

WIRRAL COUNCIL

SUSTAINABLE COMMUNITIES OVERVIEW & SCRUTINY COMMITTEE

29TH JANUARY 2013

SUBJECT:	MANAGEMENT OF HIGHWAY STRUCTURES
WARD/S AFFECTED:	ALL
REPORT OF:	INTERIM DIRECTOR OF TECHNICAL SERVICES
KEY DECISION?	NO

1.0 EXECUTIVE SUMMARY

- 1.1 The purpose of this report is to inform the Committee of the various activities carried out as part of the management of the Council's highway structures, and to place these within the broader context of the Council's obligations to the public in terms of safety, accessibility, sustainability and value for money.
- 1.2 This report details the methodology used to manage Wirral's highway structures. The relevance of the structures within the overall highway network and the importance of having in place a robust asset management system are explained.
- 1.3 The Council has a statutory duty to maintain the highway under the Highways Act 1980, and the important role which management of highway structures plays in fulfilling that obligation is explained in detail.

2.0 BACKGROUND AND KEY ISSUES

2.1 General Definition of Highway Structures and their role within the Highway Network

- 2.1.1 Highway Structures form a vital link in the highway network as by their very nature they tend to be strategically placed, and consequences when they fail or provide a reduced level of service, for example due to reduction in structural capacity, are usually serious.
- 2.1.2 Wirral Council is responsible for approximately 90 bridges and 70 other structures (mostly retaining walls) on the highway network, with a combined gross replacement cost of approximately £230 Million. They form a vital link within the highway network and their proper management is crucial to the overall functioning of the network. They include a wide variety of structures from major bridges such as Poulton Viaduct in Wallasey, Town Link Viaduct in Birkenhead, Bromborough Pool Bridge on the A41 and 'C' Bridge on the A554 Tower Road Cross-Docks route, to older masonry structures such as those over the Wirral Way, and to smaller structures such as footbridges over both the highway and on Public Rights of Way.
- 2.1.3 In September 2005, *Management of Highway Structures*, a national Code of Practice (CoP) was published. Whilst the recommendations in the CoP are not mandatory, it does provide authoritative guidance on highway structures stewardship duties, and has been developed around an asset-management approach. Compliance with the

recommendations in the CoP is a widely accepted indication that best practice in the management of highway structures is being achieved (See also Section 2.2.2).

- 2.1.4 A broad definition of a highway structure is given within the CoP as “Any bridge or other structure that impinges in any way within the footprint of the highway or that materially affects the support of the highway or land immediately adjacent to it...” Such structures include bridges, retaining walls and culverts. More specific details are given in paragraph 2.5.2 of this report.

2.2 General Duties and Obligations for Highway Maintenance

- 2.2.1 Where a highway passes over a bridge, Section 382(2) of the Highways Act 1980 vests the bridge as part of the highway and the normal duty to maintain under Section 41 of the Act applies under these circumstances. There are a number of exceptions to this principle concerning privately owned structures.

- 2.2.2 Whilst the recommendations contained within the CoP are not explicitly mandatory for owners of highway structures, the document states that “... in cases of claims or legal action, it is likely that the contents of this Code may be treated as a relevant consideration, as it is deemed to represent accepted good practice.”

During the Cumbrian floods of November 2009, a number of bridges were destroyed. The Parliamentary Review of the bridge failures highlighted that “Bridge owners should be reminded of the importance of inspecting their bridge stock in accordance with the Code of Practice”.

- 2.2.3 At the time of publication of the CoP, the Department for Transport issued an introductory document *Maintaining a Vital Asset*. Within this document the importance of having relevant systems in place to maintain highway assets and inform decision making was stressed, with a key section stating:

“Authorities also need to establish effective arrangements for dealing with more immediate issues, such as repairing potentially dangerous defects. They need to specify clear procedures and standards, and provide resources and training to ensure that standards are met. Failure to do so could have serious legal consequences both for the authority and the individual employees or contractors concerned. It is crucial that all council members and officers have a clear understanding of their responsibilities in this area, particularly in the light of Government proposals to strengthen legislation concerning corporate manslaughter.”

