

Non-Technical Summary

1. The following is a summary, in non technical language, of the Environmental Statement (ES) as updated by Further Information that accompanies Associated British Ports' (ABP) applications for approvals to carry out dredging and consequent quay wall works at Berths 201 and 202 in the Port of Southampton. Each section of this Non-Technical Summary (NTS) summarises sequentially the chapters that appear in the full ES as updated by the Further Information. This NTS replaces the NTS that was produced in 2008 when the applications were originally submitted.

Project Summary (Chapter 1)

2. ABP propose to deepen the dredged pocket for Berths 201 and 202 within the Port of Southampton. The additional depth of the berth means that it will also be necessary to reconstruct the quay walls to both berths. Upon completion of the works up to six container cranes will be provided along the quay. These works are essential if the Port is to accommodate the latest generation of large container ships currently being brought into service by the world's major shipping lines. A plan of the Container Terminal is provided in Figure NTS1 and the works proposed to be undertaken at Berths 201/202 are shown in Figure NTS2.



Figure NTS1. Plan of Container Terminal





Figure NTS2. Proposed Berth 201/202 Works

- 3. The Berth 201/202 works comprises three principal components the deepening of the dredge pocket for Berths 201 and 202; the works that as a consequence will need to be undertaken to the quay wall and the disposal of material arising from the dredge. The deepening of the berth pocket will also result in a small adjustment to the existing maintenance dredging requirement and the consequent disposal of maintenance dredge arisings. In addition, in order to handle containers over the rebuilt quay up to six container cranes will be provided.
- 4. The decision by ABP, in conjunction with DP World Southampton (the operator of the Container Terminal), to improve the existing infrastructure is entirely consistent with the principles of sustainable development. The improved berth facilities will consolidate naturally the infrastructure already in place at Southampton's Container Terminal, thereby avoiding the need for ABP to identify and bring into use suitable alternative land within the Port estate.
- 5. In order to be able to assess with confidence the potential effects of the proposed berth works to the estuarine/marine system, a large study area has been selected, extending from Redbridge to Lymington in the Western Solent and Wootton Creek in the Eastern Solent. A wider regional area that extends from Hurst Spit at the western end of the Solent to Selsey Bill in the east and about 30km offshore has also been assessed in order to cover the areas of potential effects that might arise from the relocation of dredged sediments to the Nab Deposit Ground.
- In respect of the assessments provided as part of the Further Information (ES chapters F1 to F7) the relevant study area used and how it has been defined is explained in each of those assessments individually.

Project Needs and Alternatives (Chapter 2)

7. The Port of Southampton, owned and operated by Associated British Ports (ABP), is the fourth largest port in the UK by tonnage. It handles a variety of trades, many of which are of national importance, including containers, cruise shipping, oil and petrochemicals and motor vehicles.



- 8. Opened in 1969, Berths 201 and 202 were the Port of Southampton's original container berths, although they ceased to handle containers in the 1980s. Today, however, they are unable to accommodate the new breed of large container ships being brought into service by the major international shipping lines that use the Port of Southampton in that there is insufficient depth alongside the quay, at 10.2m below Chart Datum (CD) and 12.2m below CD respectively.
- 9. Between 1993 and 2007, Southampton's container throughput grew by 273%. In 2008, at the time of the original submission, the position was that throughput was projected to grow in excess of the Government's 4.1% annual compound growth rate to 2030. Coupled with the fact that the size of container ships using the Port had grown significantly in recent years, from typically 4,000 container units (TEU Twenty Foot Equivalent Units) capacity 10 years ago to 9,000 TEU today (2007/2008), and with over 150 ships on order in the 9,000 to 11,500 TEU range, there is increasing pressure on existing, usable deep-sea berths at Southampton's Container Terminal.
- 10. As a result of the downturn in the global economy, however, throughput at Southampton is in fact lower than was predicted in 2008, but with the berth 201/202 works, it is still expected to grow at 3.5% per annum over the long term. As a further consequence of the downturn, however, the shipping lines have sought to achieve economies of scale in their operations resulting in an increase in the size and draught of vessels using the port. Dimensions of vessels used on the Far East Europe routes have increased more quickly than originally anticipated, as vessel operators are employing fewer, larger vessels on these trade routes. As a result some customers already have 13,000 TEU vessels in service and all the Port's container line major customers have placed orders for similar vessels which are expected to come into service over the next two to three years.
- 11. The increase in the length of container ships has also meant that the existing deep-sea berths at the Container Terminal (Berths 204 to 207) can no longer accommodate four large vessels simultaneously. This has increased the number and severity of ship berthing delays. As is clearly demonstrated by the white arrow on Figure NTS3, the length of the straight line quay is now sufficient for only three ships after allowing for the minimum safe 'bow to stern' vessel separation. The operator of the container terminal, DP World Southampton, has indicated to ABP that a number of shipping lines are already preparing plans to accommodate their largest vessels at other ports if Southampton cannot provide more deep-water berths.
- 12. The rapid increase in the size of vessels routinely using the port has exacerbated this situation. In addition, the anticipated introduction within the next two to three years, of vessels that are significantly wider will lead to yet further difficulties associated with such vessels using the existing berths 204 to 207. The practical operational difficulties that will arise as a result means that, without the berth 201/202 works, there is a serious danger that the Container Terminal will become increasingly marginalised, and will not be able to service its existing customers, who may be forced to move their business elsewhere. Furthermore, it is unlikely that the terminal will be able to attract new business and will thereby lose market share.
- 13. By combining Berths 201 and 202 to provide over 500m of quay with 16m of water depth alongside, the effective capacity of Southampton's container terminal will be restored so that it will be able to accommodate four large vessels. This in turn will mean that there will be



minimum delays waiting for an empty berth. The deepened berths 201/202 would also be able to accommodate the new generation of wider vessels.



Figure NTS3. An Aerial View of DP World Southampton

Consideration of Alternatives

- 14. Alternative options to meeting the identified need, namely the provision of suitable berthing to accommodate longer, wider and deeper draughted container ships elsewhere within the Port of Southampton, as well as the implications of not going ahead (i.e. 'do nothing'), have been considered but discounted. These options and the reasons for discounting them are set out in the following paragraphs.
 - (a) Do Nothing: The practical effect of doing nothing would be that the container terminal would increasingly be operating with only 3 deep-sea berths rather than 4 by reason of the increased length of the new vessels currently being brought into service. This would inevitably lead to more severe berthing delays, which would make Southampton a less attractive port of call. A failure by the Port of Southampton to adapt will eventually lead to a decline in appeal of the Port, with a consequential loss of business to other UK ports or mainland Europe.
 - (b) **Alternative Options Within the Port:** This would require the identification of an alternative berth able to accommodate deep draughted vessels adjacent to the infrastructure already in place at the Southampton Container Terminal. All of the adjacent suitable berths, however, are already fully occupied by other port trades.

A further alternative would be the development of a container terminal on an area of open land at Dibden, which is within the Port. Reclaimed for port operations between 1930 and 1970, it is currently designated as a Site of Special Scientific Interest (SSSI)



and considerable works would be required in terms of dredging, construction of new quay walls as well as the introduction of necessary infrastructure to bring that site on line.

Although there is nowhere else within the Port of Southampton onto which the current container operation could expand other than at Dibden, ABP are of the view that the sustainable option offered by the reconstruction and deepening of Berths 201 and 202 should be pursued before the option of Dibden is taken forward.

15. As a consequence, ABP has concluded that there are no viable alternative solutions to meeting the identified need.

Conclusion

16. The deepening of berths 201 and 202 and consequent reconstruction of the berth walls is critical if the Port of Southampton is to be able to continue to service international deep sea container trade, especially in the nationally important Far East to Europe container ship services.

Project Description and Methodology (Chapter 3)

- 17. The proposed works are designed to provide a deep-water berth capable of accommodating a 400m long, 15.5m draught vessel alongside the existing Berths 201 and 202. To achieve this, it will be necessary to deepen the existing berths from depths of 10.2m and 12.2m below CD to a new dredged depth of 16m below CD.
- 18. The existing quay structure at berths 201/202 is neither deep enough nor strong enough to permit the berth to be deepened, and consequently, a new quay wall will have to be constructed. Having considered the relative environmental impact and technical feasibility of a number of different methods of construction, it has been concluded that a steel combi-wall presents the best technically viable solution, thereby avoiding unacceptable navigational and environmental impacts, whilst being economically viable (Figure NTS4).
- 19. This form of retaining wall possesses superior strength characteristics when compared to a conventional single-skin sheet pile wall and is both efficient and economic as a retaining structure for quay walls with a large retained height. King piles of approximately 1.8m diameter and approximately 35m in length will be required to be driven to a depth of around 30m below Chart Datum. The steel piles will have to be installed using percussive pile driving techniques because of the size of piles required and the hard driving conditions known to exist in this location.
- 20. The construction works are expected to commence in July 2012 and will take approximately 14 months to complete. The quayside piling will be carried out between 16 September and 31 March to mitigate against any potential impact on Atlantic salmon. It is anticipated that up to four piling rigs will be used for this activity although it is unlikely that all four rigs will be operational at the same time.





Figure NTS4. Typical Section through Steel Combi-Wall

- 21. Following completion of the quay wall, the berth pocket will be dredged to a depth of -16m CD. Approximately 182,000m³ of material, comprising a thin layer of soft sediment overlying stiff clay and dense sand, will be removed. If no alternative beneficial use can be identified, the material will be disposed at sea at the Nab Deposit Ground.
- 22. Following the rebuilding of the quay wall and the dredging of the berth pocket, up to six container cranes will be erected along the rebuilt quay with some related minor operational changes made in the area behind the rebuilt quay.

