

Welsh Government

M4 Corridor around Newport

August 2017 Environmental
Statement Supplement
Main Text

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In addition to the above figures the following plans supporting Chapter 2 of the March 2016 ES and subsequent supplements have been updated as a result of the updated Scheme design changes described in this ESS.

- Figure 2.4 August 2017 (sheets 5, 6, and 16) - General Arrangement Plans.
- Figure 2.6 August 2017 (sheets 5, 6, and 16) - Environmental Master Plans.

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Appendix ESS5 2.3	Phase 1 Habitat Survey Report
Appendix ESS5 2.4	National Vegetation Classification Survey Report
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Appendix ESS5 2.7	Desk Study and Preliminary Risk Assessment Report, Newport Docks
Appendix ESS5 3.1	Navigation Risk Assessment (August 2017)

Glossary

ABP:	Associated British Ports
CCW:	Countryside Council for Wales
CL:	Contaminated Land
CPO:	Compulsory Purchase Order
EIA:	Environmental Impact Assessment
EMP:	Environmental Master Plans
ES:	Environmental Statement
ESS:	Environmental Statement Supplement
FCA:	Flood Consequence Assessment
IEMA:	Institute of Environmental Management and Assessment
M4CaN:	M4 Corridor around Newport
NMU:	Non-Motorised Users
NRW:	Natural Resources Wales
SAC:	Special Area of Conservation
SPA:	Special Protection Area
SSSI:	Site of Special Scientific Interest

Non-Technical Summary

1. Draft Orders for the proposed M4 Corridor around Newport (M4CaN) were published by Welsh Government in March 2016, together with an Environmental Statement (ES) and associated reports.
2. The M4CaN (referred to in this document as 'the Scheme') includes a proposed new section of three lane motorway between Castleton (Junction 29 of the existing M4) and Magor (Junction 23 of the existing M4) to the south of Newport in South Wales, together with a number of Complementary Measures on the existing M4 between the same junctions.
3. In September 2016, an Environmental Statement Supplement (ESS) was published (the September 2016 ESS) which provided errata; clarified some aspects of the cultural heritage assessment, and impacts during construction; provided the results of some of the 2016 ecological surveys; and provided updated or additional information to a number of appendices, including the Register of Environmental Commitments.
4. The final part of the September 2016 ESS described and assessed a number of modifications to the Scheme design since the publication of the draft Orders and consequential modifications to the Environmental Master Plans. The more significant design modifications were at the Magor Interchange where Bencroft Lane was realigned and at Docks Way junction.
5. A second supplement to the ES was published in December 2016 which provided errata, supplementary information which had become available since the publication of the September 2016 ESS, and an assessment of the modifications of the Scheme design. The Scheme design changes assessed within the December 2016 ESS included changes to future year road traffic forecasts, vertical height adjustments of the Usk Crossing, changes to the retaining structures of the Docks Way Link Road, and an additional borrow pit at Magor.
6. In March 2017, a further modification to the design was made in the form of an additional eastbound off-slip at Magor. The design change required a modification to the published draft Statutory Orders. This was reported and the environmental implications assessed in a third Environmental Statement Supplement (the March 2017 ESS).
7. In April 2017, further modifications to the draft Orders were published in regard to the proposed bridge protection works in the vicinity of the Junction Cut within Newport Docks. That design modification together with the creation of a new length of wharf was the subject of the fourth supplement (the April 2017 ES Supplement).
8. This fifth supplement (the August 2017 ES Supplement) is concerned with the environmental assessment of relocating some of ABP's assets and those tenants within Newport Docks that would be directly affected by the proposed Scheme. The supplement also updates the information on the bridge protection measures and the creation of new quayside provided in the April 2017 ES Supplement together with the details of wharf refurbishment elsewhere within the docks.
9. The main environmental topics assessed in this ES Supplement are landscape and visual effects (LVIA), including seascape; cultural heritage, ecology and nature conservation, geology and soils including land contamination, and the water environment.

10. The LVIA concluded that the impacts would have a neutral significance of effect on landscape character and seascape, and a slight adverse significance of effect on visual amenity.
11. With regard to cultural heritage, whilst there is some potential for impacts on buried archaeology as a result of the relocation proposals, the presence of historic landfilling and the need for land raising, would limit any likely significance of effect to slight or neutral provided construction was preceded by a proportionate and suitable programme of archaeological investigation.
12. A Phase 1 habitat survey and National Vegetation Classification survey of the relocation areas were completed in July 2017. The main habitat affected would be the loss of ephemeral, short perennial vegetation and scrub, however significant areas of such habitat would remain within and between the relocation land parcels after development.
13. 2017 ecological surveys concluded that the habitats and, or, conditions present do not support dormouse, badger, great crested newt or water vole. No bat roosts have been recorded. In common with other undeveloped areas in Newport Docks habitat is suitable for terrestrial invertebrates, the loss of which would be of moderate significance in EIA terms. Ongoing protected species surveys to date report no signs of otter activity, however habitat is suitable for reptiles although no signs have been observed. Terrestrial invertebrate, otter and reptile surveys will be reported in September 2017.
14. The assessment of the potential effect on breeding birds is based on recent surveys of adjacent areas and a site visit in July 2017. Key species recorded were Cetti's warbler, Lapwing and Little ringed plover; species listed under either Section 7 of the Environment (Wales) Act 2016 or Schedule 1 of the Wildlife and Countryside Act 1981. Mitigation plans as part of the M4CaN project would provide alternative habitat for most of the breeding bird species, including specific mitigation for lapwing at Maerdy Farm. Overall, the assessment of effects for Cetti's warbler would remain as significant and the effects on other bird species, including Little ring plover would remain as not significant. A site specific breeding bird survey would be undertaken in 2018 as part of the EIA required to gain consent for the relocation proposals.
15. Wintering birds would be likely to be displaced, however based on previous assessments of adjacent areas in the March 2016 ES and September 2016 ESS the effects would not be significant, other than for redshank for which there would be a moderate significant effect in the short and medium terms. A site specific wintering bird survey would be undertaken during winter 2017/18 as part of the EIA required to gain consent for the relocation proposals.
16. A separate Statement to Inform an Appropriate Assessment (SIAA) Addendum assessed the likely significant effect with respect to wintering birds in the Severn Estuary SPA and Severn Estuary Ramsar. The SIAA Addendum concluded, "*beyond reasonable scientific doubt, that the proposals for works and development at the south of Newport Docks would not adversely affect the integrity of the sites. Nor would the proposals affect the overall assessment of the M4CaN Scheme that this would similarly not affect the integrity of the sites*".
17. With regard to the effect on the local marine ecology from the bridge protection works and the creation of new, and refurbishment of existing quays the assessment concluded a neutral significance of effect.

18. The conclusion of the assessment of potential adverse effects arising from the combination of contaminated land, surface and, or groundwaters was, with the implementation of suitable mitigation measures, there would be no significant effects.
19. This supplement and the previous Environmental Statement Supplements should be read together and alongside the published March 2016 ES. None of the additional data provided in the August 2017 ESS materially alters the assessment and conclusions of the March 2016 ES.
20. Copies of the modified Orders, this ES Supplement and Summary, and supporting information are available to view during normal office hours at the locations below.
 - Orders Branch, Transport, Department for Economy and Infrastructure, Welsh Government, Cathays Park, Cardiff, CF10 3NQ.
 - Newport City Council, Civic Centre, Godfrey Road, Newport, NP20 4UR.
 - Monmouthshire County Council, County Hall, Rhadyr, Usk, NP15 1GA.
 - Monmouthshire County Council, Innovation House, Wales 1 Business Park, Magor, Monmouthshire, NP26 3DG.
 - Newport Central Library, John Frost Square, Newport, NP20 1PA.
21. Further copies of the ES Supplement Summary can be obtained free of charge from the Welsh Government in Cardiff at the following address.

Orders Branch
Transport
Department for Economy and Infrastructure
Welsh Government
Cathays Park, Cardiff
CF10 3NQ.
22. This ES Supplement and Summary (together with the full March 2016 ES, the September 2016 ESS, the December 2016 ESS, the March 2017 ESS and the April 2017 ESS) are available to view and download from the Welsh Government website:

<http://www.wales.gov.uk/m4newport>
23. Electronic copies of the March 2016 ES and five ES Supplements (on DVD) can be purchased from the above Welsh Government address at a cost of £20 (including postage and packaging).
24. Paper copies of the March 2016 ES and five ES Supplements are also available from the above address, although an administrative charge will be made to cover the cost of copying (price on application).

1 Introduction

1.1 Introduction

- 1.1.1** The M4 Corridor around Newport (M4CaN) (referred to in this document as ‘the Scheme’) includes a proposed new section of three lane motorway between Castleton (Junction 29 of the existing M4) and Magor (Junction 23 of the existing M4) to the south of Newport in South Wales.
- 1.1.2** The Scheme would also include a range of Complementary Measures. These are measures that would assist in alleviating travel related problems on the existing M4. The measures include reclassification of the existing M4 as a trunk road between Castleton and Magor, relief to Junction 23A with a new M4/M48/B4245 connection and provision of cycle and walking friendly infrastructure. These measures are complementary to the provision of the new section of motorway but would not by themselves alleviate the travel related problems on the existing M4.
- 1.1.3** Draft Orders for the proposed M4CaN were published by Welsh Government in March 2016, together with an Environmental Statement (ES) and associated reports.
- 1.1.4** In September 2016 an Environmental Statement Supplement (ESS) was published (the September 2016 ESS) which in Part A corrected a number of factual errors, inconsistencies and omissions primarily related to baseline information. Part B clarified aspects of the cultural heritage survey work and proposed mitigation, the marine historic environment, aspects of the landscape and visual assessment during construction, the impact on Barecroft Fields which is part of the Magor Marsh nature reserve, and the impact during construction on the Cardiff to Newport cycleway (NR88). Part C provided updated or additional information in the form of an updated Drainage Strategy, an updated Reen Mitigation Strategy, additional information on the Pye Corner WWII Barrage Balloon Tethers site, the results of the 2015 – 2016 Wintering Bird Survey, the 2016 Breeding Bird Survey, the 2016 Great Crested Newt Survey and the 2016 Bat Hibernation Roost Survey. Interim statements with regard to the Dormouse Survey 2016 and the Bat Emergence Survey 2016 were also included.
- 1.1.5** Part C also updated Appendix 11.1 of the March 2016 ES and its supporting Contaminated Land (CL) annexes. It also provided the results from further rounds of quarterly surface water monitoring and provided an update to the Flood Consequences Assessment (FCA, ES Appendix 16.1). Appendix 17.2 (Planning Applications (for cumulative assessment)) and Appendix 18.1 (Register of Environmental Commitments) were also updated.
- 1.1.6** None of the additional data provided in the September 2016 ESS materially altered the assessment and conclusions of the March 2016 ES.
- 1.1.7** Part D of the September 2016 ESS described and assessed a number of modifications to the Scheme design since the publication of the draft Orders and consequential modifications to the Environmental Master Plans (EMP). The design modifications were at the Magor Interchange where Bencroft Lane was realigned and at Docks Way junction. Minor modifications were made to the Glan Llyn Junction and between M4 J23 and J23a.

- 1.1.8** A second supplement to the ES was published in December 2016 which provided errata in Part A and clarification on the Buildability report and the Pre-Construction Environmental Management Plan in Part B. Part C included supplementary information which became available since the publication of the September 2016 ESS. A Navigation Risk Assessment was undertaken in November 2016 and reported on in the December 2016 ESS, identifying the main risks to navigation in the River Usk as a result of the construction and operation of the Usk Crossing. Mitigation measures were proposed which included the provision of warnings, active river traffic management, pollution control and the preparation of a marine safety management plan.
- 1.1.9** An assessment of the hazardous installations affected by the Scheme was undertaken and presented in Part C along with further information on the inter-annual variability for the chosen meteorological station used in the Air Quality assessments.
- 1.1.10** Draft Protected species mitigation strategies were presented within the December ESS for Dormouse, Bats, Great Crested Newt and Water Vole, as well as a Special Site of Scientific Interest (SSSI) Mitigation Strategy. In addition the following ecological surveys were undertaken in 2016 and the survey reports were appended to the December ESS:
- Hazel Dormouse
 - Bat Tree Survey
 - Bat Building and Structure Survey
 - Breeding Crane Survey
- 1.1.11** Part D of the December 2016 ESS described and assessed a number of Scheme design changes. These included changes to the Future Year Road Traffic Forecasts, the increased vertical height of the Usk Crossing, changes to the retaining structures of the Docks Way Link Road and an additional borrow pit at Magor.
- 1.1.12** None of the additional data provided in the December 2016 ESS materially altered the assessment and conclusions of the March 2016 ES.
- 1.1.13** Since December 2016 there has been a further change to the Scheme design. This change included a new eastbound offslip leaving the M4 west of Magor and joining the re-aligned Newport Road roundabout. A third supplement to the ES was published in March 2017 (March 2017 ESS).
- 1.1.14** As a consequence of the updated Navigation Risk Assessment reported in the April 2017 ESS bridge protection measures for the Usk Crossing at the Junction Cut between South Dock and North Dock within Newport Docks were incorporated into the Scheme design. These are described and assessed in the April 2017 ESS.
- 1.1.15** Ongoing discussions with the owner and operator of Newport Docks, Associated British Ports (ABP), has identified the need to relocate a number of ABP's existing assets and a number of existing commercial tenants within the docks that would be directly affected by the published Scheme to alternative locations within the docks. The main relocation area identified is located on the south east side of the South Dock which adjoins the River Usk Special Area of Conservation

(SAC) and the River Usk (Lower Usk) Site of Special Scientific Interest (SSSI). Given the proximity of the relocation area to the SAC and SSSI, and thus its environmental sensitivity, an environmental assessment has been undertaken of the tenant relocation and is reported in this, the August 2017 ES Supplement. This supplement should be read alongside the published March 2016 ES and the previous ES Supplements.

1.2 Scope and Content of this ES Supplement

1.2.1 This ES Supplement is concerned with the relocation of those of ABP's assets and commercial tenants within the Newport Docks that would be directly affected by the published Scheme and, in particular the indirect effects of building the necessary relocation infrastructure within the docks to accommodate those relocations. It also updates information on the bridge protection measures described in the April 2017 ESS, and describes and assesses the creation of a new, and the refurbishment of existing quayside within South Dock.

1.2.2 A non-technical summary of this ES Supplement is provided at the beginning of this document and is also available as a separate bilingual document.

1.2.3 Table 1.1 sets out the structure of this ES Supplement. New figures and appendices unique to this ESS and not previously forming part of the March 2016 ES or its supplementary ESSs are numbered with the prefix 'ESS5'.

Table 1.1: Structure of the August 2017 ES Supplement

Structure of ES Supplement	
Main Text	Glossary
	Non- Technical Summary
	Introduction
	Proposed relocation works within Newport Docks
	Bridge Protection Measures update and other works in South Dock
Figures	
Updated figures and drawings to accompany the text.	
Appendices	
New specialist reports forming technical appendices to the text.	

1.3 The Assessment Team

1.3.1 The Welsh Government awarded a Professional Services Contract for the Scheme development and environmental surveys, including publication of the March 2016 ES and up to and including any Public Local Inquiry. The contract was awarded to a Joint Venture of Costain, Vinci and Taylor Woodrow with a consultant joint venture of Arup and Atkins, supported by environmental sub-consultant RPS.

1.3.2 The Environmental Impact Assessment (EIA) process has been managed by RPS, taking into account information provided by the Welsh Government, design and consultant team. RPS is a registrant of the Institute of Environmental Management and Assessment (IEMA) Quality Mark. Details of the EIA project team are provided in Table 1.2.

Table 1.2: EIA Topic Specialists

Topic	Main Author/Contributor
EIA project management	RPS
Air Quality	Arup (part of Arup Atkins Joint Venture)
Cultural Heritage	RPS
Landscape and Visual Effects	Atkins (part of Arup Atkins Joint Venture)
Ecology and Nature Conservation	RPS
Geology and Soils	RPS
Materials	RPS
Noise and Vibration	RPS
All Travellers	RPS
Community and Private Assets	RPS
Road Drainage and the Water Environment	RPS
Assessment of Cumulative Effects and Inter-relationships	RPS
Environmental Management	RPS

1.4 Publication of the ES Supplement

1.4.1 This ES Supplement is submitted to accompany the publication of Supplementary Orders for the Scheme.

1.4.2 Copies of the Supplementary Orders, this ES Supplement and supporting information are available to view during normal office hours at the locations below.

- Orders Branch, Transport, Department for Economy and Infrastructure, Welsh Government, Cathays Park, Cardiff, CF10 3NQ.
- Newport City Council, Civic Centre, Godfrey Road, Newport, NP20 4UR.
- Monmouthshire County Council, County Hall, Rhadyr, Usk, NP15 1GA.
- Monmouthshire County Council, Innovation House, Wales 1 Business Park, Magor, Monmouthshire, NP26 3DG.
- Newport Central Library, John Frost Square, Newport, NP20 1PA.

1.4.3 In addition, copies of the draft Orders, the March 2016 ES and associated reporting published in March 2016, the September 2016 ESS, the December 2016 ESS, the March 2017 ESS and the April 2017 ESS are available in the same locations.

1.4.4 Further copies of the Non-Technical Summary (which is available as a separate bilingual document) can be obtained free of charge from the Welsh Government in Cardiff at the following address.

Orders Branch
Transport
Department for Economy and Infrastructure
Welsh Government
Cathays Park, Cardiff
CF10 3NQ.

- 1.4.5** The full March 2016 ES, September 2016 ESS, December 2016 ESS, March 2017 ESS, April 2017 ESS and August 2017 ESS are available to view and download from the Welsh Government website.

<http://www.wales.gov.uk/m4newport>

- 1.4.6** Electronic copies of the March 2016 ES and ES Supplements (on DVD) can be purchased from the above Welsh Government address at a cost of £20 (including postage and packaging).

- 1.4.7** Paper copies of the March 2016 ES and ES Supplements are also available from the above address, although an administrative charge will be made to cover the cost of copying (price on application).

1.5 Next Steps

- 1.5.1** Welsh Government is currently holding a Public Local Inquiry (commenced in February 2017). The Inquiry is being held before two independent Inspectors who are hearing and considering the evidence both for and against the published Scheme and subsequently will report their findings and recommendations to the Welsh Ministers. The Welsh Ministers will consider all issues, including any new information arising, before deciding whether to proceed with the Scheme and, if so, make the Orders with or without modification.

- 1.5.2** Further information on the key dates for progressing the new section of motorway to the south of Newport will be issued in due course.

2 Proposed Relocation Works within Newport Docks

2.1 Introduction

2.1.1 Since the publication of the draft Orders and the M4CaN ES in March 2016 discussions with Associated British Ports (ABP), the owner and operator of the Port of Newport (Newport Docks), has identified more fully the potential impact the proposed Scheme may have on the operation of the docks generally and on the operation of those of ABP's commercial tenants within the docks that would be affected directly by the proposals.

2.1.2 The relocation works identified and described below include those required as a consequence of the bridge protection measures at the Junction Cut as originally set out in the April 2017 ESS (ESS 4), and amended in this supplement (see Section 3).

2.1.3 As a result of those discussions the proposed Scheme has been amended to provide the following works to offset the impact of the proposed Scheme to Newport Docks:-

- proposed works to relocate some of ABP's assets and commercial tenants at three locations;
- the phased provision of new 303m of quay on the north side of South Dock; and
- the refurbishment of 250m of existing quay on the south side of South Dock.

Proposed Planning Strategy

2.1.4 The loss of various buildings and storage space operated by ABP and some of ABP's commercial tenants within Newport Docks would be a direct effect of the proposed M4CaN scheme. The creation of the necessary relocation infrastructure, including service roads, replacement buildings and hardstanding for storage elsewhere within Newport Docks, would be an indirect consequence of the construction of the proposed new section of motorway.

2.1.5 Consequently, to ensure a robust overall environmental assessment of the M4CaN scheme, it is necessary to assess both the direct and indirect effects of creating the necessary relocation infrastructure on the local environment, particularly with regard to biodiversity. This supplement (ESS 5) provides that assessment.

2.1.6 The legal basis for the M4CaN ES is the Highways Act 1980 (as amended) (see March 2016 ES paragraphs 1.5.4 and 5.2.1). Consequently, permission to build the necessary relocation infrastructure will be taken forward, either through ABP's existing Permitted Development (PD) Rights or by application(s) under Part 3 of the Town and Country Planning Act legislation, or a combination of both. Whichever consenting strategy is adopted, a separate EIA under the Town and Country Planning Act (Environmental Impact Assessment) (Wales) Regulations 2017 will be undertaken and reported in an ES in accordance with those regulations (Schedule 2, 10 (a) and Schedule 1 8 (b)).

- 2.1.7** One of the objectives of ESS5 is to assess whether, should the port relocation plan proposals proceed, and should reasonable and non-controversial mitigation measures during construction, together with best construction practice, be implemented, the relocation works would have any significant adverse effect on the local environment, or the adjacent internationally and nationally designated sites (the River Usk SAC, the Severn Estuary SAC, SPA and Ramsar, and the River Usk (Lower Usk) SSSI).
- 2.1.8** Throughout the assessment reference is made to various mitigation measures included in the M4CaN pre-CEMP and the assumption that these, or similar robust and widely accepted construction mitigation measures, would be employed for the works to build the necessary relocation infrastructure.
- 2.1.9** A separate standalone Addendum to the M4CaN Statement to Inform an Appropriate Assessment (SIAA) has been prepared to provide the Welsh Ministers (“the Competent Authority”) with the information necessary to assess the implications for European sites of the works and development proposed within Newport Docks to accommodate businesses which would be relocated away from the line of the new section of motorway. That Addendum should be read together with the updated M4CaN SIAA report to provide a full assessment of the implications of the M4CaN Scheme on internationally designated sites.
- 2.1.10** In addition, a Hazardous Substances Consent will be required from Newport City Council in respect of the relocation of the Origin Fertiliser Terminal.

Marine Licence

- 2.1.11** As stated at paragraph 1.5.6 of the March 2016 ES, Welsh Government is seeking an exception under Regulation 10 of the Marine Works (Environmental Impact Assessment) Regulations 2007 which allows NRW to determine that a separate EIA is not required for marine works and marine dredging on the basis that EIA has already been, is being, or is to be carried out by another consenting authority. This Supplement provides the necessary information to inform a marine licence application, the scope of which has been agreed in previous correspondence with the Marine Licensing Team at NRW.
- 2.1.12** In response to the consultation undertaken by the Marine Licensing Team at NRW of the April 2017 ESS (which included a revised Navigation Risk Assessment), Cadw requested that the following matters (in italics) be addressed.
- a) *Consider and reference to the UK Marine Policy Statement, together with the forthcoming Welsh National Marine Plan.* This is described in paragraphs 2.7.6 to 2.7.21 of this ESS.
 - b) *Integrated preparation of terrestrial and marine archaeological reports with specific reference to marine (inter and sub-tidal) archaeology throughout the document.* The Cultural Heritage Management Plan (CHMP, March 2016 ES Appendix 8.10) identifies the known archaeological and cultural heritage features and sites that would be affected by the construction and operation of the proposed new section of motorway, and describes the scope and extent of any work that is to be undertaken in order to alleviate any adverse effects. As such, it provides an integrated approach to archaeological mitigation. The CHMP is being updated, but other than potentially dredging within South

Dock, will not include any work seaward of MHW as no construction activities are required, or impact on archaeology predicted, in those areas.

