

15. Bridge Maintenance Strategy

15.1 Introduction

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

This strategy (and the phrase “highway network” when used within this strategy) specifically excludes bridges on the public rights of way network which are managed separately.

15.2 National Context

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

The County Council has adopted the final version of the National Bridge Maintenance Code of Practice document

15.3 Warwickshire Bridge Stock

Warwickshire has a total of over 1300 bridges and other structures of which the County Council owns almost 1000.

15.4 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 are weak 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; and
- Overgrowing vegetation.

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

15.5 The Strategy

15.5.1 Specific Strategy 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.

15.5.2 Strategy Themes

The main themes of bridge maintenance strategy are:

Overall - To maintain bridges and other highway structures generally in accordance with the new Bridge Management Code of Practice.

Quality Assurance - All bridge maintenance activities are covered by a BSI registered QA scheme and are regularly audited both internally and externally

Database – The County Council hold 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. All bridge record drawings are retained and all historic drawings have been converted to electronic format..

Inspections - The County Council inspects all structures in the County on a two-year cycle, regardless of ownership, 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 - The majority of structures have now been formally assessed for their suitability to carry current highway loading. We will complete the outstanding assessments. The County Council review the assessments for those structures found to be weak in some respect and take the appropriate action, which may include strengthening, closure, re-building, further testing or monitoring.

Weight Restrictions – The County Council's aim is to ensure that all bridges on the road network are capable of carrying 40 tonne vehicles. We avoid the imposition of weight limits wherever possible. A weight limit 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 County Council will ensure that signing regarding weight limits and height restrictions will be implemented in accordance with the County Council's policy entitled 'Signing for Bridges of Sub-Standard Headroom'. This policy is appended to this strategy.

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

- The degree of structural inadequacy and the level of risk presented to highway users;
- The importance of the route 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.

Ancient 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 County Council maintain a dialogue with owners of other structures and seek the most favourable terms for agreements to carry out bridgeworks, subject to:

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

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

15.3 Policies

The strategic policies related to bridge maintenance are:

Policy BM1: Overall

The County Council will maintain all structures in accordance with the Bridge Maintenance Code of Practice

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

- County Council and wider national transport objectives;
- Engineering assessment;
- Bridge Condition Indicators;
- Specific inspections of reported problems;
- Consultation; and
- Available funding.

Procurement: At the time of writing Minor Works are carried out by a term contractor appointed on the basis of competitive tender of rates. We procure larger schemes by competitive tender using a select list of contractors and the select list is regularly reviewed. From May 2011, Bridge Maintenance work will be included in the Highway Maintenance contract.

Appropriate versions of the NEC (New Engineering Contract) with the emphasis on partnership and co-operation are the norm.

Policy BM2: Inspections

The County Council will inspect all structures in the County on a two year cycle, regardless of ownership, to detect any abnormal deterioration.

Policy BM3: Strengthening

The County Council will seek to strengthen weak bridges where appropriate and possible, and will avoid the imposition of weight limits unless unavoidable.

Policy BM4: Conservation

The County Council will seek to conserve those bridges which form a vital part of our cultural heritage unless such works would be prohibitively expensive or impractical.

Policy BM5: Equality of Access

The County Council will aim to take account of all users of the highway network through the bridge maintenance strategy. In particular we will seek to ensure that as far as reasonably practicable there is no direct or indirect discrimination on the grounds of Race, Religion, Sexual Orientation, Age, Disability or Gender.

The County Council's bridge stock will be regularly reviewed by means of an Equality Impact Assessment to ensure that the principles of this policy are upheld.

Policy BM6: Sustainable Development

Where significant bridge works take place, the County Council will actively encourage the recycling of materials on site to minimise the amount of virgin stone and other materials needed from local quarries.

Policy BM7: Consultation and Partnership working

The County Council will undertake consultation on individual schemes with elected Members, District Councils, English Heritage, Environment Agency, Statutory Undertakers, neighboring authorities, other bridge owners and local residents where relevant and appropriate. The County Council will continue to be represented on national and regional groups relevant to bridge maintenance.

In addition post completion surveys will be carried out on an individual scheme basis.

15.4 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 and bodies such as English Heritage, Environment Agency, Service Authorities etc.;
- Balancing the differing priorities of bridge owners and users; and
- Unpredictability of damage being caused to structures.

15.5 Monitoring

National Indicators

There are no National indicators that are directly related to the Bridge Maintenance strategy

Bridge Condition Indicators

The County Council monitor 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). By April 2005 all structures in the County had been inspected in accordance with the new system so that a full set of base data is now available. The current average BCI is 89.22 out of a maximum 100 which is in the range "good". Future changes in the bridge stock condition will be monitored against this baseline.

Key Performance Indicators will be calculated for bridges. These have been developed by WS Atkins on behalf of ADEPT (formally the County Surveyors Society). There are specific indicators for Condition, Availability, Reliability, and Workbank. Future guidance related to Target Setting, which will be adopted by the Council.

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 Warwickshire.

The assets for which the County Council is responsible include bridges, retaining walls and other highway structures. Details are held within a dedicated database. All inspection details are entered into the database that automatically calculates the Bridge Condition Indicators. The database software is being developed so as to enable calculation of asset values. The system enables maintenance work required to be prioritised according to Bridge Condition Indicators and will in future be linked to asset value. It will be possible to assess the effects of works on an individual structure and on the total bridge stock.