

**DP2 : ARKLOW**

**Order of Magnitude Costing of a new port to replace the existing Dublin Port**

**Prepared by Programme Management Office, Dublin Port Company**

**Estimate components :**

- New port infrastructure**
- Buildings & Equipment**
- Land acquisition at new site**
- Capitalised environmental mitigation costs at new port**
- Acquisition of stakeholder interests in existing port to allow development**
- Remediation of existing port lands to allow development**

**Phasing of new port for costing purposes :**

- Phase 1 - 77m tonnes p.a. total throughput**
- Phase 2 - 134m tonnes p.a. total throughput**

**Cost Timebase :** **Q3 2020 (with no allowance for subsequent inflation)**

**October 2020**

**2.1 INTRODUCTION**

The following is an Order of Magnitude Estimate for constructing a new port at Arklow to provide a complete replacement for the existing Dublin Port. The ultimate port capacity would be 134m Tonnes p.a after Phase 2 completion. Phase 1, at 77m Tonnes capacity, mirrors the projected required capacity of the existing Dublin Port in the year 2040 - if Masterplan 2040 is completed. The conceptual design of the new port was developed iteratively from initial layouts which were refined through first stage hydraulic modelling so as to produce the final design for costing. No site investigation work has been undertaken.

Costings are based on prices current at Q3 2020, with no allowance for subsequent price inflation.

**2.2 ARKLOW : COST RANGE**

The following Cost Range provides an indicative Order of Magnitude.

Estimated Cost Range	Lower Range			Upper Range	
Phase 1	7.6	Billion	to	8.9	Billion
Phase 2	1.1	Billion	to	1.2	Billion
<b>Phase 1 &amp; 2</b>	<b>8.7</b>	<b>Billion</b>	<b>to</b>	<b>10.1</b>	<b>Billion</b>

**2.3 COST SUMMARY**

	PHASE 1	PHASE 2	TOTAL
NEW PORT INFRASTRUCTURE	€3.6 bn	€0.8 bn	€4.3 bn
BUILDINGS & EQUIPMENT	€0.9 bn	€0.1 bn	€1.0 bn
LAND ACQUISITION	€0.9 bn	€0.0 bn	€0.9 bn
REMEDICATION EXISTING PORT LAND	€0.7 bn	€0.0 bn	€0.7 bn
ENVIRONMENTAL MITIGATION (capitalised)	€0.1 bn	€0.0 bn	€0.1 bn
<b>SUB-TOTAL (excl Contingency)</b>	<b>€6.1 bn</b>	<b>€0.9 bn</b>	<b>€7.0 bn</b>
CONTINGENCY LOWER RANGE	€1.5 bn	€0.2 bn	€1.7 bn
<b>TOTAL LOWER RANGE</b>	<b>€7.6 bn</b>	<b>€1.1 bn</b>	<b>€8.7 bn</b>
CONTINGENCY UPPER RANGE	€2.8 bn	€0.4 bn	€3.2 bn
<b>TOTAL UPPER RANGE</b>	<b>€8.9 bn</b>	<b>€1.2 bn</b>	<b>€10.1 bn</b>

## 2.4 ASSUMPTIONS

Yards finish level +4m MSL / 5.03M CD

Assume dredged sand filled to level +3.4m MSL (300mm stone + 300mm Slab Finished Level to 4.0 MSL)

Ro Ro Quay allowed Rock Revetments with Jetties for docking

Assume dredge is uncontaminated and no treatment allowed before infilling

Assume sand can be dredged locally for infilling

Assume an average 50% of dredge for Basin and Berths will be rock

Assume no restrictions on rate of dredging per annum.

Buildings assume replication of existing with some capacity adjustments

Equipment assume replication of existing with addition of Shore to Ship Power and Automatic docking.

Assume remediation of existing Port Lands to a depth of 1M + raising existing levels by 1.0M for climate change.

Equipment assume half of the existing RTG, STS Cranes , Port Cranes can be relocated to new Port.

Cruise remains in existing Dublin Port.

	Qty	unit	Average Rate	Phase 1	Phase 2	TOTAL	Notes
<b>NEW PORT INFRASTRUCTURE</b>							
<b>PHASE 1</b>							
Enabling works	1	item	€233,120,153	€233,120,153		€233,120,153	
External Breakwater	9,150	m	€96,106	€879,374,002		€879,374,002	
Internal Revetments, permanent & temporary	5,600	m	€38,253	€214,219,122		€214,219,122	
Container Quay Wall Phase 1	1,200	m	€127,801	€153,361,561		€153,361,561	
Ro Ro Berth & Ramps Phase 1	1,450	m	€202,519	€293,652,283		€293,652,283	
Bulk Quay Walls Phase 1	900	m	€127,801	€115,021,171		€115,021,171	
Port Services Phase 1	100	m	€127,801	€12,780,130		€12,780,130	
Oil Berth Phase 1	600	m	€127,801	€76,680,781		€76,680,781	
Container Yard Phase 1	600,000	m2	€270	€162,162,178		€162,162,178	
Ro Ro Yard Phase 1	850,000	m2	€242	€205,311,648		€205,311,648	
Bulk Yard Phase 1	325,000	m2	€217	€70,687,465		€70,687,465	
Oil Berth Yard Phase 1	200,000	m2	€214	€42,848,903		€42,848,903	
Port & State Services Yard Phase 1	600,000	m2	€230	€138,179,296		€138,179,296	
Bulk Filling Phase 1	29,376,000	m3	€15	€438,044,748		€438,044,748	
Dredging Phase 1	5,011,410	m3	€27	€135,564,028		€135,564,028	
Roads Phase 1	12.8	km	€13,165,490	€167,860,000		€167,860,000	
Rail Phase 1	11.4	km	€10,685,825	€121,818,400		€121,818,400	
Environmental & Community Gain Costs				€90,000,000		€90,000,000	
<b>PHASE 2</b>							
Container Quay Wall Phase 2	1,200	m	€127,801		€153,361,561	€153,361,561	
Ro Ro Berth & Ramps Phase 2	580	m	€216,873		€125,786,417	€125,786,417	
Container Yard Phase 2	600,000	m2	€271		€162,306,450	€162,306,450	
Ro Ro Yard Phase 2	350,000	m2	€221		€77,197,757	€77,197,757	
Bulk Yard Phase 2	40,000	m2	€220		€8,800,616	€8,800,616	
Bulk Filling Phase 2	14,154,250	m3	€16		€220,227,971	€220,227,971	
Dredging Phase 2	236,700	m3	€27		€6,402,989	€6,402,989	
Roads Phase 2	0.6	km	€7,085,000		€4,251,000	€4,251,000	
Sub-Total - New Port Infrastructure				€3,550,685,867	€758,334,762	€4,309,020,629	
<b>BUILDINGS &amp; EQUIPMENT</b>							
Port Buildings				€136,426,308	€0	€136,426,308	
Port Equipment Phase 1				€197,611,550		€197,611,550	
Port Equipment Phase 2					€97,462,350	€97,462,350	
Stakeholder Buildings Replacement				€215,022,120	€0	€215,022,120	
Stakeholder Equipment Replacement				€77,385,000	€0	€77,385,000	
Stakeholder Oil & Gas Facilities				€299,750,000	€0	€299,750,000	
Sub-Total - Buildings & Equipment				€926,194,978	€97,462,350	€1,023,657,328	
<b>LAND ACQUISITION</b>							
New Port - Land costs less sale proceeds of existing Dublin Inland Port lands				€182,621,675	€0	€182,621,675	
Existing Port - Stakeholder Leases CPO							Existing Port Lands: cost of buying out existing stakeholder leases so as to get vacant possession. This assumes that at time of acquisition, existing port lands will have been, or will imminently be, rezoned to commercial/ residential. Benchmark price for calculation is the July '19 guide price of €10.4m per ha for the 15 ha Glass Bottle Site. Remediation cost was taken off site value at rate of €2.8m per ha (based on the overall estimate of remediation costs for the port lands). This benchmark price was then used in assessing acquisition costs of stakeholder sites with secure long term tenure. Other stakeholder sites were assessed on an individual basis.
Sub-Total - Land Acquisition				€866,296,675	€0	€866,296,675	
<b>REMEDIATION EXISTING PORT LAND</b>							
Existing Port - Site remediation	247	hectares	€2,843,723	€703,252,703	€0	€703,252,703	Assumptions:- Remediation of top layer across the site to a depth of 1M Building up levels to an average of 5.5m OD across site (1M additional imported fill) Includes a perimeter high L shaped wall to retain the material
Sub-Total - Remediation of Existing Port				€703,252,703	€0	€703,252,703	
<b>ENVIRONMENTAL MITIGATION (capitalised)</b>							
New Port - Liabilities - On-going Environmental Mitigation Measures				€73,000,000	N/A	€73,000,000	Environmental Conservation Measures - ongoing due to impact of port on natural coastal sediment movements. Ongoing OPEX of €2.9m p.a which capitalises to €73m at 4% discount rate. Capitalised sum incurred from date when southern breakwater completed.
Sub-Total - On-Going Liabilities				€73,000,000	€0	€73,000,000	
<b>NATIONAL INFRASTRUCTURE</b>							
National Infrastructure - National Roads Network Impact							Bringing forward of elements of the national roads programme due to impact of port traffic on N11/M11. Not allowed for in costs.
National Infrastructure - National Rail Network Impact							Bringing forward elements of improvement of national rail network to handle traffic from new port. Not allowed for in costs.
Sub-Total - National Infrastructure Impact				€0	€0	€0	
<b>TOTAL</b>				<b>€6,119,430,223</b>	<b>€855,797,112</b>	<b>€6,975,227,335</b>	