- c) *The archaeological Written Schemes of Investigation will run seamlessly from land to sea. As b) above.*
- d) *The seascape character areas will be considered in addition to the landscape areas, the impact of the scheme on the marine character areas, particularly No.29 will be assessed. This is described and/or assessed in paragraphs 2.6.8, 2.7.7 to 2.7.21, and 2.7.26 to 2.7.42 of this ESS.*
- e) *An appropriate monitoring regime will be implemented for areas where ground dewatering activities are to take place, and the methodology will be reported in the form of an environmental monitoring plan. Correspondence with Cadw via the Marine Licensing Team at NRW clarified that the reference to dewatering was with regard to any dewatering operations that would take place either within or adjacent to the inter-tidal zone and which would have the potential to affect archaeological deposits within the inter-tidal zone. Construction works within the inter-tidal zone would be confined to the east bank of the River Usk for the construction of the Eastern Tower and two approach viaduct piers of the Usk Crossing. As set out in the construction methodology for the foundation works of those elements (paragraphs 11.3.24 to 11.3.28 of the Buildability Report Update, Appendix SR3.1 of the December 2016 ESS) a sheet piled cofferdam would be required, and “only limited dewatering would be needed within the cofferdams to keep the formation dry”. Dewatering within the inter-tidal zone beyond the cofferdams would not occur and can be ignored.*
- f) *An explanation will be provided for areas where the effective monitoring of ground de-watering cannot take place. As e) above.*

2.2 Proposed Relocation Works

2.2.1 The tenant and land relocation proposals have been developed based on information received from ABP relating to Newport Docks as well as observations following site visits. The information has been used to identify potential constraints and to provide a basis for informing the works proposed to address the impacts identified. The details will be reviewed and worked up at subsequent design stages, including that for any application(s) to gain consent to build the relocation infrastructure. Consequently, whilst the use of Land Parcels A, B and C is fixed (see below) the location and orientation of individual buildings shown within each plot are only indicative at this stage.

2.2.2 The proposed relocation works generally comprise relocating ABP's assets and the leaseholders (ABP's tenants) to undeveloped land parcels within the docks on a like-for-like basis. The majority of the existing assets and tenants will be relocated to three land parcels, as shown on Figure ESS5 2.1. They are:

- a) Land Parcel A – located to south of South Dock
- b) Land Parcel B – located between the Southern Distributor Road (SDR) (A48) and north quay of South Dock
- c) Land Parcel C – located to south east of South Dock

2.2.3 The relocated parcels will generally consist of new buildings, hard standings, fencing and service roads, as well as infrastructure provision equivalent to the existing facilities.

2.2.4 ABP have prepared *The Port of Newport Masterplan 2015 – 2035* which sets out ABP's vision for the future development of Newport Docks. The proposed relocation works shown in Figure ESS 2.2b are broadly in line with the objectives, though not the detail or proposed scheduling of ABP's masterplan. In addition to showing the reorganisation of the docks, Figures ESS5 2.2a and 2.2b provide details of those land plots affected and the proposals to mitigate the effects. The plot number prefixes used in Figure ESS5 2.2b and the text below refer to the location of the land parcels described above.

2.2.5 The following paragraphs summarise the proposed relocation proposals.

Premises to be Relocated

ABP Central Workshops, Stores and Medical Centre (C1)

2.2.6 The ABP Central Workshops, Stores and Medical Centre, currently located on the east side of the Junction Cut in the vicinity of the proposed west tower for the Usk Crossing, are proposed to be relocated to the parcel of land on the south east side of South dock. This is bounded by the South Dock railway link, the River Usk and the easternmost wind turbine, and is referred to as plot C1 on Figure ESS5 2.2b.

Common User Storage Areas (A1)

2.2.7 Four Common User Storage Areas are located in the general area of the footprint of the proposed Usk Crossing. The majority of the impacted Common User Storage Areas would be relocated to the south of South Dock on a like-for-like basis adjacent to the refurbished 250m length of quay that is proposed to be made available as a result of the Scheme, allowing large ships to offload their cargo. A smaller proportion of the impacted Common User Storage Areas will be relocated to the north of South Dock and the proposed length of new quay.

ABP Plant Compound (A1)

2.2.8 The ABP Plant Compound, which is currently located immediately adjacent to the west side of the Junction Cut, would be included in the Common User Storage Areas (A1) and thus be relocated to an area to the south of South Dock on a like-for-like basis.

The former ABP Site Office (A1)

2.2.9 The former ABP Site Office located next to the ABP Plant Compound would be demolished and the land it currently occupies included in the new areas of common user storage area provided in the area to the south of South Dock (A1).

Hedland Engineering (A2)

2.2.10 Hedland Engineering, currently located on the east side of Junction Cut close to the footprint of the Usk Crossing, would be relocated to an area to the south of South Dock on a like-for-like basis.

Origin Fertiliser (A3)

- 2.2.11** The Origin Fertiliser Terminal site is currently located to the west of the West Way road, directly south of the proposed Scheme, and operates under a Hazardous Substances Consent. The site would be relocated to the south of South Dock at location A3 (Figure ESS5 2.2b) on a like-for-like basis, conveniently located close to the south of the refurbished 250 m of wharf to be provided. The position and site layout has been developed in consultation with ABP and Origin. Newport City Council (who are the Hazardous Substance Authority) have also been consulted and a Hazardous Substance Consent is being sought.

10 Shed (W E Dowds) (A4)

- 2.2.12** 10 Shed and the surrounding hard standing are located to the south of the proposed Scheme, between it and South Dock. The site is currently used by WE Dowds and would be relocated to vacant land south of South Dock (A4) on a like-for-like basis close to the refurbished 250 length of wharf to be provided (Figure ESS5 2.2b).

Asset International (A6)

- 2.2.13** Asset International facilities, currently located within the footprint of the proposed Usk Crossing adjacent to the River Ebbw, would be relocated to land located south of South Dock on a like-for-like basis at location A6.

Scott Pallets (A7)

- 2.2.14** Scott Pallets facilities, currently located within the footprint of the proposed Usk Crossing, would be relocated to land located south of South Dock on a like-for-like basis prior to the construction of the Scheme at location A7.

Road Maintenance Services (RMS) (A8)

- 2.2.15** Road Maintenance Services facilities, currently located within the footprint of the proposed Usk Crossing close to the River Ebbw would be relocated to land located south of South Dock on a like-for-like basis at location A8.

CJN Engineering (A9)

- 2.2.16** CJN Engineering, currently located on the east side of Junction Cut within or close to the footprint of the Usk Crossing, would be relocated to the south of South Dock on a like-for-like basis.

Ma's Ba Café (A5M)

- 2.2.17** Ma's Ba Café, currently located within the footprint of the proposed Usk Crossing, would be relocated to an equivalent area of land located to the south of South Dock on a like-for-like basis at location A5M.

Laidlaw (A5O)

- 2.2.18** Laidlaw's facilities, currently located within the footprint of the proposed Usk Crossing, would be relocated to land located south of South Dock on a like-for-like basis, prior to the construction of the Scheme at location A5O.

R Williams Transport (A5P)

- 2.2.19** R Williams Transport facilities, currently located within the footprint of the proposed Usk Crossing, would be relocated to land located south of South Dock on a like-for-like basis, prior to the construction of the Scheme at location A5P.

Bridge Time (A5Q)

- 2.2.20** Bridge Time facilities, currently located within the footprint of the proposed Usk Crossing, would be relocated to land located south of South Dock on a like-for-like basis, prior to the construction of the Scheme at location A5Q.

Ronnie Evans (A5R)

- 2.2.21** Ronnie Evans facilities, currently located within the footprint of the Usk Crossing would be relocated to land located south of South Dock on a like-for-like basis, prior to the construction of the Scheme at location A5R.

A1 Skips (A5CC)

- 2.2.22** At present, A1 Skips are located at the northern end of Land Parcel B, behind (to the west of) NR Evans. This land will be required for the Docks Way Link Road and its junction with the A48 Southern Distributor Road. A1 Skips facilities would be relocated to the south of South Dock, on a like-for-like basis at location A5CC.

Sims Metal

- 2.2.23** Sims Metal is a scrap metal recycling yard located to the west of Middle Quay. The west fence line and access to the car park in the north west corner of the Sims Metal plot will be moved eastwards to accommodate the re-aligned Westway Road.

International Timber (B1)

- 2.2.24** The International Timber Terminal is located on the west side of Junction Cut, near the Western Quay of South Dock and within the footprint of the Usk Crossing. The site comprises asphalt concrete, concrete hardstanding and lighting, and is enclosed by security fencing. During construction, International Timber would be provided with land at B1, it would also be provided with access to vacant land located to east of West Way Road and land to the South Tom Lewis Way, which is reserved for potential development by Vogen. Large ships unable to access North Dock would be able to offload cargo within the South dock via either the new length of quay to the north side of South Dock or the refurbished 250m long quay at south side of South Dock. On completion of the Scheme, the land which is currently used by International Timber will be offered back to ABP and International Timber with a restriction placed on its use. A preliminary fire risk assessment has been carried out on the basis of their current operating procedures and timber stack heights, and measures have been incorporated into the design (consisting of the use of fire resistant paint) to ensure that this use could continue. The current use would form the basis of the restriction on the future use of the land beneath the bridge which is currently used by International Timber, with any future uses to be by agreement.

JED Crushing and Screening (B2)

- 2.2.25** JED Crushing and Screening, currently located within the footprint of the proposed Usk Crossing would be relocated to vacant land located to the south of Tom Lewis Way, on a like-for-like basis, at location B2.

N R Evans (B3)

- 2.2.26** NR Evans would remain *in situ* at B3, with a reduction in land area during the construction of the Scheme which is to be largely reinstated on completion of the Scheme.

Baldwin Crane Hire (B4)

- 2.2.27** Baldwin Crane Hire's building would be relocated outside of the CPO but within its existing compound (B4). The site will be reduced in size permanently, but it is expected that they will be able to continue their operations from the site.

R C Marshalls (B5)

- 2.2.28** R.C. Marshalls would be relocated outside of the CPO but within their existing compound (B5). The site will be reduced in size permanently but it is expected that they will be able to continue their operations from the site.

New Adventure Travel (B6)

- 2.2.29** New Adventure Travel's building would be relocated outside of the CPO but within its existing compound (B6). The site will be reduced in size permanently but it is expected that they will be able to continue their operations from the site.

LDH Hire (B7)

- 2.2.30** LDH Hire is located at the northern end of Land Parcel B (B7), and would be immediately adjacent to the proposed Docks Way link road. A retaining structure will be constructed within the western boundary of the site to enable the company to remain *in situ*.

SMS Towage

- 2.2.31** SMS Towage, currently located immediately to the north of the Junction Cut in North Dock, would be temporarily relocated to Middle Quay during the construction phase of the Scheme. SMS Towage would then be permanently relocated to the south west build out of the bridge protection measures upon completion of the Scheme.

ABP's Western Gateway

- 2.2.32** The gatehouse at ABP's Western Gateway (Figure ESS5 2.2b) will be relocated further south as part of the Scheme, and will remain as close as possible to the existing location.

Flooding

- 2.2.33** Natural Resources Wales' (NRW) Development Advice Map indicates that the majority of the land to be used for relocation is within the floodplain, either in

Zone B (areas known to have flooded in the past) or in Zone C2 (areas of the floodplain without significant flood defence infrastructure). Consequently, it will not be possible to develop Land Parcels A, B and C at their current levels above Ordnance Datum.

- 2.2.34** A preliminary assessment of the future flood risk at the current tenant locations and at the proposed relocation sites is provided at Appendix ESS 2.1.
- 2.2.35** A formal detailed Flood Consequences Assessment (FCA), or assessments, will be required to assess the potential flood risk associated with the proposed relocation works, once the final specifications for the relocation sites have been agreed with ABP, and its tenants. In the meantime, it is considered that flood risk will be simply mitigated by locally raising ground levels where necessary, to either above the 1 in 200 year tidal flood level or the 1 in 1000 year tidal flood level referred to below, depending on the operations that take place within each sub-plot.
- 2.2.36** The existing ground profile for Land Parcel A varies between 8m and 10m AOD. The existing ground profiles for Land Parcels B and C vary from 9m to 10.5m AOD (see Appendix ESS 2.1 for further details).
- 2.2.37** The tidal flood level near Land Parcels A, B and C for the 1 in 200 year flood return in 2018 has been estimated at 8.49m AOD, and for the 1 in 1,000 year flood, 8.82m AOD. Including an allowance for climate change over a period of 75 years to 2093, it is estimated that those tidal flood levels will increase to 9.22m and 9.55m AOD respectively. Consequently, existing ground levels will need to be raised by approximately 1m – 1.5m to mitigate any flooding for the 1 in 200 year flood return period including an allowance for climate change. Depending on the type of development this may need to be raised to the 1 in 1000 year flood return period including an allowance for climate change.

Surface Water Drainage

- 2.2.38** A new storm network will need to be installed to serve the proposed development. It is proposed to collect any storm water flows generated from the proposed roofs and hardstandings via gullies, downpipes and linear drainage channels. Storm flows will then be transmitted via a new storm gravity network and discharged to nearby water bodies such as South Dock, existing drainage ditches or rivers.
- 2.2.39** No attenuation of storm flows is considered necessary, as the discharge location is either under tidal influence or regulated by the locks.
- 2.2.40** Pollution prevention measures such as catchpits and petrol interceptors will be installed prior to discharging into any water body. Subject to the operational requirements of the businesses, surface water runoff generated from parts of the relocated facilities which may be harmful to the environment may need to be stored and disposed to a licensed treatment facility to be dealt with appropriately.
- 2.2.41** The surface water drainage network is likely to be approximately 1.5m to 2.5m deep. This is likely to encroach within the existing ground profile even after raising of the levels to reduce the risk of flooding.

Foul Drainage

- 2.2.42** It is proposed to gravitate all foul flows generated from the relocated facilities into either packaged treatment works, septic tanks or cesspits. Foul flows will then be treated to an appropriate level before being discharged into a nearby water body such as the docks or River Usk. A pumped solution may be required following treatment of foul flows generated from the relocated facilities subject to confirmation of proposed site levels and existing inverts of existing foul infrastructure.
- 2.2.43** The foul drainage network is likely to be approximately 1.5m to 2.5m deep. This is likely to encroach within the existing ground profile even after raising of the levels to reduce the risk of flooding.

Foundations

- 2.2.44** The construction of new buildings will be required in the proposed relocation areas. Site-specific desk study will be undertaken for each development and intrusive ground investigations undertaken to confirm ground conditions.
- 2.2.45** Foundation solutions will depend on the form and structure of proposed buildings. It may be possible to improve the ground beneath lightly loaded structures, which are not sensitive to settlement, to enable raft foundations to be used. Given the thicknesses of variable Made Ground and soft Estuarine Alluvium, it is likely that heavier loaded structures of those sensitive to settlement will need to be founded on piles. This will apply to the majority of the buildings, particularly Origin, Dowds, workshops and stores, CJN and Asset International.

Construction Finishes

- 2.2.46** The proposed relocation plots for each parcel will generally consist of tarmacadam or concrete slabs. This will generally replace made ground which is variable in nature of cohesive and granular varieties. Subject to confirmation of ground conditions and proposed uses, some concrete slab hardstandings may need to be founded on a piled matrix.
- 2.2.47** The depth of construction build-up is likely to be above the existing ground profile when needed to raise the existing ground profile due to flooding.

Utilities

- 2.2.48** New potable water, electrical and telecommunication supplies will be needed for each tenant if served in the existing situation.
- 2.2.49** The depth of utilities is likely to be above the existing ground profile when needed to raise the existing ground profile to mitigate flooding risk.

Buildings Generally

- 2.2.50** The majority of larger buildings will be steel portal framed and covered with cladding. For the purposes of assessment it has been assumed, on a like-for-like replacement basis that maximum height to eaves will range from 5.5m to 7m with a maximum ridge height of approximately 10m.

2.2.51 Figure 2.2a shows the current organisation of Newport Docks whilst Figure 2.2b, the port relocation plan, sets out the current view of the layouts for Land Parcels A, B and C. The port location plan is still being developed and details may be subject to change as individual tenant briefs are yet to be agreed.

2.2.52 As such, parameter plans have not been produced but the principles of layout, access, development content and building heights for assessment purposes are summarised in the above and in Figure 2.2b.

2.3 Construction of New Quay

2.3.1 As part of the relocation works, a new 303m length of quay will be constructed in two phases, in line with Middle Quay on the north-west side of South Dock (Figure ESS5 2.2b). This new quay will be built in two phases and is required in part to offset the effects of reducing the width of the Junction Cut from approximately 19m to approximately 11m (see Section 3 of this ESS).

2.3.2 The assessment of the effects of constructing and operating the new length of quay is provided in Section 3 'Bridge Protection Measures and Other Works in Newport Docks', below.

2.4 Refurbishment of Existing Quay

2.4.1 As part of the relocation works, 250m of existing quay on the south side of South Dock will be refurbished (Figure ESS5 2.2b). This refurbishment is required in part to offset the effects of reducing the width of the Junction Cut from approximately 19m to approximately 11m (see Section 3 of this ESS).

2.4.2 The assessment of the effects of refurbishing and operating the refurbished length of quay is also provided in Section 3 'Bridge Protection Measures and Other Works in Newport Docks'.

2.5 Landscape and Visual Effects

Introduction

2.5.1 The purpose of this assessment is to assess the likely effects on landscape and on visual amenity that may arise from the proposals to relocate a number of ABP tenants to alternative locations within the Alexandra Docks area.

2.5.2 This assessment follows the methodology and guidelines set out in Volume 1, Chapter 9 of the March 2016 Environmental Assessment (March 2016 ES).

Scope of Assessment

Scheme Elements Scoped out of Assessment

2.5.3 The following elements of the relocation proposals are ground level elements only. It is not considered that they would have any measurable effect on landscape or visual amenity and are therefore not considered further in this assessment:

- Plot B1 – hardstanding only

- Plot B2 – hardstanding only
- Plots A1 (3No.) – hardstanding only
- Relocated parking areas, site access footways, access roads and quay access points
- Quay extensions and refurbishment

2.5.4 Five tenants who are located along the northern end of West Way Road would be affected by the relocation proposals: NR Evans (B3), Baldwins Crane Hire (B4), RC Marshalls (B5), new Adventure Travel (B6) and LDH Hire (B7). Works to these plots would involve the relocation of existing buildings within the plot curtilages and minor site layout alterations. The buildings affected are either industrial sheds or stacked site cabins. These structures are relatively small in the context of other existing buildings within the vicinity. Due to nature and scale of the proposals and context of these plots, it is not considered that these elements of the proposals would have any measurable effect on landscape or visual amenity, and they are therefore not considered further in this assessment.

Scheme Elements Included Within Assessment

2.5.5 Having ruled out various elements of the scheme as described above, the elements that have the potential to affect landscape and visual amenity to any measurable degree are the new buildings proposed for the area of the Port that lies between South Dock and the River Usk (Land parcels 'A' and 'C'). For the purposes of the landscape and visual assessment of the ESS5, these elements comprise 'the Scheme'. They comprise three larger buildings/building groups with a footprint in excess of 6000m² (Plots A3, A4 and C1) and a number of smaller buildings with footprints ranging in size between 202 and 1072m². There would be areas of hardstanding and boundary fencing associated with these buildings, as well as infrastructure such as lighting and signage. Building heights to eaves would vary between approximately 5 and 7.7 metres.

Study Area

2.5.6 It is considered that a 2km study area, offset from the boundaries of land parcels 'A' & 'C', is an appropriate study area in order to identify likely significant effects on landscape and visual amenity as a result of the proposals within these land parcels. All receptors beyond this 2km limit are scoped out of the assessment. This approach, which is considered precautionary, has been concluded after a consideration of the following:

- The relatively enclosed nature of the surroundings;
- The nature of the proposals (which share the inherent characteristics of the elements that comprise the immediately surrounding areas); and
- the scale and massing of the proposals, which are of a smaller scale than many of the surrounding existing built elements.

Scope of Landscape Character Assessment

2.5.7 The areas proposed for the relocation of commercial tenants that would be directly affected by the published Scheme all lie within Local Landscape Character Area 3 (LCA3) – Newport Docks and Uskmouth, as defined in the March 2016 ES (refer to Volume 2, Section 9, Figure 9.13, for LCA3 location and

extents). Due to the nature of the proposals, which is for industrial development within an area already dominated by the elements associated with this type of industrial urban area, it is considered that there would be no measurable effect on the setting of other local landscape character areas that border LCA3. These neighbouring LCAs are therefore not considered further within this assessment.

- 2.5.8** It is considered that due to the scale and context of the proposals there would not be any substantial effects on the character of the relevant local seascape area (*SU49 Lavernock Point to Goldcliff*). Effects on seascape are therefore not considered further within this assessment.

Scope of Visual Assessment

- 2.5.9** The Scheme area is visually contained to the north west by existing large buildings associated with the docks area. There would be no views of the proposals from areas to the north west (the North Dock area of Alexandra Docks and receptors either side of the A48 in this direction), and all visual receptors in this direction are therefore scoped out from further consideration.

- 2.5.10** There would be no views of the Scheme available to receptors located to the east of Corporation Road/The East Usk GWR Branch Line (shown as Visual Baseline Area 3 on the accompanying Figure ESS5 2.3). There are residential, commercial and educational visual receptors in this area as well as users of Public Rights of Way (PRoW) and visitors to the Newport Wetlands National Nature Reserve. The largely flat topography and numerous intervening elements, including large industrial buildings along the east bank of the River Usk, means that there would be no impacts on the visual amenity of receptors in this area, and they are also scoped out from further consideration.

- 2.5.11** The closest visual receptors to the Scheme are workers within the Alexandra Docks area and the industrial areas along the east bank of the River Usk. These receptors are considered to have a low sensitivity to change of the type proposed. This is due to the baseline visual amenity context and the fact their focus would rarely be on the setting or surroundings as they work. Only limited parts of the study area would afford these receptors views of the Scheme due to the built-up nature of the surroundings, which would further limit the possible magnitude of impact. The above factors mean that these receptors would not be subject to significant impacts, and they are therefore also scoped out from further consideration.

Baseline

Landscape Baseline

- 2.5.12** The site for the proposed relocated works lies within Local Landscape Character Area 3: Newport Docks and Uskmouth. This LCA covers the south of Newport, from the A48 and covers either side of the River Usk. Its western boundary is defined by the River Ebbw whilst the eastern boundary is defined by Nash Road and the former steelworks site.

- 2.5.13** The LCA contains part or all the following LANDMAP aspect areas, which are described in Volume 3, Section 9, Appendix 9.5 of the March 2016 ES.

- Visual-sensory: NWPRTVS 010, 022, 040 and 041.

- Cultural landscape: NWPRTCL 002, 004, 005, 007, 014, 015, 017 and 026.
- Landscape habitat: NWPRTLH 014, 032, 034, 036, 037, 047 and 049.
- Historic landscape: NWPRTHL 022, 032 and 048.
- Geological landscape: NWPRTGL 002, 003, 004 and 052.

2.5.14 Landcover, pattern and texture: The land cover is primarily urban and consists of docks, industrial buildings and offices. There are pockets of brownfield land that have a greener, more vegetated character as a result of self-colonisation, as well as some remnant tree belts along drainage ditches and some planted shelterbelts along access roads. These are mainly to be found across the land bordering the River Usk. The River Usk is a natural, sinuous, linear feature through the centre of the LCA, and has a modified course with intertidal beaches. The LCA has a rough texture with some green wedges present alongside the edge of the River Usk, including Coronation Park. The other notable land cover feature is the landfill site to the west.

