

# Report of Phase 1 Habitat Survey and Preliminary Ecological Appraisal & Draft Biodiversity Statement

New Rotterdam Wharf,  
40 Edington Street, Glasgow G4 9RD



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**REPORT TO SCOTTISH OPERA &  
HARRISONSTEVENS  
LANDSCAPE ARCHITECTS**

# 1. TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>1. TABLE OF CONTENTS</b>  | <b>1</b>  |
| <b>2. SUMMARY</b>  | <b>3</b>  |
| <b>3. INTRODUCTION</b>   | <b>4</b>  |
| 3.1. DEVELOPMENT SITE AND STUDY AREA                               | 4         |
| 3.2. BRIEF & PURPOSES OF REPORT                                    | 7         |
| 3.3. LEGISLATIVE BACKGROUND  | 8         |
| 3.3.1. BATS AND THE LAW  | 8         |
| 3.3.2. OTTERS AND THE LAW  | 9         |
| 3.3.3. WATER VOLES AND THE LAW                                     | 10        |
| 3.3.4. BADGERS AND THE LAW   | 11        |
| 3.3.5. BIRDS AND THE LAW   | 13        |
| 3.3.6. RARE PLANTS, HABITATS, INVASIVE NON-NATIVE PLANTS & THE LAW | 14        |
| 3.3.7. NATIONAL PLANNING FRAMEWORK 4 (NPF4)                        | 15        |
| <b>4. METHODS</b>  | <b>16</b> |
| 4.1. PHASE 1 HABITAT SURVEY METHODOLOGY                            | 16        |
| 4.2. BAT SURVEY & ASSESSMENT METHODOLOGY                           | 17        |
| 4.3. OTTER ASSESSMENT METHODOLOGY                                  | 19        |
| 4.4. WATER VOLE ASSESSMENT METHODOLOGY                             | 19        |
| 4.5. BADGER SURVEY METHODOLOGY                                     | 19        |
| 4.6. BIRD SURVEY METHODOLOGY                                       | 19        |
| 4.7. PRELIMINARY ECOLOGICAL APPRAISAL METHODOLOGY                  | 20        |
| 4.8. LIMITATIONS OF STUDY  | 21        |
| <b>5. RESULTS</b>  | <b>22</b> |
| 5.1. SURVEYED HABITATS & VEGETATION                                | 22        |
| 5.2. BATS  | 23        |
| 5.3. OTTER   | 24        |
| 5.4. <i>WATER VOLE</i>   | 24        |
| 5.5. BADGER  | 24        |
| 5.6. BIRDS   | 24        |
| 5.7. OTHER SPECIES   | 24        |
| <b>6. PRELIMINARY ECOLOGICAL APPRAISAL</b>                         | <b>25</b> |

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|   |           |
|---|-----------|
| <b>6.1. HABITATS &amp; PROTECTED SITES</b>                    | <b>25</b> |
| <b>6.2. BATS</b>  | <b>26</b> |
| <b>6.3. OTTER</b>   | <b>26</b> |
| <b>6.4. WATER VOLE</b>  | <b>27</b> |
| <b>6.5. BADGER</b>  | <b>27</b> |
| <b>6.6. BIRDS</b>   | <b>27</b> |
| <br>  |           |
| <b>7. RECOMMENDATIONS</b>                                     | <b>28</b> |
| <hr/>   |           |
| <b>7.1. INTRODUCTION</b>                                      | <b>28</b> |
| <b>7.2. PROTECTED SPECIES LICENCING</b>                       | <b>28</b> |
| <b>7.3. SUBSEQUENT OTTER &amp; BIRD SURVEYS</b>               | <b>29</b> |
| <b>7.4. PROTECTION AND MITIGATION DURING DESIGN</b>           | <b>29</b> |
| <b>7.5. PROTECTION AND MITIGATION DURING CONSTRUCTION</b>     | <b>29</b> |
| <b>7.6. DRAFT NPF4 BIODIVERSITY STATEMENT OF ENHANCEMENTS</b> | <b>30</b> |
| 7.6.1. TREE & SHRUB PLANTING                                  | 30        |
| 7.6.2. WILDFLOWER AREA  | 30        |
| 7.6.3. GREEN WALL   | 30        |
| 7.6.4. HEDGEHOGS  | 31        |
| 7.6.5. BATS   | 32        |
| 7.6.6. BIRDS  | 34        |
| 7.6.7. INVERTEBRATES  | 36        |
| <br>  |           |
| <b>8. REFERENCES</b>  | <b>37</b> |
| <hr/>   |           |
| <b>9. APPENDIX 1: DATA SEARCH FROM PORT DUNDAS</b>            | <b>40</b> |
| <hr/>   |           |
| <b>10. APPENDIX 2 HABITATS, PLANT AND BIRD SPECIES</b>        | <b>42</b> |
| <hr/>   |           |
| <b>11. APPENDIX 3: PHOTOGRAPHS</b>                            | <b>46</b> |

## 2. SUMMARY

ESS Ecology was appointed by Scottish Opera on 13/09/2023 to provide an ecological report to support an application for Planning Permission for a development at Scottish Opera's premises at 40 Edington Street, Glasgow G4 9RD, adjacent to the Forth & Clyde Canal Site Important for Nature Conservation (SINC).

The development site is surrounded by a variety of catering, other commercial, and arts educational buildings.

The open spaces of the Site are mostly Phase 1 habitat type J5 hard standing. Within the development site there are several stands of mostly young shrubs and broadleaved trees, with a few semi-mature trees. These habitats approximate most closely to Phase 1 habitat type A1.1.2 broad-leaved plantation woodland. None of these habitats or the plant species present are protected or rare.

The key ecological issues for this development are the protection of the root protection zones of retained trees, and biodiversity enhancement in compliance with National Planning Framework 4 policy 3c.

Section 7.6 of this report comprises a Draft NPF4 Statement of Biodiversity Enhancements, including a range of recommendations to make a significant contribution to Biodiversity Net Gain and to restoring biodiversity and enhancing the ecological value of the development site.

This Preliminary Ecological Appraisal Report concludes that there is no evidence for nearby protected sites which could be adversely impacted or potentially constrain this development, nor of any protected species being within the Site.

With the exception of mitigation or survey for birds which could be disturbed during breeding attempts within trees and shrubs to be removed, removal of invasive non-native *Buddleia* shrubs, a pre-construction otter survey and a precautionary otter protection plan, no further mitigation is necessary. These requirements can be secured through appropriately worded planning conditions.

### 3. INTRODUCTION

#### 3.1. DEVELOPMENT SITE AND STUDY AREA

ESS Ecology was appointed by Scottish Opera to provide an ecological report to support an application for Planning Permission for development of the site at New Rotterdam Wharf at 40 Edington Street, Glasgow G4 9RD to the west of the Forth & Clyde Canal.

The development site (also termed in this report, the “Site”) boundary is shown in Figure 1 below:

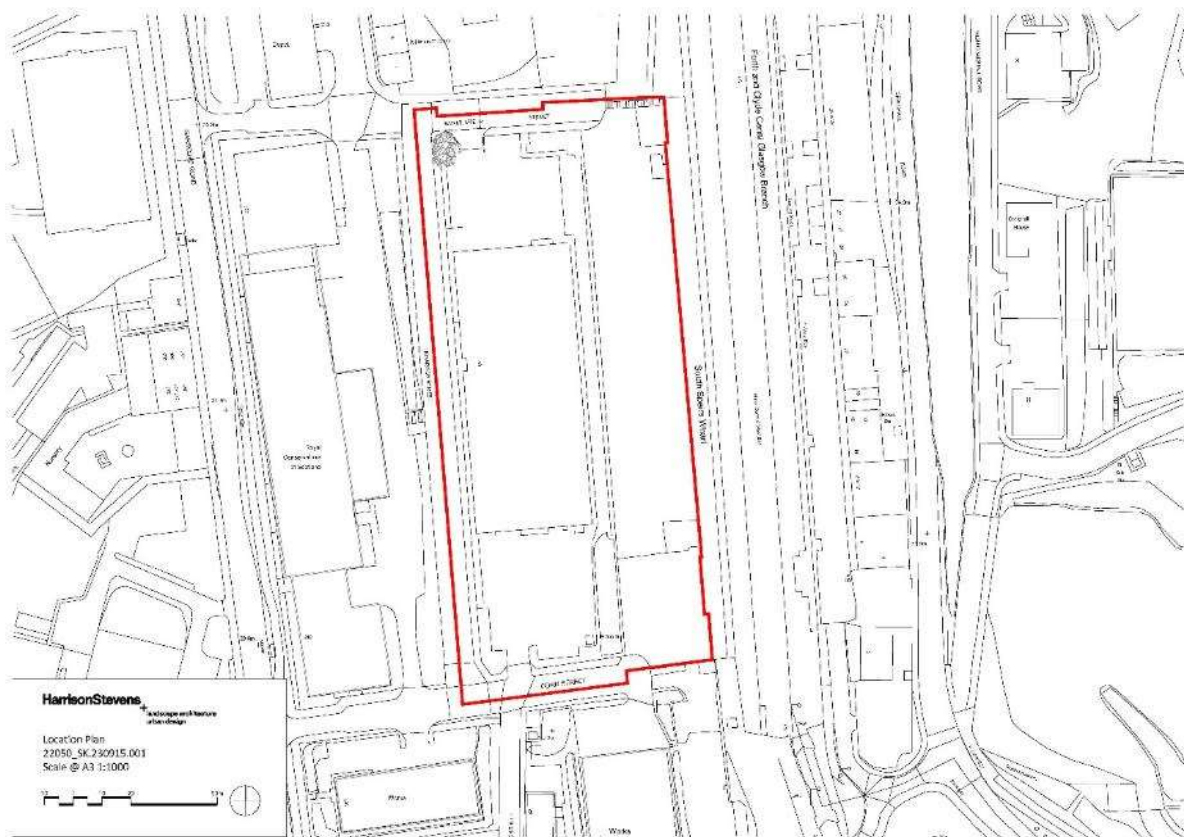


Figure 1 Development Site within red line boundary, received from HarrisonStevens Landscape Architects on 15/09/2023

The development site largely comprises an existing building which is to be retained, and hard standing, with rows and clusters of mostly young trees and shrubs, and is surrounded by a variety of commercial properties as shown in Figure 2 below:



Figure 2 Aerial Photograph of Development Site within red line, received from Landscape Architects on 15/09/2023

The survey of Phase 1 habitats focussed upon the land within the development site boundary.

Where access was feasible, the extended Phase 1 habitat survey area was increased around the Site boundary to determine whether there are suitable habitats for protected species within a 10m buffer zone for water voles, a 15m buffer for bats, and within 50m for badgers and otters.

The nearby consented (Port) Dundas Hill mixed use development site (see section 4.5) is shown in Figure 3 below, outlined in turquoise to the east.

The highly popular (1,400 attendees at their last barbeque) Skateboard & BMX Park is shown to the northeast, outlined in green.

