

HMS GANGES SHOTLEY GATE SUFFOLK

Integrated Ecology, Heritage and
Landscape Management Plan

Version Three

9th September 2009

Related to application for:
Reserved Matters Planning Permission
for Proposed Residential Development

On behalf of Haylink Ltd

Management Plan Report by Jones & Sons Environmental Sciences Ltd, 21-23 North Road, Hertford, Hertfordshire, SG14 1LN, Tel 01992 552407 with The Environmental Dimension Partnership (EDP) 14 Inner Courtyard, Whiteway Farmhouse, The Whiteway, Cirencester GL7 7BA.

Section 1 Introduction

General background

- 1.1 An integrated Ecological, Heritage and Landscape Management Plan has been prepared on behalf of Haylink Limited, in relation to a reserved matters planning application for proposed residential development at HMS Ganges, Shotley Gate, Suffolk, which is hereafter referred to as “the site”.
- 1.2 The site comprises previously developed land consisting of a former naval training base and, latterly, a police training establishment. As such, it supports institutional buildings, building remains; two of which are designated as Scheduled Ancient Monuments (SAMs); playing fields, tennis courts, lawns and areas of semi-natural habitat.
- 1.3 The purpose of the plan is to act as a management guide to safeguard and enhance the habitats and wildlife, historic monuments and key landscape features of the area. These objectives are interlinked and the objective of a joint management plan is to resolve potential conflict between the objectives of safeguarding both the historic environment and ecology.
- 1.4 **The plan also includes a methodology for monitoring the recreational behaviour of people using HMS Ganges and the nearby footpath entrances to the Stour and Orwell Special Protection Area (SPA). The purpose being to ensure no impact on the wildlife within the SPA by the creation of a suitable alternative natural green space within HMS Ganges for walkers and their dogs.**
- 1.5 Haylink Limited proposes to redevelop land within the site to provide for approximately 404 retirement homes, a clubhouse and 60 bedroom care facility. The development of a brownfield site offers significant benefits to the local area.
- 1.6 The Royal Naval Training Establishment at Shotley Point, which was otherwise known as HMS Ganges, was divided into the Marina site and the remainder of HMS Ganges (i.e. the site).
- 1.7 Unfortunately, the eastern boundary of the site, which divides it from the marina land to the east, does not follow any topographically distinct features, such as roads, Public Rights of Way or historic property boundaries. As a result, one of the two key historic features of HMS Ganges, the nationally important Shotley Fort, straddles the boundary between the two ownerships, as shown on **Figure 1**.







Site Location and Boundary

- 1.8 HMS Ganges has a central Ordnance Survey grid reference of TM 250 340 and is located in the village of Shotley Gate on the southeast tip of the Shotley Peninsula in Suffolk, 16km southeast of Ipswich.
- 1.9 The Shotley peninsula is bounded to the north by the Orwell Estuary and to the south by the Stour Estuary. The mud flats and marsh areas along both estuaries are designated Sites of Special Scientific Interest (SSSIs) and have been designated by the European Union (EU) as a Ramsar site and internationally important Special Protection Area (SPA).
- 1.10 The site itself covers an area of 24 hectares, with approximately 16.5 hectares proposed for development. The ground within the site is fairly level, sloping eastwards towards King Edward VII Drive, from approximately 20m Above Ordnance Datum (AOD) on the west side to approximately 15m AOD close to the eastern boundary. Along the east and southeast perimeter, the ground slopes downwards steeply to King Edward VII Drive.
- 1.11 The site is bounded to the north by the footpath and hedgerow along Marsh Lane; beyond which are open fields. From the north, on the west side of Martello Tower M, the site boundary curves south eastwards to run south along the summit of the low bluff that rises up from the west side of King Edward VII Drive, to the rear of Shotley Marina. At the southwest corner of the site, the boundary turns northwards towards the main gates at the east end of Caledonia Road. From there, the boundary follows the southern and then eastern edges of the parade and sports ground.
- 1.12 The site contains at least a substantive part of two recorded post-medieval archaeological sites within its boundary. These both relate to the establishment and development of coastal fortifications on Shotley Point from the early 19th century onwards. They are both designated as SAMs - Martello Tower L in the south west and Shotley Fort in the north east.
- 1.13 All of the surviving remains of Martello Tower L are located within the site boundary, and therefore within the ownership of Haylink Limited. In contrast, and as set out above, Shotley Fort, the majority of which now comprises below ground features and deposits of uncertain preservation, straddles two land ownerships. The result of this is that a significant proportion of the better preserved historic fabric, which survives along the eastern side of its former perimeter, is located outside the development land boundary. This is clearly illustrated on **Figure 1**.

The development site boundary is shown in **Figure 1** below.





-  Application Boundary
-  Location and Extent of Shotley Fort (as built)
-  Approximate Extent of Surviving Fabric (above ground)
-  Suggested Alignment of Fence



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date 25 April 2008
 drawing number EDP 262/60
 scale N/A
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project title
HMS Ganges, Shotley Gate, Suffolk

drawing title
**Figure1: Location of Extant Features
 Associated with Shotley Fort**

Section 2 Methodology

- 2.1 The preparation of this integrated management plan has been informed by specialised archaeological and ecological studies, which were completed in 2006-2007 by EDP and Jones and Sons Environmental Sciences Ltd, acting on behalf of Haylink Limited.
- 2.2 These studies were undertaken in accordance with current best practice guidelines issued by the Institute of Field Archaeologists (IFA) and Natural England respectively.
- 2.3 The contents of this document, and particularly the management prescriptions that it sets out, have been informed by an ongoing process of consultation with all the relevant stakeholders.
- 2.4 This has involved meetings with Suffolk County Council (SCC) and English Heritage, who were represented by Robert Carr and John Ette respectively, in Cambridge, on 7th December 2007 and 18th January 2008.
- 2.5 It also involved a separate meeting, with representatives from Natural England, the Suffolk Wildlife Trust, RSPB and the Suffolk Estuaries (Stour and Orwell SPA Group on 26th February 2008 and culminated in a site meeting, 20th March 2008, at which the potentially conflicting archaeological and ecological issues were discussed and an appropriate way forward finalised.
- 2.6 Regarding the impact on the Stour and Orwell Special Protection Area (SPA) a meeting was held with Babergh District Council and Natural England on the 16th January 2009 where mitigation measures required to safeguard the SPA were discussed.
- 2.7 In light of this consultation process, it has been necessary to commission additional specialist studies. These have included structural surveys of Martello Tower L and Shotley Fort, which were undertaken, in the winter of 2007-2008, by the Whitworth Co-Partnership (WCP). These are reproduced in full as **Appendix 1** and **Appendix 2** respectively.
- 2.8 These studies have guided the scope of work required to ensure the long term conservation and management of the two SAMs, thereby reducing uncertainty surrounding potential impacts upon the ecological value of the floral and faunal communities that they support.
- 2.9 They have also informed the projected timescale for the implementation of the management works and identified additional inputs, which will be required, post-consent, in order to address gaps in the current knowledge base and augment the decision-making process.



Section 3 Descriptions of Archaeological/Heritage Assets

- 3.1 As set out above, the site contains two nationally important archaeological sites: Martello Tower L and Shotley Fort. These are both designated as SAMs under the 1979 (as amended) Ancient Monuments and Archaeological Areas Act (AMAA). The Martello Tower is also listed at Grade II.

Martello Tower L

Description

- 3.2 Martello Tower L (SM 202; LB No. 6/55), which is located in the south western corner of the site, is the earlier of the two SAMs. It was built between 1810 and 1812 and forms one of the Napoleonic east coast towers, which were larger and of later date than those on the English south coast.
- 3.3 Still standing to its full height, Martello Tower L has a broadly circular plan form with a tri-lobular arrangement of gun emplacements on the roof. It was originally provided with a surrounding moat, as well as an outer glacis, which is a bare, earthen bank sloping outwards to act as a defence against infantry assault. It is built of roughcast brick with stone rusticated dressings and keystones to four doorways. It has a stone coping to the rooftop parapet.
- 3.4 It was originally provided with a basement, which housed the stores and magazine, but this has now been infilled. The ground floor, which provided the living accommodation, is brick vaulted, the arch springing from a central brick column, in common with similar examples at Shingle Street and Bawdsey (both in Suffolk). The three emplacements on the roof were originally provided with guns mounted on the traversing carriages.

Alterations and Modifications

- 3.5 Martello Tower L has been subject to significant modification and alteration over the years, particularly as a result of its changed function within the Royal Navy Training Establishment and, latterly, the abandonment of that facility.
- 3.6 The most obvious external alterations are the addition of a metal and brick water tank on the roof, as well as a two-storey look-out post on the south side. Their addition has disfigured the proportions of the tower and also hidden one of the three original gun emplacements, as well as the top of the integral staircase on the east side. On the west side of the tower, one of the windows has been enlarged to create a new doorway and has been connected to the integral staircase.
- 3.7 Within the interior of the tower, the ground floor fireplace range, which is original, is now very corroded and fragile. In contrast, the original wooden floorboards have been removed, presumably when the basement was infilled. Nonetheless, the stone flagged floor above the magazine does survive, suggesting that the magazine itself may survive within the infilled basement.
- 3.8 The door to the tower is original, but has become jammed open. Like the basement, the encircling moat has been filled in and is now heavily overgrown with dense scrub and a number of mature trees. Nevertheless, the brick revetment to the outer edge of the moat is still visible in a number of places,



thereby suggesting that it may survive below ground in reasonable condition. Indeed, a substantial section is exposed on the north east side of the tower, where former 20th century buildings, terraced into the glacis bank, have been demolished.

- 3.9 Although historic maps show that Martello Tower L was originally encircled by a glacis on the external edge of the brick-edged moat, it now survives only in the northern sector (see **Figure 2**). The development of the site, initially for the Royal Navy Hospital, and latterly the Royal Naval Training Establishment, involved the erection of new buildings to the south west, south east and north east of the tower, all of which appear to have been terraced into the sloping glacis bank. A further area of landscaping, which still contains an ornamental pond, appears to have truncated the glacis to the west.

