

# Portsmouth Naval Base Marine Engineering Centre

## Full Business Case

Submitted by BAE Systems on behalf of the Ministry of Defence  
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### Programme Details

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Programme overview and photos of the current and proposed facilities  
(material state issues to be addressed by the programme)

# 1. Executive Summary

Implementation of the Marine Engineering Centre programme will provide 'world class' workshop facilities for supporting delivery of the Royal Navy's Fleet maintenance and upgrade programme, including those required to support the Queen Elizabeth Class aircraft carriers.

- Forecast £12m net benefit to the MoD over the first 10 years (available for reinvestment into Portsmouth Naval Base)
- 20% improvement in productivity (underpin the case for sustaining current activities and options for growth)
- Modern working environment for 150 employees (helping to attract new talent to the marine engineering sector)
- Significant improvement in safety risk environment (reduction in accident and incident rates)

Combined with the Skills Development Centre programme (completed in March 2016), the programme will provide a training environment for up to 150 apprentices (annual in-take of 35), and support delivery of training for up to 20 apprentices from local SME organisations (10 SME students joined for the '16/17 academic year)

- 27 Advanced Apprenticeships – Qualification Level 3
- 8 Higher Level Apprenticeships – Qualification Level 4

Solent LEP funding of £1.8m leverages a total of £11.4m Public and Private Sector investment for the Skills Development Centre (£2.4m) and Marine Engineering Centre (£9m).

- BAE Systems has already invested £2.4m in the Skills Development Centre
- Proposed BAE Systems funding of £3m to be recovered from savings over the period to March 2020
- Proposed MoD estate 'sustainment' (£2.2m) and business improvement (£2m) funding
- Proposed Solent LEP funding of £1.8m (£750k Employer Ownership of Skills Fund and £1.05m Local Growth Fund)

Funding covers the design, delivery and commissioning of workshop facilities, and management of the transition of operations from the existing 5 facilities. The programme is scheduled to be completed by December 2017, with initial works funded 'at risk' to maintain the target completion date.

## 2. Background & Programme Overview

### 2.1 Portsmouth 2030 Programme

The decision to proceed with the Queen Elizabeth Class (QEC) carrier programme and base port the ships in Portsmouth represented a paradigm shift for the Naval Base. After decades of uncertainty, the future of Portsmouth Naval Base (PNB) was assured for the next 50 years.

To make PNB ready for the arrival of QEC and wider Fleet requirements, the Portsmouth 2030 programme (P2030) was established. This is the head-mark investment programme for 'Team Portsmouth', comprising the MoD and their local industrial partners. Over the past 3 years a significant number of P2030 programmes have been delivered.

However, funding for P2030 programme is constrained, limiting the availability of investment for 'spend to save' and 'capability development' programmes. Consequently, MoD and BAE Systems have explored alternative funding options to either accelerate investment or allow otherwise unaffordable projects to proceed.

Four projects were identified in 2014 for development:

- Skills Development Centre
- Marine Engineering Centre (consolidation and upgrade of workshop facilities)
- Small Ships Centre of Specialisation
- Combined Heat & Power facility

## 2.1 Portsmouth 2030 Programme (continued)

To date, the first (Skills Development Centre) has been completed. £2.4m of investment was provided by BAE Systems for the refurbishment and upgrade of the existing apprentice training facility to accommodate an increase in apprentice numbers (available for both BAE Systems and local SME companies) and address new training requirements associated with entry into service of the next generation of warships (e.g. Type 45 and QEC).

The next priority is to develop and implement the Marine Engineering Centre programme, to provide a training environment for 3<sup>rd</sup> and 4<sup>th</sup> year apprentices graduating from the Skills Development Centre, address productivity issues with existing facilities and ensure that facility, plant and equipments are able to meet both current and future engineering requirements.

The forecast cost for completion of the programme is £9m. MoD proposed funding contribution is £2.2m for safety related improvements to the facilities and £2m for general programme expenditure. In response to this opportunity, BAE Systems has agreed to commit £3m of initial funding (to be recovered from future savings) and approached the Solent LEP for a further £1.8m of funding.

By combining these sources of funding, the opportunity exists to deliver this programme by the end of Q3 2017, in time to meet the anticipated uplift in demand associated with the arrival of QEC and provide an appropriate training environment for the 3<sup>rd</sup> and 4<sup>th</sup> year apprentices graduating from the Skills Development Centre. This is the focus of this Full Business Case.