- 2.2.4 Regular inspections (refer to Section 2.4) are the mechanisms by which any potentially dangerous defects are identified, and the CoP provides the benchmark for defining liability should a bridge fail.

2.3 Highway Structures Management, the Corporate Plan and the Highways Asset Management Plan (HAMP)

- 2.3.1 Wirral Council’s Corporate Plan 2012 contains the Corporate Goal “Have a safe and well-maintained highway network for all users”, to which all the highway structure related asset management activities described in this report contribute.

2.3.2 Highway structures form a core part of Wirral Council's Highways Asset Management Strategy and draft HAMP, as reported to Cabinet on 12th March 2012 (Minute 341 refers).

2.3.3 As part of the effective management of Wirral's highway network, liaison is maintained with other highway structure owners within the Borough. These include Merseytravel, Network Rail, Peel Ports and some private owners. The Council is also represented on the Merseyside District Bridge Engineers Group, which currently meets twice a year, to share and develop best practice.

2.4 Inspection of Highway Structures

2.4.1 Regular inspection of highway structures is vital to ensure public safety and the continuing operation of the highway network, and in maintaining the Council's defence under Section 58 of the Highways Act 1980. Inspections are conducted systematically and not limited to times when a major problem is reported or a structural failure has occurred. Inspections of highway structures are carried out in accordance with the recommendations contained within the CoP, the guidance contained in the national *Inspection Manual for Highway Structures* and in line with technical guidance published by the Department for Transport.

2.4.2 Paragraph 2.2.3 makes reference to the importance of a regular inspection regime. A recent audit into one Council's bridge management function found that the Inspection Regime was flawed, and did not adhere to the CoP, and that this would be one of the main issues looked at by the Courts in determining whether the Council had fulfilled its obligations under the relevant legislation.

2.4.3 Broadly, two main types of inspection are routinely carried out:

- Principal Inspections are currently carried out every six years on all major structures and comprise a detailed close-up inspection of all exposed structure elements, together with a number of specialised intrusive and non-intrusive testing techniques. An external consultant is normally commissioned to carry out and report on this work.
- General Inspections are carried out between Principal Inspections at two-year intervals and comprise a less detailed overview of the structure condition. Any major problems or areas of deterioration would be identified during these inspections, and any particular areas of concern that were highlighted within the Principal Inspections are also checked for signs of deterioration.

In addition to the above, other types of inspection are carried out as and when required, such as Inspections for Assessment, Special Inspections, and Inspections following Major Works.

2.4.4 The severity and extent of any defects to structure elements is recorded during both Principal and General Inspections and incorporated in the Council's database (See Section 2.5). This enables informed decisions to be made concerning the short, medium and long-term maintenance strategies for the Council's structure stock.

- 2.4.5 Detailed knowledge of condition of elements also benefits lifecycle planning and enables informed decisions to be taken concerning optimal timing for maintenance intervention or replacement, thus ensuring value for money is realised throughout the life of the asset.
- 2.4.6 Local Authorities are being encouraged to adopt a more risk-based approach to the timing of Principal Inspections so that rather than a rigid time frame of six years a better informed regime can be established taking due cognizance of a number of factors, such as existing condition of structure, importance of road carried or obstacle crossed, historical significance, likely consequence of failure etc.

This risk exercise is presently underway for the 80 structures owned and maintained by the Council that are currently incorporated in the Principal Inspection programme. Such a risk-based Programme is likely to identify a number of structures for which it is acceptable to relax the six-year inspection frequency, and thus reduce the financial burden created by the inspection regime. National guidance has been published to assist with this decision-making process.

2.5 Wirral's Highway Structures Database

2.5.1 Over the course of several years, Wirral has developed its own Geographical Information System (GIS) based database. This contains information on all Wirral's highway structures, including those not part of the adopted highway and those in private ownership (See paragraph 2.5.8).

