Bumblebee Conservation Trust

Site survey and recommendations

FirstStage Studios

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www.bumblebeeconservation.org

Contents

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Summary of data

FirstStage Studios is situated in the Port of Leith, Edinburgh, and occupies approximately 3.6ha. Of this approximately 0.42ha was surveyed.

The site is managed without the use of herbicides or pesticides and is already maintained through a well-established permaculture gardening regime. This positive approach enhances biodiversity, improves ecosystem health, and supports the long-term sustainability of the site.

Bumblebee Conservation Trust were commissioned to carry out a bumblebee survey on site. Plants, other wildlife, and habitat features of importance for bumblebees and other pollinators were also noted.

A desk-based study was undertaken and records for bumblebee species in and around the site have been explored using data from the National Biodiversity Network (NBN) Atlas database. Nearby priority habitat and sites of importance (e.g. SSSI's) have been explored using data from DEFRA's MagicMap system and Scotland's Environment Web Integrated Habitat Network Map.

The desk-based study revealed the site is in a well-recorded area with 7130 existing bumblebee records within 5km of the site. These comprise seven of the 'Big 8' common and widespread species and four of the six cuckoo bumblebees in the UK. There are also four records of Bilberry Bumblebee (*Bombus monticola*), a nationally scarce species and habitat specialist, within 4km of the site.

Due to the site's proximity to areas of important sites and habitat, most notably the Firth of Forth (a Ramsar site, Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and contains a Marine Protection Area (MPA)), FirstStage Studios represents a good opportunity to provide connectivity and act as a 'stepping stone' between important local habitats. By improving existing habitats and creating new habitats on site, you will be providing opportunities for bumblebees and other wildlife to thrive and move through the wider landscape.

Survey Highlights

A total of 45 bumblebees were recorded comprising three of the eight common and widespread species found in the UK. Buff-tailed Bumblebee (*Bombus terrestris*) was the most frequently recorded and made up 84% of records. Bumblebees were recorded using four different forage types, with Buddleia being the top choice, with over half of the bumblebees recorded using this.

A total of 76 plant species were observed, including many species which are important food plants for invertebrates. There are already good habitats on site, most notably, the area of semi-improved neutral grassland in Area 4 and the larger banked area of grassland in Area 5.

Summary of recommendations

The site has several plant species and habitats of interest. Target areas are already left to flower and set seed and this management should continue. Establishing a late summer cut and collect of grassland areas will ensure these areas remain in good condition. A rotational cut and collect regime in Area 5 will allow taller vegetation suitable for bumblebee nesting to develop. Occasional scrub cutting every 2-3 years will be needed to ensure Bramble, Nettle and Thistles don't dominate in the other target areas. Though this needs to be done rotationally as scrub and tall vegetation is a beneficial habitat on its own and in balance with other habitats, providing forage, shelter and nesting opportunities for bumblebees and other wildlife.

To further increase the forage availability of the site, new planters to be planted with a range of pollinator friendly herbs and perennials have been suggested. With note to improving spring forage availability on site. A plant list has also been provided for the existing water tank on site which could be turned into a wildlife pond.

Signage and interpretation should be installed to highlight habitats on site explain the management regimes to site staff and visitors.

1. Introduction

There are twenty-four species of bumblebee in the UK. Bumblebees are a familiar and much-loved feature of our gardens and countryside. Bumblebees provide vital pollination services, both for a wide range of agricultural and horticultural crops as well as wildflowers, supporting wider biodiversity. This is a service we cannot simply replace or recreate with any degree of success. However, due to large-scale loss of flower-rich habitats and intensification of land-use, bumblebees are in serious decline. Other factors contributing to declines include pesticide use, competition and disease, climate change and associated extreme weather events.

Bumblebee Life Cycle

Understanding the bumblebee lifecycle (Image 1) and the resources required at each stage is a useful starting point to influence decisions that promote and maximise bumblebee resource availability on a site.

Early spring (Feb-Apr) Availability of nectar and pollen from early-flowering plant species to support new bumblebee queens freshly emerged from hibernation. Availability of suitable nesting sites for nest-searching queens.

Late spring to summer (May-Jul) The colony grows and requires continuous availability of abundant nectar and pollen from suitable plant species to support development of new workers and later new reproductive queens and males.

Late summer to autumn (Aug – Oct) Ensure later summer and autumn flowering species are available to provide nectar and pollen resources for later flying bumblebee species and queens preparing for hibernation.

Winter Hibernating queen bumblebees require suitable, undisturbed sites to spend the winter. e.g., banks, slopes and uncut hedgerow-bases.

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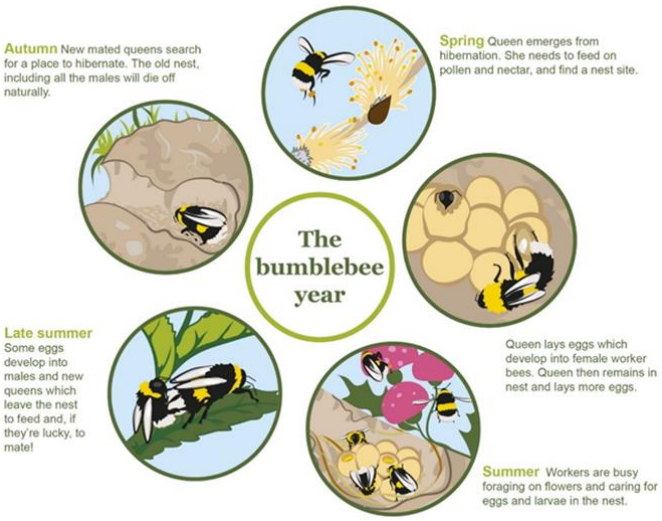


Image 1: *Illustrated bumblebee lifecycle*

Bumblebees need a continuation of forage throughout the year, largely between the months of March-October (the main flight period), but increasingly into the winter months too, as some species are becoming winter active (Stelzer *et al.,* 2010). They also need a diverse range of flowering plants to feed from, a recent study found that bumblebees forage from at least 10 different plant species at any one time of the year in order access the full range of nutrients they need (Timberlake *et al*., 2024). As well as forage, bumblebees also need suitable nesting and hibernation sites. Without these key elements, bumblebees will be unable to successfully produce the next generation and so it is important that these requirements are considered in any site management plan.