MoD and BAE Systems are developing proposals for the upgrade of the former shipbuilding Hall B to include a ship-lift and transit system that will enable the facility to fully utilise its available capacity as a small ship maintenance and upgrade facility (Small Ships Centre of Specialisation). The estimated cost of this programme is £11m.

## *2.1 Portsmouth 2030 Programme (continued)*

Finally, MoD and BAE Systems are developing a proposal for a Combined Heat and Power facility on PNB. The facility would significantly improve Base resilience to power outages, address peak load requirements associated with the arrival of QEC carriers and reduce the cost of power for the MoD. The estimate cost of this programme is £10m.

## *2.2 Shipbuilding Restructuring*

Following the cessation of shipbuilding operations in Portsmouth Naval Base in September 2014, an opportunity to significantly improve the performance of engineering workshop support for the Fleet has been pursued, utilizing the former shipbuilding facilities.

The former shipbuilding facilities (except for the main office complex – retained by BAE Systems for shipbuilding management and design activities) have now been transferred to Navy Command and incorporated within the 'Government Owned Contractor Operated' Naval Base assets register. The main build hall (Hall B) has been converted for delivery of the Hunt Class upgrade programme. Operational offices (Complex 1) are now home to the Hunt Class and River Class joint operational planning and delivery teams.

This leaves two facilities available for alternative use.

The former Steel Production Hall has been identified as the preferred location for the Marine Engineering Centre (consolidated and upgraded workshop facility). The facility is ideally sized to accommodate PNB's requirements for workshops and is located adjacent to the new Centres of Specialisation for Small Ships and Destroyer/Frigate maintenance and upgrade programmes. The facility is also large enough to accommodate the anticipated increase in demand (c.25%) associated with the QEC entry into services.

### *2.3. Apprentice Training Requirements*

BAE Systems runs an apprentice programme to meet the skills requirements for Portsmouth Naval Base. A combination of changing business needs and an increasing age demographic has demanded an increase in annual in-take levels and changes to the facilities to allow new training requirements to be met. Historically, an average of 20 apprentices have been taken on each year to meet the needs of Base and Ship support at PNB. To meet future requirements, this increased to 35 (27 Advanced Apprenticeships – Qualification Level 3) and 8 High Level Apprenticeships – Qualification Level 4) for the September 2015 in-take. In addition, as part of a wider corporate initiative, BAE Systems has agreed to provide training for 10 third party apprentices from local SMEs.

As identified above, initial training will be delivered in the Skills Development Centre (1<sup>st</sup> and 2<sup>nd</sup> year), with 3<sup>rd</sup> and 4<sup>th</sup> year training utilizing wider Naval Base operational facilities, including the proposed Marine Engineering Centre.

### *2.4 Marine Engineering Centre Programme Overview*

The programme covers the design, development, delivery and commissioning of a refurbished and upgraded workshop facility for electrical and mechanism engineering (repairs and fabrication). The programme also covers the transition of existing operations to the new facility whilst maintaining operational outputs for the Fleet support programme. The target completion date is October 2017.

A schematic outlining the consolidation plan and photos highlighting some of the 'material state' issues associated with current workshop facilities and the facility identified for refurbishment and upgrade, is provided as an Annex to this Business Case.



## 3. Case for Solent LEP Investment

### 3.1 Benefits Matrix

The table below sets out the benefits of Solent LEP investment in this programme. Further details supporting this assessment can be made available upon request.

Criteria	Description
Strategic Fit	The programme contributes to the Solent LEP's strategic objectives and growth targets within the marine engineering sector.
Deliverability	<p>Phase 1 of the programme (fully funded by BAE Systems) was completed in March 2016. The Phase 2 programme will be delivered under the MoD's existing MSDF contract (established governance and performance management framework).</p> <p>The programme has been developed 'at risk' to date, protecting the target completion date of December 2017. The competition for completion of the Detailed Design phase was launched in April 2016. Subject to approval of funding by July 2016, the Level 0 programme plan will be deliverable.</p>
Programme	The programme will be delivered between April 2016 and December 2017, with funding requirements profiled across FY 2016/17 and 2017/18. All of the proposed Solent LEP funding has been assigned to FY 2016/17.
Private Sector Leverage	To date, BAE Systems has invested £2.4m in the Phase 1 programme (Skills Development Centre) to provide specialist facilities for Level 3 and 4 marine apprentices (welding, fabrication, electrical and mechanical engineering skills) within year 1 & 2 of their training. In Phase 2, BAE Systems has proposed £3m of programme funding, to be recovered over 3 years from forecast savings (lower operating costs and productivity improvements), beneficially providing a modern workshop where year 3 & 4 apprentices can continue their development in a 'real' environment.