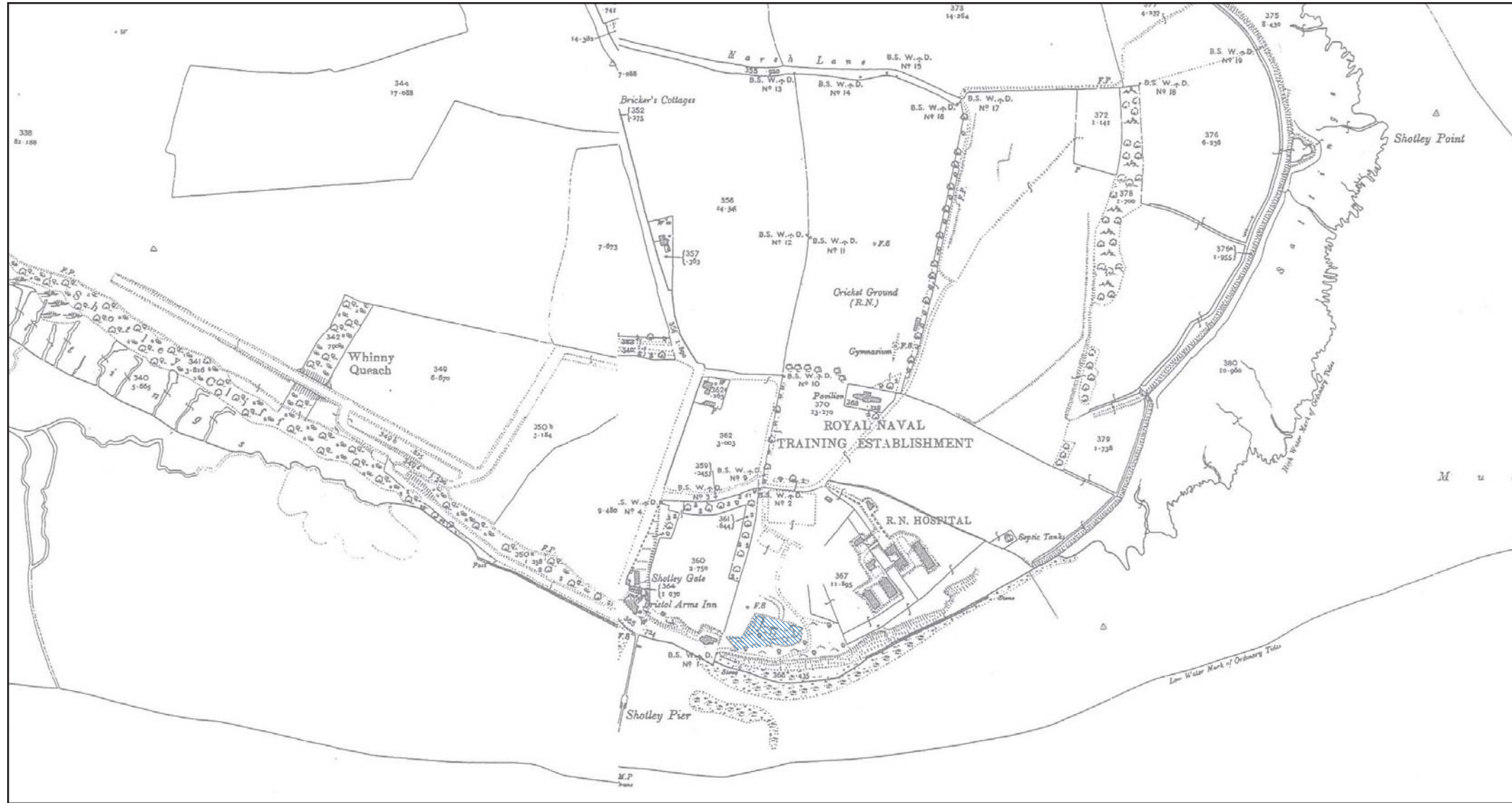
Current Condition

- 3.10 The structure appears to be in an essentially sound condition. The render to the external surfaces is generally satisfactory, although some decay is evident, largely as a result of the absence of effective weatherproofing to the top surface.
- 3.11 There is evidence that the ground level around the base of the tower has been reduced during its lifetime. This has exposed the base layer of render, as well as the edges of the top layer, which is clearly vulnerable.
- 3.12 The door and frame to the main entrance exist intact, but the associated ironwork is now corroded and the hinges no longer operate at all. At the same time, ironwork ferrules buried within the surrounding stonework have caused some of the ashlar to shatter.
- 3.13 The structural survey has identified some limited deterioration of the blockwork surrounding the window openings, predominantly as a result of frost action over time.
- 3.14 The roof of the structure is becoming colonised by saplings, which are having an adverse effect on the fabric of the Martello Tower. These have been allowed to gain a foothold by the collection of debris around the edges of the roof, thereby also blocking the rainwater goods. Indeed, there is evidence that the rainwater penetrating the interior of the structure is derived from pooling on the roof, itself caused by the blocked drains.
- 3.15 Timberwork, associated with the lookout post on the roof, is now decayed and in poor condition, as is the asphalt roofing close by. However, the poor condition of the brickwork on top of the Martello Tower's lower bastion is of greater concern, particularly on the south eastern side.

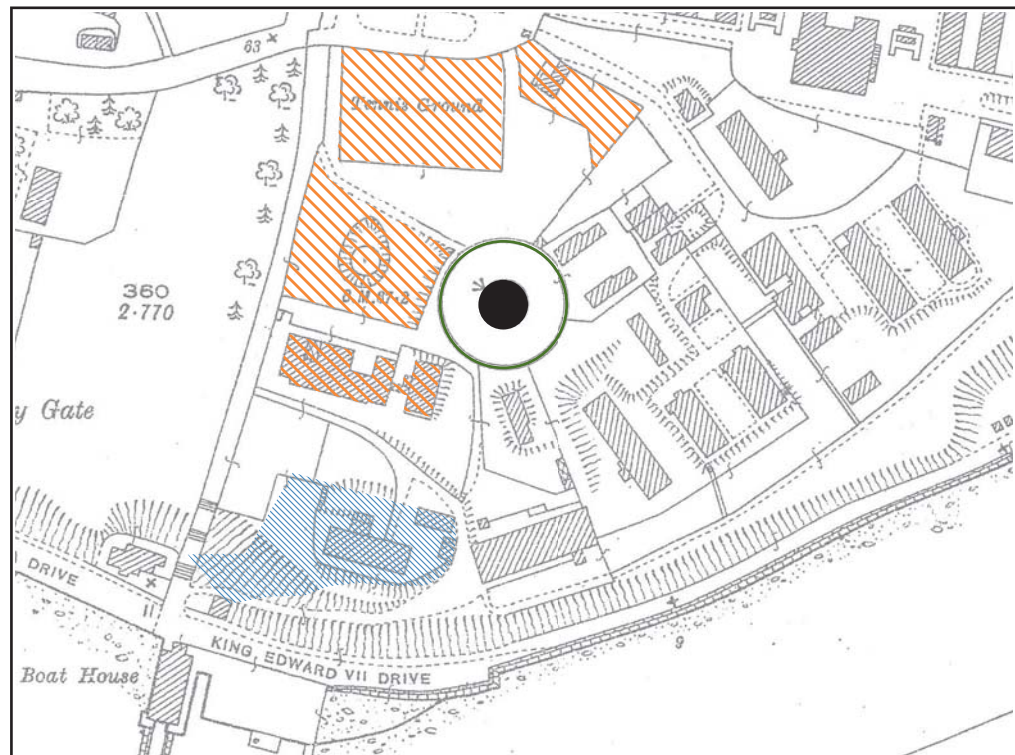
Key Issues

- 3.16 With regard to Martello Tower L, the key archaeological issues revolve around the need to:
- Guarantee the long term stability and integrity of the structure;
 - Preserve and maintain the surviving section of glacis bank;
 - Enhance presentation to the public; and
 - Restrict uncontrolled access.

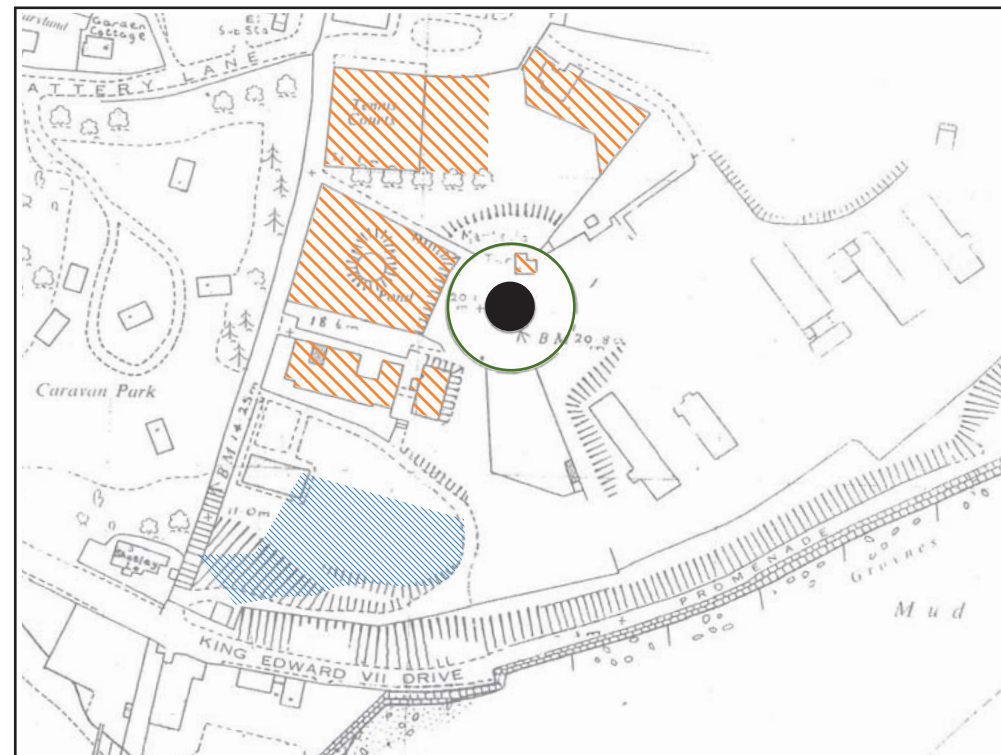









A - Ordnance Survey 1903



B - Ordnance Survey 1926



C - Ordnance Survey 1968

-  Martello Tower L
-  Moat Wall
-  Surviving Glacis
-  Extant Features of HMS Ganges
-  Location of Ancillary Battery to Martello Tower L



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project title

HMS Ganges, Shotley Gate, Suffolk

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Figure 2: Illustration of the Extent of Surviving Glacis at Martello Tower L

date 01 May 2008

drawing number EDP 262/46a

scale NTS

drawn by KK

checked RR

Shotley Fort

Description

- 3.17 Shotley Fort (SM 30638) is located in the north eastern corner of the site. It was built between 1862 and 1863 during a time of heightened tension with France. The initial design for a new fort at Shotley Point, which was intended to complement the two existing Martello Towers; Martello Tower L within the site and Martello Tower M to the north; as well as the nearby fortifications at Felixstowe and Harwich, was rejected as being too expensive.
- 3.18 As built, the fort, which comprised an irregular, seven-sided work, was sited with great precision on the 20 metre contour, set back from the edge of the bluff that defines the eastern edge of the HMS Ganges site, so that it would be impossible for enemy ships in Orwell Haven to direct accurate fire upon it, as they would have been unable to elevate their main guns sufficiently.
- 3.19 It was built with an earth rampart on the four “arms” overlooking Orwell Haven and was surrounded by an un-revetted ditch and a detached scarp wall, which was known as a Carnot wall after the French military engineer who developed it. The surrounding ditch was overlooked by five bastions and four demi-bastions, which were provided with a total of fourteen gun emplacements and a central magazine, which comprised three separate chambers lit by lamp passages.
- 3.20 Unsurprisingly, the majority of the armaments were concentrated on the seaward side of the fort. Nevertheless, the landward side was still provided with two of the bastions and an encircling ditch. The majority of the fort’s interior was empty, although a guard room was located inside the main gate mid-way along the landward side and quarters and stores were located inside the wall to the north.
- 3.21 In 1891 plans were made to replace the existing armaments of the fort with four 10” gun emplacements. However, in the end only two were ever installed. These comprised large artillery pieces mounted on central pivot carriages in deep concrete pits approximately 20 metres apart. Their construction involved the destruction of at least three of the original gun emplacements located on the south side of the central magazine. It also involved infilling the section of ditch and burying the Carnot wall in front.
- 3.22 The two 10” gun emplacements that were finished were provided with a battery commander’s post halfway between them. Shell rooms and magazines were provided in the earth rampart beneath the two emplacements, to which they were connected by lift hoists.

Alterations and Modifications

- 3.23 The site was occupied by the Royal Navy Training Establishment in the early 20th century. The guns were finally removed in 1911 and the southern end of the fort, including one of the bastions and a demi-bastion, were levelled for the construction of accommodation blocks.
- 3.24 The landward defensive circuit survived until relatively recently, even though it was obscured by 20th century buildings. However, nothing survives above ground today. The guard room and the quarters/stores were subsequently demolished, the Carnot wall levelled and the ditch infilled. Nonetheless, it is



likely that structures and deposits related to all of these elements will survive as below ground remains.