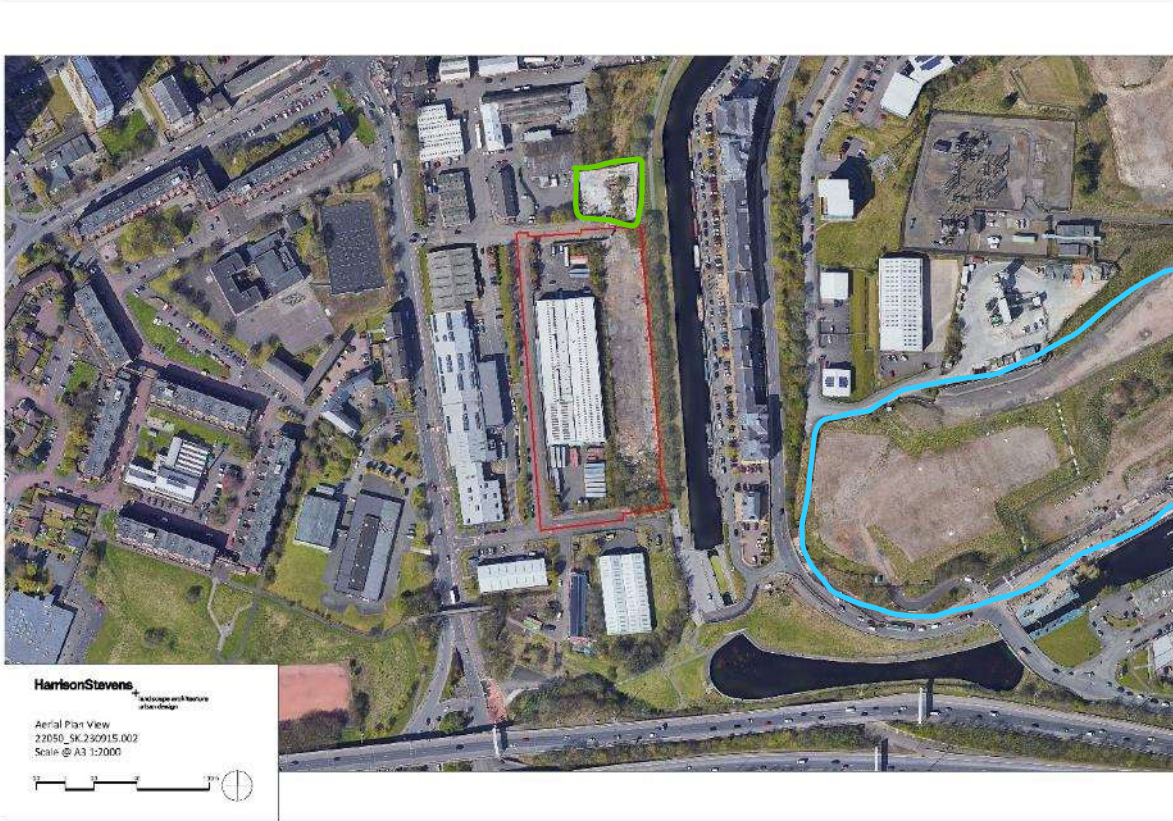


Figure 3 Aerial Photograph of Development Site received from Landscape Architects on 15/09/2023 showing nearby mixed use Dundas Hill development site outlined in turquoise to east, and Skateboard & BMX Park outlined in green to northeast

### 3.2. BRIEF & PURPOSES OF REPORT

The Preliminary Ecological Appraisal (CIEEM 2017a) brief was to: i) conduct an extended Phase 1 habitat survey to describe and classify the habitats present at the development site; ii) undertake a Preliminary Ecological Appraisal of the development planned there; iii) assess the potential presence of any specially protected or invasive species within relevant buffer zones; iv) if protected or invasive species are possibly present, recommend any further species-specific surveys required; v) identify any constraints and mitigation requirements that these may present to the development of the site; and vi) in the context of the indicative landscape design strategy described by the Landscape Architects, HarrisonStevens, suggest possible ecological enhancements to comply with NPF4 policy 3c).

***The Methods are set out in section 4 of this report, the Baseline Results are presented in section 5 and Appendix 1, the Preliminary Ecological Appraisal is discussed in section 6, Recommendations are made in section 7, and the Summary is presented at the start of this report.***



### 3.3. LEGISLATIVE BACKGROUND

***If a development has the potential to adversely affect populations of protected species, then mitigation must be undertaken to avoid such adverse effects. If such adverse effects subsequently remain unavoidable, then measures should be recommended to minimise, restore or, only in the last resort, offset any residual effects, following the mitigation hierarchy*** (Phalan et al 2017). This hierarchy must be followed for all adverse effects upon protected species.

#### 3.3.1. BATS AND THE LAW

***All species of bat occurring in the Scotland are classed as European Protected Species (EPS) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended by the Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2007), known as “the Habitats Regulations” which transpose the European Commission Habitats Directive (European Commission 1992) into domestic law. Therefore, they are given the highest level of species protection in the UK. It is therefore an offence to deliberately or recklessly:***

- kill, injure, capture or harass a bat;
- disturb a bat whilst it is using any structure or place for shelter or protection (roost sites), or in any way that impairs its ability to survive or breed, or significantly affects the local distribution or abundance of the species;
- obstruct access to a roost site, or otherwise deny its use by bats; and

**and whether or not deliberately or recklessly:**

- to damage or destroy a bat roost, irrespective of whether bats are present.

***This means that if bats could be affected in these ways by a development, and the developer takes no action to prevent it, they run the risk of committing an offence.***

Where impacts that would result in an offence cannot be avoided, a species licence can be issued in some cases to allow the works to proceed. Such licences will only be issued if certain tests are met. It is important that any licensing issues be considered as part of the planning application. This is to avoid a situation where planning permission is secured but the lack of a species licence prevents the development from proceeding.

Bats commonly roost in undisturbed spaces in buildings and in crevices and hollows of trees. They also use crevices in bridges and underground sites. Roost sites can be in both urban and rural situations. They can therefore be affected by a wide range of development types and locations where trees, caves or man-made structures need to be modified or removed, or where construction activity may disturb a roost (e.g. noise, lights and, human presence).

***If a bat roost or roosts are judged to be potentially present and a development proposal could affect bats as above, then a bat presence/absence activity survey Collins (2016), or a direct inspection of the roost by a licenced bat worker may need to be undertaken (NatureScot 2022a). If a survey demonstrates that bats and/or a known roost are likely to be affected by a proposed development, and planning permission is to be granted, a condition must be placed on the decision notice requiring the developer to apply for, and obtain, a European Protected Species Licence before work commences (BCT 2019).***

### 3.3.2. OTTERS AND THE LAW

***Otters (*Lutra lutra*) are classed as European Protected Species (EPS) under the Habitats Regulations. Therefore, they are given the highest level of species protection in the UK.*** The Wildlife and Countryside Act 1981 was updated by the Nature Conservation (Scotland) Act 2004 (as amended) to include 'reckless' acts against otters or their habitat.

***It is therefore an offence to deliberately or recklessly:***

- kill, injure, capture or harass an otter;
- disturb an otter whilst it is occupying a holt (underground den), cover or hover (above ground resting place) or other place it uses for rest, shelter or protection, or while it is rearing or otherwise caring for its young, or in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young, or significantly affect the local distribution or abundance of the species;
- obstruct access to an otter breeding site (e.g. natal den) or place otters use for rest, shelter or protection (e.g. subterranean holt or surface couch),

***and whether or not deliberately or recklessly:***

- to damage or destroy an otter breeding site or resting place.

***Otter shelters are legally protected whether or not an otter is present (NatureScot 2022b). This means that if otters could be affected in any of these ways by a development, and the developer takes no action to prevent it, they run the risk of committing an offence.***

Where impacts that would result in an offence cannot be avoided, a species licence can be issued in some cases to allow the works to proceed. Such licences will only be issued if certain tests are met. It is important that any licensing issues be considered as part of the planning application. This is to avoid a situation where planning permission is secured but the lack of a species licence prevents the development from proceeding.

Otters occur throughout Scotland, and are present on all of Scotland's major watercourses. ***Places where they might be present and could be disturbed by development works include watercourses, coasts, estuaries and wetlands.***

***Otters could be affected by a development proposal anywhere in Scotland close to a watercourse, wetland, coastline or estuary. NatureScot require an otter survey to be carried out for any development proposal within 200m of such suitable habitat. All suitable otter habitat within 200m of the proposed works should be surveyed.***

Otter surveys can be carried out at any time of year, but should avoid periods following prolonged heavy rainfall and/or high water when spraints and other signs of otter may have been washed away. Heavy frost or recent snow can also make finding spraints difficult. Such surveys should be undertaken by a suitably trained, qualified and experienced otter surveyor, and should include a systematic search for spraints, paw prints, otter paths, slides, food remains, and holts, dens or couches potentially used as places for shelter (NatureScot 2022b).

### 3.3.3. WATER VOLES AND THE LAW

***Water voles (*Arvicola amphibius*) are protected by the Wildlife and Countryside Act 1981 (as amended by the Nature Conservation (Scotland) Act 2004, under which it is listed. This protection is currently restricted to a water vole's place of shelter.***

***It is an offence to intentionally or recklessly:***

- damage, destroy or obstruct access to a water vole burrow;
- disturb a water vole while it is using its burrow.

A burrow is any structure or place which water voles use for shelter or protection.

***This means that if water voles could be affected in these ways by a development, and the developer takes no action to prevent it, they run the risk of committing an offence.***

This is likely to be where works are within 10m of watercourse banks containing water vole burrows. Where impacts that would result in an offence cannot be avoided, a species developmental licence can be issued in some cases to allow the works to proceed. Such licences will only be issued if certain tests are met. It is important that any licensing issues be considered as part of the planning application. This is to avoid a situation where planning permission is secured but the lack of a species developmental licence prevents the development from proceeding (NatureScot 2022c).

***Therefore, if development works are planned within 10m of suitable habitat within the water vole's range, a water vole survey must be carried out (NatureScot 2022c).***

### 3.3.4. BADGERS AND THE LAW

***Badgers (*Meles meles*) and their setts are protected by the Protection of Badgers Act 1992, which consolidated the previous Badgers Acts of 1973 and 1991. This legislation, and the Nature Conservation (Scotland) Act (2004) which reinforced it, aim to protect this relatively abundant species from persecution, rather than being a response to an unfavourable conservation status, as badgers are widespread and common across much of Britain.***

***Potential offences relevant to development works include:***

- wilfully injuring or killing a badger;
- disturbing a badger while it is in a sett;
- intentionally or recklessly damaging or destroying any part of a badger sett, or obstructing access to a sett.

***This means that if badgers could be affected in these ways by a development, and the developer takes no action to prevent it, they run the risk of committing an offence.***

Where impacts that would result in an offence cannot be avoided, a species licence can be issued in some cases to allow the works to proceed. Such licences will only be issued if certain tests are met.

It is essential that any licensing issues be considered as part of the planning application. This is to avoid a situation where planning permission is secured but the lack of a species licence prevents the development from proceeding (NatureScot 2022d).

The 1992 Protection of Badgers Act defines a badger sett as “any structure or place which displays signs indicating current use by a badger” (NatureScot 2022d). Undertaking any activity that will interfere with a badger sett in Scotland is likely to constitute an offence unless carried out under a licence from NatureScot.

The legal definition of a badger sett refers to a ‘structure or place’ showing signs of current use by a badger. In most cases a badger sett will be used for breeding, shelter or protection and will consist of a series of tunnels and chambers, sometimes interlinked, and accessed by one or more sett entrances.