Consents and Approvals - The Legislative Framework (Chapter 4)

- 23. An Environmental Impact Assessment (EIA) of the proposed Berth 201/202 works has been undertaken in accordance with the provisions of the relevant regulations.
- 24. The works fall within the limits of deviation of the British Transport Docks Act 1966 and are, therefore, authorised by that Act. As a consequence, the carrying out of the works constitutes permitted development under the relevant provisions of the Town and Country Planning (General Permitted Development) Order 1995, by which planning permission is deemed to be granted for development authorised by a local or private Act of Parliament. Approval to use these permitted development rights is required from Southampton City Council under Regulation 75 of the Habitats Regulations.
- 25. The construction of the new quay wall will require approval of plans under Section 21 of the British Transport Docks Act 1966 and a licence from the Marine Management Organisation under Part 4 of the Marine and Coastal Access Act 2009.



- 26. Dredging of a small area of seabed immediately adjacent to the berth pocket outside the limits of deviation of the 1966 Act will also be required. This will be carried out under ABP's powers under Section 3 of the Southampton Harbour Act 1911, although these works will require consent from the Marine Management Organisation.
- 27. In addition, approval for the berth pocket dredge will be required from the Environment Agency, and consent will be required from the Marine Management Organisation for the disposal of any dredged material at sea.
- 28. Information to assist the undertaking of an appropriate assessment by the Marine Management Organisation and Southampton City Council as necessary, has been provided in Appendix D of the ES.

Policy and Guidance (Chapter 5)

- 29. The Marine and Coastal Access Act 2009, at section 58(1), makes clear that "A public authority (which includes the Marine Management Organisation) must take any authorisation or enforcement decision in accordance with the appropriate marine policy documents, unless relevant considerations indicate otherwise". This requirement is similar to the one that applies to determinations made under the planning Acts, whereby the determination must be made in accordance with the development plan unless material considerations indicate otherwise (Planning and Compulsory Purchase Act 2004, Section 38(6)).
- 30. In light of the section 58(1) requirement in the Marine and Coastal Access Act, the analysis of policy has concentrated initially on the provisions of the appropriate marine policy documents, which in this instance consists solely of the UK Marine Policy Statement (March 2011) (MPS). An analysis of other policy and guidance as 'relevant considerations' has, therefore, also been undertaken.
- 31. The analysis concludes that the berth 201/202 works are an example of sustainable development, and are in accordance with the appropriate marine policy documents as required by section 58(1) of the Marine and Coastal Access Act 2009.
- 32. Furthermore, an analysis of other policies relevant to the consideration of the berth 201/202 works concludes that the works are in accordance with the provisions and policies of the relevant parts of the statutory development plan, which have been formulated having regard to national and regional policy. The proposals will maintain and enhance the role of the international deep sea gateway Port of Southampton, in accordance with policy T10 of the South East Plan, and will help assist in the sustainable economic growth and urban regeneration objectives for the South Hampshire sub region identified in policy SH1. The proposals will also help achieve the spatial vision set out in the Core Strategy for Southampton, by assisting in the delivery of defined strategic objectives S1, S2 and S4. The works are also in accordance with, and supported by, the site specific policy (policy CS9) of the Core Strategy in that they will promote and facilitate the growth of the Gateway Port of Southampton, the importance of which is clearly identified.



Nature Conservation Designations (Chapter 6)

33. Southampton Water and the Solent have long been recognised as being of high biological and nature conservation importance. There are a number of sites of designated nature conservation interest in the area, including Ramsar sites, Special Protection Areas (SPAs) and Special Areas of Conservation (SAC), (Figure NTS5). The proposed Berth 201/202 works and the Nab Deposit Ground lie outside all of the internationally, nationally and locally designated nature conservation sites and, therefore, any impact on designated sites will be via indirect pathways i.e. as a consequence of the effect of the proposed works on the hydrodynamic and sedimentary regime, for example erosion and accretion of intertidal sediments or the dispersal of sediments arising from the disturbance of bed material during dredging.



Figure NTS5. International Nature Conservation Designations in the Study Area

34. The potential loss of UK BAP priority habitats and species and the non-statutory action plans that are relevant have also been considered in the impact assessment.

Impact Assessment Approach (Chapter 7)

- 35. During the scoping stage of the EIA a range of environmental issues were identified that required investigation. The EIA has been supported by a large resource of literature and data describing the existing (baseline) environmental conditions in Southampton Water and the Solent. Any gaps in information have been supplemented by the following additional studies:
 - a. Hydrodynamic numerical modelling studies;
 - b. Benthic invertebrate surveys;
 - c. Seabed sediment characterisation;
 - d. Seabed sediment contamination;



- e. Underwater noise monitoring and modelling;
- f. Bird surveys;
- g. Ship wash study; and
- h. Noise monitoring and sound propagation modelling.
- 36. In order to provide the Further Information, additional studies have been undertaken, including:
 - i. A Transport Assessment:
 - j. A Water Framework Directive Assessment; and
 - k. A recommended Marine Conservation Zone Assessment.
- 37. A number of issues were identified during the scoping stage and consultation process and at the Further Information stage as not being relevant to the assessment process. As a result, the following topics for assessment have been 'scoped-out' of the EIA:
 - a. Archaeology;
 - b. Waste Management; and
 - c. Terrestrial Ecology.
 - d. Television Reception

Impact Assessment Methodology

- 38. Within the EIA, the effects of the proposed development on different aspects of the environment have been assessed. This has been done by describing in turn: the baseline environmental conditions of each receiving environment; the way in which the receptors could be affected; the significance of the impacts occurring and the measures proposed to mitigate any significant adverse impacts.
- 39. A standard approach has been applied to identify the significance of the impacts reported in chapters 8 to 17 and impact levels were identified for each of the key issues. The key significance levels for either **beneficial** or **adverse** impacts are described as follows:
 - (1) **Insignificant:** Insignificant change not having a discernable effect;
 - (2) **Minor:** Effects tending to be discernable but tolerable;
 - (3) **Moderate:** Where these changes are adverse they may require mitigation; and
 - (4) **Major:** Effects are highest in magnitude and reflect the high vulnerability and importance of the receptor (e.g. to nature conservation). Where these changes are adverse they will require mitigation.
- 40. The assessments reported in chapters F1 to F7 each individually explain the impact assessment methodology that has been used. For consistency, however, the overall categorisation of the effects given in those chapters matches as far as possible that set out above.

Approach to the Assessment

41. In order to meet the requirements of the EIA Directive, consideration has been given by ABP to the likely consequences for the existing Container Terminal once berth 201/202 have been



returned to full container operational use. This was so as to enable an assessment to be made of any likely significant effects arising from the works.

- 42. A direct consequence of the berth 201/202 development is that there will be an increase in the overall maximum number of containers that could be handled at the Container Terminal. In summary, ABP has concluded that with the berth 201/202 works the maximum capacity of the terminal has the potential to be 2.8m TEU.
- 43. This capacity of 2.8m TEU per annum cannot, however, be achieved solely as a result of the berth 201/202 works. A number of other changes to the Container Terminal will also be required (e.g. two additional cranes along berth 204 to 207) in combination with the berth 201/202 works to achieve this overall capacity. The basis of the assessments undertaken has therefore been the Container Terminal operating at a capacity of 2.8m TEU per annum which throughout the assessments is referred to as the *Future Position with the Works* scenario.
- 44. For assessment purposes, however, a number of other scenarios relating to the operation of the Container Terminal have been defined, against which the maximum capacity scenario can be assessed. These scenarios are:
 - 1. The Container Terminal operating at its historic maximum throughput of circa 1.9m TEU, which occurred in 2007. Throughout the assessments this is referred to as the *Historic Baseline* scenario.
 - 2. The Container Terminal as predicted to operate in 2011, which is at a throughput of 1.6m TEU. Throughout the assessments this is referred to as the *Current Baseline* scenario.
 - 3. The maximum future capacity of the Container Terminal without the berth 201/202 works, which is considered to be a terminal with a capacity of 2.3m TEU. Throughout the assessments this is referred to as the *Future Position without the Works* scenario.
- 45. The following sections summarise the findings of the EIA.

Physical Processes (Chapter 8)

46. A package of technical evaluations have been used to determine the magnitude and extent of physical changes that are likely to result from the proposed Berth 201/202 works. An assessment has been undertaken to understand the physical changes likely to be brought about during the construction and post-construction periods. The assessment is based upon various conservative assumptions to offer a realistic worst-case scenario.

1) Dispersion of Sediment During Dredging

- 47. During dredging of the berth pocket, heightened suspended sediment concentrations will occur. The magnitude of the change, with respect to background conditions, is considered to be negligible to small on average, and medium, when maximum levels are reached. The impact is considered to be **insignificant**.
- 48. The magnitude of bed thickness change during dredging is for the most part negligible, with the exception of areas, which are currently natural sinks, where maintenance dredging is already



required. These short-term changes in sedimentation will not affect the physical functioning of the estuary. The impact is considered to be **insignificant**.

2) Bed Accumulation and Dispersion of Sediment During Disposal

49. The deposit of the capital dredge sediments from Berths 201/202 will be widely dispersed from the Nab Deposit Ground, with all effects of the disposal returning to background conditions within around a week after cessation of the disposal operations. The magnitude of change is small, particularly given existing maintenance and capital dredge deposits at the site. Overall, the impact is considered to be **insignificant**.

3) Changes to Hydrodynamics

- 50. The modelling predicts that changes to the tidal range are confined to the area local to Berths 201/202, where there is a maximum reduction in the spring tidal range of up to 3mm, which is considered negligible compared to the normal cyclic variation of the tide and disturbance caused by episodic events such as storm waves and surges. The impact on the hydrodynamic regime of the estuary will, therefore, be **insignificant**.
- 51. Changes to flows following the proposed Berth 201/202 works will be very localised and confined to the Test Estuary. The negligible flow speed changes predicted of up to ±0.02m/s will not have a measurable effect on the hydrodynamic working of the estuary and are considered to be **insignificant**.