## ARKLOW : SUMMARY EXCLUDING CONTINGENCY

Summary Excluding Contingency	New Port Infrastructure	Buildings & Equipment	Land Acquisition	Remediation of Existing Port Land	On-going Liabilities (Capitalised)	Total
Phase 1	3,550,685,867	926,194,978	866,296,675	703,252,703	73,000,000	6,119,430,223
Phase 2	758,334,762	97,462,350	0	0	0	855,797,112
<b>Total Phase 1 &amp; 2</b>	<b>€4,309,020,629</b>	<b>€1,023,657,328</b>	<b>€866,296,675</b>	<b>€703,252,703</b>	<b>€73,000,000</b>	<b>€6,975,227,335</b>

## CONTINGENCY CALCULATION

Lower Range Contingency Allowance	New Port Infrastructure	Buildings & Equipment	Land Acquisition	Remediation of Existing Port Land	On-going Liabilities (Capitalised)	Total
Minimum Contingency Allowance	25%	25%	25%	25%	25%	
Phase 1	4,438,357,334	1,157,743,722	1,082,870,844	879,065,879	91,250,000	7,649,287,779
Phase 2	947,918,452	121,827,938	0	0	0	1,069,746,390
<b>Total Phase 1 &amp; 2</b>	<b>€5,386,275,787</b>	<b>€1,279,571,659</b>	<b>€1,082,870,844</b>	<b>€879,065,879</b>	<b>€91,250,000</b>	<b>8,719,034,169</b>

Upper Range Contingency Allowance	New Port Infrastructure	Buildings & Equipment	Land Acquisition	Remediation of Existing Port Land	On-going Liabilities (Capitalised)	Total
Maximum Contingency Allowance	45%	45%	45%	50%	45%	
Phase 1	5,148,494,508	1,342,982,717	1,256,130,179	1,054,879,054	105,850,000	8,908,336,459
Phase 2	1,099,585,405	141,320,408	0	0	0	1,240,905,812
<b>Total Phase 1 &amp; 2</b>	<b>€6,248,079,912</b>	<b>€1,484,303,125</b>	<b>€1,256,130,179</b>	<b>€1,054,879,054</b>	<b>€105,850,000</b>	<b>10,149,242,271</b>

Mid-point of Lower and Upper Contingency Allowance	New Port Infrastructure	Buildings & Equipment	Land Acquisition	Remediation of Existing Port Land	On-going Liabilities (Capitalised)	Total
Phase 1	€4,793,425,921	€1,250,363,220	€1,169,500,512	€966,972,467	€98,550,000	€8,278,812,119
Phase 2	€1,023,751,928	€131,574,173	€0	€0	€0	€1,155,326,101
<b>Total Phase 1 &amp; 2</b>	<b>€5,817,177,849</b>	<b>€1,381,937,392</b>	<b>€1,169,500,512</b>	<b>€966,972,467</b>	<b>€98,550,000</b>	<b>€9,434,138,220</b>

