# Liverpool Cruise Terminal

## Ecology Adaptive Management Plan (Cormorants)

December 2019

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## Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS OHSAS 18001:2007)

| Issue | Date | Prepared by | Checked by | Approved by |
|---|---|---|---|---|
| First | July 2019 | Niall Machin<br>Associate Director | Gavin Spowage<br>Associate Director | Gavin Spowage<br>Associate Director |
| **Comments** | | Incorporates conclusions of meeting with Peel, Arup and LCC on 2nd July to agree strategic approach to cormorant mitigation. | | |
| Second | August 2019 | Gavin Spowage<br>Associate Director | John Hughes<br>Regional Director | John Hughes<br>Regional Director |
| **Comments** | | Incorporates monitoring methodology from Arup | | |
| Third | October 2019 | Gavin Spowage<br>Associate Director | John Hughes<br>Regional Director | John Hughes<br>Regional Director |
| **Comments** | | Incorporates Natural England's consultation comments | | |
| Fourth | December 2019 | Gavin Spowage<br>Associate Director | Niall Machin<br>Associate Director | Niall Machin<br>Associate Director |
| **Comments** | | Incorporates Natural England's further consultation comments | | |

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# Contents

# 1. Introduction

1.1. This Adaptive Management Plan has been produced in response to Natural England's responses to recent planning, marine licence and harbour revision order applications affecting Liverpool Docks, notably the new **Liverpool Cruise Terminal** and the **Isle of Man Ferry Terminal**.

1.2. Waterman Infrastructure & Environment Ltd (Waterman) was commissioned by Liverpool City Council (LCC) and the Isle of Man Government Department of Infrastructure to prepare ecological advice in relation to both the construction of the new Liverpool Cruise Terminal and the Isle of Man Ferry Terminal.

1.3. For the Liverpool Cruise Terminal, this Plan supports the discharge of planning condition 8 (planning application ref: 17O/3230) in relation to minimising the adverse impacts on the population of cormorants *Phalacrocorax carbo* a component species of the bird assemblage feature of Liverpool Bay Special Protection Area (SPA). In relation to Planning Condition 8 and the cormorant Ecological Conservation Management Plan (ECMP), Natural England (NE) have recommended (letter dated 30th May 2019, ref 19DIS/0919) that an Adaptive Management Plan (AMP) is provided:

> *" to set out how monitoring will be undertaken, what additional actions may be required in order to deliver successful mitigation (e.g. movement of the pontoon), and also to consider the long term validity of the mitigation"*

1.4. NE reiterated this advice in their consultation response to the subsequent applications for a Marine Licence and Harbour Revision Order (letter dated 10th June 2019, ref 280851 & 280784)

1.5. For the Isle of Man Ferry Terminal, the provision of an Adaptive Management Plan (AMP) has been requested to discharge Planning Condition 26 (planning application Ref: 18F/3231) and the Marine Licence condition 5.2.10 (Marine Licence application Ref: L/2019/00239/1):

> Planning Condition 26 - "*No development shall commence until an Ecological Conservation Management Plan (ECMP) has been submitted to and approved in writing by the Local Planning Authority. The ECMP (…) should (…) include the following details: (..) ii) The provision of an Adaptive Management Plan (AMP) setting out the arrangements for monitoring the usage and effectiveness of the proposed mitigation and arrangements for ensuring any adaptations reasonably necessary to improve the success of the mitigation measures with respect to cormorants will be provided;*
>
> Marine Licence condition 5.2.10 - *"An Adaptive Management Plan (AMP) relating to the Cormorant Mitigation Plan (CMP) must be submitted to MMO prior to the commencement of any activity included with this licence. The AMP must ensure that appropriate monitoring, review and adaptation of the mitigation measures described in the CMP will be provided. This must be submitted at least 6 weeks before the scheduled installation of the pontoon detailed in condition 5.2.9. Monitoring reports must be provided to MMO at the intervals as determined within any agreed AMP.*

1.6. Earlier this year, Waterman produced plans for a permanent floating pontoon to provide roosting/resting opportunity for cormorant. It would be located in Princes Half Tide Dock and be sufficiently large as to provide mitigation for a number of schemes in the docks including Liverpool Cruise Terminal, Isle of Man Ferry Terminal, the Northern Link Road and, potentially, the C02 proposals.

1.7. The design and location details for the floating pontoon were set out in the respective Technical

Notes for each of the schemes (WIE12464-100-TN-14-2-2 for Liverpool Cruise Terminal and WIE13897-100-TN-10-2-1 for the Isle of Man Ferry Terminal).

1.8. The first pontoon was installed in Princes Half-Tide Dock in October 2019 as part of the mitigation measures required for the Isle of Man Ferry Terminal development. A second pontoon is proposed to be installed next to the first prior to the commencement of demolition and construction works for the Liverpool Cruise Terminal development.

1.9. A strategic approach to cormorant mitigation within the overall Liverpool Waters area is being coordinated by Arup on behalf of Peel Land & Property (Ports) Ltd, although at the time of writing this strategic approach has not been finalised. Nevertheless, the provisions within this Adaptive Management Plan are covered by and conform with the emerging overarching strategic approach.

1.10. Adaptive Management Plans are tools for improving resource management by learning from outcomes ('learning by doing'), usually through a partnership of stakeholders. This Plan is supported by the following organisations:

- Liverpool City Council
- Natural England
- Merseyside Environmental Advisory Service (MEAS)
- Peel Land & Property (Ports) Ltd
- Isle of Man Government Department of Infrastructure

1.11. The objective of this AMP is to ensure that the proposed cormorant specific mitigation remains valid, appropriate and compliant with the Habitat Regulations throughout the lifetime of the development. The AMP enables co-ordinated, appropriate and timely actions to be implemented in response to potential issues that may arise from other relevant, adjacent developments. This AMP will form part of a strategic and more collective approach to mitigation in the wider area that will be adopted in the long term, as part of other developments that may impact upon the designated sites and their interest features in the vicinity.

## 2. Cormorant Monitoring Approach

2.1. The pontoons are considered suitable to provide roosting habitat for cormorant in the non-breeding season. Other species, such as herring, lesser-black-backed and black-headed gulls and oystercatcher will use a wide range of roosts and the pontoons also provide suitable habitat for these species.

2.2. In addition, in future, monitoring will be extended to cover the operational Liverpool Cruise Terminal: this will assess the extent to which cormorants are using features of the operational terminal (e.g. deck bracing, mooring dolphins etc) as set out in the Habitat Regulations Assessment (HRA)[1].

2.3. In order to determine if and how cormorants are using the new pontoon facilities a 5 year programme of annual monitoring is being undertaken. This commenced shortly after the first pontoon was installed in October 2019. All surveys are being undertaken by an experienced ornithologist and will eventually be coordinated by Arup on behalf of Peel Land & Property (Ports) Ltd. The surveys will be completed as part of Arup / Peel's programme of ecological monitoring of the wider Liverpool Waters site. **However, for the first year[2], the monitoring is specific to the mitigation pontoons themselves (with any additional data and evidence from the wider survey work used to support the monitoring).**

2.4. The monitoring is being undertaken by Waterman, initially solely on behalf of the Isle of Man Government. Once the second pontoon is installed, Waterman will continue to monitor the pontoons on behalf of both the Isle of Man Government and Liverpool City Council.

2.5. To assess the success of the Liverpool Cruise Terminal mitigation, previous bird survey data collected for the Liverpool Cruise Terminal site will be used as a baseline to identify if numbers have declined and if any there have been any negative impacts on the populations using the site.

2.6. The monitoring methodology will include four visits per month between September 2019 and March 2020 inclusive, two during high tide and two during low tide to monitor bird numbers using the rafts and the site. A suitable vantage point will be selected which is safe for the surveyor due to active construction being undertaken on the site, but also allows for a clear sight on the rafts and the wider site area. Both high and low tide surveys will start two and a quarter hours before high/low tide and end a quarter of an hour after high/low tide (i.e. duration of 2.5 hours). Paired visits (high and low tide) will be undertaken on the same day where possible (or if not, consecutive days) during daylight hours.

2.7. **Table 1** details the peak numbers (peak number of individuals recorded at one time, seen together) of cormorants using the site over four months (a total of 18 surveys) during autumn/winter. This shows that only low numbers of individuals are using the area, with a peak count of 12 birds on the 31st October high tide count.

Table 1: Peak cormorant numbers recorded at the Liverpool Cruise Terminal site during winter and passage 2017-2018[3]

| Date | Oct 17 | Nov 17 | Dec 17 | Jan 18 |
|---|---|---|---|---|
| No. of cormorant | 12 | 8 | 10 | 5 |

[1] Waterman 2019. Information to inform a Habitat Regulations Assessment (HRA) Appropriate Assessment, ref WIE12464-100-11-3-2-AA
[2] For LCT, the first year would be winter 2020/21 as the LCT pontoon is not being installed until spring 2020
[3] Liverpool Cruise Terminal. Wintering Bird Surveys. APEM January 2018 Ref P00001343

2.8. The trigger point for the rafts to be revised or relocated will be where the bird monitoring shows that there is a decrease in numbers utilising the rafts or surrounding area. Peak monthly counts for the Site noted an average of just under 9 individuals using the Site. The lowest peak count in any month was five individuals recorded using the Site (in January).

2.9. The high and low tide counts covering 18 visits recorded zero cormorants on-site on two occasions (both high tide), and only 1 bird on another occasion (at low tide). The lowest sequence was three consecutive visits when six cormorant used the Site (occurred twice).

2.10. The trigger point for initial action of further investigation will be if **no cormorants are using the pontoon in any one month**. This is a simple and clear trigger and has been endorsed by Natural England.

2.11. In terms of initial action following the trigger point, the ecologists will make an assessment of likely contributory factors, which would involve (but not be restricted to);

- Studying weather patterns (e.g. has adverse or unseasonable weather impacted numbers?);
- Making a visual inspection of surrounding land and land uses (and making inquiries of relevant authorities) to ascertain if any activities are occurring, or have recently occurred, that may have displaced cormorant (e.g. canoeing, boating, fireworks, dock repair works, building development etc); and
- Consulting the local ornithological groups to ascertain if additional information is available on cormorant numbers locally on the River Mersey (increasing or decreasing).

2.12. Where the trigger point occurs, monthly monitoring for the following month will be increased to 6 visits per month to help better understand trends and the causes of the reduction and what further action, if any, may be required.

2.13. Depending on the outcome of action set out in paragraphs 2.11-2.12 above, the project ecologists may also notify LCC where they consider that changes to the rafts may be required (e.g. size, design, location) and also subsequently input into a specification to procure a contractor to make such changes.

2.14. Success of the monitoring programme will be identified where the monthly peak count averages six or more cormorants using the rafts and site during September to March period: this will be assessed by the project ecologists, acting on behalf of the Isle of Man Government Department of Infrastructure and Liverpool City Council, at the end of the first year of monitoring results to assess the success of the pontoon mitigation (see also 2.22 below). As part of the first year review, we will also undertake a review of annual peak means against the baseline to check there is no downward trend, e.g. if the birds are present but in dwindling numbers.

2.15. Where rafts require relocation as part of the AMP this will be implemented and maintained by Liverpool City Council in collaboration with other interested parties (e.g. Peel; Isle of Man Government Department of Infrastructure), and an amended monitoring period will re-start from when the rafts are moved. Other measures of success would include: target species using the pontoons and not being disturbed e.g. by boat traffic or other human activity; no non-target species recorded to be using the pontoons (e.g. Canada geese); and structural success in terms of the pontoons remaining in place and not having failed e.g. sinking etc.

2.16. Where pontoons or posts are deemed to have failed or require additional maintenance, repair or replacement will be carried out preferably during late winter or early spring before birds start to nest

and wintering bird activity is low. Where deemed necessary through monitoring, additional mitigation may be installed, or locations may need to be changed to maximise the effectiveness.

2.17. The results of the 5-year monitoring programme would be written up in an annual report for the client and shared with Natural England and other relevant stakeholders. The annual report would make recommendations about the success of the pontoon in terms of its intended cormorant mitigation role.

2.18. Monitoring of the physical condition of the pontoons will also be undertaken, most likely at the same time as the ornithological surveys. The floating pontoon design is expected to have a minimum estimated life of 12 years with minimal maintenance. As per RSPB guidance, yearly maintenance of the floating pontoons will be carried out. Resurfacing of the floating islands will be necessary if they are to remain attractive for birds every year. It will also be vital to remove the excess of droppings which can build up over the course of the year.

2.19. Where pontoons are deemed to have failed or require additional maintenance, repair or replacement will be carried out preferably during late winter or early spring before birds start to nest and wintering bird activity is low. Where deemed necessary through monitoring, additional mitigation may be installed, or locations may need to be changed to maximise the effectiveness.

2.20. Further adaptive measures may also be required to minimise disturbance, for example through control of boat traffic.

## Programme

2.21. Arup have proposed within their Liverpool Waters Strategic Ecological Mitigation Plan (LW SEMP) Interim Note that the monitoring of the cormorant mitigation pontoons will be included within the annual surveys being undertaken across the entire LW scheme (as included within the LW Neighbourhood Ecological and Biodiversity Strategies (NEBS)). This will include monitoring for wintering/passage birds including high water and low water surveys and also monitoring for breeding birds (e.g. ringed plover, little ringed plover, lapwing) and foraging common tern. The NEBS produced for Central Docks (where the cormorant pontoons will be / are located) in July 2019 (provided in **Appendix A**) and for Princes Docks (where the Liverpool Cruise Terminal site is) in May 2018 (provided in **Appendix B**) outline the surveys that will be completed including, duration, timing and methodology.

2.22. However, as stated in para 2.3 above, specific monitoring of the cormorant mitigation pontoon itself would be carried out in Year 1. At the end of Year 1, the monitoring approach and data would be reviewed in terms of the approach to Years 2-5 and how this fits with the wider strategic monitoring and action detailed within the future LW SEMP.

2.23. Section 2 of the Central Docks NEBS sets out specific methodologies for the following surveys:

- Section 2.2: Breeding birds, including specifically little ringed plover and black redstart;
- Section 2.3: Wintering and passage bird surveys, including cormorant; and
- Section 2.4: Common tern surveys.

2.24. Section 2 of the Princes Docks NEBS sets out specific methodologies for the following surveys:

- Section 2.1: Breeding birds, including specifically peregrine and black redstart;
- Section 2.2: Wintering and passage bird surveys, including cormorant; and
- Section 2.3: Common tern surveys.

# 3. Review of Projects

3.1. In tandem with the annual bird surveys, a review of planning applications which may impact upon the docks and cormorant ecology would be undertaken.

3.2. This would include reviewing scheme mitigation plans and reviewing whether the cormorant mitigation installed to date requires any alteration.

# 4. Adapting the Mitigation

4.1. The Adaptive Management Plan table of issues and responses, set out below, would be maintained. Data from the annual bird surveys and the planning application reviews would be fed into this table and appropriate remedial measures identified and implemented.

4.2. Implementation measures may involve a range of clients/stakeholders, including those signed up to this Plan.

Table 1: Adaptive Management Plan

| Issue | Evidence | Remedial action | Timetable | Responsibility |
|---|---|---|---|---|
| *Describe issue, e.g. damaged pontoon side* | *Describe evidence, cite source, e.g. winter bird survey (date)* | *e.g. repairs required* | *Date* | *E.g. Liverpool City Council* |
| | | | | |
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4.3. The Adaptive Management Plan will be issued to Natural England on an annual basis for review and approval.

# Appendices

# Appendix A: Central Docks Neighbourhood Ecological and Biodiversity Strategy

Peel Land & Property (Ports) Ltd.

# Central Docks Condition 16

## Neighbourhood Ecological and Biodiversity Strategy

0-15-08

Issue | 23 July 2019



Job number 266384-00

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# Document verification

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| | | Name | Amy Martin/Joseph Shepherdson | Rory Canavan | Rory Canavan |
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| | | Name | Amy Martin | N/A | N/A |
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| | | Name | Amy Martin | N/A | N/A |
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| | | **Description** | Updated to make reference to the Liverpool Waters SEMP | | |
| | | | Prepared by | Checked by | Approved by |
| | | Name | Amy Martin | N/A | N/A |
| | | Signature | | | |
| | | | | **Issue Document verification with document** | ✓ |

# Contents

# Executive Summary

Outline consent for the Liverpool Waters Scheme was granted in June 2013, subject to a total of 77 planning conditions. Condition 16 of the Liverpool Waters Outline Consent (10O/2424) states:

"*Prior to the submission of the first application for any reserved matters approval in each respective neighbourhood, an Ecological & Biodiversity Strategy based on the Principal Application Documents and Detailed Neighbourhood Masterplan that relates to that particular neighbourhood and has regard to the wider application site shall be submitted to and approved in writing by the Local Planning Authority. The strategy shall summarise the means of safeguarding all protected species of relevance and supporting habitats during construction and operation within the respective neighbourhood including consideration of pathways to protected European sites by the following measures:*

i. *The means, method and timeframe for carrying out updated bird surveys and impact assessments for bats and migratory and/or over wintering birds;*
ii. *The methodology and timeframe for carrying out (seasonal) monitoring of fish and other water species within the dock system;*
iii. *Working practices to address phasing of construction, construction vehicles, routing and speed limits during removal of existing buildings, vegetation and other suitable breeding habitats;*
iv. *Details of habitat creation;*
v. *Design of buildings and spaces in terms of layout, design, materials and lighting to avoid creating barriers to bird migration and aviation and reduce risk of bird strikes particularly in relation to tall buildings;*
vi. *Means and methodology for the monitoring and management of water quality within the dock system which shall inform mitigation to safeguard fish and other water species, including the aeration of dock water spaces;*
vii. *Methods for controlling leisure boat activity within the dock system;*
viii. *Methods for controlling gulls and pigeons roosting on buildings;*
ix. *Mechanisms for monitoring and reviewing the effectiveness of agreed ecological and biodiversity mitigation against identified targets and means for enhancing mitigation where those targets are not met; and*

*Mechanisms to ensure protection of Sefton Coast SAC (Seaforth Docks to Formby Point) from recreational disturbance overseen by the Liverpool Waters Coordination Panel in accordance with Schedule 6 of this permission.*"

This document presents the Neighbourhood Ecological and Biodiversity Strategy for the Central Docks Neighbourhood (Neighbourhood C). The strategy relates to the Central Docks Neighbourhood and has regard to the wider Liverpool Waters application site. The strategy summarises the means of safeguarding all protected species of relevance and supporting habitats during construction and operation

within the respective neighbourhood. This includes consideration of impact pathways to European designated sites.

The strategy is intended to provide guidance in relation to ecology and biodiversity for all reserved matters applications within the neighbourhood and addresses Condition 16.

# 1 Introduction

## 1.1 Background

This strategy has been produced to discharge a planning condition under Part C of the Liverpool Waters (LW) scheme (Planning Application reference: 10O/2424). The LW scheme, which secured outline consent on the 19th of June 2013, covers an area of 60 hectares of former dockland located along Liverpool's Waterfront. The project will provide a mixed-use development of up to 1,691,100 sqm. The outline planning consent is split into multiple parts:

- **Part A-** Overall Development Quantum and Parameters
- **Part B-** Time Limits
- **Part C-** Information to be submitted prior to the submission of applications for reserved matters approval
- **Part D-** Details to be provided with Reserved Matters Applications
- **Part E-** Compliance Conditions

Across parts A to E there are a total of 76 conditions within the outline consent (originally 77, see s96a section for further details). 16 of these are pre-commencement conditions which therefore require discharging prior to any submission of detailed reserved matters applications (i.e. a specific development plot). These conditions are listed within Part C of the outline consent.

In June 2018, these 16 conditions were discharged for Princes Dock (Neighbourhood A) to allow for reserved matters applications to come forward for development in this neighbourhood alone. Each condition required a strategy to be produced which provided high level information on how specific requirements would be met.

To progress development within Central Docks (Neighbourhood C), Peel Land and Property are seeking to discharge these 16 pre-reserved matters conditions for this neighbourhood. The following strategy sets out the information required to discharge a pre-reserved matters condition for Central Docks, Liverpool Waters.

## 1.2 Consultees

Where relevant, advisory or statutory consultees have been engaged with during the production of the strategy. Additionally, liaison has taken place across all conditions between other sub-consultants to ensure each condition conforms to all other relevant conditions.

## 1.3 Standalone Applications

There have been several consents for developments within Central Docks. These developments have come forward as standalone applications and although measures have been considered to ensure general conformity with the outline

consent, they have not directly followed the LW process. Due to the definition of "committed development" only the standalone applications which have commenced on site can be considered and referenced within the condition strategy. For clarity these are:

- C04 – C06 (17F/1628)
- Northern Link Road (17F/2628)

Developments which have been determined but have not commenced:

- Isle of Man (18F/3231)

Developments which are currently being determined for planning are:

- C02 (18F/3247)
- District Heating Network, Phase 1 Part 2 (19F/0079)

As these applications have not been granted consent, they only hold limited weight and are not classed as committed development. Where relevant, these have been considered within the strategy but reference to the original outline consented plots for these emerging developments is still made where needed.

## 1.4 Part D Conditions

The following strategy has been produced to discharge Part C conditions, as such, it sets a high-level strategy for the Central Docks Neighbourhood. Further detail will be provided through the discharge of Part D conditions '*Details to be provided with Reserved Matters Applications*'. Therefore, Part C conditions will establish the strategy, and Part D conditions will provide further details when reserved matters applications come forward.

## 1.5 S96a Amendment Application (18NM/2766)

In November 2018, a non-material amendment was consented for the Liverpool Waters Outline Consent. The amendments included:

1. Liverpool Waters Parameter Plan Report (November 2011) to Liverpool Waters Parameter Plan Report (October 2018), where changes within the document include:
    - PP003 Phasing Plan
    - PP004 Development Parcels
    - PP005 Development Plots
    - PP006 Building Heights
    - Illustrative Masterplan
2. **The wording of Condition 3:**

The development hereby approved shall only be implemented in general conformity with the following submitted application documents (The Principal Application Documents):

- Updated Planning Application form (November 2011);
- Statement of Key Development Principles (November 2011);
- LW Parameter Plan Report (incorporating Parameter Plans) (October 2018)
- Design and Access Statement (November 2011);
- Building Characterisation & Precedent Study (November 2011) ("BCPS");
- Public Realm Characterisation & Precedent Study (November 2011) "(PRCPS)";
- Conservation Management Plan for the Protection, Conservation and
- Preservation of Heritage Assets (November 2011);
- Liverpool Waters Indicative Masterplan (October 2011)

Received by the Local Planning Authority on the 8th & 16th December 2011 & October 2018.

**3. The wording of condition 71:**

No more than 27.24% (460,000sqm) of the entire total consented development floorspace set within the LWOPP shall be erected within Neighbourhoods A, B and C, and no development shall commence in Neighbourhoods D and E, until the Transport Assessment (November 2011) submitted and hereby approved with the application has been reviewed, updated and agreed by the Local Planning Authority in writing and identified measures have been secured to undertake the highway works and public transport enhancements identified as necessary within that updated Transport Assessment in a phased manner in relation to the development as a whole and in accordance with the Highway and Public Transport Enhancement Strategy referred to in Condition 19 and the monitoring and review and enhancement arrangements referred to in Schedule 3 of this permission.

**4. The removal of condition 75 of the LW Outline Planning permission**

**5. The wording of Schedule 3:**

The Highway & Public Transport Enhancement Strategy monitoring and review mechanisms referred to in Condition 10 and required in advance of any development in neighbourhoods D and E and anymore development floorspace greater than 27.2% (460,000sqm) of the entire total consented development floorspace within Neighbourhoods A, B and C (or 2021, whichever the earlier) shall identify the range, methodology, format and timetable of travel monitoring. The results of the monitoring shall be submitted annually to the Local Planning Authority commencing concurrently with submission to the Local Planning

Authority of the first Detailed Neighbourhood Masterplan for neighbourhood B, C D or E required by Condition 11.

6. **The wording of Schedule 5:**

- The Pontoon and Princes Jetty shall be provided in conjunction with the development plots set out in the approved Princes Dock Neighbourhood Masterplan (May 2018).
- Central Park shall be commenced at the same time as the start of any construction work to provide buildings in any of development Parcels 3a, 3b, 3c, 3d and 3f.
- Bath Gate will be commenced and completed in conjunction with plot A05 (Plaza 1821).

Where relevant, the strategy will refer to the above amendments.

## 1.6 Section 96a Amendment Application (April 2019)

An additional non-material amendment has been submitted to Liverpool City Council (application currently pending decision). The amendments include:

1. Liverpool Waters Parameter Plan Report (October 2018) to Liverpool Waters Parameter Plan Report (April 2019), where changes within the document include:
    - PP005 Development Plots
    - PP006 Building Heights
    - PP007 Access and Movement
    - Illustrative Masterplan
2. **The wording of Condition 3:**

The development hereby approved shall only be implemented in general conformity with the following submitted application documents (The Principal Application Documents):

- Updated Planning Application form (November 2011);
- Statement of Key Development Principles (November 2011);
- LW Parameter Plan Report (incorporating Parameter Plans) (April 2019)
- Design and Access Statement (November 2011);
- Building Characterisation & Precedent Study (November 2011) ("BCPS");
- Public Realm Characterisation & Precedent Study (November 2011) "(PRCPS)";
- Conservation Management Plan for the Protection, Conservation and

- Preservation of Heritage Assets (November 2011);
- Liverpool Waters Indicative Masterplan (October 2011)

Received by the Local Planning Authority on the 8th & 16th December 2011, October 2018 and April 2019.

## 1.7 Site and Scheme Description

### 1.7.1 Liverpool Waters

Liverpool Waters is a major project involving the regeneration of 60ha of redundant docks in the heart of the city of Liverpool on the eastern bank of the River Mersey. The development is over 2km in length; extending from Princes Dock in the south to Bramley Moore Dock in the north. Virtually the entire Liverpool Waters site comprises reclaimed land which was created to form docks commencing in the late 18th century. Over a third of the Liverpool Waters site consists of docks with open water. By the early 21st century all of the docks were redundant by virtue of the changing nature of the shipping industry.

The Liverpool Waters joint vision (Peel and Liverpool City Council) involves regenerating the historic dockland site to create a world-class, high-quality, mixed-use waterfront quarter in central Liverpool that will allow for substantial growth of the city's economy. The aspirational scheme will create a unique sense of place, taking advantage of the site's cultural heritage and integrating it with exciting and sustainable new development.

The principal proposed land uses at Liverpool Waters will be commercial offices and other business uses, residential development and tourism-related uses. More specifically this includes:

- Residential (about 9000 dwellings)
- Business space, mainly offices.
- Hotel and conference facilities.
- Buildings for assembly and leisure.
- Restaurants, cafes, pubs and wine bars.
- Comparison (non-food) shops serving local needs.
- Community institutions (clinics, health centres, nurseries, schools and places of worship).
- Offices and services in local shopping centres.
- Convenience (food) shops.
- Parking.
- A cruise-liner terminal and an energy centre.
- Servicing.