Badgers may also occasionally use other types of structure or place for the same purpose, including natural holes or voids in rock or spaces under buildings, all of these structures could constitute a sett if showing signs of current use. NatureScot would not consider that areas regularly used by badgers for other activities such as feeding or access would constitute a sett.

There is no case law to clarify what signs of “current use” means. In the absence of such case law, NatureScot consider that the presence of field signs such as bedding, fresh spoil heaps, signs of recent digging, hair, latrines, or footprints in or around the potential sett, or evidence of badgers entering or exiting the structure or place in question would indicate current use of the structure or place by a badger.

When a structure or place is found that could potentially be a badger sett, a close and detailed inspection should be undertaken to look for field signs indicating current use by badgers. NatureScot strongly advise that this should be undertaken by a suitably experienced person.

*An inspection is likely to reveal one of the following scenarios;*

- ***Clearly not a badger sett – in some cases it may be possible to quickly rule out that a structure is a badger sett, for instance if entrances have collapsed, or have completely filled with debris that has clearly been there for some time.***
- ***Clear evidence that it is a sett – One or more of the signs indicating current use by badgers are found in or around the structures in question.***
- ***Possible sett but signs not immediately evident or clear – A structure cannot be ruled out as a badger sett (as in ‘1’ above), but there are either no immediately evident signs of current use or there is uncertainty as to whether or not there are signs indicating current use by badgers.***

Where the third scenario arises, NatureScot recommend that the structure is subject to further monitoring (again by a suitably experienced person) to help make an informed and risk-based decision as to whether the structure / place is a badger sett in current use.

The 1992 Protection of Badgers Act provides for development licences to be issued in the following cases:

- When a badger sett could be directly affected;
- When actions could disturb badgers within the sett;
- For activities within 30m of a sett.

***As a guide, NatureScot advise (NatureScot 2022d) that any work within 30m of an entrance to a badger sett (or 100m for pile driving and blasting work) could result in disturbance of a badger in the sett, or block or damage tunnels that radiate from the entrance to the sett. It is therefore essential, should pile driving or blasting work be required, that any badger setts in current use within 100m of a development site are identified. This is to establish whether a licence might be required for a development seeking planning permission.***

***Licences are not normally granted for works during the badger breeding season (1 December to 30 June) when they are most sensitive to disturbance.*** At other times of the year, a licence will only be issued if there are alternative setts available for badgers to move to within the same territory (NatureScot 2022d). Activities that necessarily involve disturbance should therefore be programmed to take place outwith this period. ***Licences are usually only issued after full planning permission has been granted so that there is no conflict with the planning process.***

### 3.3.5. BIRDS AND THE LAW

***All wild birds in Great Britain are protected under the Wildlife and Countryside Act 1981 (as amended). This includes even common species like pigeons and blackbirds.***

***For any wild bird species, it is an offence to intentionally or recklessly:***

- kill, injure or take a bird
- take, damage, destroy or interfere with a nest of any bird while it is in use or being built
- obstruct or prevent any bird from using its nest
- take or destroy an egg of any bird

Special legal protection is given to some rarer species and to ***species vulnerable to disturbance and/or persecution***. This is done through various schedules attached to the Act.

For any wild bird species listed on Schedule 1i of the Wildlife and Countryside Act 1981 (as amended), or on Schedule I of the European Commission Birds Directive (European Commission 1979) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (***referred to as “specially protected bird species”***) it is an offence to disturb whatsoever (*i.e.* whether or not intentionally or recklessly):

- any bird while it is building a nest
- any bird while is in, on, or near a nest containing eggs or young
- any bird while lekking
- the dependent young of any bird

***This means that if a bird is affected in these ways by a development, and no action is taken to prevent it, an offence may be committed (NatureScot 2022g).***

***Therefore, any ground clearance, tree and shrub felling should take place outside the bird breeding season (generally March to August), or an ornithologist must be present to judge whether any bird nesting attempt is in progress. If evidence of breeding is detected within the affected areas, then construction work would have to cease until the ornithologist judges that the nesting attempt is completed.***

***In addition, there is particular concern, though no additional legal protection, for Red- and Amber-listed bird species of conservation concern (Stanbury et al. 2021), due to the most recent (UK national) evidence of threat and/or decline.***

### 3.3.6. RARE PLANTS, HABITATS, INVASIVE NON-NATIVE PLANTS & THE LAW

Schedule 8 of the Wildlife & Countryside Act (1981, as amended) lists rare plant species that are protected from picking and sale of plants or parts of plants. A small number of very rare plants are classified as protected species under the [Habitats Regulations 1994, Schedule 4](#). These are: creeping marshwort (*Apium repens*), early gentian (*Gentianella anglica*), fen orchid (*Liparis loeselii*), floating-leaved water plantain (*Luronium natans*), lady's slipper (*Cypripedium calceolus*), shore dock (*Rumex rupestris*), Killarney fern (*Trichomanes speciosum*), slender naiad (*Najas flexilis*), yellow marsh saxifrage (*Saxifraga hirculus*). Only the last three occur naturally in Scotland.

The European Commission Habitats Directive (European Commission 1992) Annex I lists vegetation communities which are specially protected under European law transposed into UK law as the Habitats Regulations (as amended), and development planning provides special protection to such habitats. These are included on the [Scottish Biodiversity List, as habitats of principal importance for biodiversity in Scotland, along with species of principal importance for biodiversity in Scotland](#). Any Groundwater Dependent Terrestrial Ecosystems (SEPA 2017) should be avoided in development design, or if this is not possible then impacts predicted upon such GWDTEs may need to be mitigated.

Invasive non-native species (INNS) plants and animals are listed in Schedule 9 and are subject to Section 14 of the Wildlife and Countryside Act 1981 (as amended). This has been amended by the Nature Conservation (Scotland) Act (2004) and the Wildlife and Natural Environment (Scotland) Act 2011, to prevent the release into the wild of certain plants and animals which may cause ecological, environmental, or socio-economic harm (including severe solar-sensitive skin damage in humans caused by exposure to giant hogweed). In Scotland four plants on Schedule 9 cause the greatest damage: rhododendron (*Rhododendron ponticum*) Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), and Japanese knotweed (*Fallopia japonica* synonym *Reynoutria japonica*). In addition snowberry (*Symphoricarpos albus*) and giant knotweed (*Fallopia sachalinensis*) are of concern. There are several species of invasive ornamental cotoneasters which have spread from gardens, particularly wall cotoneaster (*Cotoneaster horizontalis*), entire-leaved cotoneaster (*C. integrifolius*), hollyberry cotoneaster (*C. bullatus*) and small-leaved cotoneaster (*C. microphyllus*). All are listed under Schedule 9 of the Wildlife and Countryside Act 1981 which makes it an offence to plant or otherwise cause these species to grow in the wild.

This list has been augmented in Annex B of NatureScot (2023) to include [other terrestrial and aquatic INNS](#) commonly considered to be invasive and which should be avoided. If they are found to be present on site developers are encouraged to remove them, and any invasive plant material or contaminated soils disposed of appropriately.

It is also illegal to plant or otherwise cause to grow in the wild any plant outside its range. Under the Wildlife and Natural Environment (Scotland) Act 2011 it is an offence to cause the spread of any non-native species into the wild, even accidentally.

Therefore, if any invasive non-native plant species are present or nearby, construction work must be especially vigilant in detecting, avoiding and preventing the risk of spreading any part of the plant, but especially flowers, seeds and root fragments.

### 3.3.7. NATIONAL PLANNING FRAMEWORK 4 (NPF4)

National Planning Framework 4 (Scottish Government (2023)) was adopted by the Scottish Ministers on 13 February 2023, following approval by the Scottish Parliament on 11 January 2023. This replaces the previous National Planning Framework 3 and Scottish Planning Policy.

With regards to planning and biodiversity, NPF4 Policy 3c) states that “Proposals for local development will include appropriate measures to conserve, restore and enhance biodiversity, in accordance with national and local guidance. Measures should be proportionate to the nature and scale of development. Applications for individual householder development, or [national, major or EIA developments], are excluded from this requirement.” This policy therefore plays a critical role in ensuring that development will secure positive effects for biodiversity. This policy intends to protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks (NatureScot 2022). **NatureScot have produced guidance on Planning with Development, in which identifies and describes 24 “appropriate measures to enhance biodiversity” (NatureScot 2023).** A selection of these is likely to be expected by council planning officers to be incorporated into proposals for local development planning applications.



## 4. METHODS

### 4.1. PHASE 1 HABITAT SURVEY METHODOLOGY

The extended Phase 1 habitat surveys, including searches for potential habitats and any signs of protected species were carried out by suitably qualified, trained and experienced ecologist Jaspal Paul Gill, MCIEEM, holder of a BA in Natural Science from Oxford University, an MSc in Environmental Technology (specialising in Ecological Management) from Imperial College London, and the Association of Project Management APMQ qualification.

He is the Principal Ecologist and the Director of ESS Ecology, and has been a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) since 2008. He has benefitted from expert training, skill refinement, and experience in extended Phase 1 habitat, aerial photo interpretation, NVC vegetation, bat, otter, great crested newt, water vole, badger, squirrel, invertebrate, bird, and other protected species survey and ecological assessment.

The development site was first visited on 18/09/2023 when the weather was intermittently cloudy, 12-17° degrees Celsius, and a south-southwesterly wind of 13-20 mph. The second visit on 30/11/2023 was clear and sunny, 3-4° C, in a northerly wind of 2 mph.

The aim of the Phase 1 habitat survey technique (JNCC 2010) is to provide, relatively rapidly, a record of the semi-natural vegetation, GWDTEs (SEPA 2017), and wildlife habitat over areas of countryside. The habitat classification is based principally on vegetation, including the nature and condition of the vegetation, augmented by reference to topographic and substrate features, particularly where vegetation is not the dominant component of the habitat.

The habitat types and dominant plant species present within the Site were mapped, described, classified and identified, according to the standard Phase 1 habitat method and classification system (JNCC 2010) and with reference to Preston, Pearman & Dines (2002), Rose & O'Reilly (2006), and Stace (2010) for native, nectar-bearing and introduced non-native invasive plant species identification, and identification of horticultural species was aided by the use of the app PictureThis.

***The Phase1 habitat Map is presented as Figure 7 in in Appendix 2. Target Notes (numbered TN\*) identify individual stands of vegetation.***

Specific searches were made for the plant species Himalayan balsam, giant hogweed, Japanese knotweed, giant knotweed, Buddleia, snowberry and other species of invasive non-native plant species (INNS), in particular species of Cotoneaster shrub.

A vitally important part of the extended Phase 1 habitat survey was to assess the habitats present for their potential to support specially protected animal species (e.g. otters and bats [all species of which are European Protected Species], water vole and badger, and birds, especially specific specially protected birds, in section 3.3.5).

The methods used to do so are described in the following sections.

## 4.2. BAT SURVEY & ASSESSMENT METHODOLOGY

While surveying within and up to 15m beyond the site boundary, trees were assessed for bat roosting potential and for evidence of bats. At the same time potentially suitable trees were checked (following Shawyer 2012) for possible barn owl nest and roost sites (see section 4.6).