		Quantity	Rate	Phase 1	Phase 2
<b>ENABLING WORKS</b>					
Enabling works	Temporary Road from N11 to Shore, including lighting & services 12m wide	6,450 m	€2,000	€12,900,000	
Enabling works	Temporary Double Road Bridge Over Rail Tracks	1 nr	€5,000,000	€5,000,000	
Enabling works	Laydown Area	120,000 m2	€50	€6,000,000	
Enabling works	Marine Site Investigations	1 item	€15,000,000	€15,000,000	
Enabling works	Land Investigations	1 item	€5,000,000	€5,000,000	
Enabling works	ESB Substation & Connection for Permanent Works	1 item	€70,000,000	€70,000,000	
Enabling works	Allow for Sustainable Power Supply (wind Farm / Solar)	1 item	€25,000,000	€25,000,000	
Enabling works	Gas Connection & Infrastructure Upgrade for Permanent works	1 item	€15,000,000	€15,000,000	
Enabling works	Water Connection & Infrastructure Upgrade for Permanent Works	1 item	€15,000,000	€15,000,000	
Enabling works	Fibre / Telephone Services Connection & Infrastructure Upgrade	1 item	€10,000,000	€10,000,000	
Enabling works	Foul & Surface Water Connection & Infrastructure Upgrade	1 item	€15,000,000	€15,000,000	
<b>Contractor Preliminaries</b>					
Enabling works	Allow for Management and Preliminaries	10.00%	€193,900,000	€19,390,000	
Enabling works	PSCS	0.30%	€193,900,000	€581,700	
<b>Design &amp; Management</b>					
Enabling works	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%	€213,871,700	€19,248,453	
<b>EXTERNAL BREAKWATER</b>					
External Breakwater	North Breakwater	1,550 m	€40,146	€62,226,890	
External Breakwater	South Breakwater	2,200 m	€44,028	€96,861,160	
External Breakwater	Entrance Breakwater	3,400 m	€146,400	€497,760,000	
External Breakwater	Outer basin Revetments	2,000 m	€37,290	€74,580,000	
External Breakwater	Breakwater Channel Entrance			Included with Inner Revetment	
<b>Contractor Preliminaries</b>					
External Breakwater	Allow for Management and Preliminaries	10.00%	€731,428,050	€73,142,805	
External Breakwater	PSCS	0.30%	€731,428,050	€2,194,284	
<b>Design &amp; Management</b>					
External Breakwater	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%	€806,765,139	€72,608,863	
<b>INTERNAL BREAKWATER</b>					
Internal Revetments, permanent & temporary	Internal Breakwater	5,600 m	€31,818	€178,178,880	
<b>Contractor Preliminaries</b>					
Internal Revetments, permanent & temporary	Allow for Management and Preliminaries	10.00%	€178,178,880	€17,817,888	
Internal Revetments, permanent & temporary	PSCS	0.30%	€178,178,880	€534,537	
<b>Design &amp; Management</b>					
Internal Revetments, permanent & temporary	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%	€196,531,305	€17,687,817	
<b>CONTAINER QUAY WALL PHASE 1</b>					
Container Quay Wall Phase 1	Tubular Quay Wall, Crane Rail support Beam, 30m wide Slab	1,200 m	€106,300	€127,560,000	
<b>Contractor Preliminaries</b>					
Container Quay Wall Phase 1	Allow for Management and Preliminaries	10.00%	€127,560,000	€12,756,000	
Container Quay Wall Phase 1	PSCS	0.30%	€127,560,000	€382,680	
<b>Design &amp; Management</b>					
Container Quay Wall Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%	€140,698,680	€12,662,881	
<b>RO RO BERTH &amp; RAMPS PHASE 1</b>					
Ro Ro Berth & Ramps Phase 1	Ro Ro Area Int Breakwater Type A2	1,000 m	€30,010	€30,010,200	
Ro Ro Berth & Ramps Phase 1	Ro Ro Jetty similar to Holyhead	5 nr	€20,100,000	€100,500,000	
Ro Ro Berth & Ramps Phase 1	Ro Ro Ramps 2nr + support Piles and concrete ramp (2 nr Single)	3 nr	€14,900,000	€44,700,000	
Ro Ro Berth & Ramps Phase 1	Ro Ro Ramps 2nr + support Piles and concrete ramp (2nr Double + ramps)	2 nr	€34,519,000	€69,038,000	
<b>Contractor Preliminaries</b>					
Ro Ro Berth & Ramps Phase 1	Allow for Management and Preliminaries	10.00%	€244,248,200	€24,424,820	
Ro Ro Berth & Ramps Phase 1	PSCS	0.30%	€244,248,200	€732,745	
<b>Design &amp; Management</b>					
Ro Ro Berth & Ramps Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%	€269,405,765	€24,246,519	
<b>BULK QUAY WALLS PHASE 1</b>					
Bulk Quay Walls Phase 1	Tubular Quay Wall, Crane Rail support Beam, 30m wide Slab	900 m	€106,300	€95,670,000	
<b>Contractor Preliminaries</b>					
Bulk Quay Walls Phase 1	Allow for Management and Preliminaries	10.00%	€95,670,000	€9,567,000	
Bulk Quay Walls Phase 1	PSCS	0.30%	€95,670,000	€287,010	
<b>Design &amp; Management</b>					
Bulk Quay Walls Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%	€105,524,010	€9,497,161	

		Quantity		Rate	Phase 1	Phase 2
	<b>PORT SERVICES</b>					
Port Services Phase 1	Tubular Quay Wall, Crane Rail support Beam, 30m wide Slab	100 m		€106,300	€10,630,000	
Port Services Phase 1						
Port Services Phase 1	<b>Contractor Preliminaries</b>					
Port Services Phase 1	Allow for Management and Preliminaries	10.00%		€10,630,000	€1,063,000	
Port Services Phase 1	PSCS	0.30%		€10,630,000	€31,890	
Port Services Phase 1						
Port Services Phase 1	<b>Design &amp; Management</b>					
Port Services Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€11,724,890	€1,055,240	
	<b>OIL BERTH</b>					
Oil Berth Phase 1	Tubular Quay Wall, Crane Rail support Beam, 30m wide Slab	600 m		€106,300	€63,780,000	
Oil Berth Phase 1						
Oil Berth Phase 1	<b>Contractor Preliminaries</b>					
Oil Berth Phase 1	Allow for Management and Preliminaries	10.00%		€63,780,000	€6,378,000	
Oil Berth Phase 1	PSCS	0.30%		€63,780,000	€191,340	
Oil Berth Phase 1						
Oil Berth Phase 1	<b>Design &amp; Management</b>					
Oil Berth Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€70,349,340	€6,331,441	
	<b>CONTAINER YARD PHASE 1</b>					
Container Yard Phase 1	Container Yard RTG Yard	600,000 m2		€221	€132,600,000	
Container Yard Phase 1	Site Enclosures	3,800 m		€600	€2,280,000	
Container Yard Phase 1						
Container Yard Phase 1	<b>Contractor Preliminaries</b>					
Container Yard Phase 1	Allow for Management and Preliminaries	10.00%		€134,880,000	€13,488,000	
Container Yard Phase 1	PSCS	0.30%		€134,880,000	€404,640	
Container Yard Phase 1						
Container Yard Phase 1	<b>Design &amp; Management</b>					
Container Yard Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€148,772,640	€13,389,538	
	<b>RO RO YARD PHASE 1</b>					
Ro Ro Yard Phase 1	Yard allow 300mm thick Yard	850,000 m2		€171	€145,350,000	
Ro Ro Yard Phase 1	Level Land Element of Site - Cut, Fill & Berm Site					
Ro Ro Yard Phase 1	40M difference in 600M - assume stone quarried for Breakwater	580,000 m2		€40	€23,200,000	
Ro Ro Yard Phase 1	Site Enclosures	3,700 m		€600	€2,220,000	
Ro Ro Yard Phase 1						
Ro Ro Yard Phase 1	<b>Contractor Preliminaries</b>					
Ro Ro Yard Phase 1	Allow for Management and Preliminaries	10.00%		€170,770,000	€17,077,000	
Ro Ro Yard Phase 1	PSCS	0.30%		€170,770,000	€512,310	
Ro Ro Yard Phase 1						
Ro Ro Yard Phase 1	<b>Design &amp; Management</b>					
Ro Ro Yard Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€188,359,310	€16,952,338	
	<b>BULK YARD PHASE 1</b>					
Bulk Yard Phase 1	Yard allow 300mm thick Yard	325,000 m2		€171	€55,575,000	
Bulk Yard Phase 1	Level Land Element of Site - Cut, Fill & Berm Site					
Bulk Yard Phase 1	Site Enclosures	50,000 m2		€20	€1,000,000	
Bulk Yard Phase 1		3,700 m		€600	€2,220,000	
Bulk Yard Phase 1						
Bulk Yard Phase 1	<b>Contractor Preliminaries</b>					
Bulk Yard Phase 1	Allow for Management and Preliminaries	10.00%		€58,795,000	€5,879,500	
Bulk Yard Phase 1	PSCS	0.30%		€58,795,000	€176,385	
Bulk Yard Phase 1						
Bulk Yard Phase 1	<b>Design &amp; Management</b>					
Bulk Yard Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€64,850,885	€5,836,580	
	<b>OIL BERTH YARD</b>					
Oil Berth Yard Phase 1	Yard allow 300mm thick Yard	200,000 m2		€171	€34,200,000	
Oil Berth Yard Phase 1	Site Enclosures	2,400 m		€600	€1,440,000	
Oil Berth Yard Phase 1						
Oil Berth Yard Phase 1	<b>Contractor Preliminaries</b>					
Oil Berth Yard Phase 1	Allow for Management and Preliminaries	10.00%		€35,640,000	€3,564,000	
Oil Berth Yard Phase 1	PSCS	0.30%		€35,640,000	€106,920	
Oil Berth Yard Phase 1						
Oil Berth Yard Phase 1	<b>Design &amp; Management</b>					
Oil Berth Yard Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€39,310,920	€3,537,983	
	<b>PORT SERVICES &amp; STATE SERVICES YARD</b>					
Port & State Services Yard Phase 1	Yard allow 300mm thick Yard	40,000 m2		€171	€6,840,000	
Port & State Services Yard Phase 1	Site Enclosures	800 m		€600	€480,000	
Port & State Services Yard Phase 1						
Port & State Services Yard Phase 1	<b>STATE SERVICES YARD</b>					
Port & State Services Yard Phase 1	Level Land Element of Site - Cut, Fill & Berm Site					
Port & State Services Yard Phase 1	20M difference in 500M - assume stone can be used in Breakwaters	460,000 m2		€20	€9,200,000	
Port & State Services Yard Phase 1	Yard allow 300mm thick Yard - 46ha (60ha in total)	410,000 m2		€171	€70,110,000	
Port & State Services Yard Phase 1	Site Enclosures	2,920 m		€600	€1,752,000	
Port & State Services Yard Phase 1	Yard outside Port Area - allow 300mm thick Yard - 15ha (60ha in total)	150,000 m2		€171	€25,650,000	
Port & State Services Yard Phase 1	Site Enclosures	1,500 m		€600	€900,000	
Port & State Services Yard Phase 1						
Port & State Services Yard Phase 1	<b>Contractor Preliminaries</b>					
Port & State Services Yard Phase 1	Allow for Management and Preliminaries	10.00%		€114,932,000	€11,493,200	
Port & State Services Yard Phase 1	PSCS	0.30%		€114,932,000	€344,796	
Port & State Services Yard Phase 1						
Port & State Services Yard Phase 1	<b>Design &amp; Management</b>					
Port & State Services Yard Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€126,769,996	€11,409,300	

