

Appendix 1: Options Assessment

Options Framework

Methodology

In accordance with the Capital Investment Manual and requirements of HM Treasury's Green Book (A Guide to Investment Appraisal in the Public Sector), this section of the business case documents the wide range of options that have been considered that could deliver the agreed investment objectives for five categories of choice:

- Scope (service and geographical coverage);
- Solution (including services and required infrastructure);
- Service delivery (who will deliver the required services);
- Timing and phasing of delivery;
- Funding of the investment.

The long list must include an option that provides the baseline for measuring improvement and value for money. This option is known as 'Business as Usual'. It must also include a realistic 'Do Minimum' based on the core functionality and essential requirements for the project.

Through discussion in a workshop, the Strategic Programme Board identified and documented a long list of options. Options were generated for each category of choice by ascertaining the least ambitious, most ambitious and intermediate option for scope, solution, service delivery, timing and funding.

A diagram illustrating this process is shown below:

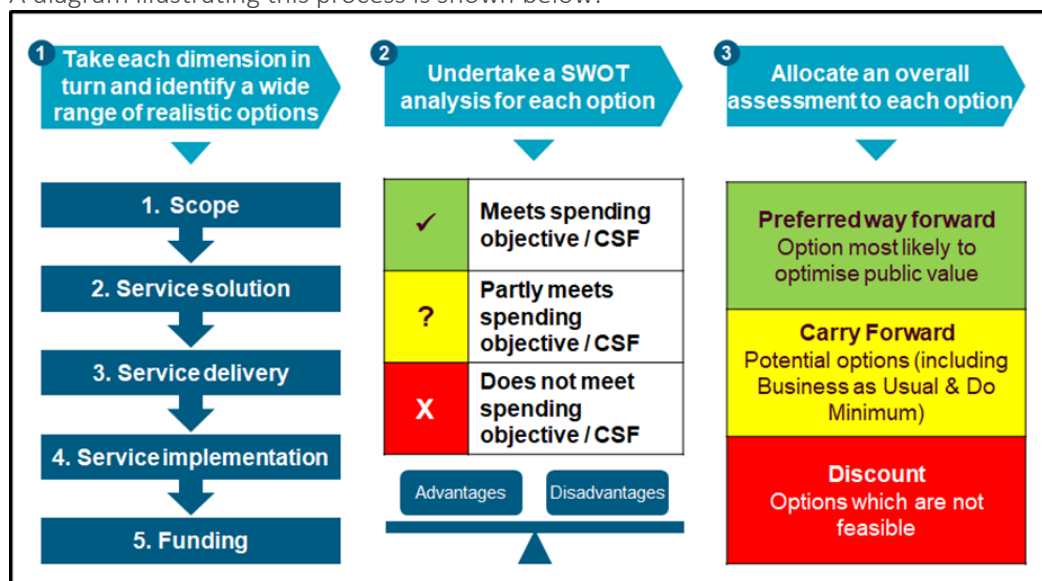


Figure 1 - Process to identify and assess the long list of options

Options were scored on a consensus basis against the agreed critical success factors and investment objectives.

Service Scope

The following options were considered in relation to the scope of the programme and assessed in relationship to spending objectives and CSFs as follows:

Project		Option 1A	Option 1B	Option 1D	Option 1E	Option 1F	
1. Service Scope <i>As outlined in Strategic Case</i>		1A: 3 scanners	1B: 3 scanners + 1 cyclotron + Centres of Excellence	1C: 4 scanners + 1 cyclotron + Centres of Excellence	1D: 5 scanners + 1 cyclotron + Centres of Excellence	1E: Do Max - 1D + Additional Cyclotron	
SO1	Improve quality/better patient outcomes	?	?	Y	Y	Y	
SO2	Workforce to deliver high quality service	?	?	Y	?	?	
SO3	Improve delivery – efficient use of facilities and infrastructure	?	?	Y	Y	?	
SO4	Cost effective service	?	?	Y	Y	?	
SO5	Widen scope/international best practice	?	?	Y	Y	Y	
CSF1	Strategic Fit	?	?	Y	Y	?	?
CSF2	Value for Money	?	?	Y	?	X	
CSF3	Supplier Capacity/Capability	Y	Y	Y	?	?	
CSF4	Affordability	?	?	?	?	?	
CSF5	Achievability	Y	Y	Y	?	?	
Conclusion		Baseline	Possible	Preferred way forward	Possible	Discount	

