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1 The Asset and how it is Managed

1.1 The Solihull structure stock includes the following structures owned by SMBC.

SMBC Owned Road Bridges > 1.5m span*	137
SMBC Owned Buried Chambers >1.5x1.5m	3
SMBC Owned Culverts >0.9<1.5 m span	27
SMBC Owned Culverts < 0.9 m span	50
SMBC Owned Footbridges Associated with highways	7
SMBC Owned Timber Footbridges on public footways	70
SMBC Owned Misc Footbridges on public footways	17
SMBC Misc Culverts under public footways	35
SMBC Parks Dept Owned footbridges	13
SMBC Owned Gantries	5
SMBC Owned Closed/Filled Subways	12
SMBC Owned Retaining Walls > 1.5m high	5

TOTAL 381

*Of these, approximately 55 are considered to have a strategic significance because of their location and usage

1.2 Structures owned by others are not currently formally recorded nor routinely inspected. Inspection records are not routinely provided to SMBC by the structure owners. If resources permit, in the future it is hoped to include all bridges in the Borough, irrespective of ownership within the structures database and to carry out a brief General Inspection at the same frequency as the SMBC structures.

1.3 Details of structures are recorded on the SMS (Structures Management System) database and currently additional data is being added to give as full a record as possible. The database allows ready access to all details and can provide detailed analysis and reports on structures.

2 The Strategy

Bridge Maintenance Strategy for Solihull

2.1 Introduction

The majority of highway maintenance including structure maintenance is based on statutory duties and powers contained in national legislation.

The Highways Act 1980 sets out the main duties of Highway Authorities in England and Wales. These include a duty to maintain highways and associated structures, which are maintainable at public expense.

Authorities have a general duty of care to users and the community to maintain the highway and associated structures in a state that is safe for use and fit for purpose.

2.2 National Context

Our policies and methods of working are in accordance with national, regional and local policies.

The Council has adopted the Management of Highway Structures Code of Practice document published in September 2005

2.3 Solihull Bridge Stock

The Council has a total of 381 structures in its ownership of which 137 are highway bridges with a span greater than 1.5m.

2.4 Challenges and Opportunities

The main challenges in relation to the bridge stock are:

- Gradual deterioration of ageing structures exacerbated by increased traffic, particularly heavy goods vehicles;
- Increases in permitted vehicle weights since design and construction, which means that certain bridges have reduced capacity in relation to current traffic loading;
- Penetration of water into and around structures particularly with the presence of road de-icing salts, leading to accelerated deterioration;
- Impact damage by vehicles;
- Vandalism and graffiti;
- Undercutting of foundations or flood damage;
- Overgrowing vegetation; and
- Severely reduced funding.

There are opportunities to repair more than one defect during the same works and to improve safety on and around structures. If roads, railways or watercourses are closed for works, there are opportunities for close inspection or testing

2.5 Specific Strategic Objectives

This strategy supports the broader objectives for a transport system which promotes a more inclusive society and a sustainable economy with minimum environmental impact. Our specific objective is to avoid any deterioration in the bridge stock.

2.6 Strategy Themes

The core themes of the bridge maintenance strategy are:

Overall - To maintain bridges and other highway structures generally in accordance with the Code of Practice for the Management of Highway Structures. Any departures from the recommendations of the Code of Practice will be monitored and their effects minimised. The risks introduced will be quantified and will be used to inform the process of prioritisation of bridgeworks.

Quality Assurance - All bridge maintenance activities are covered by a QA scheme and are regularly audited.

Database – The Council holds summary information including photographs of all structures on a dedicated computer database. This database can automatically sort and analyse bridge-related information including repair history, assessments and condition indicators. Wherever possible, bridge record drawings are retained and it is proposed that historic drawings will be converted to electronic format.

Inspections - The Council inspects all Solihull owned structures on a two-year cycle, to detect any abnormal deterioration. There is an annual programme of underwater and confined space inspections. Further and more detailed inspections are carried out as required.

Assessments – Bridge Assessment is the formal process of evaluating whether bridges are sufficiently strong to withstand the loads imposed by modern vehicles. This process involves a detailed inspection, investigation of hidden details, testing of materials used in construction and calculations and analysis to determine the structural behaviour and capacity.

Of the SMBC-owned structures, 121 fall into the categories requiring assessment. Of these, 58, (48%) passed assessment, 10 (8%) have been strengthened and 5 (4%) have been weight limited.

A review of all available assessment data has shown that 35 (29%) require a complete assessment and 13 (11%) have incomplete data and require further work.

