ISS TRAINING & EDUCATION SERVICES PROJECT (ITESP)

Ministry of Defence

OVERVIEW

The Defence Core Network Services (DCNS) programme was established to develop and deliver a portfolio of Information Communications Technology (ICT) services that are cheaper, better integrated and more flexible, delivering MOD's core ICT capability; from videoconferencing and satellites to desktop PCs and mobile phones. In line with the Government ICT Strategy, MOD is looking to implement a coordinated multi-vendor service delivery model, introducing more competition, contracting for shorter and smaller value contracts than at present and utilising up to date Government contracting mechanisms. ITESP is one project within the DCNS programme.

The Information Systems and Services (ISS) Training & Education Services Project (ITESP) was initially set up to generate savings by rationalising spend on Training & Education (T&E) ICT infrastructure across Defence. The project is responsible for establishing the most cost-effective future solution in support of Defence training. The four core stakeholder groups in scope are: Air Training Information Infrastructure Project (ATTIP), Navy Training Information Infrastructure Project (NTIIP), Army Recruitment and Training Division Classrooms Information Infrastructure Project (ACIIP) and Defence Technical Training Change Programme (DTTCP). The COEIA activity performed in support of this project comprised non-financial benefits assessment, an Investment Appraisal and consideration of other contributory factors (OCFs) for each option.

NON-FINANCIAL BENEFITS MAP

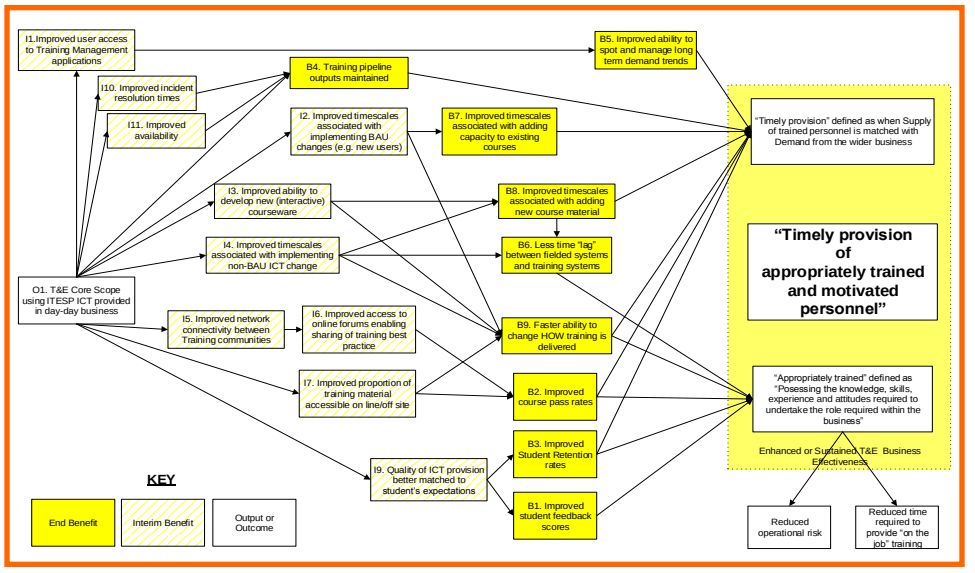
The outputs of the ITESP project lead to outcomes that enable the overall strategic objective agreed with the stakeholder community:

"The timely provision of appropriately trained and motivated personnel"

A benefit is a measurable improvement that contributes to the strategic objective. No single measurement fully covers this objective.

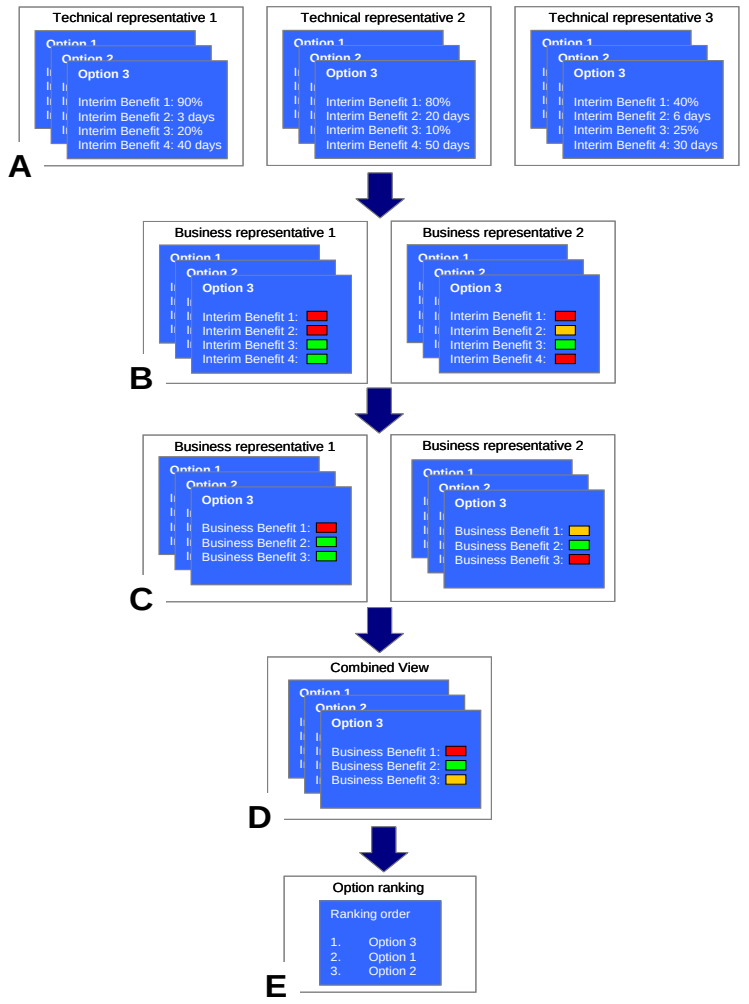
We agreed on measurable Business Benefits with business SMEs to describe what the options offer in terms of non financial benefits that together enable the objective. The Business Benefits are enabled in part by the solution's technical characteristics.

Measureable Interim Benefits were defined to describe the technical qualities of the options (e.g. availability). These enable Business Benefits above a certain threshold.



