Information Note

Project Title:	Stubbington Bypass Business Case Support
SYSTRA Project Number:	103077
Subject:	Stubbington Bypass – Initial Cost-Benefit Analysis (Confidential)
Note Number:	Version: 1
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1 Background and Introduction

1.1 This Information Note summarises the Cost Benefit Analysis on the Stubbington Bypass proposals and accompanies the Stubbington Bypass SRTM Modelling undertaken by SYSTRA on behalf of HCC and reported in Stubbington Bypass Business Case Report 20150708 v3c.

1.2 Two scenarios are appraised in this Note:

- DS3d, without Newgate Lane South (SRTM Run Code ASS)
- DS4d, with Newgate Lane South (SRTM Run Code AST)

1.3 All results are compared against the appropriate Do Minimum Scenario. The land use is the same between each DM and DS pair to ensure valid comparative TUBAs could be run (i.e. no changes in population and employment).

2 Cost Benefit Assessment Overview

2.1 Cost-benefit analysis of the scheme was conducted on the SRTM model outputs using TUBA v1.9.5 software. TUBA (Transport User Benefit Appraisal) is the transport economic appraisal software developed by the Department for Transport (DfT), to assist transport scheme economic appraisal in accordance with the DfT's published guidance. Benefits are presented in thousands of pounds and in 2010 values and prices.

2.2 Standard economic and scheme input files were used. All costs and benefits have been appraised using spend profiles to assess the present values of costs and a 60 year assessment of scheme benefits starting from the opening year of 2020.

2.3 TUBA utilises cost and demand inputs from the highway and public transport assignment models. These were provided for the SRTM Do-minimum and Do-something scenarios for 2019 and 2036. Benefits beyond 2036 (the final model year in SRTM) to the end of the 60 year appraisal period are considered to be level in magnitude, although are influenced by changing value of time assumptions and the increasing impact of discounting, reducing their value as would be perceived in 2010.

2.4 To ensure benefits to users were not overstated a conservative approach was adopted to annualisation factors in two ways:

- Benefits were only considered for 12 hours (3hrs AM, 6hrs Interpeak and 3hrs PM), no off peak (19:00 – 07:00) benefits were calculated or applied.
- An annualisation factor of 253 was used in TUBA representing the number of working days in a year – i.e. no claim was made for weekend or bank holiday periods.

2.5 TUBA's sector system functionality was utilised to firstly understand but also to then remove benefits (considered to be SRTM model "noise") in areas where the scheme is not expected to have impact. Using the sector system, shown in Figure 2.1, only benefits for movements to or from the Gosport or Fareham sectors were considered, for all of the model runs.