2.5.15 Scale and appearance: Many of the buildings and elements within the LCA are very large scale and include power stations and remnant infrastructure from the steelworks industry, as well as large steel-clad industrial ‘sheds’. There are numerous tall pylons, chimneys and turbines and, occasionally, large ships moored in the Docks. The raised mound of the waste disposal site is a further notable large-scale feature. The banks of the river frequently have walls and hard edges, but comprise tidal mud banks in other areas. The Newport Transporter Bridge provides a distinctive feature and landmark. Few or no natural features remain within this LCA beyond the margins of the River Usk corridor. Apart from the Newport Transporter Bridge and the River Usk, the LCA has little rarity and is of local scale. During the hours of darkness, the LCA is widely illuminated because of lighting associated with roads, buildings, turbines and feature lighting on the Newport Transporter Bridge and the A48 bridge.

2.5.16 Tranquillity: The tranquillity of the LCA is limited by its use as a busy and active industrial area and by the visual clutter of buildings, pylons, cranes, turbines and chimneys. There are, however, occasional more tranquil pockets along the River Usk and within a limited number of open spaces.

2.5.17 Cultural: The area was developed, originally to the east of the Usk, in the late 19th and early 20th centuries through the establishment of brickworks, sawmills, chemical works and iron/steelworks. Medieval wharves are known to have existed on the west bank of the River Usk, and a 15th century Newport Medieval Ship was discovered in the dry-dock in 2002. The LCA contains the Newport Transporter Bridge which is currently the lowest river crossing on the Usk. This heritage asset, of significance and a distinctive feature and landmark in a primarily urban and industrial setting, was opened in 1906 and is a Grade I listed structure. There are only seven bridges of this design in the world.

2.5.18 Human interaction: Interaction within the LCA is primarily by those working in the landscape at local industries and those undertaking recreational activities such as walking the coastal path or water-based sports including sailing. There are several derelict and empty sites within the area.

2.5.19 Based on the above description and the information contained in the March 2016 ES, Volume 3, Appendix 9.5, this LCA is judged to be of poor quality/condition

and to be of low landscape value overall, although some pockets of medium landscape value exist around the River Usk and the Newport Transporter Bridge.

Visual Baseline

2.5.20 The location and extent of visual baseline areas are shown on Figure ESS5 2.3.

Receptors Within the Eastern End of the Wentlooge Levels (Visual Baseline Area 1)

2.5.21 The section of the Wentlooge Levels within the study area lies between the Severn Estuary and the Ebbw River. Visual receptors in this area comprise users of the Wales Coast Path and occasional dispersed houses and farm buildings. Visual receptors in this area largely overlook flat, low-lying farmland defined by reed-filled reens and hedgerows which frequently provide local screening in the fore- and mid-ground (Refer to March 2016 ES, Volume 2, Section 9, Representative Viewpoint 23 on Figure 9.10). The visual amenity for receptors in the east of this area is also strongly influenced by the urban and industrial areas of Newport. Glimpses of the raised landform of the landfill site and the Alexandra Docks area are visible intermittently between and above intervening vegetation from residential properties and public rights of way in this area. The visual amenity of walkers on the Wales Coast Path is dominated by the adjacent open and expansive estuary to the south, although as the route approaches and runs along the River Ebbw, nearby industrial elements such as large industrial units, pylons, chimneys and wind turbines become dominant and detracting features of this part of the Levels landscape (refer to March 2016 ES, Volume 2, Section 9, Representative Viewpoint 24 on Figure 9.10).

2.5.22 During the hours of darkness, lighting associated with the industrial areas and the resultant glow in the sky is highly noticeable.

Receptors between the Ebbw River and Corporation Road/The East Usk GWR Branch Line (Visual Baseline area 2)

2.5.23 Receptors within this area are primarily commercial, with limited pockets of residential receptors near the far northern edge of the study area. The route of the Wales Coast Path (which, near the A48, also forms part of National Cycle Route 4) passes through this part of the study area near the northern study area boundary and also runs along the eastern bank of the River Usk to the south of the Transporter Bridge. Views from areas alongside the River Usk towards the Severn Estuary are dominated by large industrial buildings and vertical elements including chimneys, cranes, wind turbines and pylons. The Uskmouth Power Station is prominent on the skyline from many areas. Bridge crossings of varying age feature in many available views, including the Newport City Footbridge, the A48 City Bridge and the Transporter Bridge, the most distinct historic feature in the landscape. The South Docks is a large scale and expansive area with dockside development, cranes and equipment that often enclose the view, with occasional glimpses to the town of Newport visible in the middle distance on rising ground to the north (refer to Representative Viewpoint 94 on Figure 9.10, Volume 2 of the March 2016 ES). Walkers and cyclists using the Wales Coast Path and National Cycle Route 4 are the most sensitive receptors in this area, with their visual amenity being dominated by the surrounding industrial areas and busy roads. Views outwards are frequently limited to the immediate landscape

by these surrounding buildings. However, where the route follows the A48 between the Transporter Bridge and the A48 City Bridge, more open views are available across and along the river, with the river channel, tidal mudflats and associated bridges and riverside structures forming a distinctive and unique panorama (refer to Representative Viewpoint 25 on Figure 9.10, Volume 2 of the March 2016 ES).

- 2.5.24** This area is widely illuminated during the hours of darkness, with bright lights associated with roads and buildings and a resultant glow in the night sky being highly noticeable. Feature lighting associated with the bridges across the Usk means these elements are especially prominent during the hours of darkness.

Mitigation

- 2.5.25** The proposals for the relocation of the premises affected are at an early stage and there are no detailed design layouts or overall mitigation strategy in place at the time of undertaking this assessment. The assessment of landscape and visual effects is based on the construction of new buildings of a type that would generally match the surrounding existing steel portal framed, metal-clad industrial units. It assesses a scheme with hardstanding areas and essential infrastructure with no associated landscape enhancement proposals and as such represents a worst-case scenario.

Assessment

- 2.5.26** As the scheme is being assessed at this stage with no associated landscape enhancement proposals, there is no growth/maturing of planting to consider. The year 1 and year 15 operational effects would therefore be broadly the same, so effects are assessed for the construction phase and at year 1.

Landscape Effects

Local Landscape Character Area 3: Newport Docks and Uskmouth

- 2.5.27** The sensitivity of this LCA to the proposed development is low. This is based on:
- The elements of the proposed scheme being wholly in keeping with the type and scale of existing elements that dominate this LCA;
 - The presence of many existing features and elements that are in decline; and
 - The existence of few features and elements that could not be replaced (a notable exception being the Newport Transporter Bridge).
- 2.5.28** The River Usk itself is locally designated as a Special Landscape Area. However, it is not considered that this element of the LCA is sensitive to development of the type proposed because the surroundings of the river in this area are already characterised by industrial elements and functions.

Construction Effects on landscape

- 2.5.29** Construction activity that has the potential to give rise to landscape effects during the construction phase would involve:
- Clearance of existing spoil heaps and redundant built elements;
 - Clearance of vegetation across brownfield areas;

- Raising of the ground level to mitigate flood risks;
- Construction of new steel framed, steel clad buildings; and
- Installation of new areas of hardstanding and access roads.

2.5.30 All the above would involve the use of large plant and machinery, including large cranes.

2.5.31 **Potential effects on landform/drainage patterns/urban form/street pattern:** Construction activity of the scale required for the proposals would be of a similar scale to that associated with the existing industrial functioning of the area and would therefore not be uncharacteristic within this LCA.

2.5.32 **Potential effects on land cover/land use patterns/urban structure:** The construction activity would not result in the loss of any key features of the area and would create new features of a similar scale, massing and layout to the baseline landscape. There would be some loss of vegetation, mainly of brownfield, self-colonised habitats and species, details of which are provided in the Ecology and Nature Conservation section of this ESS.

2.5.33 **Potential effects on cultural and historic associations:** Construction activity would not detract from the historic/cultural associations of the Newport Transporter Bridge just to the north due to distance and scale of the proposed works.

2.5.34 **Potential effects on perceptual aspects – tranquillity and human interaction:** Construction activity would add to the existing visual clutter of the area with cranes, plant and other features combining with existing pylons, chimneys, turbines and industrial buildings to intensify the perception of industrial activity. However, due to the scale of the works, the elements and activities would coalesce with the existing surroundings with no appreciable effect on how the area is perceived. During the hours of darkness there may be a slight increase in the amount of lighting within the LCA, but the effect of this on the character of the area is considered to be negligible.

2.5.35 It is considered that the construction phase of the proposals would result in “*No noticeable loss, damage or alteration to character, features or elements*” (Table 9.8, March 2016 ES, Volume 1, Chapter 9 – ‘Magnitude and Nature of Landscape Impact’). As a result, there would be no change to the essential characteristics of the Newport Docks and Uskmouth LCA. Overall this LCA would experience a neutral significance of effect during construction.

Operational Effects on landscape

2.5.36 Operational elements that have the potential to give rise to landscape and visual effects comprise:

- Three industrial ‘shed’ type buildings/building groups with a footprint in excess of 6000m² (Plots A3, A4 and C1);
- 8 smaller industrial buildings with footprints ranging in size between 202m² and approximately 800m²;
- Areas of hardstanding and boundary fencing associated with these buildings along with infrastructure such as lighting and signage; and

- Vehicle movements, including HGVs, associated with the day-to-day operation of the businesses within the buildings.

2.5.37 Potential effects on landform/drainage patterns/urban form/street pattern: The built elements and operational activities would generally reflect the existing landform, urban form and street pattern of the surrounding area. The density of built form across the areas to be developed would be increased compared to the baseline, but this would be in keeping with the overall character of this LCA.

2.5.38 Potential effects on land cover/land use patterns/urban structure: There would be a loss of vegetation across the development areas, mainly vegetation that has emerged due to colonisation of brownfield sites, but this landcover type is not characteristic of the wider LCA, and the built form that would replace it would reflect the land-use patterns and urban structure of the surrounding industrial areas.

2.5.39 Potential effects on cultural and historic associations: Neither the setting of the Newport Transporter Bridge or of the River Usk would change to any noticeable degree because of these proposals. The surroundings would comprise the same range of elements with the same overall character.

2.5.40 Potential effects on perceptual aspects – tranquillity and human interaction: The proposed developments reflect the scale, layout, use and appearance of the surrounding areas and as such the area would continue to be perceived as a busy, urban, predominantly industrial area. There would be a barely perceptible change to the levels of artificial illumination during the hours of darkness.

2.5.41 It is considered that the operational phase of the proposals would result in “*No noticeable loss, damage or alteration to character, features or elements*” (Table 9.8, March 2016 ES, Volume 1, Chapter 9 – ‘Magnitude and Nature of Landscape Impact’). As a result, there would be no change to the essential characteristics of the Newport Docks and Uskmouth LCA. Overall this LCA would experience a neutral significance of effect during operation.

Visual Effects

2.5.42 As identified in the Scope of Assessment and Baseline section above, the proposals have the potential to affect the visual amenity of receptors in two geographical areas within the study area:

- Receptors across the eastern fringes of the Wentlooge Levels (Visual Baseline area 1); and
- Receptors between the Ebbw River and Corporation Road/The East Usk GWR Branch Line (Visual Baseline area 2).

2.5.43 Visual receptors have been grouped in this way due to the similarity of their baseline visual amenity. Sensitivity of these receptors to the proposals, as assigned in the assessments that follow, are as defined in Volume 1, Chapter 9, Table 9.7 of the March 2016 ES.

Receptors within the Eastern End of the Wentlooge Levels (Visual Baseline area 1)

- 2.5.44** Only receptors within the eastern end of this area, in the vicinity of the Ebbw River, have the potential to be affected by the proposals, as distance and intervening elements would prevent views from areas further west. Visual receptors comprise scattered residential properties and users of the Wales Coast Path, who are considered to be high sensitivity receptors.
- 2.5.45** Nearly all the residential receptors within this part of the study area would have no views of the scheme due to a combination of distance and intervening vegetation and buildings. The low-lying nature of the landscape means there are no elevated vantage points, and therefore even relatively low tree belts and hedges provide an effective screen. The only residential receptors who would have views of the scheme are the residents of West Usk Lighthouse. This property also functions as bed and breakfast accommodation.
- 2.5.46** Receptors on boats on the Ebbw River would have no views of the scheme due to intervening elements; as well as intervening vegetation and buildings the banks of this tidal section of the river would prevent views towards the Scheme during all but the highest tides.

Construction Effects

- 2.5.47** Walkers on the Wales Coast Path would have open views of the construction areas for the development in land parcel 'A'. Construction phase elements would be visible across the open water where the Ebbw River and River Usk meet. However, views would only be available for a short section of this route within the study area; as the route rounds a corner to begin following the Ebbw River existing industrial buildings intervene. Additionally, these construction elements would be seen in the context of surrounding buildings, cranes, chimneys and pylons. At the distances involved of more than 1 km, it is considered the construction elements would coalesce into the wide, panoramic views that are available from this route. The project, or a part of it, would therefore be perceptible but not alter the overall balance of features and elements that comprise the existing view, and as a result the magnitude of impact is considered to be minor adverse.
- 2.5.48** The single residential receptor affected (West Usk Lighthouse) would have similar views to those available to walkers on the adjacent coast path, although the more elevated nature of some viewpoints, including from an open roof terrace, would allow an even clearer, uninterrupted panorama. However, at approximately 1.7km distant, the construction area would appear as a barely noticeable element of these panoramic views, with a resultant negligible adverse effect.

Operational Effects

- 2.5.49** There would be occasional views of the proposed buildings from a section of the Wales Coast Path and from West Usk Lighthouse as described under construction effects above. Only the two largest buildings on plots A3 and A4 are likely to be visible. These only form a part of the overall scheme and it is considered that the change from the baseline visual amenity would be barely noticeable due to the distances involved and the industrial context of the

surrounding areas. It is therefore considered that there would be a negligible adverse impact during the operational phase for affected visual receptors in this area.

Receptors between the Ebbw River and Corporation Road/The East Usk GWR Branch Line (Visual Baseline area 2)

- 2.5.50** Users of some sections of the Wales Coast Path and National Cycle Route 4 would have views of the scheme. These receptors are considered to have a high sensitivity to change of the type proposed.

Construction Effects

- 2.5.51** Users of the Wales Coast Path (which also forms part of National Cycle Route 4 as it runs alongside the A48 near the northern edge of the study area) would have views of the construction elements of the Scheme from the section of the route at the western end of the Transporter Bridge and from sections of the route that follow the east bank of the River Usk. All other sections of the coast path and the National Cycle Network as they run through this part of the study area would have no views towards the scheme due to intervening buildings. Views of land parcel 'C' and the eastern part of land parcel 'A' are likely to be available up the length of the River Usk from the A48 area and across the River Usk from the east bank of the river. The construction elements that would be visible only form a part of the overall Scheme. It is considered that the change from the baseline visual amenity would be barely noticeable due to the distances involved (particularly from the A48 area, which is approximately 1.5km distant), the nature of the construction elements that would be introduced into the area, and the industrial context of the surrounding areas. Only a limited proportion of these routes would experience any impacts. It is therefore considered that there would be a negligible adverse impact during the construction phase for affected visual receptors in this area.

Operational Effects

- 2.5.52** Impacts and effects during the operational phase would be broadly similar to those described in the above paragraph. The largest of the new buildings would be visible but would not substantially alter the visual amenity available to these receptors as they move along these routes. The addition of new built elements into the views available would be barely noticeable in the context of the surrounding industrial areas. It is therefore considered that there would also be a negligible adverse impact during the operational phase for affected visual receptors in this area.

Visual Effects During the Hours of Darkness

- 2.5.53** Baseline assessment has revealed that the areas surrounding the Scheme are highly illuminated due to security lighting around buildings, street lighting and lighting to towers, cranes, turbines and chimneys. The lighting associated with the scheme is expected to include security lighting to perimeters and buildings and street lighting associated with access roads and hardstanding areas. Although this will add to the illumination of the area it is not considered that this would have a significant effect on landscape or visual amenity due to the baseline conditions.

Limitations

- 2.5.54** The assessment of visual effects has been undertaken without the use of digitally produced Zone of Theoretical Visibility (ZTV) plans. At this early stage, the 3-dimensional data is not available to enable these to be generated, and proposed building locations and sizes are indicative only. The assessment of visual effects has been undertaken with the use of site photographs, aerial and 'street view' imagery and a study of OS 1:25000 data. Using professional judgement and prior knowledge of the area from site work for the main March 2016 ES it has been possible to make judgements as to the *likely* nature and magnitude of visual effects.
- 2.5.55** Although adjacent and surrounding areas have been visited extensively within the timescales for this assessment it has not been possible to visit the site of the Scheme. An assessment of the existing vegetative ground cover across the site has been based upon a study of aerial and 'street view' imagery and the likely nature of this vegetation from a landscape character and visual perspective described. Further details of the existing vegetation and habitats are set out in the Ecology and Nature Conservation section of this ESS.

Recommendations

- 2.5.56** The site for the Scheme as assessed within this chapter of ESS 5 (land parcels 'A' and 'C') includes some existing vegetation, which is relatively scarce within the Docks area. This is assumed to consist largely of self-colonised habitats on brownfield land. There would appear to also be remnant tree belts/hedges along some drainage ditches leading to the River Usk and some planted shelter belts along access roads. As proposals for the Scheme are developed, as much of this vegetation as possible should be retained, particularly woody vegetation around plot perimeters, for its visual amenity and screening value (as well as its ecological value).

Landscape and Visual Effects - Conclusion

- 2.5.57** The Scheme comprises elements of a scale, layout and massing that are wholly in keeping with the surrounding landscape area, both during the construction and operational phases. Although the scheme introduces new elements and removes some existing elements (such as spoil heaps and self-colonised vegetation) the essential components that define the overall character of the area would not noticeably change. It is concluded that the impacts would have a neutral significance of effect on landscape character.
- 2.5.58** With regard to visual impacts, the Scheme comprises elements of a scale, layout and massing that would be viewed in the context of numerous existing features of this type within the view available, both during the construction and operational phases. The changes to the visual amenity baseline would be barely noticeable. Visual receptors moving through the area would only have views of the Scheme for a limited part of their journey. Although receptors have a high sensitivity to change, it is concluded that the impacts would have only a slight adverse significance of effect on visual amenity due to slight or negligible magnitudes of impact. There would be a limited number of visual receptors who would experience these adverse effects.

2.6 Cultural Heritage

Legislative and Policy Context

- 2.6.1** The enactment of the Historic Environment (Wales) Act 2016 was described in the September 2016 ES Supplement. The text within that Supplement advised that new advice and guidance documents were being prepared and were undergoing public consultation.
- 2.6.2** Welsh Government has now published a new Technical Advice Note (TAN) that provides guidance on how the planning system considers the historic environment during development plan preparation and decision-making. *TAN24: The Historic Environment* (2017) replaced the previous advice on these issues (Welsh Office Circulars 60/96, 61/96 and 1/98) and brought the guidance into line with the statutory position represented by the *Historic Environment (Wales) Act 2016* and the national planning guidance represented by *Planning Policy Wales* (PPW – Edition 9).
- 2.6.3** TAN24 advises (paragraph 1.8) that ‘*Changes in the historic environment are inevitable. This can be the result of decay caused by natural processes, damage caused by wear and tear of use, and the need to respond to social, cultural, economic and technological changes*’. However these changes must be carefully managed such that impacts on the significance of heritage assets is minimised. Within the planning sector, this is primarily achieved through the process whereby developers are required to assess the potential impacts of a proposed scheme on the significance of any historic asset and to put forward measures to remove or reduce such impacts.
- 2.6.4** TAN24 is supported by additional, more detailed, advice on specific issues. This suite of advice includes advice on *Heritage Impact Assessment in Wales* (2017) and on *Setting of Heritage Assets in Wales* (2017). The heritage impact assessment document provides advice on understanding the significance of any heritage asset that may be affected by a proposed development; this would include the significance of the asset as a whole and possibly also the significance of any part of the asset affected by the proposed development. The impact of the proposed development on the significance of the asset (including any benefits) should be clearly identified, along with proposed measures that may offset any harm to that significance.
- 2.6.5** The *Setting of Heritage Assets in Wales* (2017) document explains what is meant by setting, defining this as follows: ‘*The setting of a heritage asset includes the surroundings in which it is understood, experienced and appreciated, embracing present and past relationships to the surrounding landscape. Its extent is not fixed and may change as the assets and its surroundings evolve. Elements of a setting may make a positive, negative or neutral contribution to the significance of an asset*’. A four stage process is required in order to assess the potential impact on the significance of a heritage asset arising from a change within its setting:
1. Identify the asset(s) which could be affected by a proposed development;
 2. Define and analyse the setting of each asset and the contribution that the setting makes to the significance of the asset;
 3. Evaluate the potential impact of the proposed development on that significance; and

4. Consider options to mitigate or improve the potential impact on that significance.

2.6.6 The Welsh National Marine Plan is currently being developed and consulted on, but has not yet been brought forward for consideration by Welsh Government. The developing Plan has been informed by the UK Marine Policy Statement (2011) which provides high level objectives for marine planning. With regard to cultural heritage, the UK Marine Policy Statement (2011) makes the following points:

Seascape

2.6.7 *‘The effects of activities and developments in the marine and coastal area on the landscape, including seascape, will vary on a case-by-case basis according to the type of activity, its location and its setting. There is no legal definition for seascape in the UK but the European Landscape Convention (ELC) defines landscape as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”. In the context of this document, references to seascape should be taken as meaning landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other’. (paragraph 2.6.5.1).*

2.6.8 *‘In considering the impact of an activity or development on seascape, the marine plan authority should take into account existing character and quality, how highly it is valued and its capacity to accommodate change specific to any development. Landscape Character Assessment methodology may be an aid to this process’. (paragraph 2.5.6.3).*

Historic Environment

2.6.9 *‘The historic environment of coastal and offshore zones represents a unique aspect of our cultural heritage. In addition to its cultural value, it is an asset of social, economic and environmental value. It can be a powerful driver for economic growth, attracting investment and tourism and sustaining enjoyable and successful places in which to live and work. However, heritage assets are a finite and often irreplaceable resource and can be vulnerable to a wide range of human activities and natural processes’. (paragraph 2.6.6.2).*

2.6.10 *‘The view shared by the UK Administrations is that heritage assets should be enjoyed for the quality of life they bring to this and future generations, and that they should be conserved through marine planning in a manner appropriate and proportionate to their significance. Opportunities should be taken to contribute to our knowledge and understanding of our past by capturing evidence from the historic environment and making this publicly available, particularly if a heritage asset is to be lost’. (paragraph 2.6.6.3)*

2.6.11 *‘Some heritage assets have a level of interest that justifies statutory designation, the purpose of which is to ensure that they are protected and conserved for the benefit of this and future generations. In coastal/intertidal zones and inshore/offshore waters designated heritage assets may include scheduled monuments (designated under the Ancient Monuments and Archaeological Areas Act 1979), protected wreck sites (designated under the Protection of Wrecks Act 1973) and sites designated under the protection of Military Remains Act 1986. In*

Scotland they may also include Historic Marine Protected Areas designated under the Marine (Scotland) Act 2010'. (paragraph 2.6.6.4)

2.6.12 *'Many heritage assets with archaeological interest in these areas are not currently designated as Scheduled monuments or protected wreck sites but are demonstrably of equivalent significance. The absence of designation for such assets does not necessarily indicate lower significance and the marine plan authority should consider them subject to the same policy principles as designated heritage assets (including those outlined) based on information and advice from the relevant regulator and advisors'. (paragraph 2.6.6.5).*

2.6.13 *'Marine activities have the potential to result in adverse effects on the historic environment both directly and indirectly, including damage to or destruction of heritage assets. In developing and implementing Marine Plans, the marine plan authority should take into account the available evidence, including information and advice from the relevant regulator and advisors, in relation to the significance of any identified heritage assets (or the potential for such assets to be discovered), and consider how they are managed. It should also take into account the historic character of the plan area, with particular attention paid to the landscapes (see section 2.6.5) and groupings of assets that give it a distinctive identity'. (paragraph 2.6.6.6).*

2.6.14 *'In considering the significance of heritage assets and their setting, the marine plan authority should take into account the particular nature of the interest in the assets and the value they hold for this and future generations. This understanding should be applied to avoid or minimise conflict between conservation of that significance and any proposals for development'. (paragraph 2.6.6.7).*

2.6.15 *'The marine plan authority, working with the relevant regulator and advisors, should take account of the desirability of sustaining and enhancing the significance of heritage assets and should adopt a general presumption in favour of the conservation of designated heritage assets within an appropriate setting. The more significant the asset, the greater should be the presumption in favour of its conservation. Substantial loss or harm to designated assets should be exceptional, and should not be permitted unless it can be demonstrated that the harm or loss is necessary in order to deliver social, economic or environmental benefits that outweigh the harm or loss'. (paragraph 2.6.6.8).*

2.6.16 *'Where the loss of the whole or a material part of a heritage asset's significance is justified, the marine plan authority should identify and require suitable mitigating actions to record and advance understanding of the significance of the heritage asset before it is lost. Requirements should be based on advice from the relevant regulator and advisors'. (paragraph 2.6.6.9).*

2.6.17 The Welsh National Marine Plan is currently being developed by Welsh Government. An initial draft for consultation was published in November 2015. Within this draft is an identified Plan Objective (No. 7) which is to: *'Promote stewardship and enjoyment of marine related heritage assets, nationally protected landscapes and support decisions that take account of the seascape character of the local area'.*

2.6.18 Proposed Policy SOC-7 in the draft Welsh National Marine Plan states: *'Decision-making authorities should ensure that proposals demonstrate how potential*

impacts on historic assets and their settings have been taken into consideration at an early stage of development and should in order of preference:

- a) avoid adverse impacts on historic assets and their settings*
- b) minimise them where they cannot be avoided*
- c) mitigate them where they cannot be minimised*
- d) present the case for proceeding where (a-c) are not possible'*

2.6.19 The accompanying text explains that 'Development and use of the marine environment can affect historic assets both directly and indirectly, including: loss of, or damage to, historic material; alteration to the settings of historic assets which can positively or negatively affect the ability to understand and appreciate it; burial or exposure (for example, due to changing patterns of sediment movement)'.