Criteria	Description
Public Sector Leverage	<p>The MoD has proposed £2.2m of funding to address infrastructure and safety issues relating to the former shipbuilding facilities (e.g. Steel Production Hall roof). In addition, MoD has proposed £2m of funding to improve productivity of the engineering workshops within Portsmouth Naval Base.</p> <p>By combining these resources with those available from BAE Systems and the Solent LEP, sufficient funding is available to deliver a ‘transformation project’, establishing world class marine engineering facilities to meet current and future Fleet Support requirements, including those associated with the arrival of the Queen Elizabeth Class (QEC) carriers.</p> <p>The alternative option, limited to MoD funding, would be to upgrade existing facilities, leaving the former shipbuilding facilities redundant.</p>
Jobs	<p>Portsmouth Naval Base engineering workshops employ over 150 staff for BAE Systems and SMEs. Investment in world class facilities will help sustain these roles and provide the opportunity for growth, serving the needs of future Fleet requirements (25% uplift in workload anticipated upon the arrival of QEC carriers).</p> <p>Facilities will also provide employment for the annual in-take of 35 electrical and mechanical apprentices at the end of their scheme.</p> <p>During the course of the 18 month development programme, design and construction roles will be created, delivering a ‘landmark’ facility within the Solent region.</p>
Skills	<p>Phase 1 of the programme delivered a ‘flagship’ training environment for Level 1 and 2 craft apprentices. The Skills Development Centre (the ‘Jutland Complex’), officially opened by the Second Sea Lord in May 2016, provides specialist training facilities for 100 BAE Systems apprentices and 10 local SME apprentices under a National scheme.</p>

Criteria	Description
Skills (continued)	<p>Following completion of Phase 1, BAE Systems has been able to increase the annual in-take of apprentices from 20 to 35, plus 10 SME apprentices. Once the scheme achieves full service, there are expected to be 150 apprentices working within the Naval Base, utilising the proposed facilities.</p> <p>Phase 2 of the programme supplements our 1st &amp; 2nd year specialist training facilities for Level 3 and 4 electrical and mechanical apprentices. BAE Systems plan to provide within the facility the ability to enable all apprentices to undergo periods of training within the highly skilled trade areas within the new facility (in conjunction with other Naval Base operational areas).</p> <p>Similar to a number of industries, Portsmouth Naval Base is facing a significant challenge over the next 5 years due to the age demographic of the workforce. Over the this period, a significant proportion of the workforce will reach their normal retirement age. Notwithstanding the ability of individuals to work beyond this age, there is a risk that without investment in early careers, PNB will face a shortage of key skills. Establishing facilities that both enable the delivery of training programmes and improve the working environment (attract young people) is critical to the sustainment of PNB operations.</p>
Future Growth Opportunities	<p>A key driver for the Navy is to establish efficient facilities to deliver the current and future Fleet Support programme. Investment will ensure that engineering facilities are capable of meeting the needs of the next generation of Warship (Type 45, QEC carrier and Type 26). The ability to offer these services provides future growth opportunities for Portsmouth as well as sustaining existing roles.</p>

Criteria	Description
Small-Medium Enterprises	<p>As 'government owned, contactor operated' assets, the proposed new facilities will be available for the MoD's current and future industrial partners, with delivery contracts benchmarked or competed every 5 years.</p> <p>Research has shown that for every direct employee working within the Naval Base, there are seven roles required within the wider marine supply chain, many of which are SME's within the Solent region.</p> <p>To secure best value for the MoD, BAE Systems sub-contracts on average 65% of workload to the wider maritime supply chain.</p>
Productivity Improvements	<p>A driver for the programme is to enable a 20% improvement in productivity. Without such improvements, the need to demonstrate value for money could drive operations outside of the Solent region. Furthermore, demonstrating the ability to achieve these results within the Solent region may lead to the development of new schemes.</p>
SHE	<p>As part of the transition from existing to new facilities, the safety environment for both apprentices and full time staff will be significantly improved. Over the past 3 years, over twenty-six incidents and accidents have been recorded within PNB workshops. Despite year-on-year improvements, investment will enable a 'step change' in performance by eliminating key risks through the introduction of new plant &amp; machinery and revised processes.</p> <p>Over the past 2 years, measurable energy consumption at PNB has been reduced by c.10%. Transition to new energy efficient facilities will generate further savings (c.30% reduction for associated facilities).</p>

