

Pembroke Dock Marine - Evolution of the Business Case from City Deal Heads of Terms (March 2017)

	Submitted	Feedback Via	Summary of Feedback.
Version 2	14.08.17	Written Record submitted and addressed in V3 (See Answers to UK / WG Feedback 16.08.2018)	101 comments across submission. Review recognised the project not at formal FBC stage. More detail requested on how the project elements work together and a more robust. Full list of comments and responses included in Appendix K.
Version 3	08.08.2018	Regional Office Comments see Response Sheet 16.08. Version 4 in Appendix K). UK / WG Workshop held 29.09.2018.	Supplementary Information Produced and Submitted in December 2018 (see Appendix K) addressing comment summarised below. -Review of the current element deliverables for Pembroke Dock's Infrastructure from the HoT submission. -The provision of more information about how the Pembroke Dock Infrastructure element will minimise risk on the consenting with specific focus on the heritage assets within the former Royal Dockyard. - Provision of information in relation to alternative scenarios for Pembroke Port, if the residual impact of the preferred option on heritage assets is delayed or unacceptable. - Provision of additional information in relation to the Pembrokeshire Demonstration Zone (PDZ) element rationale from moving from an onshore build to a consenting only strategy within the 5-year timescale imposed on the project by the Swansea Bay City Region.
Version 4	29.03.2019	RO Feedback	Comments addressed in V05
ESB Review	NA	Meetings 26.02.2019 and 25.04.2019	Economic Strategy Board requested SWOT analysis for each element (see Appendix K).Comments focused on how the project would create legacy beyond the initial City Deal funding period, how the project would ensure long term links with academia and skills and a desire for more shared facilities to be included to support the needs of technology developers.
Version 5	28.05.2019	UK WG Workshop	Comments recorded and addressed in V06 (see appendix K)
Peer Review	30.09.2019	Feedback via report	Response to comments addressed in V06
Version 6	03.10.2019		

Table ES6: PDM costs								
Pembroke Dock Infrastructure (PDI)								
Costs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Totals
Capital		£680,271	£2,131,076	£4,509,906	£9,268,963	£17,067,926	£7,935,469	£41,593,611
Revenue								
Total		£680,271	£2,131,076	£4,509,906	£9,268,963	£17,067,926	£7,935,469	£41,593,611
Funded by:								
Catapult								
CCF								
City Deal			£1,260,800	£1,767,621	£3,800,000	£8,099,526	£6,622,053	£21,550,000
PoMH (Infrastructure)		£632,346	£360,000	£1,336,000	£2,427,090	£5,160,110	£630,572	£10,546,118
PoMH (Superstructure)			£50,000	£200,000	£750,000	£1,000,000	£500,000	£2,500,000
Private Sector								
WEFO		£47,925	£460,276	£1,206,285	£2,291,873	£2,808,290	£182,844	£6,997,493
OTHER								
Total	£0	£680,271	£2,131,076	£4,509,906	£9,268,963	£17,067,926	£7,935,469	£41,593,611
Marine Energy Test Area (META)								
Costs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Totals