2.6.20 Proposed Policy SOC-9 in the draft Welsh National Marine Plan states: 'Decision-making authorities should ensure that proposals demonstrate how potential impacts on seascapes have been taken into consideration at an early stage of development and should in order of preference:

- a) avoid adverse impacts on seascapes;*
- b) minimise them where they cannot be avoided;*
- c) mitigate them where they cannot be minimised;*
- d) present the case for proceeding where (a-c) are not possible'*

2.6.21 The accompanying text explains that 'Seascapes should be considered from the outset of any proposal that has the potential to affect seascape character. It is in the early stages of the project or in development plan options that mitigating seascape impact is most effective. Appropriate siting and consideration of alternatives should be the first priority in any approach to mitigation of potential impacts'.

Baseline Information

2.6.22 There are no designated historic assets (e.g. scheduled monuments, listed buildings, conservation areas, protected wrecks) within any of the works areas covered by this ES Supplement. All of the works areas lie outside the registered Gwent Levels Landscape of Outstanding Historic Interest in Wales and outside the defined Gwent Levels Archaeologically Sensitive Area (Newport City Council).

2.6.23 Landscapes outside the registered Gwent Levels Landscape of Outstanding Historic Interest in Wales but potentially affected by M4CaN have been characterised and assessed as part of the Environmental Impact Assessment prepared for the Scheme. These are published in Appendix R8.9 in Volume 3 of the September 2016 ES Supplement.

2.6.24 All of the works areas covered by this current ES Supplement fall within Historic Landscape Character Area (HCLA) 111 Newport Docks. The defined Key Historic Landscape Characteristics comprise

- 19th century North Dock; and
- Historic dockyard buildings.

2.6.25 The additional descriptive text for HCLA111 Newport Docks explains that ‘*The area of Newport Docks, defined by a large basin surrounded by dockland buildings and structures, was fully constructed by 1922. This altered the course of the River Ebbw to enable the building and watering of the dock facility. The 1st edition OS map (c. 1887) shows an extensive enclosure and drainage pattern, comprising an irregular drainage system of reens, with moorings, pills and pontoons also depicted.*’

2.6.26 Natural Resources Wales (NRW) has undertaken a broad-scale identification of the character of Wales’ seascapes, dividing the country’s inshore waters into 29 Marine Character Areas. The identification includes a description of the key characteristics of each defined area, including their natural, cultural and perceptual influences. More detailed local seascape characterisations have been completed for some areas.

2.6.27 Newport Docks and the surrounding inshore waters fall within Marine Character Area 29: Severn Estuary. No detailed local seascape characterisations have been published in respect of this Marine Character Area.

2.6.28 The defined Key Characteristics of Marine Character Area 29 include those related to cultural heritage, specifically:

- Rich natural resources exploited by humans for millennia, with evidence dating back to the earliest hunter-gatherers roaming what was previously a much larger coastal plain (prior to sea level rise around 6,000 BC):
- Long history of coastal reclamation, embankments and ditches, notably the extensive Gwent and Wentlooge levels:
- Long-standing strategic importance for international trade and maritime navigations, particularly as ports on both sides of the Bristol Channel expanded from the medieval period onwards. Cardiff, Newport and Barry still retain important port functions; and
- Numerous shipwrecks found on the sea floor, particularly in the west – including examples mined and sunk during WWII.

2.6.29 Newport Docks occupy the land between the Rivers Usk and Ebbw at the point where these two watercourses meet, which happens almost at the mouth of the River Usk as it empties into the Severn Estuary. Historically this land was known as the Level of Mendalgief and was part of the Gwent Levels – an extensive area of grazing marshes and reen (drainage ditch) systems on the north side of the Severn Estuary. The remaining part of the Gwent Levels west of the River Ebbw (as far as the Rhymney River) is known as the Wentlooge Level, whilst that part to the east of the River Usk (as far as the River Wye) is known as the Caldicot Level.

2.6.30 The Gwent Levels, including the Level of Mendalgief, were reclaimed from the sea at various times from the Roman period onwards. Prior to any reclamation these were areas of tidal mudflats and salt-marshes, with reed swamps along the fen-edge. Important remains of Mesolithic and Bronze Age date have been identified at a number of locations along the current coastal edge of the Gwent Levels, often exposed during low tides. A detailed description of the prehistoric and Roman activity in the area, along with a commentary on Holocene sea level

changes, is provided in the Cultural Heritage Desk Based Assessment published as Appendix 8.2 of the March 2016 ES.

- 2.6.31** Early detailed maps of the area, such as the Ordnance Survey Drawing (OSD) surveyed by Charles Budgen in 1811 (Figure ESS5 2.4) show the River Ebbw as a series of tight meanders and the River Usk as a much wider and less sinuous channel. Much of the southern end of the Level of Mendalgief is enclosed by some form of embankment (the sea wall) behind which is a landscape of small fields with straight boundaries, indicative of drainage and reclamation. To the east of the point at which the River Ebbw meets the River Usk is an area outside the embankment which is shown as salt-marsh or mud-flats – on the St Woolos Tithe Map of 1845 this area beyond the sea wall is named as the Great Wharf (Figure ESS5 2.5), suggesting that it was used for the beaching of vessels and unloading of cargoes.
- 2.6.32** Mendalgif Farm is the southernmost building indicated on the 1811 map; this was close to the eastern bank of the River Ebbw and was accessed by a track leading from the north. The track passed another farm identified on this map as ‘Tygwynbach’ and also a smaller unnamed building indicated as later mapping as ‘Ty-coch’.
- 2.6.33** As shown on the St Woolos Tithe Map of 1845 (Figure ESS5 2.5), the land identified for the relocation of ABP tenants to the south and south east of South Dock was mostly within the former sea wall and comprised small fields, presumably farmed from Mendalgif Farm. However, some of the land was actually beyond the sea wall and would have been salt-marsh and/or tidal mud-flats. A small inlet is indicated at the western end of this area, extending up to the sea wall.
- 2.6.34** The Alexandra Dock was opened in 1875 and was set within the northern part of the Level of Mendalgief, resulting in the loss of the farm known as ‘Tygwynbach’. Access into the dock was from the east via an entrance channel connecting directly to the River Usk. A Survey of 1867 (updated in 1870) shows once again how the land identified for the relocation of ABP tenants to the south and south east of South Dock straddles the sea wall and indeed some small parts are actually within the watercourse (Figure ESS5 2.6). This survey also shows the Alexandra Dock under construction, along with the location of a Powder Magazine with adjacent small pier in the very south-eastern part of the Level. A human skull was found during the excavation of the Alexandra Dock and may be of Neolithic date. Part of a vessel was also found during the excavation for the associated Timber Float and was considered to be of Scandinavian-type construction; a piece of timber from this boat has recently been dendro-dated to approximately AD 950, although this was from the inner rings and a slightly later date may be more appropriate.
- 2.6.35** The 1st edition Ordnance Survey (OS) 6” to the mile map was published in 1887 (Figure ESS5 2.7). This shows the Alexandra Dock and also the parallel Timber Float to the west. A dock railway network has been constructed which links to the South Wales Division of the Great Western Railway and this extends around the south side of the Alexandra Dock to a series of engine sheds close to the farmstead of Ty-Coch. Mendalgif Farm is still present, whilst further to the south the small inlet at the end of the Level is named here as Mendalgif Pill. Several ‘Mooring Posts’ are indicated within the area now proposed for the relocation of ABP tenants to the south and south east of South Dock, suggesting that vessels

pulled in here, although this may have been linked to having to wait for the higher tides in order to enter the Alexandra Dock rather than any loading or unloading of cargoes. The powder magazine is still present to the east, although there is now no adjacent pier.

2.6.36 The South Dock was opened in 1893 and initially entry was via a lock in the eastern side linking through to the River Usk. However the South Dock was enlarged in 1907 and a new South Lock (now the only dock entrance) was opened in 1914, with access to the Alexandra Dock (now the North Dock) now through the South Dock and then through Junction Cut. The enlarged South Dock required the course of the River Ebbw to be moved west and straightened.

2.6.37 Initially the land to the south of the South Dock remained unused, with activities focused on the wharfs along the edge of the dock. A Central Store Depot was constructed in the early 1920s, close to the South Lock, whilst in the post-war period a small ship-building yard (the Atlantic Shipbuilding Co.) was established further to the west with a dry dock adjacent to the small creek formerly known as Mendalgylf Pill but identified on later OS mapping as Pilot's Pill. In recent years much of the area now proposed for the relocation of ABP tenants has been used for the deposition and storage of coal and other materials. This activity has resulted in the concealment or loss of any remaining part of the former sea bank in this area. Other recent activities in the area include the construction of two large wind turbines.

Assessment of likely construction effects

2.6.38 There is some potential for impacts on buried archaeological remains during construction of the sites required for the relocation of ABP tenants to the south and south east of South Dock. No significant archaeological features are known to be present within any of these sites; however, the area has an overall high potential for the presence of archaeological remains from the Mesolithic period onwards. More recent features of historical interest, such as mooring posts, field boundaries and elements of former sea banks, are unlikely to be significant, although earlier land surfaces preserved beneath former sea banks could be of considerable interest.

2.6.39 The magnitude and extent of any impact would depend on the nature of any archaeological remains present along with the methodologies used for construction. A proportionate and suitable programme of archaeological investigation ahead of and/or during construction would need to be agreed and implemented within the context of preparing and consenting any application. If this happens then any effects resulting from impacts on buried archaeological remains are likely to be Slight or Neutral.

Assessment of likely operational effects

2.6.40 The buildings proposed for the relocated ABP tenants are likely to resemble the present buildings in terms of height, massing etc. As such these are typical building types which would be expected within a modern dock-side environment. These new buildings will be seen alongside existing structures and large dock equipment and infrastructure (cranes etc) as well as the existing large wind turbines and electricity pylons. The built part of the docks would extend further south than it currently does, but into an area previously occupied by large coal

heaps as well as buildings such as those associated with the Atlantic Shipbuilding Co.

2.6.41 The construction and operation of the buildings and infrastructure required for the relocation of ABP tenants would not affect the significance of any designated historic asset. Some of the new buildings may be visible from the Grade II listed former West Usk Lighthouse which is located approximately 2 km to the south west, but this change within the setting of the listed building would not affect its significance, which is based much more on its location at the mouth of the River Usk.

2.6.42 There would be no impact on the identified non-designated HLCA 111 Newport Docks, as the visual change here represents an extension into this area of structures similar to those seen elsewhere within the HLCA, and the current land use does not make any real contribution to the significance of the HLCA. For the same reasons, the construction and operation of the buildings and infrastructure required for the relocation of ABP tenants to the south and south east of South Dock would not affect the character of Marine Character Area 29: Severn Estuary.

2.7 Ecology and Nature Conservation

Introduction

2.7.1 The M4CaN March 2016 ES and ES Supplements published in September and December 2016, and March and April 2017, did not include ecology and nature conservation field survey data relating to all of the land in Newport Docks shown on Figure ESS5 2.2a and 2.2b, since previous proposals for the M4CaN Scheme did not directly affect these areas and the area at the south of Newport Docks was located outside previous ecology survey boundaries.

2.7.2 Taking into account proposals to relocate buildings to these areas, an ecology desk study and a series of field surveys of the land at the south of Newport Docks were undertaken, the purpose of which was to determine an ecology baseline for the area to inform an Environmental Impact Assessment and any ecology mitigation measures required.

2.7.3 The results of these surveys are summarised below and reported at Appendices ESS5 2.2 to 2.6 inclusive. The results of the surveys inform an assessment of the value of ecological receptors and the significance of any likely ecology and nature conservation impact. The impacts are also considered in the context of the M4CaN Scheme as a whole.

2.7.4 With regard to any in-combination impacts, Chapter 17 of the March 2016 ES identified a number of plans and projects that were to be considered in-combination with the M4CaN Scheme. The list of other projects was updated to include the period up to 24 August 2016 and an updated list provided in the September ES Supplement (Appendix R17.2). Only one additional relevant application was identified. This was an application for the continued use of a site for motor racing on a limited number of days per year. The land has been used for this purpose under a series of temporary consents and had therefore been considered as part of the baseline within the previous ES. Therefore, no further consideration is necessary for this ES Supplement.

Ecology Desk Study

- 2.7.5** The ecology desk study reported at Appendix 10.17 to the March 2016 ES covered all areas considered in this ES Supplement. Additional desk study information relating specifically to a series of surveys of the buildings relocation area (Figures ESS5 2.1 and 2.2) is provided at Appendix ESS5 2.2 and is discussed in the relevant sections below.

Habitat Surveys – Phase 1 Habitat Survey and National Vegetation Classification Survey

Aims and Methodology

- 2.7.6** A Phase 1 habitat survey of the land at the south of Newport Docks was undertaken by RPS on the 14th and 15th June 2017, an optimal time of year for this type of survey. The remaining areas within Newport Docks proposed for relocation of businesses had been surveyed previously for the M4CaN Scheme (Appendix 10.19 to the March 2016 ES).
- 2.7.7** The Phase 1 habitat survey report for the land at the south of Newport Docks is presented at Appendix ESS5 2.3.
- 2.7.8** The purpose of the survey was to:
- identify the habitats present;
 - assess the potential value of the area for protected or otherwise notable species; and
 - determine the need for detailed (i.e. phase 2) ecological surveys.
- 2.7.9** The survey was undertaken in accordance with the survey methodology described in the *Handbook for Phase 1 habitat survey - a technique for environmental audit* (Joint Nature Conservation Committee, 2010).
- 2.7.10** A National Vegetation Classification (NVC) survey was also undertaken and is attached at Appendix ESS5 2.4.
- 2.7.11** The NVC survey was undertaken on the 18th, 19th and 25th July 2017, again an optimal time of year for this type of survey.
- 2.7.12** The methodology of the survey is described in the report at Appendix ESS5 2.4.

Results

- 2.7.13** Results of the Phase 1 habitat survey are shown on Figure ESS5 2.8.

Terrestrial habitats

- 2.7.14** Results of the Phase 1 habitat survey reported a number of terrestrial habitats in the survey area. These habitats are discussed in the following sections.

Ephemeral/short perennial vegetation

- 2.7.15** Ephemeral/short perennial vegetation was the most widespread habitat recorded across the survey area. This vegetation formed a mosaic with areas of unvegetated ground (between 25% and 75% vegetated cover). Frequent species

included red fescue and creeping cinquefoil; occasionally occurring species included annual meadow grass, Yorkshire fog, creeping bent, wild carrot, scentless mayweed and herb robert.

- 2.7.16** This habitat forms part of the open mosaic of habitats within Newport Docks and is evaluated with the other constituent vegetation types under 'Brownfield Habitats' later in this section.

Tall ruderal vegetation

- 2.7.17** Tall ruderal vegetation was scattered across the site and comprised species generally associated with high nutrient levels, including dock species.

- 2.7.18** This habitat also forms part of the open mosaic of habitats within Newport Docks, and is again evaluated with the other constituent vegetation types under Brownfield Habitats later in this section.

Grassland

- 2.7.19** Areas of grassland, including species-diverse areas, were scattered across the survey area. Dominant species recorded included Yorkshire fog, red fescue and creeping bent. Areas of greater species-diversity were typified by the presence of carpets of common bird's-foot trefoil and red clover. A stand of approximately thirty southern marsh orchids was recorded in the southern part of the survey area (Target Note 25, Figure ESS5 2.8).

NVC survey – grassland, ruderal and short perennial/ephemeral

- 2.7.20** Due to the potential species interest in the areas of grassland, ruderal and short perennial/ephemeral, an NVC plant survey was considered necessary in order to determine the value of the habitat and inform the ecological impact assessment.

- 2.7.21** The NVC survey recorded a good number of locally notable plants. The most significant of these was narrow-leaved bird's-foot trefoil, which is present in great abundance in some of the damper areas of the site. The railway ballast in various parts of the site supported a relatively high proportion of uncommon plants, including dwarf spurge, round-leaved crane's-bill, narrow-leaved everlasting pea, viper's bugloss and narrow-leaved bird's-foot trefoil. Other areas of tipped rubble supported great lettuce, rough hawk's-beard and nettle-leaved goosefoot, but only in low numbers.

- 2.7.22** Plant species of particular nature conservation interest recorded during the NVC survey are listed in Table 2.1 below.

Table 2.1: Plant species of nature conservation interest recorded during the NVC survey of the land at the south of Newport Docks.

Common Name	Scientific Name	Red Data List for Great Britain
Rough hawksbeard	<i>Crepis biennis</i>	Least Concern (LC)
Dwarf spurge	<i>Euphorbia exigua</i>	Near threatened (NT)
Dittander	<i>Lepidium latifolium</i>	Least Concern (LC)
Marsh mallow	<i>Althaea officinalis</i>	Least Concern (LC)
Yellow-wort	<i>Blackstonia perfoliata</i>	Least Concern (LC)
Vipers bugloss	<i>Echium vulgare</i>	Least Concern (LC)
Round-leaved cranesbill	<i>Geranium rotundifolium</i>	Least Concern (LC)
Narrow-leaved everlasting-	<i>Lathyrus sylvestris</i>	Least Concern (LC)

Common Name	Scientific Name	Red Data List for Great Britain
pea		
Narrow-leaved birdsfoot trefoil	<i>Lotus glaber</i>	Least Concern (LC)
Spotted medick	<i>Medicago arabica</i>	Least Concern (LC)

2.7.23 The broad vegetation communities recorded during the survey, and the locations of the above plants of particular interest in the survey area, are shown on Figure ESS5 2.9a and b.

2.7.24 This habitat of grassland, ruderal and short perennial/ephemeral vegetation forms part of the open mosaic of habitats within Newport Docks and is evaluated with the other constituent vegetation types under Brownfield Habitats later in this section.

2.7.25 The Monmouthshire Local Biodiversity Action Plan (LBAP) includes a Habitat Action Plan for Species-rich Grasslands and Floodplain Pastures. The Newport LBAP also includes a Lowland Grassland and Heathland Action Plan. The overall vision for the plans is to maintain, restore and extend these habitats.

2.7.26 Considering the diversity and importance of plant species recorded across the survey area, the area is considered to be of county (medium) value with regard to grassland habitat.

Scrub

2.7.27 Scrub was scattered across the land in the south of Newport Docks and generally comprised goat willow and *Buddleia*, with dense stands of bramble and some birch seedlings.

2.7.28 The survey reported the scrub to typically comprise a species-poor ground flora that was mostly limited to common plant species and, therefore, the NVC survey excluded areas of scrub. However, a few plant species of local value were recorded amongst the scrub, including narrow-leaved everlasting pea at some of the margins.

2.7.29 This habitat forms part of the open mosaic of habitats within Newport Docks and is evaluated with the other constituent vegetation types under Brownfield Habitats below.

Brownfield habitats

2.7.30 The results of the NVC survey indicated that the brownfield plant species diversity was highly variable across the survey area due to the patchy nature of the vegetation. Habitats had developed through a combination of the varied substrata and intermittent disturbance. The infrequent and irregular disturbance has maintained a mix of transitional and successional stages across the survey area. In the absence of such disturbance, much of the value would eventually decline as the more interesting habitats are taken over by low-diversity scrub.

2.7.31 Chapter 10 of the March 2016 ES reported that other parts of the docks surveyed for the ES M4CaN were vulnerable to change due to the fact it is part of a working port, and recent operational activities had resulted in several areas being cleared or built over. However, other parts of the docks were reported to have

been left relatively undisturbed and as a result were losing their botanical diversity due to encroaching scrub.

2.7.32 Diverse brownfield habitats, which comprise open mosaics of scrub, ruderal, ephemeral and grassland species, qualify as the UK BAP/ Environment Wales Act 2016 Section 7 priority habitat ‘Open Mosaic Habitats on Previously Developed Land’ (“OMH”).

2.7.33 The Newport Local BAP also includes a Brownfield and Urban Action Plan, which covers open mosaic habitats on previously developed land. The overall vision for this plan is to maintain and enhance the wildlife value and potential of brownfield habitats in Newport.

2.7.34 The areas proposed for relocation of businesses within Newport Docks are identified by NRW as Urban and Brownfield Priority Habitat. The Wales Biodiversity Partnership account of this habitat states that:

“...It is characterised by a patchy appearance with some vegetation and varying amounts of bare ground. It is concentrated in urban and former industrial landscapes, but also occurs outside of these areas in quarries, railway sidings, etc. It is threatened by destruction and degradation due to redevelopment, conversion to landfill, eutrophication, inappropriate management or ‘restoration’ and natural succession. Few OMH sites are protected as SSSIs or nature reserves.

This habitat maintains populations of nationally scarce invertebrates and lower plants. Importantly, it offers opportunities to study ecological succession which are extremely rare in the Welsh countryside, and it also gives many city and town dwellers their first chance to experience nature at first hand.”

