

- Delay.
- Poor project management.
- Contractor/sub-contractor industrial action.
- Incorrect time and cost estimate for commissioning.

Operating Risks

- Incorrect estimated of additional operating costs.
- Latent defects.

Income and Activity Risk

- Changes in the size of the allocation of resources for the provision of health care.
- Changes in the volume of demand for patient services.

Force Majeure and Termination Risks

- Force Majeure.
- Termination of contract due to Force Majeure.
- Termination due to contractor default.

The probabilities and impact of some risks vary due to the different characteristics of each shortlist option. These differences are:

- The variations in the ground characteristics of each site.
- The design, age, size and condition of the retained buildings.
- Complexity of the design solution.
- The level of remodelling and refurbishment of existing buildings.
- The number of phases in the works programme.
- The duration of the works programme.
- Land purchases.
- The level of disruption to existing services.

To assess the variation in the levels of risks between the shortlist options, a simple risk assessment has been used. The probability and impact of each risk on each option has been scored on a scale of 1-6, where 1 is very low and 6 is very high. The product of these two values is the risk score. The total score for each option gives an indication of its level of risk relative to the other options. The risks and their scores are detailed in Table 49.

Table 49 – Assessment of the High Level Risks by Option

Risks	The Shortlist Options					
	Do Minimum		ECH Hub		PDH Hub	
Design Risks	P	I	P	I	P	I
• Failure to develop correct design brief	1	3	1	3	1	3
• Failure to design to brief	2	3	1	3	2	3
• Change in requirements of the trust	1	2	1	2	1	2
• Change in design required due to external influences	1	2	1	2	1	2
• Failure to build to design	1	2	1	1	1	2
Sub Total	15		11		15	
Construction and Development Risks	P	I	P	I	P	I
• Incorrect cost estimates	1	2	1	2	1	2
• Incorrect time estimate	2	2	1	2	2	2
• Unforeseen ground or site conditions	2	3	1	2	2	3
• Unforeseen conditions within remodelled buildings	2	2	1	2	3	2
• Delay in gaining access to the site	3	1	1	1	2	1
• Responsibility for maintaining on-site security	2	2	1	2	2	2

Risks	The Shortlist Options					
	Do Minimum		ECH Hub		PDH Hub	
• Responsibility for maintaining site safety	1	2	1	2	1	2
• Delay	2	2	1	3	2	3
• Poor project management	2	3	1	3	2	3
• Contractor/sub-contractor industrial action	2	1	1	1	2	1
• Incorrect time and cost estimate for commissioning	2	2	1	1	2	2
Sub Total	41		21		44	
Operating Risks	P	I	P	I	P	I
• Incorrect estimated of additional operating costs	3	3	2	2	2	3
• Latent defects	2	2	1	2	2	2
Sub Total	13		6		10	
Income and Activity Risk	P	I	P	I	P	I
• Changes in the resources allocated for health care	1	2	1	2	1	2
• Changes in the volume of demand for patient services	1	2	1	2	1	2
Sub Total	4		4		4	
Force Majeure and Termination Risks	P	I	P	I	P	I
• Force Majeure	1	2	1	2	1	3
• Termination of contract due to Force Majeure	1	3	1	2	1	3
• Termination due to contractor default	2	2	1	2	2	2
Sub Total	9		6		10	
Total Risk Score for Each Option	82		48		83	

The high-level risk assessment indicates the Do Minimum and PDH Hub options have almost double the risk profile in comparison to the ECH option. This reflects the easier development options for the semi-greenfield ECH site and the flexibility and condition of the existing building.

5.13 ASSUMPTIONS

The key assumptions underlying the assessment of costs, benefits, risks, economic assessment and the sensitivity analysis have been agreed with the PCTs. These are:

- No change in referral patterns or cross boundary flows.
- Inflation is matched by indexation.
- All costs are variable in the long-term.
- VAT excluded from the economic assessment.
- The appraisal period is 60 years from the operational date.
- Testing for variations in activity levels, development periods, capital costs and revenue costs.

5.14 ECONOMIC APPRAISAL

The economic appraisal has been undertaken using the generic economic model^x (GEM) and advice received from the Private Finance Unit on the application of the revised Treasury Green Book^{xi}. The appraisal has been undertaken at 3.5% with no adjustment for optimism bias. A series of sensitivity tests have been made to see the impact on the outputs and a comparison made between the preferred option and a pseudo PFI tariff. An electronic copy of the economic appraisal is provided in Appendix 12.

Results

The outputs from GEM are provided in Table 50. This shows the ECH option is the most economic at both discount rates.

Table 50 – Results of the Economic Appraisal, Including Risk Adjustment (3.5% discount rate)

Option	NPV (£m)	EAC (£m)
Do Minimum	3,321.5	125.3
ECH Hub	3,371.4	127.4
PDH Hub	3,305.3	125.1

Sensitivity Test

The economic appraisal has been subjected to a series of sensitivity tests to determine if there is a scenario where the relative positions of the options switch. The sensitivity tests and model inputs are detailed in Table 51.

