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<b>Project</b>	Portsmouth City Council Local Development Framework Habitats Regulations Assessment	<b>Date</b>	28 April 2010
<b>Note</b>	Ecological review and provisional HRA screening exercise for emerging Tipner, Horsea Island and Port Solent concepts	<b>Ref</b>	UE-0046
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## 1. Introduction

This technical note has been prepared to inform the emerging conceptual development options for Tipner, Horsea Island and Port Solent, themselves being prepared as part of the Core Strategy evidence base. The note draws on earlier work for the Portsmouth Local Development Framework in relation to Habitats Regulations Assessment, notably the Screening Statement and initial Appropriate Assessment (AA) work for the Core Strategy. The purpose of the technical note is to give an early indication of:

- ▶ The likely significant strategic effects of options being considered for Tipner, Horsea Island and Port Solent;
- ▶ Ways in which negative effects might be avoided; and
- ▶ Implications for the Core Strategy Appropriate Assessment.

Please note that Natural England has not been consulted during the preparation of this note, and there is no requirement for it to undergo public consultation. The document is not a formal HRA screening exercise, and does not present the full extent of information that would be required from one, seeking instead to provide a provisional update to earlier Core Strategy screening findings and inform initial work on the AA for the plan.

The document focuses mainly on likely significant effects in relation to Portsmouth Harbour SPA/Ramsar, however, in combination effects on sites further afield are also possible. It should be read in conjunction with the Core Strategy's Screening Statement (UE Associates, 2008).

## 2. Scope of Likely Significant Effects

In conformity with the findings of the Core Strategy Screening Statement, the likely significant effects considered possible as a result of development options are:

- ▶ Air pollution
- ▶ Coastal squeeze
- ▶ Displacement from tall buildings / light pollution
- ▶ Disturbance
- ▶ Loss of supporting habitats
- ▶ Water resources
- ▶ Waste water pollution

Three further impacts types have been added for consideration with specific regard to the development concepts: **loss of intertidal habitat**, **collision mortality** and **contamination**. The effects can be broadly subdivided into strategic issues that are faced city-wide, and effects that are locally specific insofar as they relate to Tipner, Horsea Island and Port Solent

### 3. Description of Strategic Effects

Of the impact types mentioned above, there are four to explain in further detail here: air pollution, coastal squeeze, water resources, and waste water. Disturbance is in fact a strategic issue in that it is being experienced at European sites across South Hampshire, but it is also specific to Tipner, Port Solent and Horsea Island.

**Air pollution** is relevant to the habitats of many European sites (and the qualifying species they support), particularly as a result of eutrophication from nitrogen deposition within 200m of busy roads. For Portsmouth, this specifically relates to Chichester and Langstone Harbours SPA/Ramsar and Solent Maritime SAC adjacent to the A27 in Langstone Harbour. Generally speaking a 10% increase in traffic flow is considered to lead to a significant adverse effect. The South East Hampshire Transport Study (PBA, 2009) concludes that increases as a result of planned strategic development in Portsmouth will not lead to significant increases on the two key junctions it assesses adjacent to these sites. Early work on the AA for the Core Strategy draws on the transport study and indicative conclusions are that there is no adverse effect as a result of the plan. In a strategic sense, therefore, there is no requirement to consider air pollution further in relation to the development concepts. There may be a requirement for this position to be tested further through an HRA at the planning application stage.

**Coastal squeeze** has been included within the scope of the Core Strategy AA, but this is likely to conclude that the issue will be satisfactorily addressed through the Shoreline Management Planning process and Regional Habitat Creation Programme. Loss or degradation of any habitats seaward of the existing defence line is further addressed as a site-specific issue below.

**Water abstraction** can affect both riverine and marine sites by decreasing the available quantity of fresh water flow, with effects on the food resource for both aquatic and avian species. **Waste water** pollution is primarily related to the nitrogen cycle, whereby fertiliser and organic content stimulate algal growth, in turn lowering available dissolved oxygen, with further effects on the food resource for aquatic and avian species.