2.7.35 The Monmouthshire Local BAP also includes a Built Environment and Associated Green Spaces Habitat Action Plan, which in turn includes ‘Brownfield’ and Industrial Sites.

2.7.36 Although individually the above habitats are of only local value, considered as part of the mosaic across the docks, they are considered to be of county (medium) value in accordance with the M4CaN method for valuing ecological receptors (Table 10.3, Chapter 10 of the March 2016 ES).

Broadleaved woodland

2.7.37 Small parcels of broadleaved woodland including white poplar, sycamore and willow species were recorded within the land at the south of Newport Docks survey area.

2.7.38 Broadleaved woodland is listed as a priority habitat in the UK BAP/Section 7 of the Environment Wales Act 2016. In addition, the Newport and Monmouthshire Local BAPs include Woodland Habitat Action Plans in which the maintenance, restoration and extension of woodland in Newport is a priority. The Monmouthshire Local BAP aims to ensure woodland is fully considered when assessing any development, and that appropriate mitigation or compensation measures are undertaken. The Trunk Road Estate BAP also includes a Habitat Action Plan for Woodlands and Planted Native Trees and Shrubs.

2.7.39 Due to the limited extent and isolated location of the woodland within Newport Docks, this habitat is considered to be of local (negligible) nature conservation

value in accordance with the M4CaN method for valuing ecological receptors (Table 10.3, Chapter 10 of the March 2016 ES).

Invasive plant species

2.7.40 Several species listed as non-native invasive plants under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the NVC survey, as summarised below.

- Japanese knotweed: several patches dispersed through the site, mainly in scrub margins and associated with tipped material. Some knotweed has apparently been dug up and placed in piles near the northern wind turbine. Others appeared to have been treated with herbicide.
- Himalayan/Indian balsam: occasional patches near scrub margin at western boundary.
- Montbretia: small numbers of plants in several places, mainly associated with the bund at the eastern margin of the survey area.
- Entire-leaved cotoneaster: rare, in scrub and grassland in the southern part of the survey area (near Q32), and possibly planted near road-side shelterbelt at western margin.
- Wall cotoneaster: rare, on a ditch margin to the south-east of Atlantic Shed.

Species-poor hedgerow

2.7.41 A species-poor hedgerow (Target Note 3, Figure ESS5 2.8) was located alongside the north-east boundary of the survey area.

2.7.42 Hedgerows are a priority habitat under the UK BAP/Section 7 Environment Wales Act 2016. The Newport and Monmouthshire Local BAPs and Trunk Road Estate BAP include hedgerows. The overall visions for the plans are to maintain, restore and extend farmland habitats in the county and mitigate or compensate for loss.

2.7.43 Due to the limited species diversity, extent and isolated location of the hedgerow, with poor connectivity to other hedgerows in the surrounding area, the hedgerow is considered to be of very local (negligible) nature conservation value in accordance with the M4CaN method for valuing ecological receptors (Table 10.3, Chapter 10 of the March 2016 ES).

Ponds and marshland

2.7.44 Several ponds and areas of marshland that contained limited amounts of aquatic and semi-aquatic vegetation were scattered across the survey area. Some of the ponds were located on areas of hard-standing that were likely to dry up during the summer months.

2.7.45 Ponds are a priority habitat under the UK BAP/Section 7 Environment Wales Act 2016. In addition, the Newport Local BAP Freshwater Habitat Action Plan includes ponds. The overall vision of this plan is to maintain, restore and enhance freshwater habitats and to increase the number of wildlife ponds where the site is suitable.

2.7.46 Taking into account the limited extent, ephemeral nature and minimal aquatic/semi-aquatic vegetation recorded in the waterbodies, the waterbodies on site are considered to be of very local (negligible) nature conservation value in

accordance with the M4CaN method for valuing ecological receptors (Table 10.3, Chapter 10 of the March 2016 ES).

Reed bed

- 2.7.47** A reed bed of approximately 0.1 ha was recorded in the west of the land at the south of Newport Docks. The reed bed consisted of a dense, single species stand of common reed.
- 2.7.48** The results of the NVC survey reported that the reed bed and wetland habitats had a relatively low botanical diversity; however, pink water-speedwell, spiked water milfoil and marsh mallow were all recorded in damp wetland habitat (possibly seasonally inundated), though in very small quantity.
- 2.7.49** Reed beds are a priority habitat under the UK BAP/7 Environment Wales Act 2016. In addition, the Newport Local BAP and Trunk Road Estate BAP Wetland Habitat Action Plans include reed beds.
- 2.7.50** Taking into account the limited extent and isolated nature of the reed bed, it is considered to be of very local (negligible) nature conservation value in accordance with the M4CaN method for valuing ecological receptors (Table 10.3, Chapter 10 of the March 2016 ES).

Drainage ditches

- 2.7.51** Two drainage ditches were located to the west and south of Atlantic Shed (a large building in the centre of the survey area, Figure ESS5 2.8). Both ditches were vegetated with dense stands of common reed and contained areas of standing water. The banks of the ditch to the south of Atlantic Shed were established with naturally regenerating ruderal vegetation including Japanese knotweed.
- 2.7.52** Eutrophic standing water is a priority habitat under the UK BAP/Section 7 of the Environment Wales Act 2016. The Newport Local BAP also includes a Wetland Habitat Action Plan, which covers Coastal and Floodplain Grazing Marsh with the associated reens and ditches. The overall vision for the plan is to maintain, extend and improve the condition of wetland habitats within Newport and promote the creation and maintenance of wetlands as part of large developments.
- 2.7.53** Due to the limited extent and floral diversity of the watercourses, and their relatively isolated location, the watercourses are considered to be of very local (negligible) nature conservation value in accordance with the M4CaN method for valuing ecological receptors (Table 10.3, Chapter 10 of the March 2016 ES).

Saltmarsh and intertidal muds

- 2.7.54** Outside the survey area and alongside the River Usk were areas of saltmarsh and intertidal mudflats.
- 2.7.55** Results of the NVC survey reported the Usk saltmarsh to be unmanaged and largely dominated by low diversity stands of common reed and sea couch.
- 2.7.56** The Newport Local BAP includes coastal saltmarsh and intertidal mudflats, with the aim of ensuring the maintenance and enhancement of this habitat.

2.7.57 The saltmarsh and associated intertidal mudflats on the east bank of the River Usk are part of the River Usk (Lower Usk) SSSI and the River Usk SAC but are not features for which the SAC is designated.

2.7.58 Taking into account the level of protection afforded to the saltmarsh and intertidal mudflats the habitats are valued at the national (high) level.

Japanese knotweed

2.7.59 Japanese knotweed, an invasive plant species, was recorded scattered across the survey area (Appendix ESS5 2.3, Figure 2).

Habitats Impact Assessment

Land Take

2.7.60 The area measurements for each habitat type recorded as part of the Phase 1 habitat survey carried out in 2017 are listed in Table 2.2 below. The area of habitat located within the development boundaries which would be lost as a result of the relocation of businesses is also shown in the table.

Table 2.2: Land Parcels A and C, habitat areas and losses.

Habitat type	Area of habitat within survey area (ha)	Area of habitat loss (ha)
Land Parcels A and C.		
Ephemeral/short perennial vegetation	16.35	8.00
Tall ruderal	1.03	0.59
Grassland	0.78	0.74
Amenity grassland	0.73	0.09
Scrub (scattered)	0.67	0.67
Scrub (dense continuous)	7.28	4.45
Broadleaved woodland (Target Note 11, Figure ESS5 2.8)	0.33	0.23
Drainage ditch	0.13	0.05
Ephemeral pond	0.34	0.21
Reed bed	0.22	0.22
Saltmarsh	4.27	0
Intertidal mud/sand	0.67	0

2.7.61 Habitat loss from the remaining areas of the ABP site that would be affected by the proposed relocation of buildings is listed in Table 2.3 below based on the Phase 1 Habitat Surveys carried out in 2014 and 2015.

2.7.62 The areas denoted as part of Land Parcels A and B immediately to the north of the new 303m of quay on Figure ESS5 2.1 and included in the NVC Figure ESS5 2.9a have been excluded from the habitat loss calculations. This is because both areas are included with a consented development for a bulk drying and pelleting facility with onsite energy centre obtained by Vogen Energy in 2011.

Table 2.3: Plot B1, habitat areas and losses

Habitat type	Area of habitat within survey area (ha)	Area of habitat loss (ha)
Plot B1.		
Scrub (dense continuous)	0.88	0.88

Habitat type	Area of habitat within survey area (ha)	Area of habitat loss (ha)
Plot B1.		
Unimproved neutral grassland	0.26	0.26

2.7.63 As shown in Tables 2.2 and 2.3, if considering the habitats to be lost within the development plot boundaries, the greatest habitat losses would be those of ephemeral/short perennial vegetation and scrub. The significance of the effects on these habitats, together with grassland, is assessed as part of the overall Brownfield Sites habitat following description of the individual habitat losses below.

Ephemeral/short perennial and ruderal species

2.7.64 Ephemeral/short perennial vegetation (and ruderal vegetation) is an early successional plant community associated with recently disturbed areas of land. As such, the habitat would be expected to reduce naturally over time as other plants become established.

2.7.65 In addition, approximately 8 ha of ephemeral/short perennial vegetation located within the survey area for Land Parcels A and C (Table 2.2 and Figure ESS5 2.8) would not be lost to construction.

Grassland

2.7.66 Approximately 0.26 hectare of species diverse unimproved grassland would be lost in plot B1. However, to the west and south-west of the plot B1 there are other areas of unimproved grassland in a mosaic with areas of scrub that would also be retained.

Scrub

2.7.67 Approximately 7.95 ha of scrub is located within the Phase 1 habitat survey area in the south of Newport Docks. Much of the scrub in the central and western parts of the site would be cleared for the development proposals. However, approximately 2.83 hectares of scrub located in the south-east of the survey area and outside the development plot boundaries, which is associated with the saltmarsh and river, would be retained.

2.7.68 Approximately 0.88 hectares of dense continuous scrub would also be lost from plot B1. However, an area of more than 6 hectares of scrub and unimproved grassland mosaic located to the west and south-west of plot B1, shown on Figure 10.4c of the March 2016 ES, would be retained. These areas include white poplar, goat willow, elder, bramble and *Buddleia*.

Brownfield habitats

2.7.69 As explained earlier in this section, diverse brownfield habitats which comprise open mosaics of scrub, ruderal, ephemeral and grassland species, qualify as the UK BAP/ Environment Wales Act 2016 Section 7 priority habitat Open Mosaic Habitats on Previously Developed Land.

2.7.70 For the open mosaic habitats on previously developed land habitat, the magnitude of the land take impacts for the M4CaN Scheme, as assessed in the March 2016 ES, was assessed as major adverse and the significance of effects

moderate or large in the medium term, even taking into account the sympathetic restoration of the land at Great Pencarn, Newport Docks and Tata Steel. In the long term, the magnitude of impact was assessed as moderate adverse and the significance of effects as moderate. These effects are considered significant in EIA terms. The additional land take within Newport Docks which would result from the relocation of businesses would not change this overall assessment.

2.7.71 The land take for construction has been assessed above. The residual effects of construction on all Valued Ecological Receptors (VERs) within the Industrial Land Ecological Unit (including open mosaic habitats on previously developed land) was assessed in the March 2016 ES as not significant in EIA terms. The additional effects on this habitat as a result of the relocation of businesses would not affect this assessment.

2.7.72 The residual effects of the operation of the new section of motorway on the habitats and species included in the Industrial Land Ecological Unit (including open mosaic habitats on previously developed land), taking into account the sympathetic restoration of the construction areas at Great Pencarn, Newport Docks and Tata Steel, and the extent of habitat (particularly species-rich grassland) included in the Scheme, were assessed in the March 2016 ES as not significant in EIA terms. The additional effects on this habitat as a result of the relocation of businesses would not affect this assessment.

Woodland

2.7.73 The majority of the 0.33 ha woodland parcel located in the centre of the survey area (Target Note 11, Figure ESS5 2.8) would be lost to development.

2.7.74 The assessment of the magnitude of the impacts of land take on semi-natural woodland in the March 2016 ES was that it would be major adverse leading to effects of moderate or large significance in the short and medium terms. In the longer term the magnitude of impacts would be moderate adverse resulting in effects of moderate significance. In EIA terms the effects would be significant in the short, medium and long term. The additional loss of 0.23 ha of woodland as a result of the relocation of businesses in Newport Docks would amount to an increase of only 0.46% of the overall loss of woodland, therefore the assessment of effects would remain as set out in the March 2016 ES.

2.7.75 The residual effects of construction on all VERs within the Farmland Ecological Unit (including woodland) were assessed in the March 2016 ES as not significant in EIA terms. The additional effects on woodland as a result of the relocation of businesses in Newport Docks would not affect this assessment.

2.7.76 Taking into account the severance already caused by existing roads, the planting included in the Scheme, and future management of land within the highway boundary in accordance with the objectives of the Trunk Road Estate BAP, the residual effects of the operation of the new section of motorway on the habitats included in the Farmland Ecological Unit (including woodland) were assessed in the March 2016 ES as not significant in EIA terms. The additional effects on woodland as a result of the relocation of businesses in Newport Docks would not affect this assessment.

Waterbodies

- 2.7.77** The loss of waterbodies as a result of the proposed relocation of businesses within Newport Docks would be 0.48 hectares, 0.21 hectares of which comprises ephemeral waterbodies, including water pooled on areas of hard-standing that would likely become dry during the summer months with very little or no aquatic vegetation.
- 2.7.78** The wet ditches on site would not be lost to development.
- 2.7.79** The March 2016 ES reported that no ponds would be lost under the footprint of the new section of motorway itself; however, one pond (approximately 0.15 ha) would be lost at the Duffryn construction compound site.
- 2.7.80** The additional loss of up to 0.27 ha of waterbodies (drainage ditches and largely ephemeral ponds on areas of hard-standing) at the south of Newport Docks would equate to a 4% increase in waterbody loss.
- 2.7.81** The March 2016 ES assessed this loss of ponds and eutrophic waterbodies as an effect of slight adverse significance and so not significant in ES terms.
- 2.7.82** Taking into account the extent and condition of the waterbodies on the land at the south of Newport Docks (i.e. of limited extent, minimal vegetation, largely ephemeral in nature, and several with hard-standing profiles), this additional habitat loss would not change the overall M4CaN assessment of impact.

Reed bed

- 2.7.83** The 0.22 ha of reed bed within the development boundary at the south of Newport Docks would be lost.
- 2.7.84** The March 2016 ES reported that 6.59 ha of reed bed would be lost as a result of the land take of the M4CaN Scheme, 3.19 ha of which would be permanent loss and 3.35 ha would be temporary loss. This was assessed as an effect of moderate adverse significance in the short-term and neutral to slight adverse effect in the medium/long-term. The effect would thus be significant in the short term.
- 2.7.85** The loss of an additional 0.21 ha of reed bed as a result of the relocation of businesses in Newport Docks would not change this assessment.

Saltmarsh and intertidal mudflats

- 2.7.86** The saltmarsh and adjacent mudflats would be retained and protected during construction. Therefore, there would be no impact from land take.
- 2.7.87** The March 2016 ES explains that the east pier of the new crossing of the River Usk would be located within an area of saltmarsh on the east bank of the river. The mitigation included in the Scheme for this loss of saltmarsh is the creation of new saltmarsh in an area to be used for construction of the River Usk Crossing once the construction works are complete, the effects on which taking a precautionary approach, in the short and medium term would be significant, and in the long term not significant.
- 2.7.88** The proposals for relocation of businesses within Newport Docks would not change this assessment.

Construction

Habitats - Potential Pollution Impacts

- 2.7.89** Chapter 10 of the March 2016 ES assesses the impacts of releases of pollutants during construction leading to water quality changes in the River Usk. The provisions of Policy SP4 of the Newport LDP require that development proposals should protect water quality during construction. This protection would be delivered through the implementation of a Construction Environmental Management Plan (CEMP) following best practice.
- 2.7.90** As explained in Chapter 16: Drainage and the Water Environment of the March 2016 ES, in addition to measures designed into the M4CaN Scheme, a Surface Water Management Plan (SWMP) would be developed and implemented to consider all drainage required during the construction phase. This would reference all industry and regulatory pollution prevention guidelines. The SWMP would consider all construction related discharges into waterbodies, including the River Usk, River Ebbw and Gwent Levels, to ensure negative effects on water quality of these features are minimised during construction. The works and development required to relocate businesses within Newport Docks would be subject to similar controls of discharges, and this, taken together with the protection under Policy SP4 of the Newport LDP and implementation of a CEMP, would ensure that there were no adverse effects on the River Usk or other watercourses as a result of the construction of the works and development at the south of Newport Docks.

Japanese knotweed

- 2.7.91** As explained in Chapter 10 of the March 2016 ES, Japanese knotweed is listed under Schedule 9 of the Wildlife and Countryside Act 1981. As such, it is an offence to plant or otherwise cause this species to grow in the wild. Section 10.5 of the March 2016 ES explains that, in order to minimise the potential impact of invasive species, biosecurity measures designed to manage and control their spread would be implemented during construction of the M4CaN Scheme.
- 2.7.92** In order to comply with the law, similar measures would have to be implemented during construction works for relocation of businesses in the south of Newport Docks.

Operation

Habitats - pollution effects

- 2.7.93** During operation, it is assumed that the existing Newport Docks pollution incident prevention and control procedures would apply to the relocated businesses.
- 2.7.94** Due to the long history of industrial use of land within Newport Docks, much of the vegetation present is already tolerant of a certain level of nutrient enrichment and pollutants. The relocated businesses would be subject to modern environmental controls and thus their operation would not be expected to have significant impacts on adjoining habitats. The effects of operation of the relocated businesses would thus not affect the overall assessment of the operational effects of the M4CaN Scheme as set out in the March 2016 ES.

Protected and Otherwise Notable Species

2.7.95 The Phase 1 habitat survey carried out in 2017 identified the potential value of the land at the south of Newport Docks for a variety of protected or otherwise notable species and, therefore, surveys for the following species were carried out:

- Invertebrates
- Great crested newt
- Reptiles
- Otter (and water vole)
- Breeding birds
- Wintering birds

2.7.96 No signs of badger activity were recorded during the Phase 1 habitat survey visit in 2017, so no further badger survey was considered necessary.

2.7.97 The results of a desk study undertaken in 2015 by Thomson Ecology for ABP Marine Environmental Research Ltd in 2015 (Appendix ESS5 2.2) reported no records of bats within 1 km of the land at the south of Newport Docks. Furthermore, the results of a bat activity survey undertaken in 2012 were reported to have shown only low to very low levels of bat activity from common pipistrelle, soprano pipistrelle and noctule bat.

2.7.98 Taking this information, and the findings of the 2017 Phase 1 Habitat Survey (Appendix ESS5 2.3), into account, and since no existing buildings would be affected by the development proposals, no bat surveys were recommended.

2.7.99 The results of the species surveys which have been carried out within the land at the south of Newport Docks in 2017 are reported at Appendices ESS5 2.5 and 2.6 and are summarised below.

Invertebrate Survey

Desk Study and previous survey

2.7.100 As explained in the March 2016 ES, a survey of terrestrial invertebrates within Newport Docks in 2015 identified 329 species (March 2016 ES Appendix 10.31). Of these, 32 (9.7%) were considered to be 'Key Species' and seven of them of Red Data Book or equivalent status. This represents a good diversity for such an open site. The proportion of Key Species indicated an area of significant invertebrate conservation value. While many key species are known to be doing well nationally, and some have good populations in the region, others are rarely recorded or are unknown in South Wales. One species, a fly *Liriomyza intonsa*, is new for Britain.

2.7.101 Four UK BAP/Section 42 species were recorded including two important bumblebees, the brown-banded carder bee and the shrill carder bee, for which this part of South Wales is an important stronghold. Both these bumblebees require a larger landscape scale habitat mosaic in order to maintain viable populations and many open habitats in and around the survey site will be

important for the viability of these populations. The survey showed that the saltmarsh beside the River Ebbw is of particular importance for invertebrates.

- 2.7.102** A terrestrial invertebrate survey of the Land Parcels A and C is underway and will be reported in September 2017.

Impact Assessment

- 2.7.103** The March 2016 ES reported the magnitude of the impacts on the terrestrial invertebrate assemblage associated with brownfield land, taking into account the sympathetic restoration of the land at Great Pencarn, Newport Docks and Tata Steel, as Major Adverse and the significance of effects Moderate or Large in the medium term. In the long term as the habitats recovered the magnitude of impacts would be Moderate and the significance of effects as Moderate. These effects would be significant in EIA terms.

Great Crested Newt eDNA Survey

Field Survey

- 2.7.104** The Phase 1 habitat survey undertaken in the south of Newport Docks 2017 reported the presence of waterbodies of potential value to great crested newts; therefore, an eDNA survey for great crested newts was undertaken in 2017.
- 2.7.105** The great crested newt survey report is attached at Appendix ESS5 2.5.

Aims and Methodology

- 2.7.106** The aim of the survey was to determine presence or likely absence of great crested newts in waterbodies located within the survey area for Land Parcels A and C using the environmental DNA (eDNA) technique.
- 2.7.107** The survey methodology was based on that described in Biggs, *et al.* (2014). The survey comprised collecting water samples from waterbodies of potential value for laboratory analysis for great crested newt eDNA.
- 2.7.108** The survey was undertaken on the 29th June 2018, a suitable date for this type of survey.
- 2.7.109** Water samples were collected from two ponds and one drainage ditch within the land at the south of Newport Docks (as shown on Figure ESS5 2.10). All other waterbodies within the site were dry at the time of the survey visit.
- 2.7.110** Water samples were then processed and analysed by SureScreen Scientific Laboratories in accordance with the methodology described by Biggs *et al.* (2014).

Results

- 2.7.111** Results of the analysis of the samples reported no positive records for great crested newt eDNA.
- 2.7.112** Considering the largely ephemeral nature and the limited aquatic/semi-aquatic vegetation in the surveyed waterbodies, the isolated location of the survey area (which is surrounded by built-up areas to the north and west, the River Usk to the east and south and the River Ebbw to the west), and the fact the area is

separated from the nearest known great crested newt population by the River Usk (Appendices 10.6 and 10.22 to the March 2016 M4CaN ES), it is considered unlikely that results were false negatives and, therefore, great crested newts are considered absent from the area. No further survey is recommended.

Impact assessment

2.7.113 Taking into account the results of field survey, which reported no signs that could indicate the presence of great crested newts, along with unfavourable habitat conditions, proposals to relocate buildings to the survey area would have no impact on great crested newts.

2.7.114 The March 2016 ES assessed the impacts of the M4CaN Scheme as a result of land take, construction and operation of the new section of motorway on great crested newt as not significant. The proposal for relocation of businesses in the south of Newport Docks would not change this assessment.

Reptile Survey

2.7.115 As explained in the March 2016 ES, within Newport Docks, common lizard, grass snake and slow worm were observed under artificial refuges during a reptile survey undertaken in 2015 (March 2016 ES Appendix 10.27). The peak counts of single common lizard, grass snake and slow worm indicate that low population size classes of these reptiles were present within the 2015 survey area. The rest of the land within Newport Docks in the vicinity of the proposed new section of motorway was not suitable habitat for reptiles and the populations are likely to be confined to the grassland and open scrub within the site.

2.7.116 The Phase 1 habitat survey of the Land Parcels A and C reported the presence of a mosaic of scrub, woodland edge, grassland, ruderals, ephemeral vegetation and bare ground, which provided a range of microhabitats suitable to reptiles. However, the isolated nature of the area, surrounded by the River Usk and the docks, and the recent levels of disturbance in the area, greatly reduced the potential value to reptiles. Taking this into account as well as the results of previous reptile surveys of other parts of the docks (Appendix 10.27 to the March 2016 ES) it is expected that, if present, any reptile population is likely to be small.