		Quantity		Rate	Phase 1	Phase 2
	<b>BULK FILLING PHASE 1</b>					
Bulk Filling Phase 1	Dredging sand locally (less Dredging for Basin & Channel + Rock as difficult to transfer from dredger to infill areas)	26,870,295	m3	€5.00	€134,351,475	
Bulk Filling Phase 1	Transporting (less Dredging for Basin & Channel)	26,870,295	m3	€2.00	€53,740,590	
Bulk Filling Phase 1	Drying, Filling & Double handling	29,376,000	m3	€3.00	€88,128,000	
Bulk Filling Phase 1	Levelling and Compacting	29,376,000	m3	€3.00	€88,128,000	
Bulk Filling Phase 1	<b>Contractor Preliminaries</b>					
Bulk Filling Phase 1	Allow for Management and Preliminaries	10.00%		€364,348,065	€36,434,807	
Bulk Filling Phase 1	PSCS	0.30%		€364,348,065	€1,093,044	
Bulk Filling Phase 1	<b>Design &amp; Management</b>					
Bulk Filling Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€401,875,916	€36,168,832	
	<b>DREDGING PHASE 1</b>					
Dredging Phase 1	Dredging Basin to -12 (-12.5)	4,604,910	m3	€5.00	€23,024,550	
Dredging Phase 1	Dredging Container and Bulk Berths to -14 (-14.5)	406,500	m3	€5.00	€2,032,500	
Dredging Phase 1	Dredging channel Entrance	0	m3	€5.00	€0	
Dredging Phase 1	Transporting - Pump from Dredger - Included	5,011,410	m3	€0.00	€0	
Dredging Phase 1	Extra over Rock excavation - allow 50%	2,505,705	m3	€35.00	€87,699,675	
Dredging Phase 1	<b>Contractor Preliminaries</b>					
Dredging Phase 1	Allow for Management and Preliminaries	10.00%		€112,756,725	€11,275,673	
Dredging Phase 1	PSCS	0.30%		€112,756,725	€338,270	
Dredging Phase 1	<b>Design &amp; Management</b>					
Dredging Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€124,370,668	€11,193,360	
	<b>ROADS PHASE 1</b>					
Roads Phase 1	Dual Carriageways on reclaimed land	5.9	km	€6,500,000	€38,350,000	
Roads Phase 1	Dual Carriageways on main land	6.9	km	€9,000,000	€61,650,000	
Roads Phase 1	Road Bridge Over Existing Rail Tracks	2	nr	€15,000,000	€30,000,000	
Roads Phase 1	Pedestrian Bridge Over Existing Rail Tracks	2	nr	€2,000,000	€4,000,000	
Roads Phase 1	Connection to existing Motorway connection	1	item	€20,000,000	€20,000,000	
Roads Phase 1	<b>Design &amp; Management</b>					
Roads Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€154,000,000	€13,860,000	
	<b>RAIL PHASE 1</b>					
Rail Phase 1	Single Rail Line on reclaimed land	6.4	km	€3,400,000	€21,760,000	
Rail Phase 1	Single Rail Line on land	5.0	km	€4,000,000	€20,000,000	
Rail Phase 1	Rail switch existing line	2	nr	€500,000	€1,000,000	
Rail Phase 1	Rail switch new line	4	nr	€250,000	€1,000,000	
Rail Phase 1	Road Bridge Over New Rail Tracks	4	nr	€15,000,000	€60,000,000	
Rail Phase 1	Pedestrian Bridge Over New Rail Tracks	4	nr	€2,000,000	€8,000,000	
Rail Phase 1	<b>Design &amp; Management</b>					
Rail Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€111,760,000	€10,058,400	



