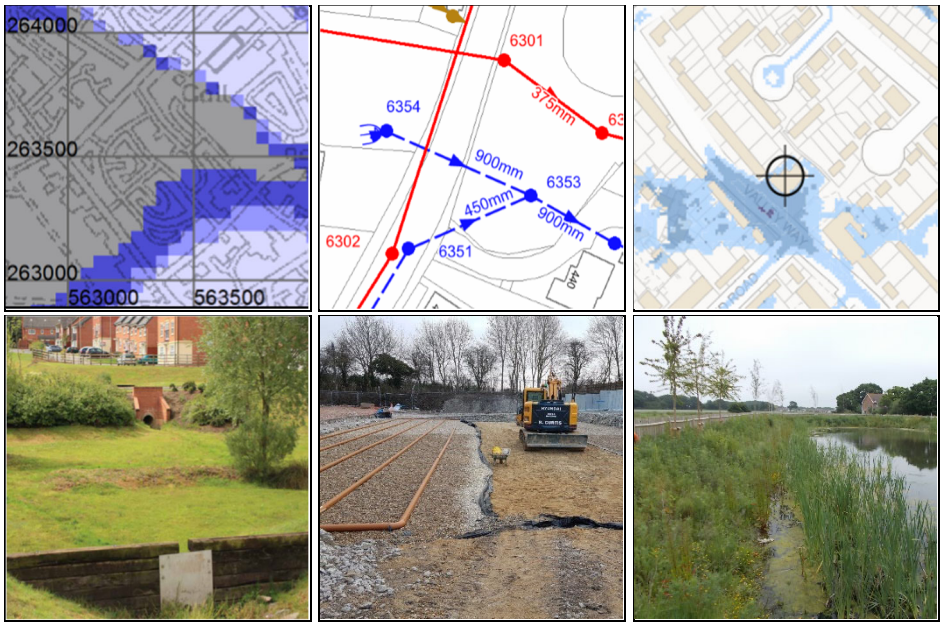

Consolidated Flood Risk Assessment

Priddys Hard 17/00599/OUT
Gosport, Hants

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1. Introduction

1.1 Instructions were received from Portsmouth Naval Base Property Trust to compile a single document drawing together individual Flood Risk Assessment (FRA) documents up to and including the Environment Agency consultation response of 21 September 2018 and the outcome from subsequent hydraulic modelling undertaken by Messrs Herrington in support of

MIXED USE DEVELOPMENT COMPRISING: (I) ERECTION OF 17 THREE-STOREY TERRACED DWELLINGS IN SOUTHERN DEMI-BASTION, (II) DEMOLITION OF FORMER COOK HOUSE AND ERECTION OF 4 THREE-STOREY TERRACED DWELLINGS, (III) DEMOLITION OF QUICK FIRE SHELL PAINTING ROOM AND ERECTION OF 1 THREE-STOREY DETACHED DWELLING, (IV) ERECTION OF THREE DETACHED DWELLINGS IN RAMPARTS, (V-a) CHANGE OF USE OF FORMER SHELL PAINTING ROOM TO FORM 4 DWELLINGS, (V-b) CHANGE OF USE OF E MAGAZINE TO CRAFT BREWERY (CLASS B1), (VI) CHANGE OF USE OF FORMER PROOF HOUSE TO STORE (CLASS B8), (VII) CHANGE OF USE OF FORMER SHELL STORE (BUILDING Q) TO FORM 1 UNIT OF HOLIDAY ACCOMMODATION (CLASS C3), (VIII) CHANGE OF USE OF CASE STORE EXHIBITION AND CONFERENCE CENTRE (BUILDING M) TO FORM RESTAURANT/PUB (CLASS A3/A4), (IX) CHANGE OF USE OF FORMER SHIFTING HOUSE (BUILDING U) TO FORM 1 UNIT OF HOLIDAY ACCOMMODATION (CLASS C3), AND (X) CHANGE OF USE OF FORMER MINES AND COUNTERMEASURES STORE (BUILDING P) TO COASTAL FORCES MUSEUM (CLASS D1) (LISTED BUILDINGS IN CONSERVATION AREA AND SCHEDULED MONUMENT) (as amended by plans received 10.05.18 and 02.04.19, additional ecological information received 21.05.18 and 30.05.18, additional transport information received 29.05.18, additional flooding information received 01.06.18, additional supporting information received 12.04.19 and as amplified by emails received 17.5.18)

1.2 The following paragraphs set out the background for component elements of the application:

1.3 Element (I) 17 new dwellings in the southern demi-bastion is also referred to as site T. A flood risk screening for this element (referred to as site 1) was undertaken by Messrs Opus International Consultants (UK) Ltd 24/7/17.

