

Report on the Appraisal of Options

Version 5
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DOCUMENT CONTROL SHEET

Version	Date	Status
1	23/9/16	Non-financial appraisal (only) content updated
2	30/9/16	Financial appraisal added by SaTH. Economic summary completed.
3	10/10/2016	Minor corrections following review by Programme Board
4	27/10/2016	Amended to reflect revised OBC capital costs
5	7/11/2016	Clarification of impact of capital costs added in response to feedback from NHS Telford and Wrekin CCG

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1.0 EXECUTIVE SUMMARY

The purpose of this report is to present the results of the process to appraise the remaining shortlisted options for acute hospital services. Those results are set out in summary here, and discussed in detail in subsequent sections.

- In the **non-financial analysis**, Option C1 ranked 1st over Option B by a margin of 21.1%. The analysis demonstrates that, although various changes to the weighting and/or scoring of options could reduce that margin, no single analysis undertaken prompts a switch in ranking;
- In the **financial analysis** conversely, Option B ranked 1st over Option C1 by a margin of 0.8%;
- In the **overall economic analysis** which combines the result of the financial and non-financial analysis, it was found that Options B and C1 score significantly higher than Options A and C2. Depending on the methodology used, Option C1 outperforms Option B by a margin of either 10.2% (50:50 weighting of combined scores¹) or 25.7% (cost per benefit point).

Table 1: Results of Economic Appraisal

Results of Economic Appraisal				
Weighted Scores (50:50)	Option A	Option B	Option C1	Option C2
Non-Financial Weighted	26.2	39.5	50.0	21.9
Financial Weighted	45.7	50.0	49.6	49.3
Combined Score	71.9	89.5	99.6	71.2
Margin below 1 st	-27.8%	-10.2%	0.0%	-28.5%
Rank	3	2	1	4
Cost per Benefit Point	Option A	Option B	Option C1	Option C2
Cost per benefit point	2434.40	1476.92	1175.04	2696.20
Margin above 1 st	107.2%	25.7%	0.0%	129.5%
Rank	3	2	1	4

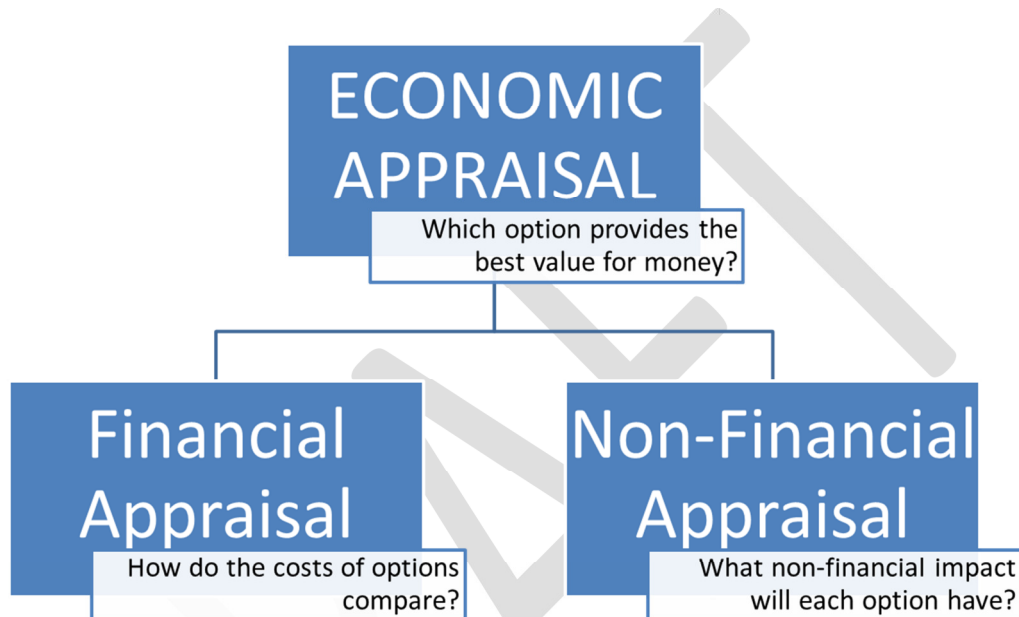
On the basis of these analyses, therefore, Option C1 appears to be the option that offers the greatest value for money, including in respect of the 'no change' option (Option A).

¹ Further weightings have been tested as part of the sensitivity analysis but with no change in ranking (see Appendix D).

2.0 INTRODUCTION

2.1 Appraisal Process

The appraisal process consists of three parts and these are each briefly described below. It was endorsed by Programme Board in April 2015 and confirmed (with some minor enhancements) in April 2016. It reflects the guidance set out in the DH Capital Investment Manual and HM Treasury's *The Green Book: Appraisal and Evaluation in Central Government*.



Financial Appraisal

At the shortlisting stage there was an overarching affordability criterion which reflected the relatively high level information that was available at that point. That criterion has now been subsumed into the financial appraisal undertaken by the Technical Team using data provided by SaTH.

The financial appraisal covers capital, lifecycle and revenue costs, and is summarised in terms of:

- Net Present Cost (NPC) - the total future costs of the project over a number of years expressed in terms of today's prices,
- Equivalent Annual Cost (EAC) - the average annual impact at today's prices.

The analysis considers periods of both 30 years and 60 years.

Non-financial Appraisal

The remaining criteria from the shortlisting process— accessibility, quality, workforce and deliverability – provide the framework for this appraisal.

Full descriptions of the options were developed which addressed all four criteria. The criteria were weighted for importance, and the appraisal panel

Economic Appraisal

This final appraisal combines the outputs of the financial and non-financial appraisals in order to assess the overall value for money offered by each option.

There are a number of standard methodologies recommended by HM Treasury which can be used at that stage, alone or in combination. This report covers two approaches

a) Weighting financial and non-financial scores

A non-financial score for each option is derived from the weighted total of the score for each non-financial criterion, giving a maximum of 100 'benefit points'. A financial score is derived from awarding 100 points to the option with the lowest EAC. More costly options are awarded points in inverse proportion to this.

The two scores for each option are then combined, and the impact of different financial and non-financial weightings can be tested. Weightings used in this analysis are 25:75, 50:50 and 75:25.

b) Calculating the cost of each non-financial benefit point

Here, the NPC is converted into an EAC for each option, and a cost per benefit point is calculated. The option with the lowest cost per benefit point would be the preferred option.

2.2 Options

Initially, over 40 ideas were developed by an evaluation panel for how the programme's clinical model could be delivered. This panel then grouped these ideas into 13 scenarios.

At shortlisting, the panel appraised those scenarios and made a recommendation to Programme Board which reflected the five options which had scored most highly. The Board accepted this recommendation and, in addition, –

- Accepted that the 'do minimum' also needed to be included on the shortlist as required by national guidance; and
- Agreed that two 'obstetric variants' should also remain under consideration pending further clarity being gained about the relative location of consultant-led obstetrics services and the proposed Emergency Centre.

The resultant eight options were then developed in terms of physical solutions and associated revenue and capital costs.

At its meeting in August 2015, the Board was advised that:

- a) The options involving a new site (D, E1, E2, F) were not affordable, and;

- b) The remaining options (B, C1, C2) were potentially affordable in that they would cover their own costs and contribute to the Trust's underlying financial position.