2. Site details

FirstStage Studios is a film studios located in the Port of Leith, Edinburgh, which borders the southern side of the Firth of Forth (OS grid ref: NT 27932 76410). The Port of Leith is a historic docklands and industrial area, much of which was built on reclaimed land.

The whole site measures approximately 3.6ha, with the studio building making up the majority of this. Around the building and car park there are a number of rectangular and linear strips and plots. Together these areas measure approximately 0.42ha and are the focus of the survey and are referred to as 'target areas' hereon.

The site is under 300m away from the Firth of Forth, a complex estuary which meets the North Sea. The Firth of Forth is designated a Ramsar site, Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and contains a Marine Protection Area (MPA) and is home to a vast array of wildlife.

Due to the location and history of the site, the soil type is likely made ground (a man-made soil type consisting of rubble, concrete and other synthetic materials mixed with natural soil) over estuarine silts and clays, the latter being characteristic of the coastal margin of the Firth of Forth (Scotland's Soils, 2026). This variety of soil types and substrates can be a valuable asset in creating diverse, flower-rich habitats.

3. Scope

Bumblebee Conservation Trust were commissioned to carry out a bumblebee survey at FirstStage Studios. This report will feedback the results of the survey, carried out on 3rd August 2026. The report will identify the bumblebees and forage species that are already present on-site, and provide recommendations on potential site enhancements, for bumblebees and other wildlife as well as for the benefit of site users.

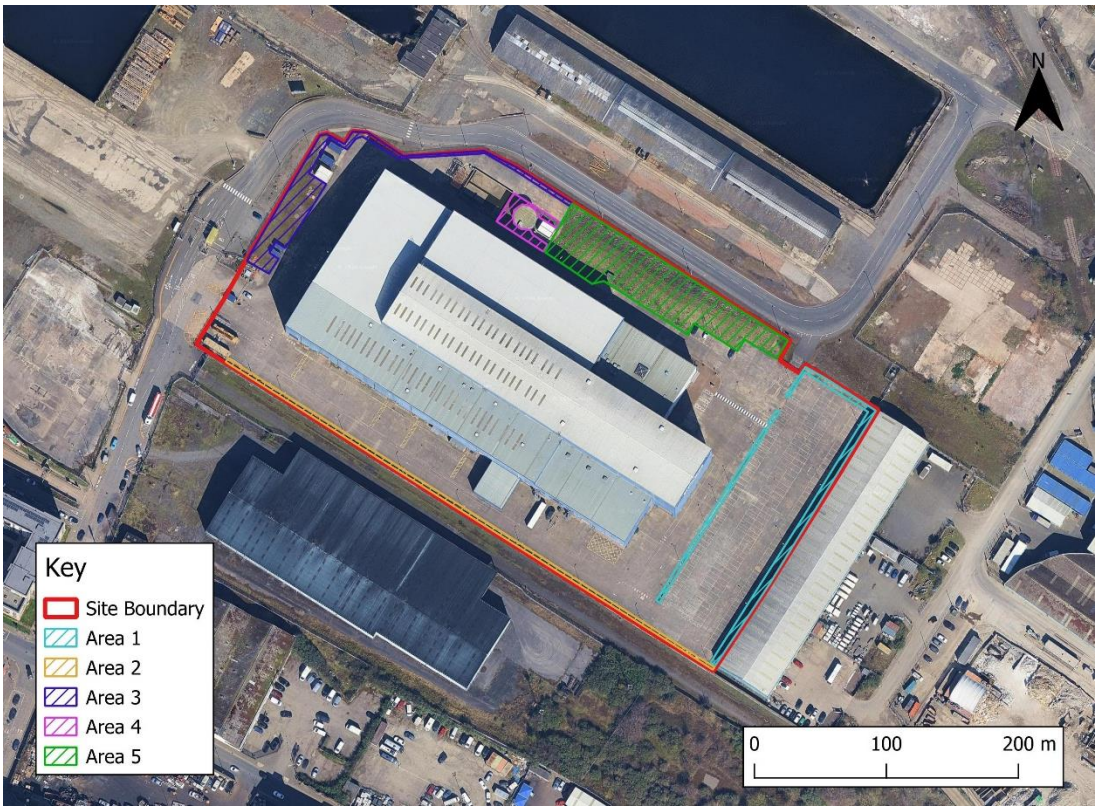
4. Methodology

The site survey was conducted on the 3rd August 2026, starting at 11:00am and finishing at 13:48pm. A temperature of 16ºC was recorded at the beginning of the survey. There was only a very light breeze at times, measuring 1 on the Beaufort Scale. Prior to the survey starting there had been heavy rain showers and it was still

raining for the first half an hour of the survey, although had turned to light rain by this point. Once the rain stopped it remained dry but still cloudy for the rest of the survey.

Five target areas were identified (Map 1), and a vegetation survey was carried out for each, listing all the plant species that are currently present in each area.

Map 1: *Aerial view of the site, showing the target areas surveyed. Imagery ©2026 Airbus, Maxar Technologies. Map data ©2026 Google.*



The bumblebee survey was completed using the standardised 'BeeWalk' methodology developed by Bumblebee Conservation Trust. During the survey, any bumblebees observed within a 4x4x2m area around the surveyor are recorded and identified to species and caste (Queen, worker or male), where possible. Flower visitation is also recorded. Other pollinator species were also recorded and identified where possible.

4.1 Desk Study

Prior to carrying out the site survey a desk study was completed. The desk study was completed by examining available records from the Bumblebee Conservation Trust's BeeWalk scheme, DEFRA's MagicMap, Scotland's Environment Map and NBN Atlas data. This helps inform the recommendations made in this report according to local bumblebee populations and available habitat nearby.