A meeting was held with Gosport BC and the Environment Agency on 4 July 2018 to discuss the way forward, including for these elements (1.3 refers). An assessment of freeboard provision for Searle Drive defences was undertaken by Aqua Callidus Consulting 9/8/18. Hydraulic modelling has now been undertaken by Messrs Herrington to quantify the residual risk and a Flood Warning and Evacuation Plan has been drawn up by Messrs Aqua Callidus Consulting.

1.4 Element (II) demolition of former cookhouse and erection of 4 new dwellings is also referred to as the cookhouse or site J.

A meeting was held with Gosport BC and the Environment Agency on 4 July 2018 to discuss the way forward, including for these elements (1.4 refers). An assessment of freeboard provision for Searle drive defences was undertaken by Aqua Callidus Consulting 9/8/18. Hydraulic modelling has now been undertaken by Messrs Herrington to quantify the residual risk and a Flood Warning and Evacuation Plan has been drawn up by Messrs Aqua Callidus Consulting.

1.5 Element (V-a) is for change of use of an existing building (former shell painting store) to form 4 dwellings. Element (III) demolition of quick fire shelling room and erection of 2 dwellings. Element (IV) erection of 3 dwellings within the ramparts. A flood risk screening

for these elements (collectively referred to as site 2) was undertaken by Messrs Opus International consultants (UK) Ltd 24/7/17. These elements lie adjacent the recently completed Shell Filling Rooms development and within the area protected by the flood defence wall constructed to defend the Shell Filling Rooms, access and adjacent hinterland. A Flood Risk Assessment for the Shell Filling Rooms was undertaken by Opus International Consultants (UK) Ltd 16/9/2014. A copy of this is contained in appendix E.

1.6 Elements (V-b) to (X) are discussed in different groupings owing to the extent of instructions given and documents produced for particular purposes:

1.6.1 A change of use of Buildings U, element (IX), and Q, element (VII) to a higher vulnerability category for holiday let residential use. A Flood Risk Assessment for these were undertaken by Messrs Opus international Consultants (UK) Ltd ref EF2245/FRASDS-JPS dated 3/11/2017. A copy of this is contained in Appendix F. This identified the governing flood risk to be tidal and within section 13 identified the need for a long term flood wall or defence to address the direct risk. It acknowledged that this would have to be *"appropriate to the heritage context"* and also acknowledged this was likely to require application of the *"managed adaptive approach. This will include an indication of the phasing or plan and vertical staging for the proposed defences"*.

1.6.2 A meeting was held with Gosport BC and the Environment Agency on 4 July 2018 to discuss the way forward, including for these elements (1.6.1 refers). Subsequently element proposals for a new building U1 for holiday let residential have been dropped for the time being and on the basis it is intended to bring this forward is a later phase. The proposed change of use for building M has now been altered since the meeting from holiday accommodation, of higher vulnerability classification to a restaurant which will maintain the current less vulnerable classification. It has not been possible to repurpose the intended change of use for building U but pending the coming forward of a subsequent development phase within the next 10 years that would include appropriate long term flood defences, it is proposed to limit the currently proposed change of use to a 10 year period and to implement interim defences for this building. An assessment of freeboard provision was undertaken by Aqua Callidus consulting 9/8/2018. Hydraulic modelling has now been undertaken by Messrs Herrington to quantify the residual risk and a Flood Warning and Evacuation Plan has been drawn up by Messrs Aqua Callidus Consulting.

1.6.3 A change of use of E magazine, element (V-b), the adjacent proof house, element (VI),and building P, element (X) which will maintain a less vulnerable classification.

