



SCOTTISH BORDERS COUNCIL

# Kalemouth Suspension Bridge

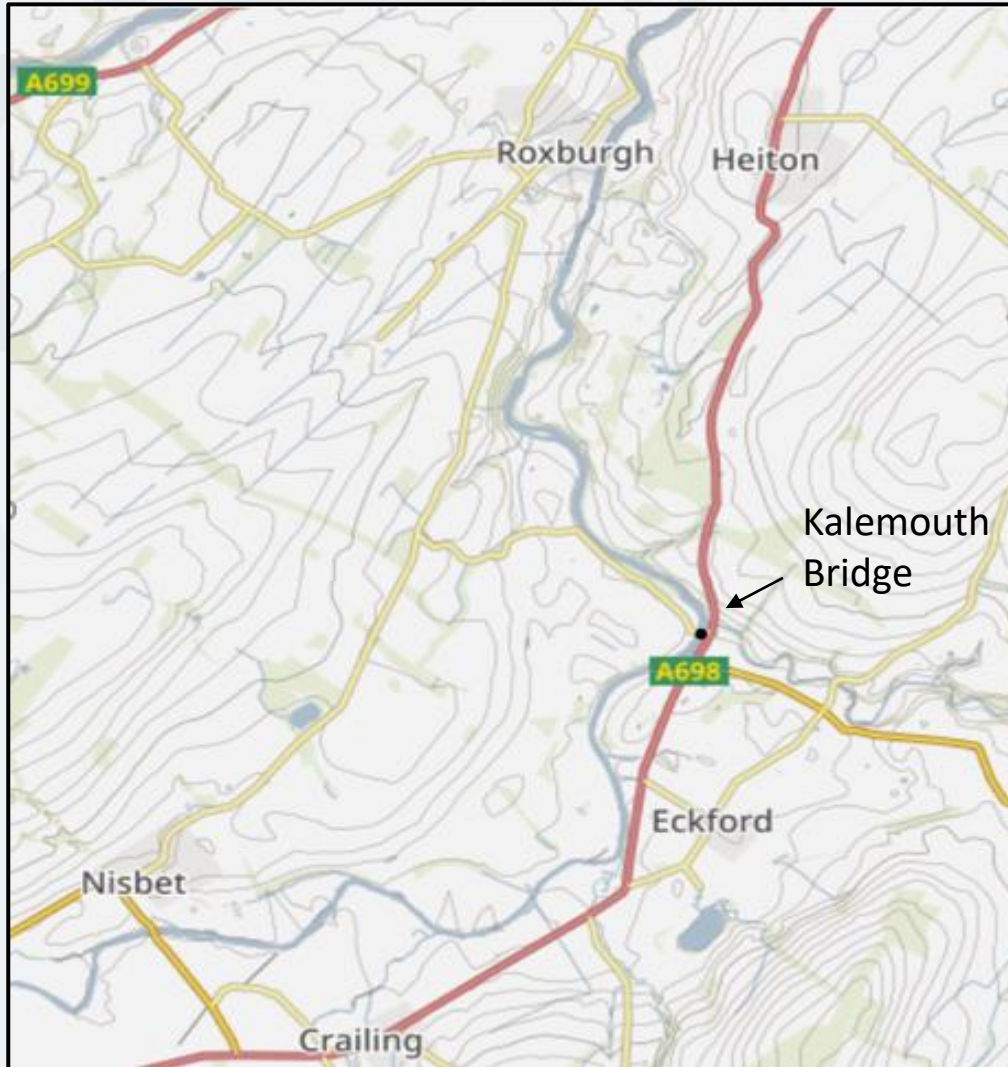
Crailing, Eckford & Nisbet Community Council – 11<sup>th</sup> Sept 2023