Table 51 – Sensitivity Tests of the Economic Model

Test	Assumption	Scenario
1	2% Increase in Activity Levels	Increase Capital Works Costs by 2%, Increase Revenue Costs by 2%
2	2% Decrease in Transaction Values	Decrease Transaction Values by 2%
3	2.5% Increase in Performance Targets	Increase Capital Works Costs by 2.5%, Increase Revenue Costs by 2.5%
4	Timings & Value of Property Purchase, Sale and Transactions	Late opening 2011, Move and increase capital by 2%, reduce transaction values by 2%
5	Capital Costs Estimates	Increase Works Costs, life cycle costs, and risk and contingencies by 2%
6	Revenue Costs	Increase Revenue costs by 2%
7	Displacement Costs	Increase Displacement Costs by 2%
8	Scheme Implementation Programme	Late opening 2011, Move transaction values, Move and Increase Displacement Costs, Contingencies, Risk costs and transitional costs by 2%.
9	Worse Case Scenario	Capital - late opening 2011 Increase Works Costs, Lifecycle Costs and Capital Risks and Contingencies by 2% Revenue Increase population to 12.5%, increase revenue costs by 2% and Transition Costs by 10%

The risk adjusted results of the sensitivity tests, see Table 52, show the preferred option provides the best value for money under all the scenarios.

Table 52 – Results of the Sensitivity Tests (Risk Adjusted)

Sensitivity Test	Do Minimum (£m)	PDH HUB (£m)	ECH HUB (£m)
Activity Levels	3,376	3,430	3,364
Performance Targets	3,393	3,444	3,378
Timings - Late Opening 2011	3,317	3,367	3,301
Capital Costs Estimates	3,325	3,376	3,309
Revenue Costs	3,379	3,429	3,363
Displacement Costs	3,321	3,371	3,305
Scheme Implementation Programme	3,316	3,364	3,298
Worse Case Scenario	3,394	3,444	3,374

PFT Test

The Trust's financial advisors, PriceWaterhouseCoopers, have produced a pseudo PFI tariff for the preferred option using an in-house financial model. The output has been entered into GEM to produce an OBC PFI test. The output from the model gives a pseudo unitary charge of £33.0m. The economic comparison to the preferred option, ECH Hub, is provided in Table 53. A 2% adjustment, the minimum possible, has been made to the value of the preferred option for taxation allowances. The outcome, see Table 53, shows a PFI option would probably be better

value for money than a publicly funded option, when all the costs of the project, including risk, are taken into account.

Table 53 – Assessment of the Preferred Option and a Pseudo PFI Tariff (3.5% discount rate)

Option	NPV (£m)	EAC (£m)
ECH Hub	3,371.4	127.6
Pseudo PFI Tariff	3,304.2	125.1

5.15 SUITABILITY FOR PFI

An assessment has been made of the suitability of each option for procurement under the Private Finance Initiative. The assessment was based on the following criteria:

- **Site Conditions** - The characteristics and condition of the construction sites, including ground conditions, topography, available space, access for construction vehicles and the surrounding environment.
- **Retained Buildings** - The characteristics, design, quality, age and condition of any retained buildings.
- **Construction Programme** - The complexity and duration of the construction programme, including number of phases and level of decant and enabling works.
- **Opportunities** - The opportunities for innovation in design and configuration of services and departments, and FM provision and alternative methods of supply.
- **Risk Profile** - The clarity of the risk profile of the option, including design and construction risks, land acquisition, refurbishment and remodelling existing buildings.

Issues that will be common to all three options, such as the contract structure and FM package, were excluded from the assessment process. The results of the assessment are provided in Table 54. Each criterion has been assessed based on the best option scoring 100. The ECH option is the most suited to PFI when measured against all five criteria.

Table 54 – Assessment of the Suitability of Each Option for PFI

Risk	Do Minimum	ECH Option	PDH Option
Site Conditions	50	100	45
Retained Buildings	30	100	40
Construction programme	30	100	35
Opportunities	60	100	80
Risk Profile	65	100	70
Totals	235	500	270

5.16 SUMMARY OF THE OPTION APPRAISAL

A summary of the results of the option appraisal are provided in Table 55. This shows the ECH option is clearly preferred on all measures.

Table 55 – Summary of Option Appraisal

	Benefit Analysis (Higher is better)	Change in Revenue Cost (Lower is better)	Economic Appraisal (NPC £m)	High Level Risk Assessment (Lower is better)	Suitability for PFI (Higher is better)
Do Minimum	8.6	33.48%	3,321.5	82	235
PDH Option	43.6	34.05%	3,371.4	83	270
ECH Option	90.1	31.01%	3,305.3	48	500

5.17 IMPACT ON OTHER HEALTH CARE PROVIDERS

The GPHIP relates to the activity and population served by the Peterborough Hospitals Trust and has been developed in collaboration with the four PCTs that account for 91% of this activity. No changes have been planned in the referral rates from other PCTs or health systems.

The remaining population is roughly equally split between four local authority areas and five PCTs. Other than supporting the general background growth in activity the impact of the GPHIP on these will be minima particularly in view of the change to payment by activity and national tariffs.