4) Changes to Sediment Regime

52. The Berth 201/202 works are predicted to result in a negligible reduction in suspended sediment concentrations (up to 0.1mg/l) in parts of the estuary at certain states of the tide. The predicted changes to potential sedimentation are localised to the vicinity of the berth and negligible in magnitude, with respect to background variability. The impact to the sediment regime of the estuary is, therefore, considered **insignificant**.

5) Changes to Maintenance Dredging Commitment

53. The increase in maintenance dredge requirements for the berth as a whole are small and well within the natural variability in existing requirements. The magnitude of the change outside the berth pocket is considered negligible and unlikely to be measurable against background. The change to the maintenance dredging commitment is considered **insignificant**.

Conclusions

54. The potential changes to physical processes have been assessed in accordance with best practice. The predicted hydrodynamic and sediment transport changes resulting from the morphological modification to Berth 201/202 are negligible in magnitude, with maximum changes predicted to occur where the direct physical changes are proposed i.e. within the berth pocket itself. The changes predicted will be near impossible to measure directly in the field, because they will be indistinguishable from natural variations and will be below the working accuracy of any standard recording instrument. During the dredging and disposal (construction)



phase, which will take place over an approximate four-week period, the magnitude of change, particularly with respect to increase in suspended sediment concentrations in the water column will be more notable, albeit very short-term, and variable in magnitude and location. Overall, the impact to the physical functioning of the estuary will be **insignificant**.

Sediment Quality (Chapter 9)

55. In order to determine the sediment contaminant status of the material to be dredged, sediment samples were collected from within the berth pocket (both from the surface and at depth) following the principles of OSPAR guidelines and, where applicable, compared to UK and internationally recognised sediment quality guidelines and standards. Samples were analysed using United Kingdom Accreditation Service (UKAS) testing methodology for a range of contaminants. With minor exceptions, the sediments of the proposed dredge contained negligible (i.e. around the limits of detection) chemical and microbiological contamination. ABP is currently consulting with Cefas, who will ultimately inform the FEPA licensing decision by undertaking their own sample analysis for the full suite of chemical contaminants to determine the suitability of the material for disposal at sea.

1) During Capital Dredging

56. Given that any contamination in the dredged sediment at Berth 201/202 is on the whole negligible and is only resident on a very small proportion of the overall dredge volume, the magnitude of a change in sediment quality during dredging is assessed as small and the probability of occurrence considered low. Given the magnitude of change, the general background levels and the likelihood of exceeding sediment quality standards and guidelines, where they apply, the exposure from sediment-bound contaminants will be negligible. The overall impact during dredging is, therefore, considered **insignificant**.

2) During Disposal of Dredge Arisings

57. Due to the highly dispersive nature of the Nab Deposit Ground, the disposal of dredged material is unlikely to result in a measurable change to the background quality of the seabed sediments. Furthermore, given the low proportion of any material containing elevated levels of contaminants relative to the total dredge volume, the exposure of changes in quality of sediments during the disposal of dredge arisings will be negligible and the impact will be **insignificant** in the area of the disposal ground and dispersion footprint.

3) In the Long-Term Due to Predicted Effect to Sedimentary Processes

58. The scheme will result in localised changes to the potential sedimentation in the Test Estuary. The scale of these changes is so small that it is unlikely to be discernable from background conditions, particularly when taking account of the redistribution of material by natural and anthropogenic produced waves. The exposure of changes in the characteristics of sediments with the presence of the proposed deepened berth pocket at Berth 201/202 will, therefore, be negligible and the impact **insignificant**.



4) During Future Maintenance Dredging

59. The scale of impact during future maintenance dredging will be similar to existing levels. The potential for redistribution of contaminants during maintenance dredging is, therefore, negligible and the impact considered **insignificant**.

Conclusions

60. With some minor exceptions, the sediments to be removed by the proposed dredging of Berth 201/202 have negligible chemical and microbiological contamination. None of the sediments exceed standards that would preclude disposal of dredged material at sea under the FEPA licence for the range of contaminants tested for. Overall, the potential for impact to the environment from any sediment-bound contaminants that are re-dispersed and deposited elsewhere as a result of the proposed works is considered insignificant in both the short and long-term, and none of the impacts are of a scale that requires mitigation.

Water Quality (Chapter 10)

61. The impacts of the proposed Berth 201/202 redevelopment on water quality have been assessed against the relevant standards that currently exist through a range of European Directives. In addition, recent guidance published by the Environment Agency in 2010 has been used to undertake a Water Framework Directive (WFD) assessment.

1) Potential Changes to Suspended Sediment Concentrations

- 62. The impact of changes in suspended sediment concentrations above existing background levels during dredging range from **insignificant to minor adverse significant** for the Southampton Water and Southampton Water Approach designated Shellfish Waters.
- 63. During the disposal of dredge arisings from the berth pocket, the impact of the changes in suspended sediment concentrations to the nearest designated Shellfish Waters in the Solent is considered to be largely **insignificant** and at worst **minor adverse significant** for short periods following disposal.

2) Potential Changes to Dissolved Oxygen Levels

- 64. Based on previous monitoring and research, it is considered that the impact of changes to dissolved oxygen during dredging of Berth 201/202 will be **insignificant** with respect to designated Shellfish Waters located at the approaches to and within Southampton Water.
- 65. Any changes in dissolved oxygen levels during disposal are likely to be very localised and short-lived given the highly dynamic nature of and water depth at the Nab Deposit Ground. As there are no designated Shellfish Waters within the footprint, this impact is considered to be **insignificant** with respect to Shellfish Waters.



3) Potential Changes to Levels of Chemical Contaminants in Water

- 66. Given the negligible to very low levels of contamination in the material proposed to be dredged, the potential for enhancement of chemical contaminants in the water column is low during dredging. The impact is, therefore, considered to be **insignificant** with respect to water quality standards that currently exist under the Dangerous Substances Directive. The Water Framework Directive assessment similarly concludes that the proposed dredge will have an insignificant impact on Southampton Water and the relevant fluvial water bodies.
- 67. The impact of the disposal of dredge arisings on levels of chemical contaminants in the water column are assessed as being **insignificant** with respect to water quality standards under the Dangerous Substances Directive. The Water Framework Directive assessment similarly concludes that the disposal of dredge arising will have an insignificant impact on relevant water bodies.

4) **Potential Changes to Nutrient Concentrations in Water**

- 68. The overall significance of potential changes to nutrient concentrations in the water column during dredging of Berth 201/202 is assessed as being **insignificant** with respect to the water quality standards proposed under the WFD, the sensitive eutrophic areas designated under the Urban Waste Water Treatment Directive (UWWTD) and the favourable condition target for the Solent and Southampton Water Ramsar site that applies under the Habitats Directive.
- 69. During disposal, any release of nutrients as a result of the disposal will be rapidly diluted to background levels and, therefore, the impact is assessed as being **insignificant** with respect to water quality standards proposed under the WFD and the favourable condition target for the Solent and Southampton Water Ramsar site.

5) Potential Changes to Microbiological Contaminants in Water

70. Due to the low levels of human microbiological contaminants in the sediments and the rapid dieoff rates, the potential changes to the numbers of these contaminants in the water column will be **insignificant** during dredging and disposal activities with respect to both designated bathing waters and designated shellfish harvesting areas.

6) Potential Changes During Future Maintenance Dredging

71. The effects on future maintenance dredging requirements are expected to be negligible compared with existing annual variability, and the levels of contamination in the materials extracted are likely to be less than at present as existing contamination within the berth pocket will have been removed by the capital works. Therefore, the impact of future maintenance dredging is considered to be **insignificant**.

7) Potential Effects Arising through Changes to the Drainage System

72. With the incorporation of the proposed drainage system at berth 201/202, there is considered to be a positive effect on water quality, albeit **insignificant**.



Conclusions

73. The capital and subsequent maintenance dredging of the berth pocket will give rise to a number of insignificant changes in water quality parameters during the dredging and disposal operation. These will all be temporary both in time and space. The changes are not predicted to affect existing levels of compliance with water quality standards in the study area. Some potentially more significant changes may occur for short periods during the capital dredging and disposal phase of the Berth 201/202 works that will last around four weeks. However, none of the impacts are of a scale that requires mitigation.

Marine and Coastal Ecology (Chapter 11)

74. The following potential impacts to nature conservation features, not including fish or birds which are covered in separate sections, will arise either in the short-term, during capital dredging of the berth pocket and disposal of dredge arisings, or in the long-term, as a result of hydrodynamic and sedimentary changes brought about by the proposed deepened berth:

1) Potential Impacts Due to Direct Removal of the Subtidal Habitat

- 75. The impact of the permanent loss of the small area of subtidal habitat that will need to be reclaimed due to the quay wall reconstruction is considered to be **insignificant to minor adverse significant**.
- 76. The overall impact to marine invertebrates within the footprint of the deepened berth pocket is considered to be **insignificant**.

2) Potential Impacts Due to the Predicted Effect on Hydrodynamic Processes on Intertidal

77. The hydrodynamic changes brought about by the deepened berth pocket will be marginal and local to Berth 201/202 at the container terminal. This change will not be discernable from background wave variability and is considered to be **insignificant**.

3) Potential Impact Due to Predicted Effect on Sedimentary Processes

78. The small localised and marginal increase in the potential sedimentation over the shallow subtidal area fronting Marchwood Military Port and Cracknore Hard will be of marginal benefit for maintaining mudflat levels. However, given that the changes are unlikely to be discernable from background and will be redistributed by existing wave disturbance, the impact is considered to be **insignificant**.

