

Agenda Item	18
Report No	ECI/53/2021

HIGHLAND COUNCIL

Committee: Economy and Infrastructure

Date: 2 December 2021

Report Title: Road Structures Annual Report

Report By: Executive Chief Officer Infrastructure, Environment & Economy

1 Purpose/Executive Summary

- 1.1 This report provides an outline of the Council's bridge stock, its condition, the bridge inspection regime and the works associated with maintaining road structures.
- 1.2 It provides recommendations for projects to be included in the "Bridges, Retaining Walls and Culverts" line of the Roads and Transport Capital Programme.

2 Recommendations

2.1 Members are asked to:-

- i. note the position of the Bridge Stock Condition Indicators in Highland;
- ii. note the current position in Highland in relation to the number of structures inspections undertaken;
- iii. note that the Levelling Up Fund application for road and bridge improvements in Highland has been unsuccessful;
- iv. note that the Local Bridge Maintenance Fund application has been partially successful with £5.927M awarded for 9 schemes; and
- v. agree that structural assessments can be included in the capital programme.

3 Implications

- 3.1 **Resource** - The estimated cost of projects in the rolling programme is nearly £7m. The total backlog is currently unknown, but the rolling programme will be added to annually as inspections are completed.

- 3.2 **Legal** - The Council has a duty to maintain structures to a reasonable standard and to manage risk effectively.
- 3.3 **Community (Equality, Poverty and Rural)** - Due to the geographic nature of Highland, many structures are located in remote areas where failure may result in communities being cut off or having to travel significant distances via alternative routes.
- 3.4 **Climate Change / Carbon Clever** - There are no known Climate Change / Carbon Clever implications arising as a direct result of this report. Although improving road structures is unlikely to have a significant effect on carbon emissions, keeping the road network in a condition which allows the free flow of traffic will assist in reducing them.
- 3.5 **Risk** - Although not specifically mentioned in CR10 Condition of our Roads, structures are a vital part of the road network and require active management.
- 3.6 **Gaelic** - There are no known Gaelic implications arising as a direct result of this report.

4 Highland Council Road Structures Information

- 4.1 The Roads (Scotland) Act 1984 states that a local roads authority shall manage and maintain roads within their area that are included in the list of public roads, more commonly known as 'adopted roads'. As Members will already know, Trunk Roads are maintained by the Scottish Ministers through various contracts across Scotland.
- 4.2 Structures are part of the road asset. The term 'road structure' is used to describe bridges, culverts and retaining walls. Cattle grids are also included. Not all road structures which carry or hold up an adopted road are in the ownership of the Council.
- 4.3 A table showing the numbers and types of road structures the Council is responsible for is shown below (2020/21 figures from asset valuation calculations):-

Structure Type	Quantity
Road Bridges	1,695
Footbridges	34
Unusual Structures	102
Retaining Walls	1,076
Culverts	430
Cattle Grids	597
Total	3,934

(Note: the majority of 'Unusual Structures' are listed bridges with 3 being post tensioned bridges.)

- 4.4 The Gross Replacement Cost (GRC) of the structures stock calculated for 2020/21 is £643,967,392. This figure fluctuates as data on the stock is refined.
- 4.5 Additionally, cattle grids are structures on roads which the Council also have a responsibility for. Traditionally they have not been included in the structures budget but have been replaced using revenue money from the roads budget. There are currently 597 listed in the asset management database. Cattle grids are not included in the structures GRC figure above as they are accounted for separately due to the way Whole of Government Accounts requires it to be recorded. The 2020/21 GRC for grids is £6,567,000.

4.6 The figures contained in this report do not include other bridges the Council may be responsible for, only those considered to be 'adopted' under the Roads (Scotland) Act 1984. Other bodies may own or be responsible for structures which carry the public road. Network Rail and Scottish Canals are examples of organisations responsible for some bridges on the adopted road network.

5 Inspections

5.1 Members approved the 'Structures Inspections' policy at Committee in August 2019 to move towards a risk-based approach to inspections. Inspections are generally undertaken within a calendar, rather than financial, year. This is to allow for programming. This policy includes Principal Inspections (PI's) undertaken predominantly by specialist structural engineers and the more routine General Inspections (GI's) undertaken predominantly by the Structures Technicians.

5.2 As inspections are undertaken with limited amounts of personnel (including individuals as per the lone working policy), they have continued through the current Covid-19 situation. The use of the underbridge vehicle has continued this year after the delays last year due to Covid restrictions and the inability to travel, although there was some disruption due to the national shortage of HGV drivers.