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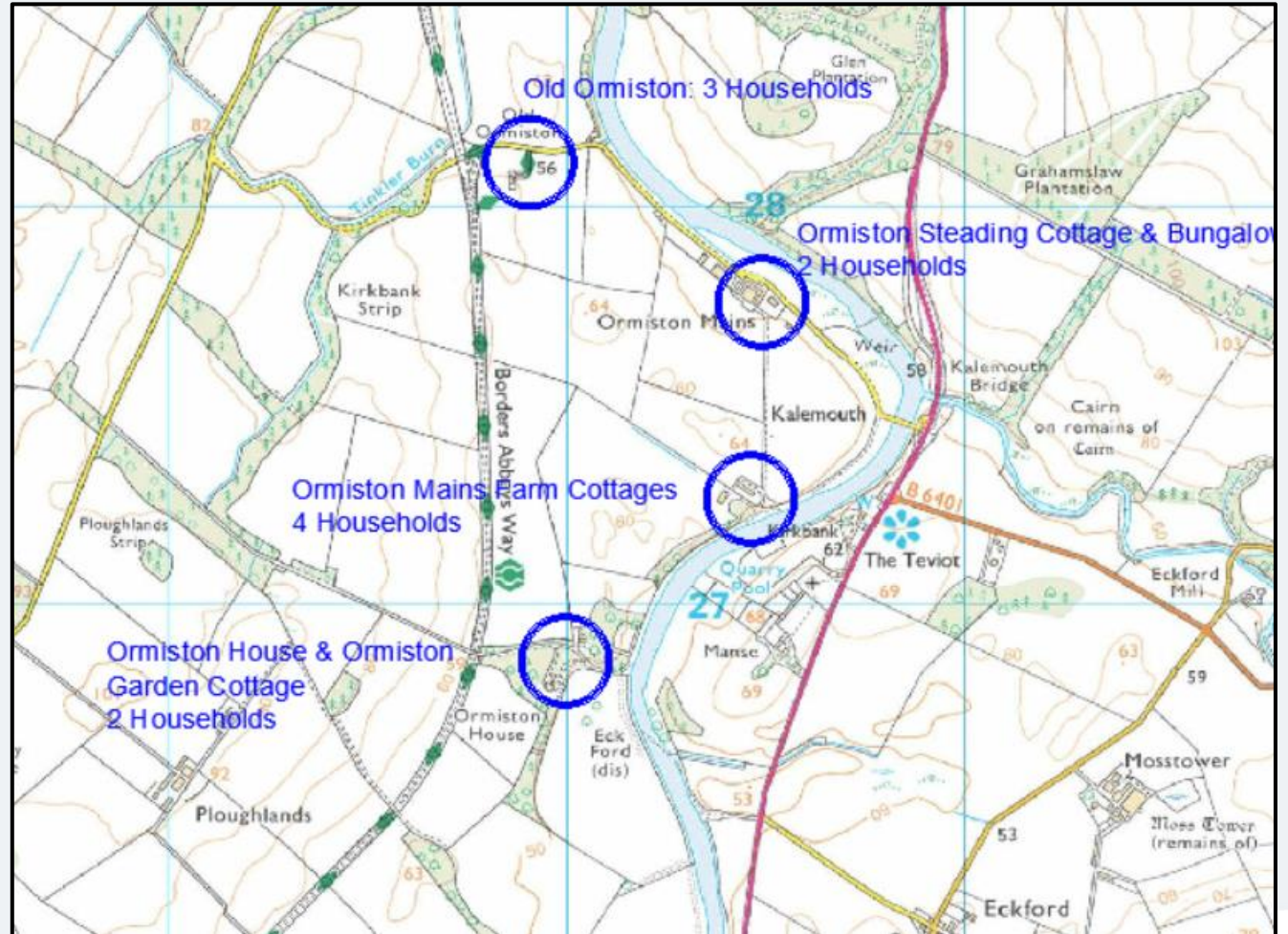
# Plans



General location plan



Local community





# Background

- Kalemouth Suspension Bridge is a Category 'A' Listed structure, noted as being of special architectural and historic interest
- It crosses the River Teviot and carries the D101/4 road under a 3-tonne limit
- In August 2020 during planned maintenance works, significant deterioration of timber decking elements discovered, and bridge closed to motor vehicles
- SBC has undertaken:- desk top review of bridge structure and its history of maintenance and repair; topographical and geophysical survey
- External consulting Engineers WSP commissioned and undertook comprehensive Principal Inspection of the bridge, concentrating on the metal suspension system. Using this data and knowledge WSP then carried out a detailed Structural Analysis of the suspension system. Costs to date £40k+



# Principal Bridge Inspection

WSP carried out a Principal Bridge Inspection over 2 days in November 2022.

To view and access the bridge they used a drone, a floating pontoon and a mobile elevated working platform.

This comprehensive inspection of the bridge gave rise to following findings....





# Principal Bridge Inspection

## Main points

- Metalwork elements on the bridge actually in fairly good condition, albeit surface corrosion noted throughout bridge
- Ultrasonic testing of connection pins was undertaken, and these showed no major difficulties\*\*

*\*\*NB It was noted though that to obtain absolute surety of condition, the metalwork would need to be removed for detailed examination however this is a substantial exercise and wasn't done*