The Integrated Water Management Strategy for PUSH (Atkins, 2009) concludes that the required Best Available Techniques are available in relation to supply, demand and treatment to allow the Environment Agency's Review of Consents licence/discharge consent modifications to proceed, together with planned sub-regional growth, to ensure that the ecological integrity of Solent European Marine Sites is maintained. There is some uncertainty here connected with the content of Portsmouth Water's final Water Resource Management Plan, which the AA for the Core Strategy will need to examine, but informal liaison with the Environment Agency is encouraging in this respect.

#### 4. Description of Site-Specific Effects

This section provides descriptions of the locally specific impact types, together with the value judgements and assumptions used while preparing the analysis presented in section 5. Implications for the Core Strategy AA are also addressed.

##### 4.1 Contamination

Across both Tipner and Port Solent / Horsea Island, large areas are believed to suffer from contamination as a result of infill with waste, ranging from domestic, municipal and construction/demolition waste, to highly toxic mobile contaminants. Significant investment will be required to establish the exact nature of contamination, and to devise and carry out an appropriate remediation strategy to allow redevelopment to proceed. It is advised that the remediation strategy has strong regard to adjacent nature conservation interests of international importance (Portsmouth Harbour SPA/Ramsar) and, for the purposes of this technical note, it is assumed that this will be the case.

##### 4.2 Collision mortality

**Description of impact:** This relates both to tall buildings (see below) and new structures, such as a bridge, which might interfere with the normal commuting or migration routes of birds. The issue is not well understood, is likely to be both highly spatially specific and weather dependant, and to be affected by the relative location of bird roosts, foraging habitats and proposed new development.

**Scales of impact:** In relation to wind turbine development, displacement effects as a result of a combination of factors including collision mortality and displacement, have been observed at distances up to 800m, with 600m widely accepted as the maximum reliably recorded distance (Drewitt & Langston, 2006). The impact is likely to be less severe in relation to static structures such as bridges and buildings.

**Possible avoidance/mitigation:** Beyond siting relevant development in locations at distance (600m) from sensitive bird areas, which would render a bridge link unfeasible and severely reduce the developable area in general, the next best available avoidance/mitigation measure would be to position structures close together to reduce the footprint of development, and the area over which the impact could be experienced. If this led to proposed development being positioned closer to pre-existing structures (such as the M275 bridge), further benefits could be gained as birds may already have habituated away from the area. Without locally-based research into flight patterns it is difficult to arrive at reliable conclusions.

**Implications for the Core Strategy AA:** The AA is likely to encourage taller or exposed structures away from the SPA/Ramsar, and into clusters. With regards to the proposed bridge link, it may be appropriate to procedurally signpost the issue down to a lower tier of plan-making. This would require a demonstration that the likelihood of impact depends entirely on how the proposal is implemented, and would also require the lower tier plan to have the ability to choose a non-damaging alternative if adverse effects are identified.

#### 4.3 Displacement from tall buildings / light pollution

**Description of impact:** Displacement from tall buildings can occur as a result of species sight line requirements, and potentially also overshadowing, increased light pollution and activity along the waterfront. There is also the risk of collision mortality (see above). The dark-bellied Brent goose *Branta bernicla bernicla*, for example, can require views of at least 500m when feeding or roosting to allow for early detection of potential predators. On the other hand, birds can become habituated to the existence of certain structures and forms of disturbance.

**Scales of impact:** Bearing in mind that the SPA/Ramsar boundary abuts the seawall around the majority of the development areas, this places constraints on available uses at the water's edge. Higher development densities are likely to lead to taller buildings and increased activity, leading to a more severe impact and greater requirement for avoidance and mitigation.

**Possible avoidance/mitigation:** The Core Strategy AA is likely to recommend a degree of set-back at the water's edge, to provide a buffer area between development and the SPA/Ramsar, and this might equally apply to supporting habitats. Low-level structures could be required close to the intertidal zone and, where taller structures may be desirable (for example, as 'landmark' developments), stepped or terraced designs may be required, which can be enhanced both visually and ecologically with green walls and green roofs. Coupled with this, low-level directional lighting should be required throughout construction and operation, together with screening to reduce the impact of heightened activity at the waterfront.