Data sources:

- MAGIC – Multi-Agency Geographic Information for the Countryside https://magic.defra.gov.uk/magicmap.aspx

- NBN Atlas - National Biodiversity Network https://nbnatlas.org/
- BeeWalk – Bumblebee Conservation Trust's national recording scheme https://beewalk.org.uk/
- Scotland's Environment Web – Integrated Habitat Network Map https://map.environment.gov.scot/sewebmap
- Scotland's Soil Map https://map.environment.gov.scot/Soil_maps/?layer=1#

4.2 Survey constraints

Weather is often a limiting factor for insect recording. Due to the heavy rain prior to the survey and the light rain showers during the beginning of the survey, this is likely to have impacted the number of bumblebees and other insects recorded. In addition, only one survey visit was carried out and as such it only offers a snapshot into the bumblebees and plants present on site. The timing of the survey visit fell in the late flowering season. As such it offers no assessment of early (spring) or mid (early-mid summer) flowering plant diversity. Enough was identifiable to make a fair assessment of the general species assemblages there, however.

5. Results

The results presented below are a combination of desk study and site survey data and will be used to inform recommendations to create and/or enhance habitat for bumblebees and other wildlife.

5.1 Bumblebee site survey

Despite the rainy start to the survey, a total of 45 bumblebees were recorded across three different bumblebee species (Table 1). These species represent three of the eight common and widespread species found in the UK. Buff-tailed Bumblebee (*Bombus terrestris*) (Image 2) was the most frequently recorded during the survey, with this species making up 84% of records. The bumblebees were recorded using four different types of forage sources during the survey. Buddleia was the most popular choice, with over half of the bumblebees recorded using this. Seven fresh Buff-tailed Bumblebee Queens were recorded during the visit, which given the time of year, means that there has been at least one successful nest either on site or nearby.

Image 2: *A Queen Buff-tailed Bumblebee (Bombus terrestris) on Buddleia (Buddleja davidii). Photo credit: Lorna Giffin-Hannan.*

***Table 1**: Bumblebee site survey results.*

Species common name	Species scientific name	Number of Queens	Number of workers	Number of males	Total Number of individuals	Forage
Buff-tailed Bumblebee	*Bombus terrestris*	7	31	-	38	Buddleia, Rosebay Willowherb, Creeping Thistle
Common Carder Bumblebee	*Bombus pascuorum*	-	6	-	6	Rosebay Willowherb, St John's Wort, Marjoram
White-tailed Bumblebee	*Bombus lucorum*	-	1	-	1	Creeping Thistle

As well as bumblebees, other insect species that were able to be identified were also recorded (Table 2).

***Table 2**: Other insect records.*

Species common name	Species scientific name	Group	Number of individuals	Forage	Notes
Honeybee	Apis mellifera	Honeybee	1	Creeping Thistle	Common and widespread
Common Wasp	*Vespula vulgaris*	Social Wasp	1	-	Common and widespread
Common Hover Fly Parasitoid Wasp	*Diplazon laetatorius*	Solitary Wasp	1	-	Thought to be fairly frequent in UK, but lacking in records
Meadow Brown	*Maniola jurtina*	Butterfly	3	Buddleia	Common and widespread
Painted Lady	*Vanessa cardui*	Butterfly	1	-	Common and widespread migrant
Marmalade Hoverfly	*Episyrphus balteatus*	Hoverfly	1	-	Common and widespread
7-spot Ladybird	*Coccinella septempunctata*	Beetle	5	Buddleia, Rosebay Willowherb, Creeping Thistle	Common and widespread

5.2 Bumblebee forage and habitat availability

Each Target Area was surveyed separately to create a species list for each. Across the five areas surveyed a total of 76 different plant species were recorded. Given the size of the site, this a good level of diversity. Of these 33 (43%) were seen in flower in at least one place on site, at the time of the survey.

The pollinator-friendly forage species on the site are marked with a 🐝 and any non-native/introduced species are marked with *. Please note that although some species may not be used for forage, they provide wildlife value in other ways, for example they may be butterfly/moth foodplants.

Area 1 consists of the strips of vegetation in and around the car park, the largest of which runs along the eastern boundary of the site (OS grid reference: NT 27979 76412). This strip was largely dominated with Buddleia (*Buddleja davidii*), Bramble (*Rubus sp*) and Rosebay Willowherb (*Chamaenerion angustifolium*) (Image 3), however, there was also some more open areas with grasses and herbs such as Wood Avens (*Geum urbanum*), Herb Robert (*Geranium robertianum*), Ragworts (*Senecio spp*). The thinner strip within the car park (OS grid reference: NT 27937 76409) consisted of lighter soils with some disturbed grassland plants present such as Hare's-foot Clover (*Trifolium arvense*) and Black Medick (*Medicago lupulina*) (Image 4). Overall, Area 1 has the highest species list, with a total of 46 plant species observed (Table 3).

Table 3: *Plants observed in Area 1. Plants with value to bumblebees are marked with a 🐝 NB. Other plants not marked- still have value to other pollinators as foodplants.*

Species common name	Species scientific name	Flowering?
Great Willowherb 🐝	*Epilobium hirsutum*	Yes
Rosebay Willowherb 🐝	*Chamaenerion angustifolium*	Yes
Willowherb 🐝	*Epilobium sp*	
Buddleia 🐝*	*Buddleja davidii*	Yes
Perforate St John's Wort 🐝	*Hypericum perforatum*	
Bramble 🐝	*Rubus sp*	Yes
Common Nettle	*Urtica dioica*	
Black Medick 🐝	*Medicago lupulina*	Yes
Hop Trefoil 🐝	*Trifolium campestre*	Yes
Hare's-foot Clover 🐝	*Trifolium arvense*	
Common Poppy 🐝	*Papaver rhoeas*	Yes
Mugwort 🐝	*Artemisia vulgaris*	
Field Forget-me-not 🐝	*Myosotis arvensis*	Yes
Creeping Thistle 🐝	*Crisium arvense*	Yes
Spear Thistle 🐝	*Cirsium vulgare*	
Cleavers	*Galium aparine*	Yes
Common Mallow 🐝	*Malva sylvestris*	
Oxeye Daisy 🐝	*Leucanthemum vulgare*	
Nipplewort 🐝	*Lapsana communis*	
Wood Avens 🐝	*Geum urbanum*	
Cock's Foot Grass	*Dactylis glomerata*	
Tall Oat Grass	*Arrhenatherum elatius*	