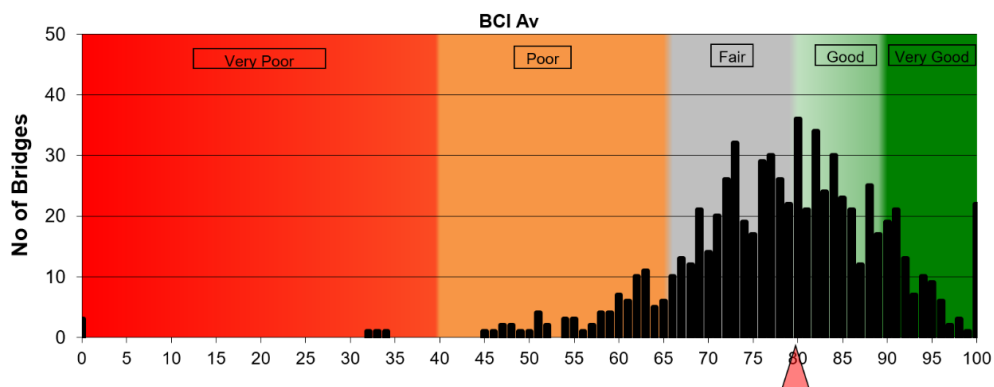
5.3 The four additional Structures Technician posts have resulted in an increase in the number of General Inspections completed since their appointments. The GI figures below will include inspections of structures not programmed for this year, as the technicians address the backlog. See the performance figures in 7.2 of this report where the General Inspections completed have increased significantly.

Bridges, Culverts and Retaining Walls		
Inspections	Due in 2021	Inspected (as at 01/10/21)
PI	117	54
GI	266	193
Totals	383	247

5.4 Additionally, 36 inspections on cattle grids have been completed as at 1 October 2021.

6 Bridge Stock Condition

6.1 Principal inspections (on bridges 5m or more in length pre 2018/19) generate a condition score for each individual bridge. This is used to calculate the Bridge Stock Condition Index (BSCI). The 2020/21 Highland BSCI average is 79.0 and BSCI critical is 64.0. The distribution of BCI average values for each bridge which has had a PI are shown in the diagram below:-



7 Performance Indicators

7.1 Highland completes and returns an APSE/ SCOTS performance questionnaire annually. This questionnaire has evolved over the years and has been partly developed through the SCOTS Road Asset Management project.

7.2 The 2020/21 Highland results have been submitted to APSE/ SCOTS but not yet verified by them. Therefore, the previous 3 years data for some of the performance indicators relating to structures is shown in the table below, along with the provisional 2020/21 results (all 4 years data for Highland).

APSE/ SCOTS PI	2017/18	2018/19	2019/20	Provisional 2020/21 Result
% of Principal Inspections carried out on time	98.8	100.0	100.0	99.1
% of General Inspections carried out on time	38.0	88.7	100.0	100.0
BSCI average	80.9	79.6	79.0	79.0
BSCI critical	67.9	65.3	64.0	64.0
% of Council owned bridges failing European standards	10.0	10.0	10.0	9.9
% of Council road bridges with unacceptable weight, height or width restriction	0.3	0.3	0.2	0.2

7.3 The table below shows the 2019/20 results for the SCOTS Family Group (Rural), and the Scotland averages. The 2020/21 results have not yet been verified by APSE/ SCOTS at the time of writing this report so are not currently available. The other rural family group members are Aberdeenshire, Angus, Argyll and Bute, Scottish Borders, Dumfries and Galloway, Moray and Perth and Kinross.

APSE/ SCOTS PI	Family Group Average	Scotland Average
% of Principal Inspections carried out on time	56.3	73.1
% of General Inspections carried out on time	78.8	87.9
BSCI average	84.1	86.3
BSCI critical	75.2	76.7
% of Council owned bridges failing European standards	3.5	2.6
% of Council road bridges with unacceptable weight, height or width restriction	0.6	1.1

Notes re the Performance Indicator results:-

- % of PIs on time: a higher percentage is a better result.
- % of GIs on time: a higher percentage is a better result.
- BSCIave: a higher value is better (this is not a percentage but a score out of 100).
- BSCItcrit: a higher value is better (this is not a percentage but a score out of 100).
- % failing Euro standards: a lower percentage is better.
- % unacceptable restrictions: a lower percentage is better.