The Board therefore agreed to recommend to Sponsor Boards that the new site options be excluded from further consideration. At the same time, work was undertaken to test previously excluded options. Board accepted the conclusion that the result of the shortlisting process had been robust.

As a result, the revised shortlist was reduced to four options. This recommendation has been approved by all Sponsor Boards, and it is these remaining options (summarised below) which this report addresses.

An appraisal was conducted in September 2015 but the Programme was unable to move forward at that point due the wider financial position in the local health economy.

As a result, SaTH was asked to develop solutions which addressed its most pressing workforce challenges, and to do so within the resource available locally. This present appraisal addresses the same four options but has considered them in terms of the revised delivery solutions developed by SaTH.

	Princess Royal Telford	Royal Shrewsbury Hospital
A	No change	No change
B	EC UCC LPC W&C	DTC UCC LPC
C₁	DTC UCC LPC	EC UCC LPC W&C
C₂	DTC UCC LPC W&C	EC UCC LPC

EC	Emergency Centre	DTC	Diagnostic & Treatment Centre
UCC	Urgent Care Centre	LPC	Local Planned Care
		W&C	Women & Children's Services

3.0 NON-FINANCIAL APPRAISAL

3.1 Panel

Programme Board agreed in 2015 that the non-financial appraisal should be undertaken by a larger group than used for the shortlisting to enable a wider and more balanced representation. It maintained the approach of asking for nominations from those bodies which are sponsor or stakeholder members of the Programme (except those conflicted by a subsequent scrutiny role). However, instead of a single member from each organisation, the following distribution was agreed. This reflected a request from the Core Group that sponsor members should have a greater representation than stakeholder members and that, given that the focus of the appraisal is exclusively on acute options, there should be additional representation from SaTH.

Table 2: Non-financial Appraisal Panel

	SPONSOR/STAKEHOLDER MEMBERS	REPRESENTATION
1.	Shropshire Clinical Commissioning Group	2 clinicians, 1 manager
2.	Telford & Wrekin Clinical Commissioning Group	2 clinicians, 1 manager
3.	Powys Teaching Health Board	2 clinicians, 1 manager
4.	Shrewsbury and Telford Hospital NHS Trust	8 clinicians, 4 managers
5.	Shropshire Community Health NHS Trust	2 clinicians, 1 manager
6.	Shropshire Patient Group	3 patients (<i>1 had to leave early before scoring</i>)
7.	Telford & Wrekin Health Round Table	3 patients
8.	Healthwatch Shropshire	3 patients
9.	Healthwatch Telford & Wrekin	3 patients
10.	Powys Patients (via PtHB)	3 patients
11.	Powys Council	1 social care
12.	Shropshire Council	1 social care 1 public health
13.	Telford and Wrekin Council	1 social care 1 public health
14.	West Midlands Ambulance Service NHS FT	1 clinician
15.	Welsh Ambulance Services NHS Trust	1 clinician
16.	Robert Jones & Agnes Hunt Hospital NHS FT	1 clinician
17.	South Staffs & Shropshire Healthcare NHS FT	1 clinician
18.	LMC/GP Federation	1 clinician
19.	Shropshire Doctors' Cooperative Ltd	1 clinician (<i>not nominated</i>)
20.	NHS England	1 commissioner

The full panel was convened on 23rd September 2016 at Shrewsbury Town Football Club, and fifty members were in attendance, along with technical advisors, members of the programme team and observers from the Joint HOSC and Powys Community Health Council. The names of panel members are listed in **Appendix A**.

3.2 Evidence

The panel was supplied with evidence which addressed the four non-financial criteria. This was supplied to the panel in advance of the appraisal (both electronically and in hard copy), and presentations of the evidence were made on the day. Substantial time was also set aside to enable panel members to seek clarification about the evidence provided.

Accessibility

The travel time analysis for this criterion was based on actual activity levels at SaTH during 2015-16. This enabled an assessment to be made of the travel time from each full postcode to each hospital site.

It models the impact of each option in terms of that historic activity, to show what the impact would have been were the configurations described in each option to have been in place. It is broken down into the following categories:

- Urgent Care
- Emergency Care
- Complex Planned Care
- Non-complex Planned Care
- Outpatients
- Women's and Children's Services.

For attendances at the EC, road travel times only are presented since admission is expected to be by ambulance only; for DTC, road and public transport times are presented. Both reflect off-peak conditions (9a.m. to 4 p.m.) when the bulk of activity takes place.

The focus of this analysis is on the differential impact of each option - that is, the marginal change that would result from implementing options B, C1 and C2 by comparison with Option A (the 'do minimum').

This impact is further broken down in terms of nine geographic localities and, so far as has been possible from the available data, of groups with protected characteristics (e.g. gender, ethnicity, age and deprivation).

A narrative summary of the analysis is provided in the option templates, and the detailed data tables and maps can be found in the appendices for cross-referencing.

Maps show the differential effects of assuming all activity continues to take place on a SaTH site. To reflect patient choice, data tables also show the impact of travelling to a nearer alternative provider.

Shaded areas on the maps reflect the average travel time for each Lower Super Output Area

(LSOA), each of which has a population of between 1,000 and 3,000. It is important that panel members are mindful of the relative geographic size of LSOAs since there is no material difference between a large red rural area and a small red urban area.

Quality

There were two main components in relation to the quality criterion. The first concerned the impact of the options on time critical journeys to EC; the second summarised the impact of each option on the three quality domains of safety, effectiveness and patient experience.

a) Care of patients with time-critical conditions

Data is provided on time-critical ambulance conveyance times by locality. This information relates to 'Red 1' (West Midlands Ambulance Service) and 'Category A' (Welsh Ambulance Service) with a handful of additional incidents where the chief complaint was recorded as Red 1, Cardiac Arrest or Life Threatening Illness. These are considered, at point of triage, as being the most time critical episodes of ambulatory care.

b) Other clinical quality considerations

Summary tables providing an indication of the potential impact of each option in terms of the three quality domains were developed. The key considerations addressed were the favourable and adverse impacts of:

- i) Consolidating emergency and planned services on single sites;
- ii) Whether or not consultant-led obstetric activity is co-located with EC; and
- iii) The extent of new or significantly refurbished facilities, and the physical disposition of services within each site, which might also be considered to have an impact on both patient and staff experience.

Workforce

Clinical workforce shortages are an increasingly critical element of the programme's case for change.

The impact of these shortages were set out in relation to Option A. For the other options, the potential of each option to improve recruitment and retention was summarised.

Deliverability

For this criterion, the estates work required to deliver each option was summarised, drawing on work undertaken by external technical advisors. Outline plans and timescales were presented to the panel workshop.

Beyond physical deliverability, there are also differential issues in terms of the acceptability of each option to the public and other stakeholders, with supporting evidence from a stratified telephone survey.

3.3 Weighting Criteria

The panel was asked to assign a relative weighting to each criterion. To inform this, the panel was presented with the weightings agreed in the shortlisting process and in the 2015 appraisal, and with a weighting derived from the public telephone survey.

Panel members agreed to use the same weighting used in the 2015 appraisal:

Table 3: Agreed Non-financial Weightings

Evaluation Criteria	<i>Shortlisting 2015</i>	<i>Appraisal 2015</i>	<i>Public Survey 2015</i>	<i>Public Survey 2016</i>	agreed weighting
ACCESSIBILITY	29.0% (2)	25.1% (3)	26.4% (2)	25.8% (3)	25.1%
QUALITY	32.3% (1)	31.2% (1)	27.5% (1)	27.1% (1)	31.2%
WORKFORCE	27.4% (3)	27.3% (2)	26.4% (2)	27.0% (2)	27.3%
DELIVERABILITY	11.3% (4)	16.3% (4)	19.7% (4)	20.1% (4)	16.3%
					100.0%

Additional weightings were used to test the sensitivity of the results, and these are set out in **Appendix B**.