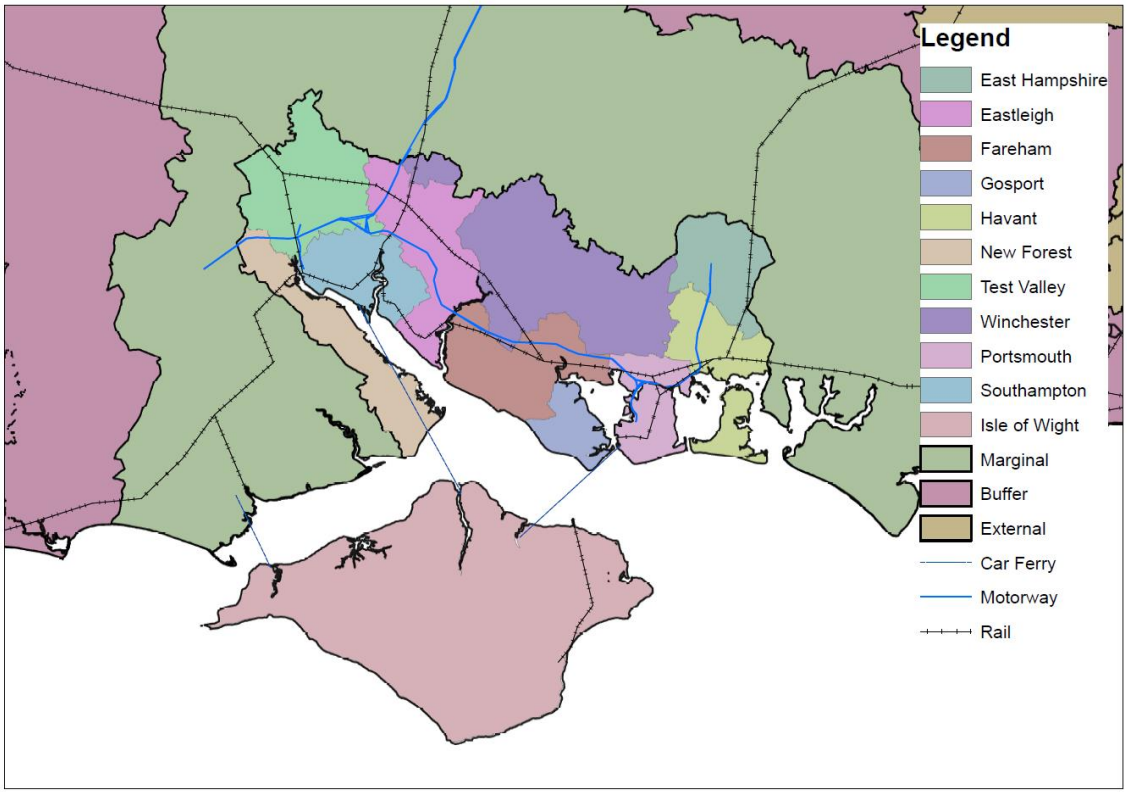

Figure 2.1 – SRTM TUBA Sector System

3 DS3d TUBA Results

3.1 The Present Value Costs, Benefits and BCR extracted from TUBA for DS3d are shown below in Table 3.1. The cost of the Bypass and associated mitigation measures is £34 million, at 2015 prices, this includes Optimism Bias at 20%. All prices are for a 2010 cost base.

3.2 The output BCR for the scheme is 1.85, indicating that the scheme provides medium value for money in accordance with DfT criteria.

Table 3.1 - DS3d TUBA Outputs Summary (SRTM Ref: ASS)

Economic Measure	Value / Ratio
PVC (£m)	29.3
PVB (£m)	54.2
NPV (£m)	24.9
BCR	1.85

3.3 The sector movement benefits are presented in Table 3.2 below. These include user benefits (highway, PT, active), tax benefits and operator revenue benefits.

3.4 Stubbington Bypass is found to primarily generate benefits travelling to or from Gosport, consistent with improving access to and from the peninsula. There are disbenefits for intra Fareham trips which tie in with the additional delay added on Peak Lane and Titchfield Road.

Table 3.2 – DS3d Sectored Total Benefits (60 year PVB in £k 2010 prices & values), SRTM Ref: ASS v ASB

	East Hampshire (Core)	Eastleigh	Fareham	Gosport	Havant	New Forest (Core)	Test Valley (Core)	Winchester (Core)	Portsmouth	Southampton	Isle of Wight	Marginal	Buffer	External	Total
East Hampshire (Core)			65	142											207
Eastleigh			-2,162	2,802											640
Fareham	-29	-1,259	-11,197	20,334	-75	-327	-231	-1,144	-262	-662	-101	-866	-657	-794	2,730
Gosport	73	3,589	20,285	-1,761	113	1,354	604	5,247	-12	2,032	-9	2,670	2,200	1,942	38,327
Havant			546	681											1,228
New Forest (Core)			-452	821											369
Test Valley (Core)			-300	345											45
Winchester (Core)			910	5,169											6,079
Portsmouth			2,032	1,723											3,755
Southampton			-62	1,338											1,276
Isle of Wight			-30	-4											-34
Marginal			-683	1,844											1,161
Buffer			-576	1,401											825
External			-1,054	1,647											593
Total	44	2,330	7,321	36,483	38	1,027	372	4,102	-274	1,370	-109	1,803	1,543	1,149	57,199

3.5 Table 3.3 shows the breakdown of the filtered benefits across period and mode. The majority of the benefits are related to highway user benefits in the IP and PM peak periods. Public transport users are showing as having a slight disbenefit considered to be the result of additional traffic (and delay) on those highway links that also accommodate bus routes.

