

Welsh Government

M4 Corridor around Newport

August 2017 Environmental
Statement Supplement
Appendix ESS5 2.1

Flooding File Note

M4CaN-DJV-EGN-ZG_GEN-AX-EN-0028

At Issue | August 2017

File Note

Project title	
M4 Corridor around Newport	
cc	File reference
	M4CaN-DJV-HDG-Z3_GEN-FN-CD-0002 Rev P01
Prepared by	Date
Dyfan Walters	11 August 2017
Subject	ABP Tenant Relocation: Effects of Flood Risk on Infrastructure Proposals

1 Introduction

- 1.1.1 As part of the M4CaN project, a number of ABP tenants, who currently occupy industrial plots within Newport Docks, will be affected by the M4CaN project and in particular, the bridge crossing the rivers Usk and Ebbw. In addition, ABP's workshops will also be affected by the Project.
- 1.1.2 To mitigate the impact of the M4CaN project on ABP and its tenants, it is proposed to move ABP's workshops and stores, and the tenants, to one of three Land Parcels: A, B or C, as shown on drawing M4CaN-DJV-GEN-Z3_GEN-SK-CX-0009.
- Land Parcel A – located to the south of South Dock.
 - Land Parcel B – located between the north of South Dock and the northern boundary of the Dock.
 - Land Parcel C – located to the south east of South Dock.
- 1.1.3 The current location of tenants and the proposed tenant relocations are shown on drawings M4CaN-DJV-GEN-Z3_GEN-DR-CX-0008 and M4CaN-DJV-GEN-Z3_GEN-DR-CX-0009.
- 1.1.4 As the tenants and the ABP workshops and stores, will be relocated to sites, which will be considered to be 'new development', the relocation sites will need to comply with the current planning policy guidance¹ with respect to flood risk.
- 1.1.5 This file note records an assessment of the future flood risk at the current tenant locations and at the proposed relocation sites. In addition, this note considers the potential extent of ground raising required to achieve acceptable consequences of flooding for the 'new development'. A detailed Flood Consequence Assessment will need to be undertaken for each relocation site, once the final specifications for the relocation sites have been agreed with ABP, and its tenants

¹ Planning Policy Wales, Technical Advice Note 15: Development and Flood Risk July 2004

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- 1.1.6 The assessment of flood risk has been undertaken using Natural Resources Wales² latest assessment of extreme tide levels and the latest Welsh Government Guidance³ on climate change allowances for planning purposes

² Natural Resources Wales, Caldicot and Wentlooge Coastal Modelling, Summary report, Final, August 2016.

³ Guidance on Climate Change Allowances for Planning Purposes: ref CL-03-16 23 August 2016

2 Land Parcel A

2.1 Site Description

2.1.1 The land parcel is located south of South Dock. East Way Road abuts the northern periphery of the site. Wana Ltd and Dowds facilities are located to the west and east of the land respectively. A former dock is also located to the south west corner of the site. The existing ground profile varies between 8m and 10m AOD. An existing drainage ditch is located along the eastern periphery of the site.

2.1.2 There is evidence of former development having been located at the site. From reviewing historical plans, it is suggested that the site was used for storage of coal shipments to the docks. The site comprises hardstanding's and compacted fill material.

2.1.3 It is proposed to relocate the following tenants to this parcel of land located south of South Dock:

- a) ABP Common Storage Areas
- b) Headland Engineering
- b) Origin
- c) 10 Shed (Dowds)
- d) Logistics and Haulier Park, which includes:
 - i. Ma's Ba Cafe'
 - ii. Laidlaw
 - iii. R Williams Transport
 - iv. Bridge Time
 - v. Ronnie Evans
 - vi. A1 Skips
- e) Asset International
- f) Scott Pallets
- g) RMS Ltd
- h) CJNI Engineering

2.2 Flooding

2.2.1 National Resources Wales' (NRW) Development Advice Map, illustrates that most of the eastern side of the land parcel is located in Zone B (areas known to have flooded in the past).

2.2.1 The western half of the land parcel, including the existing hardstanding located to the north and west of the main land parcel, which is proposed to be refurbished for ABP common user storage area, is located within Zone C2 (areas of the floodplain without significant flood defence infrastructure).

2.2.2 Based on the above, a Flood Consequence Assessment (FCA) for each relocation plot, will be required to assess the potential flood risk associated with the proposed relocation works. Considering the type of development proposed and extent of flooding shown within the site, it is considered that the flood risk will be negligible during current day conditions. However, the impacts of climate change are discussed below and would need to be considered as part of each FCA.

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- 2.2.3 An existing flood bund is located around the southern boundary of the docks, however following a site visit, the bund appears to be in poor condition. Subject to the outcome of the FCA's, the bund may need to be repaired or replaced to facilitate relocation.
- 2.2.4 NRW re-assessed the Environment Agency (2011a) Extreme Water Level's and Confidence Intervals along the Wentlooge and Caldicot Levels, applying new tide gauge data between 2009 and 2014 from tide gauges at: Mumbles, Newport and Avonmouth. NRW has confirmed that these latest estimates should be utilised for the purposes of TAN15 assessments. The tidal flood level near the site for the 1 in 200 year flood return in 2018 has been estimated at 8.49m AOD, whilst the 1 in 1000 year flood level is estimated to be 8.82m AOD.
- 2.2.5 The tidal flood level near the site for the 1 in 200 year flood return, including allowance for climate change over a period of 75 years, has been estimated at 9.22m AOD.
- 2.2.6 The tidal flood level for the 1 in 1000 year flood event, with a 75 year climate change allowance, is estimated to be 9.55mAOD.
- 2.2.7 The levels given above represent the best estimate of extreme surge tide predictions and are appropriate for assessing the flood consequences with respect to tidal flooding

