

Thurrock Council

Internal Audit Report 2014-15

FINAL

Bridge Maintenance Inspections

October 2014

Contents

Section	Page
Executive Summary	1
Action Plan	3
Findings and Recommendations	5

Debrief meeting	21 st May 2014	Auditors	Chris Harris - Head of Audit Services Gary Clifford – Manager Dina Lucchesi - Senior Auditor
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1 Executive Summary

1.1 Introduction

An audit of Bridge Maintenance was undertaken as part of the approved internal audit periodic plan for 2013/14.

Highway structures are an integral part of the highways network, creating vital links and in some cases, prominent community and historical features. The majority of highways maintenance is undertaken to meet statutory duties and powers contained in legislation such as “The Highway Act 1980” which places a statutory obligation on authorities to maintain the public highway and associated structures in a state that is safe for use and fit for purpose. The legislation is supported by the Management of Highways Structures Code of Practice (updated 13th August 2013) which provides detailed guidance to assist bridge managers and practitioners in meeting these duties and powers.

There are 113 bridges and other structures in Thurrock. Each should be given a general inspection every 2 years and a detailed principal inspection every six years (subject to a risk assessment process which could increase this up to 12 years) to identify any major defects and provide the data for preparation of major bridge maintenance programmes.

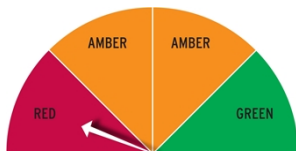
These highway structures have long service lives and generally slow rates of deterioration and these characteristics are conducive to a ‘save now, pay later’ management approach which is thought to be widespread among local authorities. However, the Government has recognised that this approach neither meets the service requirements nor does it provide long term value for money. To address this issue the Government is advocating and fully supporting an Asset Management approach for highways to ensure that fundamental management information and activities are in place and sustained and that these align with recognised good practices.

The revenue budget of £126K is used for general inspections, reactive maintenance and for consultant fees, with the capital budget of £376K being used for preventative repairs.

The audit was designed to assess the controls in place to manage the following objectives and risks:

Objective	There is adequate inspection and maintenance regime in place which ensures the safety, integrity and adequacy of structures within the highway for use by the public.
Risk	<p>Highway bridges may not be subject to periodic inspection to determine their condition and to record defects.</p> <p>There may not be an approved programme of works in place and preventative maintenance works may not be carried out in a timely manner which could result in an increased whole-life cost of the structure.</p> <p>Performance Indicators may not have been developed or monitored.</p>

1.2 Conclusion



Taking account of the issues identified, the Council cannot take assurance that the controls upon which the organisation relies to manage this risk are suitably designed, consistently applied or effective. Action needs to be taken to ensure this risk is managed.

The above conclusions feeding into the overall assurance level are based on the evidence obtained during the review. The key findings from this review are as follows:

Design of control framework

- Asset Management Software had not been implemented to comply with the Asset Management approach being promoted by the Government.
- A programme of strength assessments to determine whether highway bridges achieved the required live load capacity had not been implemented
- Performance Indicators had not been developed, monitored and communicated.

Application of and compliance with control framework

- Principal inspections that help to identify any major defects had not been carried out in line with the Management of Highways Structures Code of Practice (MHSCOP). 90% of structures were overdue an inspection.
- A Bridge Condition Index (BCI) was calculated based only on data from general inspections as very few principal inspections had been carried out
- Some general inspections had been carried out and there was a one year recovery programme in place to bring them in line with the Code of Practice.

1.3 Scope of the review

To evaluate the adequacy of risk management and control within the system and the extent to which controls have been applied, with a view to providing an opinion. Control activities are put in place to ensure that risks to the achievement of the organisation's objectives are managed effectively. When planning the audit, the following controls for review and limitations were agreed:

Limitations to the scope of the audit:

- The scope of this audit will be limited to reviewing processes in place and conclusions are based upon results of sample-testing. Our work does not provide any guarantee against material errors, loss or fraud or provide an absolute assurance that material error, loss or fraud does not exist.
- Our work does not provide an absolute assurance that material errors, loss or fraud do not exist.

The approach taken for this audit was a Risk-Based Audit.

1.4 Recommendations Summary

The following tables highlight the number and categories of recommendations made. The Action Plan at Section 2 details the specific recommendations made as well as agreed management actions to implement them.