NON-FINANCIAL BENEFITS ANALYSIS APPROACH

- **Interim Benefits Assessment (Workshop 1)**
  - Workshop with technical SMEs from each TLB
  - Score ICT performance of each option against Interim Benefits
- **Business Benefits Assessment (Workshop 2)**
  - Workshop with business SMEs from each TLB
  - Score current business performance and determine the threshold performance
- **Application of Analysis Rules**
  - Combine output from Workshop 1 & 2
  - Apply a series of rules to produce a Business Benefits RAG status for options

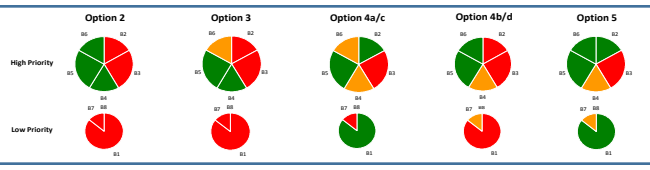


OPTIONS DEFINITION

- **Option 2: Do Minimum**
  - Extend/re-compete existing contract
- **Option 3: Best of Breed**
  - Use best examples of systems currently in use
- **Option 4: New Service**
  - New Training system procured using ITESP catalogue
    - Option 4a: 'Local' (Big Bang)
    - Option 4b: 'Remote' (Big Bang)
    - Option 4c: 'Local' (Phased)
    - Option 4d: 'Remote' (Phased)
- **Option 5: Hybrid**
  - "Middle ground" between 4a and 4b
  - On-site SIAM and desktop support arrangements
  - Blend of more and less costly architectures (e.g. thick and thin client)

OPTION SCORES

RAG scores are created for each Business Benefit, for each option, for each FLC community, based on the application of the analysis rules applied to the data provided by FLC SMEs.



ACTiCA consulting

NON-FINANCIAL BENEFITS ANALYSIS

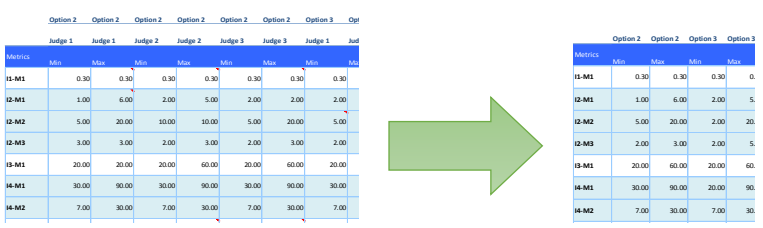
ANALYSIS RULES

We prepared a series of rules to transform the raw data collected at SME workshops into a series of RAG scores for each Business Benefit.

This process was repeated for each option and for each community in the scope of ITESP.

We carried out a series of sensitivity tests in which variants of the rules were applied to ensure that the choice of rule did not influence the result.

RULE 0

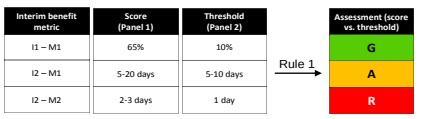


Rule 0 transforms the data from workshop 1 into a consolidated range for each Interim Benefit.

The range of values for the Interim Benefits taken from maximum and minimum scores from the technical judges in Workshop 1.

RULE 1

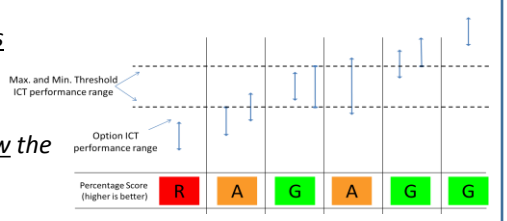
This rule calculates a RAG score for each Interim Benefit Metric.



Red *if the Interim Metric always below the threshold.*

Amber *if the Interim Metric is sometimes below the threshold.*

Green *if the Interim Metric is never below the threshold.*

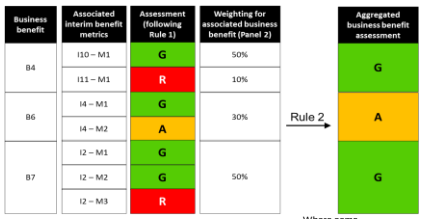


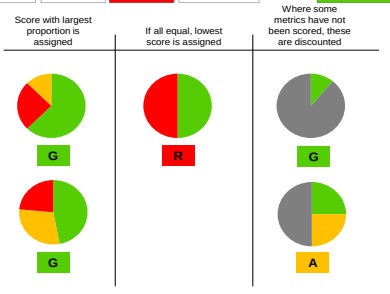
RULE 2

Business Benefits link to multiple Interim Metrics.

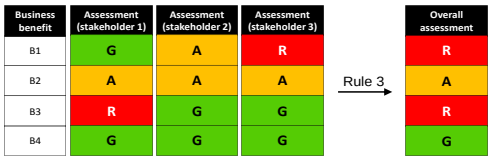
This rule calculates Business Benefit RAGs from Interim Benefit RAGs.

- *The Business Benefit RAG is the Interim Benefit RAG with the largest weighting (from Workshop 2).*
- *If weightings are equal, the lowest RAG is assigned.*





RULE 3



Rules 1 and 2 produce Business Benefit RAGs for each Stakeholder.

This rule aggregates the Business Benefit RAGs into an Overall Business Benefit RAG across all Business Stakeholders.

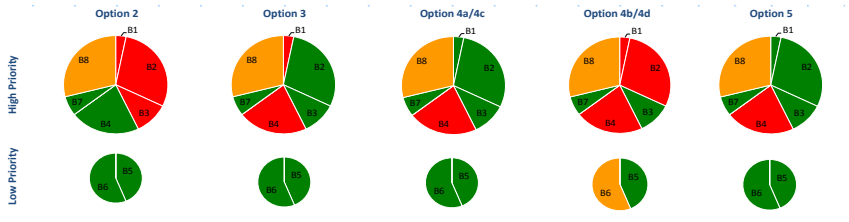
The overall Business Benefit RAG is the lowest Business Benefit RAG across all business stakeholders.

RULE 4

Rule 3 produced RAGs for each Business Benefit for each option.