		Quantity		Rate	Phase 1	Phase 2
	<b>PHASE 2</b>					
	<b>CONTAINER QUAY WALL PHASE 2</b>					
Container Quay Wall Phase 2	Tubular Quay Wall, Crane Rail support Beam, 30m wide Slab	1,200	m	€106,300		€127,560,000
Container Quay Wall Phase 2						
Container Quay Wall Phase 2	<b>Contractor Preliminaries</b>					
Container Quay Wall Phase 2	Allow for Management and Preliminaries	10.00%		€127,560,000		€12,756,000
Container Quay Wall Phase 2	PSCS	0.30%		€127,560,000		€382,680
Container Quay Wall Phase 2						
Container Quay Wall Phase 2	<b>Design &amp; Management</b>					
Container Quay Wall Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€140,698,680		€12,662,881
	<b>RO RO BERTH &amp; RAMPS PHASE 2 (assume 2 Jetties on the 500m)</b>					
Ro Ro Berth & Ramps Phase 2	Ro Ro Area Int Breakwater Type A2	500	m	€30,010		€15,005,100
Ro Ro Berth & Ramps Phase 2	Ro Ro Jetty similar to Holyhead	2	nr	€20,100,000		€40,200,000
Ro Ro Berth & Ramps Phase 2	Ro Ro Ramps 2nr + support Piles and concrete ramp (2 nr Single)	1	nr	€14,900,000		€14,900,000
Ro Ro Berth & Ramps Phase 2	Ro Ro Ramps 2nr + support Piles and concrete ramp (2nr Double + ramps)	1	nr	€34,519,000		€34,519,000
Ro Ro Berth & Ramps Phase 2						
Ro Ro Berth & Ramps Phase 2	<b>Contractor Preliminaries</b>					
Ro Ro Berth & Ramps Phase 2	Allow for Management and Preliminaries	10.00%		€104,624,100		€10,462,410
Ro Ro Berth & Ramps Phase 2	PSCS	0.30%		€104,624,100		€313,872
Ro Ro Berth & Ramps Phase 2						
Ro Ro Berth & Ramps Phase 2	<b>Design &amp; Management</b>					
Ro Ro Berth & Ramps Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€115,400,382		€10,386,034
	<b>BULK QUAY WALLS PHASE 2</b>					
Bulk Quay Walls Phase 2	Tubular Quay Wall, Crane Rail support Beam, 30m wide Slab	0	m	€106,300		€0
Bulk Quay Walls Phase 2						
Bulk Quay Walls Phase 2	<b>Contractor Preliminaries</b>					
Bulk Quay Walls Phase 2	Allow for Management and Preliminaries	10.00%		€0		€0
Bulk Quay Walls Phase 2	PSCS	0.30%		€0		€0
Bulk Quay Walls Phase 2						
Bulk Quay Walls Phase 2	<b>Design &amp; Management</b>					
Bulk Quay Walls Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€0		€0
	<b>CONTAINER YARD PHASE 2</b>					
Container Yard Phase 2	Container Yard RTG Yard	600,000	m2	€221		€132,600,000
Container Yard Phase 2	Site Enclosures	4,000	m	€600		€2,400,000
Container Yard Phase 2						
Container Yard Phase 2	<b>Contractor Preliminaries</b>					
Container Yard Phase 2	Allow for Management and Preliminaries	10.00%		€135,000,000		€13,500,000
Container Yard Phase 2	PSCS	0.30%		€135,000,000		€405,000
Container Yard Phase 2						
Container Yard Phase 2	<b>Design &amp; Management</b>					
Container Yard Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€148,905,000		€13,401,450
	<b>RO RO YARD PHASE 2</b>					
Ro Ro Yard Phase 2	Yard allow 300mm thick Yard	350,000	m2	€171		€59,850,000
Ro Ro Yard Phase 2	Level Land Element of Site - Cut, Fill & Berm Site					
Ro Ro Yard Phase 2	20M difference in 500M - assume stone can be used in Breakwaters	140,000	m2	€20		€2,800,000
Ro Ro Yard Phase 2	Site Enclosures	2,600	m	€600		€1,560,000
Ro Ro Yard Phase 2						
Ro Ro Yard Phase 2	<b>Contractor Preliminaries</b>					
Ro Ro Yard Phase 2	Allow for Management and Preliminaries	10.00%		€64,210,000		€6,421,000
Ro Ro Yard Phase 2	PSCS	0.30%		€64,210,000		€192,630
Ro Ro Yard Phase 2						
Ro Ro Yard Phase 2	<b>Design &amp; Management</b>					
Ro Ro Yard Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€70,823,630		€6,374,127
	<b>BULK YARD PHASE 2</b>					
Bulk Yard Phase 2	Yard allow 300mm thick Yard	40,000	m2	€171		€6,840,000
Bulk Yard Phase 2	Site Enclosures	800	m	€600		€480,000
Bulk Yard Phase 2						
Bulk Yard Phase 2	<b>Contractor Preliminaries</b>					
Bulk Yard Phase 2	Allow for Management and Preliminaries	10.00%		€7,320,000		€732,000
Bulk Yard Phase 2	PSCS	0.30%		€7,320,000		€21,960
Bulk Yard Phase 2						
Bulk Yard Phase 2	<b>Design &amp; Management</b>					
Bulk Yard Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€8,073,960		€726,656
	<b>BULK FILLING PHASE 2</b>					
Bulk Filling Phase 2	Dredging sand locally (less Dredging for Basin & Channel + Rock as difficult to transfer from dredger to infill areas)	14,035,900	m3	€5.00		€70,179,500
Bulk Filling Phase 2	Transporting (less Dredging for Basin & Channel)	14,035,900	m3	€2.00		€28,071,800
Bulk Filling Phase 2	Filling & Double handling	14,154,250	m3	€3.00		€42,462,750
Bulk Filling Phase 2	Levelling and Compacting	14,154,250	m3	€3.00		€42,462,750
Bulk Filling Phase 2						
Bulk Filling Phase 2	<b>Contractor Preliminaries</b>					
Bulk Filling Phase 2	Allow for Management and Preliminaries	10.00%		€183,176,800		€18,317,680
Bulk Filling Phase 2	PSCS	0.30%		€183,176,800		€549,530
Bulk Filling Phase 2						
Bulk Filling Phase 2	<b>Design &amp; Management</b>					
Bulk Filling Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€202,044,010		€18,183,961

