plans provided by the SENIOR BRIDGE ENGINEER (A&E), Bridge Engineering Branch.

## C6) Frequency of inspection

A disciplined approach to regular inspections is an essential and a basic prerequisite for effective bridge management. The factors in determining inspection frequencies include:

- .1 Time since last inspection.
- .2 Risk management of known defects.
- .3 Following natural disasters, viz. floods, bushfires, earthquakes.
- .4 Strategic importance of a route or bridge.
- .5 Notification from the public.
- .6 Availability of special equipment and/or resources.
- .7 Future live load increase

The frequency of inspections can be determined either on a time basis, or by the condition of the bridge and the liability associated with the rate of deterioration arising from the above factors.

A set of clauses for management of inspection frequencies and responsibilities is included in Appendix D below. These frequencies and responsibilities have been derived from current practices within Australasia, and represent the minimum standards.

The RBMP shall record in the BIS the rationale for any deviation of inspection frequency for Levels of inspections given in Appendix D.

## C7) Status of maintenance actions and element condition

On completion of any maintenance or improvement work to a bridge that improves the inventory or element condition rating the service provider shall advise the RBMP of such work. The RBMP will arrange a handover inspection by the Region's RTA TRAINED BRIDGE INSPECTOR. For bridges with high risk elements in condition state 3 or 4, which effect the Bridge Health Index, the RBMP shall update the BIS, on the basis of the handover inspection, to reflect the improvement in the element condition as a result of that work within 4 weeks of receiving such notification by entering a 'monitor' type inspection with updated condition rating for the reported elements only.

## C8) Inspection data recording

All bridge condition inspections except Level 1 inspections shall be recorded in the BIS.

The Level 2 inspection report shall be completed by an RTA TRAINED BRIDGE INSPECTOR, in accordance with the *RTA Bridge Inspection Procedure*, who shall ensure that inspection data is entered into the BIS within 4 weeks of the date of the Level 2 inspection.

Also data from Level 3 inspections or any other specialist inspections shall be recorded in the BIS by the structural engineer / specialist within 4 weeks of completing the inspection.

## C9) Maintenance of cost data

The RBMP shall review annually the average costs of Regional maintenance works in the BIS. These costs are used to estimate the cost of undertaking the required maintenance actions identified during bridge inspections, and to facilitate other analysis.

## **C10) Bridge capitalisation**

All RTA bridge assets are capitalised as part of RTA's capitalisation of infrastructure. The BIS is used exclusively to facilitate recording and reporting of data for that process.

The SYSTEM ADMINISTRATOR (CLIENT) shall be responsible for bridge capitalisation process with the assistance of the SYSTEM ADMINISTRATOR (ADMIN). The RBMP shall be responsible for updating the BIS for capitalisation within the time specified, and the integrity of, and details required.

## Appendix D – Levels of inspection

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### DI) Level I inspection - Routine (Works Supervisor/Bridge Inspector/Network Inspector/Contract Manager)

Frequency	Description
<p><b>All bridges</b></p> <p>In accordance with the inspection regime required by the RTA's road maintenance contracts.</p>	<p>A basic drive-by inspection performed as part of the general network asset assessment. The inspection would be performed by a works supervisor/inspector (not necessarily a RTA TRAINED BRIDGE INSPECTOR), and would be expected to collect information on visible accident damage or other deformations in superstructure like trusses and information regarding the status and performance of ancillary elements such as barriers, deck scuppers, and waterways. While these inspections are not recorded in the BIS, any significant defect identified should be reported to the RBMP for further action.</p> <p>The inspection may also be generated by reports arising from an incident or community input. Regional Asset Managers shall ensure that these inspections are carried out in accordance with the RTA's QA Specifications for road network management..</p>

## D2) Level 2 inspection - Condition assessment (RTA Trained Bridge Inspector)

Unless determined otherwise in accordance with this policy, the Level 2 inspection shall cover the full bridge, and include condition rating for all applicable elements and all the required maintenance actions (RMAs) found necessary on the day of the inspection (even if some RMAs had been identified in previous inspections).

Frequency	Description
<p><b>Other than complex bridges:</b></p> <p><b>Concrete and steel bridges:</b></p> <ul style="list-style-type: none"> <li>i. Normally 2 yearly interval</li> <li>ii. If all structural elements are in condition I, interval for inspection can be extended to 4 years, as determined by the RBMP.</li> <li>iii. Bridges in marine or aggressive environment should be inspected at a 2 year interval even if all elements are in condition I.</li> </ul> <p><b>Timber bridges:</b></p> <ul style="list-style-type: none"> <li>i. Annually</li> <li>ii. Test bore large timbers likely to contain heart wood, in accordance with the Timber Manual, every 4 years or shorter intervals as nominated by RBMP.</li> </ul>	<p>A detailed visual assessment of element condition reported in accordance with parameters defined within inspection manual guidelines. The inspection would be undertaken by a RTA TRAINED BRIDGE INSPECTOR who is suitably trained to assess the particular material of the bridge.</p> <p>The RBMP shall assess the condition rating of all members to determine if a Level 3 inspection is warranted.</p> <p>Where a bridge inspection reveals distress or deterioration that may be structurally significant the inspector shall rate the element or member in the worst condition state until the matter is further assessed by an experienced structural engineer. The inspector shall immediately inform the RBMP of the location and extent of the distress or deterioration observed.</p> <p>The RBMP shall carry out an inspection immediately and take the necessary action to address the problem. This action may include closure of the bridge, the imposition of a load limit or arranging for a Level 3 Inspection. The RBMP shall mobilise the Bridge Assessment Committee (BAC) if required.</p>
<p><b>Complex bridges</b></p> <p>As set out in the inspection plan for the bridge</p>	<p>All bridges designated as “complex” in the BIS shall be inspected by a RTA TRAINED BRIDGE INSPECTOR, trained to assess the particular material type of the bridge, and in accordance with the inspection plan for the bridge, prepared by the SENIOR BRIDGE ENGINEER (A&amp;E). The plan may require additional personnel with specified competencies to accompany the RTA TRAINED BRIDGE INSPECTOR.</p> <p>The inspection plan will set out the frequency and detail the inspection required, including access needs,, especially for critical areas, such as joints, areas adjacent to joints, bearings, stringer – girder connections, cable anchorages, potential corrosion traps, etc</p>

