

Economy: Economic Efficiency of the Transport System(TEE)

		Option 6	Option 4	Option 5	Option 1	Option 2
Travel Time	Commuting user benefits	141216	15213	99152	1524	1952
	Other user benefits	331100	44540	272124	584	-96
	Business	506888	76321	365811	3764	3342
	<b>total</b>	<b>979204</b>	<b>136074</b>	<b>737087</b>	<b>5872</b>	<b>5198</b>
User charges	Commuting user benefits	0	0	0	0	0
	Other user benefits	0	0	0	0	0
	Business	0	0	0	0	0
	<b>total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Vehicle operating costs	Commuting user benefits	-23480	-1341	-16753	317	846
	Other user benefits	-51225	-5305	-33651	-17	385
	Business	-1795	23919	3488	600	649
	<b>total</b>	<b>-76500</b>	<b>17273</b>	<b>-46916</b>	<b>900</b>	<b>1880</b>
Public Accounts	Investment costs	0	0	0	0	0
	Revenue	0	0	0	0	0
	Operating costs	0	0	0	0	0
	Grant/subsidy	0	0	0	0	0
Greenhouse Gases		-29785	2077	-19559	175	482
Present value Cost to Government (PVC)		0	0	0	0	0
Wider Public Finances		-49576	2866	-32681	287	808

Annex E  
TUBA results  
HWay

Economy:Economic Efficiency of the Transport System(TEE)

		Option 6	Option 4	Option 5	Option 1	Option 2	2a
Travel Time	Commuting user benefits	6460	-1603	1803	1618	20411	20400
	Other user benefits	17649	-2185	9660	1156	45441	45427
	Business	3347	1417	2857	2866	25373	25329
	<b>total</b>	<b>27456</b>	<b>-2371</b>	<b>14320</b>	<b>5640</b>	<b>91225</b>	<b>91156</b>
User charges	Commuting user benefits	1664	74	839	67	-3904	-3900
	Other user benefits	2603	124	1416	335	-7231	-7227
	Business	106	-50	335	-28	-948	-948
	<b>total</b>	<b>4373</b>	<b>148</b>	<b>2590</b>	<b>374</b>	<b>-12083</b>	<b>-12075</b>
Vehicle operating costs	Commuting user benefits	0	0	0	0	0	0
	Other user benefits	0	0	0	0	0	0
	Business	0	0	0	0	0	0
	<b>total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Public Accounts	Investment costs	0	0	0	0	0	0
	Revenue	27382	4392	20357	-1951	-28896	-30606
	Operating costs	0	0	0	0	0	0
	Grant/subsidy	0	0	0	0	0	0
Greenhouse Gases		0	0	0	0	0	0
Present value Cost to Government (PVC)		27382	4392	20357	-1951	-28896	-30606
Wider Public Finances		-4348	-688	-3194	289	4097	4359

Annex E  
T43A results  
PT

Annex E  
TUBA  
Hway

AST TEE Requirements

Option 6 Option 4 Option 5 Option 1 Option 2

**ENVIRONMENT**

Global Air Quality - CO2 (PV1)	-29785	2077	-19559	175	482
Physical Fitness (PV2)	0	0	0	0	0
<b>Monetary Summary</b>	-29785	2077	-19559	175	482
<b>Monetary Impact Ratio</b>	-0.60079	-0.7247	-0.59848	-0.60976	-0.59653

**SAFETY**

Total Discounted Savings (PV3)	0	0	0	0	0
<b>Monetary Summary</b>	0	0	0	0	0
<b>Monetary Impact Ratio</b>	0	0	0	0	0

**ECONOMY (TEE)**

Travel Time (PV4)	979204	136074	737087	5872	5198
User Charges (PV5)	0	0	0	0	0
Vehicle Operating Costs (PV6)	-76500	17273	-46916	900	1880
Private Sector:					
Investment Costs (PV7)	0	0	0	0	0
Operating & Maintenance Costs (PV8)	0	0	0	0	0
Revenues (PV9)	0	0	0	0	0
Grant/Subsidy payments (PV10)	0	0	0	0	0
<b>Monetary Summary (PV11)</b>	902704	153347	690171	6772	7078
<b>Monetary Impact Ratio</b>	18.20849	-53.5056	21.11842	-23.5958	-8.7599

**ECONOMY (WEBS)**

Agglomeration economies - WB1 (PV12)					
Increased Output - WB3 (PV13)					
Wider benefits from improve labour supply - WB4 (PV14)					
<b>Monetary Summary (PV15)</b>	0	0	0	0	0
<b>Monetary Impact Ratio</b>	18.20849	-53.5056	21.11842	-23.5958	-8.7599

