



Carriageway Asset Modelling Key Results

v1.0 - April 2019

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1 Introduction

Asset management has been widely accepted as a means to deliver a more efficient and effective approach to management of infrastructure assets through longer term planning, ensuring that standards are defined and achievable for available budgets. It supports making the case for funding and better communication with stakeholders, facilitating a greater understanding of the contribution highway infrastructure assets make to economic growth and the needs of local communities.

This document outlines the key results of investment scenario modelling for the AMEY Staffordshire's Carriageway assets. This modelling was undertaken using the current asset and survey information available.

The modelling was undertaken using the Horizons software package. Horizons is analysis software designed to produce works programs based on asset condition surveys and previously completed works information. By setting up the maintenance treatments that are used, Horizons will deteriorate the asset's over time to estimate the future condition and future works programs. Horizons will delay non-critical treatments to ensure the most efficient use of budget and resources. Ultimately Horizons can be used to assess the impact of various budget scenarios and also to estimate the budget required to meet a condition criteria.

2 Carriageway Modelling

2.1 Budget Strategy Results

Two budget strategies were run as follows:

- 10.75M annual budget (no annual inflation)
- 15M annual budget (no annual inflation)

While the annual budgets aren't increasing due to inflation each year, the cost of treatments is set to increase by 4.5% each year. This is the reason for the increasing slope of the maintenance backlog in figure 2.2 following.

The results of the modelling are presented in the following figures:

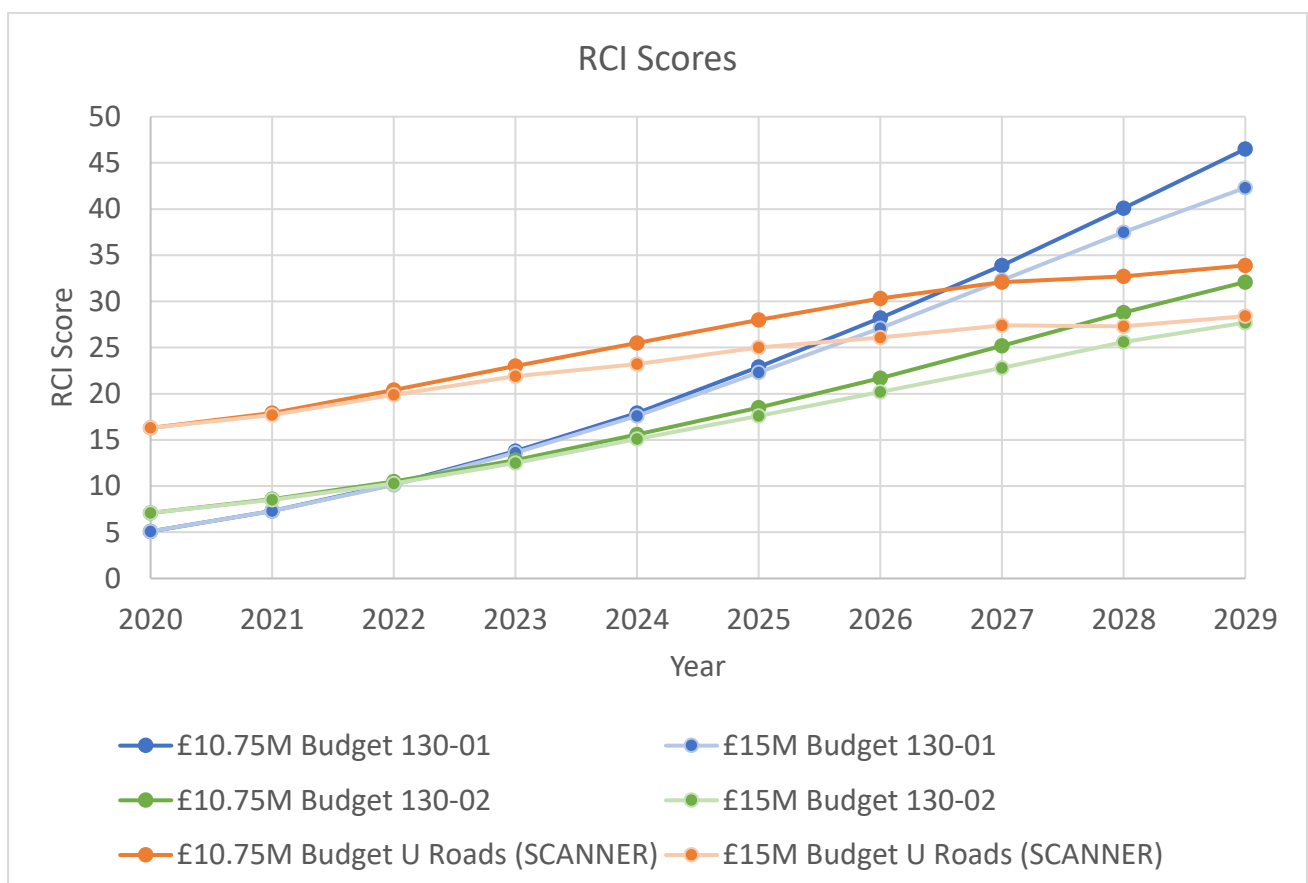


Figure 2.1: RCI Scores.