SWOT Analysis

Option 1A: 3 scanners

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • Lower capital investment • Relatively simple to implement 	<ul style="list-style-type: none"> • Insufficient capacity to meet demand in the long term • Limited ability to improve patient outcomes and provide earlier interventions • Limited ability to improve processes and provide fit-for-purpose premises • Limited ability to broaden scope of services • Only partly aligns with UK and international best practice • Limited ability to apply Prudent Healthcare principles • Radiopharmaceutical supply not guaranteed 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Some reliance on outsourcing leading to increased costs • Presents challenges recruiting and retaining workforce • Little service resilience • No opportunity to expand R&D capability • No opportunity to introduce innovative new tools such as AI • Complaints and potential litigation from patients and staff • Service cannot develop to meet future needs • As demand exceeds capacity in the longer term, waiting times and worsening clinical outcomes could still be an issue

Option 1B: 3 scanners, 1 cyclotron and Centres of Excellence

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> Improved service resilience Improved research and development Easier to attract and retain staff 	<ul style="list-style-type: none"> Does not provide sufficient capacity to meet demand in the long term Limited ability to improve patient outcomes and provide earlier interventions in the longer term Limited ability to improve processes and provide fit-for-purpose premises Limited ability to broaden scope of services Only partly aligns with UK and international best practice Limited ability to apply Prudent Healthcare principles 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> As demand exceeds capacity in the longer term, waiting times and worsening clinical outcomes could still be an issue Service cannot develop to meet long-term needs

Option 1C: 4 scanners, 1 cyclotron and Centres of Excellence

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • Provides sufficient capacity to meet demand in the long term • Ability to improve patient outcomes and provide earlier interventions • Ability to improve processes and provide fit-for-purpose premises • Ability to broaden scope of services • Aligns with UK and international best practice • Ability to apply Prudent Healthcare principles • Provides service resilience • Improved research and development 	<ul style="list-style-type: none"> • Significant capital investment required • Potential disruption to existing services during construction 	<ul style="list-style-type: none"> • Service can develop to meet future needs • Ability to attract and retain high quality staff due to increased R&D capability • Can increase the number of people taking part in clinical trials 	<ul style="list-style-type: none"> • Funding may be limited or unavailable

Option 1D: 5 scanners, 1 cyclotron and Centres of Excellence

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • Provides sufficient capacity to meet demand in the long term • Ability to improve patient outcomes and provide earlier interventions • Ability to improve processes and provide fit-for-purpose premises • Ability to broaden scope of services • Aligns with UK and international best practice • Ability to apply Prudent Healthcare principles • Provides service resilience • Improved research and development • • • 	<ul style="list-style-type: none"> • Significant capital investment required, may be unaffordable in the short term • Potential disruption to existing services during construction 	<ul style="list-style-type: none"> • Service can develop to meet future needs • Ability to attract and retain high quality staff due to increased R&D capability • Can increase the number of people taking part in clinical trials 	<ul style="list-style-type: none"> • Funding may be limited or unavailable