Capital	39,823	45,927	83,703	84,783	85,895	78,703	0	418,833
Revenue	278,690	534,743	506,601	387,122	292,809	256,206	0	2,256,171
Total	318,513	580,670	590,304	471,904	378,704	334,909		2,675,004
Funded by:								
Catapult	0	0	0	0	0	0	0	0
CCF	75,000	150,000	75,000	0	0	0	0	300,000
City Deal	0	0	195,724	195,724	195,724	195,724	0	782,897
PoMH	0	0	0	0	0	0	0	0
Private Sector	0	0	0	0	0	0	0	0
WEFO	243,513	280,670	169,580	176,180	182,980	139,185	0	1,192,107
OTHER	0	150,000	150,000	100,000	0	0	0	400,000
Total	£318,513	£580,670	£590,304	£471,904	£378,704	£334,909	£0	£2,675,004
Marine Energy Engineering Centre of Excellence (MEECE)								
Costs	2017/18	2018/19	2019/20	2020/21	2021/21	2022/22	2023/24	Totals
Capital			£1,070,000	£600,000				£1,670,000
Revenue		£68,414	£1,353,637	£2,913,875	£2,461,632	£1,843,596	£869,588	£9,510,742
Total		£68,414	£2,423,637	£3,513,875	£2,461,632	£1,843,596	£869,588	£11,180,742
Funded by:								
Catapult		£23,691	£22,184	£394,587	£392,333	£167,114	£43,035	£1,042,944
CCF								£0
City Deal			£501,726	£920,715	£896,077	£1,286,156	£395,326	£4,000,000
PoMH								£0
Private Sector							£400,000	£400,000
WEFO		£44,469	£1,715,872	£1,965,337	£987,945	£286,377		£5,000,000
OTHER		£254	£183,854	£233,237	£185,277	£103,949	£31,226	£737,798
Total		£68,414	£2,423,637	£3,513,875	£2,461,632	£1,843,596	£869,588	£11,180,742
Pembrokeshire Demonstration Zone (PDZ)*								
Costs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Totals
Capital								
Revenue	£277,770	£98,919	£403,908	£2,163,610	£1,360,110	£543,988	£173,244	£5,021,549
Total	£277,770	£98,919	£403,908	£2,163,610	£1,360,110	£543,988	£173,244	£5,021,549
Funded by:								
Catapult								
CCF								
City Deal			£199,627	£701,874	£482,281	£196,934	£86,387	£1,667,103
PoMH								
WHL	£43,105	£18,360	£6,400	£9,600	£9,600	£41,728	£3,800	£132,593
Private Sector								
WEFO	£174,665	£80,559	£197,881	£1,452,136	£868,229	£305,326	£83,057	£3,161,853
OTHER	£60,000							£60,000
Total	£277,770	£98,919	£403,908	£2,163,610	£1,360,110	£543,988	£173,244	£5,021,549
PDI / META / MEECE / PDZ TOTALS								
Costs	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Totals
Capital	£39,823	£726,198	£3,284,779	£5,194,689	£9,354,858	£17,146,629	£7,935,469	£43,682,444
Revenue	£556,460	£702,076	£2,264,146	£5,464,607	£4,114,552	£2,643,790	£1,042,832	£16,788,462
Total	£596,283	£1,428,274	£5,548,924	£10,659,296	£13,469,409	£19,790,419	£8,978,300	£60,470,906
Funded by:								
Catapult	£0	£23,691	£22,184	£394,587	£392,333	£167,114	£43,035	£1,042,944
CCF	£75,000	£150,000	£75,000	£0	£0	£0	£0	£300,000
City Deal	£0	£0	£2,157,877	£3,585,934	£5,374,082	£9,778,341	£7,103,766	£28,000,000
PoMH	£0	£632,346	£410,000	£1,536,000	£3,177,090	£6,160,110	£1,130,572	£13,046,118
Private Sector	£0	£0	£0	£0	£0	£0	£400,000	£400,000
WEFO	£418,178	£453,623	£2,543,609	£4,799,938	£4,331,027	£3,539,177	£265,901	£16,351,453
Other	£103,105	£168,614	£340,254	£342,837	£194,877	£145,677	£35,026	£1,330,391
Total	£596,283	£1,428,274	£5,548,924	£10,659,296	£13,469,409	£19,790,419	£8,978,300	£60,470,906