3.4 Scoring Options

Panel members were asked to score each of the four options against each of the four criteria using a range of 1-7, where a higher number indicated a stronger performance against a criterion.

Panel members recorded their own scores initially, and these were then combined and weighted to produce initial weighted totals. The totals were presented back to the panel which was then invited to discuss any areas of particular divergence in scores.

Following discussion, panel members were given the opportunity to revise any of their scores if they wished to. None chose to.

3.5 Non-Financial Results

The following table summarises the results of the non-financial appraisal. Detailed results can be found in **Appendix B**.

Table 4: Summary of Non-financial Scores

TOTALS	Agreed Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.1%	59.8	45.2	65.1	47.7
QUALITY	31.2%	39.0	65.0	91.5	24.7
WORKFORCE	27.3%	26.0	67.0	76.8	26.2
DELIVERABILITY	16.3%	19.6	40.5	42.4	22.2
	100.0%	144.4	217.6	275.8	120.8
RANK		3	2	1	4
DIFFERENCE		47.7%	21.1%	0.0%	56.2%

A number of sensitivity analyses were undertaken to test the validity of the results. This included breaking down weighted scores in terms of the following groupings:

- Clinicians and non-clinicians (where the former includes social care and public health professionals);
- Geographic groupings (those whose organisations are solely focused on Shropshire, Telford & Wrekin or Powys plus other non-geographic organisations), and
- The type of body represented (commissioners, SaTH, other providers and public or patient representatives which included Local Authority representatives).

The following table summarises the scores from these groupings.

Table 5: Summary of Non-financial Sensitivity Analysis

Scoring Analysis	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
OVERALL	144.4	217.6	275.8	120.8
Clinicians	69.2	103.4	138.6	59.4
Non-clinicians	75.2	114.2	137.2	61.4
Shropshire	26.1	41.2	57.8	22.4
Telford & Wrekin	33.5	67.8	49.1	31.6
Powys	28.9	24.1	48.6	18.1
Non-geographic	55.9	84.5	120.2	48.8
Commissioners	32.5	46.6	51.9	25.7
SaTH	33.6	49.2	72.4	26.7
Other Providers	36.2	59.7	73.7	32.7
Public/Patient	42.1	62.1	77.8	35.7

The colour coding highlights the highest scoring options (deep green) through to the lowest scoring options (deep red). It enables an at-a-glance assessment of any areas of significant divergence between groups.

a) Weightings

- i) Applying equal weightings to all criteria resulted in the same ranking though with a slightly reduced margin of 19.4% between C1 and B.
- ii) Applying the weightings derived from the public telephone survey also resulted in the same ranking though with a reduced margin of 20.2% between C1 and B.
- iii) Since C1 outperformed B against all criteria, no change in the weightings could switch the ranking. If the only criterion was Deliverability (a test applied in the previous appraisal) awarding a 100% weighting to deliverability would therefore still result in C1 coming first, albeit by a reduced margin of 4.6%.

b) Scoring

- i) The most significant difference in scoring between the leading options relates to the accessibility and quality criteria under which C1 scored 43.9% and 40.9%, respectively, higher than B.
- ii) Adding in scores for the Shropshire patient representative who had to leave early (using the average of other Shropshire patient representatives) very marginally increases C1's leading margin to 21.2%.
- iii) Adding in scores for the missing GP Federation representative (using the average of other GP panel members) very marginally reduces C1's leading margin to 21.0%.
- iv) C2 scored lowest across all groupings, followed by A (except in the case of Powys members where A was ranked 2nd and B 3rd).
- v) If the only scores counted are those of the CCG representatives, the outcome switches with B leading C1 by a margin of 5.2%.
- vi) If options are assessed in terms of the maximum scores awarded against each criterion, B and C1 come equal 1st.
- vii) If options are assessed in terms of the minimum scores awarded against each criterion, C1 comes 1st by a very substantial margin, indicating that the panel regarded it as the 'least worst' option as well as the best.
- viii) Finally, to test the impact of extreme scores, scores of zero and 1 were raised to 2 and scores of 7 were reduced to 6. Again, no change of ranking resulted, although C1's margin reduced to 16.8%

c) Change from 2015 Appraisal

- i) Option A scored higher than before against all criteria (Access +2, Quality +26, Workforce +16, Deliverability +2);
- ii) Option B scored lower on Access (-8), Quality (-35) and Workforce (-8) but higher on Deliverability (+22.5);
- iii) Option C1 scored higher on all criteria (Access +12, Quality +17, Workforce +17, Deliverability +34.5);
- iv) Option C2 scored lower across the board (except from Powys scorers) and replaced Option A as the lowest scoring option;
- v) The increased differential between Option C1 and Option B was most evident in the scores of representatives from provider organisations and those with no explicit geographical affiliation but -
 - a. Telford and Wrekin scorers also increased their scores for both B and C1 (and more so for C1 than for B),
 - b. Shropshire scorers decreased their scores for both B and C1 (to a comparable degree), and
 - c. Powys scorers increased their scores for both B and C1 (and more so for B than for C1).

The 2015 appraisal, in recording the same preference for C1 over other options, noted that the panel appeared to have a concern about increasing the disadvantage of those who already have to travel further, especially for emergency care.

In the present appraisal, it was further noted that some of the disadvantages of the change options (B, C1 and C2) had been mitigated through the more balance site model offered in the revised delivery solutions.

The significant change in scoring for C2, resulting in it moving from 3rd to 4th ranking, reflects the new clinical evidence that had become available since last year, therefore precluding on clinical grounds the potential for women and children's services to remain at PRH under where the preferred site for EC is RSH.

4.0 FINANCIAL APPRAISAL

4.1 Introduction

The shortlisted options have been fully evaluated in line with the requirements of Department of Health Business Case Guidance and the HM Treasury *Green Book* to assess which option represents potentially the best value for money (VfM).

The economic analysis thus:

- Covers an appraisal period that ensures a full 60-year operational use of new facilities is reflected, using a discount rate of 3.5%;
- Excludes VAT from all cash flows;
- Reflects capital cash flows at current cost levels calculated by discounting outturn cash flows by 2.5% GDP deflator;
- Makes provision where appropriate for a residual asset value to be included at the end of the appraisal period;
- No provision is made for any potential Opportunity Costs;
- Includes lifecycle costs for building and engineering elements based on standard NHS asset lives and replacement cycles, and lifecycle of equipment, with replacement occurring between 5-15 years depending upon the classification of the asset;
- Incorporates cash flows for all revenue costs;
- A quantified assessment of risk has not been undertaken;
- Assumes a price base of 2016/17.

All these cost inputs have been modelled to establish, for each option:

- The Net Present Cost (NPC) of the discounted annual cash flows over the whole appraisal period;
- The Equivalent Annual Cost (EAC), being an annualised equivalent of the NPC.

4.2 Cost Inputs

4.2.1 Capital

A capital cost assessment of the short listed options has been undertaken by Rider Hunt based on NHS Departmental Cost Allowances (DCAGs), applied to the proposed schedules of accommodation.