		Quantity		Rate	Phase 1	Phase 2
	<b>DREDGING PHASE 2</b>					
Dredging Phase 2	Dredging Container and Bulk Berths to -14 (-14.5)	236,700	m3	€5.00		€1,183,500
Dredging Phase 2	Transporting to infill areas	236,700	m3	€0.00		€0
Dredging Phase 2	Extra over Rock excavation - allow 50%	118,350	m3	€35.00		€4,142,250
Dredging Phase 2	<b>Contractor Preliminaries</b>					
Dredging Phase 2	Allow for Management and Preliminaries	10.00%		€5,325,750		€532,575
Dredging Phase 2	PSCS	0.30%		€5,325,750		€15,977
Dredging Phase 2	<b>Design &amp; Management</b>					
Dredging Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€5,874,302		€528,687
	<b>ROADS PHASE 2</b>					
Roads Phase 2	Dual Carriageways on reclaimed land	0.6	km	€6,500,000		€3,900,000
Roads Phase 2	<b>Design &amp; Management</b>					
Roads Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%		€3,900,000		€351,000
	<b>ENVIRONMENTAL &amp; COMMUNITY GAIN COSTS</b>					
Environmental & Community Gain Costs	Environmental Conservation Measures (RPS)					
Environmental & Community Gain Costs	Community Gain	1	item	€30,000,000	€30,000,000	
Environmental & Community Gain Costs	Environmental Monitoring Programmes during Construction	1	item	€15,000,000	€15,000,000	
Environmental & Community Gain Costs	Compensate loss of local fishing grounds (potting)	1	item	€5,000,000	€5,000,000	
Environmental & Community Gain Costs	Landscaping cycle and pedestrian pathways including appropriate setting of archaeology sites	1	item	€15,000,000	€15,000,000	
Environmental & Community Gain Costs	Additional water treatment at Arklow	1	item	€15,000,000	€15,000,000	
Environmental & Community Gain Costs	Enhancement works to nearby beaches	1	item	€10,000,000	€10,000,000	
Environmental & Community Gain Costs	Section 49 or equivalent Contributions, Assume not required as this is National Infrastructure and Section 48 is a contribution towards public infrastructure and facilities benefiting development in the area of the planning authority.				Assume not required	
	<b>PORT BUILDINGS</b>					
Port Buildings	Port Centre Office (increase by 25% To allow 2040 increase in capacity)	6,813	m2	€4,500		€30,656,250
Port Buildings	Port Engineering/ Maintenance Facilities - Office	1,500	m2	€3,500		€5,250,000
Port Buildings	Port Engineering/ Maintenance Facilities - workshop	1,750	m2	€1,500		€2,625,000
Port Buildings	Port Harbour Office (increase by 50% To allow 2040 increase in capacity)	750	m2	€3,500		€2,625,000
Port Buildings	Port Terminal 1 Building (increase by 35% To allow 2040 increase in capacity)	4,320	m2	€5,500		€23,760,000
Port Buildings	Port Terminal 2 Building (increase by 35% To allow 2040 increase in capacity)	2,106	m2	€5,500		€11,583,000
Port Buildings	Port Terminal 3 Building (increase by 35% To allow 2040 increase in capacity)	675	m2	€5,500		€3,712,500
Port Buildings	Check-in Facilities Terminal 1, Booths, Weighbridges, Security infrastructure , Inspection sheds	1	item	€7,500,000		€7,500,000
Port Buildings	Check-in Facilities Terminal 2	1	item	€7,500,000		€7,500,000
Port Buildings	Check-in Facilities Terminal 3	1	item	€7,500,000		€7,500,000
Port Buildings	Additional Customs Facilities	1	item	€15,000,000		€15,000,000
Port Buildings	Additional Garda Facilities	1	item	€2,000,000		€2,000,000
Port Buildings	Fire Engine Building	1,000	m2	€2,000		€2,000,000
Port Buildings	Driver Welfare Facilities	500	m2	€2,500		€1,250,000
Port Buildings	Seafarer Facilities	400	m2	€3,000		€1,200,000
Port Buildings	Lighthouses , 2 nr at Port entrance Only	2	nr	€500,000		€1,000,000
Port Buildings	<b>Design &amp; Management</b>					
Port Buildings	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%			€11,264,558	€0

		Quantity		Rate	Phase 1	Phase 2
<b>PORT EQUIPMENT PHASE 1</b>						
Port Equipment Phase 1	<u>Cathodic Protection (€5k / m of quay wall approx.)</u>					
Port Equipment Phase 1	Container Quay				€6,000,000	
Port Equipment Phase 1	Ro Ro Quay				€15,000,000	
Port Equipment Phase 1	Bulk Quay				€4,500,000	
Port Equipment Phase 1	Port Services Quay				€500,000	
Port Equipment Phase 1	Oil Services Quay				€1,500,000	
<u>Automatic Docking Facilities (€22k per m) - Enhancement based on 2016 operations</u>						
Port Equipment Phase 1	Container Quay				€26,400,000	
Port Equipment Phase 1	Ro Ro Quay				€55,000,000	
Port Equipment Phase 1	Bulk Quay				€19,800,000	
Port Equipment Phase 1	Port Services Quay				€2,200,000	
Port Equipment Phase 1	Oil Services Quay				€6,600,000	
<u>Shore Crane - Panzer P2B / Channel / Fixing Strips, approximately €450 per metre (Cavotec), Enhancement based on 2016 operations</u>						
Port Equipment Phase 1	Container Quay				€540,000	
Port Equipment Phase 1	Ro Ro Quay				N/A	
Port Equipment Phase 1	Bulk Quay				€405,000	
Port Equipment Phase 1	Port Services Quay				N/A	
Port Equipment Phase 1	Oil Services Quay				N/A	
<u>Shore to Ship Facilities (€5k per M), Shore power transfer unit, Junction Box, local Substation and local transformers. (Main transformer allowed in enabling), Enhancement based on 2016 operations.</u>						
Port Equipment Phase 1	Container Quay				€6,000,000	
Port Equipment Phase 1	Ro Ro Quay				€12,500,000	
Port Equipment Phase 1	Bulk Quay				€4,500,000	
Port Equipment Phase 1	Port Services Quay				€500,000	
Port Equipment Phase 1	Oil Services Quay				€1,500,000	
Port Equipment Phase 1	Lights and Buoys	1	item	€500,000	€500,000	
Port Equipment Phase 1	VTS Installation	1	item	€3,000,000	€3,000,000	
Port Equipment Phase 1	CCTV Installation	1	item	€750,000	€750,000	
Port Equipment Phase 1	Pilot Boats, 2 extra over required for Ships	2	nr	€1,500,000	€3,000,000	
Port Equipment Phase 1	Tugs, allow 1 extra over required for ships	1	nr	€10,000,000	€10,000,000	
Port Equipment Phase 1	Fire Fighting Equipment / Engines, allowed as may not have capacity locally	2	nr	€250,000	€500,000	
Port Equipment Phase 1	Harbour Road Vehicles, 2 extra over required for Ships	2	nr	€50,000	€100,000	
<b>Design &amp; Management</b>						
Port Equipment Phase 1	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%			€16,316,550	
<b>PORT EQUIPMENT PHASE 2</b>						
Port Equipment Phase 2	<u>Cathodic Protection (€5k / m of quay wall approx.)</u>					
Port Equipment Phase 2	Container Quay					€7,000,000
Port Equipment Phase 2	Ro Ro Quay					€6,000,000
Port Equipment Phase 2	Bulk Quay					€1,500,000
Port Equipment Phase 2	Port Services Quay					N/A
Port Equipment Phase 2	Oil Services Quay					N/A
<u>Automatic Docking Facilities (€22k per m) - Enhancement based on 2016 operations</u>						
Port Equipment Phase 2	Container Quay					€30,800,000
Port Equipment Phase 2	Ro Ro Quay					€22,000,000
Port Equipment Phase 2	Bulk Quay					€6,600,000
Port Equipment Phase 2	Port Services Quay					N/A
Port Equipment Phase 2	Oil Services Quay					N/A
<u>Shore Crane - Panzer P2B / Channel / Fixing Strips, approximately €450 per metre (Cavotec), Enhancement based on 2016 operations</u>						
Port Equipment Phase 2	Container Quay					€630,000
Port Equipment Phase 2	Ro Ro Quay					N/A
Port Equipment Phase 2	Bulk Quay					€135,000
Port Equipment Phase 2	Port Services Quay					N/A
Port Equipment Phase 2	Oil Services Quay					N/A
<u>Shore to Ship Facilities (€5k per M), Shore power transfer unit, Junction Box, local Substation and local transformers. Main transformer allowed in enabling. (Enhancement based on 2016 operations)</u>						
Port Equipment Phase 2	Container Quay					€7,000,000
Port Equipment Phase 2	Ro Ro Quay					€5,000,000
Port Equipment Phase 2	Bulk Quay					€1,500,000
Port Equipment Phase 2	Port Services Quay					N/A
Port Equipment Phase 2	Oil Services Quay					N/A
Port Equipment Phase 2	VTS Installation	1	item	€1,000,000		€1,000,000
Port Equipment Phase 2	CCTV Installation	1	item	€250,000		€250,000
<b>Design &amp; Management</b>						
Port Equipment Phase 2	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%				€8,047,350
<b>STAKEHOLDER BUILDINGS</b>						
Stakeholder Buildings Replacement	Component details of the make-up of this item removed due to commercial sensitivity				€215,022,120	
<b>STAKEHOLDER EQUIPMENT</b>						
Stakeholder Equipment Replacement	Component details of the make-up of this item removed due to commercial sensitivity				€77,385,000	