### 1.7.2 Central Docks

The Central Docks Neighbourhood will provide a new dynamic urban focus around public open space and the Leeds-Liverpool Canal extension. It is intended to be the business, entertainment and leisure fulcrum of the Liverpool Waters

scheme. There will be significant changes in the south of the neighbourhood including the new Isle of Man Ferry Terminal and cultural buildings. Central Docks is the location of the secondary tall buildings cluster and will also have a new public open space – Central Park. The plots identified for development within the masterplan for the Central Docks Neighbourhood are shown on Figure 1.1.

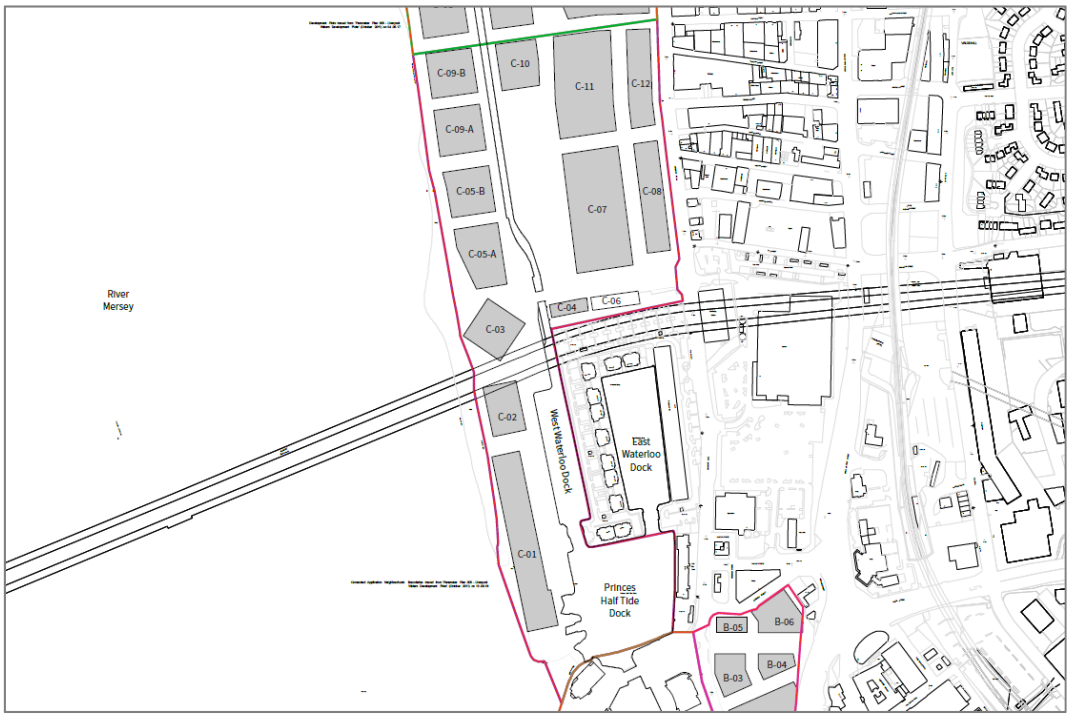


Figure 1.1: Central Docks Development Plots (C-01 to C-12). Image taken from Parameter Plan 005 Liverpool Waters Development Plots. Drg. No. 1868-VW-005 (Planit I.E. Limited, 2018).

Development within Central Docks (Neighbourhood C; Phase 2 of Liverpool Waters) is anticipated to take place over a period of 16 years between 2020 and 2036.[1] The amount of each proposed land use within the Central Docks Neighbourhood was designed to reflect firstly, the character and location of the neighbourhood, secondly the balance considered reasonable between the primary land uses (residential/business/tourism) and finally a reasonable balance of shops, services and other supporting land uses (Table 1.1).

Table 1.1: Proposed land uses at Central Docks.

| **Proposed Land Use** | **Central Docks Neighbourhood** |
|---|---|
| Residential | 2,900 units |
| Office/Business | 165,900 $m^2$ |
| Hotel/Conference | 35,300 $m^2$ |
| Assembly/Leisure | 30,700 $m^2$ |
| Restaurants/Cafes | 11,900 $m^2$ |

[1] Planit I. E. Limited (2018) Parameter Plan 003 Liverpool Waters Phasing Plan. Drg No. 1868-VW-013.

| Proposed Land Use | Central Docks Neighbourhood |
|---|---|
| Pubs/Bars | 12,600 $m^2$ |
| Local Shops – Non-food | 8,700 $m^2$ |
| Community | 600 $m^2$ |
| Local Services | 2,600 $m^2$ |
| Local Shops – Food | 4,200 $m^2$ |
| Parking | 180,400 $m^2$ |
| Servicing | 17,500 $m^2$ |
| Cruise Terminal/Other | 16,600 $m^2$ |

## 1.8 Part C - Condition 16

Condition 16 of the Liverpool Waters Outline Consent (10O/2424) states that prior to the submission of the first application for any reserved matters approval in each respective neighbourhood, an Ecological & Biodiversity Strategy based on the Principal Application Documents and Detailed Neighbourhood Masterplan that relates to that particular neighbourhood and has regard to the wider application site shall be submitted to and approved in writing by the Local Planning Authority. The strategy shall summarise the means of safeguarding all protected species of relevance and supporting habitats during construction and operation within the respective neighbourhood including consideration of pathways to protected European sites.

Ove Arup & Partners Ltd. (Arup) have been commissioned by Peel Land and Property (Ports) to address Condition 16 by producing the Neighbourhood Ecological and Biodiversity Strategy (NEBS) for Neighbourhood C (Central Dock). Condition 16 consists of ten points which are addressed within the NEBS (Table 1.2).

Table 1.2: Relevant section of the NEBS which address the ten points of Condition 16 of the Liverpool Waters Outline Consent.

| Condition 16 | | Relevant section within NEBS |
|---|---|---|
| i. | The means, method and timeframe for carrying out updated bird surveys and impact assessments for bats and migratory and/or over wintering birds. | 2.1 to 2.5 |
| ii. | The methodology and timeframe for carrying out (seasonal) monitoring of fish and other water species within the dock system. | 2.6 |
| iii. | Working practices to address phasing of construction, construction vehicles, routing and speed limits during removal of existing buildings, vegetation and other suitable breeding habitats. | 4.1 |
| iv. | Details of habitat creation. | 5 |
| v. | Design of buildings and spaces in terms of layout, design, materials and lighting to avoid creating barriers to bird migration | 3.1 |

| Condition 16 | | Relevant section within NEBS |
|---|---|---|
| | and aviation and reduce risk of bird strikes particularly in relation to tall buildings. | |
| vi. | Means and methodology for the monitoring and management of water quality within the dock system which shall inform mitigation to safeguard fish and other water species, including the aeration of dock water spaces. | 2.7 |
| vii. | Methods for controlling leisure boat activity within the dock system. | 3.3 |
| viii. | Methods for controlling gulls and pigeons roosting on buildings. | 3.2 |
| ix. | Mechanisms for monitoring and reviewing the effectiveness of agreed ecological and biodiversity mitigation against identified targets and means for enhancing mitigation where those targets are not met. | 6 |
| x. | Mechanisms to ensure protection of Sefton Coast SAC (Seaforth Docks to Formby Point) from recreational disturbance overseen by the Liverpool Waters Coordination Panel in accordance with Schedule 6 of this permission. | 3.4 |

The NEBS will set out a strategy for the Central Docks Neighbourhood based on the results and mitigation measures included in the Liverpool Waters Environmental Statement (ES) produced for the Outline Consent (WYG, 2011a).[2] It was intended that the mitigation measures would apply to the overall Liverpool Waters development area and therefore are split across each of the neighbourhoods:

- Neighbourhood A – Princes Dock.
- Neighbourhood B – King Edward Triangle.
- Neighbourhood C – Central Docks.
- Neighbourhood D – Clarence Docks.
- Neighbourhood E – Northern Docks.

This Central Docks NEBS will therefore outline methodologies for carrying out updated surveys and the mitigation measures that should be included with the Neighbourhood. A NEBS has already been produced for Princes Dock (Neighbourhood A) (WYG, 2018).[3] This sets out measures for the Princes Dock Neighbourhood however for efficiencies and practicality, also includes measures (e.g. biennial passage/wintering bird surveys) which should be undertaken across the entire Liverpool Waters site as opposed to in isolation at the different neighbourhoods. The Central Docks NEBS therefore incorporates these measures to align with the Princes Dock NEBS, in addition to specific measures for Neighbourhood C. By adopting this joined up methodology there is an opportunity for a strategic approach to be adopted in which the mitigation measures and biodiversity enhancements for the Central Docks Neighbourhood

[2] WYG (2011a) Liverpool Waters Environmental Statement.
[3] WYG (2018) Princes Dock Condition 16 Neighbourhood Ecological and Biodiversity Strategy.

can be considered strategically in respect of ensuring maximum biodiversity benefits across the whole Liverpool Waters scheme.

Part D of the Outline Consent (details to be provided with reserved matters applications) includes Condition 34 – Ecological & Biodiversity Statement (EBS). This states that prior to the commencement of development within any neighbourhood, the approval in writing of the Local Planning Authority (LPA) must be obtained to a detailed EBS based on the NEBS explaining how the specific scheme in that neighbourhood or part neighbourhood will provide for the protection and enhancement of protected species and supporting habitats, including the provision of new and replacement habitats by means of the following:

i. provision of detailed and quantitative surveys to be able to assess in detail any potential impacts of the development upon bats and migratory and/or over-wintering birds;
ii. mitigation to safeguard fish and other water species;
iii. details of habitat creation;
iv. siting and design of replacement roosting sites within Nelson Dock for displaced winter water birds (specifically cormorants);
v. provision and management of new/compensatory habitats;
vi. the design of buildings and spaces based on the Detailed Neighbourhood Masterplan for the land;
vii. for development involving the Hydraulic Engine House, Victoria Clock Tower or the office and workshop buildings south of Collingwood Dock, detailed internal bat surveys;
viii. measures to control leisure boat activity and behaviour within the dock system to minimise disturbance of wildlife within the docks;
ix. measures to discourage gulls and pigeons from nesting/roosting on buildings; and
x. mitigation for any areas affected by invasive, non-native plants and noxious weeds.

The Central Docks NEBS will therefore outline the methodologies, measures and options to allow for the production of detailed plot-specific EBSs for each reserved matters application in order for Condition 34 of the outline consent to be discharged.

## 1.9 Liverpool Waters Sustainability Principles

Peel Land and Property (Ports) Ltd. (Peel L&P) support the United Nations Sustainable Development Goals (SDGs) and their vision is to encourage the creation of highly sustainable, future-proofed developments (Peel L&P, 2019).[4] Peel L&P have prioritised the four SDGs that are most relevant to their business activities:

- SDG 8 – decent work and economic growth.

[4] Peel Land & Property (Ports) Ltd. (2019). Sustainability 5 Year Business Plan.

- SDG 11 – sustainable cities and communities.
- SDG 12 – responsible consumption and production.
- SDG 15 – life on land.

Based on these SDGs, seven sustainability principles have been developed by Peel L&P. Three of these principles are considered most relevant to this NEBS:

- Principle 3: *Develop highly sustainable and smart built environments* – minimum standards will be BREEAM Very good for commercial buildings and Home Quality Mark for residential buildings. All building development shall achieve a BREEAM Communities rating of excellent.
- Principle 5: *Put more back into the natural environment than is taken out* – ensuring that the development delivers a net gain for biodiversity and natural capital, protects existing habitats and provides benefits for people and wildlife.
- Principle 6: *Support the health and wellbeing of communities by creating beautiful, functional and well-used green public realm* – green infrastructure will be used to cool the microclimate and benefit local air quality, biodiversity and water management as well as to provide character and connectivity for people throughout the neighbourhoods.

# 2 Update Surveys and Impact Assessments

## 2.1 Preliminary Ecological Appraisal

Due to the time elapsed between the original ecological surveys and production of the ES for Liverpool Waters, each plot-specific reserved matters application should include a Preliminary Ecological Appraisal (PEA). The PEA should identify key ecological constraints, design options, requirements for further surveys and mitigation measures within each plot. These should subsequently be detailed within the plot-specific EBS.

The PEA should be undertaken in accordance with CIEEM guidelines (CIEEM, 2017).[5] With regards to habitats and vegetation, a PEA should follow the Phase 1 Habitat survey guidelines as set out by the Joint Nature Conservation Committee (JNCC, 2010).[6] The PEA should also conform to the mandatory British Standard BS42020:2013 Biodiversity Code of Practice for Planning & Development.

## 2.2 Breeding Birds

Thirty-nine breeding bird species were recorded during the initial survey work completed in 2009 for the Liverpool Waters Outline Application.[7] Of these 39 species, 16 were considered to be holding territory on site and nine species were confirmed to have successfully bred within the site boundary. The key species recorded to be holding territory within Liverpool Waters were black redstart *Phoenicurus ochruros*, lapwing *Vanellus vanellus*, skylark *Alauda arvensis*, starling *Sturnus vulgaris*, linnet *Linaria cannabina*, mallard *Anas platyrhynchos*, ringed plover *Charadrius hiaticula*, and swallow *Hirundo rustica*. Species recorded within the Central Docks Neighbourhood in 2009 included lapwing, skylark, linnet and ringed plover. A singing male black redstart was recorded approximately 150m to the north east of Central Docks. Little ringed plover *Charadrius dubius* were not recorded during the breeding bird surveys undertaken in 2009; however they had previously been recorded breeding within the Liverpool Waters site and the habitat remains suitable.

Species specific breeding bird surveys should therefore be undertaken in the Central Docks Neighbourhood. The focus of the surveys should be on Schedule 1 species which are considered to be likely breeding on site. It will be possible to assess all breeding species on site (including those listed above) by undertaking five visits (mid-April – end of June) following the Common Bird Census methodology. In addition to recording the Schedule 1 species, this method would also record species such as skylark, lapwing, linnet, ringed plover and meadow pipit *Anthus pratensis*. For efficiency, and in line with a strategic approach,

[5] CIEEM (2017). Guidelines for Preliminary Ecological Appraisal, 2nd edition. Winchester: Chartered Institute of Ecology and Environmental Management.
[6] JNCC (2010). Handbook for Phase 1 Habitat survey - a technique for environmental audit. Peterborough: Joint Nature Conservancy Council.
[7] WYG (2009). *Liverpool Waters Breeding Bird Survey Report*. Appendix 7.6 of the Liverpool Waters ES (2011).

surveys for breeding bird species should be undertaken across the entire Liverpool Waters site, thereby providing data for applications within all neighbourhoods.

### 2.2.1 Little Ringed Plover

Annual surveys should be undertaken in the year prior to construction and during the subsequent four years of development at the Central Docks Neighbourhood. The surveys will look to identify whether little ringed plover *Charadrius dubius,* have colonised the vacant plots for nesting and foraging. Ringed plover have previously been recorded breeding within the site; the surveys for little ringed plover should therefore also target ringed plover. The survey data should inform the construction mitigation strategies of the development in Central Docks with the aim of preventing disturbance to little ringed plover and ringed plover nest sites.

The surveys should be undertaken by a suitably qualified ecologist and follow the methodology described below. Following the first five years of monitoring, the requirement for continued breeding plover surveys should be reviewed. If appropriate, the frequency of surveys should be reduced to biennial surveys throughout the development of the Liverpool Waters site.

#### Methodology

The methodology for the little ringed plover survey should be based on the 2007 British Trust for Ornithology (BTO) Breeding Plover Survey (Burton & Conway, 2008).[8] The survey should comprise a transect survey along a pre-defined route around the Central Docks Neighbourhood. The survey should be undertaken between 08:30 and 18:00 and note any little ringed plover (and ringed plover) heard singing, calling, and those identified visually. In addition, any nests observed should be recorded to estimate the number of breeding pairs. Three survey visits should be undertaken between 15 April and 15 July. To reduce bias on the survey data, the transect route should be walked in the alternative direction for each survey. Appropriate field maps should be annotated to show the location of any little ringed plover that are heard or seen; the standard two letter BTO species and activity codes should be used on all surveys (BTO, 2019).[9]

#### Timing/Weather Conditions

- The survey should consist of at least three visits with one visit between 15 April to 15 May, one visit between 15 May to 15 June, and the third visit between 15 June and 15 July.
- Surveys should be undertaken between 08:30 and 18:00 and last for the duration of time it takes to comprehensively complete the transect route.
- Surveys will avoid poor weather.

[8] Burton, N. H. K. and Conway, G. J. (2008). *Assessing population of breeding ringed plovers in the UK between 1984 and 2007.* Report to the Joint Nature Conservation Committee. BTO Research Report No. 503. Thetford: British Trust for Ornithology (BTO).
[9] BTO (2019). Standard naming and coding of species and subspecies regularly found in Britain and Ireland. Available at https://www.bto.org/about-birds/birdfacts/british-list

### Impact Assessment

A breeding plover impact assessment should be undertaken for each new reserved matters application in the Central Dock Neighbourhood, using data collected on the surveys. The impact assessment should be included in the plot specific EBS for submission to the LPA.

The breeding plover impact assessment should follow the same assessment methodology prescribed in the Liverpool Waters ES,[2] and should cover remediation, construction and operational phases of the development. Should the assessment identify that significant impacts on little ringed plover are likely for a particular development, appropriate mitigation measures should be identified. Mitigation measures may include the incorporation of working windows or buffer zones to restrict the impact of potentially disturbing activities on little ringed plover (and ringed plover). In addition, there may be a requirement to provide alternative nesting habitat, where possible.

## 2.2.2 Black Redstart

As per the NEBS for Princes Dock, annual surveys for black redstart, should be undertaken in the year prior to construction and during the subsequent four years of development at the Central Docks Neighbourhood. The surveys should set out to identify whether black redstart have colonised the existing buildings and/or are using any of the vacant plots for foraging. The survey data should inform the construction mitigation strategies for the new buildings with the aim of preventing disturbance to new black redstart nest sites. The surveys should be undertaken by a suitably qualified ecologist. The methodology for undertaking the survey should closely follow that outlined in Bird Monitoring Methods (Gilbert *et al*., 1998);[10] this may need to be modified slightly to ensure it is site specific. Following the first five years of monitoring, the requirement for continued black redstart surveys should be reviewed. If appropriate, the frequency of surveys should be reduced to biennial surveys throughout the development of the Liverpool Waters site.

### Methodology

As identified in the NEBS for Princes Dock, the survey should comprise a transect survey along a pre-defined route around the Central Docks Neighbourhood. Surveys should be undertaken at dawn, and will note any black redstart heard singing, calling, and those identified visually. Five survey visits should be undertaken between mid-April and the end of June. To reduce the bias on the survey data, the transect route should be walked in the alternative direction for each survey. Appropriate field maps should be annotated to show the location of any black redstart that are heard or seen; the standard two letter BTO species and activity codes should be used on all surveys.[9]

[10] Gilbert, G., Gibbons, D. W., and Evans, J. (1998). *Bird Monitoring Methods – a Manual of Techniques for Key UK Species*. RSPB.

### Timing/Weather Conditions

- The surveys should consist of a least five fortnightly visits from mid-April to the end of June.
- Surveys should commence early morning (in the hours after sunrise) and last for the duration of time it takes to comprehensively complete the transect route.
- Surveys will avoid cold, wet and windy conditions.

### Impact Assessment

As per the NEBS for Princes Dock,[3] a black redstart impact assessment should be undertaken for each new reserved matters application in the Central Docks Neighbourhood, using data collected on the surveys. The impact assessment should be included in the plot-specific EBS for submission to the LPA.

In line with the NEBS for Princes Dock, the black redstart impact assessment should follow the same assessment methodology as set out in the Liverpool Waters ES,[2] and should cover remediation, construction and operational phases of the development. Should the assessment identify that significant impacts on black redstart are likely for a particular development, appropriate mitigation measures should be identified. Mitigation measures may include the incorporation of working windows or buffer zones to restrict the impact of potentially disturbing activities on black redstart. In addition, there may be a requirement to provide alternative nesting habitat.

## 2.3 Passage/Wintering Birds

### 2.3.1 Wintering Bird Surveys

Wintering bird surveys should be undertaken in the year prior to construction and during the subsequent four years of development within the Central Docks Neighbourhood; this data will highlight if there is a need to revise mitigation strategies in relation to disturbance of wintering bird roosts. For efficiency and in line with a strategic approach, surveys for passage/wintering species should be undertaken across the entire Liverpool Waters site, thereby providing data for applications within all neighbourhoods. The surveys should be undertaken by suitably qualified ecologists following the methodology described below.

Following the first five years of monitoring, the requirement for continued annual wintering bird and passage surveys should be reviewed; a decision as to the required survey effort should be made based on the results. If appropriate, wintering and passage bird surveys should be reduced to biennial; data from biennial surveys should inform reserved matters application in the docks that are yet to be developed. Based on the review, fully developed neighbourhoods may be excluded from future survey efforts; therefore, reducing the scope of surveys as the neighbourhoods are developed.

## Methodology

The survey methodology proposed is based on the BTO's Wetland Bird Survey (WeBS) (BTO, 2017[11]) however utilises a transect rather than dividing the site into blocks. Surveys should consist of a transect with predefined vantage points in each waterfront neighbourhood. The transects should be undertaken by two suitably qualified ecologists. Appropriate field maps should be annotated to show the bird species, high band, flight line and direction; the standard two letter BTO species and activity codes should be used on all surveys.

Target species for wintering bird and passage surveys should comprise waders, wildfowl, gulls & terns, cormorant, grey heron and raptors. All other species, including BoCC Red and Amber list passerines (song birds) should be recorded as incidental species. Surveys should be written up as a factual report; highlighting flight lines, key roosting locations, and any potential breeding activity of target species (early March onwards) within the Liverpool Waters scheme.

## Timing/Weather Conditions

- High water surveys should be undertaken between September and March (inclusive) and comprise a minimum four-hour watch period per survey.
- In line with the NEBS produced for Princes Dock, high water surveys should be undertaken during the four hours preceding high tide.
- Low water surveys should be undertaken between September and March (inclusive) and comprise of a minimum four-hour period per survey.
- Low water surveys should be undertaken during the two hours preceding low water and two hours after.
- Surveys should be undertaken in a range of weather conditions, although times of restricted visibility and particularly harsh weather will be avoided.

## Impact Assessment

The Liverpool Waters ES identified the presence of a small roost for oystercatcher *Haematopus ostralegus*, and redshank *Tringa totanus*, in Waterloo Dock.[2] Redshank and oystercatcher are components of the water bird assemblage (non-breeding) of the Mersey Narrows and North Wirral Foreshore Special Protection Area (SPA). The potential loss of this roost should be assessed in the context of the European site to determine whether this would result in a likely significant impact.

In line with the NEBS for Princes Dock, an impact assessment for water birds should be undertaken for each new reserved matters application in the Central Dock Neighbourhood, using data collected on the surveys. The impact assessment should be included in the plot specific EBS for submission to the LPA.

In accordance with the NEBS for Princes Dock, the water bird impact assessment should cover remediation, construction and operational phases of the development. It should follow the same assessment methodology as set out in the

[11] BTO (2017). *Wetland Bird Survey – Survey Methods, Analysis & Interpretation*. Thetford: BTO.

Liverpool Waters Ecology and Nature Conservation ES chapter and should include a Habitats Regulations Assessment (HRA) of Likely Significant Effect (LSE) for each of the Natura 2000 sites that may be affected by the development. Assessments should include all of the following sites, in addition to any proposed, new or extensions to current sites which may be designated subsequently:

- Liverpool Bay SPA;
- The Mersey Narrows and North Wirral Foreshore SPA/Ramsar;
- Mersey Estuary SPA/Ramsar;
- Ribble & Alt Estuaries SPA/Ramsar;
- Sefton Coast Special Area of Conservation (SAC);
- The Dee Estuary Ramsar;
- Dee Estuary SPA;
- Dee Estuary SAC; and
- Martin Mere SPA and Ramsar.

As with the NEBS for Princes Dock, the impact assessment should reference the most recent surveys, the baseline bird report for Liverpool Waters, the subsequent monthly update reports produced by WYG between October 2013 and April 2014, and the TEP assessment of the docks for qualifying features of Natura 2000 sites (TEP, 2015).[12] Impact assessments should also utilise any additional data and evidence available from standalone applications. Should the assessment identify that significant impacts on water birds are likely for a particular development, appropriate mitigation measures should be identified. Mitigation measures may include the incorporation of working windows or buffer zones to restrict the impact of potentially disturbing activities on water birds. In addition, there may be a requirement to provide alternative roosting habitat. Any mitigation proposed should be in accordance with the Liverpool Waters Strategic Ecological Mitigation Plan (SEMP) which is currently being developed at the time of writing this NEBS.[13]

## 2.4 Foraging Common Tern

### 2.4.1 Common Tern Survey

Surveys for foraging common tern *Sterna hirundo,* should take place in the Central Docks Neighbourhood in the year prior to construction and during the subsequent four years following development of the neighbourhood. The surveys should be undertaken by a suitably qualified ecologist and should follow the methodology described below. Following the first five years of monitoring, the requirement for continued surveys should be reviewed on the basis of the survey results and, if appropriate, the frequency of the surveys reduced.

[12] TEP (2015). Assessment of Supporting Habitat (Docks) for Use by Qualifying Features of Natura 2000 Sites in the Liverpool City Region. Available at http://www.meas.org.uk/media/5279/4157005-assessment-of-supporting-habitat-liverpool-docks-excl-drawings-aug-2015.pdf

[13] Arup (2019) Liverpool Waters Strategic Ecological Mitigation Plan – Interim Note.

## Methodology

There is no standard methodology available for foraging common tern within Bird Monitoring Methods.[10] Similar to the Princes Dock NEBS,[3] the following shore-based survey approach is proposed to assess foraging common tern. This approach was outlined in Parson *et al.* (2015)[14] and was designed for little tern *Sternula albifrons*. Surveys for common tern foraging should be carried out by four surveyors, one located in each of the waterfront neighbourhoods. Surveys should be carried out from a vantage point which allows observation of the docks and coastal strip along the Mersey. Appropriate field maps should be annotated to show the flight lines of observed common terns, including their height, direction and foraging activity. The survey should also record breeding behaviour as observed.

Survey results should be written up as a factual report, highlighting flight lines, key foraging locations and any breeding locations for common tern within the Liverpool Waters Scheme and adjacent coastal strip.

## Timing/Weather Conditions

- A total of 30 hours of survey effort should be completed between April and August (inclusive).
- Survey effort should be evenly spread across the five-month survey period and comprise approximately two-hour watches, with three watches completed in each month.
- The surveys should be undertaken under a variety of tidal states and times of day to reduce sampling bias.
- The surveys should be undertaken in a range of weather conditions, although times of restricted visibility and particularly harsh weather will be avoided.