Euphorbia	*Euphorbia sp*	Yes
Wild Rose	*Rosa sp*	
Wild Clematis	*Clematis vitalba*	
Dandelion	*Taraxacum officinale*	
Hawkbit	*Leontodon sp*	Yes
Biting Stonecrop	*Sedum acre*	Yes
Teasel	*Dipsacus fullonum*	
Ragwort	*Senecio jacobea*	
Narrow-leaved Ragwort	*Senecio inaequidens*	Yes
Sticky Groundsel	*Senecio viscosus*	Yes
Knapweed	*Centaurea nigra*	
Canadian Fleabane *	*Erigeron canadensis*	Yes
Mayweed	*Matricaria sp*	Yes
Ribwort Plantain	*Plantago lanceolata*	
Herb Robert	*Geranium robertianum*	Yes
Purple Toadflax *	*Linaria purpurea*	
Astrantia *	*Astrantia sp*	
Hedge Bedstraw	*Galium mollugo*	
Mouse-ear Chickweed	*Cerastium fontanum*	
Horsetail	*Equisetum sp*	
Birch	*Betula sp*	
Sycamore *	*Acer pseudoplatanus*	
Field Elm	*Ulmus minor*	
Dock	*Rumex sp*	

***Image 3 & 4**: Area 1 – scrubbier vegetation along the eastern boundary of the site (left) and strip of disturbed grassland within the car park (right)*

Area 2 (OS grid reference: NT 27884 76357) consists of a strip of vegetation running along the southern boundary of the site (Image 5). It directly connects to the strip in Area 1. Marking the boundary is a historic wall, which in itself provides opportunities for insects, including mason bees; a group of solitary bees which lay their eggs in old mortar (Image 6). A total of 33 plants species were observed in Area 2 (Table 4).

Table 4: *Plant species observed in Area 2. Plants with value to bumblebees are marked with a 🐝 NB. Other plants not marked- still have value to other pollinators as foodplants.*

Species common name	Species scientific name	Flowering?
Bramble 🐝	*Rubus sp*	
Maidenhair Spleenwort	*Asplenium trichomanes*	
Garlic Mustard 🐝	*Allliaria petiolata*	
Oxeye Daisy 🐝	*Leucanthemum vulgare*	Yes
Lady Fern	*Athyrium sp*	
Opium Poppy 🐝*	*Papaver somniferum*	Yes
Buddleia 🐝*	*Buddleja davidii*	Yes
Red Valerian 🐝*	*Valeriana rubra*	Yes
Cleavers	*Galium aparine*	
Creeping Thistle 🐝	*Cirsium arvense*	Yes
Common Nettle	*Urtica dioica*	
Narrow-leaved Ragwort 🐝	*Senecio inaequidens*	Yes
Canadian Fleabane 🐝*	*Erigeron canadensis*	
Nipplewort 🐝	*Lapsana communis*	Yes
Dandelion 🐝	*Taraxacum officinale*	
Sow Thistle 🐝	*Sonchus sp*	
Yarrow 🐝	*Achillea millefolium*	
Great Willowherb 🐝	*Epilobium hirsutum*	Yes
Rosebay Willowherb 🐝	*Chamaenerion angustifolium*	Yes
Colt's Foot 🐝	*Tussilago farfara*	
Ribwort Plantain 🐝	*Plantago lanceolata*	
Aquilegia 🐝*	*Aquilegia sp*	
Mugwort 🐝	*Artemisia vulgaris*	
Wood Avens 🐝	*Geum urbanum*	
Bittersweet 🐝	*Solanum dulcamara*	
Dock	*Rumex sp*	
Herb Robert 🐝	*Geranium robertianum*	
Mouse-ear Chickweed 🐝	*Cerastium fontanum*	
Euphorbia 🐝	*Euphorbia sp*	
Perforate St John's Wort 🐝	*Hypericum perforatum*	
White Musk Mallow 🐝*	*Malva moschata alba*	Yes
Teasel 🐝	*Dipsacus fullonum*	
Wild Mignonette 🐝	*Reseda lutea*	Yes

***Image 5 & 6**: Area 2 – strip of vegetation alongside the wall (left) and an insect hole in the mortar of the wall, which runs along the boundary of the site (right).*

Area 3 on the western side of the site (OS grid reference: NT 27737 76512) is a wider area than Areas 1 and 2 (Image 7). Like the previous areas, Buddleia and the Willowherbs were the dominant forage source at the time of survey, though there were a few species recorded here that weren't found elsewhere on site, such as Long-headed Poppy (*Papaver dubium*), Mullein (*Verbascum thapsus*) and Wild Parsnip (*Pastinaca sativa*). Within the area there was also a patch of Nettles (*Urtica dioica*), whilst not used by bumblebees, Nettles are an important foodplant for the caterpillars of certain butterfly and moth species, such as Peacock (*Aglais io*). In total of 23 plant species were observed in Area 3 (Table 5).

***Table 5**: Plant species observed in Area 3. Plants with value to bumblebees are marked with a 🐝 NB. Other plants not marked- still have value to other pollinators as foodplants.*

Species common name	Species scientific name	Flowering?
Buddleia 🐝*	*Buddleja davidii*	Yes
Perforate St John's Wort 🐝	*Hypericum perforatum*	Yes
Creeping Thistle 🐝	*Cirsium arvense*	Yes
Common Nettle	*Urtica dioica*	
Dock	*Rumex sp*	
Field Forget-me-not 🐝	*Myosotis arvensis*	
Willowherb 🐝	*Epilobium sp*	
Great Willowherb 🐝	*Epilobium hirsutum*	Yes
Rosebay Willowherb 🐝	*Chamaenerion angustifolium*	Yes

Bramble 🦋	*Rubus sp*	
Sticky Groundsel 🦋	*Senecio viscosus*	
Ribwort Plantain 🦋	*Plantago lanceolata*	
Long-headed Poppy 🦋*	*Papaver dubium*	Yes
Mayweed 🦋	*Matricaria sp*	Yes
White Musk Mallow 🦋*	*Malva moschata alba*	Yes
Mullein 🦋	*Verbascum thapsus*	
Canadian Fleabane 🦋*	*Erigeron canadensis*	Yes
Black Medick 🦋	*Medicago lupulina*	Yes
Wild Parsnip 🦋	*Pastinaca sativa*	Yes
Spear Thistle 🦋	*Cirsium vulgare*	
Teasel 🦋	*Dipsacus fullonum*	
Hawkbit 🦋	*Leontodon sp*	
Lady's Mantle 🦋	*Alchemilla sp*	

***Image 7**: Area 3 - a wider area on the western boundary of the site.*

Area 4 a small area of grassland (OS grid reference: NT 27842 76525), differs to the rest of the site in its plant assemblage, containing typical wildflower meadow species

such as Bird's-foot Trefoil (*Lotus corniculatus*), Self-heal (*Prunella vulgaris*) and Common Spotted Orchid (*Dactylorhiza fuchsia*) (Images 8-9). Common Spotted Orchid is the most common orchid in the UK and is tolerant of a wide range of conditions, including disturbance (Emorsgate Seeds, 2026). The presence of this species alongside Self-heal and Creeping Buttercup (*Ranunculus repens*) is indicative of damper conditions. The species assemblage indicates an area of low fertility semi-improved neutral grassland with good botanical diversity.