- 3.25 Although not contemporary, plans exist of the original construction, such that the boundary can be predicted with relative accuracy, even if the fortifications themselves have been removed.
- 3.26 The defensive circuit on the seaward side of the fort survives rather better. The earthen rampart in the north eastern corner survives, thereby also preserving four of the original gun emplacements (Nos. 9-12), the one at the salient (No. 12) being of the semi-circular form. Expense lockers and hauling rings are still preserved within the vertical retaining wall between the angled embrasures of the surviving gun emplacements.
- 3.27 In addition, approximately four metres north west of emplacement No. 12 is an expense magazine, which was a small magazine for immediate use in the event of battle. It survives as a rectangular structure projecting from the end of the surviving section of the rampart, although it is now largely obscured by a small, unattractive 20th century building associated with the Royal Navy Training Establishment.
- 3.28 The Carnot wall in front of the north eastern “arm” also remains intact, exposed on the inner face to a height of approximately 1.3 metres. The outer face is not visible, having been hidden when the ditch was infilled. This, however, is inside the marina’s land ownership.
- 3.29 The central magazine still survives, whilst the earthen mound, which was added during the modifications of 1891, is also likely to preserve two further gun emplacements of the original fort (Nos. 7 and 8) beneath it. It still contains three magazine chambers and a lamp lobby. Access is provided by a sunken area with a flight of steps at either end.
- 3.30 Three doors lead off this area, the one in the centre accessing the lamp lobby and those to either side accessing two magazine chambers. The lamp hatches survive, although their protective glazing has been removed. The magazine has been used as a shooting range in recent times and has been provided with chicane walls for this purpose.
- 3.31 It is clear that the surviving historic fabric on the east side of the fortification is currently subject to significant disturbance and erosion as a result of fast-growing trees and scrub, including Buddleja *Buddleja davidii* and sycamore *Acer pseudoplatanus*. In particular, the roots of self-generating sycamores are forcing apart the exposed brickwork on the north side of the central magazine of the 1862-63 fortifications, as well as that of the encircling ditch.
- 3.32 South of the main magazine, elements of the two 1891 gun emplacements still survive, along with the magazines and battery commander’s post that were added at the same time. Only the pivot for the 10” gun of the southern emplacement still survives, all of the other structural elements having been truncated during the 20th century landscaping of the site. In contrast, the northern emplacement and adjacent battery commander’s post survive broadly intact, although they are now heavily overgrown with scrub.
- 3.33 Access to the 1891 magazine is via two short flights of stairs, which open into a central lobby with doors to the shell stores and magazines and the lamp



lobbies. The internal spaces still retain many of their original fixtures and fittings, including wall pegs, doors and cupboards. A further flight of steps, in the ditch on the east side of the fort, probably provided access to another underground tunnel or bunker associated with the modifications of 1891.

Current Condition

- 3.34 The fort has clearly suffered from basic neglect over several decades, which has resulted in invasion from tree roots and scrub. These influences are, in the main, responsible for the majority of defects in the fort's structure, which are now visible.
- 3.35 The concrete of the southern magazine is cracked, which is enabling the ingress of rainwater. This is particularly marked over the doorway providing access to the interior.
- 3.36 At the same time, there is evidence for deterioration in the concrete that forms the steps leading down into the magazine, as well as up to the associated gun emplacement, which forms part of the 1891 improvements.
- 3.37 The magazine of the original fort is generally sound, although the brickwork is heavily and adversely affected by frost decay. It is also being further displaced by the impact of roots from sapling sycamores, which are now of some considerable age.
- 3.38 Similarly, frost damage and water ingress are responsible for a range of minor defects in the brickwork of the original fortifications. These factors are also having an adverse impact on the exposed brickwork of the Carnot wall, where it is exposed on the east side of the site. The same is also clearly true of the many sycamore saplings in this area.

Key issues

- 3.39 With regard to Shotley Fort, the archaeological key issues revolve around the need to:
- Reverse the deterioration in the condition of the surviving historic fabric;
 - Conserve and protect original features, fixtures and fittings;
 - Enhance presentation to the public; and
 - Restrict uncontrolled access.



Section 4 Description of Ecological Assets

Habitats

- 4.1 The most important semi-natural habitats within the south east peninsula tip include the mature tree/scrub/grassland mosaic along the eastern and southern fringes. Although, in the north east corner, a substantial proportion of this habitat is outside of the site boundary, within the Marina development, elements remain around Shotley Fort.
- 4.2 The semi-natural grassland supports indicator species of acid grassland and is classified in NVC terms as U1(d) supporting sheep's fescue *Festuca ovina* – common bent grass *Agrostis capillaries* – sheep's sorrel *Rumex acetosella* with a sweet vernal grass *Anthoxanthum odoratum* – common bird's-foot trefoil *Lotus corniculatus* sub-community. This type of community typically occurs on more nutrient-rich soils, transitional to mesotrophic grasslands.
- 4.3 Acid grassland is a declining habitat of conservation concern and, although no scarce plants were recorded within the HMS Ganges site, acid grassland indicator species were recorded around Shotley Fort. Parts of the grassland are rabbit grazed, but much is unmanaged and becoming colonised by the more rank coarse grass species and tall ruderal vegetation.
- 4.4 Within the grassland habitats, the central and southern areas have some floristic differences. The central area has higher frequency of *Festuca ovina*, *Anthoxanthum odoratum*, Common mouse-ear *Cerastium fontanum*, red fescue *Festuca rubra*, white clover *Trifolium repens*, narrow-leaved plantain *Plantago lanceolata* and germander speedwell *Veronica chamaedrys*. The southern area has more yarrow *Achillea millefolium*, black knapweed *Centaurea nigra*, mouse-eared hawkweed *Hieracium pilosella* and squirrel-tail fescue *Vulpia bromoides*. It also has a wider range of ruderal and small annuals.
- 4.5 Species representing this development are common centaury *Centaureum erythraea*, annual pearlwort *Sagina apetala* and knotted hedge-parsley *Torilis nodosa*. The absence of a dense grass sward, and the presence of rabbits, ensures that there are high frequencies of ruderals such as common ragwort *Senecio jacobaea* and spear thistle *Cirsium vulgare* and also gaps for scrub species to become established such as sycamore *Acer pseudoplatanus*, and bramble *Rubus fruticosus*.
- 4.6 Bordering the eastern and south eastern edges of the site, and also within the areas of acid grassland, are stands of tall neutral grassland, classified in NVC terms as MG1b. This type of grassland is dominated by false oat grass *Arrhenatherum elatius* with Yorkshire fog *Holcus lanatus*, creeping thistle *Cirsium arvense* and nettle *Urtica dioica* sub-community. These areas of more coarse grassland form rank swards that are relatively species poor. No uncommon plants were recorded within this community.
- 4.7 Scrub habitats around Shotley Fort, to the north and east, support predominantly dense blackthorn *Pinus spinosa* with occasional hawthorn *Crataegus monogyna*, sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior*, oak *Quercus robur*, silver birch *Betula pendula*, elder *Sambucus nigra*, and common gorse *Ulex europaeus*. These habitats are of importance



to invertebrates, small mammals, foraging bats, small birds within the site and also to migratory birds as they fly inland from the estuary.

- 4.8 The nature of the grassland and scrub on the steep slope along the southern margin of the site changes to a fen type community with common reed *Phragmites australis* growing within areas of groundwater seepage. Where the groundwater seepages decrease, the freely draining, mildly acid conditions are indicated by patches of bracken *Pteridium aquilinum* and gorse *Ulex europaeus* scrub.
- 4.9 Beyond the north eastern boundary of the site, within the Shotley Marina land ownership, the habitat changes to tall ruderal vegetation dominated by umbellifers (hemlock), with areas of dense bramble scrub, particularly around Martello Tower M.
- 4.10 There are a number of mature trees established throughout the site. The majority are planted specimens and are arranged as plantations, groups, or single trees. In plantations, they form a distinct environment that influences the ecological character of that location, and the associated plant and animal species. As groups, they provide a significant structural dimension to their environs that is exploited by associated faunal elements, such as birds, bats and many invertebrates.
- 4.11 A mature linear plantation of beech and birch has been established along the northern boundary of the site by Marsh Lane. The trees are three deep and about 60 years old. The vegetation beneath is open, dry grassland. The plantation is connected to a hedge of elm and holly with blackthorn scrub that runs along the entire northern boundary outside the fence line. The plantation is of locally significant conservation value, in combination with the ground vegetation and scrub. The scrub/hedgerow within this section is particularly important for invertebrates, including the endangered greater stag beetle that was found along this stretch.
- 4.12 Although mainly outside the ownership boundary, single lines of pine and sycamore form a significant component of the semi-natural scrub mosaic along the eastern side of the site. Groups of birch are also located at the southern end of the pine and sycamore lines and also to the north of a line of white poplar trees. Many of the silver birch trees provide dead wood habitat of value to invertebrates.
- 4.13 The line of prominent mature white poplars, extending along the eastern edge of the site southwards, similarly forms an important boundary feature. These trees provide sheltered edge habitat, of value to commuting and foraging bats, and contain holes within them providing potential roosting sites. Three of these white poplars (T64, T66 & T67) have medium/high potential to provide roosting sites for bats.
- 4.14 Groups of lime trees, planted as boundary features or to mark routeways, are found within the site. A row of the evergreen Holm Oak has also been planted along the western boundary of the site, south of the main entrance. The lines and groups of trees, particularly those along the estuarine boundary, have significant landscape value and provide landfall sites for migratory birds and important sheltered foraging corridors for bats.



- 4.15 In addition to the groups of trees, there are single mature trees of note. These include a mature oak (T53) and an ash (T57) at the northern end of the site, both of which have high bat roosting potential. Other scattered, single mature specimens of nature conservation value include mature pollarded poplars, and an old horse chestnut adjacent to Martello Tower L, as well as walnut, beech, London plane, ornamental apple and cherry trees.
- 4.16 To the south east of Martello Tower L, buildings have been demolished and vegetation is growing through the rubble within the disturbed ground. This habitat is of limited ecological interest as a whole, but towards the centre of the site, particularly towards the east end by the south slope of Shotley Fort, the botanical interest increases.
- 4.17 This habitat is described as ruderal open lawn and is found in association with Buddleja scrub around the periphery and bare ground dominated by stands of Alexanders *Smrynium olustratum*. The ruderal open lawn is a temporary habitat that, in 2002, supported a species-diverse open habitat occupied by low growing plants, including some uncommon species. This type of habitat is partly maintained by low levels of nutrients, rabbit grazing and represents temporary succession vegetation before colonisation by buddleja and other tall ruderal species.
- 4.18 During the 2006/2007 surveys, the botanical interest was found to have significantly reduced. However, it still supported low growing plants such as centaury, hedge bedstraw, creeping cinquefoil, yarrow, self heal, sheeps sorrel, birds-foot trefoil, cut-leaved cranesbill and scarlet pimpernel, as well as patches of taller perforate St Johns Wort and coarse grasses such as Yorkshire Fog. The abundant stonecrop; Biting stonecrop and white stonecrop; which carpets the concrete areas is also of interest.
- 4.19 Buddleja *Buddleja davidii* scrub is extensive across the site, occurring within areas formerly occupied by buildings and hardstanding. Some Buddleja bushes are growing into the structure of Shotley Fort and Martello Tower L, both of which, as set out in the preceding section, are designated as SAMs. Buddleja bushes have become established due to the dry, infertile environment provided by building rubble and do not comprise a botanically significant habitat.
- 4.20 Lawns of improved amenity grassland and playing fields, which are both of little ecological interest, are located around the buildings within the site. However, the lawn between the tennis courts and Martello Tower L includes patches of more species-diverse, rough semi-natural grassland, which are of greater ecological interest. An artificial pond to the west of Martello Tower L forms an important area of standing water within the site, thereby providing an important habitat for invertebrates, amphibians, reptiles and bats.



Protected Species and Species of Conservation Concern

- 4.21 The long and varied history of the site has produced a range of structurally diverse ground vegetation capable of providing a range of thermal microhabitats favourable to reptiles for basking, breeding and hibernation. The habitats are also capable of supporting a range of invertebrates, which are themselves prey items for lizards and slow worms, as well as amphibians and small mammals, which are prey items for grass snakes.
- 4.22 Slow worms *Anguis fragilis*, common lizards *Lacerta vivipara* and grass snakes *Natrix natrix* were all recorded as breeding within the site boundary during the 2006 survey. All native reptiles are protected under the Wildlife and Countryside Act 1981 (as amended).
- 4.23 Grass snakes were found in the vegetation of the southern point and the grassland/ scrub to the east and north of Shotley Fort. They were most frequently encountered by the artificial pond west of Martello Tower L, as well as around Martello Tower M, which is located beyond the north eastern boundary of the site.
- 4.24 Grass snakes are very mobile and may move several hundred metres in a day, generally inhabiting large home ranges. Both common lizards and slow-worms were distributed across the site, but particularly around its boundaries. Lizards and slow-worms have smaller home ranges than snakes and will typically move over tens of metres within a home range of 100-1000 m².
- 4.25 No badger setts were recorded within the survey area, although a badger latrine was recorded on the north side of the site by, Martello tower M, in both 2006 and 2007. Badgers are therefore crossing the northern section of HMS Ganges, even if they are outside the Haylink ownership boundary. Badgers and their setts are protected under the Protection of Badgers Act (1992).
- 4.26 Roosting sites for four species of bat were recorded during the 2006/2007 survey within the HMS Ganges site. These are Common 45kHz pipistrelle bat *Pipistrellus pipistrellus*, brown long-eared bat *Plecotus auritus*, Natterer's bat (*Myotis nattereri*) and Daubenton's bat (*Myotis daubentonii*). All bats and their roost sites are protected by the Wildlife and Countryside Act 1981 (as amended) and also the European Habitats and Species Directive 1994.
- 4.27 The former naval classrooms, residential buildings and training buildings within HMS Ganges are used as roosting sites for small numbers of pipistrelle and brown long-eared bats.
- 4.28 Martello Tower L is an important hibernation site for bats, with three species (Brown long-eared, Natterer's and Daubenton's) hibernating within the original first floor. The first floor is now on ground level. The bats hibernate within the crevices in the brickwork of the central column and outer walls.
- 4.29 Whilst it is not included within the proposed development site, and has not been surveyed internally, Martello Tower M also supports structural features highly favourable for hibernating bats and is very likely to be used by bats during the winter months.