## Impact Assessment

An impact assessment for common tern should be undertaken for each new reserved matters application in the Central Dock Neighbourhood; the reserved matters applications should incorporate the data recorded within the surveys and any other data collected from standalone applications. The impact assessment should be included in the plot specific EBS for submission to the LPA.

The impact assessment for common tern should cover remediation, construction and operational phases of the development and should include a HRA for Liverpool Bay SPA and Mersey Narrows and North Wirral Foreshore SPA. Impact assessments should reference the baseline reports for Liverpool Waters, in addition to the monthly update reports produced by WYG between October 2013 and April 2014. The impact assessments should also reference the TEP study

[14] Parsons, M., Lawson, J., Lewis, M., Lawrence, R. & Kuepfer, A. (2015). Quantifying foraging areas of little tern around its breeding colony SPA during chick-rearing – JNCC Report No. 548. Available at http://jncc.defra.gov.uk/pdf/Report_548_web.pdf

assessment of supporting Habitat (Docks) for Use by Qualifying Features of Natura 2000 Sites in the Liverpool City Region.[12]

## 2.5 Bats

Bat activity transect surveys were undertaken at Liverpool Waters by WYG in 2009.[15] Observed levels of bat activity were considered to be low with only 1-2 common pipistrelle bats recorded during each of the three visits undertaken. No bats were recorded within Central Docks and no buildings within Central Docks were recorded to have suitability for roosting bats. The waterfront dock basins were noted to be particularly exposed to the prevailing winds along the River Mersey and the habitats sparse of vegetation. It was concluded that the habitat was of poor suitability for foraging bats.

### 2.5.1 Preliminary Bat Roost Assessment

Very few buildings remain within Central Docks however there are some industrial units located to the west of Waterloo Road (approximate grid reference SJ33609151). Where a reserved matters application proposes demolition of any existing structures, a bat roost suitability assessment should be undertaken to determine presence/likely absence of roosting bats and to assess the potential of the structure to be used for roosting. This should be carried out by a suitably qualified ecologist in line with current guidance (Collins, 2016).[16] Structures should be searched for signs of bat presence including:

- bat droppings;
- scratch and grease marks;
- live or dead bats; and
- noises of bats calling from within the roost.

In addition, features searched for on structures should include:

- missing mortar; and
- any cracks or gaps at least 10mm in size.

Following this inspection, the structure should be assigned a level of suitability to support roosting bats at different times of year: high, moderate, low or negligible. If the structure is identified to have suitability for roosting bats, further surveys may be required.

#### Timing/Weather Conditions

Bat roost suitability assessments may be undertaken at any time of year under any weather conditions, providing the weather conditions do not affect the ecologist's

[15] WYG (2009). *Liverpool Waters Bat Survey Report*. Appendix 7.5 of the Liverpool Waters ES (2011).
[16] Collins, J. (ed) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust: London.

ability to carry out the survey effectively and safely e.g. not during heavy rain or high winds.

### 2.5.2 Bat Activity Surveys

Structures confirmed as roosts during the preliminary bat roost assessment, or those assessed as having low, moderate or high bat roost suitability may require further activity surveys to determine the presence/likely absence of bats and characterise roosts (identify species, numbers, access points, timing of use etc.). Surveys should take the form of dusk emergence/dawn re-entry surveys and should be undertaken following current guidance.[16]

Dusk emergence/dawn re-entry surveys involve ecologists visiting at dusk or dawn to listen/record and watch for bats emerging or returning to roosts. The number and timing of visits required depends on the suitability of the structure being surveyed:

- Confirmed/High – three separate survey visits required between May and September with at least two visits in May to August. At least one dusk emergence and one dawn re-entry survey, the third visit may be either dusk or dawn.
- Moderate – two separate surveys (one dusk emergence and one dawn re-entry) required between May and September with at least two visits in May to August.
- Low – One dusk emergence or dawn re-entry survey required between May and August.

#### Timing/Weather Conditions

Surveys should be taken between May and August/September (see above). The sunset temperature must be above 10°C and no rain or strong winds.

### 2.5.3 Bat Impact Assessment

Any reserved matters applications which affect structures with potential to be used by roosting bats should include an impact assessment within the plot-specific Ecological and Biodiversity Statement. If any significant impacts during remediation, construction or operation are considered likely, then appropriate mitigation should be identified. This may include application for a bat mitigation licence from Natural England if any roosts and to be disturbed or destroyed.

## 2.6 Aquatic Species

Surveys for aquatic species were not undertaken within the dock system as part of the survey work undertaken to inform the ES (WYG, 2011).[2] As stated in the Princes Dock NEBS,[3] an initial baseline assessment should therefore be undertaken within the Central Dock system prior to the start of construction. An ongoing programme of monitoring should then be undertaken annually throughout

the development. The surveys should follow the same methodology as included within the Princes Dock NEBS (Table 2.1).

Table 2.1: Methodology for carrying out monitoring of fish and other water species within the dock system.

| Survey | Methodology |
|---|---|
| **Baseline** | |
| Phytoplankton survey | Appropriate UKAS accredited methodology. |
| Fish survey – hydroacoustic and netting | Duncan, A. and Kubecka, J. (1993). *Hydroacoustic methods of fish surveys*. National Rivers Authority R&D Note 196.<br>Fyke net surveys. |
| Benthic macroinvertebrate survey of dock floor | Samples to be collected using a suitable grab. Samples to be taken from Princes Half Tide Dock, West Waterloo Dock, and the linear waterway to the north of West Waterloo Dock. Minimum of 18 sampling sites. Also, baited traps to be used at a minimum of nine locations to quantitatively sample mobile species. Samples to be processed following Worsfold & Hall (2010).[17] |
| Benthic invertebrate survey of dock walls | Wall scrape samples to be taken following Worsfold (1998).[18] |
| **Monitoring** | |
| Annual surveys to monitor benthic invertebrates, algae, phytoplankton and zooplankton species. | As above for baseline surveys, unless subsequent improvement to accepted methodologies during development lifespan. |
| Annual fish survey if low fish population is identified during baseline to monitor improvements. Otherwise no further monitoring except in exceptional circumstances e.g. pollution incident. | As above for baseline surveys, unless subsequent improvement to accepted methodologies during development lifespan. |

### 2.6.1 Invasive Non-Native Species

Marine Invasive Non-Native Species (INNS) such as the tunicate *Styela clava*, are known to be present within the docks in Liverpool (Davis et al., 2007).[19] There is high potential for other marine non-native species to be present in the docks, spread both by natural vectors or via vessels and their ballast/bilge water. If any INNS are recorded within Central Docks during the initial baseline or any subsequent monitoring, an appropriate method statement or management plan

[17] Worsfold, T.M. & Hall, D.J. (2010) *Guidelines for processing marine microbenthic invertebrate samples: a Processing Requirements Protocol: Version 1.0, June 2010*. Unicomarine Report. Available at http://www.nmbaqcs.org/media/1175/nmbaqc-inv-prp-v10-june2010.pdf
[18] Worsfold, T.M. (1998). *Sampling of cryptofauna from natural turfs (flora or fauna) on hard substrata. Version 1 of 26 March 1998*. In: Biological monitoring of marine Special Areas of Conservation: a handbook of methods for detecting change. Part 2. Procedural guidelines, ed. By K. Hiscock. Peterborough: Joint Nature Conservation Committee.
[19] Davis, Martin H., Lützen, Jørgen and Davis, Mary E (2007). *The spread of Styela clava Herdman, 1882 (Tunicata, Ascidiacea) in European waters.* Aquatic Invasions (2007) Volume 2, Issue 4: 378-390

should be implemented during construction to avoid promoting the spread of these species. Method statements or management plans should also be considered in relation to operational requirements, for example should there be a change in usage or activities within Central Docks waters post-development.

## 2.7 Water Quality

### 2.7.1 Monitoring

Part vi. Of Condition 16 requires details of the means and methodology for the monitoring and management of water quality within the dock system. This should inform mitigation to safeguard fish and other water species, including the aeration of dock water spaces. The surveys should follow the same methodology as included within the Princes Dock NEBS (Table 2.1).

An initial baseline characterisation survey of the dock system should be undertaken prior to the start of construction. This should include:

- Water quality sampling at several locations within Princes Half Tide Dock, West Waterloo Dock and the waterway to the north of West Waterloo Dock. Parameters to include dissolved oxygen, pH, conductivity, salinity, biochemical oxygen demand, ammonia, nutrients, heavy metals and organics likely to include poly-aromatic hydrocarbons and TBT.
- Sediment quality sampling for sediment oxygen demand, metals, pH and redox potential.
- Bathymetric survey for sediment depth.

An ongoing monitoring programme should be implemented during construction to monitor the above parameters including biochemical oxygen demand, ammonia and nutrients. This should be completed monthly in the first instance however the frequency may reduce over time, depending on the results.

Reports on water quality monitoring should be provided to the Environment Agency, MEAS and The Canal & River Trust. The Principal Contractor should rectify any issues identified during monitoring and implement measures to prevent further impacts arising.

### 2.7.2 Management Plan

As included in the NEBS for Princes Dock (WYG, 2018[3]), an appropriate water quality management plan should be developed and implemented by the Principal Contractor during the development of Central Docks. This should be produced following the results of the initial baseline assessment and will likely include measures such drainage system investigation to identify pollution risk and/or aeration of dock spaces.

# 3 Mitigation Through Scheme Design

## 3.1 Bird Strike Mitigation

Central Docks is the location of the secondary tall buildings cluster with five high-rise (>45m) buildings to be developed. Despite this, previous surveys within Liverpool Waters have found that the majority of birds follow either the River Mersey or the dock system rather than the land which has been allocated for development.[12,20] Nevertheless, the development of the tall buildings cluster within Central Docks has the potential to increase the risk of bird strike.

Measures to reduce the risk of bird strike should be designed into all tall buildings within Central Docks, particularly those with large areas of reflective glass on the northern and southern aspects. This should incorporate day and night time mitigation measures and should be incorporated into the plot-specific EBS required for each reserved matters application under Part D, Condition 34 of the Liverpool Waters outline consent. As is included in the Princes Dock NEBS (WYG, 2018[3]), all reserved matters applications for buildings over five storeys high, or where there are low existing light levels, should consider the requirement for a lighting plan. The design of any ancillary structures of high-risk buildings should also consider the requirement of similar mitigation.

Potential mitigation measures to reduce bird strike which may be included at Central Docks include (US Fish and Wildlife Service, 2016[21]):

- Reducing strikes with glass:
    - Patterning
    - Fritting
    - UV Patterned Glass
    - Screens
    - Netting (mesh size <1.3cm)
    - Architectural features e.g. overhangs, awnings and louvres
- Lighting plan to reduce lighting during bird migration periods (mid-August to mid-November and March to mid-May):
    - Avoid unnecessary lighting including perimeter lighting.
    - Operating lights to be designed so that light levels (brightness) are as low as possible.

[20] Vantage point surveys undertaken by WYG in 2009/2010, 2013/2014.
[21] US Fish and Wildlife Service (2016). *Reducing bird collisions with buildings and building glass best practices*. Falls Church, Virginia: Division of Migratory Bird Management. Available at https://www.fws.gov/migratorybirds/pdf/management/reducingbirdcollisionswithbuildings.pdf

  - Consider use of motion sensors in public areas (where health & safety considerations allow).
  - No upward lighting – lights to be fitted with hoods or louvres to avoid lighting skywards.
  - Height of lighting columns to be reduced/limited to reduce spillage.
  - Building occupants to be made aware of measures to reduce risk of bird strike e.g. use of shades/blinds and turning off lights when not in use.

- Landscaping design should:
  - avoid creating linear features which may funnel birds towards glass features;
  - consider pedestrian and vehicle approaches to buildings to avoid potential for flushing of birds e.g. from trees or shrubs towards glass buildings; and
  - avoid placement of interior planting in close proximity to windows to avoid creating the impression of continuing vegetation.

## 3.2 Control of Gulls and Pigeons

All buildings within the Central Docks Neighbourhood should incorporate measures to dissuade nesting and roosting of gulls and feral pigeons, appropriate to the design and function of the building. Each reserved matters application should include details of consideration with designed-in measures to be prioritised over additional measures such as spikes, wires or netting. Applicants should consider the implications of installing such measures in also reducing the availability of habitat for other key bird species including cormorant *Phalacrocorax carbo*. Any measures installed must also have regard to appropriate licensing requirements in respect to the protection of breeding birds under the Wildlife and Countryside Act 1981 (as amended).

Suitable designed-in measures include:

- Minimise flat roofs or replace with pitched roofs (over 25 degrees).
- Where flat roofs are required consider incorporation of roof gardens so human disturbance may deter nesting. Additional dissuasion measures may be required in certain locations.
- Avoid interruptions in the roof plane, e.g. skylights, or utilise additional dissuasion measures.
- Avoid roof overhangs with ledges below or incorporate a minimum ledge slope of 45 degrees or additional dissuasion measures.

Additional dissuasion measures which may be considered include:

- Spikes – can be effective on ledges if spaced appropriately however if used on roofs requires complete covering and therefore there is an associated visual impact.
- Wires – may be aligned in parallel rows on flat roofs or ledges to dissuade roosting (ineffective against nesting). Preferable over netting as avoids snagging of other bird species and may be less visually intrusive).
- Netting – requires careful consideration due to potential negative visual impact; difficulty to correctly install and maintain; and potential for individuals to become snagged due to inappropriate mesh size.
- Effective management of litter and waste – avoid accumulations and consider nuisance bird species in design of street furniture, e.g. litter bins.

It is not recommended that measures such as plastic bird of prey decoys, noise emitting devices or wind-driven moving structures are utilised as they are less effective and may have a negative impact on local nesting species, in particular peregrine *Falco peregrinus*.

Additional mitigation measures may be required for priority bird species which will also be deterred by the methods outlined above. All reserved matters applications should consider appropriate inclusion of integrated roosting features for species such as cormorant.

## 3.3 Control of Leisure Boat Activity

Due to the location of the Central Docks Neighbourhood within close proximity to sites designated for significant water bird populations, the impact of increased boat traffic should be considered within the environmental assessment and Habitats Regulations Assessment accompanying each reserved matters application. The assessments should incorporate survey/monitoring data of SPA species in order to ensure the appropriateness of mitigation measures.

Boats currently access Princes Half Tide Dock, West Waterloo Dock and the waterway to the north of West Waterloo Dock via the Liverpool Canal Dock link. This is accessed from the north from the Liverpool to Bootle stretch of the canal via Stanley Dock.

Impacts from increased boat traffic will require appropriate mitigation to ensure impacts on SPA qualifying species utilising the docks (e.g. cormorant) are avoided. In addition increased boat traffic has the potential to undermine the effectiveness of mitigation measures such as floating pontoons.

Measures to limit boat activity may include restricting traffic in certain seasons or to certain times of the day or year. Additionally, the implementation of a lane or one-way system may help to control traffic.

## 3.4 Recreational Disturbance

Point x. of Condition 16 requires '*mechanisms to ensure protection of Sefton Coast SAC (Seaforth Docks to Formby Point) from recreational disturbance*

*overseen by the Liverpool Waters Coordination Panel in accordance with Schedule 6 of this permission'*.

It is proposed that 2,900 residential units will be created within the Central Docks Neighbourhood. There is the potential that residents may travel to Sefton Coast SAC (approximately 5.9km to the north), Ribble and Alt Estuaries SPA/Ramsar (approximately 5.3km to the north) and Mersey Narrows and North Wirral Foreshore SPA/Ramsar (0.9km to the west across the River Mersey) for recreational purposes. This may affect the designated sites either alone, or in-combination with other developments.

A public open space will be created within the Central Docks Neighbourhood – Central Park. It is envisaged that this will be used for recreation which may reduce visits to the European sites. Recreational disturbance effects at Sefton Coast SAC were screened out within the Liverpool Waters HRA (WYG, 2011b)[22] as *"the primary movements of end users will be contained within the footprint of the development and its immediate surrounds."* However, since the Liverpool Waters outline consent was granted, a number of statutory designations have changed (e.g. Mersey Narrows and North Wirral Foreshore SPA and Liverpool Bay SPA). There is also further evidence and understanding of the impacts of visitor pressure on the designated sites (Natural England, 2015).[23]

Recreational pressure, including vehicular access and dog-fouling, is recognised in the formal statutory European Site Conservation Advice Packages for Sefton Coast SAC (Natural England, 2019[24]) which can be assessed as a Medium-High risk to qualifying features of the European site. Recreational pressure is also highlighted in the draft Liverpool Local Plans HRA as a Likely Significant Effect (LSE) (AECOM, 2017).[25] Public access/disturbance is confirmed as an issue in the Site Improvement Plans for Ribble and Alt Estuaries SPA, Sefton Coast SAC and Mersey Narrows and North Wirral Foreshore SPA.

All reserved matters applications for plots within Central Docks should include consideration of recreational pressure within HRA for Sefton Coast SAC, Ribble and Alt Estuaries SPA, Mersey Narrows and North Wirral Foreshore SPA. All future applications should ensure that they provide sufficient information to satisfy further tests of the Habitat Regulations (as required).

All developments should include a commitment to adhering to the objectives of the Visitor Management Strategy (VMS) which is currently being considered to provide a strategic approach to mitigation across the Liverpool City Region (LCR). The Liverpool City Region has commissioned a wider strategic approach to visitor and recreation pressure management; this is to be referred to as the 'Liverpool City Region European Sites Recreational Mitigation and Avoidance

[22] WYG (2011b). Liverpool Waters Habitats Regulations Assessment Screening Report for Proposed Liverpool Waters Scheme. Liverpool: WYG.
[23] Natural England (2015). *Mersey Narrows and North Wirral Foreshore Sites of Special Scientific Interest - Investigation into the impacts of Recreational Disturbance on Bird Declines*. Natural England Commissioned Report NECR201.
[24] Natural England (2019). *European Site Conservation Objectives: Draft Supplementary advice on conserving and restoring site features. Sefton Coast Special Area of Conservation (SAC) Site Code: UK0013076.* York: Natural England.
[25] AECOM (2017). *Liverpool Local Plan Habitats Regulations Assessment*. Liverpool: AECOM.

Strategy'. This work may help inform the delivery of visitor and recreation mitigation to protect European Sites within the City Region. This work is currently ongoing and no firm proposals have been proposed or agreed.

As stated in the NEBS for Princes Dock (WYG, 2018), reserved matters applications which come forward prior to the adoption of the LCR Mitigation and Avoidance Strategy should consider how recreational pressure will be assessed (and potentially mitigated for) as a result of the development. Condition 34 of Part D of the outline consent will ensure that the developer provides sufficient information to assess potential impacts through further surveys and HRA. More certainty over what mitigation (if any) would be required will be able to be provided at this stage. Applicants should include additional mitigation/preventative measures capable of being incorporated into the proposals and/or scheme design that will avoid and/or mitigate recreational pressures on the European sites and any functionally linked habitat. There should be a clear distinction within the reserved matters application documents (e.g. EBS) between those parts of the development which are essential features/characteristics, and those which are proposed as mitigation/preventative measures designed to protect European sites.

Examples of mitigation/preventative measures that may be included (as appropriate to the development of plots):

xi. Design and management of additional public open space outside the proposed development boundary to encourage use away from the European sites (e.g. Central Park).

xii. Restrictions on the number of apartments allowed to keep dogs.

xiii. Provision of information in sales packs, informing residents of the presence and importance of the European sites, and how they can help protect them including an outline 'responsible user code.'

xiv. Contributions to develop a visitor/householder 'responsible coast user code' including encouragement of visits to non-sensitive locations.

xv. Contributions to improving and/or managing access to and/or within the internationally important nature sites including financial contributions.

xvi. Contributions to increase recreation management including location-specific interventions e.g. wardening, signage, path management and habitat management, including financial contributions.

xvii. Contributions to non-sensitive locations in order improve sites to provide greater visitor enjoyment in order to reduce visits to European sites.

Any mitigation proposed should be in accordance with the Liverpool Waters SEMP.[26]

[26] Arup (2019) Liverpool Waters Strategic Ecological Mitigation Plan – Interim Note.

# 4 Construction Phase Mitigation

## 4.1 Construction Working Practices

### 4.1.1 Removal of Existing Buildings and Vegetation

The existing buildings, structures, hardstanding and ephemeral vegetation within the Central Docks Neighbourhood offer suitable nesting habitat for birds. Consequently, projects should demonstrate that breeding birds have been considered in their planning application. To limit disturbance to nesting birds, it is recommended that intrusive works such as vegetation clearance and demolition works are undertaken outside of the bird nesting season (March-August), where possible.

Where it is not possible to undertake intrusive works outside of the nesting season, a suitably qualified Ecological Clerk of Works (ECoW) should undertake a nesting bird check prior to the commencement of works on site. Should an active nest be identified, the ECoW should advise on a suitable species-specific working method and exclusion zone to limit disturbance and avoid damaging nests. The recommended working method may vary depending on the species and the nature of planned works.

### 4.1.2 Construction Vehicles, Routes and Speed Limits

As a precautionary measure, construction should be undertaken outside of the bird nesting season (March – August inclusive). Where this is not possible, an ECoW will be required to undertake a nesting bird check to ensure nests will not be damaged as vehicles move across the site. As per the NEBS for Princes Dock, vehicle routes and speed limits may need to account for nests.[3] The EcOW should advise the appropriate distance for vehicle traffic to keep from nests.

Wintering bird surveys were undertaken across the entire Liverpool Waters site during the 2018-2019 season (October to March). The reporting of the surveys was not yet published at the time of writing this NEBS, however cormorant, shelduck *Tadorna tadorna*, ringed plover *Charadrius hiaticula*, and oystercatcher have been recorded on site, among other common species. The numbers of cormorant recorded on site is considered to represent a significant proportion of the SPA population (i.e. >1%). Construction vehicle routes and speed limits should therefore be developed based on the data collected during the 2018/2019 surveys along with data collected previously across Liverpool Waters and for standalone applications. Any mitigation should be outlined in detail in the Construction Environmental Management Plan (CEMP) for the individual reserved matters through Condition 39 of the Liverpool Waters outline consent. Any mitigation proposed should be in accordance with the Liverpool Waters SEMP.[26]

The Liverpool Waters ES identified the presence of a small roost for oystercatcher and redshank in West Waterloo Dock. A restricted speed limit should therefore be stipulated for construction vehicles moving around this dock and should be

included within the CEMP. The ECoW may also recommend a speed limit during the nesting bird season (March – August inclusive).

### 4.1.3 Protection of Roost Sites of Wintering/Passage Birds

In 2011, WYG identified no significant aggregations of water birds associated with the Central Docks Neighbourhood; although, surveys by Arup in the 2018/2019 wintering season, have recorded SPA qualifying species such as cormorant on site.

Consequently, any developments in the Central Docks Neighbourhood, and elsewhere in the Liverpool Waters Scheme, which have the potential to result in increased water bird disturbance should consider, within its supporting environmental assessment and associated HRA, the impact of disturbance on features of all designated sites.

Disturbance pathways through the development of plots within the Central Docks Neighbourhood are likely to be associated with increased noise and visual effects and disturbance to available habitat for roosting and foraging. Impacts resulting from disturbance and interruption of flight paths and shading from buildings should also be considered. Mitigation should be identified through the updated impact assessment and/or the HRA. Any mitigation deemed necessary should be in accordance with the Liverpool Waters SEMP.[26] It should be outlined in detail in the CEMP for the individual reserved matters through Condition 39 of the Liverpool Waters outline consent.

#### Noise Disturbance Mitigation

Individual developments in the Central Docks Neighbourhood will require piling; this activity has the potential to extend the noise disturbance outside of the Central Docks Neighbourhood and may have potential effects on water birds using other docks within the vicinity. Therefore, effects on water bird roosting and foraging will be extended outside of the Central Docks Neighbourhood and will cover the entirety of the Liverpool Waters Scheme. For each development where piling is required, mitigation should be identified and implemented where appropriate. Any mitigation proposed should be in accordance Liverpool Waters SEMP.[26]

Noise disturbance mitigation measures should be included within the CEMP to reduce the effect of noise disturbance on birds. For Central Docks, these may include the following:

- Adherence to the guidelines set out in The Code of Practice for Noise and Vibration Control on Construction and Open Sites, 2009 and subsequent updates.
- The use of rotary piling method.
- Selection of quietest working equipment available.
- Positioning equipment behind physical carriers, i.e. temporary hoarding.
- Provision of lined and sealed acoustic covers for noisy equipment.
- Directing noise emissions away from plant, including exhausts or engines away from sensitive locations.

- Ensuring that regularly maintained and appropriately silenced equipment is used.
- Maintaining a no idling policy.

It is therefore recommended that the above guidance is followed for each development requiring piling; however, a noise impact assessment should still be undertaken for reserved matters applications through Condition 47 of the Liverpool Waters outline consent to determine whether additional mitigation, such as restrictions on the time of year i.e. a working window, is required.

An in-combination assessment should be undertaken within any HRA coming forward for reserved matters applications. This should consider the impacts of noise disturbance (amongst other impacts) from additional developments within the site, therefore looking at the cumulative and in-combination impacts, which may require additional or adapted mitigation.

## Visual Disturbance Mitigation

Developments around West Waterloo Dock and Princes Half Tide Dock will require screening in relation to water birds. In both docks, screening should only be placed at ground level, this will block sight lines to the busiest area of the construction sites (i.e. where most operative and vehicle movements are likely to be concentrated). The developments should also be screened to prevent windblown litter entering the docks.

# 5 Habitat Creation

## 5.1 Bird Nesting/Roosting Features and Foraging Habitat

In accordance with the Sustainability Principles described in Section 1.9, developments should be striving towards biodiversity enhancement and net gain. Wherever possible, any opportunity to develop ecological connectivity within the neighbourhood and the wider Liverpool Waters scheme should be considered. To enhance the ecological value of the Central Docks Neighbourhood, buildings within the neighbourhood should incorporate features for the following bird species.

### 5.1.1 Black Redstart

During the breeding bird surveys undertaken in 2009 one singing black redstart was recorded singing south of Stanley Dock (WYG, 2009).[27] In 2015 and 2016, WYG undertook peregrine surveys close to Stanley Dock (north of Central Docks) and also recorded black redstart. To create a cohesive enhancement plan across the Liverpool Waters Scheme, as per the NEBS for Princes Dock, it is recommended buildings within the Central Docks Neighbourhood consider the inclusion of a green roof specifically designed for black redstart, where appropriate and viable.

#### Green Roof

Although the term green roof is used throughout this NEBS, roof habitat designed specifically for black redstart should contain a high proportion of sparsely vegetated areas which is more typical of brown roofs.