4) Potential Impacts Due to Deposition of Sediment

79. During dredging, the temporary impact of the small-scale and localised accumulation of fine material on intertidal habitats and benthic infaunal communities is considered to be **insignificant**. There will be very marginal settlement of material (up to around 5mm) on the



clam beds that occur in the Test Estuary. This short-term and temporary impact is considered to be **insignificant**.

80. During the disposal of arisings, the impact of deposition of material outside the boundaries of the deposit ground will be negligible (less than 1mm). The impact on interest features of the South Wight Maritime SAC and nearby recommended Marine Conservation Zones, including the reef and subtidal rocky habitats off the south east coast of the Isle of Wight is, therefore, considered to be **insignificant**.

5) Potential Impacts Arising as a Result of the Effects on Water Quality

- 81. During the four-week period of dredging, the changes to water quality are largely confined to the intertidal margins of the western shore of Southampton Water and the Test Estuary. The impact on marine invertebrate communities, including clam and oyster beds, is considered to be **insignificant to minor adverse significant**.
- 82. The impact of changes to water quality on saltmarsh is considered to be **insignificant to minor adverse significant**, given their low sensitivity to the predicted levels of suspended sediments and potential release of contaminants and organic material into the water column during dredging.
- 83. The exposure of eelgrass beds to the temporary and transient changes in suspended sediment levels during dredging is confined to the beds located in the lower stretches of the Hamble Estuary and around Calshot Spit. The scale, however, is negligible and the impact is considered to be **insignificant**.
- 84. The fauna characterising the interest features of the South Wight Maritime SAC, Including reef and rocky habitats are not considered to be sensitive to the changes in water quality during disposal of arisings and, therefore, the temporary impact is considered to be **insignificant**.
- 85. Apart from maerl beds, the majority of habitat and species interest features comprising the nearby recommended Marine Conservation Zones (rMCZ) are considered to have a negligible to low sensitivity to changes in suspended sediment concentration and, therefore, the impact of the disposal is considered to be **minor adverse significant** to maerl beds and **insignificant** to the remainder of the rMCZ interest features.
- 86. The temporary and negligible exposure of marine and coastal ecology to increased nutrient levels during dredging and disposal and the potential depletion of oxygen due to the formation of algal blooms are considered **insignificant**.

6) Potential Impact During Future Maintenance Dredging

87. The change in future maintenance dredging work is expected to be negligible taking account of existing annual variability. As a consequence, the impact on the marine and coastal ecology is considered **insignificant**.



7) Potential Impacts Due to Ship Wash

88. Despite the fact that container ships are generally becoming larger and that the deepening of Berth 201/202 will allow deeper draughted vessels to access the berth, the overall impact on ship wash is negligible and the subsequent impact on marine and coastal ecology is considered to be **insignificant**, with respect to potential bed and bank erosion effects and stability of shallow subtidal and intertidal habitats.

8) Potential Impacts to Indigenous Species Through Introduction of Non-Native Species

89. The number of ships entering the estuary is not expected to increase as a result of this proposal, subject to existing fluctuations in vessel numbers, given that the number of berths at the port will remain the same. Furthermore, the deeper-draughted vessels arriving in the estuary are unlikely to be using any ballast water. The risk of introducing alien species in comparison to the existing situation is negligible and the impact considered **insignificant**.

Conclusions

90. In most cases, the impacts on marine and coastal ecology will be insignificant. Any other impacts will be minor and due to temporary changes in water quality over the four-week period of dredging activities. The impact of the permanent removal of a very small area of subtidal habitat within the footprint of the quay wall construction and dredge pocket will also be, at worst, minor given the limited ecological value of the already impoverished benthic community.

Fish (Chapter 12)

91. The following potential impacts to fish will occur either in the short-term, during berth reconstruction, and capital dredging and disposal of material from the berth pocket, or in the long-term, as a result of hydrodynamic and sedimentary changes brought about by the deepened berth:

1) Potential Impact from the Predicted Effect on Hydrodynamic Processes

92. The negligible changes to water levels and flow dynamics that are predicted to occur following the proposed dredge are localised to Berth 201/202. They will be so marginal in scale that they are unlikely to be discernable from natural variability. Therefore, there is unlikely to be a change in the usage of areas by fish and the impact will be **insignificant**.

2) Potential Impact to Habitat from the Predicted Effect on Sedimentary Processes

93. There will be a marginal increased potential for sedimentation over the shallow subtidal area fronting Marchwood Military Port and Cracknore Hard, and a negligible reduction in suspended sediment concentrations in certain parts of the estuary at different states of the tide. Given the resulting insignificant impact to mudflat habitat levels the impact, with regards to the distribution of fish and overall feeding resource, will be **insignificant**.



3) Potential Impact Due to Deposition of Sediment

- 94. The temporary impact of deposition of material on benthic invertebrates, including shellfish, during dredging is assessed as being insignificant and, therefore, the consequent impact to fish feeding grounds is also considered to be **insignificant**.
- 95. The exposure to changes in the quality of sediment is assessed as being negligible and, therefore, the temporary impact of any contamination being released and redistributed onto fish feeding grounds during dredging will be **insignificant**.
- 96. The temporary impact of dispersal and deposition of material on subtidal habitats during disposal is assessed as being insignificant and, therefore, the consequent impact to the feeding resource for fish, as well as nursery and spawning grounds, is considered to be **insignificant**.
- 97. Should the excavation process produce lumps that are not fully broken up into constituent particulate form during disposal, there will be a loss of any fish that cannot escape the falling lumps at the deposit ground. The impact to fish populations in the surrounding area as a whole, however, is considered **insignificant**.

4) Potential Impact Arising as a Result of the Effects to Water Quality

Suspended Sediment Concentrations

- 98. The temporary impact of elevated suspended sediment concentrations during dredging for the majority of fish that frequent the study area will be **insignificant**, and **insignificant to minor adverse significant for** migratory fish.
- 99. During disposal, impact on the migratory, feeding, nursery and spawning activity of fish in the area is considered to be **insignificant**.

Organic Enrichment and Oxygen Depletion

100. During dredging, the temporary impact of the marginal and localised changes to dissolved oxygen, along with the low probability that dissolved oxygen levels will fall significantly, is considered to be **insignificant** for fish and their food prey items.

Contaminants

101. Given the negligible to very low levels of contamination in the material at the berth pocket, the potential for enhancement of chemical contaminants in the water column during dredging is low. The temporary impact from the potential release of contaminants associated with the dredged materials and any uptake by fish in the water column is considered to be **insignificant**.

5) Potential Disturbance Due to the Generation of Underwater Noise and Vibration

102. The impact of percussive piling activities involved in the quay reconstruction work at Berth 201/202 is considered to be **major adverse significant** to the migratory passage and behaviour of salmon. ABP have committed to implementing an environmental window as



mitigation for the impact to migratory salmon, reducing the residual impact to **insignificant to minor adverse significant**. The impact to other fish species is considered to be **insignificant to minor adverse significant given** that they will be able to avoid areas with temporary adverse conditions without any implications to the recruitment and sustainability of the population.

103. The temporary impact of backhoe dredging noise at Berth 201/202 to migratory salmonids and other fish will be **insignificant** and will not cause a barrier to migration.

6) Potential Impact Due to Compounding Effects of Impacts

104. The compounding effects of several impacts acting together i.e. temperature, dissolved oxygen, suspended sediments and noise on migratory salmonids are considered to be **minor adverse significant with** the mitigation in place.

7) Potential Impact During Future Maintenance Dredging

105. The change in future maintenance dredging work is expected to be negligible compared with existing annual variability and, therefore, the impact on fish will be **insignificant**.

Mitigation

106. Percussive piling will be undertaken between mid September and the end of March when the potential for migratory salmon to be present in Southampton Water or the Test Estuary is at a minimum. Between mid September and the end of November, the Environment Agency may call up to two "Stop" periods to percussive piling activities if it becomes apparent that a late salmon run is underway. ABP will then cease such activity for a period of up to 3 days to allow the salmon to transit Southampton Water and the Test Estuary with the minimum of disturbance. With this proposed mitigation measure in place, the residual effect to salmon is considered to be **insignificant to minor adverse significant**.

Conclusions

- 107. The main impacts to fish will be temporary, occurring during the quay wall reconstruction activities, berth pocket capital dredging and disposal of arisings. The scale of the majority of the potential impacts to fish will be temporary and **insignificant to minor adverse significant**.
- 108. The underwater noise generated during percussive piling techniques required for the reconstruction of the front quay wall is predicted to be major adverse significant for salmon. This will be mitigated by undertaking percussive piling activities between mid September and end March when the potential for migratory salmon to be present in Southampton Water or the Test Estuary is at a minimum, reducing the impact to **insignificant to minor adverse significant**.
- 109. Following the capital dredge of the berth, the impacts of the changes to the hydrodynamic and sediment regime, including the impacts during future maintenance dredging, are all considered to be **insignificant** with respect to fish.



Marine and Coastal Ornithology (Chapter 13)

110. The following potential impacts to waterbirds will occur either in the short-term, during quay reconstruction activities and dredging of the berth pocket, or in the long-term, as a result of hydrodynamic and sedimentary changes brought about by the proposed berth works:

1) Potential Impact Due to the Predicted Effect on Hydrodynamic Processes

111. The hydrodynamic changes brought about by the deepened berth pocket will be marginal and local to Berth 201/202 at the container terminal. This change will not be discernable from background variability and is considered to be **insignificant** to birds using intertidal habitats and feeding on benthic communities.

2) Potential Impact Due to the Predicted Effect on Sedimentary Processes

112. The localised and marginal increase in the potential sedimentation over the shallow subtidal area fronting Marchwood Military Port and Cracknore Hard will be of marginal benefit for maintaining mudflat levels and potential feeding habitat for birds. However, given that the changes are unlikely to be discernable from background and will be redistributed by existing wave disturbance, the impact is considered to be **insignificant**.

