

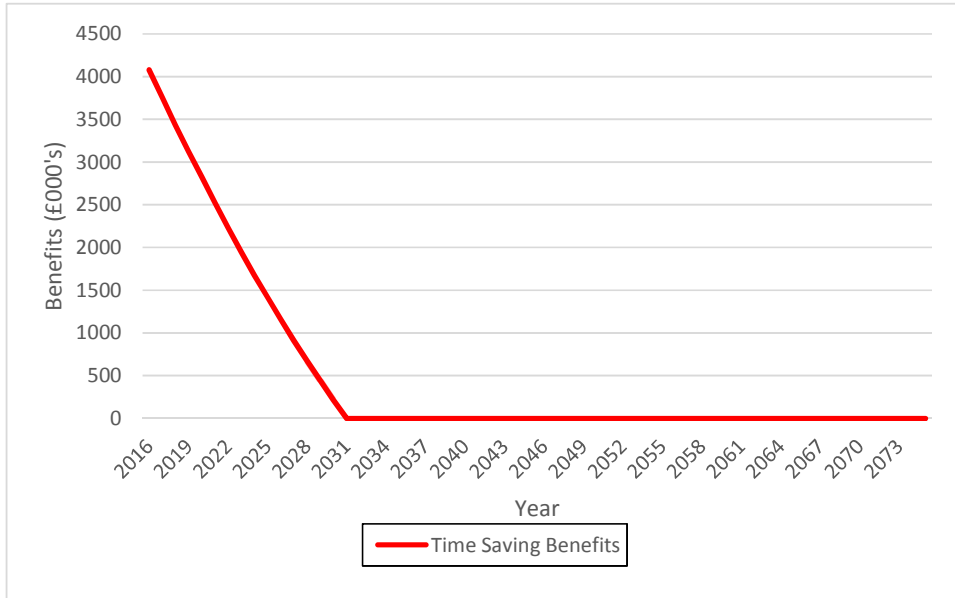
Annex A
TUBA Time Savings Summary

Annex A: TUBA Time Savings Summary

Profile of Time Benefits

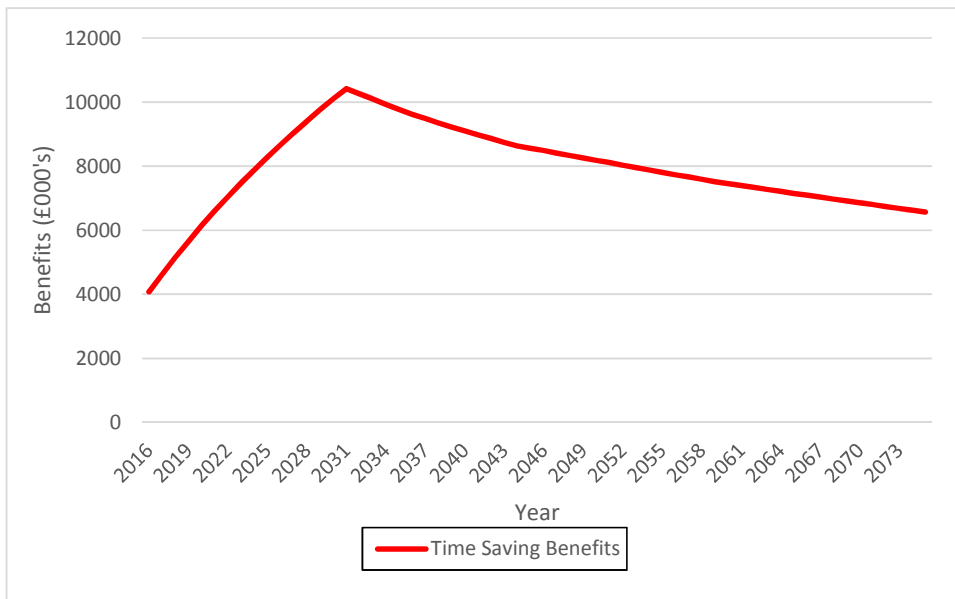
The scale of discounted benefits over time is shown in the two figures below for both the full and no decay scenarios.