- 4.30 Shotley Fort is also a hibernation site for three species of bat. These are common pipistrelle, brown long-eared bat and Natterer's bat. The bats were recorded hibernating in the only surviving expense magazine at the north end of the fort. Enhancement works, aimed at making the underground chambers of Shotley Fort more favourable for hibernating bats, form a core component of the package of ecological mitigation measures required to offset the adverse impacts of the proposed development.
- 4.31 In addition to Martello Tower L and Shotley Fort, further underground structures, providing potential for hibernating bats, were identified within the HMS Ganges site. Underground shelters were found on the north side of the site by the Drake Building and swimming baths, whilst an underground shelter was found on the south side of the site by the line of white poplar trees along the south east coastal edge. Although human access to the bunkers beneath was not possible, the view through the gaps at the ground surface shows the shelters beneath to be favourable for hibernating bats.
- 4.32 Most of the trees on the site have little potential to provide bat roosting habitat; their main value, in respect to bats, being the sheltered foraging and commuting habitat they provide. Mature oak and ash trees at the north east end of the site do, however, offer high roosting potential. A further ten trees are of medium/high potential to provide roosting sites for bats and a further nine trees are classified as medium potential. The value of trees for roosting bats will therefore need to be taken account of in any management proposals affecting these trees.
- 4.33 Important semi-natural habitats for foraging bats include the boundary hedgerows and mature tree lines, the scrub/woodland habitat adjacent to Shotley Fort, the ruderal/scrub habitat around Martello Tower M, the artificial pond and tree lines by Martello Tower L, as well as the trees and scrub habitat along the south and east estuarine escarpment that provides shelter from the prevailing wind.
- 4.34 Shotley Fort is also of importance for cave spiders, which are present behind the door and in the shafts of the chambers within the 1891 magazine on the south side. The species was identified as *Meta bournetti* by Paul Lee of Arachne Arthropod Information Services. *Meta bournetti* is a large spider found in damp underground locations. The cave spider is not legally protected, but is a nationally scarce (notable Nb) spider.
- 4.35 A roost site for a barn owl (*Tyto alba*) is present at the west end of the Vincent building. The surrounding semi-natural rough grassland/scrub habitat is therefore of importance for small mammals, such as voles and mice, that barn owls prey on. Barn owls are a declining species protected under the Wildlife and Countryside Act 1981 (as amended).
- 4.36 A total of thirty bird species were recorded within the HMS Ganges site. The grassland/scrub mosaic along the east and south side of the site is considered to be the most valuable habitat for the bird species within the site and also as a prominent feature for the bird species entering the site from the neighbouring estuaries. The adjacent Stour and Orwell estuaries have been designated as a Special Protection Area (SPA) under the EU Birds Directive because of its international importance for over-wintering wildfowl and waders.



Key Ecological Issues

- 4.37 The construction phase of the development at HMS Ganges will result in destruction, disturbance and damage to habitats. This impact, however, will mainly be to habitats evaluated as having limited botanical value. The destruction of these habitats will, nonetheless, be associated with disturbance to, and potential destruction of, animals. This includes the loss of bat roost habitat within existing built structures, the loss of reptile habitat around the buildings and the loss of an artificial pond of value as a foraging/drinking source for wildlife. Bats and reptiles are legally protected species and mitigation/compensation measures will be required to offset the adverse impacts.
- 4.38 During the occupation of the proposed residential development, impacts will primarily be associated with human disturbance of habitats and/or species, but other impacts, such as the disturbance/predation of protected animal species by domestic pets, and altered lighting levels on the site associated with human occupation, may also have an adverse effect on wildlife.
- 4.39 The development will include the retention of large areas of semi-natural scrub/grassland mosaic habitat around Shotley Fort, including the retention of extensive open grassland areas on the lower levels. Grassland/scrub habitats will also be retained on the southern tip, south west of Martello Tower L, on the site of the ancillary battery. The retention of large areas of semi-natural grassland/scrub habitats will help to minimise any impact on the ecosystems within the local area, and ensure that the overall integrity of the habitat types remains unaffected. It will also ensure that important fauna species populations remain at a favourable conservation status within the local area.
- 4.40 The active management of these habitats is of key importance to maintain the land in a balanced structurally and species diverse state. It is also important to prevent natural succession processes from converting them to continuous dense scrub habitat, which can result in loss of grassland habitat and associated loss of wildlife interest. To retain habitats suitable for a diversity of wildlife, the area will need to be managed to provide a balanced range of habitats from grassland, bramble scrub and blackthorn scrub to mature trees.
- 4.41 As some clearance of woody plants, which are growing around the SAMs, will be required to preserve their important historic features, careful management will also be needed to ensure the important wildlife species occupying the site are not adversely affected. A key issue will be to ensure that the flight routes for bats are not adversely affected and that the birds entering the site from the estuary have sufficient scrub landing points. As such, tree clearance around the fort will need to be kept to a minimum.
- 4.42 Increased public pressure within the site may potentially result in:
1. Inappropriate management, such as heavy mowing, excessive scrub clearance and inappropriate reseeding;
 2. Increased trampling of habitats and disturbance to birds;
 3. Increased litter deposition;
 4. Disturbance of cave spiders in Shotley Fort; and
 5. Disturbance to hibernating bats in Martello Tower L and Shotley Fort.



- 4.43 As Martello Tower L and Shotley Fort are both SAMs, and will require some basic structural repairs to preserve and maintain their historic features, there is a key issue regarding hibernating bats. Internal repair works, particularly in the case of the Martello Tower, may damage hibernating crevices and result in the loss of bat hibernation sites for three species of bat; i.e. Natterer's, Daubenton's and brown long-eared bats. Hibernating bats have a high reliance on cool, humid brick structures, such as those found in the first floor of the Martello tower. Any lowering of humidity levels in the hibernation area has the potential to reduce its favourability for hibernating bats.
- 4.44 Stalactite formations are present on the ceiling of the Martello Tower L hibernation area. These deposits are being used as a conduit for water to gather. It is thought that rainwater is percolating through the brickwork of the ceiling, as the stalactites correspond to the outer wall of the brick structure above. Since continued water ingress could eventually lead to the long-term decay of the tower, English Heritage will require measures to be taken to reduce water ingress. Although Martello Towers naturally have high humid internal conditions, preventing water leaking into the hibernation area has the potential to impact on bats by changing the humidity conditions inside.
- 4.45 In addition to any direct impact on the tower, construction works within 30m, as well as habitat clearance around it, has the potential to cause disturbance to hibernating bats. The removal of trees/scrub habitat around the tower, as well as the fort, has the potential to have a high impact on the bats hibernating within it. This would be due to a reduction in insect availability within the near vicinity of the hibernation site, as well as the loss of linking tree lines that enable bats to fly under cover to neighbouring foraging areas.
- 4.46 Bats hibernate during the winter, mainly due to lack of food availability. During the torpid state produced by hibernation, bats utilise their stores of body fat to maintain their vital functions. On arousal in spring, mobilisation of the fat stores is rapid, in order to produce sufficient energy to fly. Should the habitat adjacent to the hibernation site be insufficient to enable the energy store to be replaced quickly, bats will soon use up all their remaining stored fat and become grounded and unable to survive.
- 4.47 The artificial pond, located close to the west side of Martello Tower L, similarly provides an important insect food resource for hibernating bats. Daubenton's bats, in particular, feed on insects that have larval stages dependant on water. The loss of the pond, due to the construction of an access road around the Tower, will have an adverse impact on the local bat population.
- 4.48 The quality of foraging habitats is generally important for bats, as the colony size is usually related to the amount of quality feeding habitat within easy commuting distance of their roost. The management of the habitats around the site, to provide structurally diverse habitats favourable for invertebrates and therefore foraging bats, will help to ensure the population of bats within HMS Ganges is maintained at a favourable conservation status.
- 4.49 Tree lines connecting roosting/hibernating sites and foraging areas will need to be retained, in order to ensure there is no interruption of their flight routes, which could result in the isolation of roosting sites.



- 4.50 The appropriate management, aimed at enhancing the existing habitats of ecological value, will serve to offset any significant adverse impacts caused by the proposed development. A long-term commitment to site habitat enhancement and management is required, with detailed management prescriptions for the protection, maintenance and enhancement of existing plant and animal communities of ecological value.
- 4.51 In order to fulfil legal and planning requirements, it will be necessary to translocate the reptile species within the proposed development to a safe area within the site, which will remain unaffected by construction. The scrub/grassland habitats around Shotley Fort are considered to be the most suitable since this area has been identified as a potential nature reserve within the site. The receptor area, however, will need to have sufficient carrying capacity to support a higher population of reptiles. It is of high importance, therefore, that the habitats it supports are enhanced, in order to ensure the survival of the translocated reptiles.
- 4.52 The preservation of Martello Tower L and Shotley Fort will ensure that bat hibernation sites are retained within the site. The improvement of these areas for hibernating bats is likely to enhance the bat population within the local area. It will also help to offset the negative impact resulting from the loss of other underground bunkers, which offer potential hibernation opportunities, within the proposed development area.



Section 5 Management Proposals: Martello Tower L

Objectives

- 5.1 The objectives of this management plan regarding Martello Tower L and the surrounding area are to:
1. Guarantee the long term stability and integrity of the structure;
 2. Preserve and maintain the surviving section of glacis bank;
 3. Guarantee the long term survival of hibernating bats;
 4. Enhance presentation and landscaping;
 5. Restrict uncontrolled access.

Specific Management Prescriptions

Stability and Integrity

- 5.2 As the fabric of Martello Tower L is in a generally sound condition, it is not proposed to undertake any substantive remediation works, which could, at the same time, impact upon the hibernating bats that it supports. Indeed, when viewed in the round, it is clear, from the structural survey, that the long term stability and integrity of Martello Tower L is already assured.
- 5.3 Nevertheless, as set out in the WCP report (see **Appendix 1**), it will be necessary to undertake a number of minor repair works at an early stage in the development process. These include:
1. Reinstatement of the ground level around the base of the tower;
 2. Repair of the render covering the tower;
 3. Repair of the stonework surrounding the window openings;
 4. Clearance of debris from the rainwater goods; and
 5. Repair and consolidation of the wooden look-out post.
- 5.4 In particular, it is not intended to remove the red brick and steel water tank from the roof of the Martello Tower. Not only does this feature relate to the later use of the site, as it provided water for the boys of the Royal Naval Training Establishment, it is also a prominent local landmark, which will thus fit with English Heritage's current approach to place-making.
- 5.5 Nonetheless, it will be necessary to undertake some minor works to the tower, and particularly the structures that surround its base. This will include the replacement of the existing ladder, which provides access to the roof, with a new retractable structure, in order to maintain an appropriate level of safety. It will also include the demolition of the adjoining brickwork (see **Appendix 1**).
- 5.6 The clearance of the debris from the roof, coupled with the repair of the rainwater goods, is likely to reduce or eliminate rainwater ingress to the internal spaces of the Martello Tower. However, it is clear, from other Martello Towers that have been investigated previously, that this was a more general problem with their design. As a result, it is likely that the internal spaces will always suffer from some level of water ingress and will remain both cool and humid.