Green roofs should incorporate the following specification:

- relatively small areas of very sparsely vegetated rubble or rocky terrain incorporating hibernacula for invertebrates;
- still or slow-moving water; and
- nearby nest boxes.

An ornithologist should be involved in the design process to ensure specific ecological requirements for black redstart are met through the design process. Developments should also consider the compatibility of green roofs with the need to exclude gulls and pigeons as outlined in Section 3.2.

Detailed guidance on green roofs is provided by the greater London Authority (GLA) publication, Living Roofs and Roofs (GLA, 2008).[28] Guidance on creating

[27] WYG (2009). *Liverpool Waters Breeding Bird Survey Report*. Liverpool: WYG. Included as Appendix 7.6 of the Liverpool Waters ES.
[28] Greater London Authority (2008). Living Roofs and Walls Technical Report: Supporting London Plan Policy. GLA, London.

habitat specifically for black redstart is also detailed in the guidance produced by the Greater Manchester Biodiversity Project (GMBP, 2008).[29]

### Nest Boxes

In addition to providing green roofs, nest boxes specifically designed for black redstart are also recommended. Suitable next boxes include:

- Schwegler 2HW (externally fixed); and
- Schwegler 1HE (integrated).

Due to the presence of peregrine falcon within the area, consideration should be required as to which plots will be most suitable for black redstart nest boxes. A suitably qualified ecologist should advise on the installation of nest boxes within each plot during production of the EBS.

## 5.1.2 Peregrine

Peregrine falcon thrive in urban environments due to their capacity to hunt a diverse range of species. It is not considered appropriate to incorporate nest boxes for black redstart (prey) and peregrine falcon (predator) in the same area. Consequently, consideration may be required as to which plots will be most suitable for peregrine nest boxes. A suitably qualified ecologist should advise on the installation of nest boxes within each plot during production of the EBS. Dixon & Drewitt (2012) provides further guidance on the provision of artificial nest sites for peregrine on built structures.[30]

## 5.1.3 Swallows and Swifts

The Central Docks Neighbourhood should also consider the inclusion of swallow and/or swift boxes in buildings to the north of the Kingsway Tunnel. Where provided, it is recommended that a minimum of three boxes should be considered to be installed per building, to replicate a colonial nesting situation. Any boxes installed should be sited at least 5m above ground, with clear adjacent airspace so birds can access them in high-speed direct flight. A suitably qualified ecologist should advise on the installation of nest boxes. It may be necessary to utilise a lure whereby calls of nesting swifts may be played to attract individuals and increase the likelihood of establishing a colony.

## 5.1.4 Replacement Roosting Habitat for Water Birds

As per the NEBS for Princes Dock, it is acknowledged that Condition 34 of the planning decision notice for the Liverpool Waters development specifies that replacement roosting sites are only required for Nelson Dock; due to the relatively high number of roosting cormorants, recorded by WYG in the Liverpool Waters

[29] Greater Manchester Biodiversity Project (GMBP) (2008). *Make Room for Black Redstarts: A species action plan for Greater Manchester*. GMBP: UK.
[30] Dixon, N and Drewitt, E. (2012). *A 15-year study of the diet of urban-nesting Peregrines.* Devon Birds.

Wintering and Passage Bird Report (WYG, 2011c).[31] Replacement habitat for roosting water birds was not proposed for the docks in the Central Docks Neighbourhood. However, due to the findings of more recent surveys which have recorded significant numbers of cormorant,[12] and the extension of Liverpool Bay SPA which now includes cormorant as a qualifying species, the requirement for mitigation will need to be revised.

The specification for suitable water bird habitat should be based on the results of the first annual passage and wintering bird survey and foraging common tern survey. Based on the information collected during the 2018/2019 wintering bird surveys, SPA species such as cormorant have been recorded within the site. Appropriate mitigation such as floating pontoons will therefore be required. The results of the surveys will be used alongside other data to produce a Liverpool Waters Strategic Ecological Mitigation Plan (SEMP) which will examine data in the context of extant and likely reserved matters applications across the entire Liverpool Waters Scheme, and identify areas where mitigation is needed.[26] The SEMP will be submitted to the LPA for approval. In line with the NEBS for Princes Dock, it is proposed that all of the mitigation features specified are delivered in areas managed by the landowner.

A cohesive approach across all neighbourhoods is required for this type of mitigation; reserved matters applications elsewhere within the Liverpool Waters scheme may result in significant impacts on water bird habitats, which cannot be mitigated for locally, therefore, mitigation may need to be implemented within adjacent neighbourhoods to maximise the overall effectiveness. However, mitigation measures should also be submitted as part of reserved matters applications and approved and discharged through Condition 34 of the outline consent for each detailed plot when additional surveys are undertaken to provide further information. Any mitigation proposed should be in accordance with Liverpool Waters SEMP.[26]

## 5.2 Bat Roosting Features

Although no bat roosts or buildings with bat roost suitability were identified within Central Docks during the surveys undertaken (WYG, 2009),[15] there is an opportunity to enhance the site for bats through the installation of artificial roosting features. Central Docks may be considered to be the neighbourhood with the most potential to be utilised by bats in the future due to the proposed Central Park which should provide suitable foraging habitat.

A total of nine bat boxes should therefore be installed on buildings in proximity to Central Park. Two bat boxes should be installed onto the southern facing aspect of the building on Plot C-10, where possible. It is recommended that the boxes are positioned on the southern face of the building, above 4m height. It is recommended that bat boxes are to be considered to be integrated into the walls for longevity, however they may also be fixed to the external walls.

[31] WYG (2011c). *Liverpool Waters Wintering and Spring Passage Bird Survey Report*. Liverpool: WYG.

The additional bat boxes should be positioned on the buildings on Plots C-05-A, C-05-B, C-09-A, C-09-B, C-07 and/or C-11, where possible. The boxes should be positioned south-west through to south-east where possible, however the western aspects of the buildings along the River Mersey should be avoided due to exposure to the prevailing weather.

The details of locations and types of boxes should be included within the plot-specific EBS to be provided as part of the reserved matters applications.

## 5.3 Landscape Planting

Public open space is proposed at Central Park along with additional areas of planting within the majority of development plots. Landscaping design should be detailed within the plot-specific reserved matters applications. Landscaping should include native species which attract invertebrates and therefore provide a food resource for bats. This includes native nectaring species; alternatively, suitable high nectaring non-native species may be considered to augment native species planting.

### 5.3.1 Tree Planting

Tree planting in areas of public open space should aim to create potential green corridors through the neighbourhood for bats and breeding birds, whilst avoiding funnelling birds towards reflective glass surfaces (Section 3.1). The landscaping within individual plots should tie in to corridors created in the public open space and develop a green network of potential wildlife corridors throughout the development. The habitats developed within each neighbourhood should also seek to link into adjacent neighbourhoods to maximise corridors and increase permeability throughout the entire Liverpool Waters scheme.

Where possible the planting interval for trees should be such that the canopies of adjacent trees are within at least 5m of one another when mature or the spaces between the trees should be bridged by suitable planting for bats. As stated in Princes Dock NEBS (WYG, 2018), it is recommended that the priority (broad) habitat ‘Broadleaved mixed and yew woodland’’ which is listed in the Natural Character Area (NCA) profile for Merseyside Conurbation (Natural England, 2013) is referenced as the basis of tree planting schemes. Suitable species include wild cherry *Prunus avium*, alder *Alnus glutinosa*, Blackthorn *Prunus spinosa*, elder *Sambucus nigra*, goat willow *Salix caprea*, hawthorn *Crataegus monogyna*, oak *Quercus* sp., field maple *Acer campestre*, silver birch *Betula pendula*, hazel *Coryllus avellana* and rowan *Sorbus aucuparia.*

### 5.3.2 Additional Shrub and Herbaceous Planting

The planting mix should attract a range of invertebrate species and provide an important foraging resource for breeding birds and bats. The formulated planting mix should encompass a range of sequential flowering and fruiting species which provide foraging resources for site fauna at different times of year.

Landscaping of public open space and within individual plots should include additional areas of shrub and herbaceous planting, including both annuals and herbaceous perennials. The planting mix should aim to attract a range of invertebrate species and support pollinator species.

Although native species are preferred, non-native plants, provided they are not invasive, can assist in providing nectar sources throughout the year. Examples of such species are listed in the Royal Horticultural Society (RHS) publication Plants for Pollinators – Garden Plants (RHS, 2011).[32]

[32] RHS (2011). Plants for Pollinators – Garden Plants. Available at https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/plants-for-pollinators-garden-plants.pdf

# 6 Post-Construction Monitoring and Management

Details of post-construction monitoring and management should be specified within the EBS for each plot and submitted with the reserved matters application. An outline of what should be included within the Central Docks Neighbourhood is provided below.

## 6.1 Aquatic Monitoring

The results of the construction phase monitoring detailed in Sections 2.6 and 2.7 should be used by the applicant/developer to inform the monitoring programme required during the operational phase for aquatic species (including invasive non-native species) and water quality. The requirements of the ongoing monitoring should be discussed and agreed with Natural England, MEAS, the Environment Agency and Canal and Rivers Trust prior to completion of construction.

## 6.2 Ecological Mitigation

### 6.2.1 Bird Strike Mitigation

**Routine Management**

The bird strike prevention measures should be part of the fabric/fixtures/fittings of the building therefore should require little management outside of that covered by routine building maintenance. Management of any installed features should follow the manufacturer's recommendations.

**Monitoring**

Bird strike monitoring should be carried out in the first year after construction by owners/occupants of any buildings over five storeys high. This should take the form of monitoring surveys and occupant reports.

Monitoring of bird strike fatalities involves a systematic search for carcasses of birds which have collided with the building. Most bird strike collisions occur in the morning between 7am and 11am although they can happen at any time. Scavengers such as gulls, crows, cats and foxes learn where collisions happen frequently therefore it is important to survey regularly and as close as possible to peak collision time. It is proposed in the Princes Dock NEBS (WYG, 2018)[3] that monitoring surveys should be undertaken based on the methodology set out in the American Bird Conservancy (ABC) advice note (2015).[33] This is also proposed for Central Docks as set out below:

- Representatives should be chosen from each building to carry out the monitoring, for example a member of maintenance staff.

[33] ABC (2015). *Monitoring buildings for bird collisions*. Virginia: American Bird Conservancy.

- The monitoring period should be 12 months, where possible, to include one winter and one spring migration.
- Monitoring should take place on three days per week, between 8am and 10am.

Monitoring staff should initially be trained in conducting searches by a suitably qualified ecologist who may also be on hand to assist with subsequent identification of carcasses, e.g. by emailed photographs. The monitoring route should be devised during the training and should include every façade with windows, including along green roofs, and if possible, setbacks and other roof terraces. A map of the monitoring route should be created for reference, and the route should be subdivided into segments, with each change in façade structure and orientation assigned a segment number.

At the designated times, monitoring staff should conduct a careful search, looking within 10m of the building, with a special emphasis on landscape planting and other objects such as street furniture, as injured birds may seek shelter near those objects. After each segment, staff should record the date, time, number of birds found, their species and their status (dead, alive, or injured). If possible, photographs and specimens should be collected. It is important to record the search, even if no birds are found as this may be used as evidence for the effectiveness of installed mitigation.

All building occupants should be informed of the monitoring, so that their own efforts do no complicate the data e.g. maintenance staff should be instructed not to sweep up any carcasses when they are not engaged in monitoring.

The monitoring strategy and data collected should be continually reviewed in consultation with the ecologist to determine whether any adjustments to the methodology or mitigation are required. This should take place initially after 3 months and then quarterly until the end of the 12-month monitoring period. A monitoring report should be produced by the ecologist at the end of the monitoring period to summarise the findings and include any further enhancements of mitigation and monitoring, as required.

A system should also be set up whereby building occupants are encouraged to report any bird strikes. This should be included in the Welcome Pack for owners/tenants and supported by posters displayed on information boards to alert occupants to the risk of bird strike and the routine monitoring programme. Any occupant reports should be reviewed and included within the results of the monitoring report.

**Remedial Management**

The monitoring report should examine the locations of bird strikes in relation to mitigation features. Where relevant, areas of the building which may be more prone to bird strike should be highlighted and if appropriate further mitigation should be recommended. The monitoring report should be discussed with the building owner and additional monitoring undertaken if required. If additional mitigation is installed, then a further 12-month round of monitoring should take place to assess its effectiveness.

## 6.3 Control of Gulls and Pigeons

### Routine Management

Ideally, issues with gulls/pigeons should be designed out without the need for additional control/dissuasion measures. However, if installed appropriately, little management should be required on control/dissuasion measures outside of that covered by routine building maintenance. Management of any installed features should follow the manufacturer's recommendations.

### Monitoring

Monitoring for breeding is proposed where control/dissuasion measures are installed on buildings. A representative from the building should be chosen to carry out the monitoring following training by a suitably qualified ecologist. Searches should be undertaken at least twice per year, during May and June for the lifetime of the building. All potential nesting surfaces, such as ledges, flat roofs and roof terraces, should be inspected from the ground, with binoculars, and from within the buildings, where access allows. The locations of any gull or pigeon nests should be recorded on a map.

### Remedial Management

Where significant numbers of nesting gulls and pigeons (more than two gull or five pigeon nests) are recorded, then the building owner should consult an appropriate contractor to identify suitable additional measures to dissuade/exclude birds during the following breeding season. Any additional exclusion measures should be installed by a suitably qualified contractor.

## 6.4 Habitat Creation

Where appropriate, buildings within the Central Docks Neighbourhood, should consider the incorporation of the following habitat creation measures:

- green roofs and black redstart nest boxes;
- swallow boxes;
- peregrine boxes;
- bat boxes; and
- landscape planting for bats and invertebrates.

As per the NEBS for Princes Dock,[3] routine management, appropriate monitoring and provisions for remedial management are set out below. Where mitigation for water birds is provided on the basis of the passage and wintering bird surveys, these should also be included within the monitoring programme. Monitoring and remedial management measures will be dependent on the type(s) of mitigation features implemented. Further details on the requirements of monitoring of mitigation measures should be provided with reserved matters applications and should be provided to the LPA for approval prior to installation. An Adaptive Management Plan should be produced with any SPA bird mitigation package developed. This is to ensure appropriate monitoring is undertaken and the mitigation is adapted if required to ensure the best success possible for SPA birds.

Any mitigation, management and monitoring proposed should be in accordance with the Liverpool Waters SEMP.[26]

### 6.4.1 Green/Brown Roofs and Black Redstart Boxes

**Routine Management**

Once fully established, green roofs designed specifically for black redstart require limited management. Occasional weeding may be required, should robust species establish.

**Monitoring**

Green roofs should be inspected twice per year to ensure they continue to meet the original specification. Inspections should be made by a suitably qualified landscape contractor and/or an ecologist. It should be ensured the roofs remain sparsely vegetated with an exposed substrate, e.g. rubble or rocky terrain.

The black redstart nest boxes should be inspected annually to ensure they remain fit for purpose. Inspections should be made from the ground using binoculars outside of the bird nesting season (September – February); where unable to ascertain the condition of nesting boxes, a closer inspection should be undertaken using an appropriate access system (September – February).

Following the completion of a green roof, two black redstart surveys should be undertaken in accordance with the survey methodology outlined in Section 2.2.2, in addition, a roof level survey should be undertaken (following the below methodology). To make efficiencies by avoiding the duplication of survey effort, the data collected during the biennial black redstart surveys should be used for monitoring; this is only possible where a full breeding season has passed between completion of the green roof and the survey. The second survey should be carried out five years after the completion of the green roof.

The roof level survey should comprise a two-hour vantage point survey, with the aim of observing whether black redstart are utilising the green roof for foraging and/or nesting. The roof level survey should be completed following the ground-level survey or independently, depending on whether data from the biennial surveys are used for the ground-level element.

**Remedial Management**

As per the NEBS for Princes Dock, remedial management of any created green roof features would be dependent on the system chosen; management would likely be limited to re-establishing flora which has failed. If required, maintenance of the green roof would be undertaken by a suitably experienced contractor. Any nest boxes which are deemed to have failed should be replaced between September and February (inclusive).

### 6.4.2 Swallow Boxes

**Routine Management**

Once erected, swallow boxes should not require any routine management.

**Monitoring**

The condition of swallow nest boxes should be inspected from the ground using binoculars, approximately every five years.

**Remedial Management**

Any nest boxes which are deemed to have failed structurally, should be replaced between September and February, using an appropriate access system.

### 6.4.3 Bat Boxes

**Routine Management**

Once erected, bat boxes should not require any routine management.

**Monitoring**

Bat boxes should be monitored by a suitably licensed bat worker in years two, five and ten post-installation. The monitoring survey may be done from a Mobile Elevation Work Platform (MEWP) or similar, where possible, in order to inspect the boxes for signs of use. Where this is not possible activity surveys (dusk emergence/dawn re-entry) may be required to assess presence/likely absence of bats.

**Remedial Management**

If any bat boxes are recorded to have failed, or require maintenance/cleaning, this should be undertaken under the supervision of a licensed bat worker between November and February (inclusive).

### 6.4.4 Landscape Planting

**Routine Management**

A Landscape Management Plan (LMP) should be produced for each plot-specific reserved matters application and should cross-reference the plot-specific EBS. Routine management will likely comprise weeding, pruning and replanting as appropriate to the species mix and layout/design.

**Monitoring**

Landscape planting should be assessed annually during maintenance visits to determine the success/establishment of planting and whether it meets the original specification.

**Remedial Management**

The overall aim should be as set out in Section 5.3, to provide a scheme that is beneficial to bats and invertebrates. The initial requirement for remedial management should be determined by the Landscape Architect and set out in the LMP. This should be reviewed by the landscape contractor during their annual inspections. If significant remedial management is required, an ecologist should be consulted to ensure that proposed replacement is appropriate.

# 7 Summary

## 7.1 Pre-Construction/Construction Phase Surveys and Impact Assessment – Condition 16: Parts i, ii and vi

### 7.1.1 Birds

- Annual surveys for breeding little ringed plover, breeding black redstart, passage/wintering birds and foraging common tern should be undertaken in the year prior to construction and during the subsequent four years of development at the Central Dock Neighbourhood. Following the first five years of monitoring, the requirement for continued surveys should be reviewed.
- The results of the bird surveys should be used to produce updated impact assessments for each reserved matters application, to be submitted to the LPA through an Ecological and Biodiversity Statement.

### 7.1.2 Bats

- Where a reserved matters application proposes demolition of any existing structures, a bat roost suitability assessment should be undertaken.
- Structures confirmed as roosts during the preliminary bat roost assessment, or those assessed as having low, moderate or high bat roost suitability may require further activity surveys to determine the presence/likely absence of bats and characterise roosts.
- Any reserved matters applications which affect structures with potential to be used by roosting bats should include an impact assessment within the plot-specific EBS. If any significant construction or operational impacts are considered likely, then appropriate mitigation should be developed.

### 7.1.3 Aquatic Species

- Initial baseline characterisation surveys should be undertaken for phytoplankton, fish, benthic macro-invertebrates and benthic invertebrates.
- Annual surveys (spring and autumn) should be undertaken to monitor benthic invertebrates, plus surveys for algae, phytoplankton and zooplankton species.
- If the baseline survey indicates a low fish population is present, surveys should be undertaken to monitor improvements.
- If the surveys identify marine INNS, methodologies should be developed to avoid them being spread because of works within the docks.

### 7.1.4 Water Quality

- Initial baseline characterisation survey of the dock system is to be undertaken prior to the start of construction to include water quality

sampling, sediment quality sampling and bathymetric survey for sediment depth.
- Ongoing monitoring to be undertaken during construction to monitor the above parameters including biochemical oxygen demand, ammonia and nutrients.
- Appropriate water quality management plan to be developed and implemented by the Principal Contractor during development.

## 7.2 Mitigation Through Scheme Design – Condition 16: Parts v, vii, viii & x

### 7.2.1 Bird Strike Mitigation

- The design of tall buildings within the Central Docks Neighbourhood, particularly those with significant quantities of reflective glass, should incorporate measures to mitigate the risk of bird strike.
- Plot-specific details of measures to reduce bird strike should be included within the EBS for each reserved matters application.

### 7.2.2 Control of Gulls and Pigeons

- All buildings must incorporate measures to dissuade nesting and roosting of gulls and feral pigeons, appropriate to the design and function of the building.
- Each reserved matters application should include details of consideration with designed-in measures to be prioritised over additional measures such as spikes, wires or netting. This should be detailed within the plot-specific EBS.

### 7.2.3 Control of Leisure Boat Activity

- Any development which has potential to result in increased boat traffic should consider the impact of the increased boat traffic on features of designated sites.
- Bird populations at Central Docks should be monitored on an annual basis. The surveys should be used to develop a leisure boat activity mitigation strategy, where required.

### 7.2.4 Recreational Distrubance

- All reserved matters applications should include HRA information for all Natura 2000 sites which may be impacted by the proposed scheme, including through recreational disturbance.
- All developments should include a commitment to adhere to the objectives of relevant Visitor Management Strategies (VMS).
- Reserved matters applications which come forward prior to the adoption of the VMS should consider how recreational pressure will be assessed (and potentially mitigated for) for the development.

## 7.3 Construction Phase Mitigation – Condition 16: Part iii

### 7.3.1 Removal of Existing Buildings and Vegetation

- The removal of existing buildings, structures, hardstanding and ephemeral vegetation should be undertaken outside of the breeding bird season, where practicable.
- Where this is not practicable, a suitably qualified ECoW should conduct a check for nesting birds prior to commencement of works.

### 7.3.2 Construction Vehicles, Routes and Speed Limits

- Construction vehicle routing and speed limits should take account of nesting birds (advised by ECoW) and SPA birds.
- A speed limit should be implemented on vehicles travelling adjacent to West Waterloo Dock due to the potential for roosting redshank and oystercatcher.

### 7.3.3 Roost Sites of Wintering Birds and Passage

- Any development which has the potential to result in increased disturbance of water bird roosting sites should consider the impacts on features of all designated sites.
- Bird populations should be monitored on an annual basis; a scheme-wide mitigation strategy should be developed.
- For each development where piling is required, appropriate mitigation should be identified and implemented, where appropriate.
- Measures to reduce the impacts of noise disturbance during construction should be included within a CEMP.
- Visual disturbance mitigation should be installed for the developments around West Waterloo and Half Princes Dock.

## 7.4 Habitat Creation – Condition 16: Part iv

### 7.4.1 Black Redstart

- Buildings within Central Docks should consider the inclusion of a green roof designed for black redstart.
- Where green roofs are provided, black redstart nest boxes should also be included on the same building.
- Additional mitigation options for black redstart should also be considered to include brown walls and a mosaic of green/brown roofs and walls.

### 7.4.2 Peregrine

- Due to the potential for conflict between black redstart and peregrine, consideration may be required as to which plots will be most suitable for peregrine nest boxes.

### 7.4.3 Swallows and Swifts

- The inclusion of swallow and/or swift nest boxes should be considered on buildings, where appropriate. Where provided, a minimum of three boxes should be installed per building.

### 7.4.4 Replacement Roosting Habitat for Water Birds

- Due to the findings of more recent surveys which recorded 12 cormorant in Princes Half Tide Dock and the extension of Liverpool Bay SPA which now includes cormorant as a qualifying species, the requirement for mitigation may need to be revised within Central Docks.
- The specification for suitable water bird habitat should be based on the results of all surveys undertaken to date across Liverpool waters including standalone applications.
- The results of the surveys will be used alongside other data to produce a Liverpool Waters Strategic Ecological Mitigation Plan (SEMP). A cohesive approach across all neighbourhoods is required for this type of mitigation.

### 7.4.5 Bat Roosting Features

- A total of nine bat boxes are to be installed on buildings in proximity to Central Park. Two bat boxes should be installed on the southern-facing aspect of the building on Plot C-10.
- The additional bat boxes should be positioned on the buildings on Plots C-05-A, C-05-B, C-09-A, C-09-B, C-07 and/or C-11.
- The specific details of locations and types of boxes should be included within the plot-specific EBS to be provided as part of the reserved matters applications.

### 7.4.6 Landscape Planting

- Landscaping design should be detailed within the plot-specific reserved matters applications.
- Landscaping should include native species which attract invertebrates and therefore provide a foraging resource for bats. This includes native nectaring species; alternatively, suitable non-native species may be considered to augment native species planting.
- Tree planting in areas of public open space should aim to create potential green corridors through the neighbourhood for bats and breeding birds, whilst avoiding funnelling birds towards reflective glass surfaces.

- Habitats to be developed within individual plots should link to the wider neighbourhood which in turn should seek to link into the other neighbourhoods of Liverpool Waters.

## 7.5 Post-Construction Monitoring and Management – Condition 16: Part ix

### 7.5.1 Aquatic Monitoring

- The results of the construction phase monitoring should inform the monitoring programme required during the operational phase.

### 7.5.2 Bird Strike Mitigation

- Bird strike prevention measures should be integrated into buildings where possible, consequently this should form part of routine building maintenance.
- Bird strike monitoring should be carried out in the first year after construction by owners/occupants of any buildings over five storeys high. This should take the form of monitoring surveys and occupant reports.
- The monitoring strategy and data collected should be continually reviewed in consultation with the ecologist to determine whether any adjustments to the methodology or mitigation are required.

### 7.5.3 Control of Gulls and Pigeons

- Issues with gulls/pigeons should ideally be designed out without the need for additional control/dissuasion measures. However, if installed appropriately, little management should be required outside of routine building maintenance.
- Monitoring is proposed where control/dissuasion measures are installed: at least twice per year during the lifetime of the building.
- Any additional exclusion measures required as a result of the monitoring should be installed by a suitably qualified contractor.

### 7.5.4 Green/Brown Roofs and Black Redstart Boxes

- Where provided, green roofs should be inspected at least twice per year to determine whether they continue to meet their original specification.
- Black redstart nest boxes should be inspected annually between September and February (inclusive). Any nest boxes that have failed structurally should be replaced.
- Two black redstart surveys should be undertaken on the completion of the green roof. The surveys should comprise a ground level survey and a roof level survey.
- In order to maximise efficiencies by avoiding the duplication of survey effort, the data collected during the biennial black redstart surveys should

be used for monitoring. However this is only possible where a full breeding season has passed between completion of the green roof and the survey. The second survey should be carried out five years after the completion of the green roof.

### 7.5.5 Swallow and Swift Boxes

- Where provided, swallow and swift boxes should be inspected every five years.
- Any nest boxes that have failed structurally should be replaced between September and February.

### 7.5.6 Bat Boxes

- No routine management should be required.
- Bat boxes should be monitored by a suitably licensed bat worker in years two, five and ten post-installation.
- If any bat boxes are recorded to have failed, or require maintenance/cleaning, this should be undertaken under the supervision of a licensed bat worker between November and February.

### 7.5.7 Landscape Planting

- Landscape Management Plan (LMP) to be produced for each reserved matters application, cross-referencing to the plot-specific EBS.
- Landscape planting should be assessed annually during maintenance visits.
- If significant remedial management is required, an ecologist should be consulted to ensure that proposed replacement is appropriate.