1.6.4 In repurposing building M (paragraph 1.6.2 refers) as a restaurant rather than short term holiday let, the holiday let use has been relocated to change of use in building Q, element (IX) using the sequential approach. In the short-term (next 10 years) pending the subsequent phase coming forward, which will implement a complete long-term flood defence perimeter, building Q is located at higher elevation and will remain in flood zone 1 (low risk). In the longer term following implementation of a complete long-term flood defence perimeter, building Q, being at higher elevation and further behind the defensive frontage will have a lower residual risk. It is also proposed to construct a first floor level within building Q thus generating a safe refuge capability not available at building M.

1.7 A copy of the site topographic survey is contained in Appendix A.

2. Development Description & Location

2.1 The proposed development is described in section 1 above.

3. Local Development Documents & Strategic Flood Risk Assessment

3.1 The individual FRAs referred to in section 1 and included as Appendices to this document each contain discussion of the SFRA and local development documents. The purpose of this document is to consolidate information defining the current and future flood risk and residual risks together with the flood mitigation measures. These are discussed in detail in

subsequent sections of this document. It is not proposed to replicate these in detail within this section but a summary s provided in the paragraphs below.

3.2 The Partnership for Urban South Hampshire (PUSH) Strategic Flood Risk Assessment (SFRA) contains interactive flood map sets including:

- tidal/fluvial flood risk
- existing breach risk areas and hazard zones
- climate change flood zones for various dates
- surface water flood risk
- groundwater flood risk
- Sewer flood risk

3.3 Save for the new flood defence wall to the Shell Filling Rooms locale and the historic massive earthworks ramparts to the northwest the existing site has no current defences elevated above the general terrain level. The governing flood risk is tidal overtopping from Portsmouth Harbour to the east and Forton Lake to the south of the site. At present the risk level to the undefended areas relates to the elevation of the site terrain. The majority of the site is located in FZ1 with some parts, particularly around the main museum building and the Quay in FZ3 and FZ2. The climate change mappings show that without introduction of flood defences then in the future the extent FZ3 and FZ2 would gradually increase.

3.4 The currently undefended part of the site is inherently not current at risk of breaching as there is no defence to breach at present. During preparation (in 2018) of Flood Warning and Evacuation Plans for some of the elements, Graeme Jesty, the civil emergencies planner for Gosport BC advised that GBC modelling was being updated. As at the time of writing of this document the PUSH SFRA interactive mapping is still offline (and has been for about 6 months but is reported that it should be available again soon). This should then include the breach risk for the shell filling rooms flood defence.

3.5 The Gosport BC SFRA Level 2 Technical Report June 2014 acknowledges in paragraph 5.65 that there will be a variety of uses including a significant number of residential dwellings and confirms in paragraph 5.68 that the dominant source of flooding to this site is by tidal overtopping. A number of options to address flood risk and their feasibility are discussed in paragraphs 5.76 -5.80. The preferred options (combination of options 2 and 4 preferred) are discussed in paragraphs 5.81-5.84. Paragraph 5.83 cedes that eventually a continuous sea defence will need to be provided and that the residual risk from breaching or overtopping behind any defences delivered will need to be assessed (paragraph 5.82 refers). Paragraph 5.83 also cedes that a Flood Response Plan will be required to show how flood risk will be managed through evacuation or safe refuge for those buildings which cannot be realistically provided with safe access an exit during a flood (paragraph 5.91 refers) thus acknowledging that the important heritage status of many of the buildings constrains what may be deliverable.

3.6 SFRA2 also acknowledges that as average sea levels rise through climate change new or improved sewer infrastructure may be required.

4. Catchment Flood Management & Shoreline Management Plans

4.1 The North Solent Shoreline Management Plan (SMP) is applicable at the site and the following salient points have been noted:

4.2 The site is located in Policy Unit 5A25, which covers the stretch of shoreline extending from Quay Lane (MOD Boundary) to Portsmouth Harbour entrance.