Rule 4 presents these RAGs in a pie chart. The segment size is equal to the average Business Benefit Weighting.

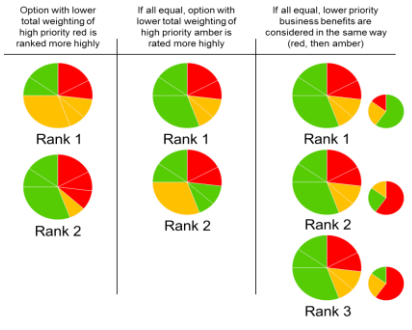
The Business Benefit RAG segment size is equal to the average Business Benefit weighting across stakeholders.

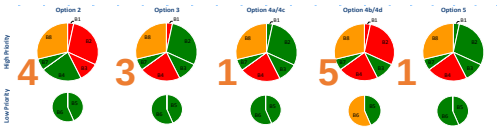


RULE 5

In this rule, Options are ranked by the following in descending order of importance. In each case, lower is better:

- The total weight of high priority Red Business Benefits.
- The total weight of high priority Amber Business Benefits.
- The total weight of low priority Red Business Benefits.
- The total weight of low priority Amber Business Benefits.





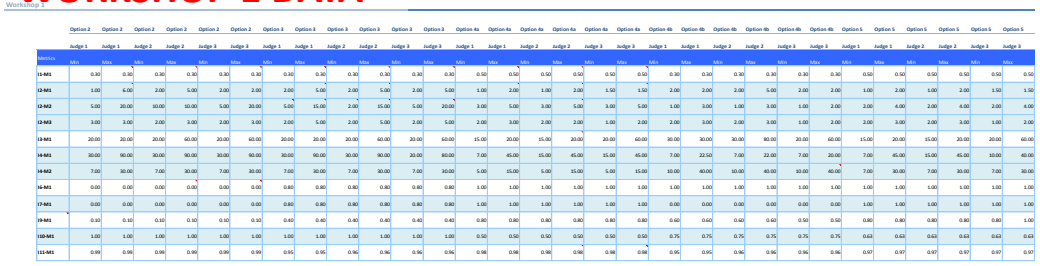
Ministry of Defence

NON-FINANCIAL BENEFITS ANALYSIS

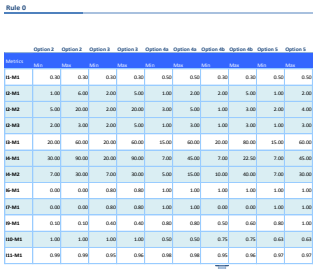
ISS

BENEFITS SCORING MODEL

WORKSHOP 1 DATA



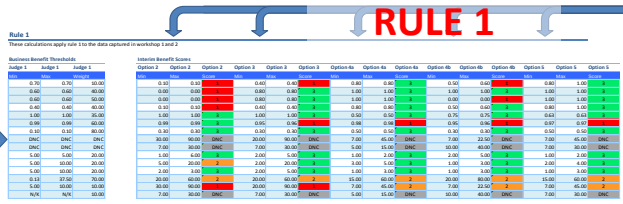
RULE 0



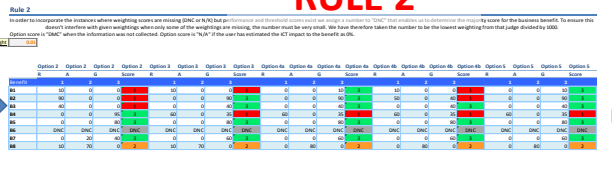
Takes the minimum and maximum value for each interim benefit across all judges., creating a maximum performance range.

WORKSHOP 2 DATA

RULE 1



RULE 2



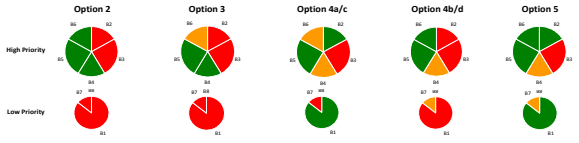
RULE 3

RULE 4

RULE 5

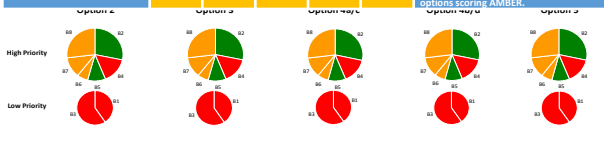
ACIIP RESULTS

Business benefit	Option 2	Option 3	Option 4a/c	Option 4b/d	Option 5	Remarks
B1. Improved student feedback scores	R	R	G	R	G	Business SMEs required a solution that can meet 50% of the students' ICT quality expectations. Technical SMEs felt that improved access to the internet would improve the performance.
B2. Improved course pass rates	R	R	G	R	G	The business SMEs require 100% of staff and trainees having access to rich content, RLI and VLEs. According to the technical SMEs, this level of accessibility would only be available under Options 4a/c and 5. The key differentiator is the level of access to VLEs outside a formal classroom (I7), which the SMEs scored very poorly for Options 2 and 4b/d (5%); Option 3 would only deliver moderate accessibility according to the technical SMEs.
B3. Improved student retention rate	R	R	R	R	R	The business SMEs have a high expectation of ICT quality. According to SMEs' scoring of the options, there is no option that could meet the desired performance.
B4. Training pipeline outputs maintained	G	G	A	A	A	Under the New Catalogue Service options (Options 4a-d and Option 5), the view from the technical SMEs was that the use of multiple contracts and added system complexity could result in longer incident resolution times and, possibly, reduced availability. The degree of uncertainty documented in the evaluation of Options 4a/c, 4b/d and 5, has therefore resulted in an AMBER score for this benefit.
B5. Improved ability to spot and manage long term demand trends	G	G	G	G	G	
B6. Reduced time lag between new systems being fielded and representative training systems being available	G	A	A	G	G	The technical SMEs stated that Options 3 and 4a/c provided a solution that had increased complexity compared with the other solutions. The thin client only Option (4b/d) was described as enabling simple deployment and easy peripheral integration capabilities.
B7. Improved timescales associated with adding capacity to existing courses	R	R	R	A	A	There was some uncertainty among the technical SMEs as to the potential complexity of the system in Options 4a/c, 4b/d and 5. This resulted in there being a mixture in the performance evaluation. The SMEs estimated it could take slightly longer to add a new user (I2-M1) under Options 4b/d and 5, whereas it would take slightly longer to provide the necessary permissions to users (I2-M3) under Options 4a/c and 5. Options 4a/c, 4b/d and 5 were estimated to reduce the time it took to add a new EUD (I2-M2).
B8. Improved timescales associated with adding new course material	-	-	-	-	-	Data was not returned.