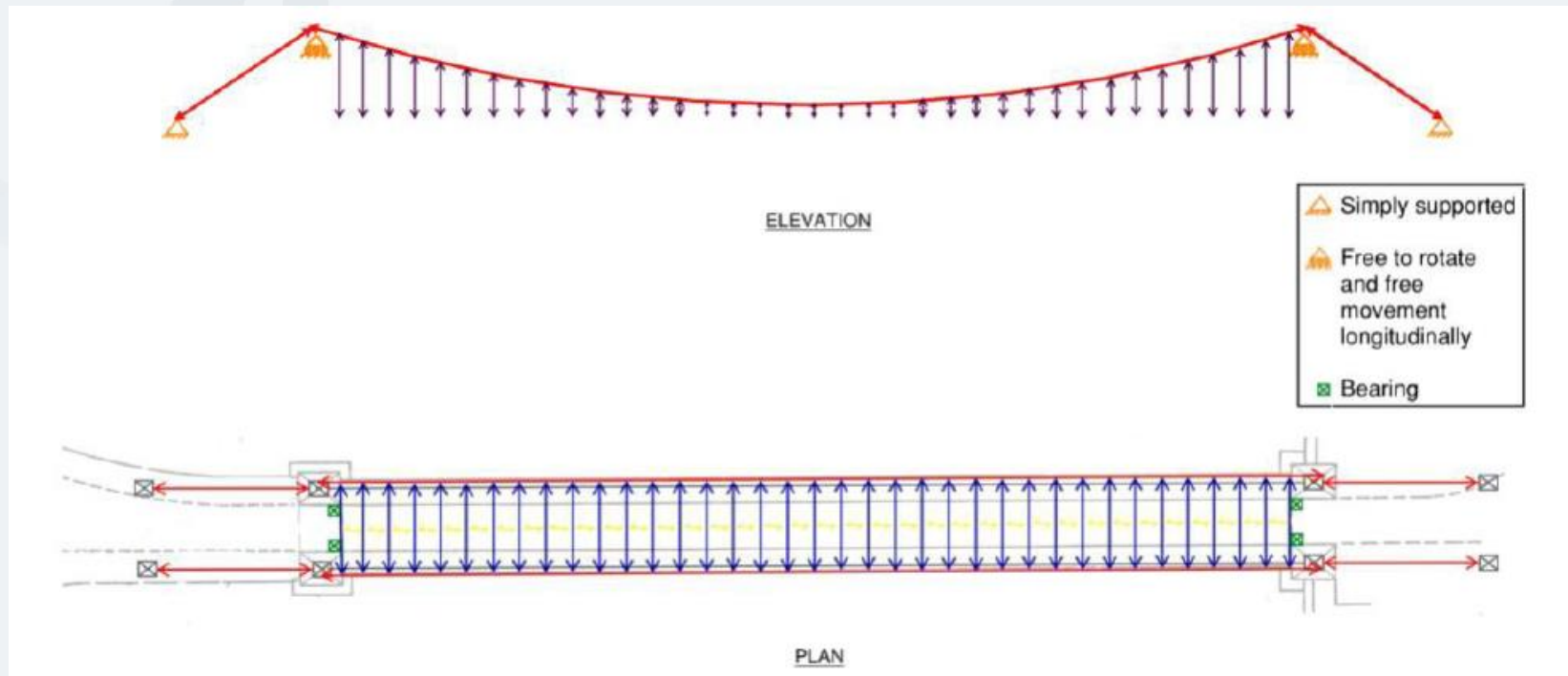
- Southwest wingwall has some stone loss and needs re-pointed
- Timber elements reaching end of effective life and need replaced



# Structural Assessment Work

Consulting Engineers WSP then undertook a Structural Assessment of the bridge structure. This concentrated on the metallic suspension system on the bridge and was undertaken in accordance with modern design standards and techniques – taking into account current condition

**A Model was created (calculates load effects within ‘members’ based on applied load scenarios)**





# Structural Assessment Work

## Results

Bridge was unable to show sufficient capacity to support vehicles or full pedestrian (crowd) loading.

Combinations tested were:-

1. Full pedestrian (crowd) loading (**FAIL**)
2. Small groups of pedestrians (**PASS**)
3. Single 3T vehicle plus element of pedestrian loading (**FAIL**)
4. Convoy of vehicles plus element of pedestrian loading (**FAIL**)

Several runs of the model were undertaken to ascertain and verify these assessment results



# Discussion / Conclusion

- Results of structural assessment are that bridge doesn't have sufficient strength to support vehicular traffic but can be used by pedestrians / cyclists (with limitations on numbers)
- A computerised structural model has been used – results have been independently verified – bridge was assessed in accordance with modern Technical Standards
- Strengthening – view is that this is not considered reasonably practicable without significant alterations to the bridge, the complete suspension system would need to be upgraded with stronger materials which would be very costly and affect the historic bridge components
- New/replacement bridge – as above - would require removal of existing listed structure. Listed structures are protected against alteration or loss. Full replacement should be a last resort and would be cost prohibitive, £3-5m

Therefore, it is considered that the bridge will need to remain pedestrian/cyclist only.





# Next steps

1. Review / install signage for continued use by pedestrians / cyclists and encourage its use in an active travel sense
2. Prepare a timber deck replacement scheme and associated cost estimate (circa £1m) - a new timber deck will be required to maintain long-term pedestrian / cyclist usage
3. Once scheme and cost estimate available - seek external funding streams to assist with deck replacement works, HES or National Lottery
4. In consultation with CC and locals look to prepare more permanent gateway points onto bridge



# Questions

Happy to discuss and answer questions..