2.7.117 No reptiles were observed during the Phase 1 habitat survey visit; however, a full seven day survey will be undertaken in September 2017.

2.7.118 Development proposals include the retention of areas of scrub, unimproved grassland and ruderals in the east of the survey area and alongside the banks of the River Usk, to which small numbers of reptiles could be displaced.

Otter Survey

2.7.119 One of four survey visits for otters was undertaken during the Phase 1 habitat survey on the 14th and 15th June 2017. During the visit the following signs that could indicate the presence of otters were surveyed for:

- holts;
- laying-up/resting sites;
- spraints;
- anal jelly (a jelly-like secretion left by adult otters for scent marking purposes);

- bank slides, runs and tunnels;
- prey remains; and
- footprints.

2.7.120 Results of the first survey visit reported no signs that could indicate the presence of otters, including no signs of potential resting places or holts.

2.7.121 Signs of otter activity were also looked for during the NVC survey visits on the 18th, 19th and 25th July 2017, although this was not the primary purpose of the visit. No signs that could indicate the presence of otters were recorded.

2.7.122 Additional otter survey visits will be undertaken in August and September 2017.

2.7.123 Should otters use the area of Land Parcels A and C, with the relocated buildings and their associated infrastructure in place dense scrub would remain in the vicinity of, and around the perimeter of the land parcels adjacent to the saltmarsh and edge of the river, which would be of value to otters.

Breeding Bird Survey

Desk Study

2.7.124 A breeding bird survey covering parts of Land Parcels A and C was carried out on behalf of ABP by Thomson Ecology over four visits in 2015, two in May and two in June (Appendix ESS5 2.6).

2.7.125 Five non-breeding and 26 breeding bird species were recorded. Of the breeding birds, Cetti's warbler (*Cettia cetti*) and little ringed plover (*Charadrius dubius*) are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Three possible Cetti's warbler territories and a single probable little ringed plover territory were recorded. In addition, seven species of Principal Importance for Wales (listed in Section 7 of the Environment (Wales) Act 2016) were recorded. These were:

- Herring gull - 48 territories;
- Lapwing - 2 territories;
- Starling - 12 colonies;
- Song thrush - 3 territories;
- Dunnock - 4 territories;
- Linnet - 4 colonies; and
- Reed bunting - 1 territory.

Field Survey

2.7.126 The report of the breeding bird survey carried out in 2017 is attached at Appendix ESS5 2.6.

Aim and Methodology

2.7.127 Due to the fact access to the site for a breeding bird survey was not obtained until after the breeding bird survey period (April – June), an adapted survey methodology was undertaken. This methodology was carried out during the

breeding bird survey season (March – August inclusive) on the 25th July 2017. The methodology comprised a single daytime walk-over survey of Land Parcels A and C in order to develop a greater understanding of the potential use of the site by breeding birds.

- 2.7.128** The aim of the survey was to assess the potential habitat value of the site, identify species of birds that could be breeding on site, and identify any signs that could confirm breeding on site.

Results

- 2.7.129** Bird species recorded during the survey visit are listed in Table 2.4 below.

Table 2.4: Species Recorded at Site During Breeding Bird Survey Visit, 25th July 2017

BTO Code	Species	Annex I EU Birds Directive	Schedule 1 W&CA 1981	BoCC List	UK BAP	Section 7 Environment (Wales) Act 2016	Breeding Status
CA	Cormorant						Non-breeding
BZ	Buzzard						Possible
MH	Moorhen						Confirmed
LP	Little Ringed Plover		X				Probable
L	Lapwing			Red	X	X	Probable
GE	Green Sandpiper		X	Amber			Non-breeding
RK	Redshank			Amber			Non-breeding
LB	Lesser Black-backed Gull			Amber			Confirmed
HG	Herring Gull			Red	X	X	Confirmed
WP	Woodpigeon						Confirmed
CD	Collared Dove						Confirmed
GS	Great Spotted Woodpecker						Confirmed
MG	Magpie						Confirmed
C	Carrion Crow						Confirmed
BT	Blue Tit						Confirmed
GT	Great Tit						Confirmed
SL	Swallow						Non-breeding
CW	Cetti's Warbler		X				Confirmed
CC	Chiffchaff						Non-breeding
BC	Blackcap						Confirmed
WH	Whitethroat						Confirmed
RW	Reed Warbler						Confirmed
WR	Wren						Confirmed
B	Blackbird						Confirmed
ST	Song Thrush			Red	X	X	Confirmed
M	Mistle Thrush			Red			Non-breeding
PW	Pied Wagtail						Confirmed

BTO Code	Species	Annex I EU Birds Directive	Schedule 1 W&CA 1981	BoCC List	UK BAP	Section 7 Environment (Wales) Act 2016	Breeding Status
CH	Chaffinch						Confirmed
BF	Bullfinch			Amber	X	X	Confirmed
LI	Linnet			Red	X	X	Confirmed
RB	Reed Bunting			Amber	X	X	Confirmed

Impact assessment

- 2.7.130** The main impact of the land take for the development of this area would be the loss of small amounts of suitable nesting habitat. In addition, adjacent land not impacted in this manner would be subject to anthropogenic disturbance during the construction and operational phases.
- 2.7.131** Taking into account the layout and nature of development proposals, it is assumed that all of the breeding birds within the site would be displaced.
- 2.7.132** In the March 2016 Environmental Statement for the M4CaN, Cetti's warbler was allocated national (high) value and the other species district (low) value respectively.
- 2.7.133** The preferred habitats of breeding little ringed plovers are gravel/sand banks, river shingle and freshwater body margins, habitats which are to some degree transient and liable to change considerably over short timescales owing to changing water levels, vegetation growth and other factors. Sites which become unsuitable are thus routinely abandoned and new ones adopted. In addition, some industrial man-made sites are ideal for little ringed plovers, though like the habitats considered above, their suitability is transient. Newport Docks provides relatively large, bare and stony areas, but the land use is subject to short-term change.
- 2.7.134** There are approximately 1,239 pairs of little ringed plover in Britain (Balmer *et al.*, 2013). Their population and range across the UK has increased consistently since first being recorded in 1938, although their selection of breeding sites can result in human disturbance. This in turn causes them to redistribute, making counting difficult. In 2000, the Welsh population was estimated to be only 100 pairs (Venables *et al.*, 2008), which had increased to a minimum of 141 pairs by 2007 (Conway *et al.* 2008). The Gwent population is 8-12 pairs, with the majority of birds nesting at Goldcliff lagoons, and birds are also present on the River Usk (Venables *et al.* 2008).
- 2.7.135** The single pair at Newport dock represents 0.7% of the last national survey count. Based on this, and the information above, it is judged that the single pair at Newport Docks is of regional (medium) value.
- 2.7.136** The M4CaN development mitigation plans including the SSSI Mitigation Strategy, Reen Mitigation Strategy, and Bird Mitigation and Protection Strategy, would provide alternative habitat for most of the breeding bird species, and specific mitigation for lapwing would be implemented at Maerdy Farm.
- 2.7.137** The additional number of territories at the south of Newport Docks identified in the Thomson survey in 2015 and the survey carried out in 2017 does not affect

the evaluation of the species recorded, with the exception of little ringed plover, which was not previously recorded in the breeding bird surveys for the M4CaN Scheme.

- 2.7.138** The assessment of effects of the M4CaN Scheme for Cetti's warbler remains as previously assessed in the March 2016 ES. There would be significant adverse effects as a result of land take, construction (short term only) and operation. The effects on other bird species, including little ringed plover, would remain as not significant.

Wintering Birds

Desk Study

- 2.7.139** A wintering bird survey covering the land at the south of Newport Docks was carried out on behalf of ABP by Thomson Ecology over three visits in February and March 2015 (Appendix ESS5 2.2). These surveys comprised walkover and vantage point surveys. The latter are not considered, as VPs only record birds flying over the survey area, and species using the site as a flyway are unlikely to be impacted by the proposed development.
- 2.7.140** The walkover surveys recorded 22 species of bird on site. Other than herring gull, of which a flock of 59 birds was recorded on one occasion, the peak count of all species was less than 10 birds. Five species recorded are listed under Section 7 of the Environment (Wales) Act 2016 as of principal importance in Wales. These were black-headed gull, herring gull, curlew, dunnoek and linnet. Species listed on the Severn Estuary SPA citation that were recorded were:
- Mallard - peak count of 2;
 - Tufted duck - peak count of 4;
 - Redshank - peak count of 1; and
 - Curlew - peak count of 1.

Impact Assessment

- 2.7.141** Considering the results of the desk study (Appendix ESS5 2.2), and the results of the wintering bird surveys carried out for the 2016 ES (September 2016 ESS, Appendix S10.4), the main impact of the land take for the development of the land at the south of Newport Docks would be the loss of suitable winter habitat for roosting and foraging birds. In addition, adjacent land not impacted in this manner would be subject to anthropogenic disturbance during the construction and operational phases. Taking account of the proposed layout for the relocated businesses and the nature of the proposed development it is assumed that any birds that would otherwise utilise the site would be displaced by development proposals.
- 2.7.142** In the March 2016 ES, redshank was allocated national (high) value. Tufted duck, curlew and all other species were allocated district (low) value. The additional low numbers of birds recorded through the desk study do not affect the evaluation of these species.
- 2.7.143** Therefore, considering the desk study findings, the assessment of the effects of the M4CaN Scheme as a whole for wintering birds would remain as previously assessed in the March 2016 ES. The effects would be not significant, other than

for the effects of construction on redshank for which there would be a significant effect in the short and medium terms.

2.8 Geology and Soils

Introduction

2.8.1 The following report has been prepared since publication of the April 2017 ESS.

- Welsh Government, M4 Corridor Around Newport, Desk Study and Preliminary Risk Assessment Report, Newport Docks, Appendix ESS5 2.7, ABP and Tenant Relocation, Newport, August 2017, RPS

2.8.2 This Desk Study and Preliminary Risk Assessment (DSPRA) report covers the parcels of land associated with the proposed relocation of ABP's operations and their tenant's relocation, and includes additional historical ground investigation and environmental data. This information has enabled baselining of the ground conditions, including land contamination, of the areas containing the relocation plots, as well as an assessment of the potential environmental impacts for the relocation and quayside development works.

Baseline Environment

Introduction

2.8.3 In addition to the aforementioned report, the baseline conditions are informed by the following:

- Welsh Government, M4 Corridor Around Newport, Preliminary Sources Study Report, Ove Arup & Partners, 14/9197
- Welsh Government, M4 Corridor Around Newport, Land Contamination Assessment Report R11.1, Annex D, CL-14 Newport Docks, Environmental Supplement, September 2016, RPS

2.8.4 In the CL-14 report (see September 2016 ESS, Appendix R11.1, Annex D) Newport Docks was identified as land subjected to potential contamination.

2.8.5 The CL-14 report provides data and assessment for land principally in the north of the Docks, which includes Land Parcel B. The DSPRA provides a specific assessment of ABP land parcels and quayside development areas.

2.8.6 Only very limited previous ground investigation data is available for the majority of the proposed parcels of land to be used for the tenant relocation.

2.8.7 Previous ground investigation data collected from and adjacent to the proposed relocation plots and quayside developments has been used as an indication of the likely ground conditions that will be present. The previous ground investigation sampling locations are shown on Figure ESS5 2.11.

2.8.8 The geological, hydrological and hydrogeological regime across the study area may be considered similar to that described in the CL-14 report. A summary is provided below.

Hydrology

- 2.8.9** The River Ebbw lies to the west of the study area and the River Usk lies to the east and south. Both the River Usk and River Ebbw are tidal and thus are characterised by extensive mudflats at low tide. Newport Harbour has an exceptionally large tidal range (magnitude of 11.6 m spring tide range).
- 2.8.10** A number of surface water discharge points to the River Usk, including Pilots Pill, are present to the south of the South Docks.
- 2.8.11** North Dock and South Dock are connected at Junction Cut. Access to the River Usk is through an entrance lock located on the south western corner of the South Dock.

Geology

- 2.8.12** A relatively significant thickness of Made Ground is expected across the study area, with significant inclusion of man-made materials such as brick and concrete. Much of the Made Ground was placed to raise the land to construct the docks over a number of years. In addition, environmental data searches including information from NRW have identified the presence of landfills in some areas of land to be used to relocate businesses. This is shown on Figure ESS5 2.11.
- 2.8.13** The underlying Tidal Flat Deposits, comprising soft clays, silts and peat, overlie sands and gravel of Glaciofluvial Deposits. The Mercia Mudstone Group lies beneath the Glaciofluvial Deposits and comprise siltstones and mudstones.

Hydrogeology

- 2.8.14** The Mercia Mudstone Group is classified as a Secondary B Aquifer, the Tidal Flat Deposits a Secondary (undifferentiated) Aquifer and no formal designation is given to the Glaciofluvial Deposits.
- 2.8.15** The Tidal Flat Deposits are expected to have low hydraulic permeability resulting in limited water movement within these strata. Consequently, limited hydraulic continuity is expected to exist between shallow site ground conditions and the wider water environment, particularly where hardstanding is present. The presence of the tidal Usk and Ebbw estuaries in close proximity of the land parcels is expected to result in fluctuating water pressures within the underlying Glaciofluvial Deposits and to a lesser extent the Tidal Flat Deposits.
- 2.8.16** Perched water is likely to be present at the interface of the Made Ground and Tidal Flat Deposits.
- 2.8.17** The land parcels do not lie within a Groundwater Source Protection Zone (SPZ). However, parts of the western boundary of the Site lie within a groundwater vulnerability zone, classified as a minor aquifer with high leaching potential.

Land Contamination

- 2.8.18** The land parcels are located within Newport Docks, and the land has therefore been the subject of a range of historical and current potentially contaminative uses related to the docklands. These include timber floats, railway sidings, timber storage yards, engine sheds, shipbuilding and engineering works, coal

storage, and a Petroleum Storage Distribution Terminal (PSDT). The infilled channel of the River Ebbw (Report CL-16 in the March 2016 ES, Appendix 11.1, Annex D) was also included as a potential land contamination site within the CL-14 Newport Docks report, and this channel underlies part of the relocation land parcels.

2.8.19 Potential contaminants of concern associated with the land's former uses include metals, metalloids, sulphate, sulphides, cyanides, PAHs, coal dust, diesel, petrol and mineral oils, pesticides and preservatives and asbestos containing materials.

2.8.20 Additionally, four historical landfills are identified within some of the proposed relocations plots. Docks Way landfill, which is an operational landfill, is located to the west of several relocation land parcels to the west of ABP Newport Docks. Details are provided in Table 2.5 and locations shown in Figure ESS5 2.11.

Table 2.5: Historical Landfills

Name	Relocation Plots Affected	Operational Period	Waste Type
Historical Landfills			
South Dock	None directly affected	1976 - 1990	Unknown
Old Coal Sidings	A1 and A2	1970 - 1983	Ship waste from numerous companies
South Dock Phase 1	A5Q, A5R, A5M, A8, A3, A1, A6	1986 - 1990	Industrial, biodegradable material, slag, calcium sulphate filter cake
South Dock Phase 2	A2, A5CC, A7, A5O, A5P, A8	1990 - 1994	Slag, calcium sulphate and biodegradable waste
Operational Landfill			
Docks Way Landfill	None directly affected	Unknown - Ongoing	Household, commercial and industrial waste

2.8.21 Ground and groundwater contamination encountered within the study area and wider ABP site is informed by soil and water samples obtained from trial pits and boreholes advanced as part of the 2015 Supplementary Ground Investigation for Welsh Government (Geotechnical Engineering, 2015) and the 2016 Additional Ground Investigation, as well as a number of historical investigations. Those historical investigations, which have included exploratory locations within/adjacent to the land relocation parcels as shown in Figure ESS5 2.11 are summarised below together with a brief description of the work carried out.

- **Terra Firma (2001), 4 trial pits and 1 borehole.** Chemical testing undertaken on 3 samples of Made Ground and 1 sample of Tidal Flat Deposits. The samples were analysed for a suite of heavy metals, pH, cyanide (total), polycyclic aromatic hydrocarbons (screen) and monohydric phenols.
- **Integral Geotechnique (2004), 6 trial pits and 2 boreholes.** Chemical testing undertaken on 5 samples of Made Ground. The samples were analysed for a suite of heavy metals, pH, cyanide (total), polycyclic aromatic hydrocarbons and asbestos identification.
- **Integral Geotechnique (2016), 4 boreholes.** Chemical testing undertaken on 3 samples of Made Ground. The samples were analysed for asbestos

identification and quantification, a suite of heavy metals, pH, cyanide (total), polycyclic aromatic hydrocarbons and total petroleum hydrocarbons.

- **Integral Geotechnique (2014), 16 boreholes.** Chemical testing undertaken on 6 samples of Made Ground. The samples were analysed for asbestos identification and quantification, a suite of heavy metals, pH, cyanide (total), polycyclic aromatic hydrocarbons and speciated petroleum hydrocarbons.
- **TUV SUD PMSS (2015), 11 trial pits, 1 borehole and 6 Cone Penetration Tests.** Chemical testing undertaken on 11 samples of Made Ground. The samples were analysed for asbestos identification, a suite of heavy metals, pH, cyanide (total), polycyclic aromatic hydrocarbons and speciated petroleum hydrocarbons.
- **Project Management Support Services Ltd (2013), 1 borehole.** No chemical testing undertaken.
- **Terra Firma (2012), 4 boreholes.** Chemical testing undertaken on 7 samples of Made Ground and 5 samples of Tidal Flat Deposits. The samples were analysed for a suite of heavy metals, pH, cyanide (total), polycyclic aromatic hydrocarbons and total petroleum hydrocarbons.

2.8.22 A summary of the general contamination status of soils/groundwaters within the wider site is provided below:

- Concentrations of soil-bound chemical species within Made Ground, whilst commonly elevated, were typically less than Suitable 4 Use Levels (LQM/CIEH, 2015) for a commercial land use;
- Visual and olfactory evidence of hydrocarbon contamination was identified in discrete areas;
- Widespread elevated pH in the Made Ground was recorded, most likely associated with the presence of slag material;
- Leachable heavy metals have been identified from the Made Ground, though are not indicated to be widespread;
- Exceedances of EQSs and DWSs are prevalent within the perched groundwater within Made Ground and underlying groundwater within the TFD and glaciofluvial aquifer, with the highest recorded exceedances in the latter two water bodies;
- Asbestos (chrysotile and amosite) fibres located within discrete areas in soil across the site; and
- Significantly elevated concentrations of ground gases were recorded within the Tidal Flat Deposits, consistent with that for naturally occurring organic deposits or brownfield sites.

Assessment of Tenant Relocation Effects

2.8.23 A Preliminary Risk Assessment (PRA) has been undertaken and a Conceptual Site Model (CSM) has been developed for the relocation plots and quayside development areas. The level of risk for each identified source-pathway-receptor contaminant linkage was identified in accordance with the Land Contamination Assessment Report (Appendix R11.1 of the September 2016 ESS) risk evaluation methodology.

2.8.24 The identified risks are generally lower/similar to those identified within the CL-14 report. New and/or higher risks are presented within Table 2.6.

Table 2.6: Risk Levels

Potential Contaminant Source	Potential Contaminants of Concern	Potential Receptors	Risk	Key Potential Contaminant Linkages
<i>Construction</i>				
Made Ground, electrical sub-stations, timber yard, railway land, stockpiles of various materials, storage sheds/depots, PSTD and associated tank farm, landfill waste /leachate, infilled ground and asbestos containing materials	Inorganics / organics including petroleum hydrocarbons, coal dust, landfill gas and asbestos	Construction workers, surface waters	Moderate and High	Contaminated soils/fibres/vapours impacting on construction workers. Leaching/migration of contaminants/ leachate in soils and perched waters into surface waters through piling. Elevated landfill gases (explosion) to construction workers during piling. Contaminated surface water run off to River Usk.
<i>Operation</i>				
Made Ground, electrical sub-stations, timber yard, railway land, stockpiles of various materials, storage sheds/depots, PSTD and associated tank farm, landfill waste /leachate, infilled ground and asbestos containing materials	Vapours including petroleum hydrocarbons, landfill gas, asbestos	Future site users	Moderate	Vapour/ground gas (explosion) intrusion into buildings. Disturbance Made Ground containing fibres left <i>in situ</i> within areas of soft landscaping. It is expected that these areas will have vegetative cover. Land raise and hardstanding will also cover contaminants and reduce infiltration.

Construction Phase

2.8.25 Piling of any buildings foundations or slabs can mobilise contaminants from shallow to deeper horizons either by pushing contaminants below the water table or by the creation of new vertical pathways to link potentially contaminated perched groundwater with deeper aquifers, i.e. the glaciofluvial deposits, which may be in hydraulic continuity with the wider water environment including the River Usk.

2.8.26 Large tidal fluctuations within the Usk Estuary are likely to create pressure fluctuations within permeable strata at depth, i.e. the glaciofluvial deposits, in

hydraulic continuity with this channel. The creation of new pathways may allow such pressure effects to influence and mobilise shallower contaminated perched groundwater.

2.8.27 The magnitude of impact and significance of effects during construction is presented in Table 2.7 where these differ from those described within the CL-14 report.

Table 2.7: Magnitude and Significance of Effects during Construction

Receptor Name	Potential Effects	Magnitude of Impacts	Potential Significance of Effect
Construction workers and adjacent land users including ABP and ABP's tenant operatives	Exposure to waste / Made Ground with potentially elevated levels of contamination. Inhalation of contaminated soil derived dusts, fibres and vapours/gases.	Major (adverse)	Very large (adverse)
Surface water (River Usk)	Migration of contaminants in soils and perched groundwater into surface water. Installation of piles may create pathways connecting allowing contaminated groundwater entering surface waters	Moderate (adverse)	Large (adverse)

Operational Phase

2.8.28 The magnitude of impact and significance of effects during operation is presented in Table 2.8 where these differ from those described within the CL-14 report.

Table 2.8: Magnitude and Significance of Effects during Operation

Receptor Name	Potential Effects	Magnitude of Impacts	Potential Significance of Effect
End users and adjacent site users	Inhalation of vapours/ground gases within buildings.	Major (adverse)	Very large (adverse)
	Disturbance Made Ground containing fibres left <i>in situ</i> within areas of soft landscaping. It is expected that these areas will have vegetative cover.	Moderate (adverse)	Moderate (adverse)

Mitigation Measures

2.8.29 Post construction risks will in part be mitigated through the end use of the site and construction required to alleviate flood risk. The land raise required along with extensive areas of hardstanding will effectively break potential human health exposure pathways i.e. ingestion of soil, dermal contact and inhalation of soil-derived dusts. The hard cover will significantly limit the infiltration of rainwater through the soils and potentially leaching of any soil contaminants in the underlying groundwater.