A programme will be established for completion of the outstanding assessments. These will be prioritised according to the strategic importance of individual structures, and take into account the available funding for assessment work. An overall risk assessment will be prepared to highlight the implications of an incomplete structural assessment programme and the overall effect on the wider issues of Asset Management.

The Council will review the assessments for those structures found to be weak in some respect and take the appropriate action, which may include strengthening, re-building, imposing restrictions on traffic, further testing, monitoring, or in exceptional circumstances, closure.

Bridge Strengthening - In determining priorities for strengthening, the Council takes account of:

- The degree of structural inadequacy and the level of risk presented to highway users;
- The importance of the route, level of usage and the availability of suitable alternatives;
- The views of the local community and users;

- The consequences of permanent or temporary weight restrictions; and
- The need for co-ordination with other highway or related works.
- The risks associated with the alternatives available

Weight Restrictions – The Council’s aim is to ensure that all bridges on the road network are capable of carrying 40 tonne vehicles, with a maximum axle weight of 11.5T. We avoid the imposition of weight limits wherever possible. A weight restriction is generally only considered appropriate if a bridge is located:

- On a minor road where a suitable alternative route is reasonably convenient (5km or less); or
- On a minor road where a suitable alternative route is longer than 5km but the numbers of HGV's affected are less than 10 in a 12-hour day.

The Council will ensure that signing regarding weight limits and height restrictions will be implemented in accordance with current guidance.

Scheduled Monuments and Listed Structures - Works are undertaken to conserve those bridges, which form a vital part of our cultural heritage unless such works would be prohibitively expensive or impractical.

Other Ownership – The Council maintains a dialogue with owners of other structures and seeks the most favourable terms for agreements to carry out bridgeworks, subject to:

- The achievement of national and corporate aims; and
- Existing national agreements.

For works on structures under other ownership the Council will seek to minimise disruption caused by diversion of traffic and disturbance to local residents and businesses.

Vehicle Incursion: Roads over Rail and Adjacent to Rail - The Council have completed a risk -ranking of all relevant structures, regardless of ownership, and will continue to work with Network Rail to promote and implement safety schemes on a cost-sharing basis.

2.7 Policies

The strategic policy and related actions for bridge maintenance as contained in the West Midlands LTP3 document are:

Policy TAM1

To seek to ensure that the transport network is adequately managed through effective Asset Management

Over the LTP3 period, it is envisaged that there will be an increase in population, development and activity. Given the emphasis on maximising the use of existing transport infrastructure, it is imperative that the transport network is adequately maintained through effective asset management planning.

Action 1

To undertake Asset Management in accordance with the profile established by the CIPFA Infrastructure Asset Management Code and Whole of Government Accounts

To deliver the full asset management approach in line with CIPFA and Government requirements, the Metropolitan Districts will continue to develop their asset management plans and accounting processes in line with the Transport Infrastructure Code. Through funding secured through this plan the metropolitan authorities will continue to develop asset management processes as follows in line with Whole of Government Accounting:

- Collect a complete set of inventory and condition data for all transport assets.
- Develop annual depreciation regimes for all transport assets.
- Prepare cost effective long term maintenance and renewal programmes
- Deliver efficiency savings and service improvements
- Produce financial information that is compliant with IFRS and meet the need of Whole of Government Accounts

Data capture has been prioritised for those assets that have been identified as critical from a risk management perspective. Whilst datasets are substantially complete, there is an ongoing need to collect/update data, through detailed surveys as and when funding becomes available.

Action 2a

Data capture using local knowledge and recently implemented asset maintenance or new scheme installation information.

Inventory and condition data will be collected in association with other duties and works, for example where there is reliable local knowledge, where maintenance works or improvement schemes have been recently carried out and there are “as-built” drawings available.

Action 2b

Financial Data to be collected in line with providing information for Whole of Government Accounts

The recently introduced Transport Asset Infrastructure Code, the principles of which are supported and have been adopted, has been developed to enable the compilation of consistent asset management data to meet the requirements of Whole of Government Accounts.

Action 2c

Data capture from renewals programmes.

Where non-critical areas and assets have been identified, inventory and condition data will be collected over future years as and when maintenance or improvement works are carried out.

The Council will prioritise maintenance and strengthening work on bridges and other structures based on:

- Council and wider national transport objectives;
- Engineering assessment;

- Bridge Condition Indicators;
- Specific inspections of reported problems;
- Consultation; and
- Available funding.