NTIIP RESULTS

Business benefit	Option 2	Option 3	Option 4a/c	Option 4b/d	Option 5	Remarks
B1. Improved student feedback scores	R	R	R	R	R	The overall opinion from the technical SMEs was that no option will improve the % of students who think the ICT quality is at least as good as their own, above the baseline 50% for the current solution. Business SMEs have stated that 70% is the desired threshold.
B2. Improved course pass rates	G	G	G	G	G	
B3. Improved student retention rate	R	R	R	R	R	B1 and B3 are both dependent on the same Interim Benefits. The threshold set by the business SMEs is again higher than current performance. As no option is expected to increase the performance, according to technical SMEs, no option can meet the business SMEs' expectations.
B4. Training pipeline outputs maintained	R	R	R	R	R	B4 is linked to the availability of the ICT system. The availability is currently at 99% and one of the business SMEs has set the threshold at 100%, whereas the other SME determined current availability as satisfactory. As the level of availability is overall estimated to possibly decrease for Options 4a/c, 4b/d and 5, no option meets the 100% availability criteria. The Business Benefit score is therefore RED due to our approach pulling out the lowest score across all SMEs.
B5. Improved ability to spot and manage long term demand trends	G	G	G	G	G	
B6. Reduced time lag between new systems being fielded and representative training systems being available	A	A	A	A	A	One of the business SMEs has set the threshold for the time it takes to integrate a new application at 30 days. According to the technical SMEs this timescale does not vary between options, but the time is application-dependent, ranging from 2-40 days. The analysis outcome for all the options is therefore AMBER.
B7. Improved timescales associated with adding capacity to existing courses	A	A	A	A	A	Under Options 4a/c, 4b/d and 5, multiple contracts will be procured and managed under a SIAM. There was concern over what the contract management process will look like and the processes involved in carrying out change requests. The added complexity was therefore anticipated by the technical SMEs to increase the change timescales. However, although Options 2 and 3 scored slightly better, the business SME's thresholds were not fully met in each case.
B8. Improved timescales associated with adding new course material	A	A	A	A	A	The end to end timescales for developing and implementing new courseware varies hugely according to the technical SMEs (10 days to 2 years), but the option capabilities do not influence this timescale. However, one of the business SMEs has stated this should not exceed 1 year, resulting in all options scoring AMBER.

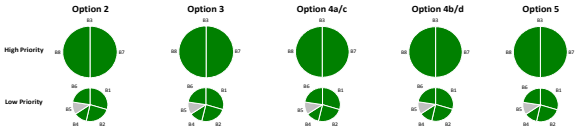


DTTCP RESULTS

Business benefit	Option 2	Option 3	Option 4a/c	Option 4b/d	Option 5	Remarks
B1. Improved student feedback scores	R	R	G	R	G	Currently the service, devices and access is very poor. Therefore Option 2 scores badly. Option 3 is also seen as not being good enough to boost the students' impression of the T&E ICT. Option 4b/d scores badly because the technical SME opinion is that thin client devices would not meet the expectations of the students.
B2. Improved course pass rates	R	G	G	R	G	Improved course pass rates are linked to Interim Benefits I6 (improved access to online forums) and I7 (improved proportion of training material available on line/off-site). This is a high priority for DTTCP and under Options 2 and 4b/d the level of access to rich content/RLI and the VLE (DLMC) was deemed insufficient by technical SMEs.
B3. Improved student retention rate	R	G	G	G	G	The business SMEs agreed there is a link between the T&E ICT quality and the student retention rate. As the current ICT provision is very poor, Option 2 would not support an improvement in the current student retention rate.
B4. Training pipeline outputs maintained	G	R	R	R	R	Maintaining the training pipeline output is linked to the availability of the T&E system. Under the options where a new solution will be implemented, there was concern that the added complexity of the new system will very slightly reduce this level of availability compared to legacy arrangements. However the business threshold was set equal to the legacy score and so all other options scored RED.
B5. Improved ability to spot and manage long term demand trends	G	G	G	G	G	
B6. Reduced time lag between new systems being fielded and representative training systems being available	G	G	G	A	G	There is a reduced level of on-site support under Option 4b/d, which is expected to increase the time it would take to integrate new peripherals to the system.
B7. Improved timescales associated with adding capacity to existing courses	A	G	G	G	G	B7 is linked to the timescales for carrying out 'Business as Usual' changes. For I2-M1, the average time required to add a new user, only Option 2 did not meet the threshold.
B8. Improved timescales associated with adding new course material	A	A	G	A	G	The business SMEs' threshold is more demanding than the current performance range of the system and the best of breed solution. Options 2 and 3 therefore score an AMBER rating. Option 4b/d is expected by technical SMEs to increase the time it takes to develop and deploy courseware, but the timescale is still partially overlapping with the threshold timescales. As for the evaluation of B6, the time it takes to integrate peripherals is also anticipated to be slightly longer than current timescales.