- 2.8.30** New drainage infrastructure will be installed as part of the development which will also limit infiltration and therefore lower the risk of mobilising contaminants in soils and perched water.
- 2.8.31** Notwithstanding the above, further ground investigation is required to refine the risks at the site relating to construction workers, future site users and controlled waters to determine the requirement for any site specific remediation. This will include gas monitoring, which will enable the gas risks to be fully determined.
- 2.8.32** A Construction Environmental Management Plan (CEMP) will be prepared and implemented during the construction phase which will set out all environmental measures to mitigate potential impacts during construction.
- 2.8.33** The CEMP will incorporate controls contained within a number of plans and strategies including the following:
- Remediation Strategy Report;
 - Pollution Prevention Plan;
 - Groundwater and Surface Water Management Plan, informed by Piling Risk Assessments; and
 - UXO Mitigation Strategy Report.
- 2.8.34** All documents will be prepared specific to the tenant relocation and quayside development works, albeit broadly in accordance within those provided within the pre-CEMP (December 2016 ESS, Appendix SR3.2) and Outline Remediation Strategy Report (September 2016 ESS, Appendix R11.2) for the main M4CaN Scheme.
- 2.8.35** The remediation strategy will facilitate the management of contaminated soils and waters including asbestos, any gross contamination, material handling and reuse, disposal of contaminated water arisings and piling / foundation arisings. It will identify the need for gas management plans to be implemented during the construction phase, and determine the need to incorporate gas protective measures within all proposed buildings on site (as well as the level of protection required). The remediation strategy will also include measures and controls to deal with unexpected contamination encountered during construction.
- 2.8.36** This strategy will be informed by the outcome of the ground investigation and would be agreed with NRW and NCC prior to the construction phase commencing.

Construction Phase

- 2.8.37** It is considered that with the implementation of the proposed mitigation measures there will be no significant effects.

Operational Phase

- 2.8.38** It is considered that with the implementation of the proposed mitigation measures there will be no significant effects.

Assessment of Additive Indirect Effects

- 2.8.39** The effects of the proposed relocation of businesses and port operations, added to the effects of the proposed new section of motorway on and by soils and geology, and specifically land contamination, have been re-assessed following the ABP tenant relocation assessment. The evaluation of potential indirect effects has not identified any increase in the significance of effects associated with the M4CaN Scheme.

Proposed Relocation Works - Conclusions

- 2.8.40** The assessment has identified that potential risks from land contamination are expected to be generally similar to that encountered elsewhere in Newport Docks. Nonetheless, given the potential sources of contamination that may be present further ground investigation is required to inform a detailed remediation strategy. The remediation strategy will be agreed with NRW and NCC prior to construction. With mitigation in place, effects are not considered significant.

2.9 Materials

- 2.9.1** There is no additional information relevant to this assessment.

2.10 Drainage and the Water Environment

Introduction

- 2.10.1** The following report has been undertaken since publication of the April 2017 ESS:
- Desk Study and Preliminary Risk Assessment covering the land parcel relocation plots. This includes additional historical ground investigation data relevant to the South Docks (Appendix ESS5 2.7)
- 2.10.2** This information has enabled baselining of the areas containing the relocation plots and assessment which includes any indirect effects the relocations works will have on the Scheme.

Baseline Environment

Introduction

- 2.10.3** The baseline conditions are informed by the following reports:
- Welsh Government, M4 Corridor Around Newport, Preliminary Sources Study Report, Ove Arup & Partners, 14/9197
 - Welsh Government, M4 Corridor Around Newport, Land Contamination Assessment Report R11.1, Annex D, CL-14 Newport Docks, Environmental Supplement, September 2016, RPS
 - Welsh Government, M4 Corridor Around Newport, Desk Study and Preliminary Risk Assessment, Appendix ESS5 2.7, Newport, August 2017, RPS
 - GroundSure Enviro Insight Report, Reference RPS-4000435, June 2017

- GroundSure Geo Insight Report, Reference RPS-4000436, June 2017
- The South Wales Ports of Newport, Cardiff, Barry, Swansea, Port Talbot and River Usk Oil Spill Contingency Plan, ABP, October 2013.
- The Newport Harbour Commissioners Policy & Strategic Objectives Document, January 2012.

Hydrogeology and Topography

- 2.10.4** A detailed description of the baseline groundwater environment within the wider study area is provided in the Baseline Water Environment Report comprising Appendix 16.2 of the March 2016 ES.
- 2.10.5** The relocation sites comprise flat dockland, raised above the Mean High Water Spring (MHWS) tide level, but at an elevation of, for the most part, less than 10m AOD.
- 2.10.6** A relatively significant thickness of Made Ground may be expected across the study area with significant inclusion of man-made materials. The underlying Tidal Flat Deposits comprise overlies Glaciofluvial Deposits and the Mercia Mudstone Group in turn.
- 2.10.7** Further details in relation to geology and hydrogeology of the site are provided in Chapter 16 of the March 2016 ES and the Geology and Soils chapter to this ESS. The geological and topographical setting of the site is shown in Figure ESS5 2.14 and 2.15.
- 2.10.8** No Water Framework Directive groundwater bodies are present beneath the proposed relocation sites.

Hydrology and Drainage

- 2.10.9** The relocation sites are located predominantly to the south and south east of South Dock (Land Parcels A and C), but also to the north of North Dock (Land Parcel B, Figure ESS5 2.1). South Dock is tidally locked at its southwestern corner from the westerly flowing and tidal River Usk beyond which the river turns south and flows into the Bristol Channel. The River Ebbw is located beyond the dock's western boundary flowing south into the Usk Estuary just to the west of the tidal locks. The hydrological setting of the site is shown in Figure ESS5 2.16.
- 2.10.10** The majority of the sites are unoccupied open space and commonly comprise scrubland or waste land with remnants of previous industrial usage including the presence of stockpiles of various materials and occasionally buildings or their foundations. The relocation sites benefit from existing surface drainage where hardstanding is in place, but otherwise are expected to freely drain to ground or toward the docks. A number of surface water discharge points to the River Usk, including Pilots Pill are present to the south of the South Docks relocation plots.
- 2.10.11** The study area includes two principal watercourses, namely the River Usk and River Ebbw. The Newport Harbour has an exceptionally large tidal range, with a magnitude of 11.6 m mean spring range (<http://www.ntsrf.org/tgi/portinfo?port=Newport>) with a MHWS of 12.14 mAOD and a MLWS of 0.51 mAOD (based on data recorded since 1993). The Highest Astronomical Tide (HAT) recorded during this time is 13.36 mAOD.

- 2.10.12** The River Usk is designated as a Special Area of Conservation (SAC) and a Site of Special Scientific Interest (SSSI) and just south of the docks forms part of the Severn Estuary SSSI and Severn Estuary Special Protection Area (SPA).
- 2.10.13** Beyond the River Usk is located the Gwent Levels, comprising areas of flat reclaimed coastal marshes that extend up to the Severn Estuary and comprise the Wentlooge Levels and Caldicot Levels to the west and east of Newport, respectively. These areas are designated as SSSIs.
- 2.10.14** The docks benefit from flood prevention measures. As described at paragraph 2.2.35 above a formal detailed Flood Consequences Assessment (FCA), or assessments, will be required to assess the potential flood risk associated with the proposed relocation works, once the final specifications for the relocation sites have been agreed with ABP, and its tenants. In the interim a preliminary assessment of the future flood risk at the current tenant locations and at the proposed relocation sites is provided at Appendix ESS 2.1.

Water Framework Directive

- 2.10.15** A corridor of 1 km radial width from the footprint of the new section of motorway has been used in order to identify all the relevant Water Framework Directive water bodies required for assessment. Any water bodies which lie within or intersect this area are screened in for assessment. This study area is shown on Figure ESS5 2.12. Further information on the basis for WFD Assessment is provided in Appendix 16.4 of the March 2016 ES.
- 2.10.16** Table 2.9 lists the waterbodies present within 1 km of the proposed relocation site boundaries, together with the hydro-morphological designation, current and potential status and any objectives.
- 2.10.17** Of these water bodies, none would be directly affected by the proposals. Construction activities could affect the water quality of South Dock which is indirectly linked hydraulically to the River Usk via the tidal lock at the south west of Newport Docks. Therefore, the Usk transitional water body (GB530905415404) is screened in for assessment.

Environmental Sensitivity

- 2.10.18** The Gwent Levels are an area of high environmental sensitivity at a national level. They are almost entirely designated as Sites of Special Scientific Interest (SSSIs) that include (from west to east): Rumney and Peterstone SSSI; St Brides SSSI; Nash and Goldcliff SSSI; Whitson SSSI; Redwick and Llandeenny SSSI; and Magor and Undy SSSI.
- 2.10.19** The Gwent Levels extend up to the Severn Estuary, which is designated at a national and European level as a Special Protection Area, Special Area of Conservation, Ramsar site and SSSI. They are also registered as a Landscape of Outstanding Historic Importance in Wales.
- 2.10.20** The environmental setting of the site is shown in Figure ESS5 2.13.

Table 2.9: WFD Waterbodies with 1km of the proposed relocation sites

Waterbody Name and ID	Waterbody Length /Area. Hydro-morphological Designation	Current Overall Status / Potential	Current Ecological / Quantitative Status / Potential and Certainty ¹	Current Chemical Status /Potential and Certainty	Protected Area Designations	Status Objective and Justification if not 'Good' by 2015
Riverine Waterbodies						
Ebbw R – conf Ebbw Fach R to Maes-glas (GB109056026910)	Length N/A Heavily Modified Waterbody	Moderate Potential	Moderate Potential (Uncertain - WoE ²) Supporting Conditions: Mitigation Measures – Moderate Quantity and Dynamics of Flow – Supports Good	Fail (Quite Certain)	Freshwater Fish Directive	Good Overall Status by 2027 Good Ecological Potential by 2027 Good Chemical Status by 2027 Justifications: Disproportionately Expensive Technically Unfeasible
Unnamed trib - source to conf Ebbw R (GB109056026780)	Length N/A Artificial	Good Potential	Good Potential (Certainty N/A) Supporting Conditions: Mitigation Measures – Good Quantity and Dynamics of Flow – Supports Good	Does Not Require Assessment	None	Good Overall Status by 2015 Good Ecological Potential by 2015 Justifications: None
Transitional Waterbodies						
Usk (GB530905415404)	Area N/A Heavily Modified Waterbody	Moderate Potential	Moderate Potential (Certainty N/A) Supporting Conditions: Mitigation Measures – Moderate Tidal Regime and Freshwater Flow – Supports Good	Good Status	Freshwater Fish Directive Habitats Directive Birds Directive	Good Overall Status by 2027 Good Ecological Potential by 2027 Good Chemical Status by 2015 Justifications: Technically Unfeasible
Severn Lower (GB530905415401)	Area N/A Heavily Modified Waterbody	Moderate Potential	Moderate Potential (Uncertain) Supporting Conditions: Mitigation Measures – Moderate	Good Status	Bathing Water Directive Freshwater Fish Directive Birds Directive Urban Waste Water Treatment Directive	Good Overall Status by 2027 Good Ecological Potential by 2027 Good Chemical Status by 2015 Justifications: Disproportionately Expensive Technically Unfeasible

¹ For both riverine and transitional waterbodies, ecological status/potential is measured whereas for groundwater quantitative status is measured.² Weight of Evidence – This notation is used where multiple elements are classed as 'Uncertain', however the data supporting these elements may all point to the same conclusion and therefore the current status/potential is classed as 'Uncertain' overall due to the 'Weight of Evidence' (Environment Agency, 2009).

Flood Risk

- 2.10.21** NRW recently re-assessed the Environment Agency (2011) Extreme Water Levels (EWLs) 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 have confirmed that these latest estimates should be utilised for the purposes of TAN15. The tidal flood level near the site for the 1 in 200 year flood return in 2018, has been estimated at 8.49mAOD, whilst the 1 in 1,000 year flood level is estimated to be 8.82mAOD.
- 2.10.22** 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. The tidal flood level for the 1 in 1,000 year flood event, with a 75 year climate change allowance, is 9.55mAOD.
- 2.10.23** Welsh Government's Development Advice Map illustrates that parts of the proposed sites are included in both Zone B (areas known to have flooded in the past) and Zone C2 (areas of the floodplain without significant flood defence infrastructure).
- 2.10.24** Based on the above, a Flood Consequence Assessment (FCA) will be required to assess the potential flood risk associated with the proposed relocation works.
- 2.10.25** 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 would need to be considered as part of the FCA.
- 2.10.26** Building slab levels will need to be raised to either 9.52m AOD, (flood free during a 1 in 200 tidal flood), or 9.95m AOD, (flood free during a 1 in 1,000 tidal flood), as appropriate.
- 2.10.27** The majority of the parcels will be raised to ensure that they are dry during a 1 in 200 annual chance flood event in 2093. It should however be noted that due to the nature of some of the businesses that are to be relocated (e.g. Origin (A3) and WE Dowds (A4)), it may be necessary to ensure that the threshold of flooding is raised to the 1 in 1,000 annual chance flood event. 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 the site specific FCA.
- 2.10.28** General ground levels at the tenant relocation sites 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. Where there is a risk of pollution (e.g. Origin (A3)) from a 1 in 1,000 year event with climate change, the ground levels will need to be raised to 9.55m AOD.
- 2.10.29** Further analysis will be undertaken as part of the site specific assessments to better understand the flood depths and velocities impacting the access roads to the proposed sites.

Assessment of Tenant Relocation Effects

- 2.10.30** A Preliminary Risk Assessment (PRA) has been undertaken as part of the Desk Study together with the development of a Conceptual Site Model (CSM) as

presented at Appendix ESS5 2.7 of this ESS. This is described in Section 2.9 of this ESS.

2.10.31 With regard to the water environment, two key constraints have been identified within the site as follows:

1. Former Petroleum Storage Distribution Terminal (PSDT) at plot C1;
2. Four historical landfills identified within the site.

2.10.32 Landfill details are provided in Table 2.5 and locations are shown in Figure ESS5 2.11.

2.10.33 The level of risk for each identified source-pathway-receptor contaminant linkage was identified in accordance with the LCAR R11.1 risk evaluation methodology.

2.10.34 The risks are generally comparable with those attributed in CL-14, with the exceptions identified within Table 2.6.

Construction Phase

2.10.35 Unmanaged earthworks drainage will have the potential to carry fine sediment and mobilise potential pollutants present in soils. Where such drainage is allowed to discharge to the docks, pollution may result.

2.10.36 It is understood ground levels will be raised as part of the proposed development of the sites. It is therefore not anticipated that significant excavations for foundations will be required requiring temporary management of shallow groundwater.

Operational Phase

2.10.37 The redeveloped site will affect the site drainage behaviour, increasing the rate and volume of run off generated by rainfall. Long term settlement of the site under new loadings generated by new buildings could result in consolidation of contaminated soils and wastes beneath the site. This could lead to expulsion of contaminated groundwater with the potential to migrate to the wider water environment including the River Usk.

Mitigation Measures

2.10.38 ABP currently implement an Oil Spill Contingency Plan for the docks of South Wales (ABP, 2013). This Oil Spill Contingency Plan has been developed to conform with the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998, SI 1998 No. 1056, which entered into effect on 15 May 1998.

2.10.39 The plan is designed to meet the statutory responsibilities placed on the Harbour Authority for responding to oil pollution within the harbour area. The plan is provided to assist the Harbour Authority and other organisations in dealing with an accidental discharge of oil. Its primary purpose is to set in motion the necessary actions to stop or minimise the discharge and to mitigate its effects. Effective planning ensures that the necessary actions are taken in a structured, logical and timely manner.

- 2.10.40** Further ground investigation is required to better establish the prevailing risks at the site relating to controlled waters to determine the requirement for any site specific remediation.
- 2.10.41** A Construction Environmental Management Plan (CEMP) will be prepared and implemented during the construction phase which will set out all environmental measures to mitigate potential impacts during construction.
- 2.10.42** It is anticipated that the CEMP will adopt the same measures as the M4CaN pre-CEMP and will incorporate controls set out in a number of M4CaN documents including the following:
- Remediation Strategy Report;
 - Pollution Prevention Plan; and
 - Groundwater and Surface Water Management Plan, informed by Piling Risk Assessments
- 2.10.43** The remediation strategy will facilitate the management of contaminated soils and waters. It will be informed by the outcome of the ground investigation and would be agreed with NRW and NCC prior to the construction phase commencing.
- 2.10.44** It is expected that all surface drainage would be captured and returned to the water environment via appropriate infrastructure designed to reduce potential for pollution to acceptable limits. It is anticipated this could be achieved via existing or modified drainage infrastructure present at the ABP site and thus not require any new external discharges to controlled water bodies.
- 2.10.45** A Flood Consequence Assessment will be undertaken for the site following finalisation of a masterplan, which fixes tenant plots and identifies fully the hardstanding areas, building types and nature of business, including the storage/usage of any hazardous/potentially polluting materials/products associated with individual premises.

Construction Phase

- 2.10.46** It is considered that with the implementation of the proposed mitigation measures there will be no significant effects.
- 2.10.47** With regard the Water Framework Directive, the results of this assessment have shown that when all the relevant mitigation measures are considered, the extent of the construction works proposed for the proposed relocations will have no adverse effects on WFD quality status of any of the water bodies assessed. However, due to the nature of the works, there is likely to be some small, temporary and localised impacts on the environment which will not cause an overall deterioration in status.

Operational Phase

- 2.10.48** It is considered that with the implementation of the proposed mitigation measures there will be no significant effects.
- 2.10.49** With regard the Water Framework Directive, the results of this assessment have shown that when all the relevant mitigation measures are considered, the extent of the construction works proposed for the proposed relocations will have no adverse effects on WFD quality status of any of the water bodies assessed.

However, due to the nature of the works, there is likely to be some small, temporary and localised impacts on the environment which will not cause an overall deterioration in status.

Assessment of Additive Indirect Effects

- 2.10.50** The effects of the proposed new section of motorway on drainage and the water environment have been re-assessed following the ABP tenant relocation assessment. The evaluation of potential indirect effects has not identified any increase in the significance of effects associated with the M4CaN Scheme.

Proposed Relocation Works - Conclusions

- 2.10.51** The new assessment has identified that potential risks from land contamination are expected to be generally similar to that encountered elsewhere in Newport Docks. Nonetheless, given the potential sources of contamination that may be present further ground investigation is required to inform a detailed remediation strategy. The remediation strategy will be agreed with NRW and NCC prior to construction. With mitigation in place, effects are not considered significant.

2.11 Air Quality

Introduction

- 2.11.1** This section assesses potential local air quality effects arising from the relocation of premises within Newport Docks. The proposed works include construction of new buildings in the southern section of Newport Docks and service roads within the Docks to provide access to the relocated premises. The potential effects during the construction phase are fugitive dust emissions as well as emissions from on-site and off-site construction vehicles. Potential effects during the operational phase arise from vehicles travelling to and from the relocated premises.

Baseline

- 2.11.2** Baseline air quality conditions remain as set out in the March 2016 Environmental Statement and subsequent Supplementary Environmental Statements. No air quality monitoring is undertaken within the Docks, however background concentrations published by Defra (and shown in Figure 7.9 of the March 2016 ES) show that concentrations are likely to be below the relevant air quality objectives.

Construction

- 2.11.3** An assessment of on-site machinery and construction vehicles travelling to and from the site has been scoped out, as effects from these sources are anticipated to be negligible. The assessment of fugitive construction dust emissions has been undertaken following the Institute of Air Quality Management (IAQM) guidance for the assessment of dust from demolition and construction as outlined in the March 2016 Environmental Statement.

- 2.11.4** The IAQM guidance takes into consideration four dust generating activities, demolition, earthworks, construction and trackout³. There are no sensitive receptors to dust soiling or human health effects within 350m of the proposed works. The River Usk Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) is within 50m of the proposed works and for completeness an assessment has been undertaken to identify the need for mitigation measures to minimise the effect on the designated sites. It is not considered that the designated site would be particularly sensitive to dust given the tidal nature of the river.

Dust emission magnitude

- 2.11.5** No demolition is required to prepare the site for construction of the relocated premises. Demolition of existing buildings as a result of the bridge construction is assessed in the March 2016 Environmental Statement. Trackout has also not been assessed, as the site sits within Newport Docks and therefore the roads within 500m of the site are not part of the public road network. The dust emission magnitude set out in Table 2.10 has been determined for the remaining activities likely to give rise to dust, earthworks and construction. This has been determined based on information provided by the construction/design team.

Table 2.10: Dust emission magnitude for dust generating activities

Activity	Dust emission magnitude	Reasoning
Earthworks	Large	>10,000m ² of earthworks area.
Construction	Medium	Total building volume to be constructed is likely to be less than 100,000m ³ .

Sensitivity of the area

- 2.11.6** As discussed above, there are no sensitive human health receptors within 350m of the proposed works. The sensitivity of the designated sites has been determined to be high as a result of the European designation. Therefore, the sensitivity of the area in relation to ecological receptors is determined to be high as the boundary of the designation lies within 20m of the proposed works.

Risk of impacts

- 2.11.7** Taking into consideration the dust emission magnitude and the sensitivity of the area, the site, prior to dust mitigation, has been classified as at high risk of dust effects at ecological receptors during earthworks, and medium risk for dust effects at ecological receptors during construction (Table 2.). Specific mitigation therefore needs to be implemented effectively to minimise the risk of impacts at the designated sites.

Table 2.11: Summary dust risk prior to mitigation

³ Trackout is the transport of dust and dirt from construction onto the public road network where it may be deposited and then re-suspended by vehicles using the network.

Activity	Ecological Health
Earthworks	High Risk
Construction	Medium Risk

- 2.11.8** The dust emitting activities assessed in the assessment of effects section can be greatly reduced or eliminated by applying site-specific mitigation measures for high risk sites according to the IAQM guidance. Appropriate measures for high risk sites are included in the Pre-Construction Environmental Management Plan for the M4CaN Scheme, and it is anticipated that these measures would be included and implemented by any Construction Environmental Management Plan for the proposed works, where practicable.

Operation

- 2.11.9** Potential effects during the operational phase are anticipated to be negligible, currently, traffic associated with these premises travels to Newport Docks via the A48, and this would remain the case once relocated. Additional traffic would travel on East Way Road within the Docks to access the relocated premises; however it is not considered that additional vehicles would be at a level that would require assessment. In addition, there are no sensitive receptors adjacent to the road, with the exception of the designated sites.

2.12 Noise and Vibration

Baseline noise levels

- 2.12.1** The 2014 (base year) noise levels across most of the land at the southern end of Newport Docks range between 45 and 50 dB LA10, 18hr. Locally, along the existing access road to the port facilities in this part of the docks, the 2014 (base year) noise level range is 60 to 65 dB LA10, 18hr.

Noise sensitive receptors

- 2.12.2** There are no noise (or vibration) sensitive residential or other receptors (NVSRs) within or in the vicinity of the existing or proposed area for the relocation of buildings at the southern end of Newport Docks.
- 2.12.3** The Wales Coast Path (Public Right of Way – PROW) skirts the perimeter of the ABP site through urban areas. The Docks are identified as a feature of this section of the path, and the expected soundscape reflects this. Changes within the ABP area are unlikely to have a material effect on users of the coast path.
- 2.12.4** Sensitive ecological receptors are likely to include breeding birds, which may nest on the site, and wintering birds, which may feed and roost on the intertidal mud and saltmarsh adjoining the site. These birds may form part of the populations for which the Severn Estuary SPA and Ramsar Site are designated.

Construction noise

- 2.12.5** A noise assessment may be required for construction activities associated with the proposed works and development at the southern end of Newport Docks.

However, it is considered that with appropriate mitigation, it will be demonstrated that the works can be undertaken without any significant impact to surrounding NSRs.

2.12.6 Indirect works associated with the Scheme (i.e. infrastructural changes) are also most unlikely to have a significant adverse effect beyond the immediate works area.

2.12.7 Good construction practice with regards to noise and vibration control and adherence to the mitigation, as proposed within the M4CaN pre-CEMP (as far as is reasonably practicable), would ensure that no significant adverse effect occurs for neighbouring residential properties or users of the PRow.