- 5.7 It is not presently proposed to undertake any substantive works to the interior of the Martello Tower, particularly given the constraints imposed by the hibernating bats, as set out below. As a result, it is anticipated that a record will be made of the fireplace range on the ground floor, which is otherwise in poor, and also deteriorating, condition. However, no consolidation works are proposed either now, or in the longer term.
- 5.8 Aside from the removal of some modern brickwork, particularly from the infilled window openings and the blocked-in doorway on the west side of the ground floor, which will aid the hibernating bats, it is not proposed to carry out any modification or alteration of the Martello Tower's core structure.
- 5.9 Nevertheless, there will be a need for the management company, which is appointed to maintain the site post-construction, to include the Martello Tower within its regular regime. This will serve to identify any developing defects in the tower's external fabric, and put in place appropriate measures to remedy them (subject to English Heritage approval). It will also serve to monitor the condition of the water tank, which although apparently robust at present, may deteriorate over time, but will, in any case, require regular repainting.

The Hibernating Bats

- 5.10 To safeguard hibernating bats, any building works to the tower will be undertaken during the warmer summer months (May to September). Access to the tower hibernation area during the winter months will be restricted to personnel with a Natural England licence to disturb hibernating bats.
- 5.11 Consultation with Natural England will be required prior to commencement of building works, impacting on the hibernation area, on the ground floor of the tower. Due to the presence of hibernation sites within the tower, to derogate from the protection afforded to places of shelter used by bats, a Habitats Regulations Licence will need to be granted from Natural England before any repairs impacting on their hibernation sites can proceed.
- 5.12 Natural England will only grant a licence if:
1. The works are considered necessary; i.e. in the interests of public health or safety, or for other imperative reasons of overriding public interest;
 2. There is no satisfactory alternative; and
 3. The action authorised will not be detrimental to the maintenance of the bat species at a favourable conservation status.

A licence application would be refused by Natural England if the conditions set out above are not satisfied.

- 5.13 Any exclusion of water leaking into the Martello Tower may change the humidity conditions within the tower hibernation area. Natterer's and Daubenton's bats, in particular, have a high reliance on the type of cool, humid brick structures found in the Martello Tower. To ensure temperature and humidity conditions remain favourable to bats, the environmental conditions will be monitored inside the hibernation area.



- 5.14 The environmental conditions within the Martello Tower will be monitored using temperature and humidity data loggers. The aim will be to maintain a cool temperature of 8°C or below and a high humidity level (75% and above) during the winter months. Monitoring will start as soon as possible to ensure that a baseline is achieved prior to any impact on the Tower. Data loggers can easily be fitted into the Tower and remain in place permanently, downloading the data as required.
- 5.15 The closing of the currently open door will also change the internal conditions within the Tower, thereby rendering the environment more favourable for hibernating bats. Fixing the door shut will reduce the airflow through the tower and also create darker internal conditions.
- 5.16 Bat access to the Tower hibernacula will be maintained through horizontal 'post box' type openings (at least three) in currently bricked up openings facing south and west. The new bat openings will have a width of 300mm-450mm and a height of 130mm height, in order to enable bats to fly directly through. The two existing openings, either side of the door, will also be retained to enable bats to fly through.
- 5.17 Sufficient crevices within the brickwork will be retained to provide hibernation sites for the bats. The tower would benefit from additional hibernation opportunities to help increase the numbers of bats using the hibernacula. It is recommended that bat bricks (bricks with slots favourable for hibernating bats) are installed within the tower, in suitable locations that do not impact on its important historic features. Suitable locations are the areas of more modern brickwork within the first floor hibernation area. Consultation with English Heritage will be required.
- 5.18 To ensure that the population of bats within the tower remains favourable, a bat ecologist, licensed by Natural England to disturb hibernating bats, will check the hibernation site. The population will be monitored prior to development and post-development, as agreed with Natural England. Any reduction in population levels will require action to correct the cause of the decline.
- 5.19 Schwegler woodcrete bat boxes, suitable for use by pipistrelle, brown long-eared, Natterer's and Daubenton's bats, will be erected high up on the south or west side of appropriate mature trees within the near vicinity of the Martello Tower, in order to provide additional roosting opportunities for the local bat population.
- 5.20 New bat roosting opportunities will also be created, within the new buildings situated close to the Martello Tower scrub habitats, to compensate for the loss of bat roosting sites in the Signal Building which is to be demolished.

Presentation and Landscaping

- 5.21 A balance will need to be achieved in creating surroundings that are presentable to the public, but do not jeopardise the survival of the bats using the site.
- 5.22 From an archaeological perspective, the presentation of the tower would be enhanced through the clearance of debris, non-TPO trees and scrub from the



surrounding moat. At the same time, 0.5m of the modern fill will be removed, under archaeological supervision, in order to expose the original brickwork defining the outer edge of the moat. This will then be consolidated in order to ensure its long term preservation.

- 5.23 Only approximately 20% of the surrounding glacia bank still survives *in situ*, the remainder having been truncated by building works associated with the development of the Royal Navy Hospital and Royal Naval Training Establishment during the early part of the 20th century. Nevertheless, the proposed development of the site will maintain a consistently proportioned area of open space around the tower, in order to replicate its original setting.
- 5.24 This space will be managed primarily for nature conservation interests, but will nonetheless maintain the openness of the landscape around the Martello Tower, thereby reflecting its original landscape setting. Accordingly, sufficient clearance of thistles, nettles and Alexanders should be undertaken to show the features of the surviving glacia and moat, but ensure sufficient foraging habitat for bats is available.
- 5.25 Additionally, it is recommended that some patches of brambles are retained and shrubs capable of supporting high insect numbers are planted. Shrub layer species will need to be selected for non-invasive root structure. Structural diversity should be retained by gradation of habitats from a short grass sward, composed of an acid grassland seed mix (suitable for the local area), strips of taller grass, low level shrubs and taller mature trees.
- 5.26 The TPO horse chestnut and walnut tree on the north west side of the Tower will be retained, but some clearance of sycamore and buddleia saplings impacting on the structure of the Tower will be required. Any removal of trees around the tower has the potential to affect the use of the building by bats due to loss of foraging habitat and linear features providing flight lines. As long as the majority of mature trees are retained, there should be no impact on bats.
- 5.27 In order to ensure favourable bat flight lines are retained between the Tower and the surrounding countryside, additional planting of new trees may be required. Further planting of tall trees and field level planting may be required to the west of the Tower, to provide connectivity with the existing Holm Oak and vegetated boundary along the west side of the site. Currently there are few trees immediately south of the Tower. Some trees will be planted south of the Tower, sympathetic to the views from the Tower, to provide a connecting flight route to the existing trees along the south escarpment edge. New tree planting will need to be of native trees typical of the local area and capable of supporting high insect numbers.
- 5.28 Sufficient scrub areas and dead wood will be retained on the south side of the Tower as habitat for invertebrates, nesting birds and foraging bats.
- 5.29 There will be no lighting, which could directly impact on a bat roosting/hibernation area, and no light spillage affecting bat flight dispersal routes. The bat flight routes (dark zones) are illustrated in **Figure 3**. There will be no lighting directed towards the tower, no up-lighting of single trees and no lighting directed towards tree lines. The narrow proposed gravel track access road around Martello Tower L will be kept dark. To delineate the road, low level Mushroom lighting bollards, controlled by intelligent lighting systems, will be used.



- 5.30 No house within 40m of the Tower will be permitted to have bright security floodlighting. If lighting is required, a request will need to be made to the Management Group with an appropriate justification. The Holm Oak hedgerow along the western boundary of the site will be kept dark, a connecting flight line between the Tower and Holm Oak hedge will be a dark zone and bat flight routes between the Tower and south coastal escarpment will also be allocated as dark zones.
- 5.31 Appropriate interpretative materials will be provided around the Martello Tower to enhance its presentation to visitors and provide a greater understanding of its history. They will also show the views that can be seen from around the Tower and the location of the internationally important SPA, as well as providing bat ecology information, including the importance of leaving them undisturbed during the winter months. Additional bat roost signs will be erected by the door and a map will be provided to show the other SAMs and Public Rights Of Way around the site.


Access

- 5.32 Given that the outer glacis bank will form part of the site's public open space provision, there will be unrestricted access to it. In contrast, there will be no uncontrolled public access to the interior of the tower, as a result of its known importance as a bat hibernation site.
- 5.33 However, there is scope for controlled and restricted public access. This will necessarily be limited to the summer months, when the bats are not using the internal spaces of the building. It will also have to be limited to guided tours or at least supervised opening times, which could include Heritage Open Days.
- 5.34 However, if, for a genuine reason, visitor access is required to the interior of the tower outside the core summer months, when bats may be using it for hibernation, a check for any bat presence will need to be undertaken by a bat ecologist licensed to disturb bats. If bats are not present the visit will be permitted but if bats are found visits will not be permitted without the necessary agreement/licence from Natural England.
- 5.35 Where access is required for health and safety, or other maintenance and monitoring works, this will be provided by an adjustable timber footbridge over the moat.
- 5.36 The main door, which is original, will be repaired and reinstated as a lockable door in order to deny access to the internal spaces. This is highly important, not only to safeguard the monument itself, but also to safeguard the hibernating bats.
- 5.37 This will require the overhaul of the door, as well as the reinstatement of the architectural ironwork. In addition, minor repair work will need to be carried out on the surrounding stonework, where the corrosion of iron ferrules has shattered the ashlar.



Figure 3: Dark Bat Flight Zones

KEY:

-  Proposed site layout
-  Existing site layout
-  Bat flight zone







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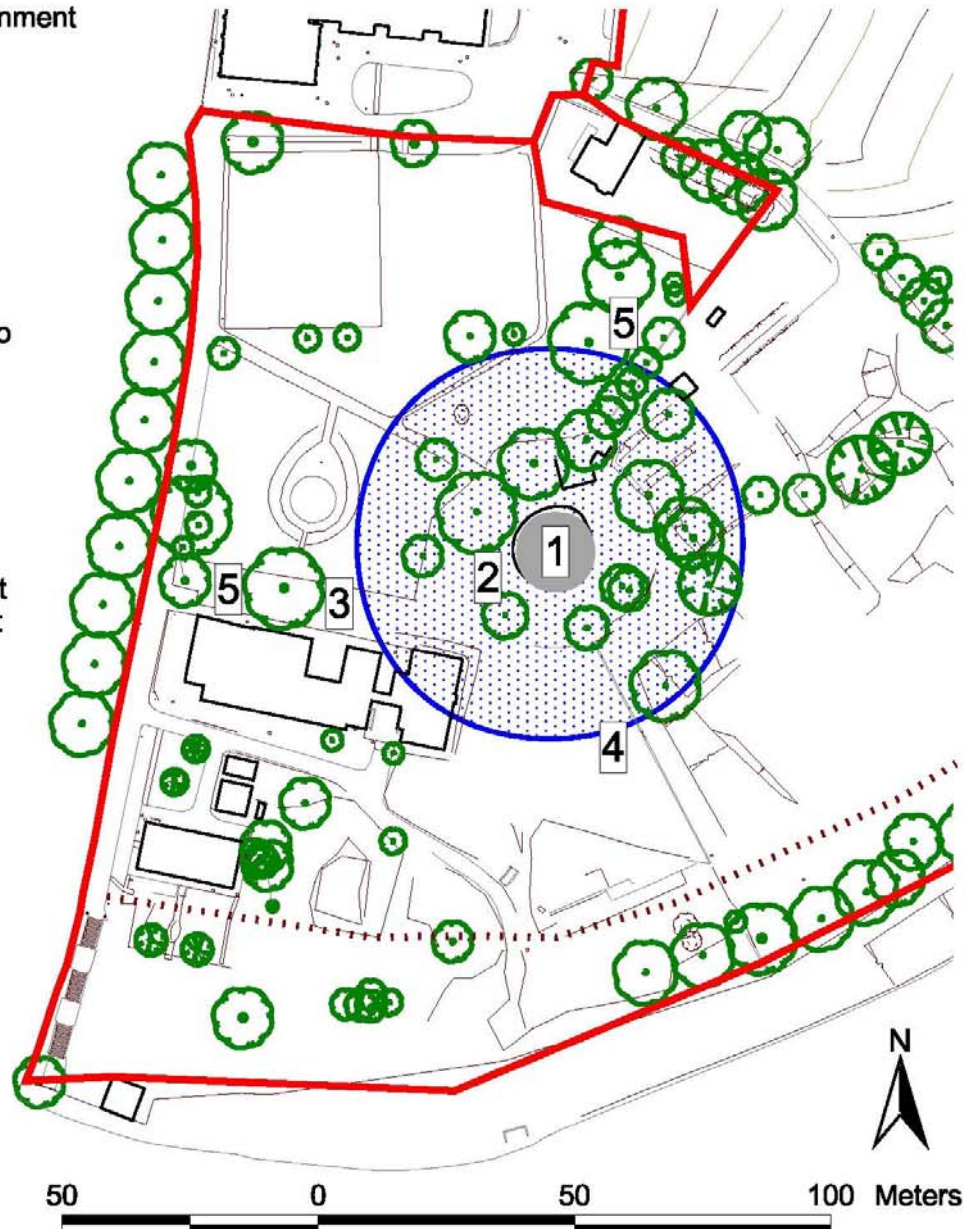
Figure 4: Management Proposals for Martello Tower