4.3 North Solent Shoreline Management Plan chapter 5 discusses detailed policy development, with Policy Unit 5A25 discussed on pages 177-179. A summary description of the policy area is as follows:

"The developed area within the tidal floodplain includes a wide range of assets and facilities, including residential properties in Gosport, transport network, and commercial assets such as marinas, along with significant MOD assets. Part of the shoreline and hinterland area is located on a former landfill site. The existing defences are owned and maintained by the MOD, Local Authority and private individuals…Heritage features include

Scheduled Ancient Monuments, listed and historic buildings, Parks and Gardens, Monuments and maritime features, along with Conservation Areas.

The North Solent Shoreline Management Plan recommends a Hold-the-Line (HTL) policy over the three epochs within the extent covered by Policy Unit 5A25. The rationale behind the policy is summarised as follows:

"The key drivers to continuing to hold the existing defence line will be to provide flood protection to the developed conurbation within the tidal floodplain that includes the residential centre of Gosport, transport networks critical to Gosport, a wide range of MOD assets and facilities, and commercial assets such as marinas."

4.4 The South East Hampshire Catchment Flood Management Plan summary – December 2009 (CFMP) indicates the site falls within Policy sub-area 1 Portsmouth & Langstone Harbours. The CFMP states that Policy 5 is the preferred policy approach:

"Areas of moderate to high flood risk where we can generally take further action to reduce flood risk. This policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Taking further action to reduce risk will require additional appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options."

4.5 The SMP is consistent with SFRA2 and the heritage status of the site.

4.6 Overall the SMP and CFMP do not present any issues that would prohibit the development of this site with respect to flood issues provided the surface water drainage is based on SuDS principles and alignment to the preferred options for the site set out in SFRA2.

5. Catchment Data

5.1 The BGS mapping indicates the site is underlain by London Clay geology. The existing museum premises has a high percentage impermeable surfacing and the surface water system is generally historic and tends to discharge directly into the tidal waters of Portsmouth Harbour. The proposed development is largely change of use and would therefore not have a material impact on the run-off regime. The site drains directly into the adjacent waters of Portsmouth Harbour. The proposed development will have no material impact on water levels within the harbour.

6. Sewage Authority Data

6.1 The site is served by public sewer connection. A capacity check has been undertaken by Southern Water that confirms there is adequate capacity to serve the proposed development. A copy of the Southern Water correspondence confirming this is contained in Appendix B.

7. Site Particulars

7.1 A topographical plan of the existing site is contained in Appendix A.

8. Source-Pathway-Receptor Assessments

8.1 Appendix C contains the Source Pathway Receptor assessments for each element.

9. Flood Probability

9.1 Environment Agency flood zone mapping represents current best estimates of zone 2 and zone 3 flooding. It does not take account of potential climate change impacts. The flood zone definitions to Table 1 (NPPG Reference ID: 7-065-20140306) are as follows:

Zone 1	Low probability of flooding (<0.1% AEP)
Zone 2	Medium probability of tidal flooding (0.1-0.5% AEP)

	Medium probability of fluvial flooding (0.1-1% AEP)
Zone 3a	High probability of tidal flooding (>0.5% AEP)
	High probability of fluvial flooding (>1% AEP)
Zone 3b	Functional floodplain (>5% AEP probability of flooding)

The flood map does not differentiate between zones 3a and 3b.
Zone 3b is only considered appropriate for water-compatible development.
Zone 3a is additionally considered appropriate for less vulnerable uses.

9.2 Gosport BC SFRA Level 2 Technical Report June 2014 advises that tidal flooding is the governing risk. The tidal flood risk for each element is contained in the Tables in Appendix C. Other flood sources are also summarised.

10. Climate Change

10.1 The new climate change allowances for flood risk assessment GOV.UK 3 February 2017 update have been used. Climate change values for the site are:

- Peak river flow: Table 1, South East basin, third epoch, central range +35%
- Peak rainfall intensity: Table 2, third epoch, central range +20%
- Sea level rise. Table 3, South East, epoch 4 to 2115_{AD} +1.17m

10.2 The SFRA map set 1D indicates the 2115_{AD} climate change extent for tidal flooding without coastal defences. However this tidal flood risk will be mitigated by the presence of maintained coastal defences SMP-unit 5a25 which advocates a Hold-the-Line policy.