**Implications for the Core Strategy AA:** It may be the case that patterns of use of the intertidal zone by European-protected species would suggest that certain areas are more appropriate for higher density development. Further survey work may shed light on the situation, but in its absence the precautionary principle comes into play, leading to more onerous avoidance/mitigation recommendations.

#### 4.4 Disturbance

**Description of impact:** Disturbance is a key issue in the sub-region applying to coastal and inshore European sites. The central tenet is that increasing recreational use of important bird areas as a result of increasing population will render the sites of lower value for birds, by subjecting them to disturbance which requires them to alter their feeding, roosting or breeding behaviour. The Solent Disturbance and Mitigation Project (SDMP) has been initiated to examine the issue, and aims to establish current levels of disturbance from all sources experienced at European sites across the Solent, and devise appropriate avoidance / mitigation. The impact is strongly related to loss of supporting habitats (see below) and, through the iterative optioneering process for development concepts, it has been possible to consider some options that are locally beneficial, such as access management at existing open spaces. Equally, unrestricted access to existing open spaces in combination with new development may lead to more acute impacts by rendering areas of less value to protected species.

**Scales of impact:** Currently the SDMP is in progress, and until it completes it is assumed that all residential development in south Hampshire could lead to significant effects, at least in combination with other plans and projects. This aspect is being addressed strategically across the sub-region. Locally, higher residential densities have the potential to lead to greater juxtaposition between people and birds, leading to more severe impacts. This is particularly the case in areas of limited, possibly decreasing open

space provision (per head) and/or where increasing recreational requirements have the potential to impact on supporting habitats.

**Possible avoidance/mitigation:** Locally, the safeguarding and improved management of existing supporting habitats becomes important, such as open space at Port Solent. Similarly, enhancement of other areas that might become more useful to European-protected species should be considered, such as the Country Park at the former Paulsgrove landfill site. There may be an opportunity to explore seasonal access restrictions in order to make the best use of available land, and similarly to explore zoned management of activities on the harbour. Strategically, the issue links directly to the PUSH Green Infrastructure Strategy (UE Associates, 2009) as Natural England views this as a key delivery vehicle for avoiding effects through the provision of additional low sensitivity natural green space, and while the findings of the SDMP are developed.

**Implications for the Core Strategy AA:** If there are no further opportunities for the local provision of recreational space or multifunctional green infrastructure, and bearing in mind that the Country Park is likely to form a key component of the avoidance strategy for all Core Strategy development, the AA is likely to pursue the protection of existing open spaces from uses not compatible with nature conservation, and the ecological enhancement of new open spaces to maximise ecological gains. Higher residential densities, because they can lead to a larger population depending on the type of housing and development area, make this requirement more acute.

#### 4.5 Loss of intertidal habitat

**Description of impact:** New structures which require engineered supports within the intertidal zone of the Harbour, such as long-span bridges, lead to the loss of protected habitat potentially used as resting or feeding grounds by European-protected species.

**Scales of impact:** Development of this nature discussed within the concept options is relatively minor in a strategic sense, however, its location within a European site suggests an adverse impact that could not be avoided or mitigated.

**Possible avoidance/mitigation:** Consider alternative designs where engineered supports within the intertidal habitats are not required, or alternative locations (ie, avoid the effect altogether by promoting development outside of the SPA/Ramsar, and so not destroying intertidal habitat).

**Implications for the Core Strategy AA:** If alternative designs or locations are not feasible, the need for development would be required to demonstrate imperative reasons of overriding public interest, with potentially significant delay for the Core Strategy. Alternatively, further field survey work may reveal that certain locations are rarely used but this may not resolve the situation in any case, and in its absence the precautionary principle comes into play. If the scheme's impacts are entirely dependant on its means of implementation it may be possible to sign-post the issue down to a lower tier of planning.

#### 4.6 Loss of supporting habitats

**Description of impact:** As previously mentioned, loss or degradation of supporting habitats is strongly related to disturbance and displacement, in that all three affect the amount and quality of space available

to protected species. Here it mainly refers to the areas birds use for high-water feeding or roosting. The Brent Goose Strategy (2002; revision due spring 2010) highlights several feeding areas of relevance, including the MoD firing range and the grassy area south of Port Solent, and to a lesser extent the sports ground south of the greyhound stadium and the former Paulsgrove landfill site. Further sites will be identified by the forthcoming Wader Roost Strategy. Disturbance and displacement can both come into play when the birds are using these areas, however, it should be possible to protect and even enhance them (in the case of the sports ground and Paulsgrove) through the LDF and detailed design stage, by taking into account the species' ecology and preventing development or other uses (including recreation), especially during the winter months.