3) Potential Impact Due to Deposition of Sediment

- 113. During dredging, the temporary impact of the small-scale and localised accumulation of fine material on intertidal habitats and benthic prey communities, including shellfish, will be **insignificant** to feeding birds.
- 114. The temporary impact of the deposition of negligible to very low levels of contaminated material, released and redistributed during dredging of the berth pocket, on habitats and benthic prey will be **insignificant**, with respect to feeding birds.

4) Potential Disturbance Due to Noise, Vibration and Movement

- 115. The short-term impact of noise during impact piling activities is considered to be **insignificant** to minor adverse significant to waterbirds in the Test Estuary given that they are likely to become habituated to this type of noise. The noise disturbance impact from other elements of the construction works, including the dredging of the berth pocket by a backhoe dredge, is considered to be **insignificant** to waterbirds.
- 116. The scale of the temporary impact of vibration during piling activities will be of negligible magnitude and the disturbance to waterbirds is considered to be **insignificant**. If a pile is being driven to refusal, the vibration level may be sufficiently high to be **minor adverse significance** for waterbirds.
- 117. Waterbirds using Southampton Water and the Test Estuary are not sensitive to mechanical activity and barge movements during quay construction and backhoe dredging activities and the temporary impact is considered to be **insignificant**.



5) Potential Impact During Future Maintenance Dredging

118. The change in future maintenance dredging work is expected to be negligible compared with annual variability associated with existing maintenance dredging in the area and, therefore, the subsequent potential impacts on waterbirds will be **insignificant**.

6) Potential Disturbance Due to Ship Wash

119. Despite the fact that container ships are generally becoming larger and that the deepening of Berth 201/202 will allow deeper draughted vessels to access the berth, the overall impact as a result of ship wash is considered negligible and the subsequent impact to waterbirds will be **insignificant**, with respect to potential bed and bank erosion effects and stability of shallow subtidal and intertidal feeding habitats.

Conclusions

120. The most significant impacts to waterbirds will occur during the short-term disturbance from noise and vibration during quay reconstruction activities. The impact due to the potential effect of smothering on prey during the short-term period of dredging of the berth is considered **insignificant** for waterbirds. Following the dredge, the impacts during the operational phase, including ship wash and the changes to the hydrodynamic and sediment regime brought about by the proposed berth works, will also be **insignificant**.

Commercial Fisheries (Chapter 14)

1) Potential Disruption of Fishing Activities Due to Vessel Movements

- 121. During the berth pocket dredge, there will be a temporary increase in barge movements in the main navigation channel between Berth 201/202 and the Nab Deposit Ground. The scale of this change will be **insignificant** for commercial fishing activities.
- 122. Following the Berth 201/202 works, the number of vessels using the channel is anticipated to remain the same, subject to annual fluctuations. The number of deeper-draughted vessels is anticipated to increase in proportion but this increase is considered to be **insignificant** for commercial fishing activities.

2) Potential Disruption of Fishing Activities Due to Disposal of Arisings

123. There will be a potential change at the bed of the deposit ground during the four-week period of the disposal for the dredge arisings as some mounds are likely to occur below each barge footprint, which reduce in size with time as they break down into fine particulate form and are dispersed rapidly with the currents. Fishing activities that occur in the area of the deposit ground are already characterised by the effects of regular disturbance through the disposal of maintenance dredge material. Therefore, the disruption to commercial fishing activity, either potting or trawling, is considered **insignificant**.



3) Potential Disruption of Fishing Activities Due to Formation of Algal Blooms

124. The risk of nutrient levels being elevated during dredging and resulting in the potential formation of algal blooms is considered to be **insignificant**, with respect to commercial fishing activities.

4) Potential Impacts to Fin Fisheries

- 125. The temporary impact of deposition of material within the Test Estuary during the dredging of the berth on the majority of the benthic invertebrate community has been assessed as being insignificant and, therefore, the impact to fish feeding grounds and subsequent impact to commercial fish catch is also considered **insignificant**.
- 126. The temporary impact of elevated suspended sediment concentrations during dredging of the berth for the feeding ability of the majority of commercial fish species and the sustainability of the commercial stock present in the Test Estuary and Southampton Water will be **insignificant**.
- 127. During the four-week period of dredging, the temporary impact of changes to other parameters of water quality (dissolved oxygen, contaminants) will be **insignificant**.
- 128. The impact of underwater noise disturbance during percussive piling activities will be **insignificant to minor adverse significant** for commercial fish species. For other construction activities, including the dredging of the berth pocket, the impact will be **insignificant**.
- 129. During disposal, the temporary water quality impacts will be of low magnitude due to the large depth at the site and given that the area already experiences the effects of the disposal of maintenance dredge arisings, the impact on the feeding, nursery and spawning activity of fish, and consequently, commercially important species in the area will be **insignificant**.

5) Potential Impacts to Shellfisheries

- 130. During dredging of the berth pocket, the temporary impacts of the deposition of sediments and water quality changes within the Test Estuary and Southampton Water are considered to be **insignificant** on the commercial shellfish beds.
- 131. During disposal activities, it is not considered that the crustacean shellfish resource surrounding the disposal site will be at risk, given that the magnitude of change will be low and the area already experiences similar effects from existing maintenance dredge deposits. With a negligible exposure to change, the temporary impact to crab and lobster fisheries is considered to be **insignificant**.

6) Potential Impacts During Future Maintenance Dredging

132. The effects on future maintenance dredging requirements are expected to be negligible compared with existing annual variability. The impact of changes to water quality and additional maintenance traffic during maintenance dredging will, therefore, have an **insignificant** impact on the commercial fisheries in Southampton Water and the Solent.



Conclusions

133. The main impacts will occur during the capital dredging and disposal of arisings, where on the whole, the scale of impacts to commercial fisheries interests will be **insignificant to minor adverse significant** at worst, and will not, therefore, require any mitigation. Following the Berth 201/202 works, the impacts to commercial fishing activities and fish resource during the operational phase, including future maintenance dredging and shipping movements, will be **insignificant**.

Coastal Defences (Chapter 15)

134. The potential direct and indirect impacts that will arise from the proposed Berth 201/202 works, either through the reconstruction of the quay wall or changes to the hydrodynamic and sediment regime brought about by the deepened berth pocket, were assessed as:

1) Potential Direct Impact to Coastal Protection Levels

135. The proposed new quay wall will be constructed immediately in front of the existing wall with the top level of the cope at +6.25m CD as per the existing level. Flood protection will be maintained throughout the construction period. Following the completion of the Berth 201/202 works, the new quay wall will provide the same level of flood protection as the existing situation. There will be **no direct impact** on coastal protection levels during and following the construction works. With respect to flood risk assessment, there will be no change to the risk of flooding as a result of the proposed Berth 201/202 redevelopment.

2) Potential Impact Due to Changes in Water Levels

136. The predicted changes in high water (HW) levels are negligible in scale and restricted to the locality of Berth 201/202 in the Test Estuary. In the context of natural variability in the wind-wave environment, the change is unlikely to be discernable from background conditions. Therefore, the impact of changes in water levels is considered to be **insignificant.** With respect to flood risk assessment, there will be no change to the risk of flooding as a result of the proposed Berth 201/202 works.

3) Potential Impact Due to Changes in the Flow and Sediment Transport Regime

137. The small and localised changes in the flow dynamics will result in negligible changes to existing erosion and sedimentation patterns in the Test Estuary, largely in the area local to Berth 201/202. The predicted level of these changes will not be measurable from natural variation and sedimentation patterns are likely to be redistributed by existing wave disturbance. Therefore, the impact of changes in flow and the sediment transport in this part of the estuary is considered to be **insignificant.** With respect to flood risk assessment, there will be no change to the risk of flooding as a result of the proposed Berth 201/202 works.



4) Potential Impacts Due to Ship Wash

138. Despite the fact that container ships are generally becoming larger and that the deepening of Berth 201/202 will allow deeper draughted vessels to access the berth, the overall impact to ship wash is negligible in the context of background wind-wave energies reaching the shore. Therefore, the impact of ship wash to the integrity of coastal flood protection is considered to be **insignificant**, with respect to potential bed and bank erosion effects and the risk of overtopping existing coastal defences.

Conclusions

139. The proposed works are consistent with the policies set out in PPS25. There will be no direct effects on the existing level of coastal defence in the study area during or following the proposed Berth 201/202 works. The potential indirect impacts from changes to the hydrodynamic and sediment regime brought about by the deepened berth pocket are considered to be **insignificant** with respect to coastal defences, and none of the impacts are of a scale that require mitigation. The impacts of ship wash during the operation of the berth is considered **insignificant** to the integrity of coastal protection.

Commercial and Recreational Navigation (Chapter 16)

140. Potential impacts on commercial and recreational navigation are assessed for both the shortterm, during quay construction, capital dredging and disposal, and for the long-term, after the berth works have been completed. These impacts are listed below:

1) Changes to Tidal Flow Patterns

141. The changes in flow speeds arising from the deepening of Berth 201/202 have been modelled and are likely to be very minor. The same modelling analyses also suggest that there are unlikely to be any significant changes in the directional flow patterns of tidal currents. Accordingly, the impact on navigation within the estuary will be **insignificant**.

2) Impact from Marine Plant

142. The proposed berth works will involve marine-based plant operating in the vicinity of Berth 201/202 during the construction phase. These vessels will present a temporary increased risk of collision with other craft. The impact of this change is regarded to be **minor adverse significant** but will be managed by notices to mariners and communications protocols for the dredge contractors.

3) Changes in Sedimentation Patterns

143. A number of sailing/yacht clubs have small craft moorings in the vicinity of the proposed area of deepening and these are sensitive to changes in sedimentation. However, modelling analysis suggests that the change in sedimentation as a result of the deepening will be very small and will not exceed 0.01m/yr at any of the existing small craft mooring locations. The impact of the change is therefore, considered to be **insignificant**.