A total of 22 plant species were observed (Table 6). Included within this area are two species, which were found growing in a thin strip of vegetation next to the studio building (OS grid reference: NT 27820 76525), Musk Mallow (*Malva moschata*) (wasn't flowering at the time, but most likely the same White variety recorded in other parts of the site) and Rose Campion (*Silene coronaria*).

Adjacent to this area is a currently unused water tank (OS grid reference: NT 27841 76533), which could be turned into a wildlife pond.

***Table 6**: Plant species observed in Area 4. Plants with value to bumblebees are marked with a 🐝 NB. Other plants not marked- still have value to other pollinators as foodplants.*

Species common name	Species scientific name	Flowering?
Rosebay Willowherb 🐝	*Chamaenerion angustifolium*	
Buddleia 🐝*	*Buddleja davidii*	Yes
Common Spotted Orchid	Dactylorhiza fuchsii	Yes
Herb Robert 🐝	*Geranium robertianum*	
Meadow Buttercup 🐝	*Ranunculus acris*	Yes
Creeping Buttercup 🐝	*Ranunculus repens*	Yes
White Clover 🐝	*Trifolium repens*	
Bird's-foot Trefoil 🐝	*Lotus corniculatus*	
Self-heal 🐝	*Prunella vulgaris*	
Ribwort Plantain 🐝	*Plantago lanceolata*	
Sweet Vernel Grass	*Anthoxanthum odoratum*	
Cock's-foot Grass	*Dactylis glomerata*	
Black Medick 🐝	*Medicago lupulina*	
Creeping Thistle 🐝	*Cirsium arvense*	Yes
Daisy 🐝	*Bellis perennis*	Yes
Dandelion 🐝	*Taraxacum officinale*	
Germander Speedwell 🐝	*Veronica chamaedrys*	
Lady's Mantle 🐝	*Alchemilla sp*	
Ragwort 🐝	*Senecio jacobea*	Yes
Mouse-ear Chickweed 🐝	*Cerastium fontanum*	
Rose Campion 🐝*	*Silene coronaria*	Yes
(White) Musk Mallow 🐝*	*Malva moschata (alba)*	

***Image 8 & 9**: Area 4 – an area of grassland (left) with Common Spotted Orchids present (right).*

Area 5 directly connects to Area 4 and consists of a larger banked area. The vegetation of the top of the bank (OS grid reference: NT 27882 76509) was quite short at the time of the survey, presumably grazed by the rabbits present on site (Image 10), but the sides consist of much taller vegetation. An area to the base of the northern side of this bank is used for composting (OS grid reference: NT 27913 76500). These types of habitat piles can provide possible nesting and hibernation sites for bumblebees and other wildlife (Image 11). The southern facing side (OS grid reference: NT 27881 76501) is slightly more varied with grasses and wildflowers such as Meadow Vetchling (*Lathyrus pratensis*) and Smooth Tare (*Vicia tetrasperma*) present (Image 12). There are also a few trees which have been planted on this side of the bank.

In total 16 plant species were observed in this area (Table 7). Though lower in diversity than the other areas on site, due to the banked nature and the different aspects, this area has the potential to provide nesting and hibernation sites for bumblebees.

***Table 7**: Plant species observed in Area 5. Plants with value to bumblebees are marked with a 🐝 NB. Other plants not marked- still have value to other pollinators as foodplants.*

Species common name	Species scientific name	Flowering?
Rosebay Willowherb 🐝	*Chamaenerion angustifolium*	Yes
Meadow Vetchling 🐝	*Lathyrus pratensis*	
White Clover 🐝	*Trifolium repens*	
Smooth Tare 🐝	*Vicia tetrasperma*	
Creeping Thistle 🐝	*Cirsium arvense*	Yes
Sow Thistle 🐝	*Sonchus sp*	
White Musk Mallow 🐝*	*Malva moschata alba*	Yes
Marjoram 🐝	*Origanum vulgare*	Yes
Meadow Buttercup 🐝	*Ranunculus acris*	
Ragwort 🐝	*Senecio jacobea*	
Bramble 🐝	*Rubus spp*	Yes
Common Nettle	*Urtica dioica*	
Dock	*Rumex sp*	
Cherry 🐝	*Prunus sp*	
Sycamore 🐝 *	*Acer pseudoplatanus*	

Buddleia 🦋*	*Buddleja davidii*	

***Image 10-12**: Area 5 – The largest of the target areas. A banked area with shorter vegetation at the top (top left), northern side with compost area (top right) and southern side of bank with taller more diverse vegetation (bottom).*

5.3 Desk Study

The desk study revealed 190 existing bee records (bumblebees, honeybee and solitary bees), across 12 different species of bees within 2km of the site (Table 8). Of these, 170 are records of bumblebees, across eight different species, seven of the UK's 'Big Eight' common and widespread species and one of the six cuckoo species found in the UK. 2006).