Recommendations made during this audit:

Our recommendations address the design and application of the control framework as follows:

	Priority		
	High	Medium	Low
Design of control framework	1	2	0
Application of control framework	1	1	0
Total	2	3	0

The recommendations address the risks within the scope of the audit as set out below:

Risk	Priority		
	High	Medium	Low
Highway bridges may not be subject to periodic inspection to determine their condition and to record defects.	2	2	0
There may not be an approved programme of works in place and preventative maintenance works may not be carried out in a timely manner which could result in an increased whole-life cost of the structure.	0	0	0
Performance Indicators may not have been developed or monitored.	0	1	0
Total	2	3	0

2 Action Plan

The priority of the recommendations made is as follows:

Priority	Description
High	Recommendations are prioritised to reflect our assessment of risk associated with the control weaknesses.
Medium	
Low	
Suggestion	These are not formal recommendations that impact our overall opinion, but used to highlight a suggestion or idea that management may want to consider.

Ref	Recommendation	Categorisation	Accepted (Y/N)	Management Comment	Implementation Date	Manager Responsible
1.1	As recommended by the Consultants (Pell Frischmann), a recovery programme for principal inspections should be established as soon as possible. This should include a risk assessment to determine the length of time required between inspections. Thereafter, a programme of regular principal inspections should be carried out in line with the risk assessment. This will reduce the likelihood of major defects going undetected and ensure the Council meets its statutory responsibilities.	High	Y	Agreed – a recovery programme is being established and is reflected in current budgets and work programmes.	October 2014	Les Burns
1.2	Once Principal Inspections are carried out, a more accurate BCI should be obtained by utilising the data from both principal and general inspections. This will ensure the Council has accurate information on the condition of its bridge stock.	Medium	Y	BCIs will be refined as more detailed structural information comes forward through principle inspections	Ongoing	John Devono

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Ref	Recommendation	Categorisation	Accepted (Y/N)	Management Comment	Implementation Date	Manager Responsible
1.3	In line with the Management of Highways Structures Code of Practice (MHSCOP), the Council should review how it stores its data and determine whether Asset Management software should be purchased. This will assist in targeting resources to those structures that are highest priority.	Medium	Y	Thurrock is progressing a phased upgrade to its Highways Asset Management System, based on Symology software.	Ongoing	Les Burns
1.4	The programme of strength assessments to determine whether highway bridges achieve the required live load capacity should be undertaken as soon as possible. This work could be programmed to coincide with principal inspections and should help to improve the stock and reduce the likelihood of legal or reputational damage.	High	Y	This is being programmed into the Recovery Programme Prioritisation.	October	John Devono
1.5	Senior management should develop some key performance indicators to show how the service is performing and help identify any areas for improvement. This will help them to target resources more effectively and efficiently.	Medium	Y	This will be undertaken in relation to HMPTE best practice and corporate risk management.	October	Ann Osola

3 Findings and Recommendations

This report has been prepared by exception. Therefore, we have included in this section, only those areas of weakness in control or examples of lapses in control identified from our testing and not the outcome of all audit testing undertaken.

	Controls (actual and/or missing)	Adequate Design (yes/no)	Test Result / Implications	Recommendation	Categorisation
Risk 1: Highway bridges may not be subject to periodic inspection to determine their condition and to record defects.					
3.1	Up to July 2013, the Council's policy was to undertake a general inspection every three years and a principal inspection on a needs basis. However, following a review of the inspection and assessment regime by Pell Frischmann (the consultants) in July 2013, it was highlighted that, as per current standard and best practice, General inspections must be undertaken at two yearly intervals and principal inspections every six years, although this can be extended if an appropriate risk assessment has been undertaken.	Yes	<p>Due to the change in interval for general inspections from three to two years, it was noted that 51 general inspections, which should have been carried out between April 2012 and November 2013, were not. However, the Principal Engineer (Capital and Bridges) confirmed that there is a one year recovery programme in place.</p> <p>As a result of the risk assessment carried out by the consultants, 50% of the structures require a principal inspection every 6 years with the other 50% requiring inspections between 8 and 12 years. However, the Master Record indicates that no principal inspections have been carried out since 2004 and 90% of the structures are overdue an inspection. It is understood these have not been carried out due to a lack of funding. This means the Council is not meeting the guidance set out in the Management of Highways Structures Code of Practice (MHSCOP).</p> <p>Principal inspections help to identify any major defects and provide the Council with data for the preparation of a major bridge maintenance programme. Therefore, there is a risk that the Council may fail to meet its statutory duties and obligations which could result in potential legal action and damage to the Council's reputation should an incident occur.</p>	As recommended by the Consultants (Pell Frischmann), a recovery programme for principal inspections should be established as soon as possible. This should include a risk assessment to determine the length of time required between inspections. Thereafter, a programme of regular principal inspections should be carried out in line with the risk assessment. This will reduce the likelihood of major defects going undetected and ensure the Council meets its statutory responsibilities.	High