Figure 10-1: Discounted benefits over time for the full decay scenario



It can be seen above that the benefits are not incurred during or after 2031, which is consistent with the methodology for the full decay scenario. The benefits ramp-down until this year due to the interpolation of benefits in TUBA.

Figure 10-2: Discounted benefits over time for the no decay scenario



It can be seen that the profile of benefits from sixty years after scheme opening in 2015 are smoothly-profiled. The ramp-up between 2015 and 2031 is due to the inclusion of two modelled years.

Warning Message Check

The outputs of the TUBA Runs were checked for warnings, in terms of the ratio of the do-minimum to do-something travel time for the full decay and no decay cases. Checking was undertaken to establish the proportion of benefits and trips falling in the defined bands in the TUBA guidance.

In both cases no serious warnings regarding DM/DS travel time ratio falling out of the relevant boundary defined by TUBA were reported. A small number of non-serious warnings were observed but these ratio are generally very close to the 0.67 and 1.5 boundary defined by TUBA. The number of non-serious warning for travel time ratio is generally below 20.

Distribution of Benefits

The key distributional analysis results, as taken from TUBA, are reported in the two tables below for the Full Decay scenario for all user classes. The majority of savings are within the 0 and 2 minutes band, which would appear reasonable. See Table 10-1.

Table 10-1: Distribution of Benefits by Ratio Band (Full Decay)

Band	Business	Commuting & Other	Total
Over 5 Minutes Saving	0.2%	0.3%	0.2%
Between 2 and 5 Minutes Saving	0.4%	0.8%	0.6%
Between 0 and 2 Minutes Saving	117.8%	113.4%	115.3%
Between 0 and 2 Minutes Increase	-17.7%	-13.4%	-15.2%
Between 2 and 5 Minutes Increase	-0.6%	-0.7%	-0.7%
Over 5 Minutes Increase	-0.1%	-0.3%	-0.2%
Total	100.0%	100.0%	100.0%

Table 10-2: Distribution of Net Benefits by Ratio Band (Full Decay in £m)

Band	Business	Commuting & Other	Total
Between 0-2 Minutes Net Benefit	12.99	17.42	30.41
Between 2-5 Minutes Net Benefit	-0.03	0.02	-0.01
Over 5 Minutes Net Benefit	0.01	0.00	0.01
Total	12.97	17.43	30.40

Key distributional analysis, as taken from TUBA, is also reported in the two tables below for the No Decay scenario for all user classes. The majority of savings are within the 0 and 2 minutes band, which would appear reasonable. Table 10-3.

Table 10-3: Distribution of Benefits by Ratio Band (No Decay)

Band	Business	Commuting & Other	Total
Over 5 Minutes Saving	0.1%	0.1%	0.1%
Between 2 and 5 Minutes Saving	13.8%	13.0%	13.4%
Between 0 and 2 Minutes Saving	97.1%	98.0%	97.6%
Between 0 and 2 Minutes Increase	-10.6%	-10.7%	-10.7%
Between 2 and 5 Minutes Increase	-0.3%	-0.4%	-0.4%
Over 5 Minutes Increase	0.0%	0.0%	0.0%

Band	Business	Commuting & Other	Total
Total	100.0%	100.0%	100.0%

Table 10-4: Distribution of Net Benefits by Ratio Band (No Decay in £m)

Band	Business	Commuting & Other	Total
Between 0-2 Minutes Net Benefit	177.04	235.90	412.94
Between 2-5 Minutes Net Benefit	27.77	34.05	61.82
Over 5 Minutes Net Benefit	0.07	0.27	0.34
Total	204.88	270.22	475.10

The combined time savings benefits for the realistic case between Full Decay and No Decay scenarios are also presented in Table 10-5.

