

VI Calculation of Net Present Cost / Value

Calculation of Net Present Cost (NPC) / Value (NPV)

- 6.1 The appraisal process requires the calculation of their net present costs/values. This expresses the stream of cash flows and quantifiable benefits occurring over the appraisal period (in this case 25 years) discounted to 2009. The NPC calculations consist of the implementation costs, the steady state costs (i.e. the annual costs incurred in the provision of the functions after the initial implementation period) and operating benefits/ efficiencies identified.
- 6.2 As noted in the introduction to Section 5, both a Financial and Economic analysis has been conducted. The cash flows of each of the options have been discounted at 3.5% and the detailed calculations are set out in Appendix D. Table 6.1 below presents a summary of the financial calculations.

Table 6.1 – Summary of NPC Calculations (Financial Analysis)

	NPC	Rank	Difference with Do Nothing
Option 1	£13,026,048,219	4	
Option 2	£13,231,505,006	5	(£205,456,787)
Option 3	£13,014,193,996	3	£11,854,223
Option 4	£12,867,532,726	2	£158,515,493
Option 5	£12,587,365,881	1	£438,682,338

- 6.3 The following comments are made in respect of the NPC results set out above:
- Option 5 has the lowest NPC across all the options, totalling less £12.6 billion over 25 years and is £438 million lower than the ‘Do Nothing’ option
 - Option 4 is ranked second in the analysis with an NPC of £12.9 billion, which is £158 million lower than the Do Nothing option;
 - Option 3 also has a lower NPC than the Do Nothing option and is ranked third overall. However, the significant implementation costs and limited transformation benefits mean that the overall NPC is just £11m more than the Do Nothing option; and
 - Option 2 has the highest NPC at £13.23 billion, some £205 million higher than the No Nothing option and £643 million higher than option 5. This reflects the higher estimated annual revenue costs compared to option 1 plus the transition costs which would also be incurred.
- 6.4 In short therefore, in order to deliver value for money under the new RPA arrangements, then a significant level of transformation needs to be undertaken within local government service delivery. Furthermore the additional efficiencies which can be derived from the establishment of a Business Service Organisation (BSO) and a single Waste Disposal Authority result in a NPC saving of £280 million compared to option 4. Although only indicative costs and benefits information has been available to complete this economic appraisal, we have sought to be prudent when quantifying the financial impacts of each of the options. In particular we sought not to underestimate costs or

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overestimate benefits. This is important to note because the difference between option 5 and option 1 (£438 million) is only 3.48% of the total NPC of option 5.

- 6.5 Therefore on this basis, whilst further organisational restructuring and transformation work must be undertaken to identify more accurate cost and benefit information, the analysis is sufficiently robust to identify the appropriate option for progression.
- 6.6 Table 6.2 below presents a summary of the Economic NPC calculations.

Table 6.2 – Summary of NPC Calculations (Economic Analysis)

	NPC	Rank	Difference with Do Nothing
Option 1	£13,026,048,219	4	
Option 2	£13,209,836,962	5	(£183,788,743)
Option 3	£12,992,525,952	3	£33,522,267
Option 4	£12,845,864,682	2	£180,183,537
Option 5	£12,565,697,837	1	£460,350,381

- 6.7 The following comments are made in respect of the Economic NPC results:
- The NPC of all the ‘Do Something’ options has decreased by approximately £21.7 million reflecting the removal of severance/ redundancy costs;
 - Similarly, the difference with the ‘Do Nothing’ option has increased by the same amount;
 - Importantly the ranking of the options remains unchanged from the Financial analysis.

Sensitivity Analysis

6.8 The high level nature of the costings identified in this appraisal, brings with it an associated high level of uncertainty. As a result we have included a comprehensive sensitivity analysis in this appraisal to test the robustness of the conclusions flowing from the NPC analysis. As indicated in section 5, the financial analysis is considered to be of greater interest to DoE senior management and the Local Government sector and for this reason the sensitivity analysis has been conducted on the financial analysis NPCs.

6.9 In particular the areas of uncertainty in terms of the financial analysis are in respect of the Transition Costs and the Transformation Costs and Benefits. As a result these are the areas of focus in our sensitivity analysis. In making a determination on the scale of variance which should be applied on both the upside and the downside, it is important to consider that in our costing analysis we always sought to take a prudent approach and use cost estimates at the higher end of any range provided. Therefore our downside analysis for each sensitivity below could be considered as a worst-worst case scenario.

Transition Costs

6.10 To allow for both upside and downside uncertainty, we have assumed both a 10% increase and a 10% decrease in transition costs (including ICT costs). The results of this analysis are set out in the table below.