The costing has been undertaken in accordance with Department of Health guidance for the costing of capital schemes. Separate costs forms have been produced for the individual sites and options

with levels of optimism bias, VAT recovery and inflation assessed individually to provide more realistic costings.

Table 6: Capital Costs of Options

Costs	Option A £000s	Option B £000s	Option C1 £000s	Option C2 £000s
Works		123,554	153,837	145,450
Fees		16,062	19,999	18,908
Non-Works		400	400	400
Equipment		12,867	14,797	13,862
Contingencies		12,355	15,384	14,545
Optimism Bias		28,090	36,795	34,770
VAT		34,048	42,668	40,335
Total at PUBSEC 195 Reporting Level		227,376	283,878	268,270
Total at Outturn (at PUBSEC 214)		249,613	311,636	294,497

Key assumptions are:

- The completion on site of each option has been separately identified;
- The Cost Index at Reporting Level is defined by the Department of Health to provide a consistent means of comparison between different projects: the current PUBSEC Index level is 195 with the costs being updated to the latest index, PUBSEC 214;
- Formal indices are no longer published in respect of equipment costs therefore, the costs are based on relative percentage requirements within new build, refurbishments and backlog areas;
- Professional fees have been included at 13% across all options;
- Planning Contingencies have been incorporated at 10% across all options;
- Optimism Bias has been calculated utilising HM Treasury's and Department of Health standard template and the percentage additions reflect the relative nature of each project. For each option the optimism bias has been assessed for each site separately to make it more appropriate to the works within each site;

VAT is potentially recoverable on all construction projects and is generally related to the amount of refurbishment work but can also be recoverable against some elements of new build. For all options, recovery has been included at 100% against all fees and this is shown in the cost forms as zero VAT in accordance with the standard NHS forms.

4.2.2 Revenue

Baseline 2016/17 revenue costs and forecasts for each option have been provided by SaTH as part of the analysis supporting the affordability assessment. The economic appraisal uses these figures, with the exception of the provision for inflation, in order to provide a consistent 2016/17 price base. Capital charges are also excluded from the VfM analysis.

Baseline revenue costs for 2016/17 are shown below.

Table 7: Baseline Revenue Costs 2016/17

Expenditure	Revenue Expenditure £000s
Pay	233,691
Non Pay	102,699
Total VfM	336,390

Table 8 below provides a summary of the assessed cost changes expected by 2020/21 under each of the options.

Sustainable services project changes represent:

- Additional staffing (£4.6m under Option A only);
- Workforce reductions comprise of three separate elements, new ways of working and new roles, efficiencies and savings directly related to service change and pathway redesign
- Further reductions in workforce relate to activity changes, duplicate costs and IT;
- Savings are site and option specific;
- Within the development options, there is a net savings range of some £3.2m, between Option C2 (lowest) at £11.4m and Option B (highest) at £14.6m.

Table 8: Revenue Cost (Savings) – in 2020/21 at 2016/17 price base

(Savings)/Costs	Option A £000s	Option B £000s	Option C1 £000s	Option C2 £000s
Sustainable Services Project Savings	4,600	(14,589)	(14,203)	(11,377)

4.2.3 Opportunity Costs and Residual Values

No specific provision has been made for Opportunity Costs since:

- Full lifecycle provision has been made for all facilities including elements refurbished on a light touch basis and those simply retained as they are, as well as New Build and Major Refurbished facilities.

In respect of Residual Values, provision reflects the assumption that New Build and Major refurbished elements will be maintained to their as built standard and therefore the residual value remains.

4.3 Financial Analysis Outputs

4.3.1 Summary of VfM analysis – 60 Year Appraisal Period

Details of the economic model are attached at **Appendix C**, but the economic impact of the cash flows described in Section Financial Appraisal 4.0 is summarised in Table 9.

Table 9: Economic Costs of Options - 60 year appraisal period

	Do nothing £000s	Option B £000s	Option C1 £000s	Option C2 £000s
Net Present Cost	9,356,590	8,555,517	8,659,431	8,705,510
Equivalent Annual Cost	351,473	321,381	324,070	325,794
Economic Value	4	1	2	3
Marginal EAC over 1st Ranked	30,092	0	2,689	4,413
% over Option First Ranked	9.4%	0.0%	0.8%	1.4%

Table 10 below provides a summary of the marginal EAC of each option, over that for Option B, split between Capital and Revenue elements:

Table 10: Summary of EAC Variance over Option B

Option	Rank	Capital EAC Variance £000s	Revenue EAC Variance £000s	Total EAC Variance £000s
Option C1	2	2,374	315	2,689
Option C2	3	1,674	2,739	4,413
Option A	0	(10,413)	40,505	30,092

From the analysis that has been undertaken it is evident that, in economic terms:

- The cost of each of the development options (excluding Option A) falls within a relatively tight band range of just 1.4%;
- Option B is preferred by a margin of 0.8% (EAC £2.689m) over Option C1;
- The Do Nothing (Option A) is least preferred, by a margin of 9.4% (EAC £30.092m).

4.3.2 Sensitivity Analysis – Appraisal Period

In order to test the robustness of the economic analysis, an appraisal has also been undertaken to assess the VfM position over a 30-year appraisal period.

Cost inputs and assumptions mirror those detailed above with the exception of Residual Value, where it is assumed that 50% of the value of new/major refurbished facilities would be retained at the end of the 30-year period.

A summary of the outcome of this sensitivity is shown in Table 11:

Table 11: Economic Costs of Options – 30 Year Appraisal Period

	Do nothing £000s	Option B1 £000s	Option C1 £000s	Option C2 £000s
Net Present Cost	7,478,605	6,889,470	7,039,144	7,072,871
Equivalent Annual Cost	351,265	323,594	326,332	327,895
Economic Value	4	1	2	3
Marginal EAC over 1st Ranked	27,671	0	2,738	4,301
% over Option First Ranked	8.6%	0.0%	0.8%	1.3%

This analysis confirms that under a shorter appraisal period:

- Whilst there is less net annual revenue cost impact under Option A, it remains least preferred by a margin of 8.6%;
- Option B again remains preferred by a margin of 0.8%;

4.3.3 Sensitivity Analysis – Income and Expenditure

A sensitivity analysis has been undertaken relating to demography, QIPP, CIP, repatriation and sustainable services workforce reductions. It has compared initial assumptions and the percentage move required for there to be an impact on affordability on each option, this is detailed in table 13.

Table 12: Sensitivity analysis

Element of Sensitivity	Assumptions within Model	Option B1	Option C1	Option C2
Demography	2% pa	58%	85%	89%
QIPP	Net QIPP Loss £10.5m over 4 years	168%	125%	118%
CIP	£31.0m over 4 years (2.1%)	77%	92%	94%
Repatriation	Net gain of £6.0m over 4 years	-19%	57%	68%
SSP Workforce	Option B1 Saving of £14.4m Option C1 Saving of £14.2m Option C1 Saving of £11.4m	66%	88%	89%

4.4 Financial Conclusions

On the basis of the analysis undertaken:

- Option B is preferred from a financial perspective on the basis of the figures provided;
- The Value for Money margin between all the development options is relatively close with the exception of Option A. This is the case even though there are substantial differences in the initial capital requirements of each of the change option. Once viewed from the perspective of whole life costs (as required by guidance), however, these differences become minimal. For example, although Option B has a capital requirement of £250m and Option C1 of £312m (c.25% more), the final difference in terms of equivalent annual cost is just £2.7m (0.8%)

5.0 OVERALL CONCLUSION

As noted in Section 2.1, two alternative methods have been used to combine the results of the Non-Financial and Financial Appraisals in order to test for robustness:

- Cost per Benefit Point;
- Weighted for Financial / Non-Financial Factors.