This document provides guidance to be used in relation to ecology and biodiversity for all reserved matters applications within the Central Docks Neighbourhood. The document addresses all parts of Condition 16 and therefore should discharge this condition.

# Appendix B: Princes Docks Neighbourhood Ecological and Biodiversity Strategy

FEBRUARY 2018

# PRINCES DOCK

CONDITION

# 16

# NEIGHBOURHOOD ECOLOGICAL AND BIODIVERSITY STRATEGY

**WYG**

LIVERPOOL
WATERS

# Liverpool Waters, Princes Dock

## Neighbourhood Ecological and Biodiversity Strategy

## Peel Land and Property (Ports) Ltd

## 18th May 2018

Quay West at Media City UK, Trafford Wharf Road, Trafford Park, Manchester M17 1HH

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| | | | | |

# Contents

# Executive Summary

Planning permission for the Liverpool Waters Scheme was granted in June 2013, subject to a total of 77 planning conditions. Condition 16 covers the Neighbourhood Ecological and Biodiversity Strategy (NEBS), which must be submitted to and approved in writing by the Local Planning Authority prior to the submission of the first application for any reserved matters approval in each respective neighbourhood. This document presents the NEBS for the first phase of the Liverpool Waters Scheme, Princes Dock (Neighbourhood A). The NEBS is intended to provide guidance in relation to ecology and biodiversity for all reserved matters applications within the neighbourhood and addresses the following broad areas:

- Pre-construction and construction phase surveys for protected species, fish and water quality;
- Mitigation for bird strike in relation to tall ball buildings;
- Measures to prevent gull and pigeon breeding on new buildings within the neighbourhood;
- Guidance on checks and mitigation for breeding birds and wintering birds during the construction phase;
- Creation of new nesting/roosting features and habitats for black redstart, peregrine falcon, swallow and bats
- Routine management, monitoring and remedial management of mitigation features, new nesting/roosting features and habitats.

The Princes Dock NEBS covers the anticipated construction period for the neighbourhood (2019 – 2023) although some of the specified monitoring measures will last for the operational lifetime of the development.

# Glossary

| | |
|---|---|
| ABC | American Bird Conservancy |
| ALSE | Assessment of Likely Significant Effect |
| BCT | Bat Conservation Trust |
| BoCC | Bird(s) of Conservation Concern |
| BTO | British Trust for Ornithology |
| CEnv | Chartered Environmentalist |
| CIEEM | Chartered Institute of Ecology & Environmental Management |
| CRoW Act | Countryside and Rights of Way Act 2000 |
| ECoW | Ecological Clerk of Works |
| EPS | European Protected Species |
| EPSL | European Protected Species Licence |
| ES | Environmental Statement |
| GLA | Greater London Authority |
| GMBP | Greater Manchester Biodiversity Project |
| HRA | Habitats Regulations Assessment |
| IUCN | International Union for Conservation of Nature |
| JNCC | Join Nature Conservancy Council |
| LPA | Local Planning Authority |
| MCIEEM | Member of Chartered Institute of Ecology & Environmental Management |
| MEAS | Merseyside Environmental Advisory Service |
| NEBS | Neighbourhood Ecological and Biodiversity Strategy |
| RSPB | Royal Society for the Protection of Birds |
| SAC | Special Area of Conservation |
| SPA | Special Protection Area |
| USFWS | United States Fish and Wildlife Service |
| VMS | Visitor Management Strategy |
| W&CA | Wildlife & Countryside Act 1981 (as amended) |

# 1.0 Introduction

## 1.1 Background

To address Condition 16 of the planning permission for the Liverpool Waters scheme, WYG was commissioned by Peel Land and Property (Ports) Ltd in December 2017 to produce a Neighbourhood Ecological and Biodiversity Strategy (NEBS) for the Princes Dock neighbourhood (Phase 1). This neighbourhood lies at the southern end of the scheme and includes Princes Dock itself and the dockside land between St. Nicholas Place to the south and Bath Street to the east (Figure 1).

This report has been prepared by WYG Senior Ecologist, Alistair Blackshaw MCIEEM.

## 1.2 Scope of the NEBS

Planning permission for the Liverpool Waters Scheme was granted in June 2013, subject to a total of 77 planning conditions. Part C of the permission includes conditions 9 – 24, which identify the additional information that must be submitted to and approved by the Local Planning Authority prior to the submission of applications for reserved matters approval. Condition 16 relates to the NEBS, which must be submitted to and approved in writing by the Local Planning Authority prior to the submission of the first application for any reserved matters approval in each respective neighbourhood. The condition states that each NEBS:

> *Shall summarise the means of safeguarding all protected species of relevance and supporting habitats during construction and operation within the respective neighbourhood including consideration of pathways to protected European sites.*

Table 1 presents the 10 points of Condition 16 and shows where they are addressed in this document. Appendix B provides a summary of the wildlife legislation relevant to the NEBS.

**Table 1: Liverpool Waters Planning Condition 16**

| Point | Description | Document Section |
|---|---|---|
| **i.** | *The means, method and timeframe for carrying out updated bird surveys and impact assessments for bats and migratory and/or over wintering birds* | **2.0** |
| **ii.** | *The methodology and timeframe for carrying out (seasonal) monitoring of fish and other water species within the dock system* | **2.0** |
| **iii.** | *Working practices to address phasing of construction, construction vehicles, routing and speed limits during removal of existing buildings, vegetation and other suitable breeding habitats* | **4.0** |
| **iv.** | *Details of habitat creation* | **5.0** |
| **v.** | *Design of buildings and spaces in terms of layout, design, materials and lighting to avoid creating barriers to bird migration and aviation and reduce risk of bird strikes particularly in relation to tall buildings* | **3.0** |

| Point | Description | Document Section |
|---|---|---|
| **vi.** | *Means and methodology for the monitoring and management of water quality within the dock system which shall inform mitigation to safeguard fish and other water species, including the aeration of dock water spaces* | **2.0** |
| **vii.** | *Methods for controlling leisure boat activity within the dock system* | **3.0** |
| **viii.** | *Methods for controlling gulls and pigeons roosting on buildings* | **3.0** |
| **ix.** | *Mechanisms for monitoring and reviewing the effectiveness of agreed ecological and biodiversity mitigation against identified targets and means for enhancing mitigation where those targets are not met* | **6.0** |
| **x** | *Mechanisms to ensure protection of Sefton Coast SAC (Seaforth Docks to Formby Point) from recreational disturbance overseen by the Liverpool Waters Coordination Panel in accordance with Schedule 6 of this permission* | **3.0** |

Additionally, Condition 34 of the Liverpool Waters planning permission requires each reserved matters application to be accompanied by an Ecological and Biodiversity Statement based on the NEBS, explaining how the specific scheme in that neighbourhood or part neighbourhood will provide for the protection and enhancement of protected species and supporting habitats, including the provision of new and replacement habitats by means of the following:

i. Provision of detailed and quantitative surveys to be able to assess in detail any potential impacts of the development upon bats and migratory and/or over-wintering birds;
ii. Mitigation to safeguard fish and other water species;
iii. Details of habitat creation;
iv. Siting and design of replacement roosting sites within Nelson Dock for displaced winter water birds (specifically cormorants);
v. Provision and management of new / compensatory habitats;
vi. The design of buildings and spaces based on the Detailed Neighbourhood Masterplan for the land;
vii. For development involving the Hydraulic Engine House, Victoria Clock Tower or the office and workshop buildings south of Collingwood Dock, detailed internal bat surveys;
viii. Measures to control leisure boat activity and behaviour within the dock system to minimise disturbance of wildlife within the docks;
ix. Measures to discourage gulls and pigeons from nesting/roosting on buildings; and
x. Mitigation for any areas affected by invasive, non-native plants and noxious weeds.

It is intended that each NEBS will identify the methodologies and options for providing the above surveys and mitigation measures within their own footprint. The Princes Dock neighbourhood is partially built-out under other consents and several reserved matters applications are also currently pending (Table 2). Therefore the scope of the ecological mitigation features which can be

accommodated within this phase of the Liverpool Waters development may be limited. However, the mitigation measures set out in the Environmental Statement (November 2011), and summarised in Schedule 6 of the planning permission, were intended apply to the overall development area and were intended to simply split pro-rata across all of the neighbourhoods.

To address these requirements, each subsequent NEBS will state how much of the total mitigation package has been delivered to date by previous Neighbourhoods – and the mitigation measures it is delivering itself, so that the delivery of these commitments can be tracked, so that all of the mitigation features will demonstrably be in place on completion of the whole Liverpool Waters development.

Note that the Princes Dock NEBS covers the anticipated construction period for the neighbourhood (2019 – 2023) although some of the specified monitoring measures will last for the operational lifetime of the development, where appropriate.

## 1.3 The Existing Liverpool Waters Scheme

### 1.3.1 Existing Site

A description of the existing site is provided in the Environmental Statement (WYG, 2011) and other documents submitted as part of the planning application. The extent of the site is shown in Figure 1 and a summary is provided below.

The site of Liverpool Waters occupies approximately 60 hectares to the north of Liverpool's Pier Head, and extends from Princes Dock in the south to Bramley Moore dock in the north. The site extends 2km along the waterfront and also includes the King Edward Industrial Estate. It extends eastwards as far as the dock boundary wall that runs along Bath Street and Waterloo Road. The eastern boundary of the site is defined by the north-south axis of the A5036 carriageway, and the River Mersey defines the site's western boundary. A small portion of the A5046 (at St Nicholas Place) abuts the site to its south, whilst the dock system continues to the site's north towards the boundary with Sefton Metropolitan Borough Council.

Over one third of the site consists of open water docks, in addition to former dock areas that have been subject to earlier in-filling, and are now part of the canal system. Previous in-filling of other docks within the site had been extensive, for example to make way for a power station (the last remnants of which were removed in 1994). The site has remained redundant since then.

The majority of the site consists of land reclaimed from the River Mersey, and historically has been used for industrial purposes. The remaining structures on site include the quaysides, dock boundary walls and open dock spaces. Whilst the site is largely unutilised, Princes Dock to the south has been recently developed to create high-rise residential apartments, office blocks, hotel development, a multi-storey car park and other commercial and ancillary uses. In addition to this, low-rise residential accommodation is located to the east of the site (East Waterloo Dock), and a small industrial estate is situated in the south-eastern corner of the site.

### 1.3.2 Overview of the Development Scheme

A description of the development scheme is provided in the Environmental Statement (WYG, 2011) and other documents included in the planning submission. A summary is provided below and an illustrative site masterplan is included in Appendix A.

The Liverpool Waters scheme has been divided into five neighbourhoods, or character areas, that focus on the historic names of the docks that sit within these neighbourhoods or have an association with the locality. The five neighbourhoods are:

- **Princes Dock (Neighbourhood A)**;
- King Edward Triangle (Neighbourhood B);
- Central Docks (Neighbourhood C);
- Clarence Docks (Neighbourhood D); and
- Northern Docks (Neighbourhood E).

The amount of floorspace generated for various uses within each neighbourhood varies from approximately 124,000m$^2$ to 551,500m$^2$, with the overall total being approximately 1,320,000 m$^2$. The different land uses of the area once the development is finished will include:

- Commercial office space;
- Residential dwellings;
- Hotel and conference facilities;
- Shops providing mainly for local daily needs;
- Banks and building societies;
- Cafes, bars and restaurants;
- Culture and leisure facilities;
- Education, health and religious and community uses;
- Cruise liner terminal;
- Car and cycle parking;
- Servicing areas; and,
- Roads, paths, central park and other landscaped areas.

Due to the scale of the project, the development will be based on a 30 year construction programme. Due to the long timescales involved in the project, no element of the project has been designed in full detail, with only certain specific elements of the design being 'fixed', such as part of the access. The neighbourhoods will be developed in five phases, in order from neighbourhood A to E.

Before construction starts on each phase (or neighbourhood) of development, clearance and levelling will need to take place, including the demolition of some existing buildings/structures on site.

### 1.3.3 Princes Dock (Neighbourhood A)

- **Characteristics:** low, medium and high-rise hotel, office and residential buildings around the existing dock basin.
- **Use/Function:** hotel, leisure, office, residential and restaurants.

The development in this neighbourhood will see the remaining vacant plots at Princes Dock brought forward and new commercial buildings delivered along the eastern and western edges of the dock. Cafes and local retail uses will be focused at the ground floor and around openings in the Dock Boundary Wall focusing activity around pedestrian links back to the city centre and to the River Mersey. A 55 storey tower known as 'Shanghai Tower' is proposed to house commercial office space, hotel and residential and will further reinforce the existing City Centre Commercial Core Cluster of tall buildings. The proposal will further activate this neighbourhood with additional residential, hotels,

cafes and restaurants together with new pontoon spaces. Neighbourhood A will deliver up to 198,500 sq.m of development[1], comprising up to:

- A1 Shops (convenience) = 100 sq.m
- A3 Restaurants & Cafes = 7,600 sq.m
- B1 Business = 57,100 sq.m
- C1 Hotels = 14,900 sq.m
- C3 Dwelling Houses = 88,500 sq.m
- D2 Assembly & Leisure = 800 sq.m
- Sui Generis Servicing = 4,700 sq.m
- Sui Generis Parking = 25,200 sq.m

Table 2 shows the planning applications that have already been submitted within the Princes Dock neighbourhood at the time of writing of the NEBS.

**Table 2: Princes Dock Planning Applications Submitted up to and Including January 2018**

| Scheme Name | Plot Reference | LCC Planning Application Reference | Consented Date |
|---|---|---|---|
| **Plaza 1821** | A05 | 17F/0913 | November 2017 |
| **The Lexington** | A04 | 16F/1370 | Not yet consented |
| **William Jessop House** | A03 | 15F/0560 | Not yet consented |
| **Hive City Docks** | A06 | 17F/0456 | January 2018 |
| **Liverpool Cruise Terminal** | Princes Jetty and Liverpool Ferry Terminal | 17O/3230 | Not yet consented |
| **Dock Boundary Wall** | - | 17F/3518 | Not yet consented |

### 1.3.4 Changes to Designated Sites Since Planning Permission was Granted

The most significant change to the designated sites within the vicinity of the Liverpool Waters scheme is the extension of Liverpool Bay SPA into the River Mersey estuary. The extended SPA now includes the River Mersey from Bootle, in the north, to past Brunswick Dock, in the south. The Liverpool Waters site, therefore now lies directly adjacent to Liverpool Bay SPA.

The extension of Liverpool Bay SPA also added the following new species to its citation:

- Little gull;
- Cormorant; and
- Red breasted merganser.

[1] Rounded to the nearest 100m

Of these, cormorant are particularly relevant to the Liverpool Waters site, as they may use dockland features, such as jetties and railings as perches or preening areas – as well as the docks themselves for fishing. The numbers of cormorants identified during the survey work which supported the original planning application would now be considered to represent a significant proportion of the birds designated through Liverpool Bay SPA.

In addition, the amended SPA boundary extends the boundary of the pervious marine SPA further inshore to offer protection to foraging common tern. As a result, common tern must now be considered in more detail as they may forage close to the Liverpool Waters Scheme (i.e. within the SPA) or potentially in the docks themselves.

The environmental assessments for all developments coming forward under the Liverpool Waters Scheme will therefore consider the impact of each proposal on the updated features of all the designated sites, including the extended Liverpool Bay SPA, and identify any mitigation measures required, as appropriate.

## 1.4 Sustainability Targets

The Neighbourhood Sustainability Strategy for the neighbourhood masterplan links the sustainability principles through to the design/construction/management of the site. This strategy has been produced to discharge condition 17. The sustainability commitments for the Liverpool Waters site include:

- To achieve BREEAM Communities Excellent (at Liverpool Waters scale);
- To achieve BREEAM New Construction Excellent for the non-domestic buildings on site; and
- To achieve Home Quality Mark 5* rating for all homes (which represents an updated target from the original Code for Sustainable Homes Level 6 target in the planning decision).

This NEBS links to sustainability targets by fulfilling the mandatory requirement for an ecology strategy under Category LE01 of the BREEAM Communities scheme. The NEBS, in conjunction with the site masterplan also provides detail on how the credits under category LE04 of scheme (Enhancement of ecological value) can be achieved for the Princes Dock neighbourhood.

Compliance with the BREEAM New Construction and Home Quality Mark schemes will be specific to the design/function of the individual buildings within the Princes Dock neighbourhood and should therefore be addressed under each reserved matters application.

# 2.0 Pre-Construction/Construction Phase Survey and Impact Assessment

## 2.1 Breeding Birds – Condition 16: Part i.

### 2.1.1 Peregrine Falcon

Annual surveys for breeding peregrine falcon should be undertaken, in the year prior to construction and during the subsequent four years of development of the Princes Dock neighbourhood (Liverpool planning application reference 10O/2424). The surveys should aim to assess whether any peregrine have colonised the existing buildings for breeding and thus should inform the updated construction phase mitigation strategies for the new buildings. The surveys should be undertaken by suitably qualified ecologists and the survey methodology should follow the guidance set out in *Bird Monitoring Methods* (Gilbert *et al* 1998) adapted for the site (see below). At the end of the first five years' monitoring, the requirement for annual peregrine surveys will be reviewed on the basis of the survey results and, if appropriate, the frequency of the surveys will be reduced. Peregrine surveys will then continue throughout the development of the Liverpool Waters site, at the frequency determined by this review.

#### Methodology

The survey should comprise a walkover of the site in late March to observe all potential nest sites within the Princes Dock neighbourhood (i.e. the existing buildings) and adjacent buildings for peregrine occupancy/activity. If peregrines are found during the initial visit, then a further two visits should be completed in June/July to assess breeding success. Appropriate field maps should be annotated to show the locations of occupied peregrine nest sites within the survey area. Flight lines of any birds foraging within the area should also be recorded. The survey(s) should be written up into a brief report, which highlights occupied peregrine breeding locations within and adjacent to the neighbourhood.

#### Timing/Weather Conditions

- The initial survey should take place at the end of March, with a further visit at the end of April, if no peregrine activity is recorded at potential breeding sites.
- If occupied nest sites are found during the initial survey, then two follow up visits should be completed in June/July.
- The survey(s) can be undertaken at any time of day.
- The surveys(s) should take place in fine weather.

#### Impact Assessment

A peregrine impact assessment should be undertaken for each new reserved matters application in the Princes Dock Neighbourhood, using the data collected by the surveys. The impact assessment should be included in the Ecological and Biodiversity Statement for the development, which should be submitted to the LPA.

The peregrine impact assessment should follow the same assessment methodology as set out in the Liverpool Waters ES chapter (WYG 2011a) and cover the construction and operational phases of the development. If the assessment identifies that significant impacts on peregrines are likely for a particular development, then appropriate mitigation measures should be identified. These may

include measures such as buffer zones or the implementation of 'work windows' to restrict potentially disturbing works to certain times of year.

### 2.1.2 Black Redstart

Annual surveys for breeding black redstarts should be undertaken in the year prior to construction and during the subsequent four years of development of the Princes Dock neighbourhood. The surveys should aim to assess whether black redstart have colonised the existing buildings and/or are using any of the vacant plots for foraging. The survey should inform the construction mitigation strategies for the new buildings, in relation to preventing the disturbance of any new black redstart nest sites. The surveys should be undertaken by suitably qualified ecologists and the survey methodology should follow the guidance set out in *Bird Monitoring Methods* adapted for the site (see below). At the end of the first five years' monitoring, the requirement for annual black redstart surveys will be reviewed on the basis of the survey results and, if appropriate, the frequency of the surveys will be reduced. Black redstart surveys will then continue throughout the development of the Liverpool Waters site, at the frequency determined by this review.

#### Methodology

The survey should comprise a walkover survey of the area around the Princes Dock neighbourhood, following a pre-determined route, at dawn to record any black redstarts heard singing or observed visually. The survey should comprise five visits between mid-April and the end of June. The same route followed during each visit with the direction alternating each time. The locations of any black redstarts seen or heard should be marked on a map of the site.

#### Timing/Weather Conditions

- The survey should consist of at least five fortnightly visits from mid-April to the end of June.
- Surveys should commence around dawn and last for the time it takes to complete the survey route.
- The surveys should take place in fine weather.

#### Impact Assessment

A black redstart impact assessment should be undertaken for each new reserved matters application in the Princes Dock Neighbourhood, using the data collected by the surveys. The impact assessment should be included in the Ecological and Biodiversity Statement for the development, which should be submitted to the LPA.

The black redstart impact assessment should follow the same assessment methodology as set out in the Liverpool Waters ES chapter (WYG 2011a) and cover the construction and operational phases of the development. If the assessment identifies that significant impacts on black redstarts are likely for a particular development, then appropriate mitigation measures should be identified. These may include measures such as buffer zones or the implementation of 'work windows' to restrict potentially disturbing works to certain times of year.

## 2.2 Passage/Wintering Birds – Condition 16: Part i.

### 2.2.1 Passage/Wintering Bird Surveys

Passage and wintering bird surveys should take place in the year prior to construction and during the subsequent four years of development of the Liverpool Waters site, to inform/revise the mitigation

strategy in relation to disturbance of wintering bird roosts. The surveys should be undertaken by suitably qualified ecologists and follow the methodology described below, which will then be comparable to those undertaken in 2011 to support the planning application for the site (WYG 2011b). At the end of the first five years' monitoring, the requirement for annual passage/wintering bird surveys will be reviewed on the basis of the survey results and, if appropriate, the frequency of the surveys will be reduced. Passage/wintering bird surveys will then continue throughout the development of the Liverpool Waters site, at the frequency determined by this review. On the basis of the review, and depending on whether they provide any mitigation features for passage/wintering birds (see Section 5.1.4), it may be possible to exclude some fully built-out neighbourhoods from the future survey efforts.

### Methodology

These should comprise vantage points survey carried out by eight surveyors, two located in each of the waterfront neighbourhoods. Appropriate field maps should be annotated to show the bird species present and their flight lines, including their height and direction, using standard BTO two letter species codes and activity codes (Gilbert et al., 2002). The survey should also record breeding behaviour if it occurs during the survey period.

Target species should comprise waders, wildfowl, gulls & terns, cormorant, grey heron and raptors. All other species, including BoCC Red and Amber list passerines (song birds) should be recorded as incidental species. The surveys should be written up as a factual report, highlighting flightlines, key roosting locations and any breeding locations of target species within the Liverpool Waters scheme. All bird species referred to within the report should be referred to using both common and scientific names.

### Timing/Weather Conditions

- A total of 36 hours of survey effort should be completed between September and March (inclusive).
- Survey effort should be evenly spread across the seven month survey period and comprise a minimum four hour watch period per survey.
- The surveys should be undertaken during the four hours preceding high tide, to take into account the limitations acknowledged by WYG 2011b[2] and two hours prior to and two hours after low tide.
- The surveys should be undertaken in a range of weather conditions, although times of restricted visibility and particularly harsh weather should be avoided.

### Impact Assessment

An impact assessment for water birds should be undertaken for each new reserved matters application in the Princes Dock Neighbourhood, using the data collected by the surveys. The impact

[2] Timing the surveys to fall two hours prior and two hours after high tide resulted in recording only minimal numbers of waders. This was believed to be a result of their feeding areas (principally on the Wirral Egremont shore) having already been submerged before the maximum tide height was reached, due to the large tidal range on the Mersey. In order to ascertain where waders were flying to from their foraging grounds, the timings of the surveys were altered so they instead covered the four hours prior to high tide.

assessment should be included in the Ecological and Biodiversity Statement for the development, which should be submitted to the LPA.

The water bird impact assessment should cover the construction and operational phases of the development and follow the same assessment methodology as set out in the Liverpool Waters Ecology and Nature Conservation ES chapter (WYG 2011a) and should include a Habitats Regulations (HRA) Assessment of Likely Significant Effect (ALSE) for each of the Natura 2000 sites that may be affected by the development. Assessments must include all of the following sites, together with any relevant new sites or extensions which may be designated subsequently:

- Liverpool Bay SPA;
- The Mersey Narrows and North Wirral Foreshore SPA/Ramsar;
- Mersey Estuary SPA/Ramsar;
- Ribble & Alt Estuaries SPA/Ramsar;
- Sefton Coast SAC;
- The Dee Estuary SPA;
- The Dee Estuary Ramsar;
- Dee Estuary SAC; and
- Martin Mere SPA and Ramsar.

The impact assessment should reference the baseline bird report for Liverpool Waters, the subsequent monthly update reports, produced by WYG between October 2013 and April 2014 and the TEP study *Assessment of Supporting Habitat (Docks) for Use by Qualifying Features of Natura 2000 Sites in the Liverpool City Region* (TEP 2015). If the assessment identifies that significant impacts on water birds are likely for a particular development, then appropriate mitigation measures should be identified. These may include measures such as buffer zones or the implementation of 'work windows' to restrict potentially disturbing works to certain times of year or the provision of alternative roosting habitat.

## 2.3 Common Tern Survey

### 2.3.1 Common Tern Survey

Surveys for foraging common tern should take place in in the year prior to construction and during the subsequent four years of development of the Liverpool Waters site, to inform an evolving mitigation strategy in relation to common tern foraging areas. The surveys should be undertaken by suitably qualified ecologists and follow the methodology described below. At the end of the first five years' monitoring, the requirement for annual common tern surveys will be reviewed, on the basis of the survey results and, if appropriate, the frequency of the surveys will be reduced. Common tern surveys will then continue throughout the development of the Liverpool Waters site, at the frequency determined by this review.

#### Methodology

No standard methodology is available for monitoring common tern foraging, but shore-based surveys have been carried out to assess use of foraging areas by little tern (Parsons *et al.,* 2015). Surveys for common tern foraging should be carried out by four surveyors, one located in each of the waterfront neighbourhoods. Surveys should be carried out from a vantage point which allows observation of the docks and coastal strip along the Mersey. Appropriate field maps should be annotated to show the

flight lines of any common terns observed, including their height, direction and foraging activity. The survey should also record breeding behaviour if it occurs during the survey period.

The surveys should be written up as a factual report, highlighting flightlines, key foraging locations and any breeding locations of common terns within the Liverpool Waters scheme and adjacent coastal strip.

#### Timing/Weather Conditions

- A total of 24 hours of survey effort should be completed between March and June (inclusive).
- Survey effort should be evenly spread across the four month survey period and comprise approximately two hour watches, with three watches completed in each month.
- The surveys should be undertaken under a variety of tidal states and times of day, to reduce sampling bias.
- The surveys should be undertaken in a range of weather conditions, although times of restricted visibility and particularly harsh weather should be avoided.

#### Impact Assessment

An impact assessment for common terns will be undertaken for each new reserved matters application in the Princes Dock Neighbourhood, using the data collected by these surveys. The impact assessment will be included in the Ecological and Biodiversity Statement for the development, which will be submitted to the LPA.