2.8 Constraints to Delivering the Strategy

It is considered that the main constraints to delivering the Bridge Maintenance strategy are:

- Funding;
- Delays in reaching agreement with other bridge owners, such as Network Rail and bodies such as English Heritage, Environment Agency, Service Authorities etc.;
- Balancing the differing priorities of bridge owners and users, as well as the impacts on communities; and
- Unpredictability of damage being caused to structures.

2.9 Monitoring

Bridge Condition Indicators. The Council monitors the condition of all structures for which it is responsible. All bridge inspections are carried out to a nationally agreed format which allows the automatic calculation of Bridge Condition Indicators. (BCI's). In future the variation in the average BCI value for the bridge stock will be calculated and monitored.

Key Performance Indicators will be calculated for bridges. These have been developed on behalf of ADEPT (formally the County Surveyors Society). There are specific indicators for Condition, Availability, Reliability, and Workbank. Further development of the last three of these is currently taking place, prior to general adoption.

Strategy based performance indicators will continue to be monitored and include:

- Percentage of substandard bridges;
- Percentage of recycled materials used;
- Satisfaction rates of customers;
- Individual scheme completion related to estimated time and cost; and
- Reportable accidents on schemes.

Asset Management - A Bridge Asset Management Plan will form part of the overall Transport Asset Management Plan for Solihull

3 Bridge Assessments

- 3.1 A fundamental part of structures management is the assessment of all bridges to evaluate their capability to carry the anticipated loading and to take the necessary actions if there are deficiencies. This process is necessary in addition to the Bridge Condition Indicator calculation, since a bridge could be in excellent condition but have been designed for far lower loading than it is required to carry.
- 3.2 A detailed review of all assessment data is in progress, with all information being transferred to the SMS database. This will enable the production of a summary showing which structures have not been assessed or require more detailed examination.
- 3.3 As a result of this, a programme will be drawn up for ongoing assessment work and remedial works or other measures required (e.g. weight restriction, strengthening or exceptionally, closure). At this time, the level of risk associated with any substandard structures will be evaluated.

4 Action Plan

- 4.1 An Action Plan has been drawn up including the following areas related to Structure Maintenance.

Asset Management
 Resources
 Term Service Contract
 Risk Management
 Current Year Programme
 3 Year and 10 Year Plans

- 4.2 This document will be regularly updated and includes a simple RAG rating to provide a snapshot of progress in each area.
- 4.3 A copy of the current Action Plan is included as Appendix A

[H:\Network Implementation\04.Capital Team\STRUCTURES\Resources\Bridges action plan Sept12 RevB.xls]

5 2012/13 Programme

- 5.1 An outline programme has been prepared for all major schemes showing progress throughout the year and the estimated costs for schemes. Again a RAG rating is provided. This programme and changes to it are as agreed with the term contractor.
- 5.2 A copy of the current 2012/13 programme is included as Appendix B

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6 Resources Allocation for 2012/13

- 6.1 A spreadsheet has been prepared showing the anticipated revenue and capital resources in terms of staff and budget for 2012/13. This includes SMBC staff, WCC staff, WSP staff and the works costs for all anticipated schemes. The staff numbers have been estimated on the basis of not just providing the basic service but of gradually improving the asset over a number of years.
- 6.2 The allocation of resources is based upon an allocation of £120k Revenue and £335k Capital, a total of £455k. .
- 6.3 A copy of the Resources spreadsheet is included as Appendix C.

[H:\Network Implementation\04.Capital Team\STRUCTURES\WCC\Resource programme 2012-13.xls]

7 Future Planning

- 7.1 Work in the future will clearly be largely dependent on the results of the assessment reviews, which will provide a list of priority structures.
- 7.2 In addition, works may arise as a result of flooding or accidental impact or significant changes of use of the structures.

8 10 Year Plan

- 8.1 As noted above, the preparation of a complete 10-year plan with prioritisation is not realistic until the full picture of assessments is available. However, details of all known remedial works required at present have been assembled as the basis of a future plan. These are shown in Appendix D.

[H:\Network Implementation\04.Capital Team\STRUCTURES\10 year plan\10plusPriority Structures May 2011]

9 Financial Issues

- 9.1 Whilst the 10-year plan includes work to overcome currently known defects, the future workload will depend on the funding available. The level of future funding is currently uncertain.

10 Change Record

<u>Date</u>	<u>Version</u>	<u>Description</u>
11/10/12	2.0	Sections 5 and 6 updated to reflect the current position.