Table 3.3 – DS3d Benefits by Mode and Period (60 year PVB in £k 2010 prices and values), SRTM Ref ASS v ASB

Benefit Type	AM	IP	PM	Total
Highway	2,195	32,181	20,300	**54,675**
Public Transport	-1,673	774	-344	**-1,243**
Active	4	2	-1	**5**
Operator Revenue	85	-687	-197	**-800**
Tax	789	2,239	1,533	**4,561**
Total	**1,400**	**34,509**	**21,290**	**57,199**

4 DS4d TUBA Results

4.1 The Present Value Costs, Benefits and BCR extracted from TUBA for DS4d are shown below in Table 4.1. The cost of the Bypass and associated mitigation measures is identical to DS3d and is £34 million, at 2015 prices, including Optimism Bias at 20%. All prices are for a 2010 cost base.

4.2 The direct benefit of the Newgate Lane South (NGLS) scheme is not quantified in this test due to the scheme being included in both the Do Minimum and Do Something scenarios. However, the inclusion of NGLS in both DM and DS will impact on how the network performs both with and without the Bypass and the DS4 results identify any additional benefits (when compared to DS3) from the Stubbington Bypass with NGLS in place.

4.3 The output BCR for the scheme is 2.07, indicating that the scheme provides high value for money in accordance with DfT criteria.

Table 4.1 - DS4d TUBA Outputs Summary (SRTM Ref: AST)

Economic Measure	Value / Ratio
PVC (£m)	29.4
PVB (£m)	60.8
NPV (£m)	31.4
BCR	2.07

4.4 The sector movement benefits are presented in Table 4.2 below. These include user benefits (highway, PT, active), tax benefits and operator revenue benefits.

4.5 Similarly to DS3d, the Stubbington Bypass scheme in DS4d is found to primarily generate benefits travelling to or from Gosport, consistent with improving access to and from the peninsula. There are disbenefits for intra Fareham trips which tie in with the additional delay added on Peak Lane and Titchfield Road. The benefits for DS4d are greater than those for DS3d.

Table 4.2 – DS4d Sectored Total Benefits (60 year PVB in £k 2010 prices & values), SRTM Ref: AST v AQV

	East Hampshire (Core)	Eastleigh	Fareham	Gosport	Havant	New Forest (Core)	Test Valley (Core)	Winchester (Core)	Portsmouth	Southampton	Isle of Wight	Marginal	Buffer	External	Total
East Hampshire (Core)			42	102											144
Eastleigh			-3,051	2,327											-724
Fareham	-11	-1,255	-10,822	14,731	3	-328	-224	-1,097	-49	-640	-69	-617	-633	-412	-1,422
Gosport	140	4,298	31,148	-1,483	508	1,603	756	6,433	1,038	2,325	-10	3,240	3,062	2,620	55,678
Havant			98	346											445
New Forest (Core)			-384	767											383
Test Valley (Core)			-395	297											-99
Winchester (Core)			903	4,545											5,449
Portsmouth			252	539											791
Southampton			27	1,412											1,438
Isle of Wight			-6	-19											-25
Marginal			-598	1,562											964
Buffer			-517	1,233											716
External			-884	1,300											415
Total	129	3,043	15,813	27,659	511	1,275	532	5,336	989	1,685	-79	2,623	2,430	2,208	64,155

4.6 Table 4.3 shows the breakdown of the filtered benefits across period and mode. The majority of the benefits are related to highway users. Similarly to DS3d, Public transport users have a slight disbenefit. When compared to DS3d, the DS4d total benefits are significantly greater in the AM peak and broadly similar in both the IP and PM peaks.

Table 4.3 – DS4d Benefits by Mode and Period (60 year PVB in £k 2010 prices and values), SRTM Ref AST v AQV

Benefit Type	AM	IP	PM	**Total**
Highway	11,341	30,682	19,777	**61,800**
Public Transport	-139	-317	-510	**-965**
Active	9	8	-1	**16**
Operator Revenue	85	-626	-310	**-851**
Tax	625	2,045	1,485	**4,156**
Total	**11,922**	**31,792**	**20,441**	**64,155**

5 Summary

5.1 Further to scheme refinement and subsequent transport modelling using SRTM the outcomes of cost-benefit analysis for the Stubbington Bypass both in isolation and with Newgate Lane south produced BCRs of 1.85 and 2.07 respectively, with a £34m scheme cost.