Structures Asset Management Hertfordshire

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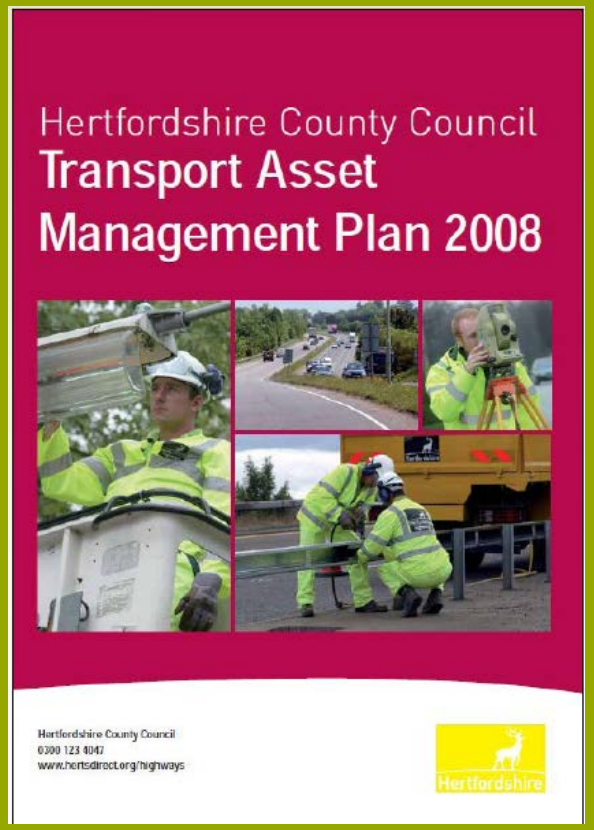
OPUS ARUP Hertfordshire

Hertfordshire Bridges

- 1700 Structures
- Value £870 million



The structures toolkit

- Published by CIPFA, for use by local authority bridge owners. Part of a suite of tools.
- Supported by: DfT, Adept, UK Bridges Board, SCOTS,
- Valuation and accounting
- Maintenance planning and prioritisation
- Spreadsheet tool accessible to all

Three questions

- How much are the structures worth?
- What budget is required to provide adequate Level of Service?
- Which maintenance is the best value or highest priority?

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Valuation - Gross Replacement Cost

- GRC = Gross Replacement cost
- The construction cost of Modern Equivalent Assets
- Represents the original cost in today's money of greenfield construction

- Our most valuable: Kingsmead Viaduct - £93m
- Our least valuable: Pye Corner Footbridge - £5k

Valuation - Depreciated Replacement Cost

- DRC = Depreciated Replacement Cost
- Value of the assets in present condition
- Depreciation represents the loss of useful life
- Depreciation is the cost of repair for a bridge at end of life or a proportion of cost of future repair
- Graph of GRC and Depreciation

Valuation - Annual Depreciation

- Annual Depreciation is the amount that the asset value decreases every year as the useful life reduces

Why do we need GRC, DRC, and Depreciation

- Accounts require this information
- Show the investment that has been made
- Provide a context for spending of maintenance money

Data collection

- Collect from a variety of sources:
  - Bridge database – Basic data, Condition
  - GIS databases – Traffic, urban/rural, salt routes
  - Proxy data – listed structures
- Manipulate the data
  - Toolkit analyses per structure, we collect per span
- Validate and error check
  - Salting routes
  - Urban or rural

Herts Valuation 2013

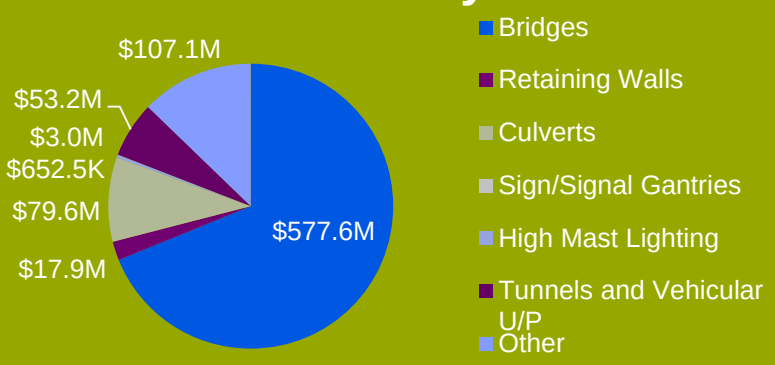
- GRC £849 million
- DRC £570 million (ie 67% of GRC)
- Annual Depr £ 15 million