***Table 8**: Bee records from within a 2km radius of FirstStage Studios (NBN Atlas/BeeWalk).*

Species common name	Species scientific name	Number	Conservation Status
Garden Bumblebee	*Bombus hortorum*	2	Common and widespread
Tree Bumblebee	*Bombus hypnorum*	34	Common and widespread
Red-tailed Bumblebee	*Bombus lapidarius*	16	Common and widespread
White-tailed Bumblebee	*Bombus lucorum*	8	Common and widespread
Buff-tailed Bumblebee	*Bombus terrestris*	42	Common and widespread
Common Carder Bee	*Bombus pascuorum*	57	Common and widespread
Early Bumblebee	*Bombus pratorum*	10	Common and widespread
Southern Cuckoo Bee	*Bombus vestalis*	1	Common and widespread in central and southern Britain
Fork-tailed Flower Bee	*Anthophora furcata*	2	Widely distributed in England, Wales and Scotland
Davies' Colletes	*Colletes daviesanus*	10	Widely distributed throughout England, Wales and the Channel Islands, but scarce in Scotland
Red Mason Bee	*Osmia bicornis*	5	Common in the UK with a widespread distribution across England and Wales, rarer in Scotland
Honeybee	*Apis mellifera*	3	Common and widespread

Widening the search to a 5km radius reveals many more records. Within 5km a total of 8109 existing bee records (bumblebees, honeybee and solitary bees), across 43 different species of bees (Table 9). Of these 7130 are records of bumblebees, demonstrating that this is a well-recorded area for bumblebees. These records comprise 12 different species, including seven of the UK's 'Big Eight' common and widespread species, as well as four of the six cuckoo bumblebee species. These records also include four records of Bilberry Bumblebee (*Bombus monticola*), a nationally scarce species in the UK. Typically, an upland species, this species can also be found using gardens and occasionally recorded at sea-level. It was last recorded in 2025 on Buccleuch Place in Edinburgh, 4km southwest of the studios.

***Table 9**: Bee records from within a 5km radius of FirstStage Studios (NBN Atlas/BeeWalk).*

Species common name	Species scientific name	Number	Conservation Status
Garden Bumblebee	*Bombus hortorum*	80	Common and widespread
Tree Bumblebee	*Bombus hypnorum*	645	Common and widespread
Red-tailed Bumblebee	*Bombus lapidarius*	1215	Common and widespread
White-tailed Bumblebee	*Bombus lucorum*	346	Common and widespread
Buff-tailed Bumblebee	*Bombus terrestris*	2177	Common and widespread
Common Carder Bee	*Bombus pascuorum*	2174	Common and widespread

Early Bumblebee	*Bombus pratorum*	414	Common and widespread
Bilberry Bumblebee	*Bombus monticola*	4	Nationally Scarce
Gypsy Cuckoo Bee	*Bombus bohemicus*	57	Less common but still widespread
Field Cuckoo Bee	*Bombus campestris*	4	Less common but still widespread
Forest Cuckoo Bee	*Bombus sylvestris*	7	Less common but still widespread
Southern Cuckoo Bee	*Bombus vestalis*	7	Common and widespread in central and southern Britain
Gwynne's Mining Bee	*Andrena bicolor*	5	Common and widespread in England and Wales, more scattered in Scotland
Clarke's Mining Bee	*Andrena clarkella*	115	Common and widespread
Grey-banded Mining Bee	*Andrena denticulata*	1	Although widely dispersed throughout Great Britain and Ireland, this species is localised and rarely frequent
Yellow-legged Mining Bee	*Andrena flavipes*	1	Widely distributed throughout southern England and the south coast of Wales. This is the only confirmed record from Scotland
Orange-tailed Mining Bee	*Andrena haemorrhoa*	71	Common and widespread
Bilberry Mining Bee	*Andrena lapponica*	1	Locally common
Buffish Mining Bee	*Andrena nigroaenea*	19	Common and widespread
Chocolate Mining Bee	*Andrena scotica*	30	Common and widespread
Impunctate Mini-miner	*Andrena subopaca*	6	Found throughout much of Britain and Ireland, often locally common
Wilke's Mining Bee	*Andrena wilkella*	1	Widely distributed throughout Britain
Wool Carder Bee	*Anthidium manicatum*	42	Widely distributed throughout much of southern England and Wales, becoming scarcer in the north
Fork-tailed Flower Bee	*Anthophora furcata*	12	Widely distributed in England, Wales and Scotland
Hairy-footed Flower Bee	*Anthophora plumipes*	27	Common and widespread
Davies' Colletes	*Colletes daviesanus*	55	Widely distributed throughout England, Wales and the Channel Islands, but scarce in Scotland
Heather (Girdled) Colletes	*Colletes succinctus*	2	Widely distributed throughout Britain
Yellow-legged Furrow Bee	*Halictus rubicundus*	52	Widely distributed across the UK
Bronze Furrow Bee	*Halictus tumulorum*	1	Common and widespread
Bloomed Furrow Bee	*Lasioglossum albipes*	13	Common and widespread
Common Furrow Bee	*Lasioglossum calceatum*	4	Widespread and fairly frequent
Turquoise Furrow Bee	*Lasioglossum cupromicans*	1	Mostly found in England and Wales particularly at higher altitudes
Smeathman's Furrow Bee	*Lasioglossum smeathmanellum*	2	Largely restricted to southern Britain
Patchwork Leafcutter Bee	*Megachile centuncularis*	7	Widespread
Willughby's Leafcutter Bee	*Megachile willughbiella*	14	Common and widespread across England and Wales, populations increasing in Scotland
Fabricius' Nomad Bee	*Nomada fabriciana*	1	Common and widespread in southern Britain, sporadic in Scotland
Gooden's Nomad Bee	*Nomada goodeniana*	19	Common and widespread
Early Nomad Bee	*Nomada leucophthalma*	17	Widely distributed throughout southern England and south Wales coast. Considered very rare in Scotland
Marsham's Nomad Bee	*Nomada marshamella*	16	Fairly common and widespread throughout much of Britain

Blunt-jawed Nomad Bee	*Nomada striata*	1	Widely but very locally distributed throughout much of Britain
Red Mason Bee	*Osmia bicornis*	21	Common in the UK with a widespread distribution across England and Wales, rarer in Scotland
Dark-winged Blood Bee	*Sphecodes gibbus*	2	Widely distributed through Britain to southern Scotland
Honeybee	*Apis mellifera*	420	Common and widespread

A search on DEFRAs MAGIC mapping system and Scotland's Environment Web Integrated Habitat Network Map, shows that the site lies nearby to important habitats. Most notably, less than 300m away is the Firth of Forth which is designated a Ramsar site, a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA) and contains a Marine Protection Area (MPA). The Firth of Forth is a complex estuary with a wide mix of habitats including saltmarsh, mudflats, sand dune and lowland neutral grassland. It is home to a rich diversity of flora and fauna, including a wide variety of breeding and overwintering birds, rare beetles and plants. Many of these plants are favourites of bumblebees including Viper's Bugloss (*Echium vulgare*), Yellow-horned Poppy (*Glaucium flavum*) and Wild Clary (*Salvia verbenaca*) (NatureScot, 2026). The site is also within 600m of the Outer Firth of Forth and St Andrews Bay Complex SPA and just over 1km away from another SPA, the Imperial Dock Lock, Leith. There are also two other SSSI's within 5km of the studios: Arthur's Seat Volcano and Duddingston Lock.