ATIIP RESULTS

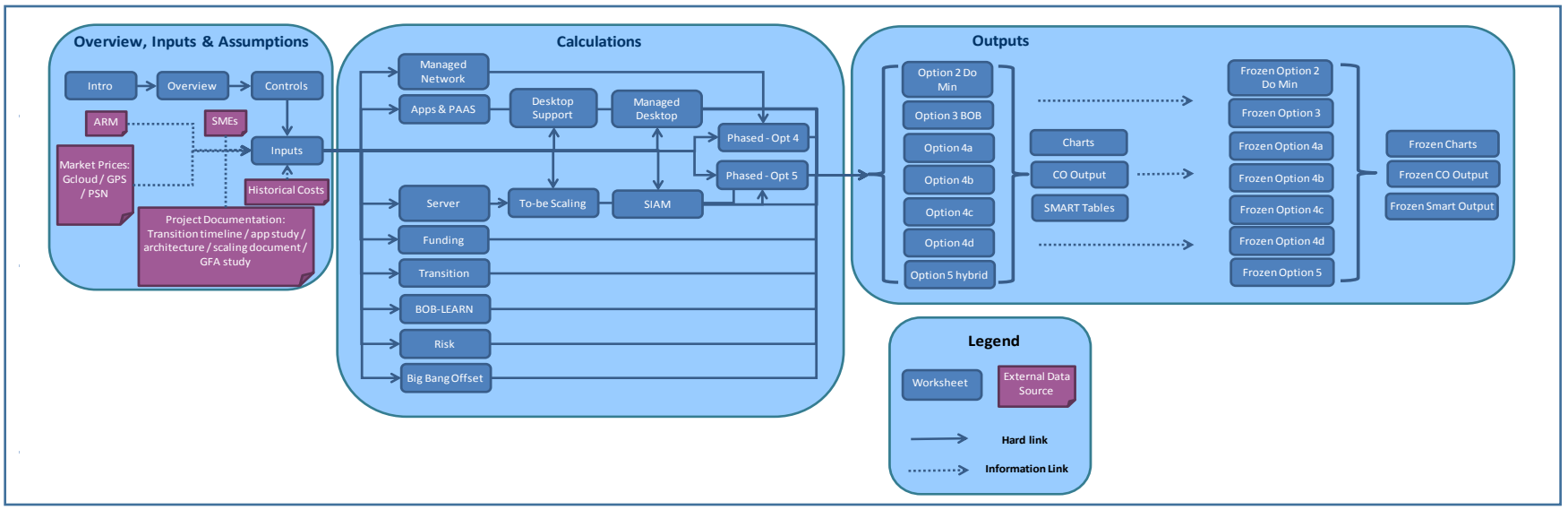
Business benefit	Option 2	Option 3	Option 4a/c	Option 4b/d	Option 5
B1. Improved student feedback scores	G	G	G	G	G
B2. Improved course pass rates	G	G	G	G	G
B3. Improved student retention rate	G	G	G	G	G
B4. Training pipeline outputs maintained	G	G	G	G	G
B5. Improved ability to spot and manage long term demand trends	-	-	-	-	-
B6. Reduced time lag between new systems being fielded and representative training systems being available	G	G	G	G	G
B7. Improved timescales associated with adding capacity to existing courses	G	G	G	G	G
B8. Improved timescales associated with adding new course material	G	G	G	G	G



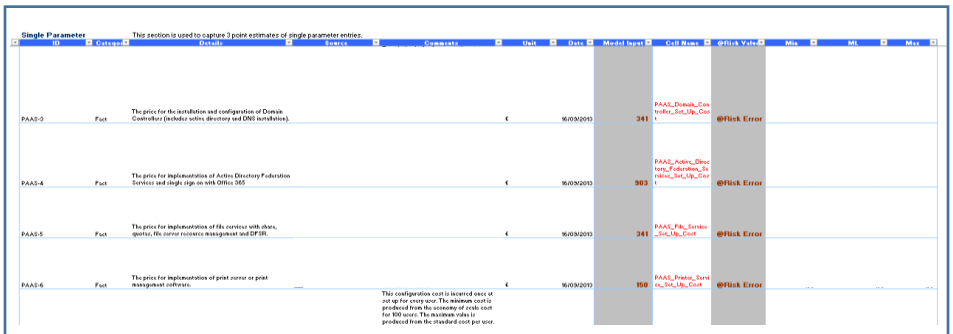
ACTiCA consulting

INVESTMENT APPRAISAL

COST MODEL OVERVIEW



DATA COLLECTION



A large number of data sources were consulted, including:

- Existing framework catalogue prices
- Historical running costs for legacy systems
- Scaling information provided by FLCs
- Open source information (e.g. technical white papers)
- SME workshops

ISS CAAS have performed an independent verification of all data sources.

MODEL CONSTRUCTION

The cost model was built in accordance with JSP 507 on a Whole Life Cost basis, covering a ten year period.

The Net present Value (NPV) of each option was calculated using the recommended Treasury Discount Rate of 3.5% and used to compare options.

The model was built from the bottom up, combining the best available scaling data and costing information with three-point-estimates to handle uncertainty, which were combined probabilistically using @Risk.

Each of the four communities was costed separately across the six categories:

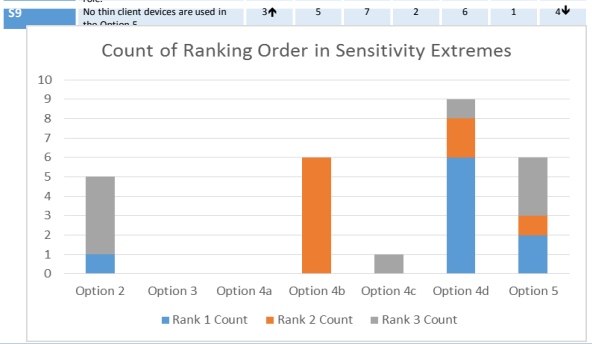
- MOD Costs
- Setup / Integration / Transition Costs
- Legacy Costs
- Equipment Costs
- Operation Costs
- Risk

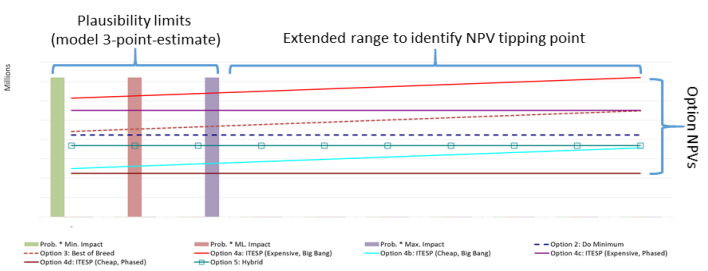
ISS CAAS independently validated the cost model construction.