Option 1E: 5 scanners, 2 cyclotrons and Centres of Excellence

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> Provides sufficient capacity to meet demand in the long term Ability to improve patient outcomes and provide earlier interventions Ability to improve processes and provide fit-for-purpose premises Ability to broaden scope of services Aligns with UK and international best practice Ability to apply Prudent Healthcare principles Provides service resilience Can attract and retain high quality workforce Improved research and development Reduces spend on outsourced services eg, radiopharmaceutical supply 	<ul style="list-style-type: none"> Significant capital investment required, may be unaffordable in the short term Potential disruption to existing services during construction 	<ul style="list-style-type: none"> Service can develop to meet future needs Ability to attract and retain high quality staff due to increased R&D capability Can increase the number of people taking part in clinical trials 	<ul style="list-style-type: none"> Funding may be limited or unavailable This option may create additional complexities that delay the programme

Service Solution

Potential solutions for delivering the programme's preferred way forward for potential scope were considered as follows:

Project		Option 2A	Option 2B	Option 2C	Option 2D	Option 2E
2. Service Solution <i>In relation to the preferred scope</i>		Do Nothing	Replace Cardiff scanner and extend North Wales and Swansea mobile capacity	Replace Cardiff scanner and cyclotron. Create 2 new build fixed facilities in North Wales and Swansea	Replace Cardiff scanner and cyclotron. Create 3 new build fixed facilities in North Wales, Swansea and TBD	Replace Cardiff scanner and cyclotron. Create 4 new build fixed facilities: North Wales Swansea, 2xTBD, plus additional cyclotron
SO1	Improve quality/better patient outcomes	X	X	?	Y	Y
SO2	Workforce to deliver high quality service	X	?	?	Y	?
SO3	Improve delivery – efficient use of facilities and infrastructure	X	?	?	Y	Y
SO4	Cost effective service	X	?	?	Y	?
SO5	Widen scope/international best practice	X	X	?	Y	Y
CSF1	Strategic Fit	X	?	?	Y	Y
CSF2	Value for Money	X	?	X	Y	?
CSF3	Supplier Capacity/Capability	Y	Y	Y	Y	?
CSF4	Affordability	?	?	?	?	?
CSF5	Achievability	X	Y	?	Y	Y
Conclusion		Baseline	Possible	Discount	Preferred way forward	Possible

SWOT Analysis

Option 2A: Do Nothing

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • No capital investment required • No disruption to existing services 	<ul style="list-style-type: none"> • Current capacity is not sufficient to meet growing demand • Premises not fit for purpose • Patient experience in mobile scanning units is poor compared with fixed units • Scan quality and patient throughput on analogue scanners is lower than for digital scanners • No opportunity to expand R&D capability • No opportunity to introduce innovative new tools such as AI • Facilities not flexible enough to cope with changing needs • Does not align with UK and international best practice 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • No service resilience • Ageing equipment could fail, threatening smooth operation of services and resulting in delays for patients and potentially poor clinical outcomes • Complaints and possible litigation from patients and staff • Rising costs due to outsourcing of services such as radiopharmaceutical supply • Inadequate and ageing facilities makes it difficult to attract and retain high quality staff

Option 2B: Do Minimum - Replace Cardiff scanner and increase mobile operating hours

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • Minimal investment • No disruption to services • Quick to implement 	<ul style="list-style-type: none"> • Increased capacity will still not be enough to meet demand in the longer term • Quality and throughput issues with analogue scanners remain • Patient experience in mobile units is not improved • No opportunity to expand R&D capability due to quality issues with mobile units • No opportunity to introduce innovative new tools such as AI • 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Little service resilience • Complaints and possible litigation from patients and staff • Increased costs due to outsourcing of services such as radiopharmaceutical supply • Inadequate facilities make it difficult to attract and retain high quality staff

Option 2C: Replace Cardiff scanner and cyclotron, and provide 2 new fixed facilities (North Wales/Swansea)

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> Improved scan quality and patient throughput associated with fixed facilities and digital scanners Improved clinical outcomes Improved patient experience Modern and updated facilities make it easier to attract and retain high quality staff 	<ul style="list-style-type: none"> Greater capital investment Increased capacity will still not be enough to meet demand in the longer term 		<ul style="list-style-type: none"> Funding may be limited or unavailable Service not resilient in the longer term Still some costs associated with outsourcing of services such as radiopharmaceutical supply