2.3 Buildings and High Risk areas

- 2.3.1 Technical Advice Note 15: Development and Flood Risk (TAN15), stipulates that the threshold of flooding in a tidal environment for commercial, retail and industrial development is the 1 in 200 annual chance flood event. It is accepted under the TAN that the site may flood during more extreme events, such as the 1 in 1000 annual chance flood event. During such an event, the depths of flooding on the development site as well as along the site access roads, should not exceed 0.6m for commercial/retail developments and 1m for industrial developments.
- 2.3.2 It should be noted that due to the nature of some of the businesses that are to be relocated (e.g. Origin), it may be necessary to ensure that the threshold of flooding is raised to the 1 in 1000 annual chance flood event. This would ensure that no potential pollution incidents occur as a result of flood water entering the developments. This issue will be considered in further detail as part of the plot specific FCA.
- 2.3.3 When setting the slab levels for buildings, or areas where the consequences of flooding are severe, a precautionary approach is recommended. A confidence interval is added to the estimates of extreme tides to represent the 95% confidence bound, i.e. there is a 95% chance that this level will not be exceeded. The confidence interval is analogous to a freeboard allowance taking account of the uncertainties within the estimates of extreme tides. The confidence level for the 1 in 200 and 1 in 1000 tidal flood tides at Newport are 0.3m and 0.4m respectively.
- 2.3.4 Building slab levels will need to be raised to either 9.52mAOD, (flood free during a 1 in 200 tidal flood), or 9.95mAOD, (flood free during a 1 in 1000 tidal flood), as appropriate.

2.4 General Site Levels

- 2.4.1 In general, the minimum plot levels will need to be set to the 1 in 200 year tide level in 2093. TAN15 stipulates that the site could be subject to a depth of flooding of up to 0.6m during a 1

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in 1000 year tidal flood level for commercial, retail and general infrastructure. However, areas of the site, which have no functional use can be allowed to flood to greater depths.

- 2.4.2 For industrial developments, the maximum depth of flooding would be 1.0m during a 1 in 1000 year tidal flood. This will be subject to satisfying other acceptance criteria, such as: the velocity of floodwater flow, the rate of rise of floodwater and the speed of inundation. Again, these will be considered in further detail as part of the plot specific FCA.
- 2.4.3 Outside of the building footprints, where plot levels are reduced below the 1 in 200 year tide level, assessments will need to be undertaken to ensure that the risk to this area can be managed, e.g. protocols to manage risks in car park areas, which flood. If these risks cannot be managed, then plot levels should be raised to the 1 in 200 year tide levels.
- 2.4.4 The flood depths summarised in the table below, have been calculated by comparing the calculated tidal level with the latest available LIDAR data that represents the current ground surface. It should be noted that no further numerical analysis has been undertaken at this stage. Further numerical analysis will be undertaken as part of the plot specific FCA.

Plot Reference		T200 in 2093 (+75 yr) current location				T200 in 2093 (+75 yr) relocation plot - no flood defences			
		Water depth [m]			Flooded Area	Water depth [m]			Flooded Area
Relocation	Current	Min	Max	Mean	%	Min	Max	Mean	%
A1	D	0.00	0.62	0.30	31.7%	0.00	1.93	0.81	59.6%
A2	F	0.47	1.59	1.14	100.0%	0.00	0.63	0.19	65.4%
A3	K	0.00	0.71	0.24	42.3%	0.00	1.60	0.80	76.7%
A4	L	0.00	0.33	0.06	11.0%	0.00	1.50	0.63	99.2%
A5	M	dry	dry	dry	dry	0.00	0.43	0.17	8.8%
	O	dry	dry	dry	dry				
	P	dry	dry	dry	dry				
	Q	dry	dry	dry	dry				
	R	dry	dry	dry	dry				
	CC	dry	dry	dry	dry				
A6	U	dry	dry	dry	dry	0.00	1.63	0.60	41.6%
A7	S	0.00	0.09	0.03	0.2%	0.01	0.75	0.29	0.5%
A8	T	dry	dry	dry	dry	0.00	1.66	0.71	6.1%
A9	E	0.00	1.46	0.34	97.7%	dry	dry	dry	dry

Table 2.1: Summary of flooding and comparison between the existing plot configuration and the proposed relocation plots without defences for a 1 in 200 year tidal event in 2093.

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- 2.4.5 Table 2.1 summarises the main differences between the flood depths predicted on the existing and proposed plots during a 1 in 200 tidal flood event (inclusive climate change in 75 years). Generally, the depths of flooding predicted on the proposed plots are greater than that predicted on the existing sites. The relocation zones are affected by flooding, except for parcel A9, and some higher parts in the A3, A5, A6, A7 and A8 parcels.
- 2.4.6 Table 2.1 also shows the proportion of the existing and proposed plots that are flooded. Generally, the proportion of the proposed plots predicted to be at risk of flooding is greater than the existing plots.
- 2.4.7 Predicted flood depths on the plots during a 1 in 1000 annual chance flood event with a 75 year climate change allowance is included in Table 2.2 below.
- 2.4.8 General ground levels at the tenant relocation plots, will need to be raised to a level of 9.22mAOD to prevent flooding from the 1 in 200 year event with climate change. Where there is a risk of pollution (e.g. Origin) from a 1 in 1000 year event with climate change, the ground levels will need to be raised to 9.55m AOD. Alternatively, the flood protection could be provided by a perimeter flood bund with tidal flood gates at entrances to the plots.