**Scales of impact:** The scale of the impact interrelates with the density of surrounding development, consequent population increase, and the existence or new provision – and quality – of alternative sites.

**Possible avoidance/mitigation:** 'Major importance' sites such as those at Port Solent and Tipner firing range should be safeguarded from development and inappropriate use, while adjacent uses should be effectively screened or buffered to ensure they can continue to function. There may be an opportunity to explore seasonal access management measures to make the best use of available land, and this should incorporate suitable habitat management for ecological gain.

**Implications for the Core Strategy AA:** If there are no further opportunities for the local provision of recreational space or multifunctional green infrastructure, and bearing in mind that the Country Park is likely to form a key component of the avoidance strategy for all Core Strategy development, the AA is likely to pursue the protection of existing open spaces from uses not compatible with nature conservation, and the ecological enhancement of new open spaces to maximise ecological gains. Higher residential densities, because they can lead to a larger population depending on the type of housing and development area, make this requirement more acute.

## 5. Analysis of Concept Options

Each component of the four concept options is analysed in **Tables 1 to 4** at the end of this document. In the majority of cases, most of the avoidance or mitigation measures discussed above apply to every option. However, the severity of impact differs subtly between options, as does the level of mitigation required. On a general point, the identification of land for a future stadium (if required) is not viewed as a development option, nor allocation, and therefore no impacts are associated with this aspect of the four options. Were an allocation or proposal to come forward at a later date it would require consideration under the Habitats Regulations.

**Table 5** summarises the main aspects of each option and gives a side-by-side comparison of performance in ecological (not sustainability) terms. The comparison is described in relation to a High, Medium or Low impact. Please note, these are relative terms; a low impact does not imply an insignificant impact.

## 6. Conclusions

To give a simplistic comparison of the performance of each option, the scales of impact listed in Table 4 can be assigned scores; 1 for low, 2 for medium and 3 for high. This suggests that, with the current mix of land uses, **option 1** is most likely to pass the tests of the Habitats Regulations with a score of 8; options 2, 3 and 4 score 10, 13 and 16 respectively. It is acknowledged that options are not mutually exclusive, and it is suggested that if the following change is made to **option 2** it would become as favourable as option 1:

- ▶ Access management restrictions at Port Solent public open space.

On a more general point, a greater provision of green infrastructure would also be of benefit, whether this is onsite or provided offsite through developer contributions.

## References

Atkins (2009): *Integrated Water Management Strategy for PUSH*

Drewitt AL and Langston RHW (2006): Assessing the impact of wind farms on birds. *Ibis*, **148**, pp29-42

Peter Brett Associates (PBA, 2009): *Assessing the Impact of the Harbour Authorities LDF Proposals on the Strategic Highway Network: Transport Assessment*

UE Associates (2008): *Habitats Regulations Assessment of the Portsmouth City Council Core Strategy: Screening Statement*

UE Associates (2009): *Green Infrastructure Strategy for South Hampshire*

**Table 1: Provisional likely significant effects analysis: Option 1**

Component – Option 1	Likely significant effects alone on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
<b>Port Solent</b>			
12ha residential @ 100dph average (1,200 units) including small scale retail / leisure uses	- Western tip: tall buildings, light pollution	- Disturbance	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- Strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Potential site for new school if required	- n/a	- n/a	- n/a
Small scale local centre	- n/a	- n/a	- n/a
<b>Horsea Island</b>			
Relocation of MoD facilities to southern part of site (office, accom, magazine)	- Tall buildings, light pollution	- Disturbance	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- Strategic provision of low sensitivity accessible natural greenspace</li> </ul>
8ha residential development @ 100 dph average (800 units) including small scale local centre	- Western tip: tall buildings, light pollution	- Disturbance	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- Strategic provision of low sensitivity</li> </ul>