This bat preliminary roost assessment (PRA) comprised a visual assessment from ground level (following Collins 2016) using high powered binoculars, looking for any apparent bat potential roost features (PRFs) in trees, including crevices, rot holes, knot holes, woodpecker holes, human-made holes, raised bark, dense ivy, cracks, splits, tears, and other cavities, and for evidence of bats (e.g. live bats, squeaking noises, bat corpses, droppings, feeding remains, scratch marks, and urine or grease staining).

***The exterior of the existing Scottish Opera building was examined from ground level using high powered binoculars for bat corpses and droppings beneath any potential access points, , as well for holes, damaged soffits, ventilation grilles, and other potential gaps and cavities within the building’s external fabric (see Photos 3 and 8).***

***The interior of the building was carefully examined from ground level, and also by inspecting roof voids (see Photos 4 and 5) at the mezzanine level (which covers a small proportion of the overall building’s footprint). This necessitated the Scottish Opera Maintenance Manager Jim Murray, removing ceiling tiles at three locations, and footing the ladder to minimise health & safety risks (as identified and mitigated during the prior risk assessment).***

***Depending on the occurrence, type, size, and orientation of any such PRFs, each tree and the building were classified as being of “high”, “moderate”, “low” or “negligible” suitability for roosting bats (following Table 4.1, page 35, Collins 2016) reproduced below as Table 1.***

Table 1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

| Suitability | Description of Roosting Habitats  | Description of Commuting and Foraging Habitats  |
|-------------|---|---|
| Negligible  | Negligible habitat features on site likely to be used by roosting bats.   | Negligible habitat features on site likely to be used by commuting or foraging bats.  |
| Low         | A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions <sup>a</sup> and / or suitable surrounding habitat to be used on a regular basis or by larger | Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, <i>i.e.</i> not very well connected to the surrounding landscape by other habitat.<br><br>Suitable, but isolated habitat that could be used by small numbers of foraging bats |

|          |   |  |
|----------|---|--|
|          | <p>numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).</p> <p>A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential<sup>c</sup></p>  | <p>such as a lone tree (not in a parkland situation) or a patch of scrub</p>   |
| Moderate | <p>A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions<sup>a</sup> and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).</p> | <p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>   |
| High     | <p>A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions<sup>a</sup> and surrounding habitat.</p>  | <p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be regularly used by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected that is likely to be used regularly by foraging bats, such as broadleaved woodland, tree-lined watercourses, and grazed parkland.</p> <p>Site is close to and connected to known roosts.</p> |

<sup>a</sup> For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

<sup>c</sup> This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

The extended Phase 1 habitat survey also assessed the potential suitability (as “high”, “medium”, “low” or “negligible”) of the Site as habitat for commuting and foraging bats, following Table 4.1, page 35 in Collins (2016), reproduced in Table 1 above.

These bat roost, commuting and foraging assessments are presented in section 5.2 and discussed in section 6.2.

### 4.3. OTTER ASSESSMENT METHODOLOGY

**Sections of the Forth & Clyde Canal up to 50m from the development site boundary were surveyed for evidence of otter, following standard otter survey techniques (Liles 2000, The Highways Agency 2001, Chanin 2003a, Chanin 2003b, Bang & Dahlstrøm 2006, CIEEM 2013d).**

These techniques involve systematic searches for footprints and tracks, fresh spraints, old spraints, anal jelly, tar spots, and/or dried feeding remains of amphibians and fish prey, resting places such as day “couches” in flattened vegetation or underground “holts” amongst rocks and/or tree roots, natal dens or breeding places, pathways and slides or runs through vegetation.

Particular attention was paid to the amount and depth of any underground cavities, ambient water levels, the presence of sandy and muddy substrates capable of retaining paw prints, spraints and other feeding signs, and the suitability of surface vegetation for an otter to form a resting couch.

### 4.4. WATER VOLE ASSESSMENT METHODOLOGY

**One water vole record from 2001 was returned from the data search, at Claypits SINC (see section 4.7) below.**

Nevertheless, while surveying for otter within and up to 50m from the Site, searches were made for any evidence of water vole burrow entrances and runs, distinctive droppings, latrines, footprints, pathways, lawns, feeding stations with the characteristically clipped vegetation feeding remains (Strachan *et al* 2011, CIEEM 2013f, SNH 2022c).

### 4.5. BADGER SURVEY METHODOLOGY

**The Site and surrounding habitats within the accessible 50m buffer around the Site boundary were checked for signs of badger. Techniques followed the standard badger field sign survey methodology (Harris *et al.* 1988, Bang & Dahlstrøm 2006, Roper 2010, CIEEM 2013a, Andrews 2013, Scottish Badgers 2014, SNH 2018a, NatureScot 2022d).** Systematic searches were carried out for badger field signs such as sett entrances (including looking for any signs of use and/or passage, such as hairs, prints, excavated soil and airing and drying bedding), day nests, dung pits and latrines, runs and conspicuous trails, footprints, scratching posts and scratch marks on trees, hair traces around setts and tufts of hair caught on fences.

### 4.6. BIRD SURVEY METHODOLOGY

During the bat PRA all trees within the Site in excess of 0.5m diameter at breast height were checked following Shawyer (2012) for possible suitable barn owl nest sites or nest boxes (see section 4.9) and for signs of barn owl roosting (pellets or white, streaky “splashing” droppings).

Any bird nests seen were identified and assessed for potential disturbance during construction works.

#### 4.7. PRELIMINARY ECOLOGICAL APPRAISAL METHODOLOGY

*The objectives of the Preliminary Ecological Appraisal (PEA) were (CIEEM 2017a) to:*

- *identify the likely ecological constraints associated with the project;*
- *propose any mitigation measures likely to be required;*
- *recommend any additional surveys that may be required; and*
- *outline the opportunities offered by the project to deliver ecological enhancement.*

*Potentially significant impacts upon the Phase 1 habitats present, any protected species, and nearby protected nature conservation sites were evaluated.*

*Appropriate mitigation was devised to avoid constraints and minimise impacts, and specific biodiversity enhancement measures are recommended in section 7.6.*

*With the temporary suspension of Glasgow Museums' Biological Record Centre data search service, commercially-usable species records from the NBN Atlas Scotland were examined. In addition, a comprehensive species list for the Claypits SINC published on the [Glasgow Natural History Society's website](#) was studied.*

*A nearby planning application revealed further historical species data search results, from the approved Glasgow mixed use development planning application, 16/01130/DC, at the (Port) Dundas Hill site bounded by Eagle St/High Craighall Rd/North Canal Bank St/ Borrton Street, Glasgow (see protected species list in Appendix 1).*

*The nearest protected nature conservation sites were checked on the [Glasgow City Development Plan](#) website.*

*There is only one Site of Special Scientific Interest (SSSI) within 5km of the development site: Possil Marsh SSSI lies 4km to the north. No impacts from the development are likely because of the distance and lack of connectivity.*

*There are two Sites Important for Nature Conservation (SINCs) within 1km: the Forth & Clyde Canal SINC lying immediately to the east, and (Hamiltonhill) Claypits SINC and Local Nature Reserve (LNR) at its closest 420m to the north. These are the only protected sites within 1km. The potential impacts upon these SINCs are discussed in section 6.1.*

*Dundas Hill and Hamiltonhill Claypits are shown in Figure 4 below:*

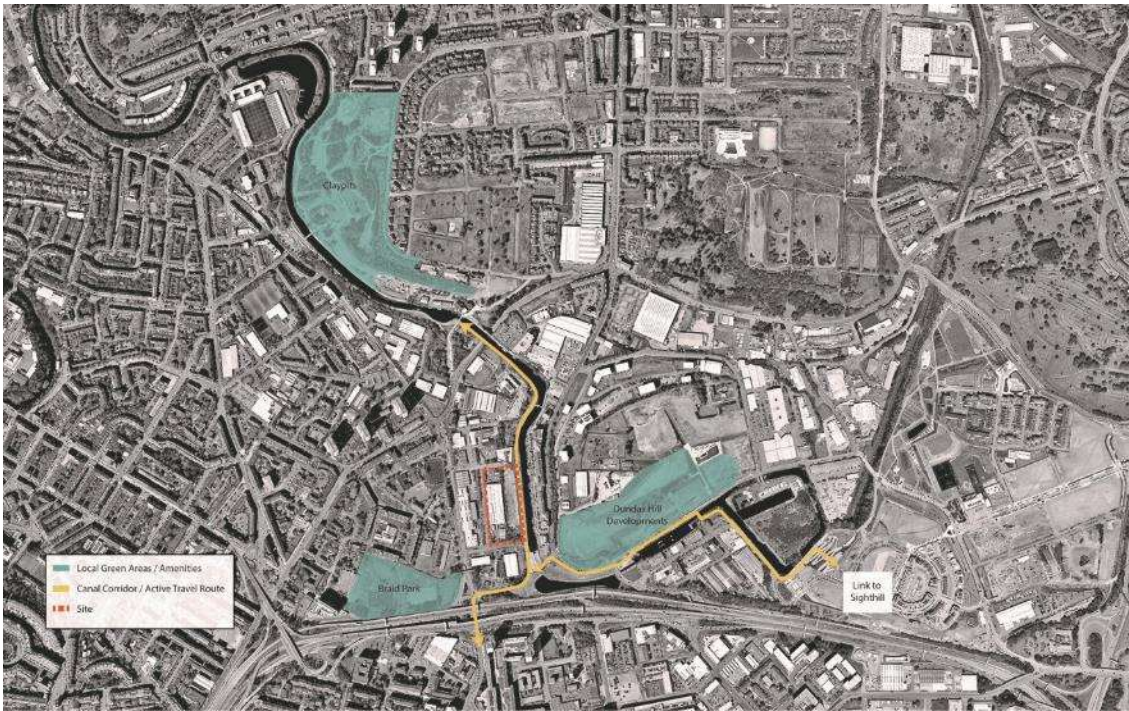


Figure 4 Development Site within red line, surrounded by green spaces, received from Landscape Architects on 07/09/2023

#### 4.8. LIMITATIONS OF STUDY

The seasons and weather were suitable for the extended Phase 1 habitat survey methodology, and the bat Preliminary Roost Assessment, otter and badger survey techniques employed.

The surveys were undertaken outwith the breeding bird season.