2.12.8 Standard best-practice construction working methods (such as use of silenced plant, shutting down plant when not in use and selecting quieter plant where available) would be adopted during the construction phase.

2.12.9 The following mitigation measures would be appropriate for a site specific CEMP:

Communication:

- Regularly engaging with stakeholders and the local community before and during the works.
- Informing the community when and where noisy activities are expected to take place and for how long.
- Displaying the project contact details including a 24-hour public helpline on the site notices.

Complaints:

- Putting in place a suitable complaints log and investigation procedure. This procedure will be managed with the use of the Incidents, Complaints and Enquiries Database (ICE).
- Adopting appropriate working hours. Where work needs to take place outside normal construction hours, this will be discussed with the Local Planning Authority via the Public Liaison Officer and agreed through the CoPA Section 61 process, as agreed where appropriate.

Access Routes:

- Routing construction traffic away from NVSRs where possible.

2.12.10 These measures will ensure that no significant adverse effect occurs for neighbouring residential properties or users of the PRow.

Operational Noise

2.12.11 The operation of the modified ABP site, assuming no change to ABP's current activities in the new locations, would not materially change with regards to noise. No significant change to noise emitted by the ABP facilities during their use would occur. It is considered, therefore, that no mitigation (above replacing any existing mitigation like-for-like) would be required as part of the scheme.

2.12.12 Any further assessment of operational noise with regards to the ABP site is scoped out of this ESS.

Summary

- 2.12.13** The works required to address the detriment issue within Newport Docks can be implemented with no, or very little significant environmental consequence with regards to noise or vibration.
- 2.12.14** Good construction practice with regards to noise and vibration and adherence to the mitigation as proposed within the CEMP (as far as is reasonably practicable) will ensure that no significant adverse effects will occur to neighbouring residential properties or users of the PRoW.
- 2.12.15** No significant change to noise emitted by the ABP facilities during their use would occur.

2.13 Commercial Property

- 2.13.1** Chapter 15 of the March 2016 Environmental Statement (ES) included an assessment of land take, construction and operational effects on commercial property, including land and buildings owned by ABP within Newport Docks. At the time of publication of the ES, information on individual businesses within Newport Docks was being treated as commercially confidential whilst discussions were ongoing between ABP and Welsh Government. The assessment of land take effects set out in paragraph 15.6.30, construction effects set out in paragraph 15.7.10 and operational effects set out in paragraph 15.8.14 of the ES therefore represented the worst-case scenario until further details became available.
- 2.13.2** Negotiations between ABP and Welsh Government on the effects on commercial property within Newport Docks have been ongoing since the publication of the March 2016 ES and have now resulted in the development of illustrative proposals for the relocation of affected businesses within the following areas, as shown on Figure ESS5 2.2 and described in paragraphs 2.2.1 to 2.2.32.
- a) Land parcel A – located to the south of South Dock
 - New Origin Fertilizers facility;
 - Replacement building for W.E Dowds;
 - Relocation of other port customers;
 - Additional common user storage;
 - New access road.
 - b) Land parcel B – located between the SDR and north quay of South Dock
 - Proposed expansion area and possible additional temporary storage areas for International Timber Storage.
 - c) Land parcel C – located to the south east of South Dock
 - New ABP central engineering workshops, medical centre and stores.
- 2.13.3** In addition to these relocation proposals, a series of measures for individual businesses that would remain on their current land parcel have been developed to mitigate for the effects of the published Scheme on Newport Docks. These include: optimising the existing layout of land parcels to increase the efficiency of the services provided; relocating buildings within the existing curtilage of their land parcel; providing new retaining structures and gable ends to buildings; and the provision of new parking facilities.

2.13.4 These illustrative proposals for land parcels A, B and C, together with the range of mitigation measures, lie within the area of Newport Local Development Plan Policy EM2 'Newport Docks'. This policy states:

"The existing 206 hectare employment site at Newport Docks is protected for B1, B2 and B8 uses. The Council will support such development where it can be demonstrated that the development is complementary to and does not hinder the operational use of the Port".

2.13.5 As the re-location and mitigation proposals have been developed by ABP in liaison with the Welsh Government, no hindrance to port operations are anticipated.

2.13.6 The re-location proposals and additional measures for individual businesses would require additional infrastructure to be constructed that would be an indirect effect arising from the published M4CaN scheme. This infrastructure includes the erection of new buildings, together with new hardstandings and access roads within the land parcels detailed above.

2.13.7 No other community or private assets are likely to be affected by the re-location and mitigation proposals. Common land along the northern bank of the River Usk is located to the immediate south of Land Parcel A, but no impact on this area is anticipated.

3 Bridge Protection Measures and Other Works in South Dock

Introduction

- 3.1.1** At the Junction Cut, the Western Approach of the Usk Crossing was originally designed to provide a navigation clearance of 25.5m (see March 2016 ES Figure 2.13a).
- 3.1.2** Following the Navigation Risk Assessment reported in Appendix SS2.1 of the December 2016 ESS, the April 2017 ES Supplement (ESS4) described the proposed measures required to protect the Usk Crossing from the risk of errant vessels within Newport Docks coming into contact with the Crossing. In summary, the bridge protection measures described were to “*comprise the extension of the Junction Cut quay walls, both to the north and to the south, by constructing new quaysides either side of the Junction Cut (see Figure FSR2.4). In addition, ship arrestor cables would be provided at either end of the extended Junction Cut together with ship height detection equipment, to provide further mitigation for the River Usk Crossing from potential ship impacts*” (April 2017 ESS paragraph 2.2.1).
- 3.1.3** Because the bridge protection measures would require additional land take not included within the draft Compulsory Purchase Orders published in March 2016, ESS4 accompanied a draft Supplementary Compulsory Purchase Order (erroneously referred to as draft Supplementary (No. 4) CPO) to enable the construction of the bridge protection measures in the vicinity of Junction Cut at Newport Docks. The correct title of the draft Order referred to in the April 2017 ESS should have been draft Supplementary (No. 3) CPO.
- 3.1.4** In addition, a new moveable bridge would be provided across the Junction Cut to facilitate crane movements around the south dock in response to the effects of the Scheme on the existing pattern of crane movements. This would allow better connectivity for ABP and their tenants / leaseholders between the eastern and western sides of the docks. The Welsh Government would also have access rights over this bridge for the purposes of inspection and maintenance of the River Usk Crossing.
- 3.1.5** Since the publication of ESS4 in April 2017, the Welsh Government has worked with ABP to further develop a solution that reduces the level of residual risk of a ship impact to the River Usk Crossing, where it passes over the Junction Cut, to a level deemed acceptable by both parties.
- 3.1.6** The solution will be achieved through physical and operational mitigation measures. The current proposal described in this ES Supplement is to narrow and extend the Junction Cut and revise the entry parameters and protocols for the North Dock. In comparison with the proposal described in ESS4, the current proposal would remove the bridge protection measures in the North Dock along with the ship arrestor cables in both the North and South Dock. In addition, the provision of two optical vessel height monitors (“Magic Eyes”) at the Junction Cut would be replaced with one located at the main lock gates at the main entrance to South Dock. The provision of a swing bridge at the Junction Cut, however is retained.

3.1.7 The bridge protection measures now proposed are illustrated in Figure ESS5 3.1. In order to obtain the powers to construct and maintain these bridge protection measures, the Welsh Government has issued a draft supplementary (No. 4) Compulsory Purchase Order in August 2017. The draft supplementary CPO shows the extended Junction Cut narrowed to 11m; however, further work is ongoing between the Welsh Government and ABP in order to potentially widen this to around 13.5m. This is subject to a further risk assessment which is ongoing at the time of publication of this ESS. In terms of environmental assessment, as opposed to potentially economic assessment, there is no significant difference between a Junction Cut of 11m width or 13.5m width.

3.1.8 An updated assessment of the effects of the construction and operation of the above design changes in respect of the bridge protection measures, the construction of 303m of new quay and the refurbishment of 250m of existing quay both within South Dock, in relation to the topics covered within the March 2016 ES, is provided in the following paragraphs.

Construction

3.1.9 The following text in this section duplicates that in ESS4 which was reported as a supplement to chapter 3 of the March 2016 ES and the updated Buildability Report provided as Appendix SR3.1 of the December 2016 ESS.

3.1.10 The bridge protection measures are illustrated in Appendix FS3.1 and would be constructed in the North and South Docks of ABP's Newport Docks, around Junction Cut. The proposed protection measures would comprise of a combi pile wall, with anchor piles, backfilled with dredged granular fill. Additional ship arrestor measures would also be installed together with height detection equipment.

3.1.11 Utilising the drawings in Appendix FS3.1, the following construction sequence is envisaged.

3.1.12 Much of the work to construct the bridge protection measures would require the use of marine plant, the piles being driven using a marine jack-up platform, the jack-up being moved with manoeuvring tugs. A typical jack-up barge that could be used for the required marine operations is Haven Seastabler, owned by Red 7 Marine. This barge has dimensions of 30.48m by 12.19m and an allowable deck load of 280t (point load allowance 6.0 t/m²). It is anticipated that a Liebherr LR1160 or similar crane will be required on the jack-up barge to handle driving of the piles, with an operating weight of 156t.

3.1.13 The exact sequence for driving piles from the jack-up barge would be determined by the marine sub-contractor chosen to do the work, but the following constraints would apply.

- Access to the North Dock must be maintained as far as reasonably practicable (it has been identified that there are a few piles that can only be driven with the jack-up platform sitting in the access to the Junction Cut and the timing of this will be agreed with ABP).
- Manoeuvring of the jack-up within the North and South Docks will be carried out with ABP's agreement.
- A sequence of driving piles will be determined to minimise the number of movements of the jack-up platform.

- A 20m wide Easement zone around the works is required to carry out the works and no ship movements within the dock areas should enter this Easement zone, except as agreed for passage between the North and South Docks.
- The raking anchor piles are to be filled with underwater concrete.

3.1.14 Whilst the marine piles are being driven, those land based piles required would also be installed utilising land based plant. Building demolition and service diversions would be required before the installation of these piles is undertaken. No additional buildings to those assessed within the March 2016 ES would require demolition. Land based works would be coordinated with the foundation works for the motorway viaduct.

3.1.15 Once the marine piling is completed for any particular area, and after the new sheet piles have been sealed against the existing dock wall, backfilling with sand would commence. The sand would be marine dredged from a permitted extraction site and pumped directly from the dredger into the reclamation area. Filling would commence from the existing dock wall and continue until the angle of repose of the filling sand reaches the toe of the combi pile wall.

3.1.16 At this point, the tie rods would be installed and stressed to the required load, together with casting the capping to the raking piles, prior to completing the backfilling operation with dredged sand. The combi pile wall cannot be loaded with backfill material before the ties are correctly installed and tensioned.

3.1.17 The capping beam to the combi pile wall would be cast on completion of backfilling.

3.1.18 The backfilled sand would be compacted (the exact methodology is to be determined) after which the area would be topped up to the correct level and finished to the required standard.

3.1.19 The concrete works for the arrestor system would be completed and the system installed.

3.1.20 Height detection equipment would be installed, in a location to be determined.

3.1.21 All of the above work would be completed in advance of the bridge beams being launched over Junction Cut.

Marine Ecology

3.1.22 The construction of the River Usk Crossing bridge protection measures will be enclosed within the docks and will therefore be separate from the wider estuary and adjacent ecologically designated sites.

3.1.23 The works will not affect any ecologically sensitive sites.

3.1.24 The construction and operation of the proposed River Usk Crossing bridge protection measures would not result in a significant change from the conclusions of the March 2016 ES and ES Supplements in September, December 2016 and March and April 2017 with respect to ecology.

Desk Study

- 3.1.25** Limited information is available on the marine ecology of Newport Docks; however data available from the River Usk and River Ebbw estuaries provides some insight into the likely ecological receptors in the dock. Sediments within the dock are expected to comprise subtidal mud similar to that characterising the River Usk and River Ebbw estuaries as described in Appendix 10.18 to the March 2016 ES, paragraphs 3.3.19 *et seq.* (River Usk) and paragraphs 3.3.27 *et seq.* (River Ebbw). The main difference between the estuarine sediments and those within the Dock relate to the enclosed and stable nature of the dock compared to the dynamic environment in the lower estuary. This will lead to the sediments within the dock being more cohesive and therefore potentially hosting slightly different ecological communities than those characterising the estuarine habitats outside the dock.
- 3.1.26** As described in the March 2016 ES Appendix 10.18 the fauna of the principal rivers in the Severn Estuary (e.g. River Usk) is reported to be similar to that of the soft sediments of the Severn itself (Morrissey *et al.*, 1994), with communities in these river estuaries dominated by the polychaete *Nereis diversicolor*, the amphipod *Corophium volutator*, the mollusc *Limoclea (Macoma) balthica* and a variety of oligochaetes (Langston *et al.*, 2003). Subtidal benthic biotopes, as mapped by the Countryside Council for Wales (CCW) (now NRW) HABMAP project (2010), indicated that communities associated with the muddy sediments in the lower Usk are largely characterised by the habitat SS.SMu.SMuVS sublittoral mud in variable salinity biotope. As described above, due to the enclosed and low energy environment within Newport Dock, subtidal sediments would be expected to be considerably more stable than those in the estuary. While it would be expected that the subtidal sediments in the dock would still be classified as the SS.SMu.SMuVS biotope, the species assemblage would likely be characterised by species such as polychaete species of the genus *Aphelocheata* and oligochaetes including *Tubificoides* spp., along with other species such as the polychaete *Nephtys hombergii*, which would be expected to occur in estuarine muddy sediments outside the dock.
- 3.1.27** The fish community within Newport Dock would also be expected to reflect the species known to occur in the River Usk and River Ebbw estuaries as described in Appendix 10.18 of the March 2016 ES, paragraphs 3.3.48 *et seq.* The most likely functional group to occur in Newport Docks are estuarine resident species, which spend their entire life-cycle within the estuarine habitats and include (but are not limited to) species such as common goby, black goby, sand smelt and three-spined stickleback (Bird, 2008). Other fish species which have the potential to occur in the dock include those species which may use the Severn Estuary, including the lower Usk and Ebbw, such as sprat, herring, whiting, bib/pouting, poor cod, bass and flounder. These species have the potential to occur within Newport Dock, entering from the estuary during periods when lock gates are open. Newport Dock is not expected to host fish spawning or nursery habitats.
- 3.1.28** It is unlikely that any of the migratory fish species described in Appendix 10.18 of the March 2016 ES (paragraphs 3.3.29 *et seq.*), including those species listed as features of the River Usk SAC, would occur within Newport Docks. This is due to these species only being present within estuarine waters while they are transiting to/from spawning grounds in the River Usk (or for European eel, migrating to

spawning grounds in the marine environment). Any works within Newport Docks would therefore not be predicted to affect habitats used by these species.

Valued Ecological Receptors

- 3.1.29** Based on the criteria outlined in the March 2016 ES Chapter 10 for considering the importance of valued ecological receptors (VERs), the subtidal benthic habitat within Newport Dock is considered to be of local (negligible) value.
- 3.1.30** Due to the absence of important fish habitats for spawning, nursery or feeding within Newport Dock, the fish communities within the docks are considered to be of local (negligible) value.

Impact Assessment

Habitat Loss

- 3.1.31** The main impact associated with the proposed River Usk Crossing bridge protection works and the construction of a new length of quay on the north side of South Dock would be the loss of subtidal benthic habitats within Alexandra Docks. In summary this would comprise:
- Loss of approximately 1.16 ha of subtidal benthic habitat due to construction of a new quay and bridge protection measures at the Junction Cut;
 - Loss of approximately 1 ha of subtidal benthic habitat due to construction of 303 m of new quay along the north western part of South Dock; and
 - Loss of approximately 2.3 hectares of subtidal benthic habitat due to capital dredging adjacent to the new quay in the western section of South Dock.
- 3.1.32** As described above, these habitats are not listed under any nature conservation legislation and the habitats and species likely to be associated with these habitats are common and widespread both locally and nationally.
- 3.1.33** Due to the relatively small area of habitat affected and the local (negligible) value of this VER, the impact is predicted to be of negligible magnitude resulting in a neutral significance of effect.

Underwater noise

- 3.1.34** Underwater noise as a result of construction operations (e.g. piling operations) may result in effects on fish populations within Newport Docks. The front of the two areas of quay would be formed of a line of steel tubular piles and sheet piles with the reclaimed land behind. Vibropiling would be used to install both tubular and sheet piles.
- 3.1.35** As stated in Section 10.7 of the March 2016 ES, vibropiling generates continuous broadband sound, and sound levels associated with vibratory driven sheet piling have been measured in water approximately 12 to 14 m deep as approximately 173 dB r.m.s re μPa m at frequencies of 400 to 2,500 Hz (Illinworth and Rodkin, 2007).
- 3.1.36** Measurements of underwater noise levels associated with dredging operations (e.g. aggregate extraction) have been published in a number of reports and have shown that source levels are generally in line with those expected for a cargo

ship travelling at modest speeds (Robinson *et al.*, 2011). The noise levels associated with these construction activities would not be expected to cause injury to marine fauna, including fish species, although some behavioural effects, e.g. avoidance of the area in the immediate vicinity of construction operations, may be expected.

3.1.37 On the basis of best practice guidelines for assessing the effects of underwater noise on fish species (i.e. Popper *et al.*, 2014), together with the magnitude of the noise likely to be generated as a result of construction operations (i.e. vibropiling), the risk to all fish species (including migratory fish in the unlikely event that they occur in Alexandra Dock) from mortality and potential mortal injury as a result of underwater noise, even in close proximity to the source (i.e., tens of metres) is considered to be low. The most likely scenario is that during construction operations, fish present within Alexandra Dock would redistribute to other parts of the dock during periods of elevated noise levels. Following cessation of noise generating construction activities, fish behaviour would quickly return to baseline levels.

3.1.38 It should be noted, however, that the marine environment within Alexandra Dock is regularly exposed to elevated noise levels (e.g. from vessel movement or dredging, which as detailed above, emit similar noise levels to vibropiling), and the enclosed nature of the dock means that the resident species cannot entirely avoid these noise levels. It is therefore, reasonable to assume that the resident fish population would have some tolerance to underwater noise. In addition, the proposed piling operations will occur in two discrete locations within the dock and would not represent a mobile noise source (e.g. vessel movements and/or dredging operations). This would allow fish to redistribute into other parts of the dock if noise levels reach a level which causes strong avoidance reactions. As South Dock does not represent important habitat for fish species (e.g. spawning or nursery habitats or migratory routes), any behavioural effects, should these occur at all, would not affect important life history stages of fish within the dock.

3.1.39 Taking the above into account, due to the limited predicted effect of works on the marine environment, the development proposals would not affect the overall assessment of the predicted effect of the M4CaN Scheme with respect to the marine environment.

3.1.40 Due to the short term, intermittent nature of construction related underwater noise, and the local (negligible) value of the fish VERs occurring within Newport Docks, the impact is predicted to be of minor magnitude resulting in a neutral to slight significance of effect.

Geology and Soils

Bridge Protection Measures

3.1.41 The construction of the bridge protection measures is not expected to involve the dredging or the associated disposal of potentially contaminated sediments. Such activities, if required, would be subject to the Marine and Coastal Access Act 2009 and consent would be required from NRW prior to dredging activities commencing.

- 3.1.42** The construction and operation of the proposed bridge protection measures is not considered to significantly change the conclusions of the March 2016 ES and ES Supplements with respect to soils, geology and land contamination.

New Dock and Existing Dock Refurbishment

- 3.1.43** The construction and operation of the new North Quay and the refurbishment of the existing South Quay is not considered to significantly change the conclusions of the March 2016 ES and ES Supplements with respect to soils, geology and land contamination.
- 3.1.44** Dredging activities would be subject to the Marine and Coastal Access Act 2009 and consent would be required from NRW prior to dredging activities commencing.
- 3.1.45** The disposal of dredgings would be dependent upon whether the sediments were contaminated or not and also whether the dredgings could be reused, possibly with treatment. Any such reuse or disposal of dredgings would be discussed with NRW and where necessary appropriate consents would be applied for.

Materials

- 3.1.46** The construction of the bridge protection measures is not expected to involve the dredging or the associated disposal of potentially contaminated sediments together with piling and bulk filling. Such activities, if required would be subject to the Marine and Coastal Access Act 2009 and consent would be required from NRW prior to activities commencing.
- 3.1.47** The construction and operation of the proposed bridge protection measures would not result in a significant change from the conclusions of the March 2016 ES and ES Supplements in September and December 2016 with respect to materials.

Drainage and the Water Environment

- 3.1.48** Subject to appropriate standard industry construction and environmental management practices, the construction and operation of the bridge protection measures, the new quay and the refurbishment of the existing quay is not considered to significantly change the conclusions of the March 2016 ES and ES Supplements with respect to drainage and the water environment.
- 3.1.49** In particular, adherence to existing ABP pollution prevention and control practices will provide adequate protection and mitigation during the proposed works in relation to spills.

Navigation Risk Assessment

- 3.1.50** A draft Navigation Risk Assessment was included originally as Appendix SS2.1 of the December 2016 ESS. It was updated in the April 2017 ESS as a result of the bridge protection measures proposed at that time as Appendix FSR2.1.
- 3.1.51** The updated April 2017 Navigation Risk Assessment included the results of a geometric assessment which consisted of the modelling of potential ship impact scenarios with the proposed bridge over the Newport Docks. The geometric assessment concluded that there was potential for errant vessels to contact the

bridge structure and support piers with either the vessels' superstructure or bow. In order to mitigate the potential risk of an errant vessel contacting the bridge, a number of mitigation measures were considered, which include, extensions of the quayside and ship arrester cables on both the north and south sides of the Junction Cut.

3.1.52 Further discussions with ABP in the form of a further navigation risk assessment workshop was held on the 10th of August 2017 to address the risk of vessels potentially colliding with the proposed bridge over Newport Docks with the mitigation measures described in Appendix FSR2.1 in place. The workshop was attended by representatives from Associated British Ports (ABP), the Maritime and Coastguard Agency (MCA), SMS Towage, various members of the M4 CaN Project team and Global Maritime (GMC).

3.1.53 The bridge protection measures currently proposed by the Welsh Government as set out in Figure ESS5 3.1 include:

- 1) An extension of quayside on either side of the Junction Cut into the South Dock approximately 50m in order to prevent errant vessels making contact with the proposed bridge piers and/or bridge structure. The proposed buildout will have the effect of extending the Junction Cut into the South Dock and will comprise of a backfilled combi-pile walls. The run-in and sides of the newly formed Junction Cut are to be fendered to prevent damage to the quay walls and vessels transiting through.
- 2) The Junction Cut is to be narrowed to a width of 11m, analysis of historical vessel movements within the Dock has shown that vessels with beam width of 11m or less do not have a high enough air draught to make contact with the bridge.
- 3) Welsh Government have also considered the installation of some form of electrooptical sensors to be located in the South Lock to act as a virtual trip wire for vessels locking into the South Lock prior to entry into the Docks. The sensors will be able to accurately measure the air draught of vessels alerting the operator of any potential issues prior to the vessel entering the Docks.

3.1.54 Both Appendix SS2.1 and Appendix FSR 2.1 have been superseded and replaced with Appendix ESS5 3.1.

Other Topics

3.1.55 The construction and operation of the proposed bridge protection measures, the phased construction of a new 303m long quay and the refurbishment of 250m of existing quay would not result in any significant effects for the following topics.

- Cultural Heritage
- Landscape and Visual
- Air Quality
- All Travellers
- Community and Private Assets

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