Table 10-5: Distribution of Net Benefits by Ratio Band (Realistic Case in £m)

Band	Business	Commuting & Other	Total
Between 0-2 Minutes Net Benefit	50.72	67.67	118.39
Between 2-5 Minutes Net Benefit	6.37	7.84	14.21
Over 5 Minutes Net Benefit	0.03	0.06	0.09
Total	57.11	75.57	132.68

Annex B
Sensitivity Test Scenario TUBA Results

Annex B: Sensitivity Test Scenario TUBA Results

TEE Table

Economic Efficiency of the Transport System (TEE)

	ALL MODES	ROAD				BUS and COACH		RAIL	OTHER
		TOTAL	Private Cars and LGVs	Passengers	Passengers	Passengers	Passengers		
Non-business: Commuting									
<i>User benefits</i>									
Travel time	58,581	58,581	0	0					
Vehicle operating costs	16,603	16,603							
User charges	-11.03	-11.03	0	0					
During Construction & Maintenance	0	0	0	0					
NET NON-BUSINESS BENEFITS: COMMUTING	75,173	75,173	0	0					
		(1a)							
Non-business: Other									
<i>User benefits</i>									
Travel time	0	0	0	0					
Vehicle operating costs	0	0							
User charges	0	0	0	0					
During Construction & Maintenance	0	0	0	0					
NET NON-BUSINESS BENEFITS: OTHER	0	0	0	0					
		(1b)							
Business									
<i>User benefits</i>									
Travel time	44,841	24,903	19,938	0	0	0			
Vehicle operating costs	3,029	1,245	1,784						
User charges	30.19	25	5	0		0			
During Construction & Maintenance	0	0	0	0		0			
Subtotal	47,900	26,173	21,727	0		0			
		(2)							
<i>Private sector provider impacts</i>									
Revenue	0								
Operating costs	0								
Investment costs	0								
Grant/subsidy	0								
Subtotal	0								
		(3)							
<i>Other business impacts</i>									
Developer contributions	0								
NET BUSINESS IMPACT	47,900								
		(4)							
		(5) = (2) + (3) + (4)							
TOTAL									
Present Value of Transport Economic Efficiency Benefits (TEE)	123,073								
		(6) = (1a) + (1b) + (5)							

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

PA Table

Public Accounts for the Appraisal of Major Highway Schemes

	ROAD INFRASTRUCTURE	
	TOTAL	
Local Government Funding		
Operating Costs	14,827	
Investment Costs	6,121	
Developer and Other Contributions	0	
NET IMPACT	20,948	(7)
Central Government Funding: Transport		
Operating costs	3247	
Investment Costs	0	
Developer and Other Contributions	0	
NET IMPACT	3,247	(8)
Central Government Funding: Non-Transport		
Indirect Tax Revenues	11,054	(9)
TOTALS		
Broad Transport Budget	24,195	(10) = (7) + (8)
Wider Public Finances	11,054	(11) = (9)

AMCB Table

Analysis of Monetised Costs and Benefits

Noise	-	(12)
Local Air Quality	-	(13)
Greenhouse Gases	3,042	(14)
Journey Ambience	-	(15)
Accidents	3,402	(16)
Economic Efficiency: Consumer Users (Commuting)	75,173	(1a)
Economic Efficiency: Consumer Users (Other)	-	(1b)
Economic Efficiency: Business Users and Providers	47,900	(5)
Wider Public Finances (Indirect Taxation Revenues)	-11,054	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Option Values	-	(17)
Present Value of Benefits ^(see notes) (PVB)	118,463	(PVB) = (12) + (13) + (14) + (15) + (16) + (1a) + (1b) + (5) + (17) - (11)
Broad Transport Budget	24,195	(10)
Present Value of Costs ^(see notes) (PVC)	24,195	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	94,268	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	4.90	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.