The common tern impact assessment will cover the construction and operational phases of the development and will include an HRA ALSE for Liverpool Bay SPA. The impact assessment will reference the baseline bird report for Liverpool Waters, the subsequent monthly update reports, produced by WYG between October 2013 and April 2014 and the TEP study *Assessment of Supporting Habitat (Docks) for Use by Qualifying Features of Natura 2000 Sites in the Liverpool City Region* (TEP 2015). If the assessment identifies that significant impacts on common terns are likely for a particular development, then appropriate mitigation measures should be identified. These may include measures such as buffer zones or the implementation of 'work windows' to restrict potentially disturbing works to certain times of year.

## 2.4 Bats – Condition 16: Part i.

### 2.4.1 Roosting Bats – External/Internal inspections

Where a reserved matters application proposes demolition or re-modelling of existing built structures, for example the dock boundary wall or buildings associated with the temporary cruise terminal, these should be inspected by a suitably qualified ecologist, for signs of, and potential for use by roosting bats. Depending on structure type, inspections should comprise external and internal assessments which must be completed prior to determination of the reserved matters application.

#### Methodology

Inspections of structures for bats should be carried out in accordance with *Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition* (Bat Conservation Trust, 2016), hereafter referred to as the 'BCT Guidelines', to determine presence or likely absence of bats, as well as the likelihood of the structure being used by bats.

Each structure should be systematically inspected during daylight, using binoculars, high powered torches and an endoscope where necessary, and any features suitable for bats noted, such, gaps in brickwork, cracks or crevices. Any potential bat access points should be identified and inspected for signs of bats such as:

- Bat droppings on the ground or stuck to the wall;
- Suitable entry and exit points around gaps in mortar;
- Live bats, bat corpses or skeletons; and,
- Oily marks (from fur) or localised clean spots around possible access points and roost areas.

On the basis of the inspection, each structure should be assigned to one of four roost suitability categories, following the BCT Guidelines: Negligible, Low, Moderate or High. The roost suitability category of the structure should determine the requirement and level of effort of additional nocturnal surveys and appropriate mitigation.

The assessment should also determine the suitability of each structure for nesting birds.

#### Timing/Weather Conditions

- External inspections of structures for bats can be carried out at any time of year.
- The surveys should take place in fine weather.

### 2.4.2 Roosting Bats – Nocturnal Surveys

If a structure is assigned a roost suitability category of Low, Moderate, High or even as a confirmed roost, it will require further nocturnal surveys to determine the presence or likely absence of bats and/or the number and species of bat present prior to determination of the reserved matters application. The level of survey effort that should be undertaken for each suitability category is presented below:

- **Low** – One survey visit between May and August (inclusive). One dusk emergence or dawn re-entry survey.
- **Moderate** – Two separate survey visits between May and September (inclusive). One dusk emergence and a separate dawn re-entry survey, with at least one of the surveys between May and August (inclusive).
- **High/Confirmed roost** - Three separate survey visits between May and September (inclusive). At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. At least two of the surveys must be between May and August (inclusive).

#### Timing/Weather Conditions

- Nocturnal bat surveys must take place between May and September (refer to the list above for more specific timings related to building/structure category).
- Surveys must take place in suitable weather conditions: Sunset temperature greater than 10°C and no rain or strong winds.

### 2.4.3 Impact Assessment

An impact assessment for bats should be undertaken for any reserved matters application that includes demolition/modification of structures, using the data collected by any bat surveys that are

carried out. The impact assessment should be included in the Ecological and Biodiversity Statement for the development, which should be submitted to the LPA. Should a delay of more than 12 months occur between consent for the reserved matters application being given and the development works commencing, updated bat surveys may be required.

The bat impact assessment should cover the construction and operational phases of the development and follow the same assessment methodology as set out in the Liverpool Waters ES chapter (WYG 2011a). If the assessment identifies that significant impacts on bats are likely, then appropriate mitigation measures should be identified. If a bat roost is found, a European Protected Species Licence (EPSL) application to Natural England will be needed. The EPSL is required to permit the destruction, damage or modification of a bat roost. A mitigation strategy will be required as part of the licence method statement and this should be developed once all surveys are completed and detailed proposals are available.

## 2.5 Fish and Other Water Species – Condition 16: Part ii.

### 2.5.1 Fish and Other Water Species Monitoring During Construction

Monitoring should include:

A one-off initial baseline characterisation survey carried out at a time between May and September covering:

- Phytoplankton survey[3]
- Fish survey using hydroacoustic[4] and netting methods[5]
- Benthic macroinvertebrate survey of dock floor[6]
- Survey of the dock walls to identify benthic invertebrates[7]

Ongoing programme of surveillance surveys covering:

- Annual surveys (spring and autumn) to monitor benthic invertebrates, plus surveys for algae, phytoplankton and zooplankton species[8]. Note that this frequency could potentially reduce over time dependent on results.

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[3] Following an appropriate UKAS accredited methodology.
[4] Following Duncan, A., and Kubecka, J. (1993). *Hydroacoustic methods of fish surveys.* National Rivers Authority R&D note 196 163pp.
[5] To include fyke net surveys using at least four pairs of nets.
[6] Benthic invertebrate samples to be collected from at least 12 sampling sites within the dock using a suitable grab. Also, baited traps to be used at six or more locations to quantitatively sample mobile benthic invertebrates. Samples to be processed following Worsfold, T.M., Hall, D.J. & O'Reilly, M. (Ed.) 2010. Guidelines for processing marine macrobenthic invertebrate samples: a Processing Requirements Protocol: Version 1.0, June 2010. Unicomarine Report NMBAQCMbPRP to the NMBAQC Committee. 33pp. Available online.
[7] Wall scrape samples to be taken following Worsfold, T.M., 1998. Sampling of cryptofauna from natural turfs (flora or fauna) on hard substrata. Version 1 of 26 March 1998. In: Biological monitoring of marine Special Areas of Conservation: a handbook of methods for detecting change. Part 2. Procedural guidelines, ed. By K. Hiscock, 4 pp. Peterborough, Joint Nature Conservation Committee.
[8] Methodologies to follow those used in the initial baseline characterisation survey, other than where improvements have been identified.

- An annual fish survey if the baseline survey indicates a low fish population is present, to monitor improvements[9]. Otherwise further fish surveys are not required unless unusual circumstances arise, such as a pollution event that results in a fish kill.

Based on surveys carried out in nearby docks it is likely that marine invasive non-native species will be identified as present. If they are recorded, methodologies should be developed to avoid their spread as a result of works within the dock. The precise measures required will depend on the species identified, but are likely to consist of controls on the disposal of material removed from the dock. The amount of material is likely to be limited, as only limited works are proposed within the dock.

## 2.6 Water Quality – Condition 16: Part vi.

### 2.6.1 Water Quality Monitoring During Construction

The applicant should conduct an initial baseline characterisation survey covering:

- Water quality sampling at several locations in each basin for physical and chemical parameters, to include dissolved oxygen, pH, conductivity, salinity, biochemical oxygen demand, ammonia, nutrients, heavy metals (cadmium, mercury, arsenic, copper, chromium, zinc, nickel, lead and iron) and organics likely to include poly aromatic hydrocarbons and TBT.
- Sediment quality sampling for sediment oxygen demand, metals, pH and redox potential.
- Bathymetric survey for sediment depth.

Ongoing programme of surveillance surveys covering:

- Monthly monitoring for physical and chemical parameters as shown above including biochemical oxygen demand, ammonia and nutrients. Frequency could potentially reduce over time dependent on monitoring results.

Results to be reported in the form of electronic reports that summarise the data and identify key issues, with the full data set included as appendices. Copies to be provided to the Environment Agency, MEAS and the Canal & River Trust. Should the reports identify issues with water quality arising as a result of the development the Principal Contractor should undertake measures to prevent further impacts arising and if necessary to clean up any contamination.

Principal contractor to develop and implement a management plan for water quality within the dock system during construction. Details to be developed once the initial baseline characterisation surveys have been completed, but management measures may include for example:

- Investigations of the drainage system to identify pollution risk.
- Reaeration.

[9] Methodologies to follow those used in the initial baseline characterisation survey, other than where improvements have been identified.

# 3.0 Mitigation Through Scheme Design

## 3.1 Bird Strike Mitigation – Condition 16: Part v.

Vantage point bird surveys of the Liverpool Waters site by WYG in 2009/10 and 2013/2014 and by TEP in 2013 and 2014 found that the majority of birds flying through the site (i.e. travelling at height and at speed, rather than short-distance commuting between the docks) did so following either the River Mersey or the dock system, rather than the land allocated for development. Therefore, even though development of the Princes Dock neighbourhood will include 14 buildings greater than five storeys in height, the risk of bird strike is considered to be relatively low. Nevertheless, the development of tall buildings along the river has the potential to increase the risk of bird strike over the baseline situation, where relatively few tall buildings were present.

It is thought that bird strike with buildings is due to birds' inability to detect the difference between clear air and glass. During the daytime, they see the reflections of the surrounding landscape or are able to see through the glass altogether. At night, birds can be attracted to lit structures, causing collisions, although it is thought that this phenomenon is more associated where isolated lighted structures occur in otherwise dark environments, or during conditions of poor visibility.

The designs of all tall buildings constructed in the Princes Dock neighbourhood, particularly those with significant areas of reflective glass to their northern and southern facades, should incorporate measures to mitigate the risk of day time and night time bird strike, appropriate to the building design and function. Developers must show the risk of bird strike has been considered in their planning application documents and provide specific details of any mitigation measures adopted in the Ecological and Biodiversity Statement for each reserved matters application, which must be submitted to the LPA in accordance with Condition 34 of the Liverpool Waters Consent.

The US Fish and Wildlife Service (USFWS) has produced a document *Reducing Bird Collisions with Buildings and Building Glass* (USFWS 2016) which identifies various potential mitigation options. Those that are most suitable for commercial buildings are summarised below:

### 3.1.1 Reducing Bird Strike with Glass

Not all windows are equally hazardous to birds, it is considered that those which reflect bird habitats, such as open sky or vegetation are the most dangerous. In the context of the likely direction of waterfowl flights through the neighbourhood (i.e. following the line of the River Mersey), north facing and south facing windows which reflect these features are likely to be most hazardous. To mitigate this, non-reflective glass can be used or glass can potentially be treated in the following ways;

#### Patterning

The principle of patterning is to create the impression of a space that is too small for the target bird to pass through. Much of the research into bird strike has found that passerines (i.e. song birds such as thrushes) are most at risk and therefore USFWS recommend horizontal lines with a spacing of 5cm or vertical lines with a spacing of 10cm. Other patterns can also be used, for example diagonal lines or dots. The patterning can be applied to the glass as tape, film or adhesive stickers.

### Fritting

Fritting is the use of ceramic dots or lines on the outside facing or interior panes of a window to break up large expanses of highly reflective glass. This technique is applicable to commercial buildings as it is permanent and can be used to create a variety of patterns, which aesthetic as well as practical functions.

### Ultraviolet Patterned Glass

Birds see in the ultraviolet (UV) spectrum, so using glass that reflects UV light in a pattern can reduce bird collisions. While this glass is typically more expensive than other treatments, it is comparable in price to other energy-efficient glass This option may be desired, over alternatives such as fritted glass, when seeking a product that is generally not visible to humans, but provides some benefit to birds.

### Screens and Netting

Installing external screens or netting on windows is an effective and relatively inexpensive treatment. Screens reduce reflection and injury by providing a cushion between the bird and the window. This treatment can be installed on individual panes or attached to a façade. To be effective, the netting must be placed far enough in front of the window that a bird hitting it will not collide into the glass behind. The netting should have openings no larger than 1.3 cm, to prevent birds becoming entangled.

### Architectural Features

Structural additions such as overhangs, awnings and louvres can be used to shade reflective features and thus reduce the risk of bird strike. Louvres can also have the same shading effect and also can be designed to fulfil a similar function to 'patterning' to create the impression of a space that is too small for target bird species to fly through. Such features also often have additional benefits in that they can reduce overheating and glare in buildings with large areas of glass.

## 3.1.2 Lighting

### Lighting Design

As described above, lighting can also play a significant role in bird strike collisions with buildings. Therefore all reserved matters applications for all buildings over five storeys high or located within an area of limited development, where there are low light levels in comparison to other areas across the Liverpool City frontage, will consider the requirement for a lighting plan to reduce bird strike, in accordance with the building's position in the development, construction materials etc. Where a lighting plant is developed, this should explore opportunities for reducing lighting of the building during bird migration periods e.g. mid-August to mid-November and March to mid-May. The following lighting design principles should be followed:

- Unnecessary lighting (i.e. lighting which does not perform a practical function), including perimeter lighting, should be avoided.
- Motion sensors should be installed in interior and exterior public spaces to activate lights only when people are present.
- Exterior lighting should be fully shielded so that light is prevented from being directed skyward. "Fully shielded" light fixtures are defined as those with an opaque shield so that all light is emitted below the lowest light emitting part of the fixture.

- Building occupants should be made aware of the risk of bird strike via a welcome pack, when they take up occupation of the building, which will provide instruction in simple techniques to reduce the risks (e.g. closing shades, turning off lights in unoccupied rooms/offices.)

### 3.1.3 Landscape Design

#### Exterior

The design of landscaping around new buildings, particularly those with extensive glass surfaces, should be carefully considered to avoid creating funnelling effects whereby linear features (e.g. lines of trees, walkways, passageways and walls) direct birds towards windows. Approaches to the buildings for vehicles and pedestrians should also be carefully considered to avoid flushing birds from landscaping features towards windows.

Where ancillary structures are required, such as bus shelters, guard rails and glass walls, consideration should be given to avoiding the use of glass or treating it with the methods outlined for building glass above.

#### Interior

Indoor plants and trees should be located sufficiently far away from windows, or placed next to treated windows, to avoid creating the impression of continuing natural vegetation behind the glass.

## 3.2 Dissuasion of Breeding Gulls and Pigeons – Condition 16: Part viii.

Rooftops and ledges of urban buildings provide ideal nesting/roosting sites for gulls and feral pigeons because they are free from predators and are often within easy reach of food sources, e.g. landfill sites. It is important to incorporate measures to discourage nesting birds from buildings to prevent the establishment of colonies, to which individual birds are likely to be faithful once they have bred and which can attract additional birds from the surrounding area.

Given the proximity of Liverpool Waters to large gull and feral pigeon populations, all buildings constructed in the Princes Dock neighbourhood should aim to incorporate measures to discourage these species, appropriate to building design and function. Developers must show how such measures have been considered in their planning application documents; the focus should be on designed-in measures such as minimising the area of flat roof, minimising ledges or using sloping ledges in preference to relying on systems such as netting. Suitable dissuasion measures are summarised below.

### 3.2.1 Designed-in Measures

#### Roof Pitch

The size of flat roofs should be minimised where possible, or replaced with pitched roofs. Pitches of over 25 degrees are considered steep enough to prevent nesting, without any additional dissuasion methods. Even small interruptions in the roof plane, for example a skylight, can provide enough purchase for a gull nest so these should be avoided where possible, or equipped with dissuasion measures.

#### Ledges and Overhangs

Roof overhangs provide potential shelter for roosting birds, especially when a ledge is located below and should therefore be avoided where possible. Where ledges are necessary to building design/function, or they have been included to mitigate bird strike (see Section 3.1) they should incorporate a minimum slope of 45 degrees to make them unsuitable for nest building or should be equipped with suitable dissuasion measures, such as spikes where practicable.

#### Roof Gardens

Where flat roofs are critical to building design, they can be purposed as roof gardens, where practical and feasible, which, if used frequently, should result in a sufficient level of human disturbance to dissuade gulls. Roof gardens can also offer other social, insulating and rainwater attenuation benefits or can function as green/brown roofs for black redstarts. Publicly accessible gardens may not always be compatible with habitat creation measures proposed for black redstarts, although, if required, netting of a suitable gauge can be installed to dissuade gulls and pigeons, but allow black redstarts to use the feature (see Section 6).

### 3.2.2 Additional Dissuasion Measures

#### Spikes

These are typically a series of upturned spikes that deter gulls from roosting or, in certain circumstances, from nesting. Spikes can be effective on ledges where, if used in sufficient quantity, they will deter birds. If used on roofs, spikes should be positioned at a density suitable to dissuade the target species and completely cover the roof. If used on ledges, they must be placed at sufficiently close spacing to be effective. They are generally ineffectual if placed only around parapet walls or installed at low densities.

#### Wires

Wires can be stretched across a flat roof or across the ridge of a pitched roof; they do not prevent nesting birds but can be used to prevent roosting. These are aligned in parallel rows at a distance that will dissuade a gull from landing. They have the advantage that other birds do not get snagged in them, and they can be less visually intrusive than nets. Wires can also be used on ledges.

#### Netting

Netting is a common form of bird dissuasion because it can be retrofitted to most buildings. However, netting may have a negative visual impact and therefore designed-in measures should be prioritised. Where netting is considered to be necessary, an appropriate shade should be chosen to integrate with the materials of the building. Also, locating the netting further back on the roof and using a combination of methods such as wires or spikes, should help to minimise visual impact from the street.

Netting systems need to be properly installed and maintained to be successful. If installed poorly or the incorrect mesh size is used, gulls may still be able to enter the area or become snagged in the nets; an appropriate mesh size for gull management is 75mm, whilst 50mm is suitable for dissuading pigeons.

### Litter and waste

Accumulations of litter and other waste can attract opportunist birds such as gulls, pigeons and corvids. All reserved matters applications should therefore demonstrate how waste will be managed to ensure that it is not accessible to foraging birds. Management of litter within the public realm should also take nuisance bird species into account and should employ designs for street furniture, such as litter bins that are not accessible to gulls in particular.

### Other measures

A variety of other dissuasion measures are available including plastic bird of prey decoys, noise (e.g. distress calls) emitting devices and wind-driven moving structures, however these are considered to be significantly less effective than the dissuasion measures described above, and are therefore not recommended. The use of plastic decoys should be avoided altogether, as they may have a negative effect on peregrines nesting locally.

The use of birds of prey is considered an impractical deterrent measure, as they must be flown daily, over a large part of the breeding season, to deter nesting birds. As with plastic decoys, the flying of captive birds of prey should be avoided, as they may have a negative effect on peregrines nesting locally.

### 3.2.3 Potential Conflicts with Waterbird Mitigation

Features such as ledges and platforms, when appropriately located, can provide roosting sites for priority bird species, including cormorants. All individual reserved matters applications within Princes dock should consider the provision of integrated roosting features for species such as cormorant, provided that they can be located or designed in such a way to have minimal levels of anthropogenic disturbance and reduce the likelihood of their use by gulls and pigeons.

## 3.3 Methods for Controlling Leisure Boat Activity – Condition 16: Part vii.

Leisure boats can currently access Princes Dock via the Liverpool Canal Dock link, which is accessed from the Liverpool to Bootle stretch of the canal via Stanley Dock. It is likely that development of the dock will result in an increase in boat traffic, over current levels.

In 2011 WYG identified no significant aggregations of water birds associated with Princes Dock although small numbers of the SPA species cormorant and shelduck were recorded using the docks themselves. In 2013/14 TEP recorded small numbers of the following SPA species using Princes Dock black-headed gull, cormorant, lesser black-backed gull and oystercatcher. Following the addition of cormorant as a designated feature of Liverpool Bay SPA, it is considered that the numbers previously recorded within Princes Dock may represent a significant proportion of the SPA population. Therefore, any development coming forward within Princes Dock, and indeed elsewhere within the Liverpool Waters scheme, which has the potential to result in increased boat traffic should consider, within its supporting environmental assessment and associated Habitats Regulations Assessment, the impact of the increased boat traffic on features of all designated sites (including the recently extended Liverpool Bay SPA).

It is important to prevent any increase in boats causing a direct or indirect impact to SPA birds, such as cormorants, utilising the docks as functionally linked habitat, nor undermine the effectiveness of

any mitigation measures (e.g. floating pontoons) put in place. Where impacts from increased boat are considered likely then appropriate mitigation measures must be identified, for example restricting traffic at certain times of year or certain times of day and/or the creation of lane or one-way systems.

To allow for change in waterbird populations, the annual water bird surveys will monitor the dock and the survey report should analyse the data to monitor whether the area continues to be used as functionally linked habitat by significant numbers of SPA qualifying species and identify any changes to the mitigation strategy re: boat traffic, if appropriate.

## 3.4 Protection of Sefton Coast SAC –– Condition 16: Part x.

Point x of condition 16 states that *Mechanisms to ensure protection of Sefton Coast SAC (Seaforth Docks to Formby Point) from recreational disturbance overseen by the Liverpool Waters Coordination Panel in accordance with Schedule 6 of this permission.*

Prince's dock lies 6.7km from Sefton Coast SAC. Recreational disturbance effects on this Natura 2000 site were screened out within the Liverpool Waters HRA (WYG 2011c) for the following reasons:

> *The construction works and primary movements of the end users will be contained within the footprint of the development and it's immediate surrounds. In addition, none of the qualifying species have been recorded on or near the site*.

Nevertheless, all reserved matters applications within the Princes Dock neighbourhood should include a Habitats Regulations ALSE covering all of the Natura 2000 sites that may be affected by recreational disturbance as a result of the development. All developments should include a commitment to adhere to the objectives of the Sefton Coast SAC and Ribble and Alt Estuaries SPA VMS. The VMS is being produced within and across all European sites within the Liverpool City Region.

Reserved matter applications which come forward on a plot by plot basis and are received prior to the adoption of the VMS should consider how recreational pressure will be assessed (and potentially mitigated for) as a result of the additional development. Condition 34 of the outline consent (1O/2424) will ensure that the developer provides additional information through further ecological surveys. Each development that is brought forward in more detail will allow for more certainity over what mitigation (if any) would be required.

# 4.0 Construction Phase Mitigation

## 4.1 Construction Working Practices – Condition 16: Part iii.

### 4.1.1 Removal of Existing Buildings and Vegetation

Existing vegetation, hardstanding and structures within the Princes Dock neighbourhood have some potential to support breeding birds. Developers must therefore show how breeding birds have been considered in their planning application documents. It is recommended that vegetation clearance and demolition works should therefore be timed to take place outside the bird breeding season where possible, provided this would be lawful in the context of the results of the pre-construction surveys for bats outlined in Section 2.0.

- The bird breeding season is normally regarded as March to August (inclusive)

Where restricting works outside the bird nesting season is not possible, a suitably qualified Ecological Clerk of Works (ECoW) should conduct a check for nesting birds within the site in advance of any works commencing. If a nesting bird was identified, the ECoW would advise on suitable working methods and exclusion zones to avoid damage to the nest. The measures recommended would depend on the nature of the works in the area close to the nest, as well the nesting bird species, and could result in delays to undertaking works within specific areas of the site until all chicks had fledged.

### 4.1.2 Construction Vehicles, Routes and Speed Limits

If construction is undertaken outside the bird breeding season, then routing of construction traffic will not need to take account of breeding birds. Should construction take place during the breeding season and a nesting bird be identified during the ECoW's check (see 4.1.1), then vehicle routes and speed limits may need to account of the nest. The distance that construction traffic would need to keep from the nest would depend on the nesting bird species and would therefore be advised by the ECoW following the check.

In 2011 WYG identified small numbers of cormorant and shelduck using Princes Dock in winter. In 2013/14 recorded small numbers of the following SPA species using Princes Dock black-headed gull, cormorant, lesser black-backed gull and oystercatcher, however, the aggregations present were not considered represent significant proportions of their respective SPA populations. As the docks are currently subject to disturbance by vehicles using William Jessop Way and Princes Parade, and alternative routes into the site are likely to be unfeasible, no specific routing of construction traffic is proposed to protect wintering birds.

Specification of a general speed limit for construction vehicles in this document is not considered to be appropriate, as no specific bird breeding locations or wintering roost locations are considered likely to be affected by construction traffic.

### 4.1.3 Protection of Roost Sites of Wintering/Passage Birds

In 2011 WYG identified no significant aggregations of water birds associated with Princes Dock although small numbers of the SPA species cormorant and shelduck were recorded using the docks themselves. In 2013/14 TEP recorded small numbers of the following SPA species using Princes Dock black-headed gull, cormorant, lesser black-backed gull and oystercatcher. Following the addition of

cormorant as a designated feature of Liverpool Bay SPA, it is considered that the numbers previously recorded within Princes Dock may represent a significant proportion of the SPA population. Therefore, any development coming forward within Princes Dock, and indeed elsewhere within the Liverpool Waters scheme, which has the potential to result in increased waterbird disturbance should consider, within its supporting environmental assessment and associated Habitats Regulations Assessment, the impact of disturbance on features of all designated sites (including the recently extended Liverpool Bay SPA).

Disturbance pathways associated with the development of plots within the Princes Dock neighbourhood are likely to be visual and noise effects mainly during construction. Mitigation against these effects should be identified through the updated impact assessment (described in 2.2.1) and/or the HRA and any mitigation deemed necessary should be outlined in detail in the Construction Environmental Management Plan (CEMP) for the individual development.

### Visual Disturbance Mitigation

Based on current baseline information (e.g. WYG 2011b and TEP 2015), no specific screening is proposed for development west of William Jessop Way as the developable land is located east of the road and the area immediately adjacent to the docks is regularly used by inhabitants of the existing buildings and members of the general public.

Development east of Princes Parade should be screened from Princes Dock by heras fencing equipped with dark green debris netting, to screen the site and prevent any windblown litter entering the docks. Development west of Princes Parade (e.g. at the northern end of the neighbourhood) should be screened on the western side of the site (facing the River Mersey) by heras fencing equipped with dark green debris netting, to screen the site and prevent any windblown litter entering the docks.

In both areas, screening should only be placed at ground level, to block sight lines to the busiest area of the construction sites (i.e. where most operative and vehicle movements are likely to be concentrated).

### Noise Disturbance Mitigation

Some of the development in the Princes Dock neighbourhood will require piling, which has the potential to extend the noise disturbance envelope outside of Princes Dock, with potential associated effects on water birds using other docks within the vicinity. Therefore, effects on water birds roosting/foraging outside Princes Dock should be assessed for each development where piling is required and mitigation identified as appropriate.

MEAS demonstrated, in their comments on the Plaza 1821 development, based on the use of rotary piling, as specified in the Liverpool Waters outline application and Statement of Conformity, the noise disturbance envelope would extend to 550m beyond the plot[10]. However, the comments concluded there would be no disturbance to non-breeding birds within the envelope, from piling operations at this plot, if the following were included in the CEMP:

[10] An envelope of 550m around Princes Dock includes Canning Dock and Canning Half Tide Dock, to the south and Princes Half Tide Dock and East and West Waterloo Docks, to the north. In 2013/14, TEP found these docks supported qualifying/assemblage species for nearby Natura 2000 sites SPAs.