2.5.2 A Highway Structure is defined in detail by the CoP:

- A bridge with a minimum clear span of at least 1.5m;
- A retaining wall associated with the highway whose dominant function is to act as a retaining structure
- A culvert of at least 1.5m diameter.

The CoP also makes provision for other structural features, such as high masts and sign gantries, however there are at present no such structures for which Wirral Council has responsibility.

For historical reasons, information is also held on some structures for which the minimum dimensions are less than those stated in paragraph 2.5.2 above.

2.5.3 The development, maintenance and updating of a highway structure database has enabled details of inspections, maintenance and asset condition to be recorded which in turn help to inform decisions on spending prioritisation and thus ensure value for money. Data can be interrogated to provide various outputs that provide an indication of the current condition of the structure stock.

2.5.4 The current database holds asset information, including digitised reports, maintenance records, assessments and drawings and **Table 1** below summarises the number and type of structures held in the database, together with some key information concerning the overall highway structure asset stock. The individual assets each comprise a number of elements, for example a bridge has separate elements for parapets,

bearings, abutments, deck, joints etc, and in total the database has current and historical condition information on over 2,200 such elements. The information is continually updated as inspections are undertaken or work carried out to structures.

STRUCTURE TYPE	DATABASE TOTAL	MANAGED BY WIRRAL COUNCIL
Main Bridge	148	47
Footbridge (including on Public Right of Way)	57	43
Retaining Wall	44	41
Other (e.g. Subways, Small Culverts etc)	47	27
TOTAL	296	158

Table 1: Highway Structures Database details

A summary of significant data held includes:

- Total deck area of bridges 25,000 m²
- Total length of retaining walls 1,800 linear metres
- Total length of sea walls 10,500 linear metres
- Total Gross Replacement Cost (approximate) £230,000,000

2.5.5 Although, as mentioned in 2.5.4 above, information is held on a number of retaining walls, there remain several such structures for which a comprehensive inventory is not yet held. Work is ongoing to fully identify all such structures and incorporate the relevant details within the database.

2.5.6 Due to the geography of Wirral, there are a significant number of highway retaining walls that also fulfil a role as sea- or river- walls, providing a function as sea-defence or coast-protection structures. Details of these structures are held within both the highway structures database and the closely related coastal database.

2.5.7 A number of Council-owned structures do not meet the criteria for a highway structure as set down in the CoP (See section 2.1.4 of this report). These are structures typically situated within parks or other public open spaces. In order to minimise the risk to the Authority of any maintenance or service failure of these structures, they are included within the broader database of structures, and the more significant of these structures are subjected to the same regime of inspection and maintenance as that described for highway structures in paragraph 2.4.

2.5.8 A number of structures have limited headroom or substandard weight carrying capacity. Details of these limitations are held within the database and enable technical advice to be given to colleagues and advice to third-parties concerning vehicle movements and loadings to be given. Monitoring of available headroom and adequacy of warning measures is also dealt with within the bridge management function.

2.6 Structure Condition and Valuation Reporting

2.6.1 The main outputs used to monitor the condition of the assets within the database are:

- Bridge Condition Index (BCI) - the BCI enables an ongoing record of the overall condition of the Authority's structure stock to be maintained. It is calculated using

mathematical formulae that take account of the individual elements of a structure, including criticality and condition. A weighting is then applied to the individual elements and the overall size and importance of the structure is also taken into consideration during this process, in order to arrive at an overall BCI value for the entire bridge stock.

- Structure Condition Index - a similar exercise is undertaken for retaining walls and the output from that exercise is combined with the BCI to give the overall SCI.

A standardised system such as this enables comparisons to be made with other highway authorities at a regional and national level. The effect of major capital expenditure on the condition of the bridge stock is also reflected by a change in the BCI score, as the improvements resulting from a particular capital scheme directly affect the overall asset condition, as a consequence of replacement or refurbishment of individual structure elements.