		Quantity		Rate	Phase 1	Phase 2
<b>STAKEHOLDER OIL &amp; GAS FACILITIES</b>						
Stakeholder Oil & Gas Facilities	Oil Tanks (Replacement cost for all of current oil facilities, excluding land and jetties)				€275,000,000	
Stakeholder Oil & Gas Facilities	Oil Pipelines				incl above	
Stakeholder Oil & Gas Facilities	Oil Un-fuelling Facilities				incl above	
Stakeholder Oil & Gas Facilities	Oil Truck Filling facilities				incl above	
Stakeholder Oil & Gas Facilities	Common Oil Pipeline				incl above	
Stakeholder Oil & Gas Facilities	National Oil Reserves Agency (NORA)				incl above	
Stakeholder Oil & Gas Facilities	Gas Storage and Gas Infrastructure				incl above	
<b>Design &amp; Management</b>						
Stakeholder Oil & Gas Facilities	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%			€24,750,000	€0
<b>NEW PORT - LAND COSTS</b>						
New Port - Land costs less sale proceeds of existing Dublin Inland Port lands	Component details of the make-up of this item removed due to commercial sensitivity				€182,621,675	
<b>STAKEHOLDER LEASES CPO</b>						
Existing Port - Stakeholder Leases CPO to secure vacant possession	Existing Port Lands: cost of buying out existing stakeholder leases so as to get vacant possession. This assumes that at time of acquisition, existing port lands will have been, or will imminently be, rezoned to commercial/ residential. Benchmark price for calculation is the July '19 guide price of €10.4m per ha for the 15 ha Glass Bottle Site. Remediation cost was taken off site value at rate of €2.8m per ha (based on the overall estimate of remediation costs for the port lands). This benchmark price was then used in assessing acquisition costs of stakeholder sites with secure long term tenure. Other stakeholder sites were assessed on an individual basis.				€683,675,000	
<b>DUBLIN PORT SITE REMEDIATION</b>						
Assumption remediation of soil across site to a depth of 1M						
Existing Port - Site remediation	North Port Lands 1,937,000m2					
Existing Port - Site remediation	South Port Lands 450,000m2					
Existing Port - Site remediation	West Port Lands 86,000m2					
Existing Port - Site remediation	Total Area 2,473,000 (247 Hectares)					
Existing Port - Site remediation	Site Investigations across the whole site	1	item	€7,500,000	€7,500,000	
Existing Port - Site remediation	allow for removing structures / buildings on -site, tanks	2,473,000	m2	€15	€37,095,000	
Existing Port - Site remediation	Break up of hard Surface	741,900	m3	€40	€29,676,000	
Existing Port - Site remediation	Removal of 1 m of ground	2,473,000	m3	€10	€24,730,000	
Existing Port - Site remediation	Removal of Hotspots of heavy contamination further than 1 m deep (say 10% of area between 1m and 2m deep)	247,300	m3	€15	€3,709,500	
Existing Port - Site remediation	Sorting, testing of all the excavated Material	2,720,300	m3	€10	€27,203,000	
Existing Port - Site remediation	Blended rate between on site Treatment washing, stabilisation (say 75%) and disposal off site (say 25%)	2,720,300	m3	€100	€272,030,000	
Existing Port - Site remediation	Replacement of Fill disposed off site	680,075	m3	€30	€20,402,250	
Existing Port - Site remediation	Allow for importation of a 1.25m layer of inert Material to raise levels to 5.5 OD average. (1 m raise level + 0.25m replacing disposed off site material)	3,091,250	m3	€30	€92,737,500	
Existing Port - Site remediation	Allow for L concrete retaining wall structure to Perimeter 500mm wide x 2.0m high + 1.0m base	24,000	m3	€500	€12,000,000	
Existing Port - Site remediation	Allowance for Ground Water Treatment	1	item	€30,000,000	€30,000,000	
Existing Port - Site remediation	Allow for Phasing of Works 5%	5%			€27,854,163	
<b>Contractor Preliminaries</b>						
Existing Port - Site remediation	Allow for Management and Preliminaries	10.00%			€58,493,741	
Existing Port - Site remediation	PSCS	0.30%			€1,754,812	
<b>Design &amp; Management</b>						
Existing Port - Site remediation	Contractor Detail Design CSA, M&E, Fire, Cat 1 Checker, PSDP, Resident Engineers, Environmental Engineers, PMO.	9.00%			€58,066,737	
<b>ENVIRONMENTAL MITIGATION (capitalised)</b>						
New Port - Liabilities - On-going Environmental Mitigation Measures	Environmental Conservation Measures (RPS). (Beach re-nourishment, Additional Maintenance dredging and protection works). - The On-going Liabilities 'Environmental Measures and dredging' in Arklow is €2.94m p.a., which capitalises to a figure of €73m using a 4% discount rate	1	item	€73,000,000	€73,000,000	
New Port - Liabilities - On-going Environmental Measures & Dredging	Dredging cost of approach channel Arklow (capitalised). This is an additional cost, as existing DP1 channel will still need maintenance dredging due to retention of cruise in Dublin. No additional dredging at Arklow, as approach channel in deep water.				Not required due to Arklow channel depths	
<b>TOTAL</b>					<b>€6,119,430,223</b>	<b>€855,797,112</b>

5.0 MAIN QUANTITIES

ARKLOW

PHASE 1	Lengths	Fill Stone	Armour	Concrete	GeoTextile	Piled wall,	Scour Protection	Yards	Ro Ro Jetty	Bulk Filling	Dredging	Bridge	Roads	Rail
Enabling												1 nr	6 km	
External Breakwater	9,150 m	2,901,500 m3	504,750 m3	104,700 m3	76,500 m2	6,800 m	68,000 m2							
Internal Revetments, permanent & temporary	5,600 m	3,130,000 m3	428,000 m3	100,800 m3	78,400 m2									
Ro Ro Jetty Stone Wall	1,000 m	423,000 m3	76,000 m3	22,000 m3	20,000 m2									
Ro Ro Jetty									5 nr					
Quay Wall						2,800 m								
Yards								2,575,000 m2						
Bulk Filling										29,376,000 m3				
Dredging											5,011,410 m3			
Roads												4 nr	12.8 km	
Rail												8 nr		11.4 km
Planning & Environmental														
Prelims & Design														
PHASE 1		6,454,500 m3	1,008,750 m3	227,500 m3	174,900 m2	9,600 m	68,000 m2	2,575,000 m2	5 nr	29,376,000 m3	5,011,410 m3	13 nr	19 km	11 km