4) Changes in Ship Wave Energy

144. A mathematical analysis of ship wash and associated energy has been carried out and it has been shown that if the average draught of container vessels is increased by 1m, a circa 1% rise in total incident ship wave energy reaching the Marchwood foreshore will occur and elsewhere in Southampton Water the increases will be less. The changes in vessel generated wave energy as a result of the increase in the maximum size of container vessels that can be accommodated by the proposed Berth 201/202 will be negligible in scale (circa 0.1% reduction in total incident ship wave energy). In the context of wind-wave energy, the overall impact of the predicted changes is considered to be **insignificant**.

5) Changes in Access to Container Terminal

145. The overall number of shipping movements is not expected to significantly increase above 2007 levels, subject to annual fluctuations, given that the number of berths at the port is remaining the same. The proposed Berth 201/202 works will restore the capacity of the container terminal to four berths capable of accommodating the latest generation of large container ships now in operation without the potential delay of waiting for an empty berth. Furthermore, vessel accessibility to the container terminal will be significantly improved as Berth 201/202 is the nearest for transiting vessels entering the estuary, involving less manoeuvring and, thus, providing easier berthing access. The impact of these improvements will be **major beneficial significant**.

Mitigation

146. Best practice management procedures will be incorporated during the dredging works to minimise the impact on the Port's many users. Recreational users will be informed by active communications with Vessel Traffic Service (VTS) to keep clear of the dredging plant. Notices to Mariners will be issued by the Harbour Master's department during the dredging works to advise all users of plant operating in specified areas. Race and Training Officers from Eling, Marchwood and Cracknore Hard Yacht/Sailing Clubs will be reminded to continue to communicate with the Harbour Master's department whilst the dredge plant is in the vicinity of the sailing club operating areas. The dredging plant will display the appropriate shapes and lights to warn all users of dredging operations.

Conclusions

147. The majority of impacts on navigation will be insignificant. There will be a minor and temporary impact as a result of marine plant operating in the locality of Berth 201/202 during the construction phase. There will also be a major beneficial impact offered to the access for deeper draughted vessels, as they will be able to more easily manoeuvre to Berth 201/202.

Noise and Vibration (Chapter 17)

148. Noise and vibration from construction activities associated with Berth 201/202 will have a potential adverse impact on nearby residential areas. The most sensitive residential locations to



the development are considered to be the apartment complexes at Admiralty Quay, Marchwood, which have direct line of sight to Berth 202 and the container terminal, with many water facing balconies associated with the apartments.

- 149. Detailed ambient noise surveys have been undertaken in the vicinity of the River Test and Southampton Water using a combination of attended and unattended noise measurements. The results of the surveys show that the ambient noise levels vary from day to day, and time of day, by differing degrees, depending on the proximity to one or more dominant sources of noise. Noise from the container terminal keeps ambient levels fairly constant throughout the day and night at those residential areas in its immediate vicinity (e.g. Admiralty Quay). At other locations affected predominantly by traffic noise, there is a distinct day-night variation in noise levels.
- 150. The concern over the impact of underwater noise on migrating salmon has dictated that the piling activity can only take place over the autumn and winter period. In order to complete the pile driving over one winter, it has been determined that four piling rigs are likely to be required for the quay wall, two to drive the main tubes and two to drive the infill sheets.
- 151. The following potential noise and vibration impacts will occur on local residential areas in the short-term during the construction phase of the Berth 201/202 works:

1) Effects of Construction Noise

- 152. Detailed computer modelling of the planned construction activities has enabled a noise time history to be developed for each of the residential locations considered over the typical 14 month construction period. With the main tubular rigs shrouded, the maximum noise impact will be **moderate adverse significant**. Without the shrouds the impact would have been of major adverse significance during percussive piling operations. In the construction periods before and after the percussive piling for the quay wall, the noise impact will be **minor adverse significant** for receiver locations in the vicinity of Berth 201/202, and **insignificant** at more distant receiver locations.
- 153. If pitching of piles is required during the evening (a more stringent noise assessment period than the daytime), then in a worst case scenario, the noise impact will be **moderate adverse significant** at Admiralty Quay if some vibro-piling needs to take place to get the piles in a safe condition, but **insignificant** if only the crawler crane is required.

2) Effects of Construction Vibration

154. As it is expected that for most of the time vibration levels from percussive piling would be less than 1mm/s PPV, the impact would therefore be **insignificant to minor adverse significant** at the nearest properties to any piling activity. If a pile is being driven to refusal, the vibration level may be sufficiently high to be considered to be **moderate adverse significant**. Whilst not sufficiently high to give rise to any concerns over structural damage, it is possible that complaints may arise, unless prior warning and an explanation about the effects of vibration have been given to residents. With mitigation measures in place, the residual effect at the nearest residential locations to the construction site will be **moderate adverse significant** when percussive piling is taking place.



Mitigation

155. A range of measures to reduce disturbance from construction noise and vibration will be established and agreed with the Environmental Health Officers of Southampton City Council and New Forest District Council. Noise mitigation measures will include shrouding of tubular piles, day working hours for percussive piling, noise monitoring, plant and equipment fitted with silencers, good community relations and a complaints contact line. With these mitigation measures in place, the residual effect at the nearest residential locations to the construction site will be moderate adverse significant when percussive piling is taking place. Vibration mitigation measures will include undertaking a vibration survey during appropriate stages of percussive piling activities and providing an appropriate response depending on the level of vibration recorded.

Conclusions

- 156. The most significant mitigation measure will be to fit shrouds to the tubular piling rigs. With the tubular piles shrouded, the noise impact is reduced to moderate adverse significant during the pile driving activity. Outside this period, the noise impact is only minor adverse significant at the nearest properties to the site, and insignificant elsewhere.
- 157. Apart from the use of shrouds on the main tubular rigs, other mitigation measures include the adoption of a British Standard code of practice to control noise from the construction site in general, regular noise monitoring to ensure that reasonable levels of noise are not being exceeded and maintaining good community relations at all times.
- 158. It is possible that vibration from tubular pile driving, using a percussive hammer, may be felt at the Admiralty Quay properties although it is considered unlikely that the vibration levels will be high enough to give rise to any risk of cosmetic or structural damage. Vibration surveys will be undertaken during pile driving to ascertain actual levels of vibration and further actions then taken as a consequence of the monitoring, if vibration levels prove higher than expected.
- 159. The fact that the pile driving activity has to take place in the autumn and winter period is of benefit in reducing its potential noise impact on neighbouring residential areas. With appropriate mitigation measures in the form of noise reducing shrouds for the main tubular piles, the impact can be further reduced, although will remain moderate adverse significant during the piling period. At other times the noise impact is only likely to be minor adverse significant or insignificant. For much of the time vibration from percussive piling will only be insignificant or minor adverse significant, possibly increasing to moderate adverse significant at pile refusal. It is therefore concluded that the development of Berth 201/202 can proceed in the knowledge that the noise and vibration impact from the associated construction activities will, at the most, only be moderate adverse significant.

Road Traffic (Chapter F1)

160. The potential impacts arising from the proposed berth 201/202 works have been assessed for the construction period in terms of road traffic generated by construction vehicles and staff; and



for the operational period in terms of Heavy Goods Vehicle movements and staff movements generated on the local and strategic highway network.

Construction Period

161. Forecast construction related traffic movements are, however, low, particularly in relation to existing movements into and out of the port as a whole. Construction activity will occur in areas currently used for port activities that generate vehicle movements. These movements will not occur whilst construction activity is taking place. It is concluded that construction related traffic will have an **insignificant** impact on the operation of the highway network.

Operational Period

- 162. The predicted change in traffic movements during the operational period will be modest at all times of the day, indeed sufficiently low as to not trigger the 'rule of thumb' threshold that is commonly used in road traffic assessments as a gaugefor the requirement for detailed appraisal.
- 163. Notwithstanding this, the potential impact from the proposed works have been assessed in terms of the following issues, which are specified by relevant guidance.
 - Fear and Intimidation/Pedestrian Amenity/Pedestrian Delay/Severance The impact of additional traffic in respect of these issues is considered to be insignificant.
 - Driver Delay The impact of additional traffic in respect of this issue is considered to be insignificant.
 - Highway Safety Existing records do not suggest any specific relevant locational highway safety concerns. The impact of additional traffic as a result of the proposals on highway safety is considered to be insignificant.
 - Hazardous Loads For the movement of any such loads, as now, best practice will be adhered to. The impact of hazardous loads carried on the highway network as a result of the works is considered to be insignificant.
- 164. If the traffic flows generated are compared with the current baseline position, the operational impacts are considered to be **minor adverse**.

Conclusions

165. No specific mitigation measures are required in respect of either the temporary construction road traffic or permanent operational road traffic generated by the proposals.

Rail Traffic (Chapter F2)

166. The potential impacts that arise from the proposed berth 201/202 works on rail transportation conditions have been considered.



Construction Period

167. There are no forecast construction related traffic movements by rail. It is therefore concluded that construction operations will have **insignificant** impacts on rail transportation conditions.

Operational Period

- 168. The predicted change in rail traffic movements resulting from the development will be modest in terms of requirements for increased rail paths and rail terminal capacity. Planned rail infrastructure enhancements and operational improvements as well as existing spare capacity will match overall capacity requirements of the project.
- 169. The effects of the project in respect of the national rail network, the local Southampton Rail Terminals and inland Rail Terminals are considered to be **insignificant**.