Stock Value Report	Value					
	GRC	DRC	Depreciation	AD	AD (%of GRC)	DRC/GRC
Bridges	£577,073,803	£373,165,955	£203,907,848	£10,087,600	1.7%	64.7%
Retaining Walls	£16,848,848	£10,252,075	£6,596,772	£268,230	1.6%	60.8%
Culverts	£73,082,800	£48,778,808	£24,303,992	£2,058,351	2.8%	66.7%
Sign/Signal Gantries	£1,342,726	£1,328,528	£14,198	£3,227	0.2%	98.9%
High Mast Lighting	£0	£0	£0	£0	0.0%	0.0%
Tunnels and Vehicular U/P	£73,583,297	£61,844,915	£11,738,382	£421,104	0.6%	84.0%
Other	£106,965,419	£74,721,909	£32,243,509	£2,072,853	1.9%	69.9%
Full stock	£848,896,892	£570,092,190	£278,804,702	£14,911,366	1.8%	67.2%

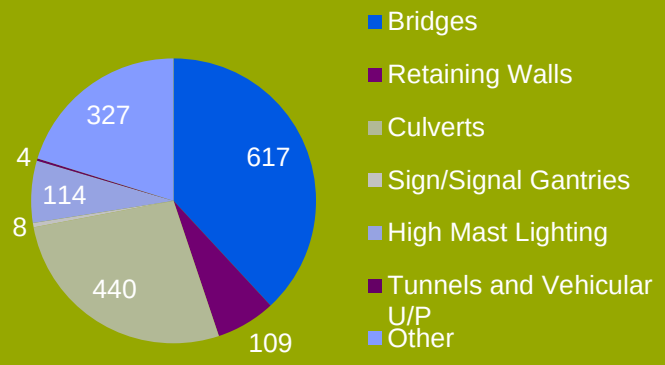
Stock Report

Stock Condition Report	Number	Stock Condition		Condition Band				
		$SSCI_{av}$	$SSCI_{crit}$	Very Good	Good	Fair	Poor	Very Poor
Bridges	645	83.4	76.9	307	217	97	19	5
Retaining Walls	112	80.4	86.0	45	29	13	12	13
Culverts	574	89.4	90.0	237	199	102	20	16
Sign/Signal Gantries	8	97.0	97.6	8	0	0	0	0
High Mast Lighting	0	0.0	0.0	0	0	0	0	0
Tunnels and Vehicular U/P	15	87.2	75.3	8	6	0	1	0
Other	332	87.4	88.7	166	133	23	2	8
Full stock	1,686	83.8	77.5	771	584	235	54	42