Plot Reference		T1000 in 2093 (+75 yr) current location				T1000 in 2093 (+75 yr) relocation site - no flood defences			
		Water depth [m]			Flooded Area	Water depth [m]			Flooded Area
Relocation	Current	Min	Max	Mean	%	Min	Max	Mean	%
A1	D	0.00	1.94	0.45	52.4%	0.00	2.26	1.05	65.7%
A2	F	0.80	1.92	1.47	100.0%	0.00	0.96	0.43	94.0%
A3	K	0.00	1.04	0.36	90.6%	0.00	1.93	1.02	85.2%
A4	L	0.00	0.66	0.21	89.6%	0.03	1.83	0.95	99.8%
A5	M	0.00	0.22	0.12	78.1%	0.00	0.76	0.31	19.7%
	O	0.00	0.1	0.03	3.78%				
	P	dry	dry	dry	dry				
	Q	0.01	0.01	0.01	0.2%				
	R	0.00	0.30	0.08	23.0%				
	CC	dry	dry	dry	dry				
A6	U	0.00	0.32	0.16	5.3%	0.00	1.96	0.70	58.7%
A7	S	0.00	0.42	0.12	25.1%	0.00	1.08	0.40	0.95%
A8	T	0.00	0.27	0.09	9.57%	0.00	1.99	0.32	28.56%
A9	E	0.23	1.79	0.66	100.0%	dry	dry	dry	dry

Table 2.2: Summary of flooding and comparison between the existing plot configuration and the proposed relocation plots without defences for a 1 in 1000 year tidal event in 2093

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- 2.4.9 There are issues related not only to the extent and depth of the flooding at the relocation plots, but also on the dock access road to the plots during flood events. The dock access road to the relocated tenant plots becomes inundated during both 1 in 200 and 1 in 1000 year events with climate change, (see figure 2.1).
- 2.4.10 To provide flood-free access during a 1 in 200 flood event in the future, the road would need to be raised or defended.

Land Reference	Access Road Flooding			
	T200 in 2018	T200 in 2093 (+75 yr)	T1000 in 2018	T1000 in 2093 (+75 yr)
Current	dry	Flooded	partially flooded	Flooded
Relocation	slight flooding	Flooded	partially flooded	Flooded
Current Max Water Depth (m)	0	0.73	0.33	1.06
Relocation Max Water Depth (m)	0.07	0.82	0.40	1.15

Table 2.3: Summary of access availability during flooding and comparison between the existing plot configuration and the proposed relocation plots without defences.

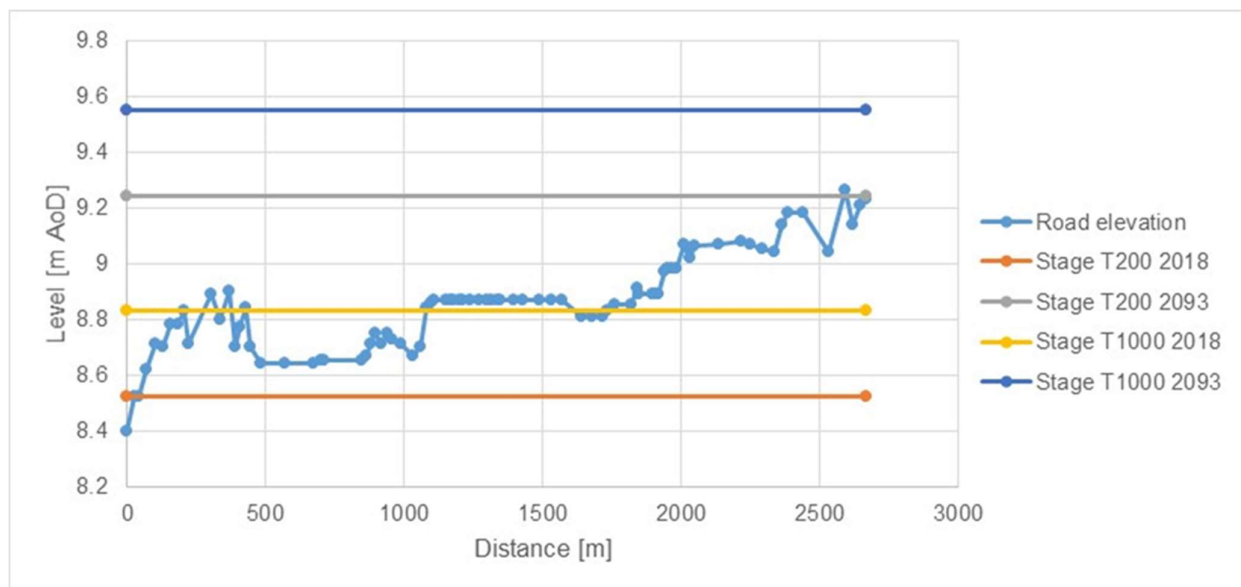


Figure 2.1: Comparison between ground level (from LiDAR survey) and estimated tidal flood level during different events, along the main access road starting from the tenant relocation zone at South Dock and travelling to the east and then northwards

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- 2.4.11 Flood water velocity over the access road will need to be considered as part of all plot specific flood consequence assessment where detailed numerical analysis would be undertaken.
- 2.4.12 A flood risk management plan for the overall dock area should be developed to manage the risks to the access, during periods of inundation.
- 2.4.13 Raising road levels would also affect the adjacent general infrastructure such as plot access roads and railway lines.