## 5. RESULTS

### 5.1. SURVEYED HABITATS & VEGETATION

*The semi-natural habitats within the development site are shown in the Phase 1 habitat Map as Figure 7 in Appendix 2, with the Phase 1 Habitat codes, descriptions and mapping codes given in Figure 8. The following habitat areas are identified by Target Note (TN) numbers on Figure 7. Where tree sizes have been estimated, the diameter at breast height is given below as dbh in centimetres (cm dbh).*

*There are young broad-leaved trees of plantation origin (Phase 1 Habitat type A1.1.2) within the northwestern corner of the development site, west of the northern entrance from Sawmillfield Street (TN1), comprising five Norway maple (25-30cm diameter at breast height - dbh) and two silver birch trees (15-25cm dbh).*

*In the southwestern corner of the Site south of the eastern entrance (TN2) there are five Norway maple trees of 30cm dbh (see Photo 1). This habitat type also most closely approximates to Phase 1 Habitat type A1.1.2, broad-leaved plantation woodland, with an understorey of dominant cherry laurel and wall cotoneaster, with frequent tufted hair grass, fringed willowherb and occasional fleabane.*

*West of the southern Site entrance from Corn Street extending up to south of the electricity sub-station (TN3), the bed (see Photo 9) contains more broad-leaved plantation woodland. There are three large goat willow trees (30cm dbh), two ash saplings (5-15cm dbh) and five silver birch trees (5-30cm dbh), with dominant Cotoneaster sp. and Veronica sp., abundant bramble and occasional male fern.*

*East of the sub-station (TN4) cherry laurel is dominant, with silver birch and goat willow (25cm dbh), dominant Buddleia and frequent Cotoneaster horizontalis and blackthorn, and occasional broad-leaved helleborine.*

*The eastern part of the Site (see Photo 16) is almost entirely hard standing (Phase 1 Habitat type J5), with the exception of a fenced and inaccessible stand of deciduous plantation woodland to the east (TN5), which is dominated by goat willow (5-30cm dbh), with frequent silver birch (5-20cm dbh) and abundant Buddleia. To the northeast of this enclosed area (TN6) there is a more open area of scattered scrub (Phase 1 Habitat type A2.2) dominated by Buddleia, with abundant rosebay willowherb, curly dock and common knapweed.*

*A strip of deciduous broad-leaved plantation woodland (definitively Phase 1 Habitat type A1.1.2) adjoins the eastern boundary of the Site (TN7). It is dominated by goat willow of 10-45cm dbh (the largest of which is shown in Photo 11), with frequent silver birch (15-20cm dbh), elder and hawthorn, and occasional young ash saplings. The understorey is varied, with frequent bramble, dog rose, Buddleia, broom, Thuidium delicatulum moss, Equisetum horsetail, broad-leaved willowherb, red clover, dandelion, with occasional boxleaf honeysuckle, Cotoneaster sp., coltsfoot and fleabane. All these trees were found to hold negligible potential for roosting bats (see section 6.2 below).*

*This woodland strip separates the Site from the species-poor amenity grassland (Phase 1 Habitat type J1.2) and footpath (J5 – white on the Phase 1 map) along the west side*

*(TN8) of the Forth and Clyde Canal (TN9), which is Phase 1 Habitat type G1.2 - mesotrophic standing water.*

*The grassland is dominated by perennial rye grass, common bent grass, white clover, with abundant dandelion and Juncus sp. (see Photo 7)*

*In the northeast corner of the development site (TN10) there is a fenced and inaccessible stand of monoculture goat willow (3-40cm dbh).*

*Between the Scottish Opera building and the large hard-standing vehicle parking and storage area to the east extends a strip (TN11 – see Photo 13) of scattered deciduous scrub (Phase 1 Habitat type A2.2), dominated by Buddleia, with frequent bramble and broad-leaved willowherb, and occasional male fern. There is a single herbaceous planter box to the east of the Scottish Opera building (see Photo 12).*

*To the northeast of the Scottish Opera building (see Photo 13) within Phase 1 Habitat type A1.1.2 broad-leaved plantation woodland, stand 25 silver birch trees (10-20 cm dbh) with frequent goat willow, cherry laurel and box shrubs, and brambles. Adjacent to this, an attractive enclosed garden area (TN13) has been created, planted with three Escallonia shrubs, spirea and greater periwinkle (see Photo 17). At the foot of the steps leading up to the garden area there is a wooden planter with dianthus, primroses and poppies.*

*No GWDTEs (SEPA 2017) were found to be present within the development site or 50m buffer.*

*The only plant INNSs found were Buddleia and several species of Cotoneaster, which are abundant within the Site.*

*The Scottish Opera building and an electricity sub-station at the south of the Site are shown shaded in black (Phase 1 Habitat type J3.6).*

*The extensive areas of hard standing (Phase 1 Habitat type J5) and the footpaths within and around the Site and along the canal, are shown in white in Figure 7.*

## 5.2. BATS

*A single soprano pipistrelle bat was recorded at Claypits SINC in 2011.*

*The bat PRA found all trees and shrubs within or adjacent to the Site to be of negligible potential suitability for roosting bats. The existing Scottish Opera building, being in excellent condition, very well maintained, and of modern design and construction, (see Photos 1, 2, 3, 4 & 5) was also judged to be of negligible suitability for roosting bats.*

*While the Site itself is of low suitability, the broad-leaved woodland and canal to the east are at least of moderate suitability for commuting and foraging bats.*



### 5.3. OTTER

*No signs of otter were found in aquatic and riparian habitat along the Forth & Clyde Canal within 50m of the Site boundary.*

### 5.4. WATER VOLE

*During the otter sign survey some sections were sampled for signs of water vole but these revealed no feeding signs of water vole or water vole burrows.*

### 5.5. BADGER

*The searches for badger field signs focussed on the development site but the surveyed areas included the Skateboard and BMX Park to the north (see Photo 6) out to a 50m buffer zone (but not including other commercial properties for which access permission had not been sought, as it was for the Skatepark).*

*These systematic searches did not reveal any evidence of feeding signs, sett entrances, excavated soil, bedding, dung pits, latrines, scratching posts, trails, runs, footprints, hairs, or any other signs of badger.*

### 5.6. BIRDS

*Herring and lesser black-backed gulls, magpies and woodpigeons were seen flying over the Site throughout the 18/09/2023 survey, but only gulls breed within it, on the roof of the existing building. When they are found to do so, a pest control specialist, licensed to destroy gull eggs, is retained by Scottish Opera (Scottish Opera's Maintenance Manager Jim Murray, pers. comm.).*

*A robin reportedly nests within a Buddleia bush at the north of the site, and a blackbird nests nearby. House sparrows nest within a tree on the northern edge of the skatepark site.*

*Barn owls have been reported to fly from a roost site on the northern corner of Spiers Wharf. However, there were no suitable nest sites or nest boxes for barn owl within the development site or surrounding trees, and no signs (pellets or white, streaky "splashing" droppings) were found.*

*Other Wildlife & Countryside Act (as amended) Schedule 1i species peregrine falcon and kingfisher have been recorded at Claypits from 2017-2022 and in 2013 respectively.*

*Mute swan and mallard ducks were recorded on the canal on 30/11/2023.*

### 5.7. OTHER SPECIES

*Foxes, grey squirrels, and roe deer were reported to utilise the Site, and nearby records were returned from Claypits SINC in 2012, 2022 and once in 2023 respectively. None of these common species were observed during the surveys.*

## 6. PRELIMINARY ECOLOGICAL APPRAISAL

### 6.1. HABITATS & PROTECTED SITES

*The development site comprises the existing Scottish Opera building (see Photos 1, 2, 3, 4 & 5), extensive hard standing areas (see Photos 2 & 16), stands of largely very young trees, and a few semi-mature broadleaved trees in the north and south of the development site (see Figure 7 in Appendix 2, TNs 1, 2, 3, 4, 5 and 10, and Photos 1, 9, 13 and 15 in Appendix 3).*

*Behind and to the east of the building there are many Buddleia trees, some growing into the wall there, whose abundant nectar is of great value to a number of butterfly species, but are an invasive non-native species which should be carefully removed before the construction phase (see sections 3.3.6 & 7.3).*

*None of these habitats are GWDTEs (SEPA 2017), rare or uncommon in a local, regional or national context, or listed in the Habitats Regulations or on the Scottish Biodiversity List, nor are there Habitat Action Plans in Glasgow's Local Biodiversity Action Plan (GCC 2017) applicable to these species. Neither design nor construction mitigation are required to protect habitats, other than the root protection zones of retained trees.*

*None of the plant species recorded within the development site are rare or uncommon, nor are any classified as European Protected Species under the Habitats Regulations.*

*The development will result in the removal of some of the existing Site vegetation, but no specific mitigation measures are required to protect vegetation species within the development site, except that the root protection zones of retained trees must be protected (see section 7.5).*

*There is a belt of young broadleaved trees and shrubs (TN7 in Figure 8 in Appendix 2) dominated by goat willow, between the Site eastern boundary and the footpath along the western side of the Forth and Clyde Canal. This is protected as part of the Forth & Clyde Canal SINC. None of these trees are likely to be directly affected by the development.*

*No ecological impacts are predicted upon the Forth & Clyde Canal SINC, which is also a protected monument, provided mitigation and enhancement, including the construction of a green wall (see section 7.6.3) are implemented.*

*Ecological impacts upon the canal itself are also unlikely because of the drop in elevation from the canal to the levels of development.*

*The Hamiltonhill Claypits SINC is unlikely to be impacted by the development, lying as it does 400m to the north, on the other side of the canal.*

## 6.2. BATS

*Within the development site there were only trees of negligible suitability for bat roosting potential (following Collins 2016). The belt of goat willow and other broadleaved trees between the development site and the canal are also of negligible suitability for bat roosting potential (see Photo 14).*

*The excellent condition of the exterior of the existing building (see Photos 3-5 in Appendix 3) led to the judgement that it is of negligible suitability for roosting bats (following Collins 2016). There were only seven plausible ingress or access points into the roof void identified. These are seven groups of five very small circular holes (see Photo 8 in Appendix 3) on the thin metal walls which were left when a previous generation of security camera were removed. These have been blocked immediately after the bat potential roost assessment (Scottish Opera's Maintenance Manager Jim Murray, pers. comm.).*

*Therefore no adverse impacts upon roosting bats are predicted.*

*Pipistrelle bats are known by locals to roost in the buildings on Spiers Wharf to the east of the canal, which together with the belt of broadleaved trees east of the Site are of at least moderate suitability for commuting and foraging bats. Bats may use the Site once it has been developed, and this can be encouraged through the landscape planting scheme encouraging their insect prey, and bat roosting blocks being installed (see section 7.6.5).*

*As a part of biodiversity enhancement, in line with NPF4 policy 3c (see section 3.4.9), the planting of native trees, wildflower areas, and installation of a green wall (see sections 7.6.1, 7.6.2 and 7.6.3 below), will enhance the development site for commuting, and potentially foraging bats.*

*Section 7.6.5 describes the installation of five integrated bat roosting blocks, together with measures to avoid and reduce lighting impacts on bats, which will ensure an overall positive impact of the development on bats.*

## 6.3. OTTER

*No records of otter were returned from the data search within 1km of the Site or from Hamiltonhill Claypits, but there is a 2007 record identified during the 2016 data search for the nearby Port Dundas development (see Appendix 1) from within the 10 kilometre square containing the development site.*

*No signs of otter were detected within the development site or along the Forth & Clyde Canal during the otter survey on 18/09/2023.*

*However, otters may utilise the canal at other times, so a pre-construction otter survey (see section 7.3), and a precautionary otter protection plan (see section 7.5) should be made conditions of planning permission.*

#### 6.4. WATER VOLE

*There is no habitat potentially suitable for water vole within the development area or 10m buffer, and no signs of water vole were seen during the otter survey. The single 2001 records of water vole were 1km, 1.2km and 1.8km from the Site. Accordingly, this species is not a constraint, and no impacts are predicted.*

#### 6.5. BADGER

*A single badger record was revealed by the data search for the nearby Port Dundas development (see Appendix 1). There was no evidence of badger setts, commuting or feeding activity within the development site or 50m buffer zone. Thus badger will not create any constraint to this development, and no impacts are likely or predicted.*