Total Allocat #####

Annual

Payment £16,066,667 £16,066,667 £16,066,667 £16,066,667 £16,066,667 £16,066,667 £16,066,667 £16,066,667

PDM % 0.0% 0.0% 13.4% 22.3% 33.4% 60.9% 44.2%

£0

£112,466,667

24.9%

PDM IO 2: Successfully attracts £60m of additional inward investment from technology developers within the SBCR area by 2024.			
	Source	Value (£m)	Evidence
Technology Developers	Bombora WavePower	£10.5	Link Here Also see Bombora Letter of Support in Appendix D
	Marine Power Systems	£12.80	Link here Also see Letter of Support SBCR - MPS 2016 and MPS-Letter to PCC Leader - 27.11.2018 in Appendix D
	Simply Blue Energy	£8.5m - £10m	See Letter of Support March 2019 SBE + PPI and SBE Development Investment 2020 - 2023 in Appendix D
Total		£31.8 - £33.3	
% Target to Date		53%	

Table 6.5 PDI Targeted Revenue from SBCD Funded and Enabled outputs			
Output	Scenario		
	Low	Medium	High
Port Services (Laydown,	£219k	£647k	£1.19m
Net Rental	£163k	£189k	220k
Total	£382k	£863k	£1,412

PDM IO 4: MEECE / META successfully attain legacy through further project collaboration and Funding applications (targeting at least 2 per year in year 2, 3,4 and 5 (total 8))			
Project & Funding Source	Project & Funding Source	Summary	Value (£m)
SELKIE Interreg (Ireland Wales)	Approved	Selkie is a 3.5-year project that was formerly launched by Leslie Griffiths at Ocean Energy Europe in Dublin on September 30th. The project has 6 partners including Swansea University and Marine Energy Wales. The Port of Milford Haven sit on the Project's Steering Committee. The aims of the Selkie project are to: 1. Establish a cross-border network of Ocean Energy SMEs and supply chain companies; 2. Conduct industry-academic collaborative R&D projects; 3. Transfer R&D knowledge to wave and tidal industry/SME stakeholders, thereby advancing the technology sector as whole; 4. Assist Irish and Welsh SMEs to progress along the path to commercialisation	€4.2m / £3.72m
TIGER (Interreg Atlantic Area)	Application Submitted - Decision Expected Oct 2019	The Offshore Renewable Energy Catapult is leading the €46M, Interreg-funded Tidal Stream Industry Energiser Project (TIGER). TIGER will drive the growth of Tidal Stream Energy (TSE) in France & the UK, and accelerate the deployment of TSE in those regions, with significant economic benefits for coastal communities. Cambrian Offshore Limited, with registered offices in Wales, through TIGER, will invest €6.3M (€3.8M grant and €2.5M private) into the Ramsey Sound tidal site, once operated by Tidal Energy Limited, to bring that site back into full operation. This site could also benefit from revenue support through a Renewable Obligations Certificate, so bringing extra revenue into the region while it is generating. This will enhance the market attractiveness to the sector to use the PDM outputs especially MEECE, META and the new assets in PDI	€6.3m / £5.58m
MILFORD HAVEN: ENERGY KINGDOM ISCF Prospering from the Energy Revolution (Detailed Designs)	Application Submitted -	The project is a two year Front End Engineering Study commencing January 2020. The objective of Milford Haven: Energy Kingdom is to establish seed markets for use of hydrogen around the Milford Haven Waterway, by integrating a wide range of major energy facilities, renewable energy generators and energy consumers in the community, using a systems architecture that can be implemented with commercial-ready solutions and which focusses on underlying fundamentals and is therefore robust in the face of regulatory change.	£4,405
Southeast Clsuter Enhanceme nts	Expression of Interest Submitted.	The Port of Milford Haven are at early stage proposals in collaboration with the Sunderland Trust, PCC and The National Museum of the Royal Navy To create a new sense of place for Pembroke Dock with themes of maritime and	£6m
Total			19.7m

Table 6.3 Other funding breakdown per year

Source	2018/19	2019/20	2020/21	2021/22	2022/23	2023/2024	Total
Swansea Uni	£0	£96,832	£107,293	£93,365	£65,629	£11,710	£374,829
Bangor Uni	£0	£37,312	£26,049	£26,049	£9,185	£19,517	£118,110
Cardiff Uni	£254	£36,305	£81,827	£50,909	£23,277	£0	£192,572
Cardiff Met Uni	£0	£13,405	£18,068	£14,955	£5,859	£0	£52,286
META (TMF)	£150,000	£150,000	£100,000				£400,000
Welsh Govt	40,000	£20,000					£60,000
Wavehub Ltd	£19,500	£39,972	£4,400				£63,872
Total	£209,754	£393,826	£337,637	£185,277	£103,949	£31,226	£1,261,669

£1,261,669

Table ES1: Net additional operational jobs				
	Option 1	Option 2	Option 3	Option 4
B8: Storage	-	319	-	319
B1: Business	-	370	139	370
B2: General Industry	-	1,192	-	1,192
Net additional	0	1,881	139	1,881

1881

139

1881

Table ES2: Net additional GVA (£m 2018 prices)			
	Option 2	Option 3	Option 4
Annual GVA*	£73.50	£5.40	£73.50
Cumulative GVA	£343.40	£26.40	£343.40

Table ES3: costs and benefits (discounted, £m) ²			
	Option 2	Option 3	Option 4
Present Value Costs (including OB) ³	42.7	4.4	75.5
Present Value Benefits:	0	0	0
Land Value Uplift	0.177	0.004	0.177
Wage premium	78.8	6.5	81.1
Distributional benefits ¹	25.2	2	26
Environmental benefits	8.2	2.5	8.2
Total benefits	112.4	11.0	115.5
NPPV	69.7	6.7	40
BCR (adjusted)	2.63	2.52	1.53

Table ES4: Appraisal Summary Table (£000s)				
		Option 2	Option 3	Option 4
A	Present Value Benefits ^[1]	87.1	9	89.4
B	Present Value Costs / (Surplus)	42.7	4.4	75.5
C	Present Value of other quantified impacts	25.2	2.1	26
D	Net Present Public Value A-B	44.4	4.6	13.9
E	'Initial' Benefit-Cost Ratio [A/B]	2.04	2.05	1.18
F	'Adjusted' Benefit-Cost Ratio [A+C]/B	2.63	2.52	1.53
G	Significant Non-monetised impacts	Agglomeration benefits	-	Agglomeration benefits
H	Value for Money (VFM) Category	"High VFM"	"High VFM"	"Acceptable VFM"
I	Switching Values (BCR=1:1)	-62%	-60%	-35%
J	Financial Cost (undiscounted)	45	7.3	80.6
K	Risks	External influences	External influences	External influences