Component – Option 1	Likely significant effects alone on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
			accessible natural greenspace
Enhanced Country Park and ecological improvements to public open space (POS)	- n/a	- n/a	- n/a
Existing POS <b>restricted access</b> due to ecological constraints	- n/a	- n/a	- n/a
Land identified for future stadium if required	- n/a	- n/a	- n/a
New bridge link between Horsea Island and Tipner (route to be confirmed)	<ul style="list-style-type: none"> <li>- Collision mortality</li> <li>- Displacement</li> <li>- Loss of intertidal habitat</li> </ul>	- n/a	<ul style="list-style-type: none"> <li>- Pre-development research into common flight lines, commuter routes</li> <li>- Pre-development survey of mudflat use, risk of displacement</li> <li>- Choice of route (adjacent to existing likely to be lesser impact) &amp; design</li> </ul>
<b>Tipner West</b>			
Strategic landscape buffer to firing range	- n/a	- n/a	- n/a
6ha residential @ 100dph average (600 units) including small scale local centre	- Waterfront: tall buildings, light pollution	- Disturbance	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- Strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Conversion of Listed Buildings to leisure / commercial uses	- n/a	- n/a	- n/a
Retention of Waterside School	- n/a	- n/a	- n/a
<b>Tipner East</b>			
Park and ride facility (up to 3 storeys 900-1,800 car parking spaces)	- n/a	- n/a	- n/a
9.6ha residential @ 105dph average (1,000	- Waterfront: tall buildings, light	- Disturbance	- Set-back buffer at waterfront to reduce

Component – Option 1	Likely significant effects alone on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
units)	pollution		effect on view lines, with screening to protect from waterfront activity - Stepped building heights toward waterfront,, green roofs/ walls - Bespoke, low-luminance lighting - Strategic provision of low sensitivity accessible natural greenspace
CHP plant	- n/a	- n/a	- n/a
Small scale local centre	- n/a	- n/a	- n/a
Potential enhancements to existing school	- n/a	- n/a	- n/a

**Table 2: Provisional likely significant effects analysis: Option 2**

Component – Option 2	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
<b>Port Solent</b>			
10ha residential @ 100dph average (1,000 units) including small scale retail / leisure uses	- <b>Disturbance</b>	- Disturbance	- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace
2ha marine related employment uses	- Western tip: tall buildings, light pollution	- n/a	- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity - Stepped building heights toward waterfront,, green roofs/ walls - Bespoke, low-luminance lighting
<b>Horsea Island</b>			
Relocation of MoD facilities to southern part of site (office, accom, magazine)	- Tall buildings, light pollution	- Disturbance	- Set-back buffer at waterfront to reduce effect on view lines, with screening to

Component – Option 2	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
			protect from waterfront activity - Stepped building heights toward waterfront,, green roofs/ walls - Bespoke, low-luminance lighting - Strategic provision of low sensitivity accessible natural greenspace
5.3ha residential development @ 150 dph average (800 units) including small scale local centre	- <u>Across site</u> : tall buildings, light pollution - <u>Disturbance</u>	- Disturbance	- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity - Stepped building heights toward waterfront,, green roofs/ walls - Bespoke, low-luminance lighting - <u>Local</u> and strategic provision of low sensitivity accessible natural greenspace
Enhanced Country Park and ecological improvements to public open space	- n/a	- n/a	- n/a
<b>Unrestricted access</b> to existing open space	- <u>Disturbance</u>	- n/a	- <u>Local</u> provision of alternative (enhanced) BG foraging habitat
2.7ha employment land	- n/a	- n/a	- n/a
Land identified for future stadium if required	- n/a	- n/a	- n/a
New bridge link between Horsea Island and Tipner (route to be confirmed)	- Collision mortality - Displacement - Loss of intertidal habitat	- n/a	- Pre-development research into common flight lines, commuter routes - Pre-development survey of mudflat use, risk of displacement - Choice of route (adjacent to existing likely to be lesser impact) & design
Potential site for waste methane to energy plant	- n/a	- n/a	- n/a