PHASE 2	Lengths	Fill Stone	Armour	Concrete	GeoTextile	Piled wall,	Scour Protection	Yards	Ro Ro Jetty	Bulk Filling	Dredging	Bridge	Roads	Rail
Ro Ro Jetty Stone Wall	500 m	211,500 m3	38,000 m3	11,000 m3	10,000 m2									
Ro Ro Jetty									2 nr					
Quay Wall						1,200 m								
Yards								990,000 m2						
Bulk Filling										14,154,250 m3				
Dredging											236,700 m3			
Roads													1 km	
Rail														0 km
Prelims & Design														
PHASE 2		211,500 m3	38,000 m3	11,000 m3	10,000 m2	1,200 m	0 m2	990,000 m2	2 nr	14,154,250 m3	236,700 m3	0 nr	1 km	0 km

PHASE 1 & 2		6,666,000 m3	1,046,750 m3	238,500 m3	184,900 m2	10,800 m	68,000 m2	3,565,000 m2	7 nr	43,530,250 m3	5,248,110 m3	13 nr	20 km	11 km
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6.0 TOTAL BERTHAGE AND TERMINAL AREA AFTER EACH DEVELOPMENT PHASE

Dublin Port Company, Programme Management Office

Order of Magnitude Estimate

DP2 Arklow

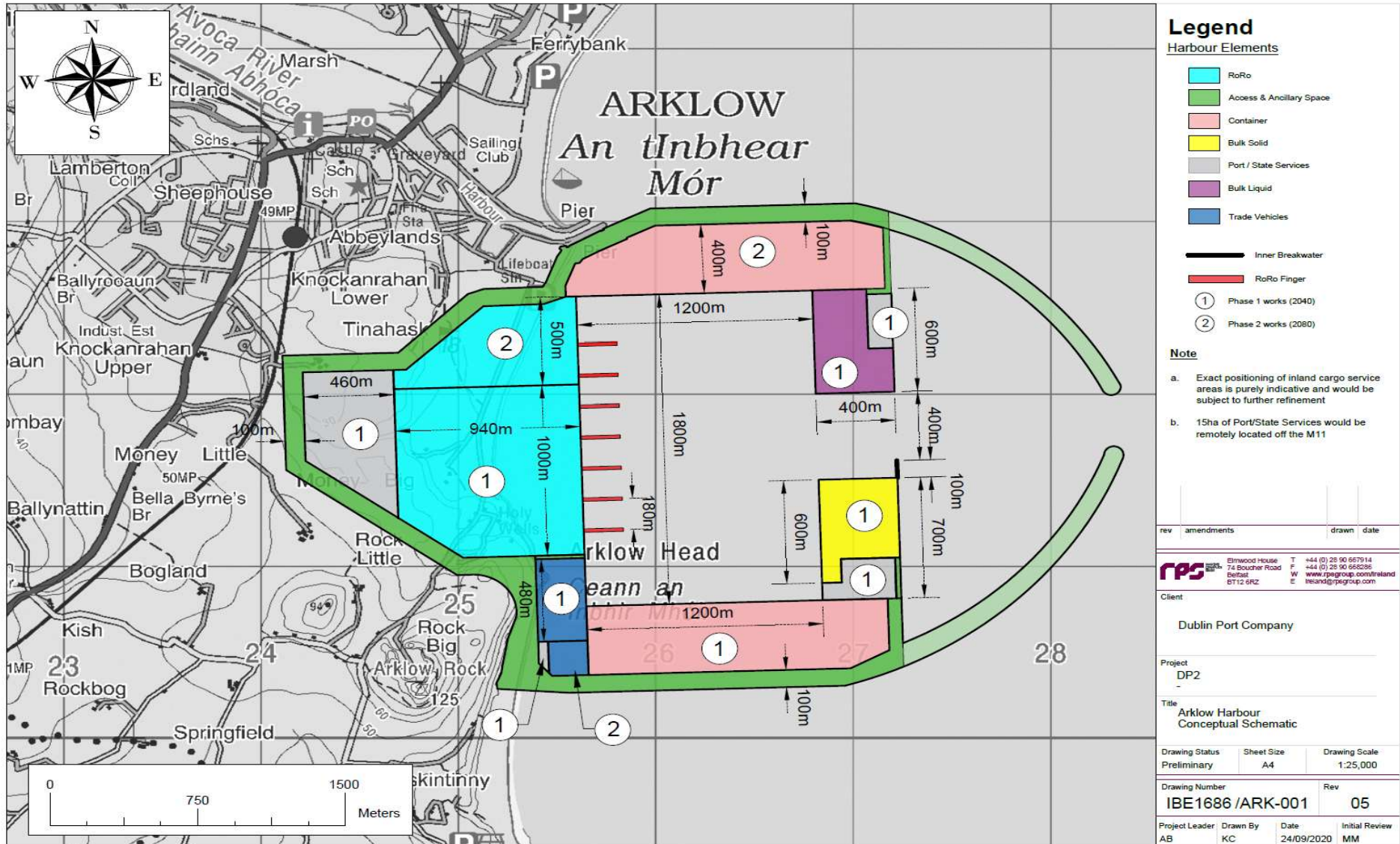
October 2020

Phase 1, 77m tonnes p.a. throughput in 2040 :

Trade/Activity	Berth numbers	Berth length (m)	Berth depth (m)	Terminal (ha)
Bulk Liquid	2	600 total	14.5	20
Bulk Solid	2	600 total	14.5	20
Trade Vehicles	1	250	11	12
Container	4	1,200 total	14	60
RoRo	9	325 each, using 5 double berth finger piers, min 180m apart. Berth length = 9*325 = 2925	10	85
Port/ State Services	1	100	10	60
<b>TOTAL</b>	<b>19</b>	<b>5,675m</b>		<b>257</b>

Phase 2, 134m tonnes p.a. throughput in 2080 :

Trade/Activity	Berth numbers	Berth length (m)	Berth depth (m)	Terminal (ha)
Bulk Liquid	2	600 total	14.5	20
Bulk Solid	2	600 total	14.5	20
Trade Vehicles	1	250 each	11	16
Container	8	2,400 total	15	120
RoRo	14	325 each, using 7 double berth finger piers, min 180m apart. Berth length = 14*325 = 4550	10	120
Port/ State Services	1	100	10	60
<b>TOTAL</b>	<b>28</b>	<b>8,500m</b>		<b>356</b>



**Legend**

Harbour Elements

- RoRo
- Access & Ancillary Space
- Container
- Bulk Solid
- Port / State Services
- Bulk Liquid
- Trade Vehicles

Inner Breakwater

RoRo Finger

① Phase 1 works (2040)

② Phase 2 works (2080)

**Note**

- a. Exact positioning of inland cargo service areas is purely indicative and would be subject to further refinement
- b. 15ha of Port/State Services would be remotely located off the M11

rev	amendments	drawn	date

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Client

Dublin Port Company

Project

DP2

Title

Arklow Harbour

Conceptual Schematic

Drawing Status	Sheet Size	Drawing Scale
Preliminary	A4	1:25,000

Drawing Number	Rev
IBE1686 /ARK-001	05

Project Leader	Drawn By	Date	Initial Review
AB	KC	24/09/2020	MM