## 4. Economic Case

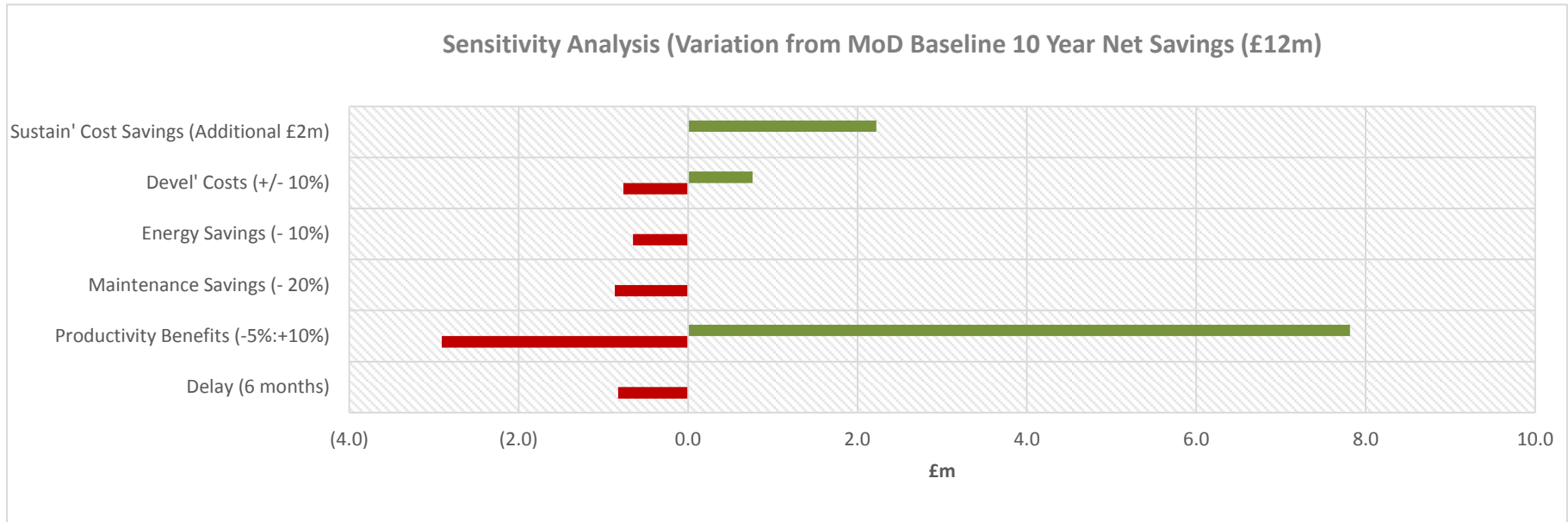
### 4.1 Benefits Realisation

Value for money has been evaluated using the MoD's investment appraisal methodology. VfM is delivered by reducing operating costs for the facility (maintenance and energy costs) and improving operational productivity by 20%.

Forecast Benefits for MoD Base & Ship Support Operating Centres	'Steady State' Savings	10 Year Total
Maintenance Costs	£0.3m	£1.9m
Energy Consumption	£0.2m	£1.3m
Productivity Improvements	£1.1m	£8.2m
Asset Replacement	-	£2.0m
General & Admin and Fee	£0.1m	£1.3m
<b>Total</b>	<b>£1.6m</b>	<b>£14.7m</b>

### 4.2 Sensitivity Analysis

Risk and opportunity analysis has been undertaken on both the development phase (variation in development costs and delivery schedule) and Operational Phase (variation in benefits delivery profile and quantum). The chart below summarises the outputs from this analysis.