	Controls (actual and/or missing)	Adequate Design (yes/no)	Test Result / Implications	Recommendation	Categorisation
3.2	<p>There was evidence that a Bridge Condition Index (BCI) is determined for each individual bridge, based on its condition at the time of the inspection. The BCI system is a nationally developed method, endorsed by the Surveyor's Society with two BCI values calculated for each bridge which are defined as:-</p> <ul style="list-style-type: none"> • BCI_{lav} – this score provides an overview of the average structure condition • BCI_{crit} – this score provides an indication of the criticality of the structure with regards to the load bearing capacity. 	Yes	<p>The review highlighted that the BCI_{lav} for all bridges and retaining walls is above 76 which places them between fair and very good condition. However, the BCI_{crit} of 24 structures is below 70 which suggested they may be in poor condition in respect of their load bearing capacity. BCIs are only based on general inspections which are visual inspections of all parts of the structure that can be inspected without the need for special access equipment or traffic management arrangements.</p> <p>However, principal inspections comprise a comprehensive close examination, within a touching distance, of all parts of a structure that are accessible, utilising suitable inspection techniques, equipment and/or traffic management works, as necessary. Therefore, to obtain more reliable information on the structures condition, the BCI should be based on data from both general and principal Inspections as a more detailed inspection enables a more informed decision. There is a risk, therefore, that a larger number of bridges than reported could be below the poor rating of 70.</p>	Once Principal Inspections are carried out, a more accurate BCI should be obtained by utilising the data from both principal and general inspections. This will ensure the Council has accurate information on the condition of its bridge stock.	Medium
3.3	<p>There is a bridge inventory in the form of an excel spreadsheet which gives details of type, structure, dimensions and location for all the highway structures the Authority is responsible for. Other bridge data i.e. current condition, performance, severity and extent of defects, material strength, loading etc. has to be compiled</p>	No	<p>There is no ready availability of condition, running costs and other performance data which would help management in making decisions around bridge maintenance.</p> <p>A more comprehensive database would centralise and assist with the recording and analysis of data related to all asset information e.g. identification, location, condition, performance, accounting, management, risk and photographic evidence etc. This would aid management in making informed decisions around</p>	In line with the Management of Highways Structures Code of Practice (MHSCOP), the Council should review how it stores its data and determine whether Asset Management software should be purchased. This will assist in targeting resources to those	Medium

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	Controls (actual and/or missing)	Adequate Design (yes/no)	Test Result / Implications	Recommendation	Categorisation
	using several other records.		investment. The Government is advocating and fully supporting an Asset Management approach for highways to ensure that fundamental management information and activities are in place and tools/procedures that will improve and streamline management activities are developed.	structures that are highest priority.	
3.4	There is not a bridge assessment and strengthening programme in place to ensure that the Council's bridges are able to carry 40 tonne loads, as now required by EU legislation. Where highway bridges fail to provide current highway loading there is a requirement to carry out strengthening works. The consultant engaged in 2013 carried out a risk based analysis and recommended that 11 structures require an assessment. In addition, a review of structures which have not been assessed and are suspected of having inadequate load capacities should be undertaken.	No	This work had not been carried out due to lack of funding. With the development of major industrial sites in Thurrock, there is likely to be an increase in traffic which could result in increased wear and tear on the structures. Failure to carry out the required assessments could result in structures not being maintained appropriately and open the Council up to potential legal and reputational risk.	The programme of strength assessments to determine whether highway bridges achieve the required live load capacity should be undertaken as soon as possible. This work could be programmed to coincide with principal inspections and should help to improve the stock and reduce the likelihood of legal or reputational damage.	High
Risk 3: Performance Indicators may not have been developed or monitored.					
3.1	There are no national indicators that are directly related to the Bridge Maintenance Strategy. Local indicators have not been developed.	No	It is understood that some local indicators are being considered including: <ul style="list-style-type: none"> Percentage of planned general inspections completed annually. Percentage of principal inspections and 	Senior management should develop some key performance indicators to show how the service is performing and help identify any areas for	Medium

	Controls (actual and/or missing)	Adequate Design (yes/no)	Test Result / Implications	Recommendation	Categorisation
			<p>risk assessments completed annually.</p> <ul style="list-style-type: none"> • Percentage of structural assessments completed annually. <p>Examples of other strategy based performance indicators that could be considered but are not mutually exclusive include:-</p> <ul style="list-style-type: none"> • Percentage of substandard bridges. • Actual time and cost of individual schemes compared to estimated time and costs. • Reportable accidents on bridges. <p>Measuring performance should assist senior management in identifying areas for improvement and provide information to help them target their resources more effectively and efficiently, including making the case for further investment where appropriate.</p>	<p>improvement. This will help them to target resources more effectively and efficiently.</p>	