**Cost to Public Sector**

Public Sector Investment Costs (PV16)	0	0	0	0	0
Public Sector Operating & Maintenance Costs (PV17)	0	0	0	0	0
Grant/Subsidy Payments (PV18)	0	0	0	0	0
Revenues (PV19)	0	0	0	0	0
Taxation Impacts (PV20)	-49576	2866	-32681	287	808
Cost to Funding Agency (PV21)					

Present Value Benefits (PVB)	872919	155424	670612	6947	7560
Present value Cost to Government (PVC)	-49576	2866	-32681	287	808
Net Present Value (NPV)	823343	158290	637931	7234	8368
BCR to Government (BCR)	17.60769	-54.2303	20.51994	-24.2056	-9.35644
BCR (Inc WEBS)	17.60769	-54.2303	20.51994	-24.2056	-9.35644
BCR to FA					

Driver Frustration

PVB (WEBS + Driver Frustration)	872919	155424	670612	6947	7560
BCR (WEBS + Driver Frustration)	17.60769	-54.2303	20.51994	-24.2056	-9.35644

Annex E

TUSA

PT

## AST TEE Requirements

Option 6 Option 4 Option 5 Option 1 Option 2 2a

**ENVIRONMENT**

Global Air Quality - CO2 (PV1)	0	0	0	0	0	0
Physical Fitness (PV2)	0	0	0	0	0	0
<b>Monetary Summary</b>	0	0	0	0	0	0
<b>Monetary Impact Ratio</b>	0	0	0	0	0	0

**SAFETY**

Total Discounted Savings (PV3)	0	0	0	0	0	0
<b>Monetary Summary</b>	0	0	0	0	0	0
<b>Monetary Impact Ratio</b>	0	0	0	0	0	0

**ECONOMY (TEE)**

Travel Time (PV4)	27456	-2371	14320	5640	91225	91156
User Charges (PV5)	4373	148	2590	374	-12083	-12075
Vehicle Operating Costs (PV6)	0	0	0	0	0	0
Private Sector:						
Investment Costs (PV7)	0	0	0	0	0	0
Operating & Maintenance Costs (PV8)	0	0	0	0	0	0
Revenues (PV9)	27382	4392	20357	-1951	-28896	-30606
Grant/Subsidy payments (PV10)	0	0	0	0	0	0
<b>Monetary Summary (PV11)</b>	59211	2169	37267	4063	50246	48475
<b>Monetary Impact Ratio</b>	-2.570591	-0.585583	-2.171357	2.444645	2.02613	1.846878

**ECONOMY (WEBS)**

Agglomeration economies - WB1 (PV12)						
Increased Output - WB3 (PV13)						
Wider benefits from improve labour supply - WB4 (PV14)						
<b>Monetary Summary (PV15)</b>	0	0	0	0	0	0
<b>Monetary Impact Ratio</b>	-2.570591	-0.585583	-2.171357	2.444645	2.02613	2.02613

**Cost to Public Sector**

Public Sector Investment Costs (PV16)	0	0	0	0	0	0
Public Sector Operating & Maintenance Costs (PV17)	0	0	0	0	0	0
Grant/Subsidy Payments (PV18)	0	0	0	0	0	0
Revenues (PV19)	27382	4392	20357	-1951	-28896	-30606
Taxation Impacts (PV20)	-4348	-688	-3194	289	4097	4359
Cost to Funding Agency (PV21)						

Present Value Benefits (PVB)	59211	2169	37267	4063	50246	48475
Present value Cost to Government (PVC)	23034	3704	17163	-1662	-24799	-26247
Net Present Value (NPV)	82245	5873	54430	2401	25447	22228
BCR to Government (BCR)	-2.570591	-0.585583	-2.171357	2.444645	2.02613	1.846878
BCR (Inc WEBS)	-2.570591	-0.585583	-2.171357	2.444645	2.02613	1.846878
BCR to FA						

## Driver Frustration

PVB (WEBS + Driver Frustration)	59211	2169	37267	4063	50246	48475
BCR (WEBS + Driver Frustration)	-2.570591	-0.585583	-2.171357	2.444645	2.02613	1.846878

Option 1	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	0.196707	-179.2847	25.8968		-53.72641
A96 Corridor - Moray (area 19)	0.024918	41.60915	0.056995		12.49022
Aberdeen (area 15)	0.136904	268.713	3.635174		80.65497
Inverness & hinterland	0.013584	1.02676	0.109114		0.312103
Banf & Fraserhead (areas 17 & 18)	0.006827	25.46179	0.015034		7.540384
<b>Total</b>	<b>0.378939</b>	<b>157.526</b>	<b>29.71312</b>	<b>663</b>	<b>47.37147</b>