Option 2D Replace Cardiff scanner and cyclotron, and provide 3 new fixed facilities (North Wales/Swansea/TBD)

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • Capacity will meet growing demand • The third scanner can be provided as demand grows and located to best meet population needs • Shorter travel distances for some patients • Improved scan quality and patient throughput associated with fixed facilities and digital scanners • Improved clinical outcomes • Improved patient experience • Improved R&D capability 	<ul style="list-style-type: none"> • Greater capital investment • Increased capacity will still not be enough to meet demand in the longer term • 	<ul style="list-style-type: none"> • Modern and updated facilities make it easier to attract and retain high quality staff • More patients able to take part in clinical trials • Service can develop flexibly to meet future needs 	<ul style="list-style-type: none"> • Funding may be limited or unavailable • Service not resilient in the longer term • Still some costs associated with outsourcing of services such as radiopharmaceutical supply •

Option 2E: Replace Cardiff scanner and cyclotron, and provide 4 new fixed facilities (North Wales/Swansea/2xTBD) and a further cyclotron

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> Capacity will meet demand in the long term The third and fourth scanners and second cyclotron can be provided as demand grows and located to best meet population needs Shorter travel distances for many patients Improved scan quality and patient throughput associated with fixed facilities and digital scanners Improved clinical outcomes Improved patient experience Improved R&D capability Supply chain for radiopharmaceuticals is secure and offers flexibility for future development of new radiotracers 	<ul style="list-style-type: none"> Significant capital investment 	<ul style="list-style-type: none"> Modern and updated facilities make it easier to attract and retain high quality staff More patients able to take part in clinical trials Service can develop flexibly to meet future needs 	<ul style="list-style-type: none"> Funding may be limited or unavailable This option may create additional complexities that delay the programme

Service Delivery

A range of service delivery options were considered as follows

Project		Option 3A	Option 3B	Option 3C
3. Service Delivery <i>In relation to the preferred scope and service solution</i>		Continue with existing arrangements (PETIC and external provider)	Service delivered by NHS Wales workforce and PETIC partnership	Entire service delivered by NHS Wales
SO1	Improve quality/better patient outcomes	?	Y	Y
SO2	Workforce to deliver high quality service	X	Y	?
SO3	Improve delivery – efficient use of facilities and infrastructure	X	Y	?
SO4	Cost effective service	X	Y	?
SO5	Widen scope/international best practice	X	Y	Y
CSF1	Strategic Fit	X	Y	X
CSF2	Value for Money	X	Y	?
CSF3	Supplier Capacity/Capability	Y	Y	?
CSF4	Affordability	?	?	?
CSF5	Achievability	?	Y	X
Conclusion		Baseline	Preferred Way Forward	Discount

SWOT Analysis

Option 3A: Continue with existing arrangements (PETIC and external provider)

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> No disruption to existing services 	<ul style="list-style-type: none"> External provider limits ability to provide earlier interventions and improve outcomes External provider limits ability to broaden scope of services and align with UK and international best practice Greater commercial challenges agreeing risk allocations and ownership 	<ul style="list-style-type: none"> Potential to develop a long-term working relationship with external providers 	<ul style="list-style-type: none"> Increased reliance on external outsourcing leading to increased costs and potentially lower resilience

Option 3B: Service delivered by NHS Wales workforce and PETIC partnership

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> This option partly supports NHS Wales and its workforce Lower costs as less reliance on outsourcing compared with BAU option 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Potential to strengthen relationship with PETIC 	<ul style="list-style-type: none">

Option 3C: Entire service delivered by NHS Wales workforce

Strengths:	Weaknesses:	Opportunities:	Threats:
<ul style="list-style-type: none"> • This option fully supports NHS Wales and its workforce • Most affordable option • NHS Wales has autonomy to manage and develop the service flexibly to meet changing needs 	<ul style="list-style-type: none"> • 		<ul style="list-style-type: none"> •