2.6.2 The average BCI for Wirral Council structures, adjusted to allow for relative size of structure, is 88 and that the Critical BCI is 69. The average BCI takes account of the condition of all elements within each structure, whereas the critical BCI considers only those elements classified as critical. Each element is assigned an “importance factor” based on its role within the structure, such that for example the condition of the structure drainage or surfacing is less important to the overall integrity of the structure than the condition of its main beams or supporting columns.

2.6.3 Standardised guidance for the interpretation of the above information exists, with the following bandings commonly in use:-

<u>BCI Score</u>	<u>Condition</u>
Score 90-100:	Very Good
Score 80-89:	Good
Score 65-79:	Fair
Score 40-64:	Poor
Score 0-39:	Very Poor

From the above it can be seen that at the time the analysis was carried out, the average BCI fell into the “Good” Category, and the critical BCI was in the “Fair” Category. It should be noted that a number of schemes have been carried out since the above analysis, with the emphasis on high-priority defects (e.g. some of the schemes referred to in paragraph 2.7.4), and that this will have increased the critical BCI value. The calculation will be run again once all the necessary condition information relating to recent schemes has been included in the database.

2.6.4 It is important to note that without continual management of the highway structural assets, including inspection and maintenance, the overall trend in BCI scores would inevitably be downwards as deterioration remained unaddressed.

2.6.5 Under the Whole of Government Accounts requirements, calculations using CIPFA’s published methodology means that the approximate Gross Replacement Cost (GRC) for Wirral’s Council-owned highway-related structures is approximately £230 Million.

2.7 Funding of Works

- 2.7.1 Works carried out on highway structures are funded through either revenue or capital budget allocations. Whilst the revenue stream provides for relatively minor maintenance works, major improvement schemes or works that enhance the asset are funded via capital finances.
- 2.7.2 Capital funding is generally obtained either externally or from within the Council via the annual Capital Bid process. Sources of external funding include the current Local Transport Plan, and direct scheme-specific grant from the Department for Transport.
- 2.7.3 Significant highway-structure capital works carried out over the last three years are shown in the following table. The combined value of these works was approximately £6,000,000.

STRUCTURE	LOCATION	DETAIL OF WORK
Various Retaining Walls – 10 no.	Various	Repair, Strengthening and Reconstruction of over 10 retaining walls.
Bidston Moss Viaduct	A5139 Docks Link, Wallasey/Seacombe/Bidston.	Strengthening work – part of larger scheme carried out jointly with Highways Agency and Merseytravel.
Bromborough Station Footbridge	Allport Road, Bromborough.	Replacement of substandard parapet
Poulton Viaduct	A5139 Docks Link, Wallasey/Seacombe/Bidston.	Renewal of expansion joints and waterproofing; partial painting.
Docks ‘A’ Bridge	A554 Tower Road, Seacombe.	Complete renewal of timber decking; steelwork repairs; patch painting.
Docks ‘C’ Bridge	A554 Tower Road, Birkenhead/Seacombe.	Replacement walkways; steelwork repairs; full re-paint.
Poulton Swing Bridge	A5088 Poulton Bridge Road, Bidston/Seacombe.	Replacement walkways.
The Dell Underpass	A41 Rock Ferry By-pass, Rock Ferry.	Concrete repairs; renewal of expansion joints and waterproofing.
Town Link Viaduct	A5527 Town Link Viaduct, Birkenhead.	Steelwork and parapet repairs; joint replacement; repainting.
Leasowe Road	A554 North Wallasey Approach Road, Wallasey/Leasowe.	Concrete repairs; renewal of expansion joints and waterproofing.

2.7.4 A number of schemes have been identified for implementation in financial year 2013/14, with a total anticipated expenditure in excess of £1 Million.