Breakdown by value



Breakdown by number



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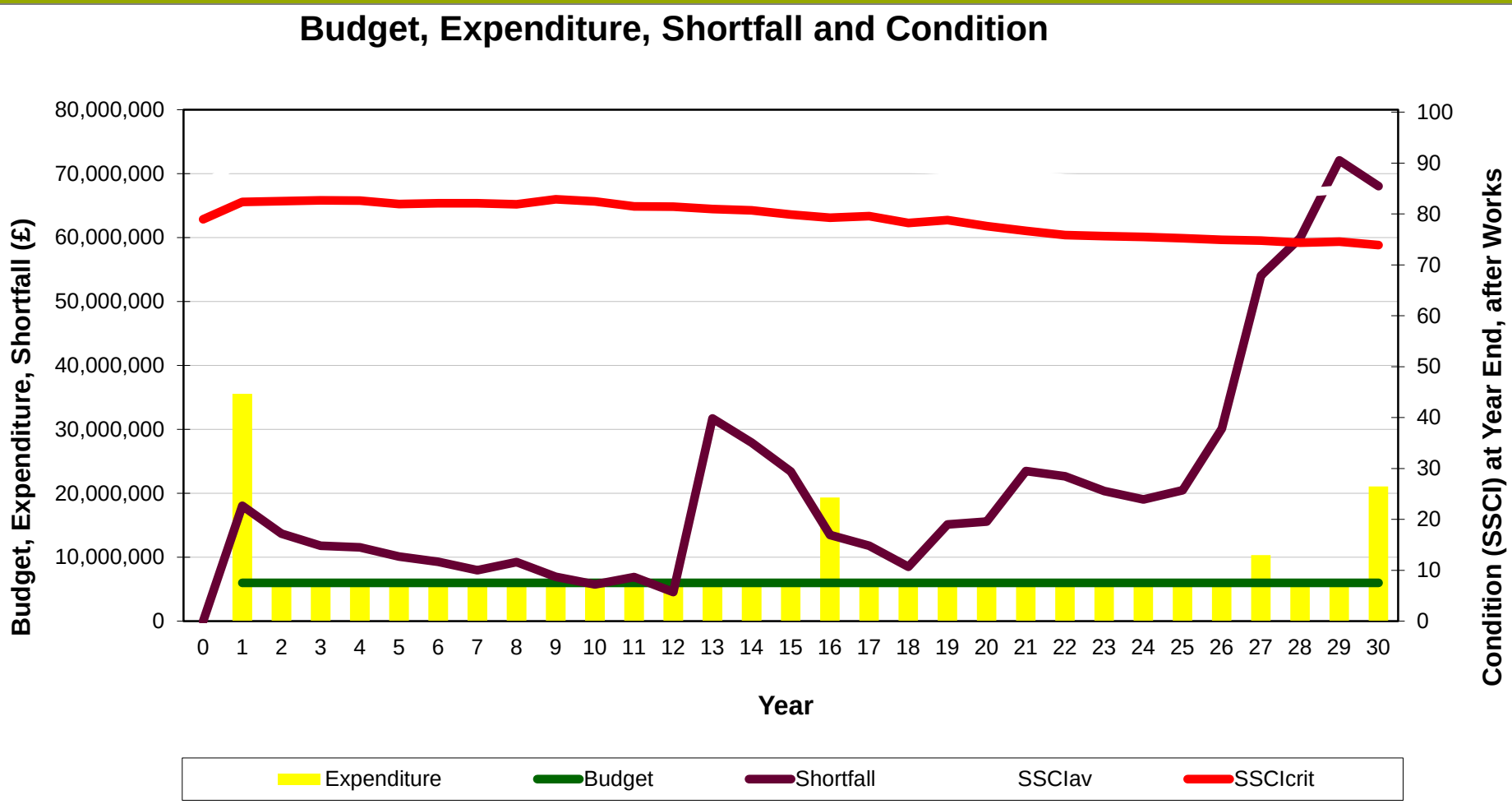
Work Priority

Eg. Expansion joints

Year	Priority	Str Name	Str ID	Start ECS	Values WorksCost	TotalCost
	1 **12.38**	BISHOPS STORTFORD VIADUCT	**ST1697**	5	40408.80	69117.61
	12.18	KINGSMEAD VIADUCT	**ST1469**	4.7	272372.00	476662.96
	11.75	RIVER LEA VIADUCT	**ST1953**	4.3	208480.80	353691.72
	11.3	SIXHILLS WAY RAILWAY	**ST0733**	4	46082.72	85495.84
	9.67	ST ALBANS ROAD FOOTBRIDGE	**ST0840**	3.3	4362.72	7329.37
1 Total					**571707.04**	**992297.50**
	2 **12.05**	HUNTERS BRIDGE	**ST0736**	5	51351.36	73817.58
	11.5	HODDESDON INTERCHANGE N.	**ST1457**	4.3	32988.60	69774.29
		HODDESDON INTERCHANGE S.	**ST1456**	4.3	32988.60	69774.29
	11.25	HAILEY INTERCHANGE NORTH	**ST1463**	5	37738.72	74576.76
		HAILEY INTERCHANGE SOUTH	**ST1462**	5	37738.72	74692.54
	10.43	COURTLANDS DRIVE	**ST1694**	5	30610.56	61496.41
		PARK ROAD	**ST1470**	5	13660.32	32705.76
	10.4	NORTH ROAD BRIDGE	**ST0931**	3.7	40736.60	81839.56
	10.35	WESTON ROAD	**ST0934**	4	36177.20	72679.75
	10.15	STANDON	**ST0083**	5	20705.04	42383.47
	9.67	MOUNT PLEASANT (NORTH)	**ST0877**	3.3	14661.60	29455.06
	9.35	FEATHER BED LANE FOOTBRIDGE	**ST0821**	4	4338.88	6768.65
	8.93	DURRANTS HILL CANAL	**ST0615**	5	10084.32	15076.06
	8.92	HAZELEND ROAD	**ST1698**	3.3	17284.00	32452.10
2 Total					**381064.52**	**737492.27**