8 Works Programmes

- 8.1 Principal and general inspections create recommendations and works for the structures stock. These works are prioritised either in the Capital programme or by the Roads area offices from the revenue budget.
- 8.2 Members agreed at November 2019 Committee to have an extended rolling programme of works for the Roads and Transport capital budget allocation (£650k). The extended list will allow Members to see potential schemes which may be included in future years. The actual schemes to be completed each year will be amended to reflect the budgets available. Not all projects will be completed in the year they start as design work is initially required. Schemes will be added to the list as inspections progress, and they are prioritised. **See Appendix A.**
- 8.3 Works on Bonar Bridge, Torbreck Weir and Halladale have been completed. With an annual capital allocation of £650,000, the remaining projects in **Appendix A** would take 5.5 years to complete. Currently there are nearly 100 other schemes at an estimated cost of over £4m which will be prioritised and added into the rolling programme. At £650k per year, this additional work would take 6.2 years. It is also worth noting that the amount of works identified will only increase as inspections are completed.
- 8.4 Members are reminded that the Health and Prosperity Strategic fund which allocated £3.5M to structures work will be reported on separately to Area committees. Similarly, the allocations for other structures capital projects, including the Infirmary Bridge, will be reported to committee in the Capital funding report. The Levelling Up Fund application for road and bridge improvements, made to the UK government, which was reported to the June HC Committee, has been unsuccessful. Additionally, a separate application was made to the Local Bridge Maintenance Fund (Scottish Government) where the outcome has been favourable. Highland has been awarded a total of £5.927M for 9 bids out of the 29 applications made. The £5.927m is 80% of the bid totals due to the over subscription of the fund.
- 8.5 During recent months, there has been an impact on the availability of contractors and materials for construction works, predominantly due to the backlog of works caused by Covid-19 lockdowns. This has resulted in the delay of some smaller projects being delivered on site. Officers are working to try to secure contractors, but this may now be impacted by the winter season.

9. Structural Assessments

- 9.1 Structural assessments are required to determine the load bearing capacity of a structure in relation to carrying traffic loading. This will influence capital expenditure and works. These are different to inspections which identify defects. Assessments are not required for every load carrying structure and the programme will be determined on a technical needs basis. Depending on the result of an assessment, restrictions such as a weight limit may need to be imposed on a structure prior to any further capital improvement works.

9.2 As part of the process for determining works required, it is proposed to include some additional structural assessments in the programme from the capital budget. Where possible, other funding for assessments is also utilised, which may be through developers, abnormal load movements or timber transport schemes. As assessments vary in complexity, a set amount of funding will not be indicated but the work will be determined from a list of assessments required and contained within the £650k capital budget allocation.

Designation: Executive Chief Officer Infrastructure, Environment & Economy

Date: 18 October 2021

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Background Papers: TEC 77/13 Cattle and Deer Grids [Policy](#)
COM 58/15 Bridges and Road Structures [Report](#)
EDI 23/17 Road Structures Annual [Report](#)
EDI 81/18 Road Structures Annual [Report](#)
EDI 61/19 Risk Based Approach to Structures Inspections [Report](#)
EDI 83/19 Road Structures Annual [Report](#)
ECI 18/20 Strategic Timber Transport Scheme 2020/21 [Report](#)
ECI 38/20 Road Structures Annual [Report](#)
HCI/17/21 Levelling Up Fund and Community Renewal [Fund](#)

Appendix A

PROJECT			TOTAL ESTIMATED PROJECT COST £000	SCOPE of WORKS
0	A08360090	Bonar Bridge	Completed	Bolt replacement and parapet repair.
1	C10400010	Torbreck Weir	Completed	Repair to weir to protect Torbreck Bridge from collapse
2	U11040010	Tordarroch	200	Arch repair following vehicle strike
3	A08350270	Ledmore	275	Parapet replacement
4	A08350250	Knockan	350	Parapet replacement, concrete investigation
5	B08610010	Ness	350	Assessment and Post-tensioned Special Investigation as a precursor to major works
6	A08360360	Halladale	Completed	Parapet replacement
7	C10870030	An Uillt Bhig	125	Strengthening and refurbishment
8	A08360220	Inchkinloch	30	Partial repointing
9	A08380220	Kyle of Tongue	50	Movement joint replacement
10	A08360180	Vagastie	20	Minor works
11	A08610340	Camuschork	125	Masonry repairs
12	A08610350	Ceol na Mara	125	Masonry repairs
13	A08620090	Lovat	125	Masonry repair and scour protection
14	U32670010	Achvaich	306	Scour risk and weak parapets
15	A08320330	Poolewe	150	Concrete investigation and repair
16	U19070010	Dublin	306	Masonry arch major refurbishment
17	A08320090	Grudie	30	Investigation to determine scope of repairs
18	A08380080	Achfary	90	Waterproofing and resurfacing, concrete repairs
19	A08610230	Gour	150	Repainting, waterproofing and surfacing, parapet replacement
20	A08630140	Caroy	100	Waterproofing and resurfacing, parapet replacement
21	A08550010	Leasgary	400	Edge strengthening, parapet replacement and general refurbishment
22	B09700200	Nethy	140	Repointing
23	A08390010	Pittentrail	125	Refurbishment
Estimated Total of Projects			3572	