- 1 Stabilize Tower. Address defects. Enhance environment for bats, monitor conditions and bats. No lighting of Tower. Secure Tower's external openings retaining bat access.
- 2 Clear debris and ruderals around Moat and glacis and expose original moat brickwork. Plant insect-supporting shrubs with non-invasive roots around border. Landscape with rough grassland areas. Provide interpretation boards.
- 3 Plant new native tall trees and shrubs to connect to west boundary hedge. Maintain as dark, vegetated bat flight corridor.
- 4 Plant new native trees and shrubs southwards, sympathetic to views from the Tower, to provide a bat flight corridor connecting to the south and east boundary.
- 5 Retain existing trees, wherever possible, and erect bat boxes on suitable mature trees within bat flight areas near the Tower.

KEY:

-  Reserved Matters
-  Moat and Glacis
-  Martello Tower
-  Footpath

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Section 6 Management Proposals: Shotley Fort

Objectives

- 6.1 The objectives of this management plan, regarding Shotley Fort and surrounding area, are to:
1. Reverse the deterioration in the condition of surviving historic fabric;
 2. Conserve and protect original features, fixtures and fittings;
 3. Guarantee the survival of the hibernating bats and enhance the fort for hibernating bats as part of the mitigation measures proposed for the development;
 4. Safeguard the cave spiders inside the fort;
 5. Manage the semi-natural habitats to protect, maintain and enhance the invertebrate, bird and bat population within the area;
 6. Generally conserve the overall integrity of the tree/scrub/grassland habitat mosaic to maximize the area's biodiversity potential;
 7. Safeguard the reptiles within the site and enhance the habitat to increase the carrying capacity for the translocated animals from the development area;
 8. Encourage the development of semi-natural acid grassland;
 9. Create an area of standing water to compensate for the loss of the pond by the Martello Tower;
 10. Enhance presentation to the public; and
 11. Restrict uncontrolled access.

Specific Management Prescriptions

Conservation of the Historic Fabric

- 6.2 The results of the WCP structural survey have demonstrated that, on the whole, the fort is in a relatively sound and stable condition. Indeed, those significant defects, which were detected, can be directly attributed to the long term neglect of the fort and, as a result, the absence of an appropriate management regime.
- 6.3 Accordingly, no substantive remediation works are proposed for the surviving fabric of Shotley Fort. Nevertheless, a range of minor works will be required in order to stabilise its condition, in the short term, and improve it, in the longer term, as set out above. These are set out below.
- 6.4 The trees and woody shrubs, with intrusive root systems that have penetrated the brickwork and fabric of the fort, particularly the fast growing sycamore and buddleja, will be removed. This will also apply to those trees that are currently affecting the condition of the surviving brickwork of the Carnot wall.
- 6.5 In comparison, the mature trees and dense scrub on the earthwork rampart, as well as within the ditch on the east side, will be subject to an arboricultural management plan.
- 6.6 The main aim of the clearance and management will be to halt the erosion of the fort's historic fabric in the short term and, in the long term, open up views



of Orwell Haven, with which the Fort enjoyed a symbiotic relationship when it was in operation.

- 6.7 Initially tree and scrub thinning will be on a small scale (10%), the ecological effects of which will be monitored before progressing with further thinning. From a historical and landscape perspective, a long-term reduction in tree/scrub areas by as much as 50% is required. However this will not be compatible with the ecological aspects of the site and therefore any clearance works will be undertaken on a step-by-step basis.
- 6.8 Once the initial arboricultural works have been completed, it will be necessary to address the specific minor defects that have arisen in the fort's fabric as a result of long term neglect. This will include filling of the cracks in the concrete of the later (southern) magazine, as well as the associated gun emplacement. It will also include the dismantling and rebuilding of sections of brickwork that have been affected by fast-growing trees and frost damage within the original magazine and gun emplacements at the northern end.

Conservation of the Original Fixtures and Fittings

- 6.9 The results of the structural survey have shown that, despite the past neglect of the fort, the original fixtures and fittings are in relatively sound condition. As such, it is not proposed to undertake any substantive works within the interior of the fort, but rather to maintain stable conditions and ensure that the fixtures and fittings do not deteriorate any further.
- 6.10 As such, a priority will be to address the drainage of surface water within the magazines. At present, water accumulates in the sunken areas outside the entrances, rather than draining away. This is likely to be having an adverse effect on the condition of the numerous surviving fixtures and fittings, many of which are of wood.
- 6.11 It is likely that there would have been drainage provision originally and that it has simply become blocked or damaged since Shotley Fort was abandoned as an operational structure. As such, it is likely that resolution of the drainage issue will comprise repair of existing drains or sumps.
- 6.12 As a second stage, the 20th century structure at the northern end of the exposed rampart will be demolished to expose the single surviving expense magazine. Since the underground magazine is a confirmed hibernation site for two species of bat, repairs to the interior of this structure will only be undertaken where considered absolutely necessary to stabilise the building. Bat hibernation crevices within the brickwork will need to be retained.
- 6.13 The internal spaces of the magazines, which retain numerous fixtures and fittings, many of which are of wood, will be subject to a separate programme of consolidation and conservation. Further survey is likely to be required to inform a programme of works within the Fort interior, although nonetheless, a priority will be to address the flaking paint, particularly within the central magazine of the 1862-63 fortifications.



Conservation of Bats and Other Species of Note

- 6.14 To safeguard hibernating bats within the expense magazine, any structural surveys and building works will be undertaken during the summer months. Access to the hibernation area during the winter will be restricted to personnel licensed by Natural England to disturb hibernating bats.
- 6.15 Consultation with Natural England will be required prior to commencement of building works impacting on the hibernation sites in the north expense magazine. Due to the presence of hibernation sites within the fort, to derogate from the protection afforded to places of shelter used by bats, a Habitats Regulations Licence will need to be granted from Natural England prior to commencement of building works impacting on the expense magazine. The bat hibernation crevices will need to be retained. Any loss of hibernation sites would require a like-for-like hibernation site replacement.
- 6.16 The remaining chambers within the fort have potential for hibernating bats. As such, they will need to be checked for any presence of bats on a regular basis by a bat ecologist licensed by natural England, in order to ensure that they are not disturbed, or their places of shelter damaged. It is recommended that any works to the fort in general should be undertaken in the summer months to minimise any risk to bats.
- 6.17 The fort offers considerable potential for enhancement as a hibernation site for bats. Enhancement of the area (particularly the long tunnel) for bats forms part of the mitigation strategy for the development of the site. The tunnel passageway, bunkers and chambers currently contain few crevices favourable for hibernating bats. The environmental conditions within the tunnel and below ground chambers are generally too warm and the tunnel also has highly fluctuating temperatures by the entrance.
- 6.18 Additional crevices could be provided by the use of bat bricks. These are bricks with slots favourable for hibernating bats. This could take the form of free standing pillars of bat bricks or bat bricks attached to the more modern partition walls. Any fixtures to the original fabric of the tunnel would require the agreement of English Heritage.
- 6.19 At the same time, manipulation of the airflow through the tunnels and bunkers could also assist in providing more favourable temperature conditions. The temperature and humidity within the chambers will need to be monitored with data loggers. The aim would be to achieve a cool temperature of 8°C or below and a high humidity level (75% and above) during the winter months.
- 6.20 The tunnel is currently open at both ends causing the temperature to fluctuate too much in temperature. This can be controlled by partially blocking off one end with a secure grill above. The grill would require openings through the horizontal steel rods with a height of 130mm height to enable bats to fly directly through.
- 6.21 To safeguard the cave spiders, the chambers within the southern 1891 magazine, which the spiders favour, will need to be protected and dark and humid conditions maintained. People working on the Fort will be provided with information regarding the cave spiders.



- 6.22 Changes to the drainage system around the fort are likely to affect its humidity and may therefore also impact on the cave spiders and bats. The internal environmental conditions will require careful monitoring and management to ensure that the built structures remain favourable for bats and cave spiders. These works will be required during and after completion of the development.
- 6.23 There will be no lighting directed towards the fort that could impact on bat roosting sites and/or their dispersal routes. The adjacent semi-natural habitats will remain dark.

Management of the Semi-natural Habitats

- 6.24 To minimize any impact on bats hibernating in the fort, and foraging along the wooded slope to the east and north, the scrub and trees will require sympathetic management. This is an important ecological resource that contributes to the survival of the bats within the area.
- 6.25 Some scrub and tree thinning, as well as coppicing or pollarding, will be required to (a) help existing mature trees develop and (b) maintain a balanced tree/scrub/ grassland mosaic. From an ecological perspective, it is recommended that this is no more than 10% thinning of trees initially. Trees targeted for thinning will be the immature or tall etiolated sycamores. Mature sycamores that contribute to the tree canopy along the edge should be retained. Recommended tree cover is shown in **Figure 5**.
- 6.26 Brambles on the site provide diversity to the habitats and provide nesting areas and foraging habitat for small birds, mammals and invertebrates, as well as cover for reptiles. Their thorny nature also helps to prevent vandalism by preventing intruders accessing the site. Blackthorn and hawthorn are also useful trees for these benefits. Patches of brambles, blackthorn and hawthorn, particularly between the east side of the fort and the informal path along the eastern edge of the site, should therefore be retained. Patches of bramble as cover will be retained and managed, on an annual basis, to retain three metre wide strips.
- 6.27 Tree and scrub management operations should avoid the bird nesting season, generally March to the end of August, to avoid contravention of the Wildlife and Countryside Act 1981 (as amended), which protects nesting wild birds and their nests. If any works are required within the bird nesting season, a check for nesting birds will need to be made beforehand. If nesting birds are identified, any works resulting in damage to the nest will be delayed until the birds have left it.
- 6.28 The majority of the mature trees within the area are covered by TPOs and will therefore need to be retained. Some of these trees also have high or medium bat roosting potential. Should, for health and safety reasons for example, any of the trees with medium/high bat roosting potential require felling or pruning, a check will need to be made of the tree by a licensed bat ecologist to ensure that there will be no impact on bats.
- 6.29 Where the presence of bats is positively confirmed, a licence from Natural England will be required. Surgery of trees with high bat potential is best undertaken in autumn, after the breeding season and before they hibernate.



Tree felling of other trees with some roosting potential, but of minor significance can also be felled in the winter months.