The site is also well connected to the Water of Leith, along which there are already four BeeWalks set up and walked by the Water of Leith conservation group. This will be one of the reasons why this is a well-recorded area.

Due to its position in the landscape, FirstStage Studios represents a good opportunity to provide connectivity between important habitats locally, having the potential to become an important 'stepping stone' and allowing bumblebees and other wildlife to move through the wider landscape.

6. Recommendations

Based on the results presented above the following recommendations have been made to create and enhance opportunities for bumblebees and other wildlife at FirstStage Studios.

6.1 Bumblebee habitat requirements

Basic habitat requirements for bumblebees include suitable nesting areas (e.g. tussock grassland or abandoned rodent burrows (Prys-Jones and Corbet, 2014)) and good availability of diverse forage sources with no 'gaps' within the main bumblebee flight season; March-October. There is also increasing evidence that due to milder winters, the Buff-tailed Bumblebee is remaining active even throughout the winter

months and so an all-year round supply of forage is becoming increasingly important (Stelzer *et al*., 2010).

The majority of bumblebee species in the UK nest underground, using old rodent burrows i.e. beneath hedgerows, shrubs, compost heaps, log piles etc. One species; the Tree bumblebee (*Bombus hypnorum*), uses tree cavities, bird boxes and even roof spaces for nesting. Carder bees, such as the Common Carder Bee (*Bombus pascuorum*) (Image 13), tend to prefer longer, tussock-forming grass areas, woody debris piles and areas under hedgerows (Bees, Wasps and Ants Recording Society, 2022).

Image 13: *Common Carder Bee (Bombus pascuorum) on Creeping Thistle (Cirsium arvense). Photo credit: Clare Alley.*

6.2 Management recommendations

Rec 1: Planters

There are a couple of existing planters outside the building entrance. These could be rejuvenated by replacing the plants with bumblebee friendly alternatives. Retain the Agapanthus and Hosta's, as these are good bumblebee plants, but the rest could be replaced (Image 14). It would also be good to add in additional larger planters as there is a big space outside of the building which isn't currently utilised. It was noted that there were some existing materials on site at the time of survey, that looked suitable for use as planters (Image 15).

Image 14 & 15: *Existing planter with Agapanthus in flower (left) and unused planters which could be upcycled (right).*

When selecting plants to include in a planter, first consider the location and how much sun the planter will get. There will be a wider variety of plants to choose from, for a planter in a full to part-sun position, but there are still plenty of plants that can do well in a shady position. Selecting perennial plants, rather than annuals, provide good value for money as they will put on a display for several years. Choose plants that can do well in a range of conditions, including dry periods.

Plant suggestions for planters in full to part-sun:

- Edible herbs e.g. Rosemary (*Salvia rosmarinus*), Creeping Wild Thyme (*Thymus pulegioides*), Chives (*Allium schoenoprasum*), Oregano (*Origanum vulgare*)
- Perennials e.g. Salvia 'Javier', Mexican fleabane (*Erigeron karvinskianus*), Californian poppies (*Echscholzia californica*), Verbena (*Verbena bonariensis*), Coral bells (*Heuchera spp.*), Echinops 'Veitch's blue' (*Echinops ritro*), Geranium 'dreamland' (*Geranium sp*), Echinacea 'Kim's knee high' (*Echineacea pupurea*), Lambs-ear (*Stachys byzantina*),
- Bulbs and compact plants – good for underplanting for early spring colour and forage resources e.g. Crocus (*Crocus spp.*), Primrose (*Primula vulgaris*), Grape Hyacinth (*Muscari armeniacum*), Common Snowdrop (*Galanthus nivalis*)

Plant suggestions for planters in shade:

- Perennials e.g. Catmint (*Nepeta x faassenii*) (a compact variety good for smaller spaces), Bugle (*Ajuga reptans*), Coral Bells, Hellebores (*Helleborus spp.*), Foxglove (*Digitalis purpurea*)
- Alliums (*Allium spp.*) – good for filling space between larger plants and many varieties to choose from
- Bulbs and compact plants – good for underplanting for early spring colour and forage resources e.g. Alliums, Crocus, Common Snowdrop, Lungwort (*Pulmonaria spp.*), Primrose, Cowslip (*Primula veris*)

Prior to planting, soak the root ball of the plants and water the whole planter well following planting, to aid establishment. The planters will need regular watering as plants are establishing and through the spring and summer. A pea gravel or bark mulch added to the planters following planting will help maintain a tidy appearance as well as retaining moisture. A general use slow-release organic feed can be added to planters annually in spring, to aid in maintaining good plant health and successful flowering. Deadheading of spent flowers helps keep displays looking tidy and attractive and often encourages repeat flowering to occur, helping to ensure a longer flowering season. Some species may self-seed, simply remove any unwanted plants and dispose of appropriately.

Adding raised rain garden beds could also be considered, to capture rain flowing off the building roof. Rain gardens help to slow the flow of water into drains and watercourses and therefore, help to reduce localised flooding (Wildfowl and Wetlands

Trust, 2026). They can also be planted with a range of native pollinator friendly plants such as Yellow Flag Iris (*Iris pseudacorus*), Purple Loosestrife (*Lythrum salicaria*) and Bugle, providing an extra boost for bumblebees and other insects. More can be found out about how to make a rain garden on the Wildfowl and Wetlands Trust Website - https://www.wwt.org.uk/discover-wetlands/gardening-for-wetlands/how-to-make-a-rain-garden

Though the survey was carried out in the late flowering season, a fair assumption from the species that were found, is that the site will likely lack in early spring forage. This should be taken into consideration when creating any new planters, ensuring to include some early forage (e.g. native Primrose, Snowdrops, Crocuses, Lungwort, Rosemary). An additional consideration could be the addition of early flowering fruit trees such as Crab Apples and Plums. Currently, there aren't many trees or woody species on site, where opportunities arise to plant new trees, this will improve flower availability (particularly if spring flowering species are chosen) and increase structure and diversity onsite. Avoid planting new trees on the grassland areas (Area 4-5) as this will shade out the wildflowers. Small fruit trees can be grown in large pots/planters though require regular watering.