Landscape and Visual (Chapter F3)

- 170. This assessment has identified the likely significant landscape and visual effects of the project. Landscape effects are those that derive from physical changes to the landscape and changes to the character of the landscape setting; whilst visual effects are those that derive from changes to views resulting from the development of a project.
- 171. The methodology for the assessment has followed current best practice as defined by the Landscape Institute and The Institute of Environmental Assessment.
- 172. Effects have been assessed for the construction and operational phases and for the existence of the project. The landscape assessment has identified the likely scale and nature of change to individual landscape elements and characteristics, and any consequential effects on character resulting from the proposed development. The visual assessment has described the changes to the character of views resulting from the proposed facilities. This has used a combination of a written assessment and photomontage analysis.

Identification of landscape and visual effects

- 173. In terms of its landscape and visual effects the project represents incremental change. The baseline site is not only an operational port but more specifically is already in use as a Container Terminal. Direct temporary and permanent landscape changes would therefore be in harmony with the existing industrial townscape character. Direct construction phase landscape effects would generally be Insignificant. Reintroducing container handling over berths 201-202 would lead to a more ordered townscape and noticeable increase in quayside activity. Operational direct landscape effects on the port townscape character would be permanent **minor beneficial**.
- 174. Indirect effects, from increased visual intrusion and lighting effects, on the character of the adjacent landscapes and townscapes would generally be **insignificant** in the initial construction phases, increasing to **minor** and occasionally **moderate** adverse as construction progressed and the piling rigs and then the new quayside cranes became visible in the wider



surroundings. Effects on the most sensitive landscapes and townscapes would be **insignificant** for the New Forest National Park and **minor** to **moderate** adverse for the Marchwood RNAD conservation area.

- 175. Direct visual effects would result from the addition of the new cranes, large and potentially visually prominent structures. The assessment has shown that these cranes would be visible in the same areas as the existing cranes. No new views or areas of visual intrusion would be created, although existing views of the cranes would be reinforced by these additions. This would result in incremental visual effects to an accepted baseline. Effects, although noticeable for a number of viewpoints e.g. at Marchwood, would be no more than **moderate** adverse for the most significant changes.
- 176. For a number of the identified urban viewpoints the existing Container Terminal and the ship traffic it generates is seen by many as an interesting and exciting addition to the views of Southampton Water and the character of Southampton. For such people the identified magnitude of change would remain as assessed, but the adverse significance would be reduced or indeed reversed to bring about significant beneficial visual effects.
- 177. Changes to views from the New Forest National Park would be small scale and incremental with the upper sections of the container cranes visible as minor additions of elements already within the view. These additions would be seen as 'outside' of the Forest and would not alter receptors appreciation of the visual amenity and the unique natural beauty of the New Forest. Effects would be permanent but intermittent and **insignificant** for the earlier construction phases, increasing to **minor** adverse for the operational phase of the project.

Conclusions

- 178. The Site is a busy container terminal and industrial townscape where beautification, such as planting to screen views and lighting, is neither possible nor desirable. Further difficulty in providing mitigation arises from the nature of the views. These are often over water, with little or no intervening land on which to provide any form of landscape mitigation.
- 179. The most significant landscape and visual changes have been identified as moderate adverse. These effects are not widespread and represent the larger scale incremental effects on an accepted baseline, rather than any fundamental change. These effects represent tolerable changes that do not warrant mitigation given the nature of the baseline.

Air Quality (Chapter F4)

180. The following impacts on air quality will occur during the short-term construction phase or longterm operational phase of the proposed works:

1) During Construction

181. Construction activities will lead to increased dust and fine particulate matter (PM₁₀) concentrations close to the works. During construction it will be necessary to apply a package of mitigation measures to minimise dust emission. With mitigation in place, there are no



sensitive properties close enough to be affected by dust-soiling or PM_{10} impacts. The air quality impact of traffic during the construction phase would be negligible. The impacts are, therefore, judged to be **insignificant**.

2) During Operation

- 182. The works would lead to an increase in traffic on local roads and an increase in rail movements, which may impact on air quality at nearby residential properties. The main air pollutants of concern related to road traffic emissions are nitrogen dioxide and fine particulate matter (PM₁₀ and PM_{2.5}). The main air pollutant of concern related to rail traffic emissions is nitrogen dioxide.
- 183. It is concluded that concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} would remain below, and thus achieve, the Governments air quality objectives, whether the works are undertaken or not. The works would only increase traffic and rail volumes on local roads and rail lines by a small amount. These changes would give rise to, at worst, a small increase in concentrations of nitrogen dioxide and an imperceptible increase in PM₁₀ and PM_{2.5}. The impacts of changes in ship emissions and port machinery would be insignificant. It is concluded that overall the operational air quality impacts are judged to be **insignificant**.

Conclusion

184. The overall air quality impacts are judged to be adverse and **insignificant**.

Cultural Heritage (Chapter F5)

- 185. In order to assess likely cultural heritage effects of the development proposals an analysis of them was carried out against the existing baseline position whilst also having regard to the changes that could occur over time in their absence. The assessment has had regard to recognised best practice guidance and involved a desktop study of acknowledged sources in order to identify cultural heritage assets and assess the significance of potential effects. No direct effects (physical changes) to an identified asset are generated, and as such identified effects are limited to those on the setting of the assets identified.
- 186. The assessment concludes that the residual effects of the proposal on cultural heritage assets and resources can in the majority of cases be classed as insignificant. The only exceptions to this are the temporary adverse minor significant effect during construction and the permanent adverse minor significant effect during operation on the setting of cultural heritage assets within the Marchwood RNAD area, and the permanent beneficial effect of insignificant/minor significance on the setting of the King George V Dry Dock and adjacent pumphouse during the operation of the project.
- 187. The limited harm that is caused by the development on the setting of cultural heritage assets is considered to be outweighed by the wider benefits of the project.



Operational Noise and Vibration (Chapter F6)

- 188. The operational noise assessment considers how the noise generated by the loading or offloading of a container ship when berthed at 201/2 with six quayside cranes in use, and noise from associated container handling plant and vehicles, impacts on residential properties in the immediate vicinity of the Container Terminal.
- 189. An acoustic model of activity associated with Berth 201/2 has been developed using noise source data taken of similar container handling plant at the Container Terminal. A further ambient noise survey has also been undertaken as part of the provision of Further Information, to supplement the surveys previously undertaken. The assessment has considered both short term noise impacts when Berth 201/2 is first operational and longer term impacts when the Container Terminal is at full capacity. Consideration has also been given to changes to road and railway noise.
- 190. For noise assessment purposes use has been made of the British Standards cited in the Draft National Statement for Ports and significance effects criteria have been derived from these standards.
- 191. The short-term operational noise effects are considered to be **neutral** or of **minor** adverse significance for residential properties outside the port boundaries, but of **moderate** adverse significance for two residential properties located close to the port boundary. In the longer term, internal noise levels at these two properties are assessed as being of major adverse significance, if the windows of these properties are kept open.
- 192. No significant noise effects of increased road traffic are anticipated. Minor adverse significant noise effects from rail traffic are anticipated.
- 193. Mitigation measures include a positive purchasing policy with respect to noise limitation, environmental awareness training of operatives, ensuring noise aspects are included in planned maintenance routines and the offer of improved ventilation to the two affected properties, to allow windows to be kept shut, when necessary.

Socio Economic (Chapter F7)

- 194. A review of Southampton's socio-economic baseline position indicates that the area is facing a number of socio-economic challenges including low economic activity rates, high levels of unemployment, weak business demographics and relatively high levels of multiple deprivation. Against this background, the Port of Southampton specifically, and the marine sector in general, are valuable economic assets and key drivers for the local and sub-regional economies.
- 195. The berth 201/202 works are strategically aligned to the local, sub-regional and national policy context. The proposed works will be a critical private sector investment which will allow the Port (which is recognised at national level as a key component of the nation's transport system and critical to the functioning of the system as a whole and to the economic success of the nation) to remain competitive and to continue to be a key driver of the local economy as well as a major employer. The Port's continued success is reliant on continuous investment to ensure that



Southampton can continue to meet the evolving demands of seaborne world trade in what is a very competitive market.

- 196. If the berth 201/202 works were not to be undertaken there is a serious danger that the Southampton Container Terminal will become increasingly marginalised, losing market share. This would put many of the 2,000 jobs directly or indirectly supported by Southampton's Container Terminal at risk.
- 197. In the context of Southampton's challenging socio-economic indicators, this would be a serious issue for the local and sub-regional economies. The berths 201/202 works would safeguard these jobs and would also support the creation of 192 additional direct jobs over the period 2014-2027. Furthermore, it would support some 360 construction person years during the construction phase which translates to about 36 direct FTE jobs. Additional indirect and induced jobs would be supported through economic multiplier effects.
- 198. It is concluded that the proposed development would have a beneficial economic impact of major significance to the local economy and would be strategically aligned to the area's socio-economic priorities and national, sub-regional and local policy objectives.

Cumulative and In-Combination Effects (Chapter 18)

- 199. The cumulative and/or in-combination effects of the berth 201/202 works have been assessed with the following other relevant plans and projects that are at various points in the planning and consenting domain:
 - Southampton Approach Channel Dredge;
 - Woolston, Redevelopment of Vosper Thorneycroft Site;
 - Marchwood Marine Park;
 - Cowes Breakwater and Marina Development;
 - Hythe Marine Park;
 - Town Quay and Royal Pier/Mayflower Park Development; and
 - Portsmouth Harbour Approach Dredge.
- 200. In producing the Further Information, the following additional projects to be taken account of were identified in correspondence with Southampton City Council.
 - Capital dredge of berths 204 and 205;
 - Helius Biomass Generating Station;
 - Use of land for port purposes with new internal access road arrangements in the vicinity of Dock Gate 20;
 - New Council Depot and Household Waste Recycling Centre; and
 - Redevelopment of part of the British American Tobacco site to provide a warehouse club.