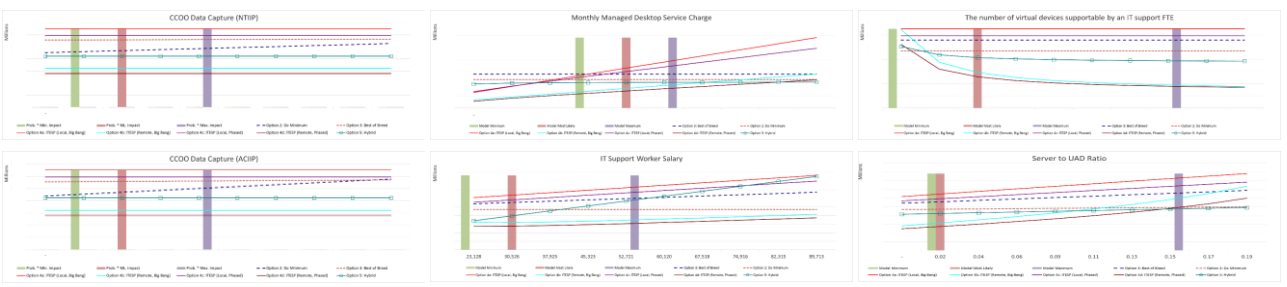
SENSITIVITY ANALYSIS

Statistical techniques were used to identify the most sensitive data inputs. These were varied to determine how much they influence the NPV ranking.

Sensitivity	Scenario	Q2	Q3	Q4a	Q4b	Q4c	Q4d	Q5
Baseline	Baseline ranking order	4	5	7	2	6	1	3
S1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S3	The integration overhead for ACIIP is 50% higher than the maximum expected value.	4	6↓	7	2	5↑	1	3
S4	The integration overhead for NTIIP is 50% higher than the maximum expected value.	4	6↓	7	2	5↑	1	3
S5 (1)	The desktop managed service charge falls to half the minimum value seen from any supplier on the Desktop 21 framework.	7↓	6↓	4↑	2	3↑	1	5↓
S5 (2)	The desktop managed service charge rises by more than 50% of the maximum value seen from any supplier on the Desktop 21 framework.	3↑	5	7	4↓	6	2↓	1↑
S6	The server to EUD ratio rises by more than seven times the most likely value (consistent only with small site statistical fluctuations).	3↑	5	7	4↓	6	2↓	1↑
S7	Absolutely no rationalisation of support staff is possible following the move to thin client devices.	1↑	4↑	6↑	7↓	5↑	3↓	2↑
S8	All IT support workers are paid the industry maximum salary for the role.	3↑	5	7	2	6	1	4↓
S9	No thin client devices are used in	3↑	5	7	2	6	1	4↓







The plots above show how the total NPV changes as the most sensitive inputs were varied.

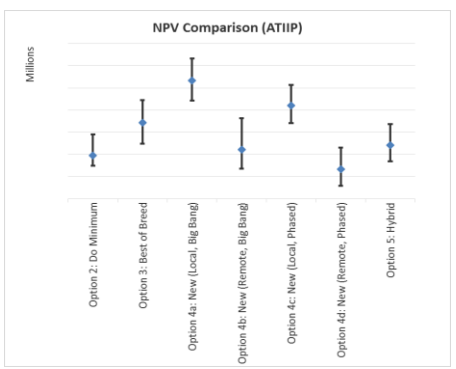
The vertical bars show the minimum, most likely and maximum values of the 3 point estimates.

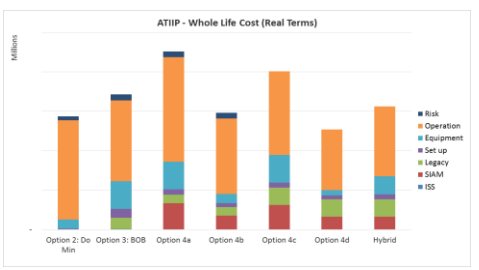
Often the parameters needed to extend far beyond the maximum values to change the NPV ranking.

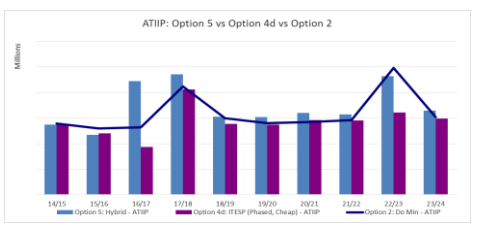
A count of the NPV ranking in these extreme scenarios is given on the left, which shows that the same options score highly even in at these extremes.

INVESTMENT APPRAISAL

ATIIP RESULTS



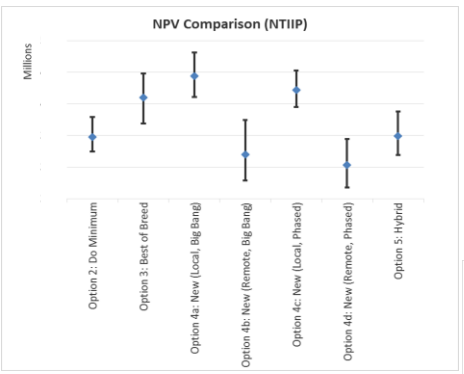


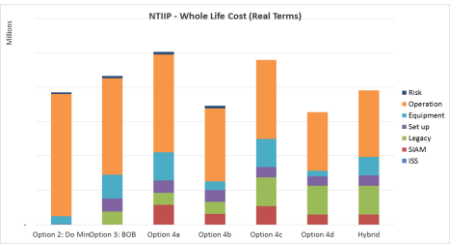


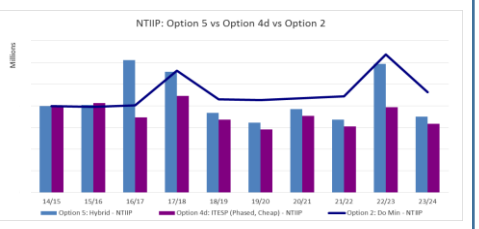
Operational costs are key financial drivers across all options, which are reduced considerably by a thin client solution. Thin client also reduces tech refresh spend. 'Big bang' options carry greater risk than 'phased options'

Options with lowest NPV are 4b, 4d, 5 and 2 but it is difficult to distinguish between them in pure NPV terms. More data is needed to reduce the uncertainty.