2.045455 1.184106

Table ES5 Costs, benefits and cost effectiveness			
	Option 2	Option 3	Option 4
Attributed total public sector economic costs (adjusted for optimism bias, £m)*			
Discounted public sector cost – economic	49.2	6.8	85
Benefits			
Net additional jobs	1,881	139	1,881
Net additional cumulative GVA (£m)	73.5	5.4	73.5
Cost effectiveness (attributed)			
Cost per net additional job	26,152	47,009	45,182
BCR (GVA:economic cost)	1.5	0.8	0.9

26156
1.548921
0.845189
0.9

	Option 1	Option 2	Option 3	Option 4
Costs (discounted)	£2.3 million	£45.1 million	£6.8 million	£77.8 million

	Option 1	Option 2	Option 3	Option 4
B8: Storage	-	20,584	-	20,584
B1: Business	-	4,100	1,600	4,100
B2: General Industry	-	35,945	-	35,945
Total	-	60,629	1,600	60,629

	Option 1	Option 2	Option 3	Option 4
B8: Storage	-	321	-	321
B1: Business	-	373	145	373
B2: General Industry	-	1,198	-	1,198
Total	-	1,892	145	1,892

	18/19	19/20	20/21	21/22	22/23	23/24	24/25	TOTAL
Option 2	-	699	-	-	697	227	269	1,892
Option 3	-	145	-	-	-	-	-	145
Option 4	-	699	277	697	269	-	-	1,942

	Option 1	Option 2	Option 3	Option 4
B8: Storage	-	319	-	319
B1: Business	-	370	139	370
B2: General Industry	-	1,192	-	1,192
Net additional	0	1,881	139	1,881

	Option 2	Option 3	Option 4
Annual GVA*	£73.5 million	£5.4 million	£73.5 million
Cumulative GVA	£343.4 million	£26.4 million	£343.4 million

	Option 2	Option 3	Option 4
Land value uplift	£177,240	£4,060	£177,240

	Option 2	Option 3	Option 4
Wage Premium	£78.8 million	£6.5 million	£81.1 million

	Bottom Quintile	Second Quintile	Middle Quintile	Fourth Quintile	Top Quintile
Wales	25%	22%	21%	19%	14%
Welfare Weight	2.416	1.442	1	0.693	0.415
	0.604	0.317	0.21	0.132	0.058
					1.32

	Option 2	Option 3	Option 4
Carbon Dioxide (CO ₂) savings	£8.2 million	£2.5 million	£8.2 million

	Option 2	Option 3	Option 4
Land Value Uplift	£0.177	£0.004	£0.177
Wage premium	78.8	6.5	81.1
Distributional benefits ¹	25.2	2	26
Environmental benefits	8.20	2.50	8.20
Total net external impact	112.4	11.0	115.5

	Option 2	Option 3	Option 4
Present Value Costs (including OB) ¹	42.7	4.4	75.5
Present Value Benefits			
Land Value Uplift	0.177	0.004	0.177
Wage premium	78.8	6.5	81.1
Distributional benefits ¹	25.2	2	26
Environmental benefits	8.2	2.5	8.2
Total benefits	112.4	11.0	115.5
NPPV	69.7	6.7	40
BCR (adjusted)	2.63	2.52	1.53

	Option 2	Option 3	Option 4	
A	Present Value Quantified¹	87.1	9	89.4
B	Present Value Costs / (Surplus)	42.7	4.4	75.5
C	Present Value of other quantified impacts	25.2	2.1	26
D	Net Present Public Value A-B	44.4	4.6	13.9
E	*Initial Benefit-Cost Ratio (A/B)	2.04	2.05	1.18
F	*Adjusted Benefit-Cost Ratio ((A-C)/B)	2.63	2.52	1.53
G	Significant Non-monetised impacts	Agglomeration benefits	-	Agglomeration benefits
H	Value for Money (VFM) Category	"High VFM"	"High VFM"	"Acceptable VFM"
I	Switching Values (BCR±1)	-62%	-60%	-35%
J	Financial Cost (undiscounted)	45	7.3	80.6
K	Risks	External influences	External influences	External influences

Based on Green Book principles and Green Book Supplementary and Departmental evidence

	Option 2	Option 3	Option 4
Attributed total public sector economic costs (adjusted for optimism bias, £m)*			
Discounted public sector cost – economic	49.2	6.8	85
Benefits			
Net additional jobs	1,881	139	1,881
Net additional cumulative GVA (£m)	74	5	74
Cost effectiveness (attributed)			
Cost per net additional job	26,152	47,009	45,182
BCR (GVA:economic costs)	1.50	0.80	0.90