3 Land Parcel B

3.1 Site Description

- 3.1.1 Land Parcel B, extends from the north side of South Dock to the northern boundary of the Docks.
- 3.1.2 Plot B1 is positioned to the east of West Way Road and the existing landfill is located to the west of the plot; International Timber is situated to the east. The existing ground profile varies between 9m and 10.5m AOD. It is proposed to relocate International Timber to this land parcel.
- 3.1.3 Plot B2 is located to the south of the diverted Tom Lewis Way. It is proposed that JED Crushing and Screening is relocated to this plot. Ground levels are typically in the range of between 10mAOD and 10.5mAOD.
- 3.1.4 There is evidence of former development having been located at the site. From site walkovers, the site comprises former hardstanding's and compacted fill material.

3.2 Flooding

- 3.2.1 NRW's Development Advice Map, illustrates the land parcel is located in Zone B (areas known to have flooded in the past).
- 3.2.2 A Flood Consequence Assessment (FCA) will be required to assess the potential flood risk associated with the proposed relocation works. Based on the information gathered, and considering that the development has taken place nearby, it is considered that the flood risk will be negligible (subject to the outcome of the FCA, which will advise any mitigation measures - if any).
- 3.2.3 The tidal flood level near the land parcel for the 1 in 200 year flood return in 2018, has been estimated at 8.49m AOD.
- 3.2.4 The 1 in 1000 year flood level is estimated to be 8.82m AOD.
- 3.2.5 The tidal flood level near the land parcel for the 1 in 200 year flood return period, including allowance for climate change over a period of 75 years, has been estimated at 9.22m AOD.
- 3.2.6 The tidal flood level for the 1 in 1000 year flood event with a 75 year climate change allowance is 9.55m AOD.
- 3.2.7 TAN15 stipulates that the threshold of flooding in a tidal environment for this type of development is the 1 in 200 annual chance flood event. It is accepted under the TAN that the land parcel may flood during more extreme events such as the 1 in 1000 annual chance flood event. During such an event, the depths of flooding on the development site as well as along the site access should not exceed 0.6m for commercial/retail developments and 1m for industrial developments.
- 3.2.8 The flood depths summarised in the table below have been calculated by comparing the calculated tidal level with the latest available LIDAR data that represents the current ground

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surface. It should be noted that no further numerical analysis has been undertaken at this stage. Further numerical analysis will be undertaken as part of the plot specific FCA's.

- 3.2.9 Table 3.1 summarises the main differences between the existing plot configuration and the proposed plot relocation, during a 1 in 200 tidal flood event (inclusive climate change in 75 years). The analysis shows that both existing plots are at risk of flooding. The relocated plot B1 is at risk of flooding, whilst plot B2 is predicted to be flood free during the event.

Plot Reference		T200 in 2093 (+75 yr) current plot location				T200 in 2093 (+75 yr) relocation plots - no flood defences			
		Water depth [m]			Flooded Area	Water depth [m]			Flooded Area
Relocation	Current	Min	Max	Mean	%	Min	Max	Mean	%
B1	I	0.00	0.31	0.12	31.3%	0.00	1.40	0.29	17.4%
B2	N	0.00	0.22	0.06	12.6%	dry	dry	dry	dry

Table 3.1: Summary of flooding and comparison between the existing plot configuration and the proposed plot relocation without defences for a 1 in 200 year tidal event in 2093.

- 3.2.10 The flood depths predicted during a 1 in 1000 annual chance flood event, with a 75 year climate change allowance, is summarised in Table 3.2.
- 3.2.11 The ground levels at the tenant relocation plots will need to be raised to a level of 9.22m AOD to prevent flooding from the 1 in 200 year event with climate change.

Plot Reference		T1000 in 2093 (+75 yr) current plot location				T1000 in 2093 (+75 yr) relocation plots - no flood defences			
		Water depth [m]			Flooded Area	Water depth [m]			Flooded Area
Relocation	Current	Min	Max	Mean	%	Min	Max	Mean	%
B1	I	0.00	0.64	0.31	7.3%	0.00	1.73	0.41	34.0%
B2	N	0.00	0.55	0.22	53.6%	dry	dry	dry	dry

Table 3.2: Summary of flooding and comparison between the existing plot configuration and the proposed plot relocation without defences for a 1 in 1000 year tidal event in 2093.

- 3.2.12 Further analysis will be required to identify the depths and velocities of flooding along the access road, as part of the plot specific FCA's.
- 3.2.13 A flood risk management plan for the overall dock area should be developed to manage the risks to the access during periods of inundation.

4 Land Parcel C

4.1 Site Description

- 4.1.1 The land parcel is located to the south east of South Dock, and to the west of the riverbank of the River Usk. The South Dock link road and railway line forms the western boundary of the land parcel. The southern extent of the plot is limited by the presence of a wind turbine. The land comprises existing concrete hardstanding's and compacted fill material. The existing ground profile varies between 9m and 10.5m AOD.
- 4.1.2 Plot C1 is positioned to the east of the railway line and is adjacent to the riverbank of the River Usk. It is proposed to relocate ABP's workshops and stores to this land parcel.