NTIIP RESULTS



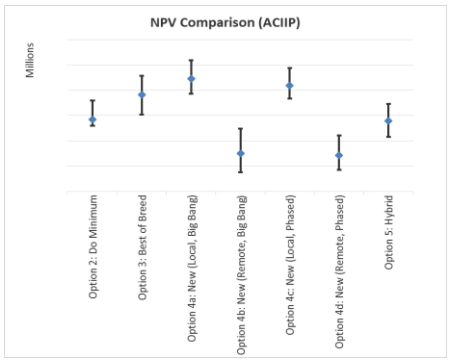


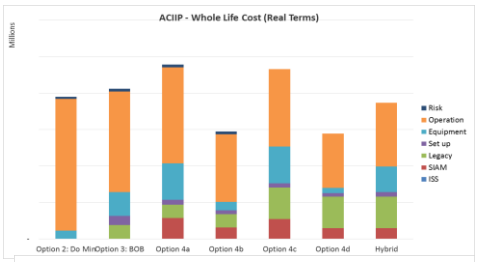


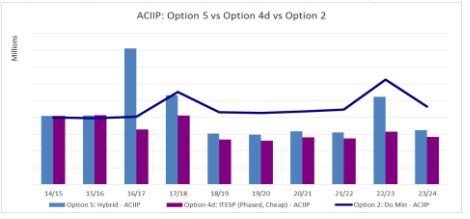
Operational costs are key financial drivers across all options, which are reduced considerably by a thin client solution. Option 2 has higher operational costs due to thick client, but lower up front investment.

Options with lowest NPV are 4b and 4d, but Options 2 and 5 cannot definitively be ruled out and Option 5 offers greater potential for savings than Option 2. More data is needed to reduce the uncertainty.

ACIIP RESULTS



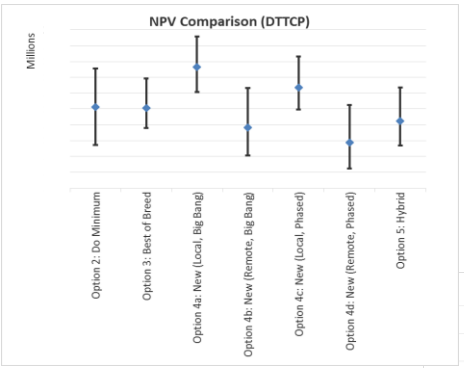


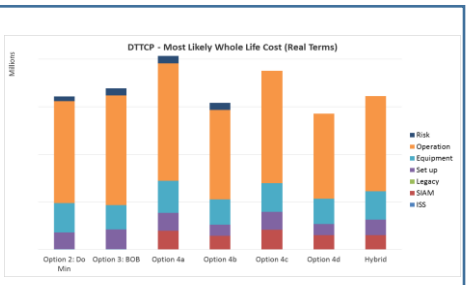


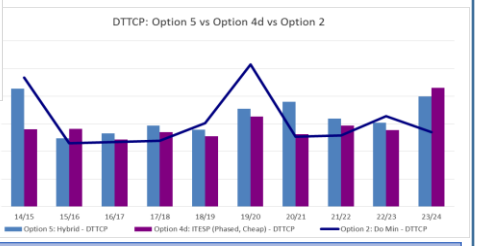
Because ACIIP has a higher proportion of sites to access devices compared with other FLCs, there is a relative increase in equipment and service integration costs. Reduced operational costs are achievable using thin client.

Options with lowest NPV are 4b, 4d, followed by 5 and 2. There is some degree of overlap between options and more data is needed to reduce the uncertainty. It is expected that new data will reduce the cost of Option 2 which will increase the VFM of this option (data not included in these figures).

DTTCP RESULTS







Key areas of spend are similar to other options, except there is no contribution from a legacy system in early years. Also, because DTTCP is confined to one site it has relatively lower integration and network equipment costs.

It is very difficult to say which option definitively has the lowest NPV, although there is a general trend towards Options 4b, 4d and 5.

OVERALL NPV OPTION RANKING

In general most options show some degree of overlap between the 10% and 90% confidence intervals. However the following general trend is seen:

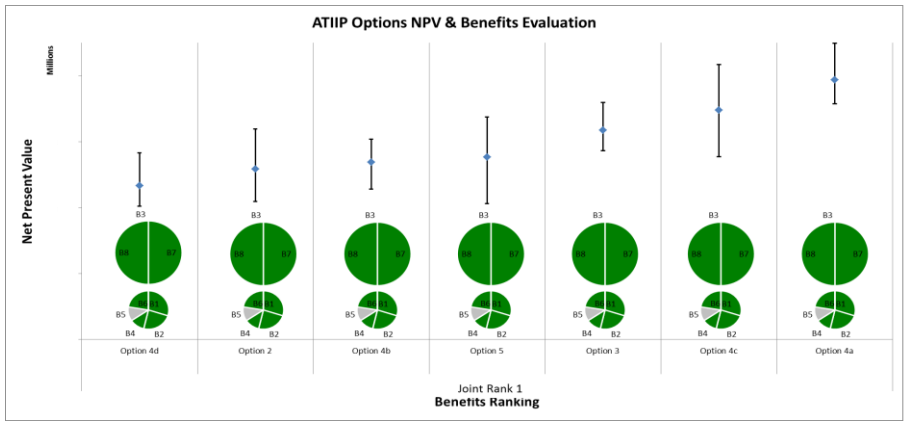
- **Option 4b and 4d** are typically the best options from an NPV perspective
- **Option 5 and Option 2** are typically the next best options and are generally hard to distinguish when the confidence intervals are compared. However Option 5 offers greater potential savings depending on the degree to which thin client is implemented.
- **Options 3, 4a and 4b** typically have the highest NPV.

GENERAL INVESTMENT APPRAISAL CONCLUSIONS

- Significant potential savings from thin client architecture.
- Modest savings from commodity service providers (partially offset by need for integrator)
- Additional Spend in early years for new architectures.