Based on the results of the analysis in Sections 3.5 and 4.3, the results are as follows:

Table 13: Overall Economic Results

	Option A	Option B	Option C1	Option C2
Total Weighted Non-Financial Score	144.38	217.6	275.79	120.83
Benefits Margin below 1st	-47.7%	-21.1%	0.0%	-56.2%
Benefits Rank	3	2	1	4
Total EAC (£m)	351,473	321,381	324,070	325,794
Financial Margin above 1st	9.4%	0.0%	0.8%	1.4%
Financial Rank	4	1	2	3
Cost per Benefit Point (£)	2,434.40	1,476.92	1,175.04	2696.20
Overall Margin below 1st	107.2%	25.7%	0.0%	129.5%
Overall Rank	3	2	1	4
Combined Scores (50:50)	71.9	89.5	99.6	71.2
Overall Margin below 1st	-27.8%	-10.2%	0.0%	-28.5%
Overall Rank	3	2	1	4

No material change in the results is caused by the application of the variant weightings from the non-financial appraisal.

A further sensitivity analysis has been undertaken to examine what weighting would need to be applied to the Non-Financial / Financial Results in order for Option B (the second ranked Option overall) to be preferred in Overall Terms to Option C1. This shows that, in order for the combined scores of Options B and C1 to be the same, the relative weightings for financial and non-financial analyses would need to be set at 96.2% and 3.8%, respectively.

APPENDIX A – NON-FINANCIAL PANEL

ORGANISATION	REPRESENTATIVE
Shropshire Clinical Commissioning Group	Dr Jessica Sokolov, GP Board Member
	Dr Steve James, GP Board Member
	Julie Davies, Director of Strategy & Redesign
Telford & Wrekin Clinical Commissioning Group	Dr Mike Innes
	Anna Hammond, Deputy Executive for Commissioning and Planning
	Alison Smith, Director of Governance
Powys Teaching Health Board	Victoria Deakins, Lead Therapist
	Andrew Cresswell, Interim North Locality General Manager
	Lesley Sanders
Shrewsbury and Telford Hospital NHS Trust	Dr Kevin Eardley, Care Group Director - Unscheduled Care
	Mr Mark Cheetham, Care Group Director - Scheduled Care
	Ms Louise Sykes, Consultant Anaesthetist - Scheduled Care
	Dr Subramanian Kumaran, Consultant in Emergency Medicine
	Mr Andrew Tapp, Care Group Director - Women & Children
	Julia Clarke, Director of Corporate Governance
	Sarah Bloomfield, Chief Nursing Officer
	Dr Edwin Borman, Medical Director
	Neil Nisbet, Director of Finance
	Victoria Maher, Director of HR
	Debbie Jones, Radiology Care Group Manager
	Robin Hooper, Non-Executive Director
Shropshire Community Health NHS Trust	Dr Ganesh, Medical Director
	Andrew Thomas, Head of Nursing & Quality for Adults
	Tricia Finch, Head of Business & Development
Shropshire Patient Group	Jane Niblock
	Richard Chanter
	Graham Shepherd
Telford & Wrekin Health Round Table	Derek Hall
	Janet O'Loughlin
	Jane Pickavance
Healthwatch Shropshire	Angela Saganowska - Healthwatch Shropshire Board member
	Daphne Lewis – Healthwatch Shropshire Chair
	Vanessa Barratt- Healthwatch Shropshire Board member
Healthwatch Telford & Wrekin	Kate Ballinger – Manager
	David Bell – Healthwatch Telford & Wrekin Member
	Janet O'Loughlin – Member
Powys Patients (via PtHB)	Joy Jones
	Frances Hunt
	Robert Wright
Shropshire Council	Carole Croxford, Team Leader
	Lee Chapman, Portfolio Holder for Adult Services
Telford and Wrekin Council	Julie Smith

ORGANISATION	REPRESENTATIVE
	Clive Jones
Powys County Council	Jen Jeffreys, Senior Manager - Older People
West Midlands Ambulance Service NHSFT	Mark Docherty, Director of Nursing, Quality & Clinical Commissioning
Welsh Ambulance Services NHS Trust	David Watkins
Robert Jones & Agnes Hunt Hospital NHS FT	David Ford, Consultant Orthopaedic Surgeon
South Staffs & Shropshire Healthcare NHS FT	Alison Blofield, Consultant Nurse and Clinical Director
LMC/GP Federation	(not provided)
Shropshire Doctors' Cooperative Ltd	Emmanuel Le Goff, Operations Director
NHS England	Richard Woosley, Assurance & Delivery Manager

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APPENDIX B – NON-FINANCIAL SCORING

TOTALS	Agreed Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.1%	59.8	45.2	65.1	47.7
QUALITY	31.2%	39.0	65.0	91.5	24.7
WORKFORCE	27.3%	26.0	67.0	76.8	26.2
DELIVERABILITY	16.3%	19.6	40.5	42.4	22.2
	100.0%	144.4	217.6	275.8	120.8
	RANK	3	2	1	4
	DIFFERENCE	47.7%	21.1%	0.0%	56.2%

TOTALS	Equal Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.0%	59.5	45.0	64.8	47.5
QUALITY	25.0%	31.3	52.0	73.3	19.8
WORKFORCE	25.0%	23.8	61.3	70.3	24.0
DELIVERABILITY	25.0%	30.0	62.0	65.0	34.0
	100.0%	144.5	220.3	273.3	125.3
	RANK	3	2	1	4
	DIFFERENCE	47.1%	19.4%	0.0%	54.2%

TOTALS	Public Survey Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.8%	61.4	46.4	66.8	49.0
QUALITY	27.1%	33.9	56.4	79.4	21.4
WORKFORCE	27.0%	25.7	66.2	75.9	25.9
DELIVERABILITY	20.1%	24.1	49.8	52.3	27.3
	100.0%	145.0	218.8	274.4	123.7
	RANK	3	2	1	4
	DIFFERENCE	47.1%	20.2%	0.0%	54.9%

TOTALS	Other Weightings	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	0.0%	0.0	0.0	0.0	0.0
QUALITY	0.0%	0.0	0.0	0.0	0.0
WORKFORCE	0.0%	0.0	0.0	0.0	0.0
DELIVERABILITY	100.0%	120.0	248.0	260.0	136.0
	100.0%	120.0	248.0	260.0	136.0
	RANK	4	2	1	3
	DIFFERENCE	53.8%	4.6%	0.0%	47.7%

MAXIMUM SCORES	Agreed Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.1%	1.8	1.8	1.8	1.8
QUALITY	31.2%	1.9	2.2	2.2	1.9
WORKFORCE	27.3%	1.6	1.9	1.9	1.6
DELIVERABILITY	16.3%	1.1	1.1	1.1	1.1
	100.0%	6.4	7.0	7.0	6.4
	RANK	3	1	1	3