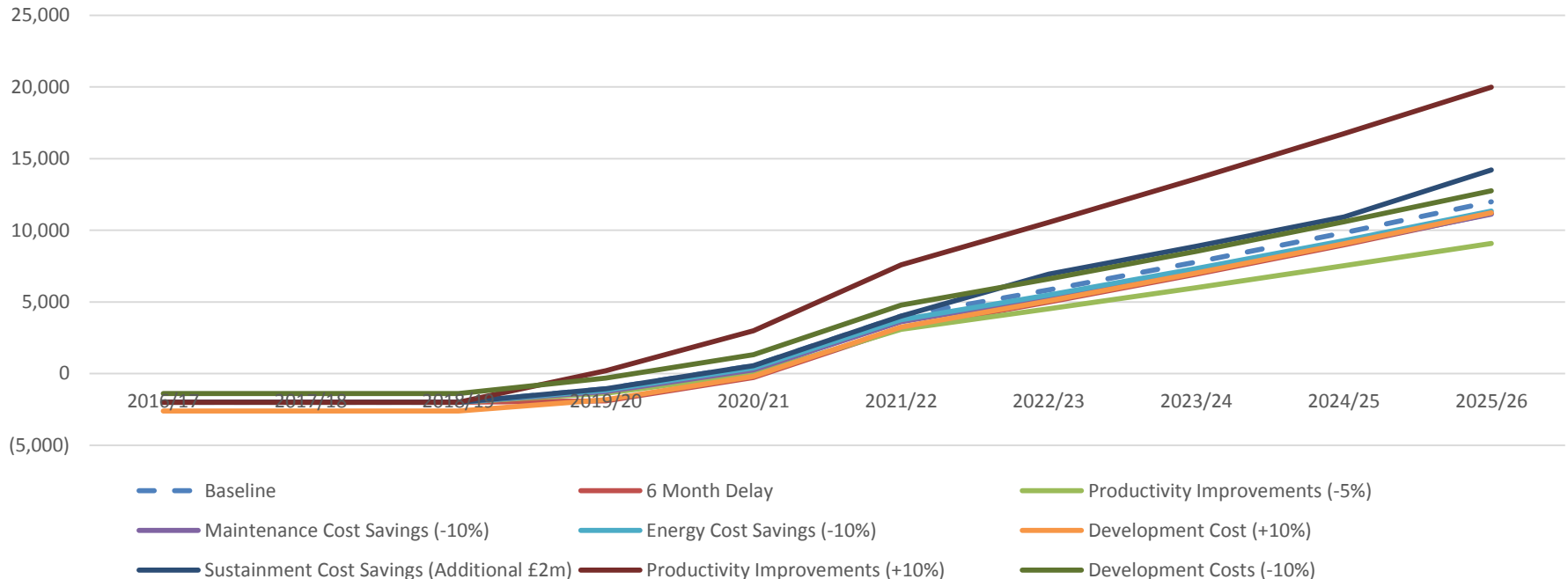


The basis for estimation, drawing on experience from other major programmes delivered within PNB, provides the team with a high level of confidence in Baseline projections. Overall, the risk and opportunity analysis demonstrates a net opportunity for the MoD to improve VfM beyond the Baseline plan.

### 4.3 Projected Timing and Quantum of Benefits

The chart below shows the cash flow implication for the MoD associated with implementation of the programme. The Baseline net benefit is £12m over 10 years. The range of expected benefits is between £8.5m and £20m. For the purpose of this analysis, MoD investment is limited to £2m on the basis that £2.2m of MoD estate sustainment funding (to address safety critical issues) would need to be incurred irrespective of whether the programme proceeds.

Workshops Programme Sensitivity Analysis (Cumulative MoD Cash Flows - £k)



## 5. Sources & Uses of Funds

### 5.1 Development Costs

The table opposite sets out development costs for the programme. Costs cover the design, delivery, fit-out and commissioning of the refurbishment and upgrade programme for the former shipbuilding steel production hall on Portsmouth Naval Base.

Development Costs	2016/17	2017/18	Total
Site Preparation	(2,247)	0	(2,247)
Safety Critical Works	(1,700)	(500)	(2,200)
Refresh of Plant & Machinery	(323)	(2)	(326)
Workshop Fit Out and Commissioning	(1,947)	(959)	(2,906)
IM&T & Security	(139)	(111)	(250)
Design and Programme Management	(797)	(341)	(1,138)
<b>Total</b>	<b>(7,154)</b>	<b>(1,913)</b>	<b>(9,067)</b>

### 5.2 Funding Plan

Funding is to be provided by MoD, BAE Systems and the Solent LEP. The table below sets out the planned quarterly drawdown profile. The plan proposes £4.2m (MoD) and £3m (BAE Systems) funding. £750,000 of Solent LEP funding has been committed under the Employer Ownership of Skills Fund. This Business Case requests approval for a further £1.05m (total commitment £1.8m) under the Local Growth Fund.