- Adherence to the guidelines set out in *The Code of Practice for Noise and Vibration Control on Construction and Open Sites, 2009* and subsequent updates;
- The use of rotary piling methods;
- Selection of quietest working equipment available;
- Positioning equipment behind physical barriers i.e. hoarding;
- Provision of lined and sealed acoustic covers for noisy equipment;
- Directing noise emissions away from plant including exhausts or engines away from sensitive locations;
- Ensuring that regularly maintained and appropriately silenced equipment is used; and
- Maintaining a no idling policy.

It is therefore recommended that the above guidance is followed for each development requiring piling although a noise impact assessment should still be undertaken to determine whether additional mitigation, such as the restriction of piling to 'working windows' is required.

# 5.0 Habitat Creation

## 5.1 Bird Nesting/Roosting Features and Foraging Habitat – Condition 16: Part iv.

Buildings constructed in the Princes Dock neighbourhood should incorporate features for the following bird species, to enhance the ecological value of the site.

### 5.1.1 Black Redstart

Breeding bird surveys carried out in 2009 to support the Liverpool Waters Planning Application (WYG 2009) recorded one singing black redstart south of Stanley Dock. Peregrine surveys carried out by WYG in 2015 and 2016 for a site close to Stanley Dock also recorded black redstarts. To enhance the site for this species, buildings within the neighbourhood should, if practicable, consider the inclusion of a green roof[11], specifically designed for black redstarts. Outline specifications for the green roof and black redstart nest boxes are provided below.

#### Green Roof

Incorporating the following ecological requirements into green roof design can make a significant contribution to the replacement of lost brownfield habitat and benefit black redstarts:

- Relatively small areas of very sparsely vegetated rubble or rocky terrain incorporating hibernacula for invertebrates;
- Still or slow moving water; and
- Nearby nest boxes.

The area of habitat creation for black redstart does not need to be extensive, small roof areas of 25m$^2$ will readily be used, although the roof should be at least partially south facing to create suitable thermal conditions for a diverse range of invertebrates. Green roofs can be created at a range of heights, but it is recommended that, where practical and feasible, within the Princes Dock neighbourhood the maximum height of any green roof(s) is 50m above ground level, to reduce exposure to high winds and precipitation. Green roofs should also be accessible for maintenance, but ideally not regularly disturbed by the public; larger areas of roof habitat may be able to function as public spaces in combination with black redstart foraging habitat, particularly if access is restricted at certain times of day. Green roofs for black redstarts have also successfully been combined with solar panels, with the foraging habitat provided between the solar arrays.

The aim is to create an environment with sparse vegetation and abundant microhabitats for invertebrates. This is achieved by using low nutrient substrate, such as crushed brick, fine aggregate or expanded clay pellets with topsoil or peat-free compost if necessary.

Detailed guidance on green roofs is provided by the Greater London Authority (GLA) publication *Living Roofs and Walls* (GLA 2008). The following specification for green roofs is taken from the Greater Manchester Biodiversity Project (GMBP) publication *Make Room for Black Redstarts* (GMBP

[11] Although the more generic term 'green roof' is used throughout, roof habitats for black redstarts are more often termed 'brown roofs' in reference to the generally higher proportion of sparsely vegetated habitat than a typical 'green' sedum roof or roof garden.

2008), which provides photographs to illustrate the target habitat. A similar specification is also provided at:

- https://www.blackredstarts.org.uk/pages/greenroof.html

The substrate should be based on a mix of aggregate, (e.g. Leca), and this should then be overlaid with rock and/or stone chippings and contoured in height from zero up to 50cm, for the largest invertebrate hibernacula. In designing the hibernacula, a central mound area of sand or soil is compacted to form a sandcastle effect that angled at 30 degrees with the broadest area south facing. The mound is then covered with boulders around 10 – 15 cm in size, that are loosely placed to allow entry by invertebrates into the central area.

Vegetation can be introduced onto a new green roof although the roof can also be left to colonize naturally. However, it is important that the majority of a green roof designed specifically for black redstarts should consist of bare or sparsely vegetated areas. If the roof is to be seeded or plug-planted this should be done with species typical of drought stressed and nutrient poor conditions (see Table 3). If sedum matting is to be used, it should only cover a small amount of the total roof area and should be planted into the aggregate mix, to encourage colonization by other plant species. If matting is the only viable option due to structural (i.e. load bearing) considerations, then a system which incorporates a range of hardy plants should be used.

**Table 3: Suggested Species for Planting to Create Green Roofs for Black Redstarts**

| Species Name |
|---|
| **Perforate St John's Wort** *Hypericum perforatum* |
| **Yellow-wort** *Blackstonia perfoliata* |
| **Common Centuary** *Centaurium erythaea* |
| **Kidney Vetch** *Anthyllis vulneraria* |
| **Common Bird's-foot-trefoil** *Lotus corniculatus* |
| **Black Medick** *Medicago lupulina* |
| **Dove's-foot Crane's-bill** *Geranium molle* |
| **Common Eyebright** *Euphrasia nemorosa* |
| **Betony** *Stachys officinalis* |
| **Devil's – bit Scabious** *Succisa pratensis* |
| **Ribwort Plantain** *Plantago lanceolata* |
| **Selfheal** *Prunella vulgaris* |

### Nest Boxes

If a green roof for black redstarts is provided, then nest boxes for this species should be installed on the same building. Various suitable nest boxes for black redstarts are available; these can either be fixed to an exterior wall, or integrated into the fabric of a building. Examples of these two types of nest box are provided below:

- Schwegler 2HW (externally fixed) or equivalent.
- Schwegler 1HE (integrated) or equivalent

Where provided, the boxes will be securely installed on the buildings at a variety of heights, between 3m and 50m, in locations that are unlikely to be disturbed by the public, in a sheltered position i.e. under overhangs or balconies on a north or east-facing wall, or in a similar sheltered location in close proximity to the green roof.

#### Additional Mitigation Options

Mitigation for black redstarts could, where practicable, be improved by expanding the habitat creation to include the following.

##### Brown Walls

If, due to building design restrictions, only a small area of green roof habitat can be provided, black redstart habitat could be extended by designing brown walls into the new buildings. Brown walls (e.g. https://www.blackredstarts.org.uk/pages/brownwall.html) incorporate ledges at different heights filled with suitably sized aggregate and sparse planting to provide linear strips of habitat similar to that targeted by the green roof described above.

##### Green/brown Roof and Wall Mosaic

Further benefits could be delivered for black redstarts if additional green/brown roofs and walls were incorporated into other buildings within the Princes Dock neighbourhood, to provide a mosaic of elevated habitats that would benefit this species. Different buildings could potentially target slightly different habitats, for example sparsely vegetated crushed brick/aggregate, flower-rich grassland and aquatic features or each roof could include a combination of these. Nest boxes could be distributed across the buildings, in association with the mosaic of habitats, to provide black redstarts with a network of potential nest sites.

### 5.1.2 Peregrine

Peregrine falcons prey on other bird species and will hunt a diverse range of species, even in urban environments. Therefore, it is not considered appropriate to combine the provision of black redstart habitat and peregrine nest boxes in the same location. Black redstart was the highest conservation priority bird species recorded in the Liverpool Waters area by WYG (2009). Princes Dock neighbourhood is the first phase of the Liverpool Waters development and therefore offers the opportunity to provide a benefit to this species at the earliest opportunity in the lifespan of the development.

### 5.1.3 Swallows and Swifts

Buildings within Princes Dock should consider the inclusion of swallow and/or swift nest boxes where possible. Where provided, it is recommended that a minimum of 3 boxes are installed per building to create colonial nesting habitat. The boxes should be fixed to the exterior of the buildings at a minimum of 1m intervals under suitable canopies or overhanging ledges, at a maximum of second storey height, with a distance of at least 6cm between the top of the nest and the ceiling of the canopy or ledge. Suitable nest boxes include:

- No. 10 Schwegler swallow nest (or equivalent).
- No. 18 Schwegler swift box (or equivalent).

### 5.1.4 Replacement Roosting Habitat for Water Birds

Condition 34 of the planning decision notice for the Liverpool Waters development specifies that replacement roosting sites are only required for Nelson Dock, due to the relatively high number of roosting cormorants recorded by WYG 2011b. No replacement water bird roosting sites were proposed for Princes Dock. However, due to the extension of Liverpool Bay SPA, which now includes cormorant as a designated feature, the requirement for mitigation may need to be revised. The final specification for replacement water bird habitat will be based on the results of the first annual passage/wintering bird survey and common tern survey. If the numbers of birds identified by this future study represent a significant proportion of their SPA populations, then mitigation features (e.g. floating pontoons for cormorants) may be required.

The results of the first annual passage/wintering bird survey and common tern surveys will be used alongside other data where relevant to draft a strategic water bird mitigation plan, which examines the bird survey data in the context of extant and likely reserved matters application across the Liverpool Waters scheme and identifies areas where mitigation is needed. The plan will be submitted to the local planning authority for approval. It is proposed that all of the mitigation features specified are delivered in areas managed by Peel Holdings and will be provided within two years of the mitigation plan being approved.

A strategic approach to providing this type of mitigation is required, as reserved matters applications elsewhere within the Liverpool Waters scheme may result in significant impacts on water bird habitat, which can't be mitigated locally to the development and therefore mitigation features may need to be provided within other neighbourhoods to maximise the overall effectiveness of the mitigation package proposed. However, mitigation measures will also be submitted as part of reserved matters applications and approved and discharged through condition 34 of the outline consent for each detailed plot when additional surveys are undertaken to provide more information.

## 5.2 Bat Roosting Features – Condition 16: Part iv.

### 5.2.1 Bat Boxes

To enhance the value of the Princes Dock neighbourhood for roosting bats, a total of 3 bat boxes should be provided on the new building proposed for Plot A-03 . This is the most appropriate part of the neighbourhood for bat boxes due to its location close to potential bat foraging habitat associated with The King Edward Estate and Great Howard Street. Buildings in this location are also likely to be more sheltered than those on the western side of Princes Dock, which are closer to the River Mersey.

The bat boxes will be placed at 4m height on the south, south-east and east faces of the buildings. The north and west faces should be avoided due to being too shaded and exposed to the prevailing weather. The bat boxes can either be fixed to the external walls of the buildings or integrated into the walls:

- Externally fixed boxes should be Schwegler 2FE or equivalent.
- Integrated boxes should be Schwegler 1FR or equivalent.

## 5.3 Landscape Planting – Condition 16: Part iv.

### 5.3.1 Planting for Bats and Invertebrates

Landscaping within the Princes Dock neighbourhood should seek to incorporate features to enhance its value for bats and their invertebrate prey. Public open space including tree/shrub and herbaceous planting is proposed for The Northern Crossing, The Jetty, The City Link and The Southern Gateway

(Planit 2018). Each reserved matters application will also have its own landscaping proposals for the environment local to the new buildings.

### Tree Planting

Tree planting in areas of public open space should aim to create potential foraging corridors for bats and green linkages through the neighbourhood for breeding birds where possible. To maximise the potential for green corridors through the development, landscaping for the individual reserved matters should seek to link into the corridors created in the public open space and develop a network of potential wildlife corridors throughout the development.

The planting interval should be such that the canopies of adjacent trees are within at least 5m of one another when mature or the spaces between the trees should be bridged by suitable 'bat-friendly' planting (see Appendix C). To maximise invertebrate populations within landscaped areas, locally native tree and shrub species should be planted. It is recommended that the priority (broad) habitat '*Broadleaved mixed and yew woodland*' which is listed in the Natural Character Area (NCA) profile for Merseyside Conurbation (Natural England 2013) is referenced as the basis of tree planting schemes; suitable species are listed in Table 4. Planting should be carefully planned to avoid funnelling birds, which may use the trees for foraging and/or song posts towards reflective glass surfaces (see section 3.1.3).

**Table 4: Suitable Tree and Shrub Species for Linear Planting**

| Species Name |
|---|
| **Wild cherry** *Prunus avium* |
| **Alder** *Alnus glutinosa* |
| **Blackthorn** *Prunus spinosa* |
| **Elder** *Sambucus nigra* |
| **Goat willow** *Salix caprea* |
| **Hawthorn** *Crataegus monogyna* |
| **Hazel** *Corylus avellana* |
| **Rowan** *Sorbus aucuparia* |

### Additional Shrub and Herbaceous Planting

Landscaping of public open space and the public realm of the individual developments can be further enhanced by the inclusion of additional shrub and herbaceous species, with the aim of having flowers in bloom throughout the year, including both annuals and herbaceous perennials. Although native species are often preferred by ecologists, non-native plants, provided they are not invasive (see Appendix B), can assist in providing nectar sources more or less year round. Examples of such species are provided in Appendix C. Additional plant species are listed in the Royal Horticultural Society (RHS) publication *Perfect for Pollinators – Garden Plants* (RHS n.d.)

- https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/rhs-perfect-for-pollinators-garden-plants.pdf

# 6.0 Post-construction Monitoring and Management

## 6.1 Ongoing Aquatic Ecology Monitoring – Condition 16: Part ii.

Monitoring programmes for the following should be developed by the applicant/developer subject to the results of the construction phase monitoring outlined in Section 2.0:

- Fish and other water species; and
- Water Quality.

The requirements for ongoing monitoring of both of these features in the operational phase should be discussed and agreed with MEAS, the Environment Agency and Canal and Rivers Trust before completion of the construction phase. The design of any ongoing monitoring programmes should take into account the results of the construction phase monitoring, in particular whether or not they indicate any issues with water quality and/or aquatic ecology in the dock.

## 6.2 Ecological Mitigation – Condition 16: Part ix.

The following permanent ecological mitigation measures should be incorporated into the Princes Dock neighbourhood where possible:

- Measures to reduce bird strike;
- Measures to dissuade breeding gulls and pigeons.

Routine management, monitoring and provisions for remedial management of these measures are set out below.

### 6.2.1 Measures to Reduce Bird Strike

#### Routine Management

Bird strike prevention measures should require little management outside of that covered by routine building maintenance as they would be part of the fabric and or fixtures and fittings of the building. Management of any installed features should follow the manufacturer's recommendations.

#### Monitoring

Owners/occupants of buildings over five storeys high should aim to carry out bird strike monitoring in the first year after construction. Monitoring can be conducted through two methods:

- Regular walk arounds of the buildings; and
- Building occupant reports.

Building Walk-arounds

Monitoring of bird strike fatalities requires systematic searches for the carcasses of birds which have collided with a building. This can be problematic, because predators such as foxes, crows and gulls will rapidly habituate to searching areas where collisions regularly occur and may remove carcasses before they are found. Monitoring therefore has to be frequent to be effective.

The following monitoring strategy, based on the American Bird Conservancy (ABC) advice note *Monitoring Buildings for Bird Collisions* (ABC n.d.), is proposed:

- A representative, for example a member of the maintenance staff, should be chosen from each building to carry out monitoring.
- The monitoring period should be 12 months, to include one winter and one spring migration.
- Monitoring should take place on three days a week, between 8am and 10am.

Monitors should be trained initially by a suitably qualified ecologist appointed by the building owner. The ecologist should be available to check the identification of carcasses found by the monitor once the initial training is completed. Verification of carcass identification could be completed by emailed carcass photos rather than site visits, to minimise the cost of monitoring. During training, the monitoring route should be agreed and finalised. The route should include every façade with windows, including along green roofs, and if possible, setbacks and other roof terraces. A map of the monitoring route should be created for reference, and the route subdivided into segments, with each change in façade structure and orientation assigned a segment number. Monitors should follow this route consistently during monitoring.

Monitors should conduct a careful search, looking within 30 feet of the building, with a special emphasis on landscape planting and street furniture, as injured birds may seek shelter near those objects. The primary activity should be the search effort, though it is permissible for searchers to do other things while they are searching (e.g. picking up litter). After each segment, the monitor should record the date, time, number of birds found, their species and their status (dead, alive, or injured), if possible photographs and specimens should be collected. The search should be recorded, even if no birds were found, as zero counts can help to evidence that any installed mitigation measures are working.

Prior to the monitoring programme commencing, a local wildlife hospital or veterinary service, who can accept any injured birds that may be found, should be identified. Injured birds should be captured using a long-handled net and placed in a suitably sized container with air holes, for transport to the wildlife hospital. Injured birds should be kept away from extreme cold and heat during transport and their containers secured in as quiet an environment as possible.

The monitoring strategy should be reviewed in consultation with a suitably qualified ecologist after 3 months, to determine whether any adjustments need to be made. The data collected should be reviewed at 6 months. Following the end of the 12 month monitoring period, the data collected during the building walk arounds should be reviewed by a suitably qualified ecologist and a brief monitoring report produced, including recommendations for enhancing mitigation, where required.

### Building Occupant Reports

Building occupants should be encouraged to report any bird strikes they witness while inside/outside the building, via a dedicated email address. This information should be included in the Welcome Pack for owners/tenants. Posters on each building floor could alert occupants to risk of bird strike and the monitoring programme that has been put in place. The occupant reports should be collated by the bird strike monitor and reviewed by the ecologist during production of the monitoring report.

#### Remedial Management

The monitoring report should examine the locations where bird strikes were reported in relation to existing mitigation features and, where relevant, highlight areas of the building which are prone to bird strike and, if appropriate make recommendations for further mitigation. The monitoring report should be discussed with the building owner and additional monitoring undertaken if required. If additional mitigation is installed, then a further 12 month round of monitoring should take place to assess its effectiveness.

### 6.2.2 Measures to Dissuade Gulls and Pigeons

#### Routine Management

Measures to dissuade/exclude gulls and pigeons will be dependent on building design but should require little management outside of that covered by routine building maintenance. Management of any installed features should follow the manufacturer's recommendations.

#### Monitoring

The following monitoring programme for gull and pigeon breeding is proposed for buildings where dissuasion measures are installed:

- A representative, for example a member of the maintenance staff, should be chosen from each building to carry out monitoring.
- Searches for breeding birds should take place at least twice annually, during May and June, for the lifetime of the building.

All potential nesting surfaces, such as ledges and roof terraces should be inspected, either from the ground, with binoculars, and from within the building, where access is possible. The locations of any pigeon/gull nests recorded on a map of the building.

#### Remedial Management

Where significant numbers of nesting gulls and pigeons (e.g. more than 2 gull nests or 5 pigeon nests) are present on a building, then the building owner should consult a suitably experienced contractor to identify suitable measures to dissuade/exclude birds during the following breeding season. Any additional exclusion measures should be installed by a suitably qualified contractor.

## 6.3 Habitat Creation – Condition 16: Part ix.

Where possible buildings within the Princes Dock neighbourhood will seek to include the following ecological habitat creation measures:

- Green/brown roof(s) and black redstart boxes;
- Swallow boxes;
- Bat boxes; and
- Landscape planting for bats and invertebrates.

Routine management, monitoring and provisions for remedial management of these measures are set out below. Where mitigation features for waterbirds are proposed on the basis of the passage/winter bird surveys, these should also be included within the monitoring programme. Monitoring and

remedial management measures will be dependent on the type(s) of mitigation features provided and should be provided to the LPA for approval prior to installation.

### 6.3.1 Green Roof(s) and Black Redstart Boxes

#### Routine Management

Once established, the green/brown roof(s) created for black redstarts would need little maintenance other than occasional weeding, if robust species do establish. The very low nutrient status and drought conditions should keep any vegetation that does establish sparse and low growing.

#### Monitoring

Where provided green roofs should be monitored as part of ongoing landscape maintenance programme and inspected at least twice a year by a suitably experienced landscape contractor or ecologist, to determine whether they continue to meet their original specification.

The condition of black redstart nest boxes should be inspected annually between September and February, from the ground using binoculars, to determine their condition. If a closer inspection is required, this should be undertaken between September and February (inclusive) using an appropriate access system.

Two black redstart surveys should be carried out post completion of a building with a green roof. The surveys should comprise two elements; a ground level survey (following the methodology outlined in 2.1.2) and a roof level survey (following the methodology below). To avoid duplication of survey effort, the data collected during the biennial black redstart surveys (see 2.1.2) should be used for monitoring where possible, provided a full breeding season has passed between completion of the green roof and the survey. The second survey should be carried out five years after completion of the green roof.

The roof level survey should comprise a two hour vantage point watch, to observe whether any black redstarts are utilising the green roof(s) for foraging and/or nesting. This should either be completed following the ground-level survey or independently, depending on whether data from the biennial surveys is used for the ground-level element.

#### Remedial Management

Remedial management of any created green roof features would be dependent on the system chosen, but would likely to be limited to re-establishment of any failed planting should this be identified by monitoring. If required, maintenance of the green roof would be undertaken by a suitably experienced contractor. Any nest boxes which are deemed to have failed structurally should be replaced between September and February (inclusive).

### 6.3.2 Swallow Boxes

#### Routine Management

Swallow boxes should need no maintenance and should be left undisturbed.

#### Monitoring

Where provided, the condition of swallow nest boxes should be inspected, every five years, from the ground using binoculars to determine their condition.

#### Remedial Management

Any nest boxes which are deemed to have failed structurally should be replaced between September and February (inclusive) using an appropriate access system.

### 6.3.3 Bat Boxes

#### Routine Management

Once installed, bat boxes will require no routine management.

#### Monitoring

Where provided bat boxes should be monitored in years 2, 5 and 10 post-installation. Monitoring should be undertaken from a mobile work platform or similar by a suitably licenced bat worker. The boxes should be examined for droppings and urine-staining and for 'chattering' bats. The boxes should also be inspected with an endoscope where appropriate and accessible, to assess occupation by bats and whether any of the boxes needs cleaning.

#### Remedial Management

Any bat boxes which are deemed to have failed structurally should be replaced under the supervision of a suitably licenced bat worker between November and February (inclusive). Where monitoring has deemed that a frequently occupied box needs cleaning, this should also be carried out under the supervision of a licenced bat worker, between November and February (inclusive).

### 6.3.4 Landscape Planting for Bats

#### Routine Management

Any landscape planting for bats should be managed by a suitably experienced contractor. Routine management should likely comprise weeding, pruning and replanting (e.g. annual plants), as appropriate to the plant species mix chosen and the planting layout.

#### Monitoring

Landscape planting should be assessed at least annually, between May and August (inclusive), by a suitably experienced contractor, to determine whether the planting continues to meet its original specification.

#### Remedial Management

All planted trees which fail to establish or die during the lifetime of the development should be replaced with an equivalent tree within 12 months. Remedial management of other aspects of the landscape scheme will be dependent on the plant species mix, for example some plants may fail due to the local soil conditions and need to be replaced. It is recommended that a requirement for remedial management is decided by the landscape contractor, as a result of their annual inspections, however the overall aim should be to provide a scheme which delivers on the original specification to provide a benefit to bats and invertebrates. If significant remedial management required, a suitably qualified ecologist should be consulted to ensure that the proposed replacement planting is appropriate.

# 7.0 Summary

## 7.1 Pre-Construction/Construction Phase Surveys and Impact Assessments – Condition 16: Parts i, ii & vi

### Birds

- Annual surveys for breeding peregrine falcon should be undertaken, in the year prior to construction and during the subsequent four years of development of the Princes Dock neighbourhood. After the initial five years of survey work, the results will be reviewed and the interval between surveys reviewed.
- Annual surveys for black redstarts should be undertaken, in the year prior to construction and during the subsequent four years of development of the Princes Dock neighbourhood. After the initial three years of survey work, the results will be reviewed and the interval between surveys reviewed.
- Annual surveys for passage/wintering birds, covering the entire Liverpool Waters scheme, should be undertaken, in the year prior to construction and during the subsequent four years of development of the Princes Dock neighbourhood. After the initial five years of survey work, the results will be reviewed and the interval between surveys reviewed.
- Annual surveys for common terns, covering the entire Liverpool Waters scheme, should be undertaken, in the year prior to construction and during the subsequent four years of development of the Princes Dock neighbourhood. After the initial five years of survey work, the results will be reviewed and the interval between surveys reviewed.
- The results of the bird surveys should be used to produce updated impact assessments for peregrine, black redstart, passage/wintering birds and common tern for each reserved matters application, to be submitted to the LPA through an Ecological and Biodiversity Statement.
- The frequency of each of the above survey efforts will continue throughout the remainder of the construction phase of the Liverpool Waters site, as determined by each of their subsequent reviews.

### Bats

- Where a reserved matters application proposes demolition or re-modelling of existing built structures, these should be inspected by a suitably qualified ecologist, for signs of, and potential for use by roosting bats. Depending on structure type, inspections should comprise external and internal assessments which must be completed prior to determination of the reserved matters application.
- If a structure is assigned a roost suitability category of Low, Moderate, High or even as a confirmed roost, further nocturnal surveys, to determine the presence or likely absence of bats and/or the number and species of bat present, must be completed prior to determination of the reserved matters application.
- The results of any bat surveys undertaken to inform proposals including the demolition of structures should be used to produce an updated impact assessment for bats for the reserved matters application, to be submitted to the LPA through an Ecological and Biodiversity Statement.

### Fish

- Initial baseline surveys characterisation surveys should be undertaken for: phytoplankton, fish, benthic macro-invertebrates and benthic invertebrates on the dock walls.
- Annual surveys (spring and autumn) should be undertaken to monitor benthic invertebrates, plus surveys for algae, phytoplankton and zooplankton species.
- If the baseline survey indicates a low fish population is present to monitor improvements.
- If the surveys identify marine invasive non-native species, methodologies should be developed to avoid their being spread as a result of works within the dock

### Water Quality

- Initial baseline characterisation surveys should be undertaken for physico-chemical parameters, sediment quality and sediment depth.
- Monthly monitoring of physico-chemical parameters, including biochemical oxygen demand, ammonia and nutrients, should be undertaken.
- Results of the monitoring are to be reported in the form of electronic to be provided to the Environment Agency, MEAS and the Canal & River Trust. Should the reports identify issues with water quality arising as a result of the development the Principal Contractor should undertake measures to prevent further impacts arising and if necessary to clean up any contamination.
- A management plan should be developed for water quality within the dock system on the basis of the baseline characterisation surveys, to potentially include investigations of the drainage system to identify pollution risk and reaeration.

## 7.2 Mitigation Through Scheme Design – Condition 16: Parts v, vii, viii & x

### Bird Strike Mitigation

- The designs of all tall buildings constructed in the Princes Dock neighbourhood, particularly those with significant areas of reflective glass to their northern and southern facades, should seek to incorporate measures to mitigate the risk of day time and night time bird strike, appropriate to the building design and function.
- Specific details of measures to reduce bird strike should be included in the Ecological and Biodiversity Statement for each reserved matters application, which should be submitted to the LPA.