MINIMUM SCORES	Agreed Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.1%	0.3	0.0	0.8	0.3
QUALITY	31.2%	0.3	0.3	0.9	0.0
WORKFORCE	27.3%	0.0	0.3	0.5	0.0
DELIVERABILITY	16.3%	0.0	0.2	0.3	0.2
	100.0%	0.6	0.7	2.6	0.4
	RANK	3	2	1	4
	DIFFERENCE	78.0%	70.8%	0.0%	83.8%

CLINICIANS	Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.1%	29.4	20.9	32.7	23.9
QUALITY	31.2%	18.1	31.2	45.9	10.9
WORKFORCE	27.3%	11.8	32.5	38.8	12.0
DELIVERABILITY	16.3%	10.0	18.8	21.2	12.6
	100.0%	69.2	103.4	138.6	59.4
	RANK	3	2	1	4

NON-CLINICIANS	Weighting	Total Weighted Scores			
		Option A	Option B	Option C1	Option C2
ACCESSIBILITY	25.1%	30.4	24.4	32.4	23.9
QUALITY	31.2%	20.9	33.7	45.6	13.7
WORKFORCE	27.3%	14.2	34.4	38.0	14.2
DELIVERABILITY	16.3%	9.6	21.7	21.2	9.6
	100.0%	75.2	114.2	137.2	61.4
	RANK	3	2	1	4

Geographic Summary	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
Shropshire	26.1	41.2	57.8	22.4
Telford & Wrekin	33.5	67.8	49.1	31.6
Powys	28.9	24.1	48.6	18.1
Non-geographic	55.9	84.5	120.2	48.8

SHROPSHIRE	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	11.6	7.3	13.8	9.8
QUALITY	6.6	11.9	19.4	4.4
WORKFORCE	4.4	13.4	15.8	4.6
DELIVERABILITY	3.6	8.6	8.8	3.6
	26.1	41.2	57.8	22.4
	3	2	1	4

TELFORD & WREKIN	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	11.8	16.3	12.1	9.8
QUALITY	10.0	20.6	16.2	8.1
WORKFORCE	7.1	19.4	13.7	8.7
DELIVERABILITY	4.6	11.4	7.2	4.9
	33.5	67.8	49.1	31.6
	3	1	2	4

POWYS	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	10.1	3.5	11.8	6.5
QUALITY	8.4	7.2	15.6	4.1
WORKFORCE	6.0	9.0	13.4	4.4
DELIVERABILITY	4.4	4.4	7.8	3.1
	28.9	24.1	48.6	18.1
	2	3	1	4

NON-GEOGRAPHICAL	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	26.4	18.1	27.4	21.6
QUALITY	14.1	25.3	40.3	8.1
WORKFORCE	8.5	25.1	33.9	8.5
DELIVERABILITY	7.0	16.0	18.6	10.6
	55.9	84.5	120.2	48.8
	3	2	1	4

Group Summary	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
Commissioner	32.5	46.6	51.9	25.7
SaTH	33.6	49.2	72.4	26.7
Other Provider	36.2	59.7	73.7	32.7
Patient/Public	42.1	62.1	77.8	35.7
CCGs	19.0	29.8	28.2	17.4

COMMISSIONER	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	12.3	9.5	12.1	9.8
QUALITY	8.1	14.1	17.5	4.4
WORKFORCE	6.0	15.0	14.5	6.3
DELIVERABILITY	6.0	8.0	7.8	5.2
	32.5	46.6	51.9	25.7
	3	2	1	4

SaTH	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	17.1	10.3	17.3	12.6
QUALITY	7.5	14.1	24.0	4.4
WORKFORCE	4.9	14.8	19.9	4.9
DELIVERABILITY	4.1	10.1	11.1	4.9
	33.6	49.2	72.4	26.7
	3	2	1	4

OTHER PROVIDER	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	15.8	12.8	16.6	13.3
QUALITY	10.0	18.4	24.7	6.6
WORKFORCE	6.3	18.3	21.0	6.3
DELIVERABILITY	4.1	10.1	11.4	6.5
	36.2	59.7	73.7	32.7
	3	2	1	4

PATIENT/PUBLIC	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	14.6	12.6	19.1	12.1
QUALITY	13.4	18.4	25.3	9.4
WORKFORCE	8.7	18.9	21.3	8.7
DELIVERABILITY	5.4	12.2	12.1	5.5
	42.1	62.1	77.8	35.7
	3	2	1	4

CCGs	Total Weighted Scores			
	Option A	Option B	Option C1	Option C2
ACCESSIBILITY	7.0	6.5	6.3	6.3
QUALITY	4.4	8.7	9.7	3.1
WORKFORCE	3.6	9.3	8.2	4.4
DELIVERABILITY	4.1	5.2	4.1	3.6
	19.0	29.8	28.2	17.4
	3	1	2	4

APPENDIX C - ECONOMIC MODEL

Option A																
	New Capital at Current - Land & Works	Land Sales	Opportunity Costs	Residual Value	Lifecycle New Works	Lifecycle New Equipment	Lifecycle Existing	TOTAL CAPITAL	Pay	Non Pay	Other	Total Revenue	Total costs	Discount Factor	Net Present Cost	
0							9,768	9,768	233,691	104,683	-1,984	336,390	346,158	1.0000	346,158	
1							9,768	9,768	233,881	104,983	-2,725	336,139	345,907	0.9662	334,209	
2							9,768	9,768	234,581	105,283	-2,765	337,098	346,866	0.9335	323,804	
3							9,768	9,768	235,281	105,260	-3,193	337,348	347,116	0.9019	313,079	
4							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.8714	307,011	
5							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.8420	296,629	
6							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.8135	286,598	
7							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.7860	276,906	
8							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.7594	267,542	
9							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.7337	258,495	
10							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.7089	249,753	
11							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.6849	241,308	
12							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.6618	233,147	
13							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.6394	225,263	
14							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.6178	217,646	
15							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.5969	210,286	
16							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.5767	203,175	
17							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.5572	196,304	
18							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.5384	189,666	
19							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.5202	183,252	
20							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.5026	177,055	
21							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.4856	171,067	
22							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.4692	165,283	
23							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.4533	159,693	
24							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.4380	154,293	
25							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.4231	149,075	
26							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.4088	144,034	
27							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3950	139,164	
28							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3817	134,457	
29							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3687	129,911	
30							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3563	125,518	
31							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3442	121,273	
32							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3326	117,172	
33							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3213	113,210	
34							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3105	109,381	
35							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.3000	105,682	
36							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2898	102,109	
37							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2800	98,656	
38							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2706	95,319	
39							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2614	92,096	
40							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2526	88,982	
41							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2440	85,973	
42							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2358	83,065	
43							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2278	80,256	
44							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2201	77,542	
45							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2127	74,920	
46							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.2055	72,387	
47							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1985	69,939	
48							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1918	67,574	
49							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1853	65,289	
50							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1791	63,081	
51							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1730	60,948	
52							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1671	58,887	
53							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1615	56,895	
54							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1560	54,971	
55							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1508	53,112	
56							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1457	51,316	
57							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1407	49,581	
58							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1360	47,904	
59							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1314	46,284	
60							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1269	44,719	
61							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1226	43,207	
62							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1185	41,746	
63							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1145	40,334	
64							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1106	38,970	
65							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1069	37,652	
66							9,768	9,768	240,581	105,560	-3,607	342,534	352,302	0.1033	36,379	
Total	0	0	0	0	0	0	654,456	654,456	16,094,028	7,070,507	-237,932	22,926,602	23,581,058	27	9,356,590	
Equivalent Annual Cost																351,473