Rec 2: Ponds for pollinators

Adjacent to the grassland in Area 4, there is a raised water tanker approximately 251.14 m² (Image 16). This is currently unused and could be enhanced for wildlife by adding in pollinator friendly pond plants.

Image 16: *Water tank which could be turned into a wildlife pond.*

Consider adding in these pollinator-friendly plants to provide a variety of forage extending throughout the main bumblebee flight season: Yellow Flag Iris (*Iris pseudacorus*), Marsh Marigold (*Caltha palustris*), Water Forget-me-not (*Myosotis scorpioides*), Purple Loosestrife (*Lythrum salicaria*), Flowering Rush (*Butomus umbellatus*), Water Speedwell (*Veronica anagallis-aquatica*) and Watermint (*Mentha aquatica*). Native oxygenating plants such as Water Crowfoot (*Ranunculus aquatilis*)

and Hornwort (*Ceratophyllum demersum*) will also be needed to absorb excess nutrients, helping to keep the pond ecosystem in balance and reduce algal blooms.

Plants can be established in traditional pond planter baskets or on floating platforms. Pre-planted coir rolls might be particularly suited to this area and could be attached directly to the margins of the water tank. Ensure there is a means of access to and from the pond for wildlife in several locations to prevent wildlife becoming trapped.

Once established occasional clearance of excess vegetation will be required as plants begin to spread, particularly Yellow Flag Iris. Any removal of vegetation should be done in autumn to avoid disturbance during the amphibian breeding season in spring, and the winter months when amphibians are hibernating. When removing vegetation from within the pond ensure at least 25% of the vegetation covering the pond remains. Lie the removed vegetation at the side of the pond for a day or two, to allow any creatures to go back into the pond, then remove the arisings and add to the designated compost area. Ensure cuttings aren't left too close to the pond as this will cause nutrient build up and algal blooms, which will suffocate the pond.

Rec 3: Managing existing grassland areas

Area 4 already consists of grassland of good diversity. To ensure this area remains in good condition we recommend establishing an annual cut and collect regime:

- Cut the area(s) once annually, once most flowers have set seed (late August – early September)
- If possible, leave the cuttings in place for 1-2 days to allow the seeds to drop, then rake and remove – it's important to remove the cuttings to avoid nutrient build-up as wildflowers thrive in low nutrient conditions
- Cut any re-growth throughout autumn and winter if needed up until around March – due to rabbits onsite providing some grazing, a second cut may not be needed

This same regime can also be used to manage the strip of vegetation within the car park in Area 1 (OS grid reference: NT 27937 76409).

For Area 5 we recommend establishing a similar regime, cutting the top of the bank at the end of each summer as above, but for the sides cutting these on a 3-year rotational basis, to allow areas of taller vegetation to develop which offer potential nesting opportunities. To do this cut one third of each side of the bank (southern and northern side) once a year at the end of summer/early autumn and rotate which section gets cut each year. As for the other areas ensure arisings are collected and deposited in a designated compost area or taken off site for composting. There is already a sacrificial area for composting on site in Area 5, where arisings can be disposed of. Compost areas provide a different habitat and can offer more hibernation/nesting opportunities

for bumblebees, as well as for other insects, reptiles, amphibians and mammals, such as Hedgehogs.

Rec 4: 'Weed' Removal

Directly outside the building's entrance is a wide paved area where unwanted plants readily grow along the gaps in-between the bricks. To keep this area looking neat, the removal of these plants is desired. The best way to do this is through the manual removal through hand-pulling or the use of hand tools such as hoes. Other mechanical methods of weed removal such as heat treatment (flame/steam) and infra-red methods are also available. Search for services providing these approaches locally. The addition of new planters in this area as suggested in Rec 1, would also help to reduce the surface area needing weeding and provide alternative sources of forage for pollinators, whilst brightening the area up for the use of site staff and visitors.

The FirstStage site is already managed without the use of herbicides or pesticides and is maintained through a well-established permaculture gardening regime.

Rec 5: Scrub Control

Areas 1, 2 and 3 all contained some dense areas of Bramble, Thistles and/or Nettles. Whilst these are all important pollinator plants, whether that be for forage, creating nesting habitats or as caterpillar foodplants, these plants do have a habit of taking over as they spread and outcompete other wildflowers. Therefore, occasional scrub clearance and trimming will be required to ensure other wildflowers don't get outcompeted and to keep areas around buildings and car park edges neat. Any scrub clearance works should be done outside the main bird nesting season, which runs from March 1st-August 31st. Light trimming will likely be need every year especially around the building and car park edges, but more intensive scrub clearance can be done on a rotational basis and likely only necessary every 2-4 years.

Rec 6: Signage and communicating change

We recommend placing signage onsite to explain the decisions made about the management of the site. Simple signs with messages along the lines of "no-mow wildflower area" or "excuse the 'weeds' we're feeding the bees" are often the most effective. We can offer advice and help designing signs to be bespoke to the site.

At Bumblebee Conservation Trust we also offer a range of other services, which include talks, bee safaris and bumblebee identification training days. The latter being aimed at those who are interested in setting up their own BeeWalk survey. A talk combined with a bee safari is often a good way to engage with site users and make them aware of the wildlife sharing the site, as well as the reasons behind management approaches. Please let us know if you are interested in exploring these ideas further.

7. Next Steps

We recommend scheduling a next steps meeting once the report has been reviewed. During this session, we will bring the report to life, develop a practical action plan for on the ground work, and decide on a communications plan in order to promote the work we have been doing together.

We advise implementing the actions detailed within this report to improve bumblebee friendly habitat and increase biodiversity at the site, taking into account the needs of the species onsite and those that the site has the potential to support. We can offer further support and advice to help bring these recommendations to life.

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