Work Priority

Priority Sc	Str ID	Str Name	Element type	Maint activity	Total costs
102.19	ST0733	**SIXHILLS WAY RAILWAY**	Br11. Pier/Column	Maintenance/Repair of Other/Unknown Materials	81,676
			Br13. Bearings	Bearings: Replacement	161,304
			Br18. Expansion Joints	Expansion Joint Replacement: Other Expansion Joint	85,496
			Br23. Handrail/Parapets/Safety Fences	Parapet: Maintenance (Other)	31,498
			Br31. Wing Walls	Maintenance/Repair of Other/Unknown Materials	223,969
			Br32. Retaining Walls	Maintenance/Repair of Other/Unknown Materials	65,699
			Br33. Embankments	Embankments/Earthworks: Maintenance	5,642
			Br21. Finishes: Parapets/Safety Fences	Finishes: Wet/Dry surface preparation and re-application of finish	28,571
			Br20. Finishes: Substructure Elements	Finishes: Wet/Dry surface preparation and re-application of finish	153,174
83.29	ST1469	**KINGSMEAD VIADUCT**	Br13. Bearings	Bearings: Replacement	1,112,095
			Br15. Superstructure Drainage	Drainage: Maintenance	7,109
			Br16. Substructure Drainage	Drainage: Replacement	1,986
			Br18. Expansion Joints	Expansion Joint Replacement: Other Expansion Joint	476,663
			Br23. Handrail/Parapets/Safety Fences	Parapet: Maintenance (Other)	108,273
			Br21. Finishes: Parapets/Safety Fences	Finishes: Wet/Dry surface preparation and re-application of finish	84,468
			Br20. Finishes: Substructure Elements	Finishes: Wet/Dry surface preparation and re-application of finish	1,052,451
69.18	ST1697	**BISHOPS STORTFORD VIADUCT**	Br13. Bearings	Bearings: Replacement	175,914
			Br15. Superstructure Drainage	Drainage: Replacement	38,722
			Br16. Substructure Drainage	Drainage: Replacement	2,115
			Br18. Expansion Joints	Expansion Joint Replacement: Other Expansion Joint	69,118
			Br26. Invert/River Bed	Invert repair	24,124
			Br20. Finishes: Substructure Elements	Finishes: Wet/Dry surface preparation and re-application of finish	166,578
67.43	ST0646	**MARDLEY HILL**	Br01. Primary Deck Element	Maintenance/Repair of Other/Unknown Materials	174,420
			Br11. Pier/Column	Maintenance/Repair of Other/Unknown Materials	53,485
			Br15. Superstructure Drainage	Drainage: Replacement	8,674
			Br16. Substructure Drainage	Drainage: Replacement	2,240
			Br23. Handrail/Parapets/Safety Fences	Parapet: Maintenance (Other)	29,485
			Br32. Retaining Walls	Maintenance/Repair of Other/Unknown Materials	84,773
51.77	ST0840	**ST ALBANS ROAD FOOTBRIDGE**	Br14. Bearing Plinth/Shelf	Maintenance/Repair of Other/Unknown Materials	2,042
			Br18. Expansion Joints	Expansion Joint Replacement: Other Expansion Joint	7,329
			Br19. Finishes: Deck Elements	Finishes: Wet/Dry surface preparation and re-application of finish	19,709
			Br21. Finishes: Parapets/Safety Fences	Finishes: Wet/Dry surface preparation and re-application of finish	32,310
			Br20. Finishes: Substructure Elements	Finishes: Wet/Dry surface preparation and re-application of finish	10,551



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Conclusions

- Spreadsheet format gives access to all bridge owners
- Supplied data on costs and deterioration
- Rapid entry to asset management

More ..

- Ongoing discussions on the next toolkit version

Three questions

- How much are the structures worth?

- What budget is required to provide adequate Level of Service?

Next Year in sAMPT?

- Which maintenance intervention is the best value or highest priority?

Next Year in sAMPT?

thank you

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