Option B - Capital £249m																
Year	New Capital at Current - Land & Works	Land Sales	Opportunity Costs	Residual Value	Lifecycle New Works	Lifecycle New Equipment	Lifecycle Existing	TOTAL CAPITAL	Pay	Non Pay	Other	Total Revenue	Total costs	Discount Factor	Net Present Cost	
0	7,000						8,821	15,821	233,691	104,683	-1,984	336,390	352,211	1.0000	352,211	
1	50,000						8,821	58,821	233,881	104,983	-8,767	330,097	388,918	0.9662	375,766	
2	76,000						8,821	84,821	234,581	105,283	-15,481	324,382	409,204	0.9335	381,996	
3	76,000						8,821	84,821	235,281	105,260	-22,733	317,808	402,629	0.9019	363,149	
4	20,000						8,821	28,821	221,392	105,560	-30,123	296,829	325,650	0.8714	283,786	
5	20,000						8,821	28,821	221,392	105,560	-30,123	296,829	325,650	0.8420	274,189	
6						-40,352	8,821	-31,531	221,392	105,560	-30,123	296,829	265,298	0.8135	215,820	
7							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.7860	240,239	
8							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.7594	232,115	
9							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.7337	224,265	
10							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.7089	216,681	
11							8,821	14,589	221,392	105,560	-30,123	296,829	311,418	0.6849	213,305	
12							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.6618	202,274	
13							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.6394	195,434	
14							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.6178	188,825	
15							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.5969	182,440	
16							8,821	35,353	221,392	105,560	-30,123	296,829	332,183	0.5767	191,572	
17							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.5572	170,310	
18							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.5384	164,550	
19							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.5202	158,986	
20							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.5026	153,610	
21							8,821	45,009	221,392	105,560	-30,123	296,829	341,838	0.4856	165,987	
22							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.4692	143,396	
23							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.4533	138,547	
24							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.4380	133,862	
25							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.4231	129,335	
26							8,821	35,353	221,392	105,560	-30,123	296,829	332,183	0.4088	135,809	
27							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3950	120,736	
28							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3817	116,653	
29							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3687	112,708	
30							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3563	108,897	
31							8,821	72,268	221,392	105,560	-30,123	296,829	369,097	0.3442	127,054	
32							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3326	101,656	
33							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3213	98,219	
34							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3105	94,897	
35							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.3000	91,688	
36							8,821	65,773	221,392	105,560	-30,123	296,829	362,602	0.2898	105,094	
37							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2800	85,592	
38							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2706	82,697	
39							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2614	79,901	
40							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2526	77,199	
41							8,821	14,589	221,392	105,560	-30,123	296,829	311,418	0.2440	75,996	
42							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2358	72,066	
43							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2278	69,629	
44							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2201	67,274	
45							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.2127	64,999	
46							8,821	35,353	221,392	105,560	-30,123	296,829	332,183	0.2055	68,253	
47							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1985	60,678	
48							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1918	58,626	
49							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1853	56,643	
50							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1791	54,728	
51							8,821	45,009	221,392	105,560	-30,123	296,829	341,838	0.1730	59,137	
52							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1671	51,089	
53							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1615	49,361	
54							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1560	47,692	
55							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1508	46,079	
56							8,821	93,032	221,392	105,560	-30,123	296,829	389,861	0.1457	56,787	
57							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1407	43,016	
58							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1360	41,561	
59							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1314	40,155	
60							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1269	38,798	
61							8,821	14,589	221,392	105,560	-30,123	296,829	311,418	0.1226	38,193	
62							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1185	36,218	
63							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1145	34,993	
64							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1106	33,810	
65							8,821	8,821	221,392	105,560	-30,123	296,829	305,650	0.1069	32,666	
66				-137,547			8,821	-48,703	221,392	105,560	-30,123	296,829	248,126	0.1033	25,622	
Total	249,000	0	0	-137,547	-40,352	453,906	591,032	1,116,038	14,885,121	7,070,507	-1,946,716	20,008,912	21,124,950	27	8,555,517	
Equivalent Annual Cost															321,381	

Option C1 - Capital £311m																
Year	New Capital at Current - Land & Works	Land Sales	Opportunity Costs	Residual Value	Lifecycle New Works	Lifecycle New Equipment	Lifecycle Existing	TOTAL CAPITAL	Pay	Non Pay	Other	Total Revenue	Total costs	Discount Factor	Net Present Cost	
0	7,000						8,500	15,500	233,691	104,683	-1,984	336,390	351,890	1.0000	351,890	
1	50,000						8,500	58,500	233,881	104,983	-8,767	330,097	388,597	0.9662	375,456	
2	76,000						8,500	84,500	234,581	105,283	-15,481	324,382	408,883	0.9335	381,696	
3	138,000						8,500	146,500	235,281	105,260	-22,733	317,808	464,308	0.9019	418,779	
4	20,000						8,500	28,500	221,778	105,560	-30,123	297,215	325,715	0.8714	283,842	
5	20,000						8,500	28,500	221,778	105,560	-30,123	297,215	325,715	0.8420	274,244	
6							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.8135	248,700	
7					-52,933		8,500	-44,433	221,778	105,560	-30,123	297,215	252,782	0.7860	198,685	
8							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.7594	232,164	
9							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.7337	224,313	
10							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.7089	216,727	
11							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.6849	209,398	
12						7,432	8,500	15,933	221,778	105,560	-30,123	297,215	313,148	0.6618	207,236	
13							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.6394	195,476	
14							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.6178	188,865	
15							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.5969	182,479	
16							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.5767	176,308	
17						34,189	8,500	42,689	221,778	105,560	-30,123	297,215	339,904	0.5572	189,396	
18							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.5384	164,585	
19							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.5202	159,020	
20							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.5026	153,642	
21							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.4856	148,446	
22						46,631	8,500	55,131	221,778	105,560	-30,123	297,215	352,346	0.4692	165,303	
23							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.4533	138,576	
24							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.4380	133,890	
25							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.4231	129,363	
26							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.4088	124,988	
27						34,189	8,500	42,689	221,778	105,560	-30,123	297,215	339,904	0.3950	134,266	
28							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3817	116,678	
29							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3687	112,732	
30							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3563	108,920	
31							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3442	105,236	
32						81,756	8,500	90,256	221,778	105,560	-30,123	297,215	387,471	0.3326	128,869	
33							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3213	98,239	
34							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3105	94,917	
35							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.3000	91,708	
36							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2898	88,606	
37						73,387	8,500	81,887	221,778	105,560	-30,123	297,215	379,103	0.2800	106,161	
38							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2706	82,715	
39							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2614	79,918	
40							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2526	77,215	
41							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2440	74,604	
42						7,432	8,500	15,933	221,778	105,560	-30,123	297,215	313,148	0.2358	73,834	
43							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2278	69,644	
44							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2201	67,289	
45							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2127	65,013	
46							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.2055	62,815	
47						34,189	8,500	42,689	221,778	105,560	-30,123	297,215	339,904	0.1985	67,478	
48							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1918	58,638	
49							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1853	56,655	
50							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1791	54,739	
51							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1730	52,888	
52						46,631	8,500	55,131	221,778	105,560	-30,123	297,215	352,346	0.1671	58,894	
53							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1615	49,372	
54							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1560	47,702	
55							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1508	46,089	
56							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1457	44,531	
57						108,513	8,500	117,013	221,778	105,560	-30,123	297,215	414,228	0.1407	58,296	
58							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1360	41,570	
59							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1314	40,164	
60							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1269	38,806	
61							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1226	37,493	
62						7,432	8,500	15,933	221,778	105,560	-30,123	297,215	313,148	0.1185	37,106	
63							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1145	35,001	
64							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1106	33,817	
65							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1069	32,673	
66							8,500	8,500	221,778	105,560	-30,123	297,215	305,715	0.1033	31,569	
67				-177,242		103,117	8,500	-65,625	221,778	105,560	-30,123	297,215	231,590	0.0998	23,106	
Total	311,000	0	0	-177,242	-52,933	584,898	578,012	1,243,735	15,131,217	7,176,067	-1,976,839	20,330,445	21,574,180	27	8,659,431	
Equivalent Annual Cost															324,070	