EXAMPLE COEIA RESULTS

EXAMPLE ATIIP RESULTS



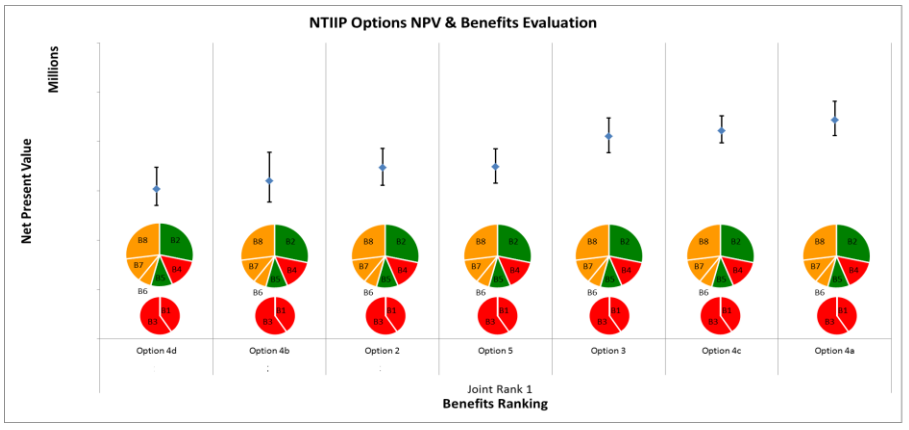
It was not possible to distinguish between options from a non-financial benefits perspective.

There is a reasonable overlap between the 10% to 90% NPVs for most options, particularly 2, 4b, 4d and 5.

When OCFs are taken into account there's a general preference towards 4b, 4d and 5, since these are better aligned with Government Policy.

Phasing the delivery would allow the approach to be validated by DTTCP.

EXAMPLE NTIIP RESULTS

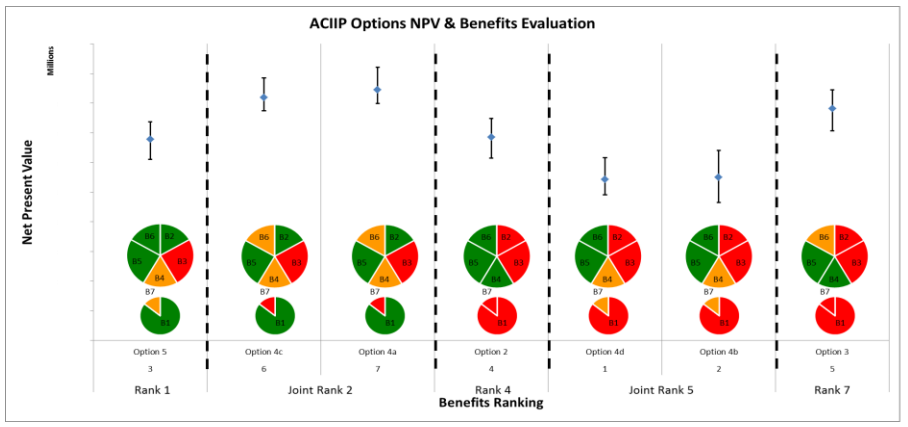


It was not possible to distinguish between options from a non-financial benefits perspective. Note that a RED benefit score only indicates that the option does not deliver any *additional* benefit over the KURs.

There is a reasonable degree of overlap between option NPVs, particularly 2, 4b, 4d and 5 – but 4b and 4d offer the greatest potential for savings.

When OCFs are taken into account, 4d and 5 would be preferred overall due to the alignment with Government policy and by providing an opportunity to allow the approach to be first validated by DTTCP.

EXAMPLE ACIIP RESULTS

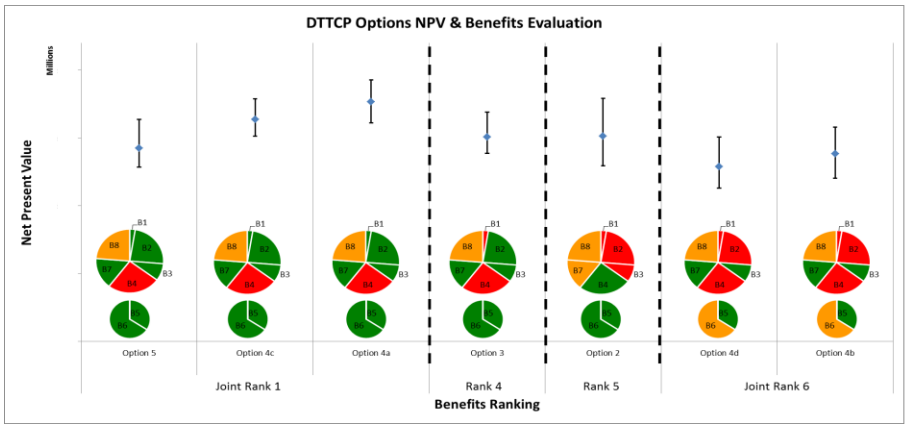


There was a clear demarcation between options arising from the benefits analysis, in which Option 5 was ranked 1st, and Options 4c and 4a 2nd.

From a financial perspective, there is a clear separation between the highest and second highest ranked benefits option, although Option 2 is similar in terms of NPV. Note that the NPV of option 2 may fall further when recent new information is taken into account (not shown in this figure).

The analysis shows that Option 5 is the most cost effective option, although the analysis should be updated when new data becomes available.

EXAMPLE DTTCP RESULTS



From a benefits perspective, Options 5, 4c and 4a are ranked equal 1st for DTTCP, of which Option 5 has the lowest NPV, making this the preferred option overall, although 4c cannot be entirely ruled out.

It is recommended that Option 5 is pursued for DTTCP, and that data gathered from the trial is used to update the analysis for the other FLCs. This will ensure that their recommendations are made based on the best available data, and will allow any lessons learned from DTTCP to be incorporated into their approach.

EXAMPLE RECOMMENDATIONS

For DTTCP, it is recommended that **Option 5** is taken forward. This will allow the approach to be validated, and the uncertainties identified in the IA to be reduced for the other FLCs.

For **ATIIP and NTIIP,** it is recommended that the legacy arrangements (**Option 2**) are extended in the short term to allow further information to be gathered by DTTCP to determine whether a variant of **Option 4 or 5** actually offers better VFM.

For ACIIP, Option 5 appears to offer the best VFM based on the information available. However as this option would require a short term extension of legacy arrangements (**Option 2**), there is an opportunity for the investment decision to be revisited based on updated data from the DTTCP trial.