4.2 Flooding

- 4.2.1 NRW's Development Advice Map, illustrates the land parcel is located in both Zone B (areas know to have flooded in the past) and Zone C2 (areas of the floodplain without significant flood defence infrastructure).
- 4.2.2 Based on the above, a Flood Consequence Assessment (FCA) will be required to assess the potential flood risk associated with the proposed relocation works. Considering the type of development proposed and extent of flooding shown within the land parcel, it is considered that the flood risk will be negligible during current day conditions. However, the impacts of climate change are discussed below and would need to be considered as part of the plot specific FCA.
- 4.2.3 The tidal flood level near the land parcel for the 1 in 200 year flood return in 2018 has been estimated at 8.49m AOD.
- 4.2.4 The 1 in 1000 year flood level is estimated to be 8.82mAOD.
- 4.2.5 The tidal flood level near the land parcel for the 1 in 200 year flood return period including allowance for climate change over a period of 75 years, has been estimated at 9.22m AOD
- 4.2.6 The tidal flood level for the 1 in 1000 year flood event with a 75 year climate change allowance, is 9.55m AOD.
- 4.2.7 TAN15 stipulates that the threshold of flooding in a tidal environment for this type of development is the 1 in 200 annual chance flood event. It is accepted under the TAN that the site may flood during more extreme events such as the 1 in 1000 annual chance flood event. During such an event, the depths of flooding on the development site as well as along the site access should not exceed 0.6m for commercial/retail developments and 1m for industrial developments.
- 4.2.8 The flooding depths summarised in the table below have been calculated by comparing the calculated tidal level with the latest available LIDAR data that represents the current ground surface. It should be noted that no further numerical analysis has been undertaken at this stage. Further numerical analysis will be undertaken as part of the site specific FCA.
- 4.2.9 Table 4.1 summarizes the main differences between the existing ABP workshops and stores location and the proposed relocation, during a 1in 200 tidal flood event (inclusive of climate

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change in 75 years). Currently there are flooding issues in the eastern part of Newport Docks. The relocation site is affected by flooding.

Plot Reference		T200 in 2093 (+75 yr) current location				T200 in 2093 (+75 yr) relocation site - no flood defences			
		Water depth [m]			Flooded Area	Water depth [m]			Flooded Area
Relocation	Current	Min	Max	Mean	%	Min	Max	Mean	%
C1	B	dry	dry	dry	dry	0.00	1.37	0.67	97.6%
	C	0.04	0.25	0.16	100.0%				
	II	0.00	0.26	0.11	97.2%				

Table 4.1: Summary of flooding and comparison between the existing plot configuration and the proposed plot relocation without defences for a 1 in 200 year tidal event in 2093.

4.2.10 The ground levels at the ABP Workshops and Stores relocation site, will need to be raised to a level of 9.22m AOD to prevent flooding from the 1 in 200 year event with climate change. As the relocation site will be used for ABP's Workshops and Stores, it is likely that the ground will need to be raised further to a level of 9.55m AOD, to prevent flooding from a 1 in 1000 year event with climate change. Alternatively, the flood protection could be provided by a perimeter flood bund with tidal flood gate at entrance to the site.

4.2.11 Predicted flood depths at the relocation site during a 1 in 1000 tidal flood event with a 75 year climate change allowance, are included in Table 4.2 below.

Plot Reference		T1000 in 2093 (+75 yr) current location				T1000 in 2093 (+75 yr) relocation site - no flood defences			
		Water depth [m]			Flooded Area	Water depth [m]			Flooded Area
Relocation	Current	Min	Max	Mean	%	Min	Max	Mean	%
C1	B	dry	dry	dry	dry	0.10	1.70	0.99	99.65%
	C	0.37	0.58	0.49	100.0%				
	II	0.28	0.59	0.44	100.0%				

Table 4.2: Summary of flooding and comparison between the existing plot configuration and the proposed relocation without defences for a 1 in 1000 year tidal event in 2093.

4.2.12 There are issues related not only to the extent and depth of the flooding at the relocation site, but also on the access road to the site during severe flood events. The access road to the relocated site becomes inundated during both 1 in 200 and 1 in 1000 year events with climate change, (see figure 4.1).

4.2.13 To provide flood-free access during a 1 in 200 flood event in the future, the road would need to be raised or defended.

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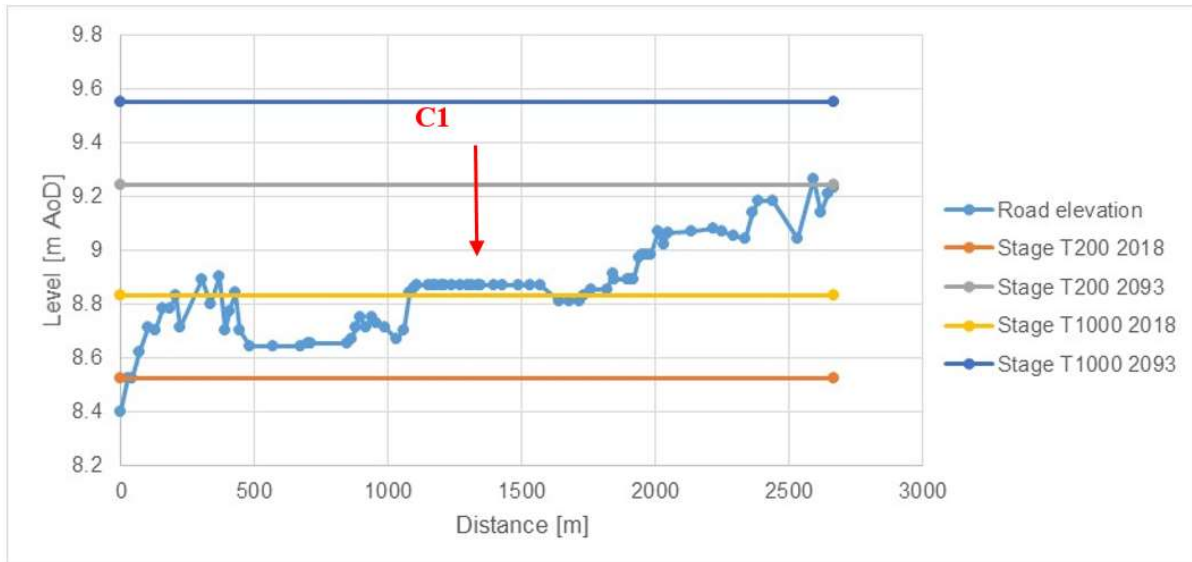


Figure 4.1: Comparison, along the main access road from the South Dock, between ground level from LiDAR survey and estimated tidal flood level during different events.