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Table 6.3 – Sensitivity Analysis – 10% Increase in Transition and ICT Costs

	NPC – 10% Increase in Transition Costs			NPC – Standard Analysis		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	13,029	3	-	13,026	4	-
Option 2	13,259	5	(230)	13,232	5	(205)
Option 3	13,041	4	(12)	13,014	3	12
Option 4	12,901	2	128	12,868	2	159
Option 5	12,616	1	413	12,587	1	439

6.11 The following conclusions can be made from this analysis:

- The NPCs for all the options increases, however options 5 and 4 are still ranked 1 and 2 respectively;
- The NPC for option 1 also increases because we have assumed ICT investment in 'Do Nothing' (albeit much lower) as well as in the 'Do Something' options. As we have assumed an increase in ICT costs so the 'Do Nothing' NPC increases; and
- Option 2 is ranked last.

Table 6.4 – Sensitivity Analysis – 10% Decrease in Transition and ICT Costs

	NPC – 10% Decrease in Transition Costs			NPC – Standard Analysis		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	13,023	4	-	13,026	4	-
Option 2	13,204	5	(181)	13,232	5	(205)
Option 3	12,987	3	36	13,014	3	12
Option 4	12,834	2	189	12,868	2	159
Option 5	12,563	1	460	12,587	1	439

6.12 The following conclusions can be made from this analysis:

- The ranking of the options is not impacted by an increase in the transition costs;
- The NPCs for all the options decreases, however options 5 and 4 are still ranked 1 and 2 respectively;
- The NPC for option 1 also decreases because we have assumed ICT investment in 'Do Nothing' (albeit much lower) as well as in the 'Do Something' options. As we have assumed a decrease in ICT costs so the 'Do Nothing' NPC decreases; and
- Option 2 is ranked last by a margin.

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Transformation Costs and Benefits

- 6.13 The other area of uncertainty identified is in respect of the estimates used to calculate transformation costs and benefits. As above we have also considered both upside and downside outcomes, where the upside outcome assumes higher benefits **and** lower costs and conversely, the downside outcome assumes lower benefits **and** higher costs.
- 6.14 As detailed in section 5 of the report, these costs and benefits are based on percentages of local government expenditure and therefore we have changed the assumed cost and benefit percentages as set out in the table below.

Table 6.5 – Transformation Costs and Benefits – Sensitivity Assumptions

	Transformation Costs			Transformation Benefits		
	Upside	Standard	Downside	Downside	Standard	Upside
Option 3	2%	3%	4%	2%	2.5%	3%
Option 4	5%	7%	8%	4%	5%	7%
Option 5	7%	8.5%	9.5%	6%	7.5%	10%

- 6.15 The results of the upside and downside analyses are set out in the table below.

Table 6.6 – Sensitivity Analysis – Transformation Costs Downside

	NPC – Transformation Costs and Benefits (Downside)			NPC – Standard Analysis		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	13,026	3	-	13,026	4	-
Option 2	13,232	5	(205)	13,232	5	(205)
Option 3	13,068	4	42	13,014	3	12
Option 4	12,969	2	57	12,868	2	159
Option 5	12,736	1	290	12,587	1	439

- 6.16 The following conclusions can be made from this analysis:
- The ranking of the options changes slightly, option 1 is now ranked third ahead of option 3 in fourth;
 - The NPCs for options 1 and 2 is unchanged because no transformation is undertaken in these options;
 - Option 5 remains the preferred option in financial terms.

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Table 6.7 – Sensitivity Analysis – Transformation Costs Upside

	NPC – Transformation Costs and Benefits (Upside)			NPC – Standard Analysis		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	13,026	4	-	13,026	4	-
Option 2	13,232	5	(205)	13,232	5	(205)
Option 3	12,960	3	66	13,014	3	12
Option 4	12,665	2	361	12,868	2	159
Option 5	12,341	1	685	12,587	1	439

6.17 The following conclusions can be made from this analysis:

- The NPCs for options 3, 4 and 5 have decreased significantly;
- The ranking of the options is not impacted by this change;
- The NPCs for options 1 and 2 is unchanged because no transformation is undertaken in these options; and
- Option 5 remains the preferred option in financial terms.

NPC Period

6.18 Typically, NPCs are run over the assumed life of the project. However in this instance the 'project life' is not clearly defined. As a result we have also completed a sensitivity analysis on the NPC period at both 20 years and at 30 years. The results of this analysis are set out below.