#### 6.6. BIRDS

*There were no specially protected Wildlife & Countryside Act Schedule 1i-listed, or European Commission Birds Directive Annex I-listed bird species such as barn owl, kingfisher or peregrine falcon recorded during the Site visits, nor were there suitable nest sites within the Site for these specially protected species.*

*There were very few birds singing or calling during the surveys. Apart from the herring and lesser black-backed gulls occasionally breeding on the building roof (which are legally controlled under licence when they do), there was no evidence of other Red-listed or Amber-listed species bird species of conservation concern (Stanbury et al. 2021) breeding within the development site.*

*It is likely that some bird species do nest within the Site, including robin and blackbird, whose populations would not be affected if the trees they nest in are removed. However, to avoid the risk of an offence being committed through the destruction of an active bird nest, vegetation removal should be completed outside the bird breeding season (i.e. undertaken from September to February). If this is not possible, then a nesting bird check by an ornithologist, and potentially a bird protection plan with specific mitigation measures to protect any nesting birds will be required (see section 7.3).*

*It is unlikely that large concentrations of wintering birds currently utilise the development site, or will do so in the future.*

*Enhancement measures to benefit birds will include the choice of native species and other specific plants with flowers likely to attract prey for insectivorous birds, and trees and shrubs with berries, fruit and/or nuts for birds to feed on, and the installation of bird nest boxes (see section 7.6.6). These should result in a biodiversity net gain for birds.*

## 7. RECOMMENDATIONS

### 7.1. INTRODUCTION

*This chapter explains to the client, architect and planning adviser, and the Glasgow City Council Planning Officer that there is no likelihood of protected species development licences being required from NatureScot, and that no subsequent surveys are required before determination of the planning application.*

*Section 7.6 identifies ecological enhancement recommendations for a range of landscape and habitat creation measures, as suggested by NatureScot (2023) and to comply with NPF4 policy 3c). As such section 7.6 comprises a Draft NPF4 Biodiversity Statement of Enhancements, in compliance with NPF4 (Scottish Government 2023).*

*Because there is no evidence of protected species, no further pre-consent protected species surveys are required, and there are no other substantive ecological issues, this Preliminary Ecological Appraisal Report is suitable and sufficient to support the determination of an application for Planning Permission for development at this site.*

### 7.2. PROTECTED SPECIES LICENCING

*If there were trees suitable for roosting bats within or immediately adjacent to the development site, and evidence of roosting bats, or even a single bat, were found within such trees, then a bat protection and mitigation plan, to support a European Protected Species (EPS) development licence or Bat Low Impact (BLIMP) licence application to NatureScot would be required to permit such a bat roost to be disturbed.*

*The results of the bat Preliminary Roost Assessment (PRA) are that no bat potential roost features were detected within the building and trees examined within the development site and surrounding fifteen metre buffer (see sections 5.2 and 6.2). Therefore a bat European Protected Species development licence should not be required for the development.*

*If the recommended pre-construction repeat otter surveys (see section 7.3 below) do identify a resting place for otters within 200m (natal or breeding den) or 100m (other resting holt or couch), then an otter European Protected Species development licence may be required.*

*Because there is no evidence of suitable habitats for water vole, and no evidence of badger or other protected species, within the relevant zones of influence of the development, there is no likelihood of the development requiring mitigation or a protected species development licence for these species.*

### 7.3. SUBSEQUENT OTTER & BIRD SURVEYS

*Because otters continue to expand their range, and may utilise the canal within 200m of the construction site in the future, a pre-construction otter survey should be made a condition of planning permission.*

*Vegetation removal, including invasive non-native Buddleia, and any silvicultural treatment of trees within the development site should take place outside the March to August general peak bird nesting season. If this cannot be completed from September to February, then a nesting bird check, bird protection plan and mitigation measures will be required, including nesting bird checks by a suitably qualified and experienced ornithologist to confirm that no bird nesting attempt is taking place (see section 6.6).*

*If any active nests are found, these must be left intact until the young have fledged or the nest becomes unused (i.e. abandoned). It will be necessary to create a construction activity exclusion zone around active nests during this time. The buffer and exclusion zone width should be determined by the ornithologist on a case-by case basis depending on the sensitivity to disturbance of the bird species. Silvicultural and vegetation clearance of the exclusion area(s) surrounding any identified nests must not be undertaken until after the ornithologist has completed nesting bird checks and judged that the nesting attempt(s) have been completed and the nest becomes unused.*

*These pre-construction survey requirements can be dealt with by appropriately worded planning conditions.*

### 7.4. PROTECTION AND MITIGATION DURING DESIGN

*None of the habitats or species identified during the extended Phase 1 habitat survey (with the exception of nesting birds) will constrain the development, except the Root Protection Zones (RPZs) of the semi-mature trees which are to be retained.*

### 7.5. PROTECTION AND MITIGATION DURING CONSTRUCTION

*Because otters may enter the construction site sporadically at times of year other than the September 2023 otter survey, and in the future, a pre-construction otter survey (see section 7.3), and a precautionary otter protection plan (which would protect any badgers entering the construction site) should be made conditions of planning permission.*

*Mitigation to protect the root protection zones of all retained semi-mature trees is required.*

*Prior to construction, invasive non-native Buddleia plants should be removed, ideally from September to February to avoid the general peak bird nesting season (see section 7.3).*

## 7.6. DRAFT NPF4 BIODIVERSITY STATEMENT OF ENHANCEMENTS

*This section of the PEA Report comprises a Draft NPF4 Biodiversity Statement of Enhancements, in compliance with NPF4 (Scottish Government 2023).*

*The following suggested and recommended biodiversity enhancements would make a significant contribution to Biodiversity Net Gain (Baker et al 2019) and to restoring biodiversity and enhancing the ecological value of the development site, as required by NPF4.*

### 7.6.1. TREE & SHRUB PLANTING

**Trees and shrubs with abundant flowers, nectar, seeds, nuts and fruits**, including native species such as hazel (*Corylus avellana*), elder (*Sambucus nigra*), crab apple (*Malus sylvestris*), apple (*Pyrus malus*), pear (*Pyrus communis*), blackthorn or sloe (*Prunus spinosa*), cherry plum (*Prunus cerasifera*), wild cherry or gean, (*Prunus avium*), bird cherry (*Prunus padus*), dog rose (*Rosa canina*), guelder rose (*Viburnum opulus*), hazel (*Corylus avellana*), holly (*Ilex aquifolium*), rowan (*Sorbus aucuparia*), hawthorn (*Crataegus monogyna*), guelder rose (*Viburnum opulus*) or wayfaring tree (*Viburnum lantana*), **are recommended for the landscape design.**

These species will benefit birds, pollinating insects and other invertebrates, and may attract any bats roosting nearby to commute along and within the Site boundaries, and potentially feed on invertebrates within the development site.

### 7.6.2. WILDFLOWER AREA

**To benefit wildlife and biodiversity and to help create a pleasant and attractive environment for the occupiers, visitors and residents of the mixed use, cultural and residential site, the landscape proposals should include a native wildflower area as suggested by NatureScot (2023).**

**Scotia Seeds' meadow grass wildflower mix [Urban Pollinator Meadow Mix \(SCM11\)](#) can be sown**, with species such as cowslip (*Primula veris*), field scabious (*Knautia arvensis*), yarrow (*Achillea millefolium*) and yellow rattle (*Rhinanthus minor*). There are 21 wildflower (20% by volume) and six grass (80% by volume) species in this mix, which includes annuals, biennials and perennials. With the correct site preparation, establishment and management set out in the detailed landscape specification, this will create a permanent community of attractive pollen and nectar producing plants, providing food for pollinating insects throughout the season (see section 7.6.7).

### 7.6.3. GREEN WALL

**A green wall protecting the canal, which is a protected monument, will be included as part of the landscape proposals for the development.**

**The green wall will be developed as a base structure for climbing plants with a steel upright frame, and a mesh steel infill, allowing for tendril based climbers such as honeysuckle. A variety of other native climbing plant species can be included within this design.**

#### 7.6.4. HEDGEHOGS

Hedgehogs are a notable mammal species that is not currently specially protected, although they are on the Scottish Biodiversity List and may be offered protection in the future, because they are in severe decline across the UK including parts of Scotland (Mathews *et al* 2018).

***There are no recent records of hedgehog from within 1km or from Claypits SINC.***

It is possible that hedgehogs already use the Site and this can be encouraged. The passage of hedgehogs into the Site, and between different sections of each level of the landscape would be facilitated by providing hedgehog-sized holes (13cm x 13cm) in fencing to create “***hedgehog highways***” (NatureScot 2023).

Hedgehogs feed most frequently on worms, slugs, millipedes, caterpillars, earwigs and beetles, as well as a wide range of other food. Accordingly they are likely to benefit from many of the ecological enhancements recommended above and below.

***Five hedgehog houses*** comprising a large woodstone (concrete and wood fibre mix) dome with a secure roof and a two long corridor-like entrances (NatureScot 2023) specifically designed for hibernation and spring to autumn shelter, and to discourage predators, could be purchased (<https://www.wildcare.co.uk/woodstone-hedgehog-house-10506.html>).

They should be sited with entrances facing north and east in suitably sheltered locations such as log piles within the landscape proposals. These log piles described in section 7.6.7 will also benefit invertebrates, as well as providing ideal habitats for hedgehog shelter and hibernation.



### 7.6.5. BATS

*Following guidance from NatureScot (2023) and the [Bat Conservation Trust](#), bat roosting blocks suitable for both winter hibernation and summer maternity colonies can be integrated within the development.*

*It is recommended that five bat roosting blocks integrated into the external block layer of the building should be installed during construction on the cooler north elevations, suitable for bat winter hibernation roosts.*

*In addition, another three integrated bat roosting blocks could be installed on the warmer south elevations suitable for summer maternity roosts.*

*Micro-siting must ensure that bats have clear open flightlines into the roost entrance and avoid overhangs or perches from which predators could mount easy attacks.*

These integrated blocks are preferable to external bat boxes, partly because they 1) are of standard UK block size, 2) will not impose any requirement for ongoing maintenance, 3) nor annual checking by Licenced Bat Workers (if and when bats utilise the roost blocks), and 4) will provide the capacity to accommodate many roosting bats, so fewer bat roosting boxes need be installed. These roosting blocks are supplied by [Green&Blue](#) (see Figure 5 below).

**Green&Blue**

BIRDS BEES BATS HEDGEHOGS ABOUT

HOME | BATS | BAT BLOCK | BAT BRICK

### Bat Block | Bat Brick

£106.36 **Sold out**

Tax included.

Colour: White

Quantity

\*Please call us on +44 (0)1872 858 658 for latest product lead times.

The Bat Block bat brick is designed to create roosting space for crevice dwelling bats within the framework of new builds. A simple, stylish way to help protect our Bat species and provide hibernation or maternity roosting space for them. Features an internal FSC certified wooden panel, a small entrance space to deter larger birds and predators and is standard UK block size. Position South or West facing for summer maternity roost or north facing for a winter hibernation roost.

If you'd like a quote for installing 5 or more Bat Blocks in your development then please contact us for a [quote here](#).