- 4.2.14 Raising road levels will also affect the adjacent general infrastructure such as site access roads and railway lines.
- 4.2.15 A flood risk management plan for the overall dock area should be developed to manage the risks to the access during periods of inundation.
- 4.2.16 Flood water velocity over the access road will need to be considered as part of any site specific flood consequence assessment where detailed numerical analysis would be undertaken.

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5 Conclusion

- 5.1.1 Our assessments indicate that it will not be possible to develop Land Parcels A, B and C at their current levels. It will be necessary to raise the levels of the plots within the Land Parcels to achieve acceptable flood consequences for the 'new development'
- 5.1.2 Most of the plots in the Land Parcels will need to be raised to ensure that they are dry during a 1 in 200 annual chance flood event in 2093, (9.22mAOD). However, it should be noted that due to the nature of some of the businesses that are to be relocated (e.g. Origin and WE Dowds), it may be necessary to ensure that the threshold of flooding is raised to the 1 in 1000 annual chance flood event, (9.55mAOD). This would ensure no pollution incidents occur as a result of flood water entering the developments. This issue will be considered in further detail as part of each plot specific FCA.
- 5.1.3 Areas of the Land Parcels, which have no functional use, do not need to be raised and can be allowed to flood.
- 5.1.4 When setting the slab levels for buildings, or areas where the consequences of flooding are severe, a precautionary approach is recommended. A confidence interval is added to the estimates of extreme tides to represent the 95% confidence bound, i.e. there is a 95% chance that this level will not be exceeded. The confidence interval is analogous to a freeboard allowance taking account of the uncertainties within the estimates of extreme tides. The confidence level for the 1 in 200 and 1 in 1000 tidal flood tides at Newport are 0.3m and 0.4m respectively.
- 5.1.5 Building slab levels will need to be raised to either 9.52mAOD, (flood free during a 1 in 200 tidal flood), or 9.95mAOD, (flood free during a 1 in 1000 tidal flood), as appropriate.
- 5.1.6 Further analysis will be undertaken as part of the plot specific FCA's to better understand the flood depths and velocities impacting the access roads to the proposed Land Parcels.

DOCUMENT CHECKING

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Name	Dyfan Walters	Derek Fenn	Gary Davies
Signature			<div>X </div> <div>Gary Davies</div> <div>Signed by: gary.davies</div>