3.0 RELEVANT RISKS

3.1 Failure to manage the Council's network of highway structures in accordance with the principles outlined in this report could lead to:

- a. Disruption to the highway network users due to increased occurrence of unforeseen problems with structures, in turn causing unplanned works and/or diversion of traffic away from affected structures.
- b. Consequential business-, economic-, regeneration- and tourism-related effects flowing from a. above.
- c. Hazards to the public from deteriorating and unmaintained highway structure assets.
- d. Exposure of the Council to legal action and financial claims due to not having a demonstrably robust highway asset management system in place in accordance with best-practice guidelines, and meeting the duty to maintain the public highway.

4.0 OTHER OPTIONS CONSIDERED

4.1 This Report outlines the methodology by which Wirral Council manages its highway structures and as such no other options are relevant.

5.0 CONSULTATION

5.1 None carried out in the preparation of this report.

6.0 IMPLICATIONS FOR VOLUNTARY, COMMUNITY AND FAITH GROUPS

6.1 None relevant in the context of this report.

7.0 RESOURCE IMPLICATIONS: FINANCIAL; IT; STAFFING; AND ASSETS

7.1 Works carried out on highway structures are funded through either revenue or capital budget allocations. Whilst the revenue stream provides for relatively minor maintenance works, major improvement schemes or works that enhance the asset are funded via capital finances.

7.2 The management of highway structures is currently undertaken by staff within the Highway Management Division of the Technical Services Department, supported by the Design Consultancy within Asset Management. Construction is carried out on smaller schemes through the Highways and Engineering Services Contract, and through individual tenders for the larger schemes.

7.3 The existing Highway Structures Database system is occasionally revised or updated with new functionality, for example to provide different levels of output or reporting options, or when new external guidance is produced requiring changes to reporting. This is carried out by the System's Developer, on a commission quotation basis, as necessary.

8.0 LEGAL IMPLICATIONS

8.1 Highway maintenance is a duty placed on the Council as highway Authority by statute.

8.2 It has been identified that failure to manage highway assets in accordance with accepted best-practice can lead to exposure to potential legal action in the event of, for example, structure failure.

9.0 EQUALITIES IMPLICATIONS

9.1 Has the potential impact of your proposal(s) been reviewed with regard to equality?

(b) No because there is no relevance to equality.

10.0 CARBON REDUCTION IMPLICATIONS

10.1 Maintaining the Council's highway structures in accordance with best practice leads to less delay and disruption on the highway network due to unscheduled closures and diversions. Any such increase in disruption would increase both journey time and distance and consequently have negative effects on carbon reduction.

11.0 PLANNING AND COMMUNITY SAFETY IMPLICATIONS

11.1 Management of highway structures forms part of the overall management of Wirral's highway network. Any maintenance activities arising as a consequence of this management are exempt from planning legislation.

11.2 Effective management of highway structures has a positive impact on community safety.

12.0 RECOMMENDATION/S

12.1 That the Committee note the report.

13.0 REASON/S FOR RECOMMENDATION/S

13.1 The Committee's acknowledgement of these specialist highway assets, and their management, is important in the scrutiny of the Council's objective to secure a Safe and Well Maintained Highway Network for all Users.

REPORT AUTHOR: **Ged Herby**
Group Leader
telephone: (0151) 606 2320
email: gedherby@wirral.gov.uk

APPENDICES

Not Applicable

REFERENCE MATERIAL

Management of Highway Structures: A Code of Practice (TSO, 2005):-

<http://tinyurl.com/CoPHighwayStructures>

(pdf downloadable version)

Inspection Manual for Highway Structures (TSO, 2007):-

<http://tinyurl.com/InspectManual>

(link to TSO bookshop; note:- hard-copy or pdf of above document can be made available for Member's perusal on request to the report author)

Maintaining a Vital Asset (DfT, 2005):-

<http://tinyurl.com/VitalAsset>

(pdf downloadable version)

SUBJECT HISTORY (last 3 years)