Proposed Quarterly Drawdown Profile	30-Jun-16	30-Sep-16	31-Dec-16	31-Mar-17	30-Jun-17	30-Sep-17	31-Dec-17	Total
Solent LEP Funding	594	254	579	373	-	-	-	1,800
MoD Improvement Funding	-	1,103	897	-	-	-	-	2,000
MoD Estate 'Sustainment' Funding	-	1,700	-	-	-	567	-	2,267
BAE Systems Funding	-	-	794	859	1,227	111	9	3,000
<b>Cumulative Funding Requirement</b>	<b>594</b>	<b>3,651</b>	<b>5,921</b>	<b>7,153</b>	<b>8,380</b>	<b>9,058</b>	<b>9,067</b>	<b>9,067</b>



## 6. Commercial Arrangements

### 6.1 Commercial Terms

The programme will be delivered by BAE Systems under the Maritime Support Delivery Framework (MSDF) contract held between the MOD and BAE Systems. BAE Systems will be responsible for documenting requirements, approval of the design, programme management of the works package and acceptance of the facility on behalf of the MoD.

All major works will be competed in accordance with MSDF contract conditions. To ensure the benefits of Solent LEP funding are not diluted, no fees or handling costs will be charged on the associated £1.8m of development costs.

Under the MSDF contract, all assets are owned by the MoD under a 'Government Owned, Contractor Operated' arrangement. It is proposed that BAE Systems' investment in the programme will be recovered from forecast operational savings over the period to March 2020. This ensures that the MoD has unencumbered title to the assets for the purpose of procuring the next generation contract.

### 6.2 Procurement Process

Following completion of a concept design, BAE Systems invited Expressions of Interest to six organisations to complete detailed design work in April 2016. Two companies have been down-selected, with appointment of the preferred design partner scheduled for July 2016. Upon completion of the detailed design work, a competitive process for the selection of delivery partners will commence, scheduled for Q3 2016.

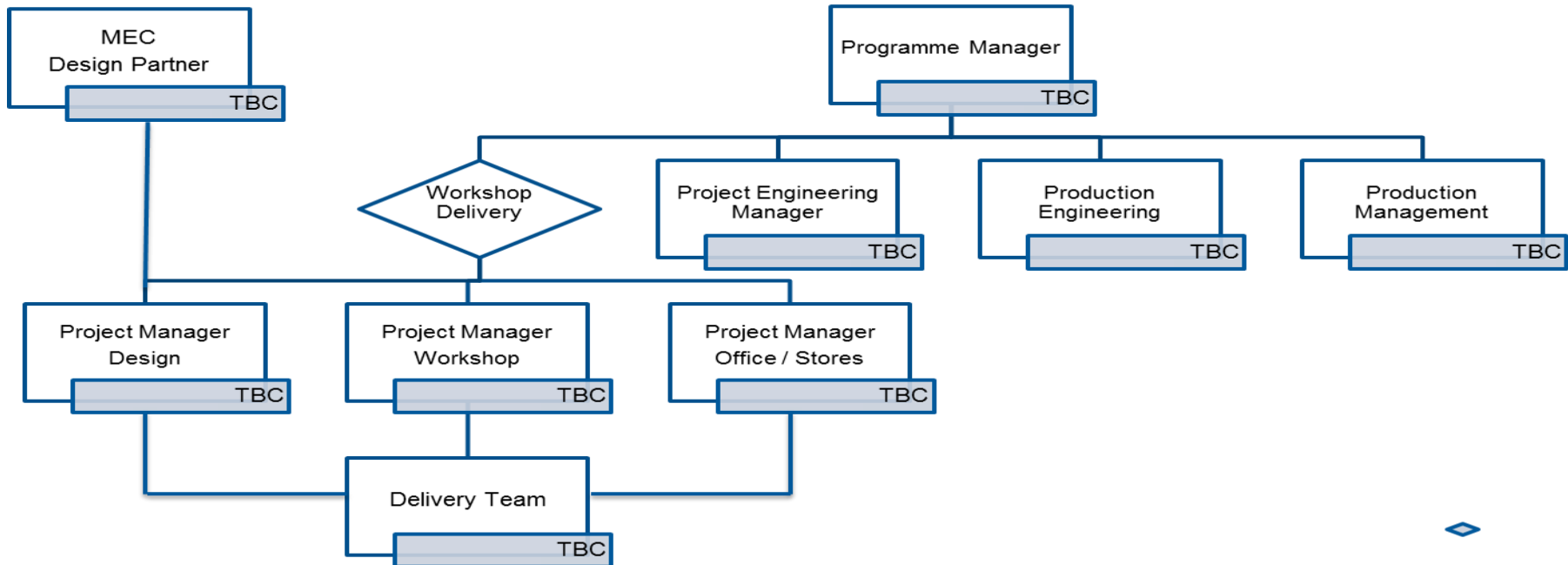
### *6.3 State Aid Considerations*

Investigations have been made into the State Aid implications of this project. BAE Systems has received a positive response from its legal advisers Pinsent Masons that the State funding for the project will fall within articles 56 of the General Block Exemption Regulations which relate to investment into local infrastructures.