Highway PT  
3764 2866

Option 2	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	0.175181	331.513	30.68721		99.50647
A96 Corridor - Moray (area 19)	0.343017	-58.51659	0.195379		-17.45207
Aberdeen (area 15)	1.187828	3831.778	37.4207		1149.89
Inverness & hinterland	0.092358	-57.93517	-0.007252		-17.35284
Banf & Fraserhead (areas 17 & 18)	0.001332	44.98487	0.050904		-13.49506
<b>Total</b>	<b>1.799715</b>	<b>4001.855</b>	<b>68.35694</b>	<b>2871.5</b>	<b>1201.096</b>

Highway PT  
3342 25373

Option 4	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	1.284935	-160.5791	-16.26952		-47.78825
A96 Corridor - Moray (area 19)	4.8823	1090.871	4.797421		328.7261
Aberdeen (area 15)	-0.030571	-444.5816	4.606814		-133.3836
Inverness & hinterland	2.066368	-2.077229	5.288091		-0.009258
Banf & Fraserhead (areas 17 & 18)	0.000118	-15.19123	1.364345		-4.557335
<b>Total</b>	<b>8.203151</b>	<b>468.4423</b>	<b>-0.21285</b>	<b>7773.8</b>	<b>142.9936</b>

Highway PT  
76321 1417

Option 5	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	7.743455	-194.3953	56.59484		-55.99555
A96 Corridor - Moray (area 19)	21.17034	3715.441	51.43157		1120.984
Aberdeen (area 15)	1.677496	546.4876	65.1773		164.4495
Inverness & hinterland	10.40887	-23.99812	25.68447		-4.076773
Banf & Fraserhead (areas 17 & 18)	0.355423	-77.71515	7.589366		-23.20792
<b>Total</b>	<b>41.35559</b>	<b>3965.82</b>	<b>206.4776</b>	<b>36866.8</b>	<b>1202.153</b>

Highway PT  
365811 2857

Option 6	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	11.80546	-125.3014	123.746		-34.04879
A96 Corridor - Moray (area 19)	34.76133	3828.216	65.74964		1158.893
Aberdeen (area 15)	3.950887	2076.074	110.8025		624.0073
Inverness & hinterland	16.14874	-37.38146	36.37497		-6.369818
Banf & Fraserhead (areas 17 & 18)	0.633763	-92.41364	9.98941		-27.53996
<b>Total</b>	<b>67.30018</b>	<b>5649.193</b>	<b>346.6625</b>	<b>51023.5</b>	<b>1714.948</b>

Highway PT  
506888 3347

Option 1	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	196.7066	-179284.8	25896.8		-53726.41
A96 Corridor - Moray (area 19)	24.91751	41609.15	56.995472		12490.22
Aberdeen (area 15)	136.9037	268713	3635.17358		80654.97
Inverness & hinterland	13.58446	1026.76	109.1138		312.1038
Banf & Fraserhead (areas 17 & 18)	6.827076	25461.79	15.0343975		7640.584
<b>Total</b>	<b>378.9393</b>	<b>157526</b>	<b>29713.1173</b>	<b>286.6</b>	<b>47371.47</b>

Highway PT  
3764 2866

Option 2	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	175.1806	331513	30697.2109		99506.47
A96 Corridor - Moray (area 19)	343.0168	-58516.59	195.378727		-17452.07
Aberdeen (area 15)	1187.828	3831778	37420.6953		1149890
Inverness & hinterland	92.35798	-57935.17	-7.2517126		-17352.84
Banf & Fraserhead (areas 17 & 18)	1.332338	44984.87	50.3038208		-13495.06
<b>Total</b>	<b>1799.715</b>	<b>4001855</b>	<b>68356.937</b>	<b>2871.5</b>	<b>1201096</b>

Highway PT  
3342 25373

Option 4	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	1284.935	-160579.1	-16269.524		-47788.25
A96 Corridor - Moray (area 19)	4882.3	1090871	4797.42104		328726.1
Aberdeen (area 15)	-30.5709	-444581.6	4606.81439		-133383.6
Inverness & hinterland	2066.368	-2077.229	5288.09147		-3.258333
Banf & Fraserhead (areas 17 & 18)	0.11802	-15191.23	1364.34454		-4557.535
<b>Total</b>	<b>8203.151</b>	<b>468442.3</b>	<b>-212.85268</b>	<b>7773.8</b>	<b>142993.6</b>

Highway PT  
76321 1417

Option 5	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	7743.455	-194395.3	56594.8443		-55995.55
A96 Corridor - Moray (area 19)	21170.94	3715441	51431.575		1120984
Aberdeen (area 15)	1677.496	546487.6	65177.3029		164449.5
Inverness & hinterland	10408.87	-23998.12	25684.4663		-4076.773
Banf & Fraserhead (areas 17 & 18)	955.4231	-77715.15	7589.36617		-23207.92
<b>Total</b>	<b>41355.59</b>	<b>3965820</b>	<b>206477.555</b>	<b>36866.8</b>	<b>1202153</b>