Component – Option 2	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
<b>Tipner West</b>			
Strategic landscape buffer to firing range	- n/a	- n/a	- n/a
5ha residential @ 150dph average (750 units) including small scale local centre	- <u>Across site</u> : tall buildings, light pollution - <u>Disturbance</u>	- Disturbance	- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity - Stepped building heights toward waterfront,, green roofs/ walls - Bespoke, low-luminance lighting - <u>Local</u> and strategic provision of low sensitivity accessible natural greenspace
Conversion of Listed Buildings to leisure / commercial uses	- n/a	- n/a	- n/a
Retention of Waterside School	- n/a	- n/a	- n/a
<b>Tipner East</b>			
Park and ride facility (up to 3 storeys 900-1,800 car parking spaces)	- n/a	- n/a	- n/a
7.5ha residential @ 100dph average (750 units) including small scale retail / leisure uses	- Waterfront: tall buildings, light pollution - <u>Disturbance</u>	- Disturbance	- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity - Stepped building heights toward waterfront,, green roofs/ walls - Bespoke, low-luminance lighting - <u>Local</u> and strategic provision of low sensitivity accessible natural greenspace
2.1ha employment	- n/a	- n/a	- n/a
Small scale local centre	- n/a	- n/a	- n/a
Potential enhancements to existing school	- n/a	- n/a	- n/a

**Table 3: Provisional likely significant effects analysis: Option 3**

Component – Option 3	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
<b>Port Solent</b>			
12ha residential @ 150dph average (1,800 units)	<ul style="list-style-type: none"> <li>- <b>Across site:</b> tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	<ul style="list-style-type: none"> <li>- Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Small scale local centre	- n/a	- n/a	- n/a
<b>Horsea Island</b>			
Enhanced Country Park and ecological improvements to public open space	- n/a	- n/a	- n/a
<b>Unrestricted access</b> to existing open space, <b>inc formal recreation</b>	- <b>Disturbance</b>	- n/a	- <b>Local</b> provision of alternative (enhanced) BG foraging habitat
Retention of existing MoD uses	- n/a	- n/a	- n/a
Land identified for future stadium if required	- n/a	- n/a	- n/a
New bridge link between Horsea Island and Tipner (route to be confirmed)	<ul style="list-style-type: none"> <li>- Collision mortality</li> <li>- Displacement</li> <li>- Loss of intertidal habitat</li> </ul>	- n/a	<ul style="list-style-type: none"> <li>- Pre-development research into common flight lines, commuter routes</li> <li>- Pre-development survey of mudflat use, risk of displacement</li> <li>- Choice of route (adjacent to existing likely to be lesser impact) &amp; design</li> </ul>
<b>Tipner West</b>			
Strategic landscape buffer to firing range	- n/a	- n/a	- n/a

Component – Option 3	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
5ha residential @ 150dph average (750 units) including small scale local centre	<ul style="list-style-type: none"> <li>- <b>Across site:</b> tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	<ul style="list-style-type: none"> <li>- Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Conversion of Listed Buildings to leisure / commercial uses	- n/a	- n/a	- n/a
Retention of Waterside School	- n/a	- n/a	- n/a
<b>Tipner East</b>			
Park and ride facility (up to 3 storeys 900-1,800 car parking spaces)	- n/a	- n/a	- n/a
7.5ha residential @ 100dph average (750 units) including small scale retail / leisure uses	<ul style="list-style-type: none"> <li>- Waterfront: tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	<ul style="list-style-type: none"> <li>- Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Small scale local centre	- n/a	- n/a	- n/a
2.1ha employment	- n/a	- n/a	- n/a
Potential enhancements to existing school	- n/a	- n/a	- n/a

**Table 4: Provisional likely significant effects analysis: Option 4**

Component – Option 4	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
<b>Port Solent</b>			
5ha residential @ 150dph average (750 units)	<ul style="list-style-type: none"> <li>- <b>Central area:</b> tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	<ul style="list-style-type: none"> <li>- Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Retained 2.6ha employment & boardwalk	- n/a	- n/a	- n/a
Small scale local centre	- n/a	- n/a	- n/a
<b>Horsea Island</b>			
Enhanced Country Park and ecological improvements to public open space	- n/a	- n/a	- n/a
11.8ha residential development @ 135 dph average (1,600 units)	<ul style="list-style-type: none"> <li>- <b>Across site:</b> tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	<ul style="list-style-type: none"> <li>- Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
<b>Unrestricted access</b> to existing open space, <b>inc formal recreation</b>	- <b>Disturbance</b>	- n/a	- <b>Local</b> provision of alternative (enhanced) BG foraging habitat
Partial retention of existing MoD uses	- n/a	- n/a	- n/a