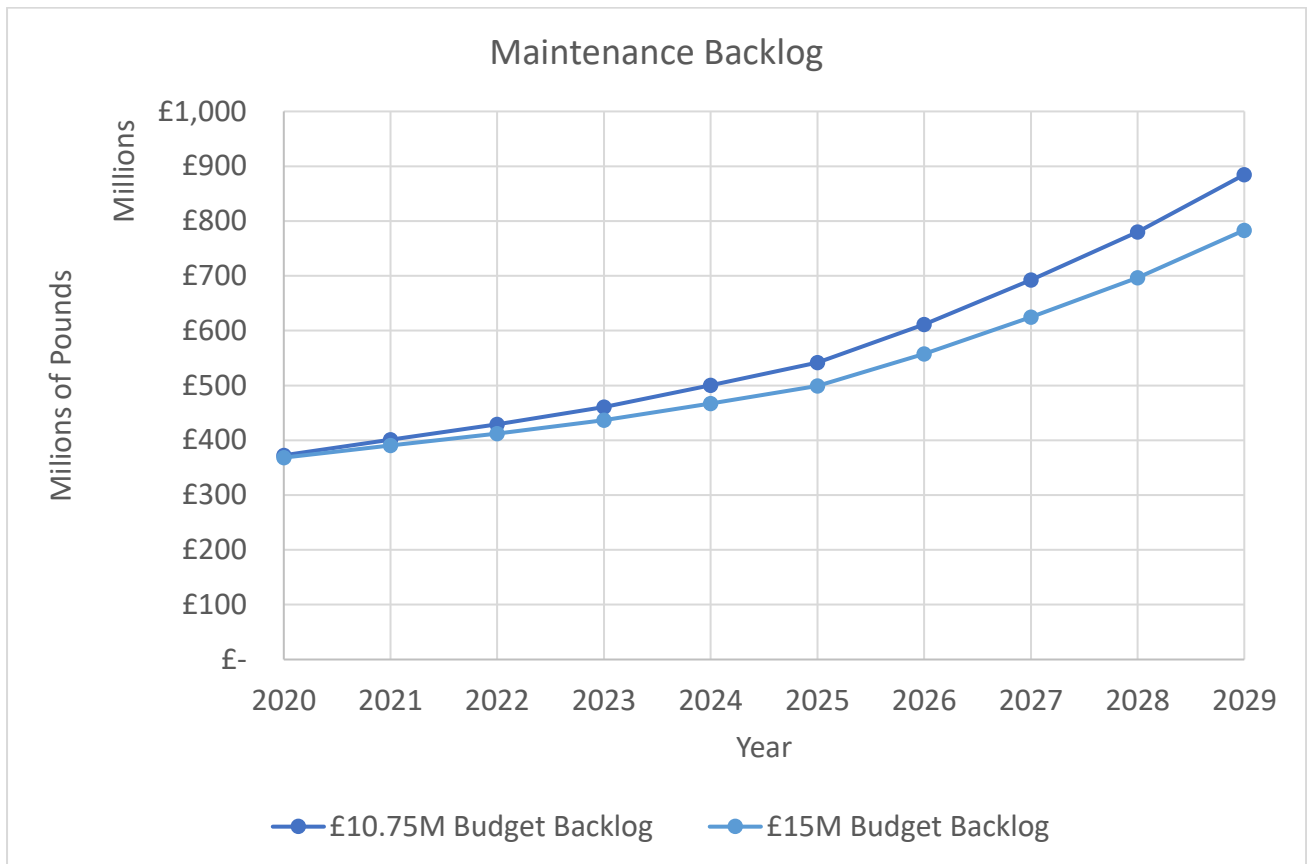


Figure 2.2: Replacement Backlog Projections.

As can be seen, the model is predicting that the budget strategies run are not sufficient to maintain or reduce the current maintenance backlog.

2.2 Hard Strategy Results

A hard strategy was run in order to estimate the budget required to maintain a targeted road condition. The following condition targets were set:

- 130-01 = 2.1
- 130-02 = 4.6
- U Roads (SCANNER) = 12.2

The results estimated that an average annual budget of £41.7M would be required in order to maintain the above condition targets.

APPENDIX - Results Tables

Budget Strategies

Year	£10.75M Budget				£15M Budget			
	130-01	130-02	U Roads (\$	Backlog	130-01	130-02	U Roads (\$	Backlog
2020	5.1	7.1	16.3	£ 372,603,986	5.1	7.1	16.3	£ 368,354,005
2021	7.3	8.6	17.9	£ 400,776,800	7.3	8.5	17.7	£ 390,538,485
2022	10.2	10.5	20.4	£ 428,918,205	10.1	10.3	19.9	£ 412,151,685
2023	13.8	12.8	23	£ 460,806,071	13.6	12.5	21.9	£ 436,574,347
2024	17.9	15.6	25.5	£ 500,103,694	17.6	15.1	23.2	£ 467,133,432
2025	22.9	18.5	28	£ 541,723,511	22.3	17.6	25	£ 499,437,657
2026	28.2	21.7	30.3	£ 611,090,964	27.1	20.2	26.1	£ 557,474,386
2027	33.9	25.2	32.1	£ 692,348,995	32.3	22.8	27.4	£ 624,580,171
2028	40.1	28.8	32.7	£ 780,270,022	37.5	25.6	27.3	£ 696,295,534
2029	46.5	32.1	33.9	£ 884,611,828	42.3	27.7	28.4	£ 783,258,571

Hard Strategy

Year	Hard Only
2020	£ 74,547,353
2021	£ 39,323,002
2022	£ 40,523,450
2023	£ 39,589,161
2024	£ 47,905,582
2025	£ 44,935,615
2026	£ 46,436,678
2027	£ 37,923,099
2028	£ 38,104,956
2029	£ 40,166,850
Average	£ 41,656,488

(The first year is ignored, as a greater budget is required to bring the current road condition up to the targeted road condition.)