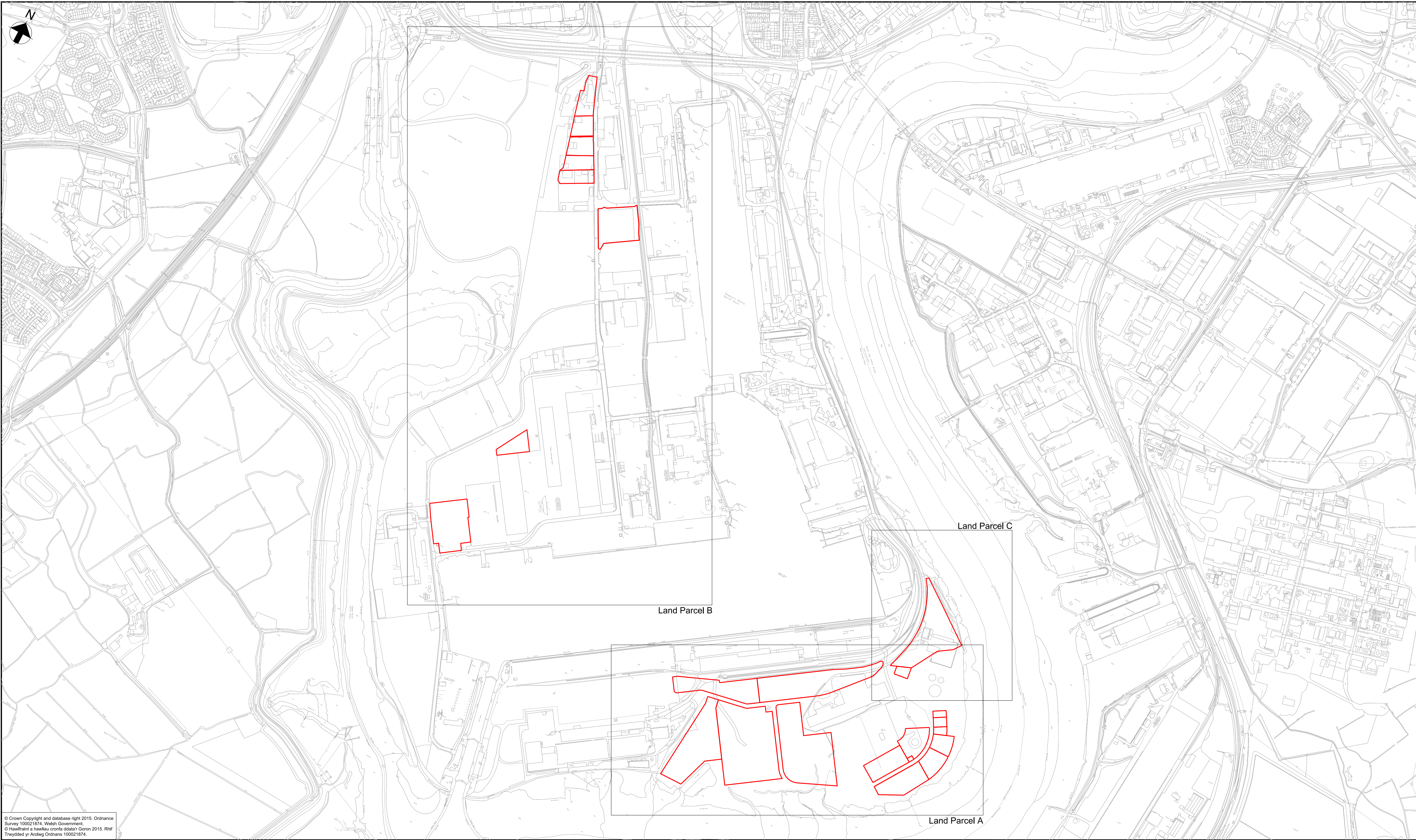
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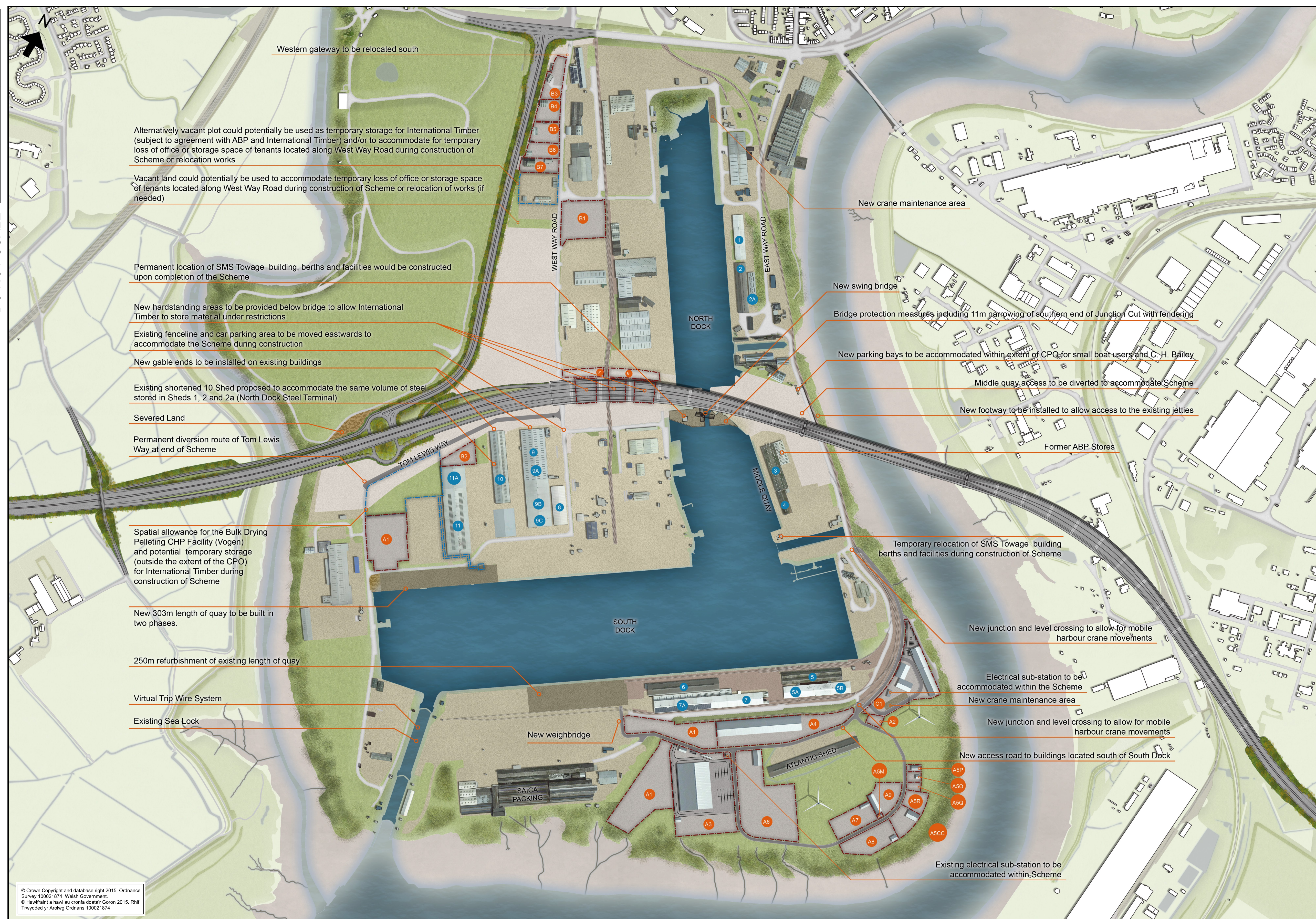
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© Hawffraint a hawliau cronfa ddata'r Goron 2015. Rhif Trewyddid yr Arrolwg Ordnans 100021874.