- 6.30 Any loss of the rows of mature trees along the southern and eastern fringes has the potential to have a high impact on flora and fauna due to increased exposure to wind, reduced suitability of the habitat to flying insects, reduced suitability to foraging bats and loss of landing features for birds migrating inland from the estuary. The rows of trees are therefore an important ecological feature and will need to be retained and managed sympathetically.
- 6.31 Where pruning is required to maintain the health of the tree, large branches should be stacked in neat piles within retained bramble scrub areas or wooded edge. Similarly, any felled tree trunks, of a reasonable size, should be retained as lying dead wood within the site to provide food material for a range of invertebrates. For example, the endangered greater stag beetle, known to be present within the area, depends on rotting wood for its survival. Piles of dead wood also provide shelter for reptiles.
- 6.32 The brushwood from any scrub clearance will need to be chipped to minimize any fire hazard. The chippings can be left in piles around the site as shelter for reptiles.
- 6.33 Bat boxes will be erected on suitable mature trees within the near vicinity of the fort to enhance the roosting opportunities for the bats within the area. Types of bat boxes recommended are the 'Schwegler' woodcrete boxes. These are made of sawdust and concrete, are maintenance free, long lasting and maintain a stable temperature favoured by bats. A range of boxes suitable for use by pipistrelle, brown long-eared bats, Natterer's and Daubenton's bats will be erected.
- 6.34 Bird nesting boxes, including at least one barn owl box, will be erected on the mature trees within the area.
- 6.35 To compensate for the loss of the pond by the Martello Tower, a new pond will be created within the grassland south of the Fort - between the proposed new footpath and the steep south slope of the monument. The pond will be designed to maximise ecological benefit and have an undulating outline, providing a length of c.20m and a maximum width of c 10m. The pond will have shallow marshy areas. Shallow marshy areas within ponds frequently become the most species diverse parts.
- 6.36 The pond will also have gently shelving margins and a maximum depth of 2m or less. Only native plants, suitable to the local area, will be introduced. Some tree shade is desirable on the north side of the pond to provide cover and shade from the wind. No fish will be introduced, since fish prey on the larvae of dragonflies and amphibians. Log piles will be created around the banks of the pond as refuge areas for the grass snakes that inhabit the area.
- 6.37 The grassland around the fort supports plants characteristic of semi-improved neutral/acid grassland. Since acid grassland is a declining habitat, the habitat around the fort will be managed to encourage open areas of acid grassland to develop. Strips of short grassland will be retained in areas for human access with bordering taller fine grasses as cover for the reptiles. The cutting regime of the more 'natural' areas will require the grass to be cut, no more than twice a year, aimed at an early cut (e.g. March) and a late cut (e.g. September).



This will help encourage the development of the finer grasses and prevent colonisation of the coarser grasses. The grass will be cut at a high level to ensure there is no impact on reptiles.

- 6.38 To maintain a low nutrient content of the soil, grass clippings will be removed and deposited in areas designated as compost piles. Compost heaps provide warm incubating conditions for grass snake eggs and warm areas for slow worms and lizards.
- 6.39 The open areas of rubble spoil, to the west and south of the fort, could be a safety issue for the residents of the site. This will therefore need to be cleared. Some bare patches will be left to colonise naturally, but other areas will be replaced with grassland. This will be achieved by cutting grassland turfs (particularly any species diverse patches) from the areas of proposed construction works and translocating the turfs to the cleared rubble areas. This will help to ensure that the grassland is suitable for the local area.
- 6.40 To encourage more favourable native grassland and wild flowers to develop, no topsoil will be introduced to the site's more species diverse 'natural' areas to ensure the nutrient content is maintained at a low level. Where specific amenity grassland areas are provided for members of the public, some topsoil may be required to enable appropriate landscaping.
- 6.41 To ensure the habitats within the Shotley Fort Nature Reserve area can support the reptiles removed from the development area, habitat enhancement work specific for reptiles will need to be undertaken to provide favourable basking, foraging, breeding and hibernation areas.
- 6.42 The following enhancement works for reptiles will be implemented:
- The south facing slope of the fort itself (area of southerly gun emplacement) and the open grassland to the south, east and west of the fort will be managed to provide favourable basking sites for reptiles, with south facing grassy mounds and banks, strips of taller grass and patches of scrub as cover. Reptiles were frequently caught within the open scrub / grassland south of the fort. Basking mounds will be created within this area to increase the carrying capacity of the habitat for reptiles;
 - Reptile hibernacula will be created around the fort. These should include both log piles deposited in sunny aspects adjacent to tall grassland / woodland edge and also constructed capped mound hibernacula. The latter is constructed to provide a sloping gradient of 30- 50 degrees with minimum dimensions of 2m x 1m (preferably longer). Pipes can be installed within the hibernacula mound, along with logs, rubble and stones, to provide crevices for reptiles to hide in. The tops of the mounds should be capped with a turf covering, which then allows access for reptiles to the inside of the hibernacula around the margins.

Presentation

- 6.43 It will be necessary to remove much of the building debris and invasive plants from the structure of the fort. The interior of the fort should then be re-profiled through the addition of new topsoil where appropriate. Re-profiling the interior of the fort in this way would not only aid the implementation of a new



landscape strategy for the open space, but would also serve to provide better protection for those below ground elements that still survive; i.e. the outer defences, as well as the guardhouse and quarter/stores.

- 6.44 Alongside the management of existing mature trees and scrub, which presently obscures the surviving rampart and ditch, the management plan will include provision for the development of a sympathetic landscape treatment. This should comprise an informal wooded grassland environment, for which a rough sward may be appropriate, with good quality trees retained.
- 6.45 Appropriate interpretative materials will be provided around the fort to enhance the presentation of the monument to visitors. Interpretive boards will provide a greater understanding of the historic and natural history features of the fort and peninsula including the nearby SPA. Signs will also be required regarding the need to keep dogs under control and on a short lead, particularly during the bird breeding season, to minimize any disturbance to sensitive species.
- 6.46 The interpretation boards will form part of a “riverside” walk around the perimeter of the HMS Ganges site, which will maintain the historic connectivity between the fort and Orwell Haven. This could also incorporate a formal viewpoint on the more southerly of the two gun emplacements of 1891, of which only the central pivot still survives in place. Information regarding the important over-wintering bird populations within the neighbouring SPA will also be included.

Access

- 6.47 It is not proposed to have any formal public access to the existing earthworks, and other above ground remains, of Shotley Fort. This is to preserve the nationally important archaeological remains themselves, as well as to safeguard the important floral and faunal communities that they support.
- 6.48 However, in common with Martello Tower L, there is scope for controlled and restricted public access. This will necessarily be limited to the summer months, when bats are not using the internal spaces of the fort. It will also have to be limited to guided tours, or at least supervised opening times, which could include Heritage Open Days.
- 6.49 Access to the above ground remains of Shotley Fort will be restricted by the construction of an appropriate fence around the perimeter. Short stretches of painted metal railings still exist on the seaward side of the fort, although they are obscured by dense scrub. As such, it is recommended that this should be extended to create a full circuit of the earthwork features. The extent and line of this circuit is shown on **Figure 1**.
- 6.50 In addition, the presence of dense blackthorn scrub, on the east side of the fort, as well as being of high importance for birds and bats, acts as an impenetrable natural barrier limiting human access to the built structures. The strip of dense blackthorn scrub on the east side of the fort will be retained.
- 6.51 At the same time, the entrances to the magazines will be secured through the provision of appropriate security grilles and the original doors, where they survive, will be repaired, in order to deny access to the fort’s internal spaces



even if the outer perimeter is breached. It is important that access to the chambers is prevented, particularly in the winter months, to prevent disturbance to hibernating bats.









- 6.52 However, access to the chambers will need to be retained for bats. This can be achieved by using grills with horizontal bars of a minimum of 450mm width by 130mm height. Alternative access points can be provided above the door, or possibly through a 'post box type' slot through the door with English Heritage agreement. Other bat access points that bats can land and crawl through can have a lower height of 25 mm with a minimum width of 150mm.
- 6.53 Public access will be restricted, although if, for a genuine reason, visitor access is required, the precise scope would have to be agreed with Natural England in order to prevent disturbance to the hibernating bats. On balance, public access should be discouraged.
- 6.54 Although public access will be restricted, it will still be necessary to provide appropriate measures for the management of health and safety risks. In particular, hand rails or barriers will be provided around the parapets of the surviving 1891 gun emplacement and the entrances to the below ground magazines.
- 6.55 In contrast to the "above ground" remains of Shotley Fort, there will be full and open public access to the remainder, which has previously been levelled to create space for the accommodation blocks, and other associated structures, of the Royal Naval Training Establishment. In the first instance, it will be re-profiled, through the addition of topsoil, and then prepared to receive the translocated grassland habitat from the former sports pitches.
- 6.56 Once the grassland habitat has become established, and is considered sufficiently robust to cope with frequent or intensive use, this area of the fort will become public open space. Its provision will not only benefit the residents of the site, post-construction, but will reduce disturbance within the adjacent SPA through informal recreation, such as walking and dog-walking.
- 6.57 However, to protect sensitive semi-natural habitats and minimise disturbance to sensitive wildlife species, people walking through the area will be encouraged to keep to the footpaths around the site. A plan of the proposed footpath around the fort and along the eastern edge is shown in **Figure 6**. The walking routes (approx 1.5km in length) have been designed to cover a varied terrain through hilly wooded areas, as well as along open ground.



Figure 5: Shotley Fort Management Proposals

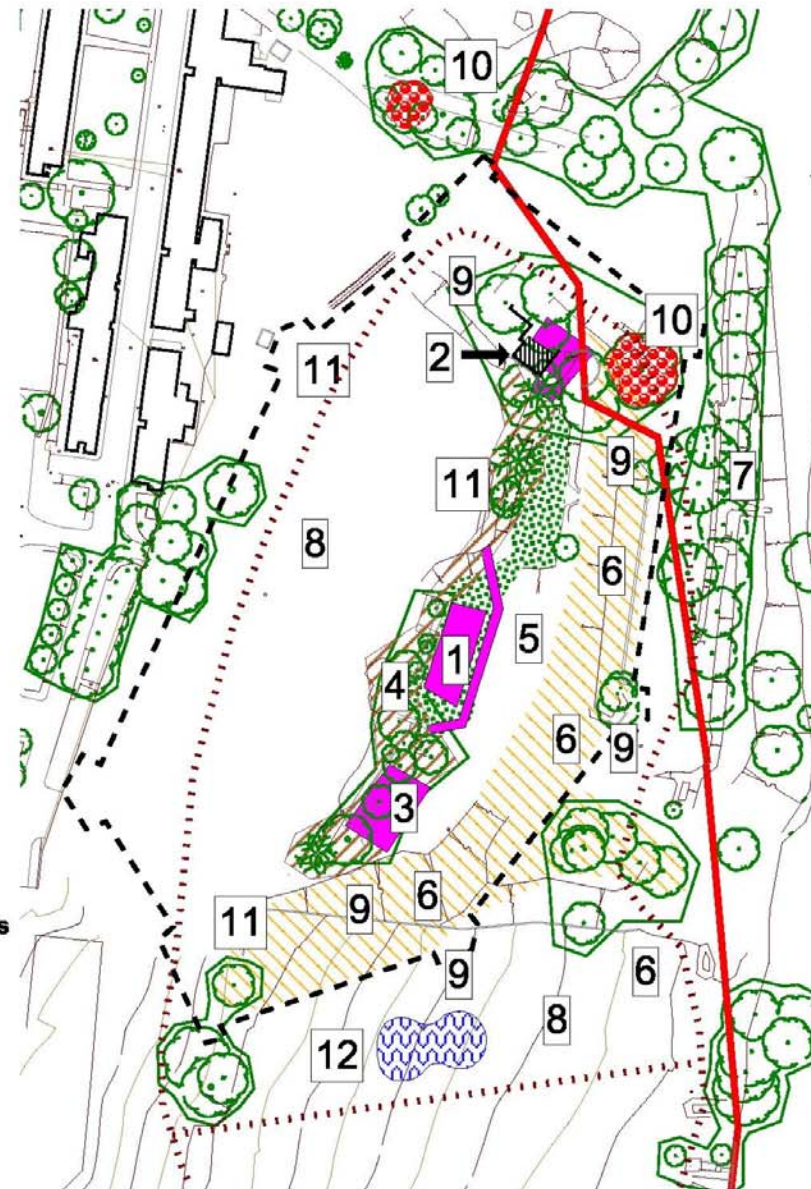
- 1** Fort Buildings: Conserve and protect original features. Secure openings to underground structures retaining bat access. Enhance as bat hibernation areas. Restrict public access.
- 2** Demolish modern concrete structure whilst protecting adjacent bat hibernation area.
- 3** Safeguard Cave Spiders
- 4** Reverse deterioration of historic fabric by clearance of intrusive trees.
- 5** Retain Blackthorn scrub.
- 6** Tree thinning and encouragement of semi-natural neutral/acid grassland along Moat and areas adjacent to footpath.
- 7** Protect treelines along east edge and around Martello Tower M from damage.
- 8** Landscaped to include areas of amenity and more natural grassland.
- 9** Reptile habitat enhancement
- 10** Retain existing trees wherever possible and erect bat and bird boxes on suitable mature trees.
- 11** Provide interpretation boards around the Fort.
- 12** Creation of new wildlife pond

KEY:

	Tree clearance		Bat 'roost' tree		Reserved Matters
	Fort buildings		Blackthorn Scrub		Pond
	Extent of Fort		Tree thinning		Footpath



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Section 7 Basic Methodology for monitoring the recreational behaviour at HMS Ganges and footpath entrances to the Stour and Orwell SPA.