Council Meeting	Date
SUSTAINABLE COMMUNITIES OVERVIEW & SCRUTINY COMMITTEE. Corporate Goal "<i>Have a Safe and Well-Maintained Highway Network for all Users</i>" Progress Report	21st November 2012
CABINET. Highways Asset Management Strategy including the Draft Highways Asset Management Plan (HAMP)	15th March 2012
SUSTAINABLE COMMUNITIES OVERVIEW & SCRUTINY COMMITTEE. Corporate Goal "<i>Have a Safe and Well-Maintained Highway Network for all Users</i>" Progress Report	26th September 2011

Equality Impact Assessment Toolkit (from May 2012)

Section 1: Your details Ged Herby (Group Leader Coastal / Highway Structures)

EIA lead Officer: Rob Clifford
Email address: robertclifford@wirral.gov.uk
Head of Section: Mark Smith
Chief Officer: Chris McCarthy
Department: Technical Services
Date: 3rd January 2013

Section 2: What Council proposal is being assessed?

The Management of Highway Structures

Section 2b: Will this EIA be submitted to a Cabinet or Overview & Scrutiny Committee?

Yes / No If 'yes' please state which meeting and what date

Sustainable Communities Overview & Scrutiny Committee 29th January 2013

Please add hyperlink to where your EIA is/will be published on the Council's website

<http://www.wirral.gov.uk/my-services/community-and-living/equality-diversity-cohesion/equality-impact-assessments/eias-2010/technical-services-0>

Section 3: Does the proposal have the potential to affect..... (please tick relevant boxes)

- Services**
- The workforce**
- Communities**
- Other** (please state eg: Partners, Private Sector, Voluntary & Community Sector)

If you have ticked one or more of above, please go to section 4.

- None** (please stop here and email this form to your Chief Officer who needs to email it to equalitywatch@wirral.gov.uk for publishing)

Section 4: Does the proposal have the potential to maintain or enhance the way the Council (please tick relevant boxes)

- Eliminates unlawful discrimination, harassment and victimisation
- Advances equality of opportunity
- Fosters good relations between groups of people

If you have ticked one or more of above, please go to section 5.

- No** (please stop here and email this form to your Chief Officer who needs to email it to equalitywatch@wirral.gov.uk for publishing)

Section 5:

Could the proposal have a positive or negative impact on any of the protected groups (race, gender, disability, gender reassignment, age, pregnancy and maternity, religion and belief, sexual orientation, marriage and civil partnership)?

You may also want to consider socio-economic status of individuals.

Please list in the table below and include actions required to mitigate any potential negative impact.

Which group(s) of people could be affected	Potential positive or negative impact	Action required to mitigate any potential negative impact	Lead person	Timescale	Resource implications

Section 5a: Where and how will the above actions be monitored?

Section 5b: If you think there is no negative impact, what is your reasoning behind this?

Section 6: What research / data / information have you used in support of this process?

Section 7: Are you intending to carry out any consultation with regard to this Council proposal?

Yes / No – (please delete as appropriate)

If 'yes' please continue to section 8.

If 'no' please state your reason(s) why:

(please stop here and email this form to your Chief Officer who needs to email it to equalitywatch@wirral.gov.uk for publishing)

Section 8: How will consultation take place and by when?

Before you complete your consultation, please email your preliminary EIA to equalitywatch@wirral.gov.uk via your Chief Officer in order for the Council to ensure it is meeting it's legal requirements. The EIA will be published with a note saying we are awaiting outcomes from a consultation exercise.

Once you have completed your consultation, please review your actions in section 5. Then email this form to your Chief Officer who needs to email it to equalitywatch@wirral.gov.uk for re-publishing.

Section 9: Have you remembered to:

- a) **Add appropriate departmental hyperlink to where your EIA is/will be published (section 2b)**
- b) **Include any potential positive impacts as well as negative impacts? (section 5)**
- c) **Send this EIA to equalitywatch@wirral.gov.uk via your Chief Officer?**
- d) **Review section 5 once consultation has taken place and sent your completed EIA to equalitywatch@wirral.gov.uk via your Chief Officer for re-publishing?**