During Operation

- 201. No evidence of any cumulative and/or in-combination effects as a result of the proposed dredge element of the project and other plans or projects downstream of Fawley were identified. The only interactive effects were with those developments that occur up estuary of Dock Head. Overall, the impacts of these developments on the hydrodynamic and sediment transport regimes will be **insignificant**. The in combination ship wash effects of the berth 201/202 development with the Southampton Approach Channel Dredge is considered to be **minor beneficial significant**.
- 202. The Helius Biomass Generating Station has been identified as having significant landscape and visual effects as a result of its siting and massing. In its current form HBGS would block identified views of the project. For other close-in views the Helius Project may result in reduced significance of identified visual effects associated with the berth 201/202 works.

During Construction

- 203. There is the potential for in-combination impacts to occur to fish due to the interaction of underwater noise and water quality impacts between the Southampton dredge or the berth 204/5 berth widening proposal and Berth 201/202 construction activities should they occur at the same time. These impacts are assessed as **minor adverse significant**. There is also a potential for interaction to occur as a result of the cooling water discharge required for the Helius Biomass Generating Station. The biomass station proposal is not sufficiently advanced at this stage to quantify the scale of any interactive effect. Any such in combination effects can only be considered as part of the EIA that is undertaken for the Helius Energy PIc development.
- 204. There is also the potential for significant cumulative environmental noise impact on residents at Admiralty Quay as a result of Berth 201/202 construction activities and the Southampton Approach Channel Dredge. If backhoe dredging is required for the channel dredge, mitigation is proposed under the Southampton Approach Channel Dredge project, by way of avoiding the vicinity of Admiralty Quay during periods of percussive piling operation for Berth 201/202 to reduce the impact to acceptable levels.
- 205. Cumulative impacts due to the disposal of arisings at the Nab Deposit Ground occurring at the same time will be **insignificant to minor adverse significant**, although the contribution of Berth 201/202 works to such impacts would be negligible (around 1%).

Summary of Impacts and Mitigation (Chapter 19)

206. The philosophy of the proposed Berth 201/202 works has been to meet the commercial need by avoiding and/or minimising environmental impacts where possible. For example, alternative methods of quay wall design have been considered at the outset for known environmental impacts. In addition, standard best practice procedures and impact reduction measures have been considered as part of the proposal to minimise the potential impact on different receiving environments.



- 207. The following mitigation measures are proposed:
 - Identification of Viable Beneficial Use Schemes: Any beneficial use schemes that become viable within the timescale of the project will be considered. This will limit the requirement for disposal at the Nab Deposit Ground.
 - **Salmon Migration Window for Underwater Noise Disturbance During Percussive Piling:** The Environment Agency has confirmed that taking the salmon movements into account, the impact from percussive piling will be insignificant to minor adverse significant if the activity can be undertaken between mid September and the end of March. Between mid September and the end of November, the Environment Agency may call two "stop" periods to percussive piling activities if it becomes apparent that a late salmon run is underway. Any impact piling activity would then cease for a period of up to 3 days to allow the salmon to transit Southampton Water and the Test Estuary with the minimum of disturbance.
 - **Measures to Manage Navigation During Dredging:** Best practice management procedures will be incorporated during the dredging works to minimise the impact on the Port's many users. The following management procedures will be put in place and controlled by Vessel Traffic Service (VTS) to minimise disruption:
 - Recreational users will be informed by active communications with VTS to keep clear of the dredging plant;
 - Notices to Mariners will be issued by the Harbour Master's department during the dredging works to advise all users of plant operating in specified areas. Exclusion zones could be set around the dredgers to ensure small craft are not endangered;
 - Race and Training Officers from Eling, Marchwood and Cracknore Hard Yacht/Sailing Clubs will be reminded to continue to communicate with the Harbour Master's department whilst the dredge plant is in the vicinity of the sailing club operating areas. It is the responsibility of the Race Officer to inform VTS of the intent to carry out racing, including active communication prior, during and on completion of racing; and
 - Dredging plant will display the appropriate shapes and lights to warn all users of dredging operations.
 - Measures to Reduce Airborne Noise Disturbance During Percussive Piling: A range of measures to reduce disturbance from construction noise will be established and agreed with the Environmental Health Officers of Southampton City Council and New Forest District Council, including:
 - Noise reducing shrouds will be used during percussive piling operations for the main tubes. A system will be used that seals the shroud to the top of the gate with an additional shroud located around the sides of the gate and section of pile beneath the gate extending into the water. As a further precaution, to avoid re-radiated noise from the gate structure, it will be necessary to ensure no metal to metal contact between the pile and the gate through the use of a resilient lining on the inner faces of the gate;
 - Percussive piling operations will be confined to the hours 08:00 to 18:00 Mondays to Fridays and 08:00 to 13:00 on Saturdays. During the week it is



considered reasonable to allow construction activities to extend to 22:00 in order to pitch piles for pile driving the following or subsequent days;

- The latest version of British Standard BS 5228 will be adopted as the basic code of practice on controlling the noise from construction activities and contractual arrangements will be put in place to delegate noise management requirements to all contractors and subcontractors. Regular noise monitoring of the noise levels, to an approved scheme, will be undertaken;
- All plant and equipment will be required to be fitted with effective silencers and be maintained in accordance with manufacturers' instructions. Plant will not be left running unnecessarily. Plant and equipment will be required to comply with the requirements of EC Directive 2000/14/EC as amended by EC Directive 2005/88/EC;
- Local residents will be kept informed of particularly noisy activities and the efforts being made to minimise noise levels. A complaints contact line will be established and any complaint received responded to promptly; and
- Given that the piling operations will, mostly by necessity, take place going into the winter period, people will be less likely to want to have windows open or to use balconies during this period and this is considered to be added mitigation.
- Measures to Reduce Vibration Disturbance During Percussive Piling A range of measures to reduce disturbance from construction vibration will be established and agreed with the Environmental Health Officers of Southampton City Council and New Forest District Council, including:
 - A vibration survey will be undertaken during appropriate stages of percussive piling to identify actual received levels. Actions to be taken would then depend on the level of vibration measured;
 - If the vibration levels at the footings of the buildings were to equal or exceed 1mm/s PPV externally to any particular residential property, a detailed vibration survey to record levels within their properties would be available to residents, on request. This will also give further opportunity to explain to residents the effect of vibration on buildings and human perception;
 - If the level of vibration exceeded 2mm/s PPV at the footings of buildings, the piling contractor would be required to review its pile driving practice, and if practical, to seek a modified way of driving the piles to reduce levels of vibration. This may require a smaller energy per blow or a modified dolly on the pile head, for example;
 - If vibration levels greater than 5mm/s PPV at the footings of buildings were to occur, it is proposed that the pile driving activity would be halted at the earliest opportunity whilst structural surveys were undertaken on all potentially affected properties (or representative samples of the properties). At the end of the pile driving, the properties would then be resurveyed and any cosmetic or structural damage, which was identified as having occurred directly as a consequence of the pile driving, made good.
- Measures to Reduce Air Quality effects The following set of measures will, where practicable, be incorporated into the construction process. These measures are straightforward and include:
 - Water-suppression to minimise dust during any demolition activity;



- Phasing the development so that at any one time, construction activity is largely confined to relatively small portions of the site;
- Use of water-sprays to ensure that any unpaved routes are maintained in a damp condition when in use;
- Imposition and enforcement of a 5 mph speed limit on unpaved ground;
- Minimising any dust generating activities on very dry or windy days, if water suppression is not working efficiently;
- Sheeting of all lorries carrying materials on and off site;
- Locating and/or covering of stockpiles as far from sensitive locations as possible, and provision of appropriate hoardings;
- Wherever practicable, off-road plant to use Ultra-Low Sulphur Diesel and be equipped with exhaust after-treatment;
- Regular cleaning of all paved areas on-site, as required;
- Use of a jet-spray vehicle wash, as required, for vehicles leaving the site;
- Regular use of a water-assisted dust sweeper on the access and local port roads, as necessary, to remove any material tracked out of the construction site; and
- Use of water suppression during any cutting of stone or concrete.

Measures to Reduce Operational Noise effect

- When purchasing new equipment consideration will be given to noise emission levels, and a noise specification will be included as part of the bidding and procurement process.
- All crane and straddle carrier operatives will be made aware of environmental noise considerations in relation to port operations, and will be encouraged to strive towards quiet container handling practices.
- Planned maintenance procedures will include ensuring that all engine silencers remain effective, and are replaced immediately when any defects are identified.
- For the two residential properties cottages located of Western Avenue closest to the 201/2 development, improved ventilation to bedrooms will be offered, to allow bedroom windows to be kept shut at night and maintain a reasonable internal noise environment with adequate ventilation.

Conclusions (Chapter 20)

- 208. The berth 201/202 works are being promoted by ABP as the most appropriate solution to meet an identified need. That need, in summary, can be defined as the requirement to provide the Port of Southampton with a further deep water berth to accommodate the increase in size of the new generation of deep sea container vessels.
- 209. The provision of the deepened berth will enable the Port of Southampton to continue to fulfil its role as an international gateway port of significant global and economic importance underlining the national significance of the development.
- 210. As has been demonstrated, the works proposed are in accordance with the appropriate marine policy documents (principally the UK Marine Policy Statement) and comply with the relevant policies contained within the statutory development plan. The works are considered to be an



example of sustainable development and will assist in the achievement of relevant policy aims and objectives.

- 211. The assessment has demonstrated that in most instances the adverse effects generated will be either insignificant or of minor significance. The assessment also identifies where mitigation can and will be used to reduce the significance of some of the more significant identified adverse effects. It should be noted, however, that significant effects of the project will not just be adverse but in some cases significant beneficial effects will also be generated.
- 212. It is concluded that the limited residual adverse effects are significantly outweighed by the beneficial effects generated.