11. Development Details and Surface Water Strategy

11.1 Appendix C contains detail plans for each element in terms of location and layout; ground floor level, and upper floor levels where applicable.

11.2 Appendix C also sets out the surface water drainage strategy for each element.

12. Sequential & Exceptions Tests

12.1 NPPF 164 directs that changes of use should not be subject to the Sequential Test.

12.2 NPPF 164 also directs that changes of use should not be subject to the Exceptions Test.

12.3 Changes of use must however set out how the development will be safe.

12.4 Portsmouth Naval Base Property Trust are making this planning application as part of a wider site sustainability and regeneration strategy supported by Heritage Lottery Funding (HLF). The whole of the museum site is at very similar elevation albeit that at present this defines most of the site as FZ1 and some fringe areas as FZ 2 and 3. It is evident from SFRA map set 1D that potentially the majority of the museum site is within 2115_{AD} FZ3. In terms of the Sequential Test there is no reasonably available alternative site as the development must inherently be at the museum site. The development forms part of an allocated regeneration site. The Sequential Test as set out in NPPF paragraph 162 has been considered in Gosport BC SFRA Level 2 Technical Report June 2014 as discussed in paragraph 3.5.

12.5 The proposed development is part of the ongoing regeneration and sustainability of the Explosion museum and important heritage assets at Priddys Hard. These form the wider sustainability developments to the community under NPPF 160(a).

12.6 Given the heritage status of the museum site, inclusive of various listed buildings and associated contexts the provision of sea defences needs to be considered carefully. Gosport BC SFRA Level 2 Technical Report June 2014 paragraph 5.83 cedes that eventually a continuous sea defence will need to be provided and that the residual risk from breaching or overtopping behind any defences delivered will need to be assessed

(paragraph 5.82 refers). Paragraph 5.83 also cedes that a Flood Response Plan will be required to show how flood risk will be managed through evacuation or safe refuge for those buildings which cannot be realistically provided with safe access an exit during a flood (paragraph 5.91 refers) thus acknowledging that the important heritage status of many of the buildings constrains what may be deliverable. It is these strategies that deliver NPPF160(b) in respect of safety of the development for its lifetime.

12.7 The governing flood risk is tidal as identified in Gosport BC SFRA Level 2 Technical Report June 2014. The provision of a continuous sea defence would not alter sea level and so not increase flood risk elsewhere, NPPF160(b). The continuous sea defence will reduce flood risk overall. The current application will provide a further section of this continuous sea defence to the southern end of Searle Drive. The application for the subsequent development phase will bring forward the remainder of the sea defence at which time the direct and residual risks to the currently proposed development will be updated accordingly in line with the strategies contained in Gosport BC SFRA Level 2 Technical Report June 2014.

13. Flood Risk Management Measures

13.1 The flood risk management measures proposed accord with Gosport BC SFRA Level 2 Technical Report June 2014 and the particular measures for each element are set out in Appendix C.

14. Off Site Impacts

14.1 The provision of a further section towards a final continuous sea defence would not alter sea level and so not increase flood risk elsewhere.

14.2 The site has its own surface water drainage network so the proposed development would not increase flood risk elsewhere.

14.3 Southern Water have undertaken a foul water capacity check and have confirmed that there is adequate network capacity to support the proposed development. The proposed development would therefore not increase flood risk elsewhere

15. Residual Risks

15.1 The provision of sea defences will for some elements remove the direct risk from 1:200 year 2019_{AD} + CC + freeboard tidal flooding. There will be a residual direct flood risk for tidal events in excess of 1:200 year 2019_{AD} + CC + freeboard.

15.2 The residual risk of flooding attributed to breaching and overtopping of defences has been assessed by Messrs Herrington Consulting to a methodology agreed by the Environment Agency Modelling and Forecasting Team on 27 February 2019 and in accordance with paragraph 5.83 of Gosport BC SFRA Level 2 Technical Report June 2014. A copy of their summary Technical Note 17 April 2019 summarising key findings is contained in Appendix D. The output from this has been used to inform the flood management strategies for each element, which accord with Gosport BC SFRA Level 2 Technical Report June 2014, and which are summarised in Appendix C.