Component – Option 4	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
Land identified for future stadium if required	- n/a	- n/a	- n/a
New bridge link between Horsea Island and Tipner (route to be confirmed)	<ul style="list-style-type: none"> <li>- Collision mortality</li> <li>- Displacement</li> <li>- Loss of intertidal habitat</li> </ul>	- n/a	<ul style="list-style-type: none"> <li>- Pre-development research into common flight lines, commuter routes</li> <li>- Pre-development survey of mudflat use, risk of displacement</li> <li>- Choice of route (adjacent to existing likely to be lesser impact) &amp; design</li> </ul>
<b>Tipner West</b>			
Strategic landscape buffer to firing range	- n/a	- n/a	- n/a
5ha residential @ 100dph average (500 units) including small scale local centre	<ul style="list-style-type: none"> <li>- <b>Across site:</b> tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	- Disturbance	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Conversion of Listed Buildings to leisure / commercial uses	- n/a	- n/a	- n/a
Retention of Waterside School	- n/a	- n/a	- n/a
<b>Tipner East</b>			
Park and ride facility (up to 3 storeys 900-1,800 car parking spaces)	- n/a	- n/a	- n/a
10ha residential @ 100dph average (1,000 units) including small scale retail / leisure uses	<ul style="list-style-type: none"> <li>- Waterfront: tall buildings, light pollution</li> <li>- <b>Disturbance</b></li> </ul>	- Disturbance	<ul style="list-style-type: none"> <li>- Set-back buffer at waterfront to reduce effect on view lines, with screening to protect from waterfront activity</li> <li>- Stepped building heights toward waterfront,, green roofs/ walls</li> </ul>

Component – Option 4	Likely significant effect on Portsmouth Harbour SPA/Ramsar	In combination effects on other European sites	Avoidance/mitigation options
			<ul style="list-style-type: none"> <li>- Bespoke, low-luminance lighting</li> <li>- <b>Local</b> and strategic provision of low sensitivity accessible natural greenspace</li> </ul>
Small scale local centre	- n/a	- n/a	- n/a
2.1ha employment	- n/a	- n/a	- n/a
Potential enhancements to existing school	- n/a	- n/a	- n/a

**Table 5: Comparison of concept options**

Option 1		Option 2		Option 3			
3,600 dwellings	High	3,300 dwellings	Med	3,300 dwellings	Med	3,600 dwellings	High
Mostly 100dph	Low	100-150dph	Med	Mostly 150dph	High	100-150dph	Med
3-6 storey buildings	Med	4-6 storey buildings	Med	4-6 storeys & higher	High	4-6 storeys & higher	High
No employment	-	6.9ha employment	-	2.1ha employment	-	4.7ha employment	-
Improved Country Park	-	Improved Country Park	-	Improved Country Park	-	Improved Country Park	-
POS access mgt	-	Unrestricted POS	Med	Formal recreation POS	High	Formal recreation POS	High
Bridge	Med	Bridge	Med	Bridge	Med	Bridge	Med
Park & Ride	-	Park & Ride	-	Park & Ride	-	Park & Ride	-
Potential new school*	-	No new school*	-	No new school*	-	No new school*	-
Port Solent local centre	-	Port Solent local centre	-	Port Solent local centre	-	Port Solent local centre	-
Tipner local centre	-	Tipner local centre	-	Tipner local centre	-	Tipner local centre	-
CHP	-	Waste to energy	-	No renewables	-	No renewables	-
Land for stadium if required	-	Land for stadium if required	-	Land for stadium if required	-	Land for stadium if required	-
<b>OVERALL</b>	<b>Lower</b>	<b>OVERALL</b>	<b>Med</b>	<b>OVERALL</b>	<b>High</b>	<b>OVERALL</b>	<b>High</b>

\* The proposed site for a potential new school is at eastern Port Solent.