# 7. Management Plan

## 7.1 Programme Management

BAE Systems will employ normal Life-Cycle Management processes, covering all aspects of the programme. An experienced programme manager was appointed in September 2015 to lead the programme. The chart below sets out the proposed team for delivery of the programme. Subject to securing funding approval, this team will be fully mobilised (4 full time roles) by the end of July 2016.



### *7.2 Quality & Safety Management*

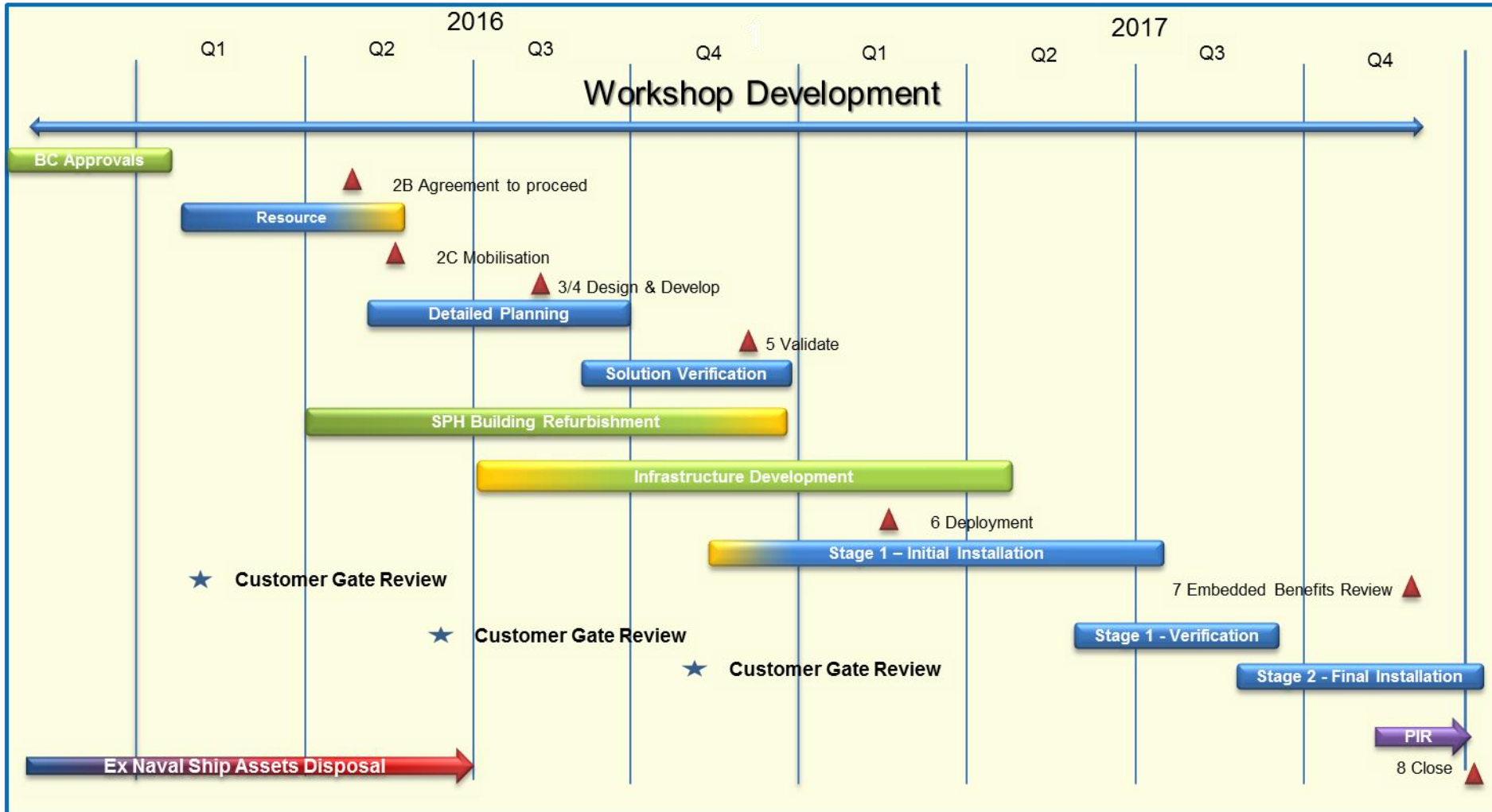
The programme will be subject to Construction Design Management (CDM) regulations. In addition, the programme will be subject to BAE Systems' quality and safety governance procedures for operations on Portsmouth Naval Base. A dedicated quality and safety advisor has been appointed to the programme.