Details

Delivery

Sustainability

Reviews

Figure 5 Integrated bat block brick, showing means of installation

Immediately below the entrance of the bat block, ***the installer will need to create a small area of rough cast cement to provide alighting bats with a suitably rough surface to land upon*** before crawling into the bat roosting block.

While there is no evidence of bats currently using the development site for roosting, or for foraging or commuting, ***the lighting design should follow the latest guidance (ILP & BCT 2023), which will reduce any avoidance by bats from feeding and commuting within the Site, and will minimise predation by avian predators of any bats roosting in the bat roosting blocks.***

***Further habitat enhancement for insects which will be achieved through the habitat creation and native species plantings within the landscape proposals, will increase the supply of insect food for bats.***

### 7.6.6. BIRDS

*The landscape proposals include a variety of native trees and shrubs, including nut-bearing, fruiting and berried species that provide abundant food for a wide range of bird species (see section 7.6.1 above).*

*Native grasses, native wildflowers and flowering tree and shrub species recommended in sections 7.6.1 and 7.6.2 will provide pollen, larval food, fruit and seeds, for insects which insectivorous birds will feed upon.*

*Enhanced feeding opportunities for birds could also be supplied through the provision of supplementary bird feeders close within the mixed use, cultural and residential areas.*

*Following NatureScot's suggested habitat enhancement measure 13 (NatureScot 2023), three types of bird nest box can be included within the landscape and architectural designs.*

*The landscape proposals could include installation of Schwegler bird nest boxes with a larger [45mm hole](#) suitable for Red-listed (Stanbury et al 2021) birds such as starling (*Sturnus vulgaris*) on existing trees to be retained. Schwegler nest boxes with a [32mm hole](#) suitable for house sparrow (*Passer domesticus*), which have been recorded breeding nearby in the Skateboard and BMX Park, can be installed on one of the buildings.*

*Starling and sparrow nest boxes should be placed two to four metres up a tree, facing between north and east, avoiding strong sunlight and the wettest winds, and with a clear flight path in without any clutter in front of the nest box entrance.*

*Specialist nest box designs should also be installed for swifts (*Apus apus*), a severely declining species that the data search revealed has been recorded nesting nearby to the north and flying extensively to the west and southeast.*

*As part of the construction of the buildings, twenty [swift nest box blocks](#) should be installed by integrating these immediately below the eaves and away from windows, with unimpeded flightlines facing in a northern direction on the cooler north elevation to reduce the effects of the prevailing southwesterly wind, as well as glare and solar heating of the nest block.*

greenandblue.co.uk/products/swift-block-swift-box



### Swift Block | Swift Box - Integrated

£95.14

Tax included

Colour: charcoal



Quantity



ADD TO CART

The Swift Block swift box is designed to create nesting space for our declining Swift population. A simple, stylish solution which can be easily integrated into new builds or retrofitted on existing properties.

Swift populations have decreased by over 50% in the last 20 years and a large factor in this is loss of habitat. If every new build contained provision for these beautiful birds, then we might start to reverse the decline. Swifts join us for a few months each Summer, spending their winters on the wing in Africa. Generally, they mate for life and often will return to the same nesting site.

The beautiful Swift Block swift box features an internal nesting bowl, a small entrance hole to deter larger birds and predators, full instructions cast into the surface for easy fitting, a stylish entrance feature and is UK standard box size.

Swifts will use any material they can gather whilst on the wing to build their nest, including feathers, seeds, paper and straw. They normally lay 2 or 3 eggs at 2-2 day intervals, with the young hatching a few days apart. Feeding on a diet of insects, young Swifts will start to move around the nest at around 2-3 weeks old, starting to do press-ups to strengthen their wings! They will spend a lot of time looking out from the nest, preparing to leave, and it's little wonder as once they do leave they remain on the wing for the next 2 years, eating, sleeping and mating in the sky!

Details +

Delivery +

Sustainability +

Reviews

Figure 6 Integrated Swift Nesting Blocks available from supplier [Green & Blue](https://www.greenandblue.co.uk/products/swift-block-swift-box) (click on this hyperlink to order)

### 7.6.7. INVERTEBRATES

The landscape proposals and planting schemes should provide a vegetation mix of structural and species variety that is likely to be highly attractive to pollinators and other beneficial insects throughout the year (NatureScot 2023). Different pollinators are specialised and co-adapted with particular floral structures and species. Elder, alliums and daisies for example have a distinctive flat flowerhead, perfect for short-tongued bees and flies with small mouthpieces, while trumpet-shaped flowers such as foxgloves, bluebells, comfrey, borage, penstemons, snapdragons and lungwort are more suited to long-tongued species. Ornamental and horticultural varieties bred for double flowers have been avoided, as they often produce little or no pollen and nectar, and pollinators cannot get through tightly packed petals.

***The wildflower mix suggested in section 7.6.2 (Urban Pollinator mix) has been selected from a nearby Scottish source (Scotia Seeds) and includes perennials (remaining to bloom every year), biennials and annuals with a wide range of floral structures likely to attract and sustain a broad range of pollinating invertebrates.***

***Log piles built from loosely organised clusters of tree and shrub trunk and branch sections together with leaves*** (NatureScot 2023), will create a habitat of slowly decaying wood and leaf litter and provide food and shelter for a range of invertebrate species, including decomposers that help to recycle decaying matter, and predators controlling the outbreak of pest species.

***The material can be sourced on site using cut material from trees and shrubs that are to be felled, with the chopped wood retained on site. These log piles will also provide ideal habitats for hedgehog hibernation (see section 7.6.4).***

***Bee, bug and other invertebrate habitat boxes will be attached to fence posts and trees across the development site.*** Such “bee boxes” and “bug hotels” (NatureScot 2023), and ***other types of beneficial invertebrate habitat box*** should be installed at different appropriate heights and orientations: for solitary bees placed facing southeast or southwest at varied heights, and for ladybirds and lacewings placed facing north or west, one metre above the ground. ***An example has been installed in the garden area (TN13, as shown in Photo 17 in Appendix 3.)***

An additional benefit from assisting colonisation by such beneficial invertebrates is their predation on garden “pests”, and the consequent ***reduced need for chemical pesticides to control aphids, scale insects and other garden pests which these beneficial invertebrates feed upon.***

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## 9. APPENDIX 1: DATA SEARCH FROM PORT DUNDAS

### Appendix 3

| Location   | Port Dundas                          | Grid Squares   | NS<br>590<br>666   | Date of<br>Search | 18 <sup>th</sup> March 2016  |
|--|--------------------------------------|--|--|-------------------|--|
| <b>Wild Surveys Data</b>                                     | <b>No of Records within<br/>5 km</b> | <b>Approximate<br/>distance in km</b>  | <b>Site name/Grid Ref</b>  |                   | <b>Date</b>  |
| <b>Soprano pipistelle</b>                                    | 1                                    | 4.5km  | NS 552 681   |                   | 2006   |
| <b>Glasgow Biological<br/>Records Centre Bat<br/>Records</b> | <b>No of Records within<br/>5 km</b> | <b>Approximate<br/>distance in km</b>  | <b>Site name/Grid Ref</b>  |                   | <b>Date</b>  |
| <b>Daubentons</b>  | 7                                    | 2.5km<br>2.4km<br>2.4km<br>2.4km<br>2.4km<br>2km<br>2km  | Kelvingrove NS565665<br>Botanic Gardens NS567675<br>Botanic Gardens NS568675<br>Botanic Gardens NS569675<br>Botanic Gardens NS569675<br>Kelvingrove Park NS570663<br>Kelvingrove Park NS570663   |                   | 1879<br>2000<br>2001<br>2001<br>2001<br>1879<br>1879   |
| <b>Pipistrelle sp</b>  | 4                                    | 3.1km<br>2.8km<br>2.8km<br>1.5km   | Sydenham Road NS560675<br>GLL Cycleway NS563656<br>GLL Cycleway NS563656<br>Woodside Road NS575670   |                   | 2002<br>2002<br>2008<br>2006   |
| <b>Common<br/>pipistelle</b>                                 | 25                                   | 3.9km<br>3.5km<br>3.5km<br>3.5km<br>3.4km<br>3.4km<br>3.6km<br>3.4km<br>3.4km<br>3.3km<br>3km<br>2.9km<br>2.8km<br>2.5km<br>4km<br>2.3km<br>2.3km<br>2.3km<br>2.3km<br>1.9km<br>1.6km<br>1.5km | Bighams Pond NS55366821<br>Dyce Park NS55496706<br>Partickhill Road NS555670<br>Turnberry Road NS555672<br>Dyce Park NS55586710<br>Banavie Road NS55606720<br>Stazione NS55676806<br>Novar Drive NS55706759<br>Old Station Pk NS55756768<br>Dyce Park NS55806766<br>Crown Lane NS560671<br>Dowanhill Park NS561669<br>Dowanhill Park NS562669<br>Burnhouse Road NS565663<br>Botanic Gardens NS5667<br>Kelvingrove Park NS567663<br>Botanic Gardens NS568675<br>Botanic Gardens NS568676<br>Botanic Gardens NS569675<br>Kelvingrove Park NS571664<br>Kelvingrove Park NS574665<br>Glasgow University NS575665 |                   | 2006<br>2006<br>2007<br>2007<br>2006<br>2006<br>2008<br>2006<br>2006<br>2006<br>2008<br>2008<br>2008<br>1997<br>1996<br>2002<br>2001<br>2000<br>2000<br>1997<br>2005<br>1998 |
| <b>Soprano pipistelle</b>                                    | 5                                    | 3.9km<br>1.7km<br>1.5km  | Bighams Pond NS55446823<br>Kelvinbridge Station NS573669<br>River Kelvin NS575671  |                   | 2008<br>2008<br>2008   |



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|                             |                                  |                                   |   |                              |
|-----------------------------|----------------------------------|-----------------------------------|---|------------------------------|
| Brown long eared            | 4                                | 4km<br>2km                        | Dudley Drive NS5567<br>Kelvingrove Park NS570663  | 1989<br>1904                 |
| <b>NBN Bat Species Data</b> | <b>No of Records within 5 km</b> | <b>Approximate distance in km</b> | <b>Site name/Grid Ref</b>   | <b>Date</b>                  |
| Badger                      | 1                                | 1km                               |   | 2015                         |
| Otter                       | Present within 10km square       |                                   |   | 2007                         |
| Water vole                  | 3                                | 1km<br>1.2km<br>1.8km             | F+C Canal NS 582 675<br>F+C Canal NS 583 678<br>F+C Canal NS 576 682  | 2001<br>2001<br>2001         |
| Pine marten                 | 0                                |                                   |   |                              |
| Red squirrel                | 0                                |                                   |   |                              |
| Great crested newt          | Present within 10km square       |                                   |   | 1996                         |
| Barn owl                    | Present within 10km square       |                                   |   | 1988                         |
| <b>NBN Bat Species Data</b> | <b>No of Records within 5 km</b> | <b>Approximate distance in km</b> | <b>Site name/Grid Ref</b>   | <b>Date</b>                  |
| Common pipistrelle          | 4                                | 3km<br>3.8km<br>4.3km<br>4.5km    | NS 57 63<br>Nithsdale Road NS 568 633<br>NS 55 70<br>NS 589 719   | 2005<br>1997<br>2005<br>2005 |
| Soprano pipistrelle         |                                  |                                   |   |                              |
| Nathusius pipistrelle       | 0                                |                                   |   |                              |
| Daubenton's                 | 7                                | 7                                 | Kelvingrove Park NS 572 665<br>Glasgow Green NS 602 639<br>Kelvingrove Park NS 706 663<br>Botanic Gardens NS 569 675<br>River Kelvin NS 567 675<br>Kelvingrove NS 565 665<br>Glasgow Green NS 600 641 | 2011<br><br><br>2001<br>2000 |
| Natterers                   | 0                                |                                   |   |                              |
| Whiskered                   | 0                                |                                   |   |                              |
| Brown long eared            | 2                                | 2km<br>3km                        | Kelvingrove NS 570 663<br>NS 55 67  | 1904<br>1989                 |
| Noctule                     | 0                                |                                   |   |                              |
| Leislars                    | 0                                |                                   |   |                              |