Highway PT  
365811 2857

Option 6	NPV GP1	NPV GP3	NPV WB1	NPV WB3	NPV WB4
<b>Areas</b>					
Inverness and Dingwall	11805.46	-125301.4	123745.967		-34048.79
A96 Corridor - Moray (area 19)	34761.33	3828216	65749.6352		1158893
Aberdeen (area 15)	3950.887	2076074	110802.493		624007.3
Inverness & hinterland	16148.74	-37381.46	36374.9732		-6369.818
Banf & Fraserhead (areas 17 & 18)	633.7626	-92413.64	9989.41036		-27539.96
<b>Total</b>	<b>67300.18</b>	<b>5649193</b>	<b>346662.479</b>	<b>51023.5</b>	<b>1714948</b>

Highway PT  
506888 3347

Annex F  
Final Results  
HUG + PT +  
WEBS

AST TEE Requirements	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Source
<b>ENVIRONMENT</b>							
Global Air Quality - CO2 (PV1)	0	482	623.1	2077	-19559	-29785	TUBA
Physical Fitness (PV2)	0	0	0	0	0	0	TUBA
Monetary Summary	0	482	623.1	2077	-19559	-29785	
Monetary Impact Ratio	0.00	0.00	0.00	0.01	-0.02	-0.02	
<b>SAFETY</b>							
Total Discounted Savings (PV3)	0	0	18,074	10,304	125,121	213,503	Accidents Spreadsheet
Monetary Summary	0	0	0	0	0	0	TUBA
Monetary Impact Ratio	0	0	0	0.04750383	0.15	0.14	
<b>ECONOMY (TEE)</b>							
Travel Time (PV4)	11512	96423	40110.9	133703	751407	1006660	TUBA
User Charges (PV5)	374	-12083	148	148	2590	4373	TUBA
Vehicle Operating Costs (PV6)	900	188c	5181.9	17273	-46916	-76500	TUBA
Private Sector:	0	c	0	0	0	0	TUBA
Investment Costs (PV7)	0	c	0	0	0	0	TUBA
Operating & Maintenance Costs (PV8)	0	c	0	0	0	0	TUBA
Revenues (PV9)	1951	28896	0	-4392	-20357	-27382	TUBA
Grant/Subsidy payments (PV10)	-1951	-28896	4392	20357	27382	27382	TUBA
Monetary Summary (PV11)	12786	86220	45292.8	151124	707081	934533	TUBA
Monetary Impact Ratio	0.10	0.62	0.27	0.70	0.85	0.82	
<b>ECONOMY (WEBS)</b>							
Agglomeration economies - WB1 (PV12)	29713	68857	-213	-213	206478	346662	WEBS
Increased Output - WS3 (PV13)	287	2872	7774	7774	36867	51024	WEBS
Wider benefits from improve labour supply - WB4 (PV14)	30000	71228	7561	7561	243344	397686	
Monetary Summary (PV15)	0.34	1.15	0.75	0.75	1.14	0.89	
<b>Cost to Public Sector</b>							
Public Sector Investment Costs (PV16)	126336	168448	169517	202409	749816	1344364	Costs Spreadsheet
Public Sector Operating & Maintenance Costs (PV17)	-1951	-28896	0	4392	20357	27382	Costs Spreadsheet
Grant/Subsidy Payments (PV18)	289	4905	653	2178	-35875	-53924	TUBA
Revenues (PV19)	0	0	0	0	0	0	
Taxation Impacts (PV20)	12497	81797	63337	161327	848518	1172175	
Cost to Funding Agency (PV21)	124385	139552	169517	216921	834701	1495460	
Present Value Benefits (PVB)	-111888	-57755	-106181	-55594	13817	-323286	
Present value Cost to Government (PVC)	0.10	0.59	0.37	0.74	1.02	0.78	
Net Present Value (NPV)	0.34	1.10	0.37	0.78	1.31	1.05	
BCR to Government (BCR)							
BCR (inc WEBS)							
BCR to FA							
<b>Driver Frustration</b>							
PVB (WEBS + Driver Frustration)	42497	153025	63337	168888	1167362	1720860	
BCR (WEBS + Driver Frustration)	0.34	1.10	0.37	0.78	1.40	1.15	

PVB  
Accidents  
Opt 3 18,074  
Opt 4 10,304  
Opt 5 125,121  
Opt 6 213,503

NOTES  
Based on increase/decrease in rail fares, therefore a Private Sector benefit (PV9), but recovered by the Govt (PV10). Overall benefit reflected as a +ve/-ve Cost to Public Sector (PV18)