Table 6.8 - Sensitivity Analysis – NPC Period 20 Years

	NPC – 20 Year Period			NPC – Standard 25 Year Period		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	11,347	3	-	13,026	4	-
Option 2	11,531	5	(184)	13,232	5	(205)
Option 3	11,354	4	(7)	13,014	3	12
Option 4	11,241	2	106	12,868	2	159
Option 5	11,010	1	338	12,587	1	439

6.19 The following conclusions can be made from this analysis:

- The NPCs overall are lower as costs are assessed over a shorter time period;

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- In addition the difference between the highest and lowest NPC is reduced as the period for benefits is reduced in options 3, 4 and 5 and the period for additional costs is reduced for option 2;
- The ranking of the options is unchanged with option 5 ranked first with the lowest NPC.

Table 6.9 - Sensitivity Analysis – NPC Period 30 Years

	NPC – 30 Year Period			NPC – Standard 25 Year Period		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	14,477	4	-	13,026	4	-
Option 2	14,701	5	(224)	13,232	5	(205)
Option 3	14,449	3	28	13,014	3	12
Option 4	14,274	2	203	12,868	2	159
Option 5	13,956	1	521	12,587	1	439

6.20 The following conclusions can be made from this analysis:

- The NPCs overall are higher, as costs are assessed over a longer time period;
- In addition the difference between the highest and lowest NPC is greater as the period for benefits is longer in options 3, 4 and 5 and the period for additional costs is longer for option 2;
- The ranking of the options is unchanged with option 5 ranked first with the lowest NPC.

Phasing Transformation Benefits

6.21 Although not an area of significant uncertainty we have also considered the impact of transformation benefits taking longer to be realised. In our standard analysis we have assumed that the transformation benefits will start to be realised in year 3 (2012/13) and then fully realised in year 5 (2014/15). Under this sensitivity we have assumed that it will take 12 months longer for the benefits to be realised (i.e. starting in year 4 and only being fully realised in year 6). The results of the analysis are set out below.

Table 6.10 – Sensitivity Analysis – Transformation Benefits (1 year delay)

	NPC – Transformation Benefits (1 year delay)			NPC – Standard Analysis		
	NPC £'m	Rank	Difference £'m	NPC £'m	Rank	Difference £'m
Option 1	13,026	3		13,026	4	-
Option 2	13,232	5	(205)	13,232	5	(205)
Option 3	13,029	4	(3)	13,014	3	12

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Option 4	12,898	2	128	12,868	2	159
Option 5	12,633	1	393	12,587	1	439

6.22 The following conclusions can be made from this analysis:

- This sensitivity impacts options 3, 4 and 5 only and given the closeness of option 1 and option 3 NPCs, a delay in the benefits by 1 year results in option 1 being ranked very marginally ahead option 3;
- The ranking of options 4 and 5 remain unchanged and remain significantly more favourable than the Do Nothing option.

Switching Values

6.23 The final sensitivity we have undertaken is to consider the extent to which the estimated transformation costs and benefits would have to change before options 3, 4 and 5 would become less favourable than the Do Nothing option. (ie. at what point would our preferred option switch to the Do Nothing option.

6.24 The first analysis is in respect of transformation costs. In general as the transformation costs are one-off, they are relatively low when considered against the overall costs incurred across local government over a 25 year time scale. As a result for options 4 and 5 a very large increase in transformation benefits would be required for them to be less favoured than option 1. The impact across each of the three transformation options is set out below:

- Option 3 – Transformation costs would have to increase by 62% to have a higher NPC than Option 1 ‘Do Nothing’;
- Option 4 – Transformation costs would have to increase by over 250% to have a higher NPC than Option 1 ‘Do Nothing’; and
- Option 5 – Transformation costs would have to increase by over 700% to have a higher NPC than Option 1 ‘Do Nothing’.

6.25 In respect of Transformation benefits, these will be accrued annually over the life of the project and are therefore much greater than the transformation costs over the period of the NPC analysis. As a result, a relatively smaller percentage reduction is required to reach the switching point, with option 1. The impact in respect of options 3, 4 and 5 are set out below:

- Option 3 – Transformation benefits would have to fall by only 5% to have a higher NPC than Option 1 ‘Do Nothing’;
- Option 4 – Transformation benefits would have to fall by 33% for this option to have a higher NPC than Option 1 ‘Do Nothing’; and
- Option 5 – Transformation benefits would have to fall by 62% for this option to have a higher NPC than Option 1 ‘Do Nothing’.

6.26 As option 5 has the lowest NPC, it is intuitively correct that the most significant variances are required to make it less favourable than the ‘Do Nothing’ option. As this analysis highlights either the Transformation costs would have to increase by some 700% or the transformation benefits would have to be at least 62% lower before this scenario would occur. Given the prudent approach taken in this appraisal in estimating both the transformation costs and benefits, it is reasonable to assume that the probability of either of the two scenarios above occurring is extremely low.