### Exclusion of Breeding Gulls and Pigeons

- All buildings constructed in the Princes Dock neighbourhood should seek to incorporate measures to exclude breeding gulls and pigeons, appropriate to building design and function. The focus should be on designed-in measures such as minimising the area of flat roof, minimising ledges or using sloping ledges in preference to relying on retro-fitted systems.
- All developments should demonstrate how waste will be managed to ensure that it is not accessible to foraging birds. Management of litter within the public realm should be regular and employ innovative solutions to ensure that gulls in particular do not become a nuisance.
- Management of gulls and pigeons should not conflict with provision of replacement habitat for priority waterbird species. Provided that they can be located or designed in such a way

as to reduce their use by gulls and pigeons, all individual reserved matters applications within Princes dock should consider the provision of integrated roosting features for species such as cormorant.

- Specific details of measures to reduce bird strike should be included in the Ecological and Biodiversity Statement for each reserved matters application, which should be submitted to the LPA.

### Methods for Controlling Leisure Boat Activity

- Any development coming forward within Princes Dock, and elsewhere within the Liverpool Waters scheme, which has the potential to result in increased boat traffic should consider the impact of the increased boat traffic on features of all designated sites, including the recently extended Liverpool Bay SPA.
- Bird populations within Princes Dock will be monitored on an annual basis. A mitigation strategy should be developed in respect of leisure boat activity on the basis of the results of these surveys.

### Protection of Sefton Coast SAC

- All reserved matters applications within the Princes Dock neighbourhood should include a Habitats Regulations ALSE for each of the Natura 2000 sites that may be affected by recreational disturbance as a result of the development. All developments should include a commitment to adhere to the objectives of the Sefton Coast SAC and Ribble and Alt Estuaries SPA VMS

## 7.3 Construction Phase Mitigation – Condition 16: Part iii

### Removal of Existing Buildings and Vegetation

- Vegetation clearance and demolition works should be timed to take place outside the bird breeding season (March to August inclusive) where possible, provided this would be lawful in the context of the results of the pre-construction surveys for bats outlined in Section 2.0.
- Where restricting works outside the bird nesting season is not possible, a suitably qualified ECoW should conduct a check for nesting birds within the site in advance of any works commencing.

### Construction Vehicles, Routes and Speed Limits

- Construction vehicle routing should take account of nesting birds if nests are present on site.
- The distance that construction traffic would need to keep from the nest would depend on the nesting bird species and would be advised by the ECoW.
- No general speed limit for construction vehicles is specified as no specific bird breeding locations or wintering roost locations are considered likely to be affected by construction traffic in the Princes Dock neighbourhood.

### Protection of Roost Sites of Wintering/Passage Birds

- Any development coming forward within Princes Dock, and elsewhere within the Liverpool Waters scheme, which has the potential to result in increased disturbance of waterbird roosting sites should consider, the impact of disturbance on features of all designated sites, including the recently extended Liverpool Bay SPA.

- Bird populations within the Liverpool Waters Scheme will be monitored on an annual basis. If significant populations of SPA or Ramsar site qualifying species are recorded utilising Princes Dock, an overarching mitigation strategy should be developed on the basis of the results of these surveys.
- Visual disturbance mitigation should be installed for the developments to the east and west of Princes Parade and comprise heras fencing equipped with dark green debris netting, to screen the site and prevent any windblown litter entering the docks.
- The measures outlined in 4.1.3 to reduce the noise disturbance associated with piling should be followed.

### Additional Mitigation Requirements

- Any additional mitigation identified by the updated impact assessments for peregrine, black redstart and water birds should be incorporated in the CEMP as required.

## 7.4 Habitat Creation – Condition 16: Part iv

### Black Redstart

- Building within the neighbourhood should, if practicable, incorporate consider the inclusion of a green roof , specifically designed for black redstarts.
- If a green roof for black redstarts is provided, then nest boxes for this species should be installed on the same building.
- Additional mitigation options for black redstart should also be considered including brown walls and a mosaic of green/brown roofs and walls distributed between different buildings.

### Peregrine

- Nesting habitat for peregrine should not be provided in the Princes Dock neighbourhood, due to the potential negative interaction between this species and black redstarts.

### Swallows and Swifts

- Buildings within Princes Dock should consider the inclusion of swallow and/or swift nest boxes where possible. Where provided, it is recommended that a minimum of 3 boxes are installed per building.

### Replacement Roosting Habitat for Water Birds

- The final requirement for replacement water bird habitat should be based on the results of the proposed passage/wintering bird surveys.
- The results of the first annual passage/wintering bird survey and common tern surveys will be used to draft a strategic water bird mitigation plan which will be submitted to the local planning authority for approval. All of the mitigation features specified will be delivered in areas managed by Peel Holdings and will be provided within two years of the mitigation plan being approved.

### Bats

- A total of 3 bat boxes should be provided on  the new building proposed for Plot A-03.

### Landscape Planting

- Linear planting of locally native trees should be incorporated in the landscape scheme for the areas of public open space within Princes Dock neighbourhood. Where tree planting is proposed within the public realm of the individual development plots, it should seek to integrate with adjacent plots/public open space, to create a coherent ecological network within the neighbourhood.
- Planting should be carefully planned to avoid funnelling birds, which may use the trees for foraging and/or song posts towards reflective glass surfaces.
- Opportunities for further enhancing landscaping within the neighbourhood should be taken where possible, through the incorporation of additional 'bat friendly' plants within the scheme.

## 7.5 Post-construction Monitoring and Management – Condition 16: Part ix.

### Green Roofs and Black Redstart Boxes

- Where provided green roofs should be inspected at least twice a year by a suitably experienced landscape contractor, to determine whether they continue to meet their original specification.
- The condition of black redstart nest boxes should be inspected annually between September and February, from the ground using binoculars, to determine their condition.
- Two black redstart surveys should be carried out post completion of a building with a green roof. The surveys should comprise two elements; a ground level survey and a roof level survey.
- To avoid duplication of survey effort, the data collected during the biennial black redstart surveys (see 2.1.2) should be used for monitoring where possible, provided a full breeding season has passed between completion of the green roof and the survey. The second survey should be carried out five years after completion of the green roof.
- The roof level survey should be completed either following the ground-level survey or independently, depending on whether data from the biennial surveys is used for the ground-level element.
- If monitoring of green roofs finds that remedial management is required, this should be undertaken by a suitably experienced contractor.
- Any nest boxes which are deemed to have failed structurally should be replaced between September and February (inclusive).

### Swallow and Swift Boxes

- Where provided, the condition of the swallow and/or swift nest boxes should be inspected, every five years, from the ground using binoculars to determine their condition.
- Any nest boxes which are deemed to have failed structurally should be replaced between September and February (inclusive) using an appropriate access system.

### Bat Boxes

- Where provided, bat boxes should be monitored in years 2, 5, and 10 post installation, by a licenced bat worker from a mobile work platform or similar.

- Any bat boxes which are deemed to have failed structurally should be replaced under the supervision of a licenced bat worker between November and February (inclusive).
- Where monitoring has deemed that a frequently occupied box needs cleaning, this should also be carried out under the supervision of a licenced bat worker, between November and February (inclusive).

### Landscape Planting

- Routine management of any landscape planting for bats should be undertaken by a suitably experienced contractor.
- The landscape planting should be assessed at least annually, between May and August, by a suitably experienced contractor, to determine whether it continues to meet its original specification.
- All planted trees which fail to establish or die during the lifetime of the development should be replaced with an equivalent tree within 12 months.
- The requirement for remedial management of the landscape planting should be decided on the basis of the landscape contractor's annual assessment, with the overall target that the scheme should continue to meet the original specification for the lifespan of the development.
- If significant remedial management required, a suitably qualified ecologist should be consulted to ensure that the proposed replacement planting is appropriate.

# 8.0 References


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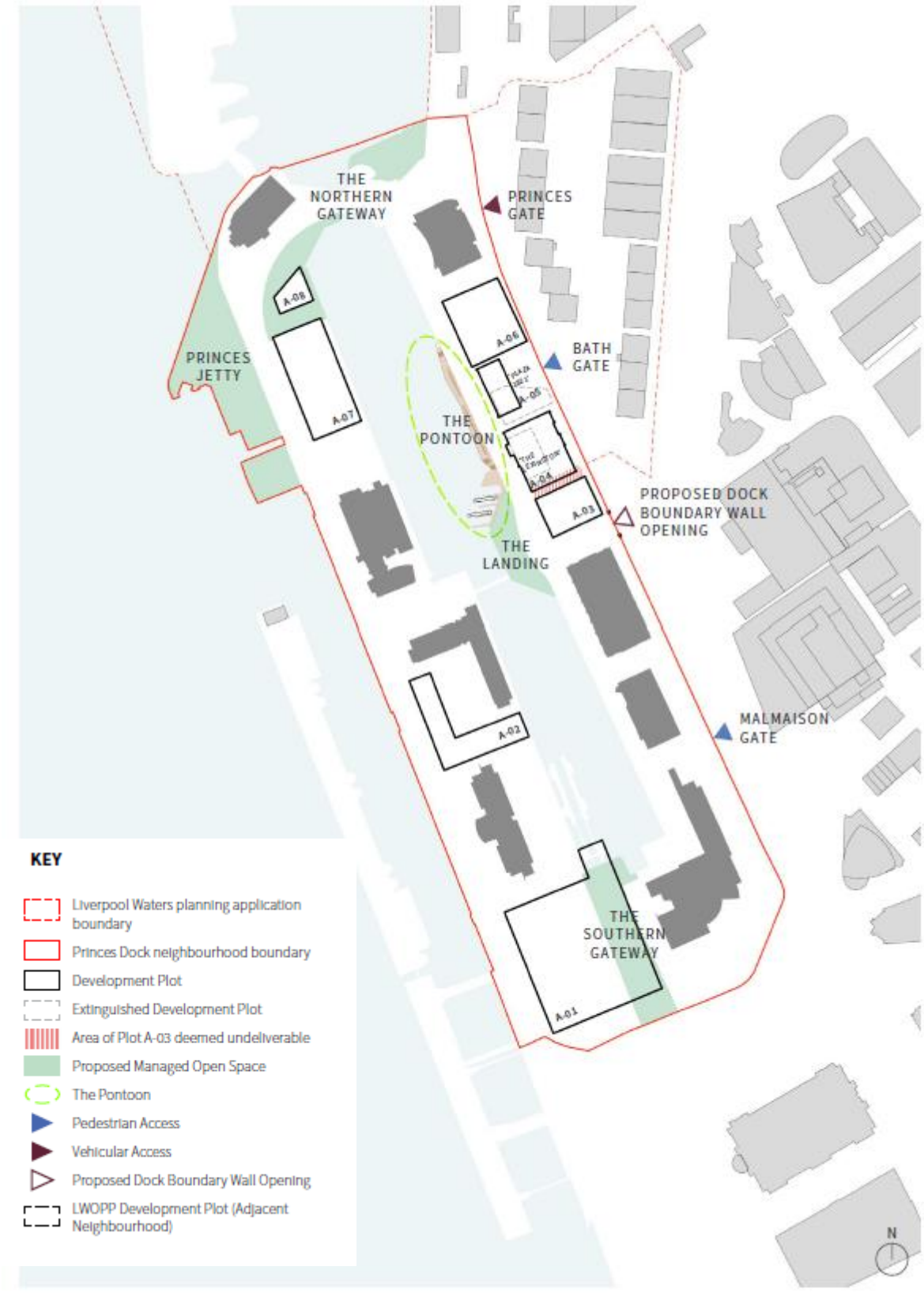
# Appendix A – Figures

**Figure 1 Plots Identified for Development within the Princes Dock Masterplan**



# Appendix B – Wildlife Legislation

## Bern Convention

The *Convention on the Conservation of European Wildlife and Natural Habitats* (the *Bern Convention*) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countires to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the *EC Birds Directive* (1979) and the *EC Habitats Directive* (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

## Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals or 'Bonn Convention' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.

In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985 (as amended), Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CRoW).

## Habitats Directive

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Fora, or the 'Habitats Directive', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes.

In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species Regulations 2010 (as amended) in England and Wales, and via the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland.

## Birds Directive

The EC Directive on the Conservation of Wild Birds (791409/EEC) or 'Birds Directive' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.

## Conservation of Habitats and Species Regulations 2017 (as amended)

Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I or II of the Habitats Directive respectively) to the European Commission. These sites, if ratified by the European Commission, are then designated as Special Protection Areas (SPAs) within six years. Public bodies must also help preserve, maintain and re-establish habitats for wild birds.

The Regulations also make it an offence to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, uproot, destroy, or trade in the plants listed in Schedule 5 - see below:

| **Schedule 2 – European Protected Species of Animals** | **Schedule 5 – European Protected Species of Plants** |
|---|---|
| Horseshoe bats *Rhinolophidae* - all species | Shore dock *Rumex rupestris* |
| Common bats *Vespertilionidae* - all species | Killarney fern *Trichomanes speciosum* |
| Large Blue Butterfly *Maculinea arion* | Early gentian *Gentianella anglica* |
| Wild cat *Felis silvestris* | Lady's-slipper *Cypripedium calceolus* |
| Dolphins, porpoises and whales *Cetacea* – all sp. | Creeping marshwort *Apium repens* |
| Dormouse *Muscardinus avellanarius* | Slender naiad *Najas flexilis* |
| Pool frog *Rana lessonae* | Fen orchid *Liparis loeselii* |
| Sand lizard *Lacerta agilis* | Floating-leaved water plantain *Luronium natans* |
| Fisher's estuarine moth *Gortyna borelii lunata* | Yellow marsh saxifrage *Saxifraga hirculus* |
| Great crested newt *Triturus cristatus* | |
| Otter *Lutra lutra* | |
| Lesser whirlpool ram's-horn snail *Anisus vorticulus* | |
| Smooth snake *Coronella austriaca* | |
| Sturgeon *Acipenser sturio* | |
| Natterjack toad *Epidalea calamita* | |
| Marine turtles *Caretta caretta, Chelonia mydas, Lepidochelys kempii, Eretmochelys imbricata, Dermochelys coriacea* | |

## Wildlife & Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the 'Bern Convention' and the Birds Directive are implemented in the UK. Since it was first introduced, the Act has been amended several times.

The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

- kill, injure, or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use; or
- take or destroy an egg of any wild bird.

Or to intentionally do the following to a wild bird listed in Schedule 1:

- disturbs any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturbs dependent young of such a bird.

In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5;

- interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places; and
- The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Finally, the Act also makes it an offence (subject to exceptions) to:

- intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant;
- unless an authorised person, intentionally uproot any wild plant not included in Schedule 8; or
- sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise case to grow in the wild any plant which is listed in Part II of Schedule 9.

It is recommended that plant material of these species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes.

| **Schedule 1 - Birds which are protected by special penalties** | | | |
|---|---|---|---|
| Avocet | *Recurvirostra avosetta* | Osprey | *Pandion haliaetus* |
| Bee-eater | *Merops apiaster* | Owl, Barn | *Tyto alba* |
| Bittern | *Botaurus stellaris* | Owl, Snowy | *Nyctea scandiaca* |
| Bittern, Little | *Ixobrychus minutus* | Peregrine | *Falco peregrinus* |
| Bluethroat | *Luscinia svecica* | Petrel, Leach's | *Oceanodroma leucorhoa* |
| Brambling | *Fringilla montifringilla* | Phalarope, Red-necked | *Phalaropus lobatus* |
| Bunting, Cirl | *Emberiza cirlus* | Plover, Kentish | *Charadrius alexandrinus* |
| Bunting, Lapland | *Calcarius lapponicus* | Plover, Little Ringed | *Charadrius dubius* |
| Bunting, Snow | *Plectrophenax nivalis* | Quail, Common | *Coturnix coturnix* |
| Buzzard, Honey | *Pernis apivorus* | Redstart, Black | *Phoenicurus ochruros* |
| Capercaillie | *Tetrao urogallus* | Redwing | *Turdus iliacus* |
| Chough | *Pyrrhocorax pyrrhocorax* | Rosefinch, Scarlet | *Carpodacus erythrinus* |
| Corncrake | *Crex crex* | Ruff | *Philomachus pugnax* |
| Crake, Spotted | *Porzana porzana* | Sandpiper, Green | *Tringa ochropus* |
| Crossbills (all species) | *Loxia* | Sandpiper, Purple | *Calidris maritima* |
| Curlew, Stone | *Burhinus oedicnemus* | Sandpiper, Wood | *Tringa glareola* |
| Divers (all species) | *Gavia* | Scaup | *Aythya marila* |
| Dotterel | *Charadrius morinellus* | Scoter, Common | *Melanitta nigra* |
| Duck, Long-tailed | *Clangula hyemalis* | Scoter, Velvet | *Melanitta fusca* |
| Eagle, Golden | *Aquila chrysaetos* | Serin | *Serinus serinus* |
| Eagle, White-tailed | *Haliaetus albicilla* | Shorelark | *Eremophila alpestris* |
| Falcon, Gyr | *Falco rusticolus* | Shrike, Red-backed | *Lanius collurio* |
| Fieldfare | *Turdus pilaris* | Spoonbill | *Platalea leucorodia* |
| Firecrest | *Regulus ignicapillus* | Stilt, Black-winged | *Himantopus himantopus* |
| Garganey | *Anas querquedula* | Stint, Temminck's | *Calidris temminckii* |
| Godwit, Black-tailed | *Limosa limosa* | Swan, Bewick's | *Cygnus bewickii* |

| | | | |
|---|---|---|---|
| Goshawk | *Accipiter gentilis* | Swan, Whooper | *Cygnus cygnus* |
| Grebe, Black-necked | *Podiceps nigricollis* | Tern, Black | *Chlidonias niger* |
| Grebe, Slavonian | *Podiceps auritus* | Tern, Little | *Sterna albifrons* |
| Greenshank | *Tringa nebularia* | Tern, Roseate | *Sterna dougallii* |
| Gull, Little | *Larus minutus* | Tit, Bearded | *Panurus biarmicus* |
| Gull, Mediterranean | *Larus melanocephalus* | Tit, Crested | *Parus cristatus* |
| Harriers (all species) | *Circus* | Treecreeper, Short-toed | *Certhia brachydactyla* |
| Heron, Purple | *Ardea purpurea* | Warbler, Cetti's | *Cettia cetti* |
| Hobby | *Falco subbuteo* | Warbler, Dartford | *Sylvia undata* |
| Hoopoe | *Upupa epops* | Warbler, Marsh | *Acrocephalus palustris* |
| Kingfisher | *Alcedo atthis* | Warbler, Savi's | *Locustella luscinioides* |
| Kite, Red | *Milvus milvus* | Whimbrel | *Numenius phaeopus* |
| Merlin | *Falco columbarius* | Woodlark | *Lullula arborea* |
| Oriole, Golden | *Oriolus oriolus* | Wryneck | *Jynx torquilla* |
| **Invasive plant species listed in Schedule 9** | | | |
| Australian swamp stonecrop or New Zealand pygmyweed | *Crassula helmsii* | Japanese rose | *Rosa rugosa* |
| Californian red seaweed | *Pikea californica* | Japanese seaweed | *Sargassum muticum* |
| Curly waterweed | *Lagarosiphon major* | Laver seaweeds (except native species) | *Porphyra* spp |
| Duck potato | *Sagittaria latifolia* | Parrot's-feather | *Myriophyllum aquaticum* |
| Entire-leaved cotoneaster | *Cotoneaster integrifolius* | Perfoliate alexanders | *Smyrnium perfoliatum* |
| False Virginia creeper | *Parthenocissus inserta* | Pontic rhododendron | *Rhododendron ponticum* |
| Fanwort or Carolina water-shield | *Cabomba caroliniana* | Purple dewplant | *Disphyma crassifolium* |
| Few-flowered garlic | *Allium paradoxum* | Red algae | *Grateloupia luxurians* |
| Floating pennywort | *Hydrocotyle ranunculoides* | Rhododendron | *Rhododendron ponticum* × *Rhododendron maximum* |
| Floating water primrose | *Ludwigia peploides* | Small-leaved cotoneaster | *Cotoneaster microphyllus* |
| Giant hogweed | *Heracleum mantegazzianum* | Three-cornered garlic | *Allium triquetrum* |
| Giant kelp | *Macrocystis* spp. | Variegated yellow archangel | *Lamiastrum galeobdolon* subsp. *argentatum* |
| Giant knotweed | *Fallopia sachalinensis* | Virginia creeper | *Parthenocissus quinquefolia* |
| Giant rhubarb | *Gunnera tinctoria* | Wakame | *Undaria pinnatifida* |
| Giant salvinia | *Salvinia molesta* | Wall cotoneaster | *Cotoneaster horizontalis* |
| Green seafingers | *Codium fragile* | Water fern | *Azolla filiculoides* |
| Himalayan cotoneaster | *Cotoneaster simonsii* | Water hyacinth | *Eichhornia crassipes* |
| Hollyberry cotoneaster | *Cotoneaster bullatus* | Water lettuce | *Pistia stratiotes* |
| Hooked asparagus seaweed | *Asparagopsis armata* | Water primrose | *Ludwigia grandiflora* |
| Hottentot fig | *Carpobrotus edulis* | Water primrose | *Ludwigia uruguayensis* |
| Hybrid knotweed | *Fallopia japonica* × *Fallopia sachalinensis* | Waterweeds | *Elodea* spp. |
| Indian (Himalayan) balsam | *Impatiens glandulifera* | Yellow azalea | *Rhododendron luteum* |
| Japanese knotweed | *Fallopia japonica* | | |

## Natural Environment and Rural Communities Act 2006

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of Habitats and Species which are of Principal Importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 Habitats of Principal Importance and 1,150 Species of Principal Importance.

## Birds of Conservation Concern

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

The latest report was produced in 2015 (Eaton *et al*, 2015) and identified 67 red list species, 96 amber species, and 81 green species. The criteria are complex, but generally:

- **Red list** species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.
- **Amber list** species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.
- **Green list** species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed

## Global IUCN Red List

The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe.

The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.

## Local Biodiversity Action Plan (LBAP)

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities.

Some LBAP's may also include Habitat Action Plans (HAP) and/or Species Action Plans (SAP), which are used to guide and inform the local decision making process.

# Appendix C – Planting for Bats and Invertebrates

**Table B1 Gardening for bats**

Below are some suggestions, but this is not an exhaustive list – see also:

- https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/rhs-perfect-for-pollinators-garden-plants.pdf

Flowering times are approximate, varying dependent on region. Regular dead-heading extends flowering period in many flowers. A=annual, HA= hardy, annual, HHA=half-hardy annual, P=perennial, W=wild flower.

| **Flowers for borders** | | | |
|---|---|---|---|
| St. John's Wort | *Hypericum* | P | March |
| Marigolds | *Calendula* | H/A | March-October |
| Aubrietia | *Aubrietia deltoidea* | P | March-June |
| Honesty | *Lunaria rediviva* | HB | March |
| Forget-me-not | *Myosotis* sp. | A/P | March-May |
| Elephant ears | *Bergenia* | P | April |
| Wallflowers | *Erysimum* | B | April-June |
| Cranesbills | *Geranium spp.* | P | May-September |
| Yarrow | *Achillea* | P | May- |
| Poppies | *Papaver spp.* | A | May- July |
| Dames violet | *Hesperis matronalis* | P | May-August |
| Red Valerian | *Centranthus rubber* | P | May-Sept |
| Poached egg plant | *Limnanthes* | HA | June-August |
| Knapweed | *Centaurea nigra* | P | June-September |
| Phacelia | *Phacelia spp.* | HA | June-September |
| Ox-eye daisy | *Leucanthemum vulgare* | P | June-August |
| Evening primrose | *Oenothera biennis* | B | June-September |
| Candytuft | *Iberis umbellate* | HA | June-September |
| Sweet William | *Dianthus barbatus* | B | June-July |
| Blanket flowers | *Gaillardia* | P | June - |
| Verbena | *Verbena bonariensis* | HHA | June-October |
| Scabious | *Knautia arvensis* | P | July-August |
| Night-scented stock | *Mattiola bicornia* | HA | July-August |
| Pincushion flower | *Scabious spp.* | A/P | July-September |
| Cherry pie | *Heliotrope* | HHA | July-October |
| Mexican aster | *Cosmos sp.* | A/P | July-October |
| Cone flower | *Rudbeckia spp.* | A/P | August-November |
| Mallow | *Lavateria spp.* | P | August-October |
| Michaelmas daisy | *Aster spp.* | P | August-September |
| Ice plant 'Pink lady' | *Sedum spectabile* | P | September |
| **Herbs – both leaves and flowers are fragrant** | | | |
| Fennel | *Foeniculum vulgare* | | July-September |
| Bergamont | *Monarda didyma* | | June-September |

| | | | |
|---|---|---|---|
| Sweet Cicely | *Myrrhis odorata* | | April-June |
| Hyssop | *Hyssopus officinalis* | | July-September |
| Feverfew | *Tanacetum parthenium* | | June-September |
| Borage | *Borago officinalis* | | May-September |
| Rosemary | *Rosmarinus officinalis* | | March-May |
| Lemon balm | *Melissa officinalis* | | |
| Coriander | *Coprianrum sativum* | | June-August |
| Lavenders | *Lavendula spp* | | |
| Marjoram | *Origanum spp* | | |
| **Trees, shrubs and climbers important to insects** | | | |
| Common alder | *Alnus glutinosa* | | Suitable for coppicing |
| Hazel | *Corylus avellana* | | Suitable for coppicing |
| Elder | *Sambucus nigra* | | Small |
| Goat willow | *Salix caprea* | | Suitable for coppicing |
| Hawthorn | *Crataegus monogyna* | | Suitable for coppicing |
| Honeysuckle | *Lonicera spp* | | Grow a variety for succession |
| Dog rose | *Rosa canina* | | Climber |
| Bramble | *Rubus fruticosus* | | Climber |
| Ivy | *Hedera helix* | | Climber |
| Guelder rose | *Vibernum opulus* | | Shrub |
| Gorse | *Ulex spp.* | | Shrub |
| **Plants for pond edges and marshy areas** | | | |
| Purple loosestrife | *Lytrhum salicaria* | W | June-August |
| Meadow sweet | *Filipendula ulmaria* | W | June-September |
| Lady's smock | *Cardamine pratensis* | W | April-June |
| Water mint | *Mentha aquatica* | W | July-September |
| Angelica | *Angelica sylvestris* | W | July-September |
| Hemp agrimony | *Eupatorium cannabinum* | W | March-May |
| Marsh marigold | *Caltha palustris* | W | June-September |
| Creeping Jenny | *Lysimachia nummularium* | W | May-August |
| Fringed water lily | *Nymphoides peltata* | W | June-September |
| Water forget-me-not | *Myosotis scorpioides* | W | June-September |

# Appendix D – Report Conditions

This Report has been prepared using reasonable skill and care for the sole benefit of Peel Land and Property (Ports) Ltd ("the Client") for the proposed uses stated in the report by WYG Environment Planning Transport Limited ("WYG"). WYG exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder's permission.

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The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.

## Appendix C: Approval Correspondence

*To be added once NE approve this Framework AMP document.*

# UK and Ireland Office Locations