Option C2 - Capital £294m																
Year	New Capital at Current - Land & Works	Land Sales	Opportunity Costs	Residual Value	Lifecycle New Works	Lifecycle New Equipment	Lifecycle Existing	TOTAL CAPITAL	Pay	Non Pay	Other	Total Revenue	Total costs	Discount Factor	Net Present Cost	
0	7,000						8,561	15,561	233,691	104,683	-1,984	336,390	351,950	1.0000	351,950	
1	50,000						8,561	58,561	233,881	104,983	-8,767	330,097	388,657	0.9662	375,514	
2	76,000						8,561	84,561	234,581	105,283	-15,481	324,382	408,943	0.9335	381,753	
3	121,000						8,561	129,561	235,281	105,260	-22,733	317,808	447,368	0.9019	403,501	
4	20,000						8,561	28,561	224,604	105,560	-30,123	300,042	328,602	0.8714	286,358	
5	20,000						8,561	28,561	224,604	105,560	-30,123	300,042	328,602	0.8420	276,674	
6							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.8135	251,048	
7					-50,022		8,561	-41,461	224,604	105,560	-30,123	300,042	258,580	0.7860	203,242	
8							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.7594	234,356	
9							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.7337	226,431	
10							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.7089	218,774	
11							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.6849	211,376	
12						7,024	8,561	15,584	224,604	105,560	-30,123	300,042	315,626	0.6618	208,876	
13							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.6394	197,321	
14							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.6178	190,649	
15							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.5969	184,202	
16							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.5767	177,973	
17						32,309	8,561	40,869	224,604	105,560	-30,123	300,042	340,911	0.5572	189,957	
18							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.5384	166,139	
19							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.5202	160,521	
20							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.5026	155,093	
21							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.4856	149,848	
22						44,066	8,561	52,627	224,604	105,560	-30,123	300,042	352,668	0.4692	165,455	
23							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.4533	139,885	
24							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.4380	135,155	
25							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.4231	130,584	
26							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.4088	126,168	
27						32,309	8,561	40,869	224,604	105,560	-30,123	300,042	340,911	0.3950	134,664	
28							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3817	117,779	
29							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3687	113,796	
30							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3563	109,948	
31							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3442	106,230	
32						77,260	8,561	85,820	224,604	105,560	-30,123	300,042	385,862	0.3326	128,334	
33							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3213	99,167	
34							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3105	95,814	
35							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.3000	92,573	
36							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2898	89,443	
37						69,351	8,561	77,912	224,604	105,560	-30,123	300,042	377,953	0.2800	105,839	
38							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2706	83,496	
39							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2614	80,672	
40							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2526	77,944	
41							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2440	75,309	
42						7,024	8,561	15,584	224,604	105,560	-30,123	300,042	315,626	0.2358	74,418	
43							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2278	70,301	
44							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2201	67,924	
45							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2127	65,627	
46							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.2055	63,408	
47						32,309	8,561	40,869	224,604	105,560	-30,123	300,042	340,911	0.1985	67,677	
48							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1918	59,192	
49							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1853	57,190	
50							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1791	55,256	
51							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1730	53,388	
52						44,066	8,561	52,627	224,604	105,560	-30,123	300,042	352,668	0.1671	58,948	
53							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1615	49,838	
54							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1560	48,153	
55							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1508	46,524	
56							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1457	44,951	
57						102,545	8,561	111,105	224,604	105,560	-30,123	300,042	411,147	0.1407	57,862	
58							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1360	41,962	
59							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1314	40,543	
60							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1269	39,172	
61							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1226	37,848	
62						7,024	8,561	15,584	224,604	105,560	-30,123	300,042	315,626	0.1185	37,400	
63							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1145	35,331	
64							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1106	34,136	
65							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1069	32,982	
66							8,561	8,561	224,604	105,560	-30,123	300,042	308,602	0.1033	31,867	
67				-167,494		97,446	8,561	-61,488	224,604	105,560	-30,123	300,042	238,554	0.0998	23,800	
Total	294,000	0	0	-167,494	-50,022	552,730	582,121	1,211,335	15,312,106	7,176,067	-1,976,839	20,511,334	21,722,669	27	8,705,510	
Equivalent Annual Cost															325,794	

APPENDIX D – OVERALL SENSITIVITY

COMBINED expressed as Cost/Benefit Point (£)					2434.40	1476.92	1175.04	2696.19
		1st			1175.0	1175.0	1175.0	1175.0
		Margin Costs/Benefits above 1st			107.2%	25.7%	0.0%	129.5%
		Rank			3	2	1	4
COMBINED SCORES - LOW COST WEIGHTING					A	B	C1	C2
Non-Fin Weighting	75.0%	Non-Financial Weighted			39.3	59.2	75.0	32.9
Cost Weighting	25.0%	Financial Weighted			22.9	25.0	24.8	24.7
		Combined Score			62.1	84.2	99.8	57.5
		1st			99.8	99.8	99.8	99.8
		Margin Combined Score below 1st			-37.7%	-15.6%	0.0%	-42.4%
		Rank			3	2	1	4
COMBINED SCORES - 50/50 WEIGHTING					A	B	C1	C2
Non-Fin Weighting	50.0%	Non-Financial Weighted			26.2	39.5	50.0	21.9
Cost Weighting	50.0%	Financial Weighted			45.7	50.0	49.6	49.3
		Combined Score			71.9	89.5	99.6	71.2
		1st			99.6	99.6	99.6	99.6
		Margin Combined Score below 1st			-27.8%	-10.2%	0.0%	-28.5%
		Rank			3	2	1	4
COMBINED SCORES - HIGH COST WEIGHTING					A	B	C1	C2
Non-Fin Weighting	25.0%	Non-Financial Weighted			13.1	19.7	25.0	11.0
Cost Weighting	75.0%	Financial Weighted			68.6	75.0	74.4	74.0
		Combined Score			81.7	94.7	99.4	84.9
		1st			99.4	99.4	99.4	99.4
		Margin Combined Score below 1st			-17.8%	-4.7%	0.0%	-14.5%
		Rank			4	2	1	3
COMBINED SCORES - HIGH COST WEIGHTING					A	B	C1	C2
Non-Fin Weighting	3.8%	Non-Financial Weighted			1.979	2.982	3.780	1.656
Cost Weighting	96.2%	Financial Weighted			87.982	96.220	95.422	94.917
		Combined Score			89.961	99.202	99.202	96.573
		1st			99.202	99.202	99.202	99.202
		Margin Combined Score below 1st			-9.3%	0.0%	0.0%	-2.6%
		Rank			4	1	1	3

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