<div>Legend</div> <div><div></div> Land Parcel</div> <div><div></div> Plot 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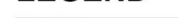







Plot Reference	Occupier	Summary of Proposals
A1	ABP Common User Storage Area	New concrete hardstanding to be provided including infrastructure provisions to allow operations to be maintained as existing.
A2	Hedland Engineering	New gravel hardstanding only
A3	Origin	New facility, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A4	10 Shed (Dowds)	New facility, external hardstanding and infrastructure provisions to allow operations to remain the same as existing. Existing shortened 10 Shed proposed to accommodate for the same volume of steel stored in Shed 1, 2 and 2a (North Dock Steel Terminal) currently occupied by Dowds.
A5 M	Ma's Ba Café	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A5 O	Laidlaw	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A5 P	R Williams Transport	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A5 Q	Bridge Time	New external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A5 R	Ronnie Evans	New external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A5 CC	A1 Skips	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A6	Asset International	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A7	Scott Pallets	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A8	RMS Ltd	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
A9	CJN Engineering	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
B1	International Timber Storage	New concrete hardstanding to be provided including infrastructure provisions to allow operations to be maintained as existing. Restrictions will be in place for any storage of materials below the proposed bridge. During construction a temporary hardstanding will be provided to provide additional storage until part of the land below the bridge is handed back to ABP.
B2	JED Crushing and Screening	New gravel hardstanding only
B3	NR Evans	Optimise existing layout to increase efficiency of the services provided. Additional hardstanding to be provided to compensate for reduced land take during construction until part of the land is handed back to ABP.
B4	Baldwins Crane Hire	New retaining structure to be built to reduce the extent of the CPO or a new building to be built within existing curtilage to replace the existing building. Existing layout to be optimised to increase efficiency of the services provided. During construction of the new building a temporary building may be needed if occupier cannot operate alongside the construction activities within the curtilage.
B5	R. C. Marshalls	Optimise existing layout to increase efficiency of the services provided. Additional hardstanding to be provided to compensate for reduced land take during construction until part of the land is handed back to ABP.
B6	New Adventure Travel	New retaining structure to be built to reduce the extent of the CPO or a new building to be built within existing curtilage to replace the existing building. Existing layout to be optimised to increase efficiency of the services provided. During construction of the new building a temporary building may be needed if occupier cannot operate alongside the construction activities within the curtilage.
B7	LDH Plant Hire	New retaining structure now introduced which reduced the CPO extent to allow operations to remain as existing. Western boundary to be reinstated.
C1	ABP Central Workshops & Medical Centre	New facilities, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.
	ABP Stores	New building, external hardstanding and infrastructure provisions to allow operations to remain the same as existing.


GENERAL NOTES:

1. THE PROPOSED MASTERPLAN AS SHOWN IS WORK IN PROGRESS. THE MASTERPLAN IS INTENDED TO DEMONSTRATE THE PRINCIPLE RELOCATION WORKS PROPOSED WITHIN THE PORT OF NEWPORT AS FROM 28/07/2017.

LEGEND

-  New Building
-  New Hardstanding
-  Plot Reference
-  Building Reference
-  Plot Extent
-  Approximate extent of land handed back to ABP upon completion of Scheme

P01	11/08/17	Issued		SW	SW
Rev.	Date	Description		By	Chk'd

Drawing Status	FOR INFORMATION	Suitability	S2	Project Title					M4 CORRIDOR AROUND NEWPORT					
Project Team				Drawing Title										
				PORT RELOCATION PLAN										
Client				Scale	Designed / Drawn	Checked	Approved	Authorised						
				1:5000	SW	SW	GRD	GRD						
 Llywodraeth Cymru Welsh Government				Original Size	Date	Date	Date	Date						
				A1	11/08/17	11/08/17	11/08/17	11/08/17						
				Drawing Number								Revision		
				Project Originator Volume M4CaN - DJV - GEN - Volume Z3_GEN - DR - CX - 0008								P01		
				Location Type Role Number										

DO NOT SCALE

100
0 10
Millimetres



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- LEGEND**
- Plot Reference
 - Building Reference
 - Existing Weighbridge
 - Plot Extent
 - Draft Compulsory Purchase Order (CPO) - (not showing easements)

Reference	Tenant/Landowner
A	Small Boat Users
B	ABP Central Workshops
C	Medical Centre
D	Common Storage Area
E	CJN Engineering
F	Hedland Engineering
G	ABP Plant Compound
H	Former ABP Site Office
I	International Timber Terminal
J	Sims Metal
K	Origin Fertilizer Terminal
L	10 Shed (Dowds)
M	Ma's Ba Café
N	JED Crushing and Screening
O	Laidlaw
P	R Williams Transport
Q	Bridge Time
R	Ronnie Evans
S	Scott Pallets
T	Road Maintenance Services Ltd (RMS Ltd)
U	Asset International Site
V	Site Licensed to Newport County Council
W	LDH Hire
X	New Adventure Travel
Y	Baldwin's Crane Hire
Z	R. C. Marshalls
AA	Vacant Compound
BB	NR Evans
CC	A1 Skips
DD	Western Gateway
EE	Allocated Development: Bulk Drying Pelletting CHP Facility
FF	Allocated Development: Vacant Plot
GG	W. E. Dowds (North Dock Steel Terminal)
HH	C. H. Bailey
II	Stores
JJ	Tug Berth
KK	East Way Road
LL	West Way Road
MM	Tom Lewis Way
NN	Middle Quay Access
OO	Parking Area
PP	South Dock Railway Link
QQ	Sims Metal Railway Link
RR	Electrical Substation
SS	SMS Towing
TT	3 Shed
UU	4 Shed
VV	North Dock Road
WW	North Dock Timber and Forest Products Importers
XX	Marine Shipping
YY	Saica Packaging

Drawing Status	FOR INFORMATION	Suitability	S2	Project Title	M4 CORRIDOR AROUND NEWPORT
Project Team		Drawing Title	EXISTING PORT LAYOUT	Scale	1:1
Client		Original Size	A1	Designed / Drawn	SW
		Date	11/08/17	Checked	SW
				Approved	GRD
				Date	11/08/17
				Authorised	GRD
				Date	11/08/17
				Revision	P01
				Location	Type
				Role	Number

P01	11/08/17	Issued	SW	SW	GRD
Rev.	Date	Description	By	Chk'd	App'd