### *7.3 Performance Management*

The programme will be subject to the normal MSDF contract performance management arrangements. Monthly reports will be reviewed by the MoD infrastructure Intelligent Customer Group. Overall performance will be monitored by the Portsmouth Operational Board, chaired by the Naval Base Commander (Portsmouth).

### *7.4 Level 0 Programme and Milestones*

The schematic on the next page sets out the Level 0 plan for programme delivery. Subject to approval of funding in July 2016, detailed design work will be completed by October 2016 allowing refurbishment and upgrade works to commence. The target date for completion is December 2017.



# Annex

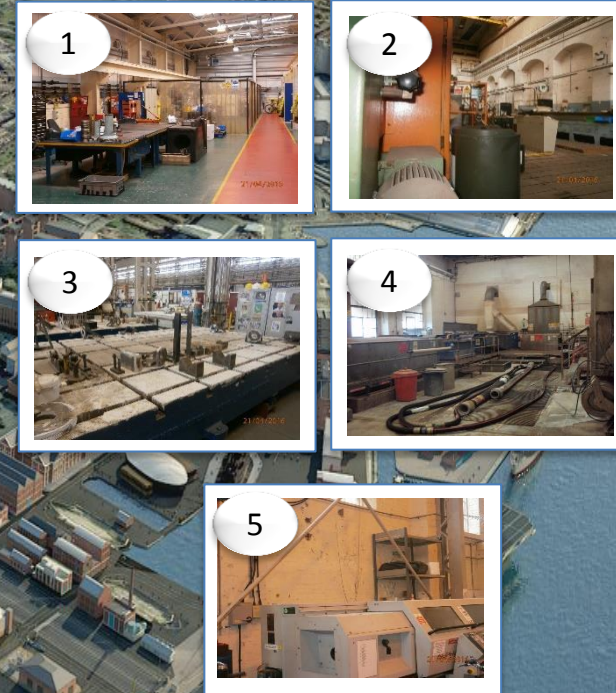
Programme overview and photos of the current and proposed facilities (material state issues to be addressed by the programme)



The programme involves the consolidation of 5 existing facilities into a new facility, utilising the former Steel Production Hall for shipbuilding operations.

## Rationale

- Addresses current and future requirements for Workshops
- Delivers 20% improvement in productivity
- Enables improvement in performance of Fleet Support programme (not quantified)
- Eliminates 'emergent work' risk associated with operation of existing 'Victorian' facilities
- Provides a modern training environment for marine engineers
- Improves safety environment for delivery of high risk operations

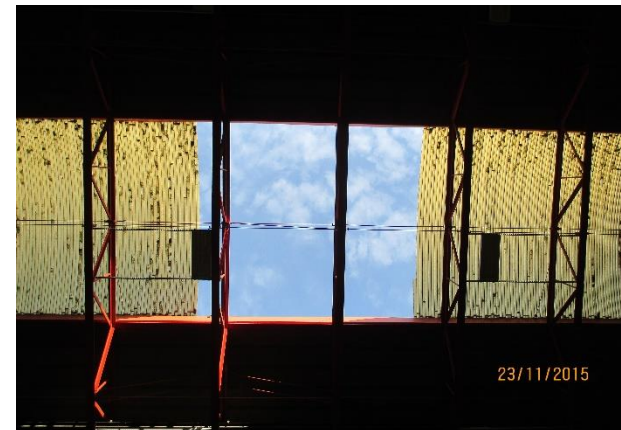


The schematic below shows the concept design for the refurbished and upgraded Steep Production Hall facility. This will be subject to change following completion of the detailed design in August 2016.





The photos below illustrate the poor material state of the former shipbuilding facilities to be utilised for this programme. As part of the programme, these issues will be addressed, providing a facility with 30 years life, to sustain engineering operations in support of the Portsmouth Fleet.



The photos below illustrate the poor material state of existing workshop facilities. In addition to high operating costs (maintenance and energy), use of these facilities acts as a barrier to attracting new employees (poor working environment), prevents implementation of productivity improvements (restrictions to layout and availability of services), does not provide a modern environment for Apprentice development and intensifies the ongoing safety risk for operators.