<p><b>Under water/scour Inspections:</b></p> <p>Every 4 years or shorter intervals, as nominated by the RBMP.</p>	<p>The inspection would be undertaken by an experienced diving contractors directed by RTA staff in accordance with the RTA QA specifications on Underwater Inspections.</p> <p>A report of the defects in the chosen sample parts of the underwater elements with necessary photographs and videos by the diving contractor shall be uploaded into the BIS.</p> <p>The inspection may also be initiated in response to a flood event, an incident or a community report.</p>
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### D3) Level 3 inspection – Structural safety assessment (Experienced structural engineer)

The scope of the inspection shall be defined by the RBMP and/or the SENIOR BRIDGE ENGINEER (A&E). The scope of the inspection can cover the full bridge or only specific elements as required.

Frequency	Description
<p><b>Concrete, steel and timber Bridges:</b></p> <p>The need for a Level 3 inspection is identified by:</p> <ul style="list-style-type: none"> <li>i. A level 2 inspection,</li> <li>ii. A Level 4 assessment indicating strength issues, or</li> <li>iii. Performance of similar class of bridges/ bridge elements.</li> <li>iv. Incident on the bridge impacting structural capacity</li> <li>v. Post natural disaster such as heavy floods , earth quake etc.</li> </ul>	<p>RBMP in consultation with the Manager Bridge Assets shall decide to program a level 3 inspection. Requirements for Level 3 inspections are:</p> <ul style="list-style-type: none"> <li>i. A Level 3 inspection of a bridge must be a structural inspection of the complete bridge except where the RBMP deems a partial inspection is adequate. Partial structural inspections are allowed for inspections relating to bridge emergencies, or monitoring or follow-up inspections within two years subsequent to a complete Level 3 inspection, or where the RBMP deems a partial inspection is adequate.</li> <li>ii. The Regional RTA TRAINED BRIDGE INSPECTOR shall accompany and support the experienced structural engineer during the inspection.</li> <li>iii. The structural engineer who conducts the Level 3 inspection shall write a full structural inspection report without any constraint.</li> <li>iv. As part of the Level 3 inspection, the condition of the bridge elements must also be rated by the structural engineer and RTA TRAINED BRIDGE INSPECTOR in accordance with the 'RTA Bridge Inspection Procedure' for a Level 2 inspection</li> <li>v. Where deemed necessary by the RBMP or structural engineer, an assessment in consultation with a durability engineer or any other specialists required shall be carried out. It is essential that electronic versions of the full reports be uploaded to the BIS as “Specialist” inspections, as part of entering the Level 3 inspection into the BIS In addition to any other reporting requirements, the full inspection report should be supplied in electronic format (.pdf and .doc) and should include any supplementary reports (e.g. material testing) from other specialists if engaged.</li> <li>vi. The recording of ‘Required Maintenance Actions’ from the list of maintenance activities in the BIS as part of Level 3 inspections where relevant is recommended but <b>NOT mandatory</b>.</li> </ul> <p>If a <b>Level 3</b> inspection of a <b>complete bridge</b> is done (and recorded in BIS), then the subsequent Level 2 inspection of the bridge shall be carried out at the normal required time interval (1 year or 2 years or as determined previously) from the date of the Level 3 inspection unless an earlier Level 2 inspection is recommended by the structural engineer who conducted Level 3 inspection.</p> <p>However, if the <b>Level 3</b> inspection is issue based and <b>covers only selected elements</b>, then a Level 2 inspection shall be carried out on the other elements and at the same time as the Level 3 inspection.</p>



**D4) Level 4 inspections – Load capacity assessment (Experienced structural engineer)**

Frequency	Description
<p><b>All bridges:</b></p> <p>As requested for changes in legal loads or new vehicles.</p>	<p>As per Level 3 inspection for determining load capacity of a bridge.</p>

**D5) Specialist inspections – Inspection carried out by Specialists**

Frequency	Description
<p><b>Specialist Inspections:</b></p> <p>These inspections are for other specialists such as specialist surveyors, material specialists or innovative technical solution providers.</p> <p>Eg. Assessment of ‘Lead’ contamination of bridge site, durability assessment, etc.</p> <p>The frequency of specialist inspections is determined on an as needs basis</p>	<p>Carried out by a RTA accepted specialist on a specific bridge management issue.</p> <p>Full electronic version of the inspection by the specialist shall be uploaded to the BIS.</p>