7.1 This represents a basic outline of the pre-construction and future monitoring of the recreational use of the HMS Ganges site. At each stage in the process more detail will be gained on the next step to enable a more targeted approach to the monitoring process. The information gained through monitoring (surveys at specific points/questionnaires/feedback) will be processed accordingly and passed to the Developer, HMS Ganges Management Group **and the Local Planning Authority. Necessary, agreed restorative action or mitigation will be undertaken to address any issues arising from the results of the monitoring**^{*1}. This will ensure there is no adverse impact on the SPA.

7.2 There will be three key stages of monitoring. These will include:

- **Pre-housing phase with no public access** - monitoring baseline;
- **Preliminary phase with public access** (access road under construction, dog walking facilities in place and dog walking access invited); and
- **Housing phases completed with housing occupied** - monitoring of the impact of house occupation as the building phases are completed until all houses are occupied.

7.3 Recreational behaviour will be monitored by:

- General observations of how people are using the site - this will be undertaken by security staff, who are in place from 07.00 hrs until 24.00 hrs 7 days per week, and ecologists undertaking work within the site;
- Standardised monitoring at set points within HMS Ganges and footpath entrances to SPA. The set points will include the proposed access points to HMS Ganges (road link to King Edwards Drive and existing steps in the southwest corner). The SPA will be monitored at Shotley Point (site with previous monitoring data in report commissioned by the Suffolk Coasts and Heath Unit) and an equivalent point on the Stour within close proximity to HMS Ganges; and
- Walking the site boundary to record signs of forced access into/out of HMS Ganges.

7.4 Forms used for monitoring will record: walkers, joggers, walkers with dogs including dog numbers and whether dogs are on or off lead. Surveyors will be provided with maps to ask people locations they have come from and other areas regularly used for walking their dogs. People will be asked how frequently they use HMS Ganges and the surrounding area for dog walking.

^{*1} Changes highlighted in **bold red** are following from an e-mail from Natural England on the 05/03/09 stating that Chris Gibson and Pat Williams “are happy that the document covers all the points raised and is a good way forward but would like to see the following changes in red to the first paragraph of the document”.



- 7.5 Monitoring surveys at set points undertaken on an annual basis will be at a similar time of year and under suitable weather conditions. Set points will be monitored four times a year (March, June, September and December) and will include a Sunday and mid-week day (e.g. Wednesday) in each monitoring month. Surveyors will liaise with other organisations undertaking monitoring studies (visitor management and bird monitoring) along the Estuary. Data gathered by the monitoring exercise will be analysed on an annual basis to provide a view of any changing patterns of use of the site and estuary.
- 7.6 Mitigation proposed within the Revised Environment Statement (2008) includes the provision of a range of educational material, recruitment of volunteer wardens for the SPA and the provision of alternative walking areas within HMS Ganges. It is expected that these measures will be sufficient to ensure no impact on the SPA. However without monitoring studies it is uncertain if this will be the case. In the event of the monitoring surveys highlighting an adverse impact on the SPA further mitigation will be provided to address the issues raised. Additional mitigation provision will be the responsibility of the Ganges Management Group.
- 7.7 Mitigation measures will include:
- Additional signage, for example to highlight the hazards of disturbing birds during periods of cold weather;
 - Leaflet drops to residents within the site and Shotley Village to encourage people to use recreational areas within HMS Ganges rather than the SPA;
 - Communication via the website set up by the Ganges Management Group to help reduce disturbance to the SPA and further the conservation of the area; and
 - Restrict access points and further securing of the site boundary by closing gaps where people may be forcing their way through the site boundary and the planting of further defensive screening (planting of thorn bushes).
- 7.8 During the ongoing monitoring surveys consultation with local stakeholders will include:
- Suffolk Coast and Heath Project;
 - Estuary Management Group; and
 - Wildlife Trust/BTO surveyors undertaking wintering bird counts.
- 7.9 Additional local groups to consult could also include:
- Shotley Walking Club;
 - Shotley Community Council;
 - Mothers Union;
 - Over 60's;
 - River Orwell Sporting and Social Club;
 - British Legion;
 - Shotley Sailing Club;
 - WI;
 - Shotley Parish Council; and
 - HMS Ganges Association.
- 7.10 Additional detail of the proposed methodology is given below.



7.10.1 Pre-housing phase with no public access

This study will be undertaken as soon as possible (March 2009) to gain sufficient baseline data. Initially there will be a concentrated effort to gain as much information as possible and ensure a sound baseline. The surveys will include the standard set points as outlined above.

General on-site monitoring by HMS Ganges security staff of visitors to site will include:

- Number of visitors observed each day and at what time (visitors with appointments and people accessing the site without permission);
- Number of visitors with dogs; and
- Activity of people within site.

Other monitoring will include:

- Mapping of any breaks in the site boundary allowing public access.

In addition to the above, the preliminary investigations should aim to assess how dog walkers are currently using the footpath network within the area. The objectives will be to:

- Identify which day/s and times are most popular;
- Identify which routes most commonly used;
- Identify key user groups;
- Identify current impact of local residents use of site; and
- Identify 'at risk' areas where increased access could cause damage/disturbance.

This information will be used to formulate future questionnaires, liaise with key user groups, erect signs/maps showing dog walking areas in locations likely to be encountered by dog walkers, and further refine the design of the dog walking tracks within HMS Ganges.

7.10.2 Preliminary phase with public access

The construction of the access road and dog walking areas within HMS Ganges will be undertaken as soon as possible prior to building construction. The proposed footpaths are shown in **Figure 5** and **Figure 6**. When dog-walking facilities are in place the site will be opened to the public.

Studies of the SPA undertaken for Suffolk Coasts and Heaths Unit found that Shotley Point is already a popular recreational area. Comparatively high numbers of walkers were recorded including walkers with dogs. It is expected that the provision of footpaths around HMS Ganges will help to reduce the visitor pressure on the SPA. This could be of considerable benefit for the wildlife within the SPA

People will be actively encouraged to walk along the footpaths within HMS Ganges by:



- Notification of local residents of the opening of the site via stakeholder groups, local newspapers, websites and leaflets;
- Specific footpath markers/way markers;
- Dog bins and refuse bins to ensure site remains clean and inviting to use;
- Safe area for controlled dogs to run loose; and
- Interpretation boards on SPA, development proposals, etc.

The aim of the above measures is to create a Suitable Alternative Natural Green Space (SANGS) suitable for use by dog walkers. This provision may help to stop any further degradation of the SPA and produce a positive benefit to the SPA.

The monitoring surveys will include monitoring at set points as before and include discussion with members of the public walking across the site to provide additional information. This will help to assess general visitor use within the area. During this time ecologists undertaking wildlife mitigation works will regularly visit HMS Ganges. Members of the public using the site will be asked to complete questionnaires to provide feedback. This will assist with the design of the dog walking areas within HMS Ganges and highlight problems identified within the footpath network around the site. People will be asked how frequently they use HMS Ganges and the surrounding area for dog walking. Feedback forms will be located within the site office for distribution.

Areas where people have created their own pathways and forced their way through the site boundary will be recorded and any gaps found will be secured.

7.10.3 Housing phases completed with housing occupied

The impact of the occupation of the houses will be monitored as each phase is completed until all the houses are occupied. The monitoring surveys will include monitoring at set points as before and include discussion with residents and visitors using the site to provide additional information. The implementation of the monitoring strategy during the occupation of the houses will ensure that any problems encountered within the SPA as a result of the development can be quickly addressed.

Additional investigations will be undertaken to determine site usage including the surrounding footpath network as identified during earlier surveys and consultation exercises.

Home Information Packs and other interpretative material will be provided and will include information on the value of the SPA and estuary habitats for wildlife and also inform the residents of the need to avoid walking dogs within the SPA. The website set up by the Ganges Management Group will also provide relevant information to the residents on the importance of the SPA.

All householders within the development will be part of the Ganges Management Group and all residents will be offered membership of a group dedicated to the SPA. It is hoped from this volunteer wardens for the SPA will be recruited from the new resident community who could assist in helping to



persuade dog walkers within the site to understand the issues of disturbance to birds within the SPA. It will be the responsibility of the Ganges Management Group to retain the boundary intact.

With the proposed encouraged involvement of the new residents to assist in the conservation of the SPA, it is expected that the habitats and wildlife within the SPA could benefit in the long term.

Addendum 9th September 2009

Section 7.10.2

The new footpaths proposed on the HMS Ganges site will be available to the residents of the Marina development to also help reduce the visitor pressure on the SPA from the Marina development.

The monitoring surveys will include set points as initially proposed plus additional set points gathered from the results of the preliminary investigations. The monitoring scheme will take account of the need to cover the increase in visitors from the Marina development as well as from HMS Ganges and the wider area.

Interpretation boards including signage marking the footpaths within HMS Ganges will be placed so that the signage is easily visible to visitors to the estuary from the Marina development as well as from HMS Ganges.

The distribution of leaflets to the HMS Ganges residents and Shotley village will include the Marina Development.

Section 7.10.3

The proposed wardening scheme will be extended to cover the Marina development part of the SPA.



Figure 6: Proposed Footpath around HMS Ganges



Section 8 Constraints

- 8.1 As previously stated, the single most significant constraint to the successful implementation of this integrated management plan is the dual ownership of Shotley Fort. As **Figure 1** clearly illustrates, important historic fabric relating to the original fort is located outside the control of Haylink Limited, north east of the application site boundary, within land controlled by Shotley Marina.
- 8.2 Sections of the Carnot wall, as well as the ditch behind and elements of the earthen rampart, are beyond the control of Haylink Limited. As a result, there are potential limitations on the effectiveness of the management plan. With this in mind, it is recognised that there is a requirement to unify the ownership of Shotley Fort, in order to ensure that its surviving remains are managed in a coherent and holistic manner.
- 8.3 It is therefore intended that discussions will be held with the owners of the Shotley Marina site, at an early stage in the implementation phase, in order to secure an appropriate approach to the management of the fort, as a whole, in order to preserve its archaeological and ecological features of importance.
- 8.4 Similarly, it is recognised that there is a need to complete a full and detailed survey of the surviving archaeological features of the site, prior to the implementation of the management plan. This will comprise an earthwork survey showing the locations and extents of the key features, both of the Martello Tower and Shotley Fort, followed by an appropriate record of their condition prior to work on site commencing.
- 8.5 Since the site has been subject to extensive ecological surveys including protected species, it is considered that there are no major constraints on the ecological information for the HMS Ganges site. It should however be recognised that habitats and species are subject to change and the surveys should be treated as a series of 'snap shots' in time that may change in the future.



Section 9 Summary

- 9.1 The management plan for HMS Ganges presents a number of management tasks aimed at protecting and enhancing the important historic ancient monuments, landscape features and key flora and fauna species within the site.
- 9.2 The implementation of the management plan will ensure that the historical and natural assets at HMS Ganges are maintained in a sustainable fashion for future years.
- 9.3 The inclusion of the recreational monitoring strategy will also help to ensure that there is no adverse impact on the archaeological and ecological assets within HMS Ganges and the nearby SPA.
- 9.4 Further information from site surveys and audits will feed into later stages of the Management Plan.



Section 10 References

Jones and Sons Environmental Sciences Ltd (April 2007) *HMS Ganges, Shotley Peninsula, Suffolk – Bat and Reptile Report*

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