**Glasgow Biodiversity Action Plan**

**Species Action Plans**

- Badger
- Otter
- Water vole

**Habitat Action Plans**

- Boundary features
- Broadleaved and mixed woodland
- Built up areas and gardens
- Neutral grassland



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## 10. APPENDIX 2 HABITATS, PLANT AND BIRD SPECIES

Figure 7 Phase 1 Habitats and Target Notes within the New Rotterdam Wharf Development Site

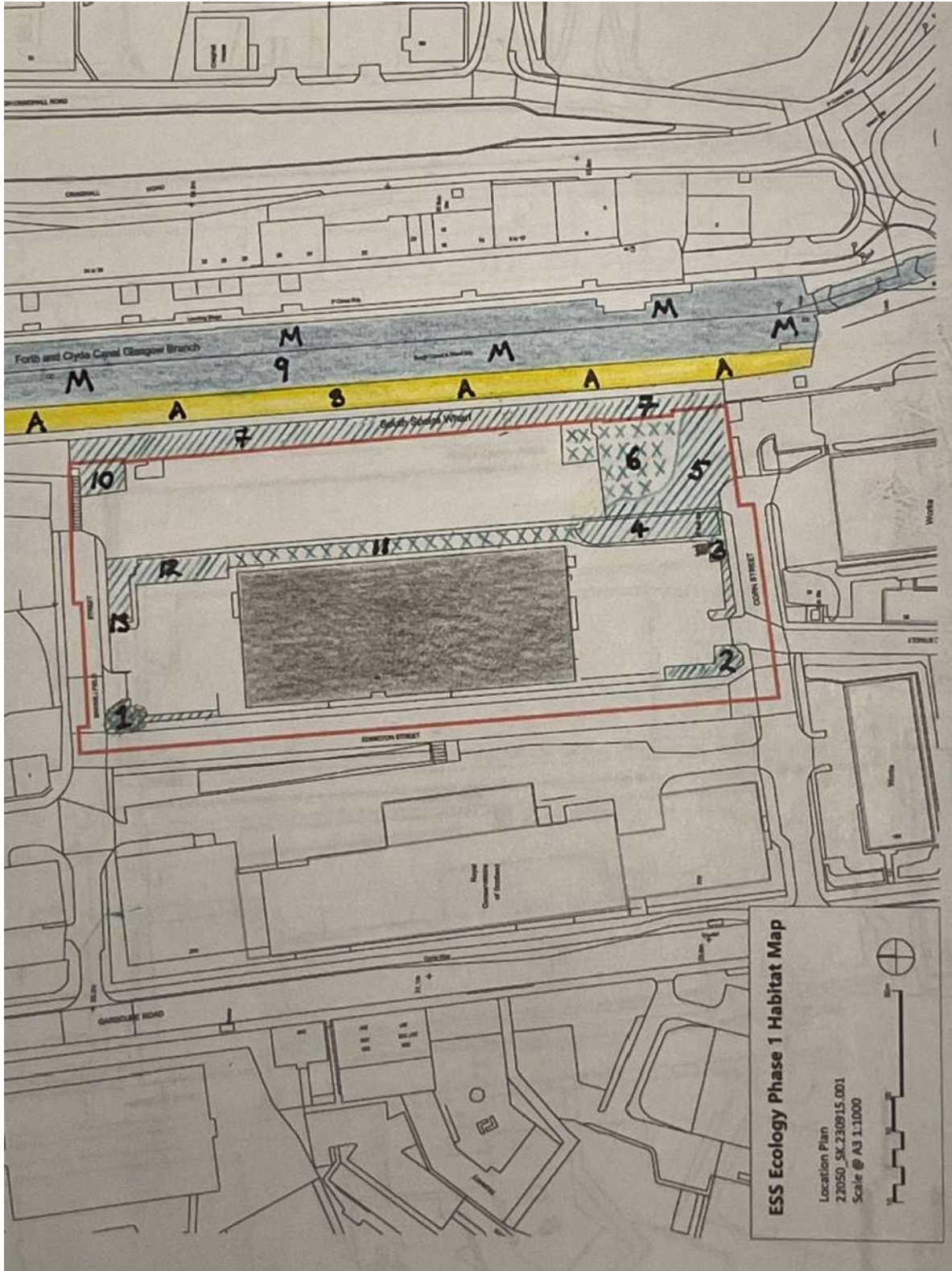


Figure 8 Phase 1 Habitats Codes, Descriptions and Mapping Codes

## Phase 1 Habitat Survey Map Legend





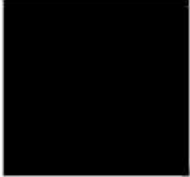
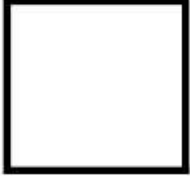
| Code   | Description                      | Colour Co   |
|--------|----------------------------------|---|
| A1.1.2 | Broad-leaved Plantation Woodland |    |
| A2.2   | Scattered Scrub                  |    |
| G1.2   | Mesotrophic Standing Water       |   |
| J1.2   | Amenity Grassland                |  |
| J3.6   | Buildings                        |  |
| J5     | Hard Standing/Footpaths          |  |

Table 1 Plant species recorded within development site on 18/09/2023 & 30/11/2023

| Scientific Latin Name           | Common Name              |
|---------------------------------|--------------------------|
| <i>Acer platanoides</i>         | Norway Spruce            |
| <i>Agrostis stolonifera</i>     | Common Bent grass        |
| <i>Bellis perennis</i>          | Daisy                    |
| <i>Buxus sempervirens</i>       | Common Box               |
| <i>Centaurea nigra</i>          | Common Knapweed          |
| <i>Chamerion angustifolium</i>  | Rosebay Willowherb       |
| <i>Cirsium arvense</i>          | Creeping Thistle         |
| <i>Cotoneaster horizontalis</i> | Wall Cotoneaster         |
| <i>Cotoneaster sp.</i>          | Cotoneaster species      |
| <i>Crataegus monogyna</i>       | Hawthorn                 |
| <i>Deschampsia caespitosa</i>   | Tufted Hairgrass         |
| <i>Dianthus barbatus</i>        | Sweet William            |
| <i>Dryopteris filix-mas.</i>    | Male Fern                |
| <i>Epilobium ciliatum</i>       | Fringed Willowherb       |
| <i>Epilobium montanum</i>       | Broad-leaved Willowherb  |
| <i>Epipactis helleborine</i>    | Broad-leaved Helleborine |
| <i>Erigeron annuus</i>          | Fleabane                 |
| <i>Escallonia sp.</i>           | Escallonia               |
| <i>Fraxinus excelsior</i>       | Ash                      |
| <i>Galium aparine</i>           | Cleavers                 |
| <i>Hedera helix</i>             | Ivy                      |
| <i>Lolium perenne</i>           | Perennial Ryegrass       |
| <i>Lonicera ligustriana</i>     | Boxleaf Honeysuckle      |
| <i>Plantago lanceolata</i>      | Ribbed Plantain          |
| <i>Plantago major</i>           | Greater Plantain         |
| <i>Poa annua</i>                | Annual Meadow-Grass      |
| <i>Populus sp.</i>              | Poplar                   |
| <i>Prunus laurocerasus</i>      | Cherry Laurel            |
| <i>Prunus spinosa</i>           | Blackthorn               |
| <i>Ranunculus repens</i>        | Creeping Buttercup       |
| <i>Rosa canina</i>              | Dog Rose                 |
| <i>Rubus fruticosus agg.</i>    | Bramble                  |
| <i>Rumex crispus</i>            | Curly Dock               |
| <i>Salix caprea</i>             | Goat Willow              |
| <i>Sambucus nigra</i>           | Elder                    |
| <i>Senecio jacobaea</i>         | Common Ragwort           |
| <i>Spirea</i>                   | Spirea                   |
| <i>Stellaria media</i>          | Chickweed                |
| <i>Taraxacum spp.</i>           | Dandelion                |
| <i>Thuidium delicatulum</i>     | Fern Moss                |
| <i>Trifolium pratense</i>       | Red clover               |
| <i>Trifolium repens</i>         | White Clover             |
| <i>Tussilago farfara</i>        | Coltsfoot                |
| <i>Vinca major</i>              | Greater Periwinkle       |
| <i>Urtica dioica</i>            | Common Nettle            |

Table 2 Bird species recorded and reported by locals to be breeding within and near the development site on 18/09/2023

| Common Name              | Scientific Latin Name      | Conservation Concern (Stanbury <i>et al.</i> 2021) |
|--------------------------|----------------------------|--|
| Blackbird                | <i>Turdus merula</i>       | Green  |
| Feral Pigeon             | <i>Columba livia</i>       | Green  |
| Herring Gull             | <i>Larus argentatus</i>    | Red  |
| Lesser Black-backed Gull | <i>Larus fuscus</i>        | Amber  |
| Magpie                   | <i>Pica pica</i>           | Green  |
| Mallard                  | <i>Anas platyrhynchos</i>  | Green  |
| Moorhen                  | <i>Gallinula chloropus</i> | Green  |
| Robin                    | <i>Erithacus rubecula</i>  | Green  |
| Woodpigeon               | <i>Columba palumbus</i>    | Green  |

## 11. APPENDIX 3: PHOTOGRAPHS

Photo 1 Norway maple trees in southwest of site (TN2)



Photo 2 Hard standing in southwest of site



Photo 3 Scottish Opera building facing Edington Street



Photo 4 Internal view of building roof showing no bat PRFs



Photo 5 Roof void, showing no bat signs



Photo 6 BMX Skate Park to north of development site



Photo 7 Forth & Clyde Canal & Amenity Grassland TNs9/8



Photo 8 Five small holes where previous CCTV removed



Photo 9 Electricity sub-station at TN3



Photo 10 View south from Corn Street entrance





Photo 11 Mature goat willow at south of woodland (TN7)



Photo 12 Small planter box to east of building at TN11



Photo 13 Silver birch trees and Buddleia scrub (TNs12/11)



Photo 14 Forth & Clyde Canal and Amenity Grassland



Photo 15 Silver birch & goat willow in SE of site (TN5) view from footpath along canal, down Corn St towards TNs3/2



Photo 16 Hard standing vehicle and storage area from east



Photo 17 Garden area at TN13, planted with Escallonia, Spirea, greater periwinkle, with insect habitat box on birch tree

