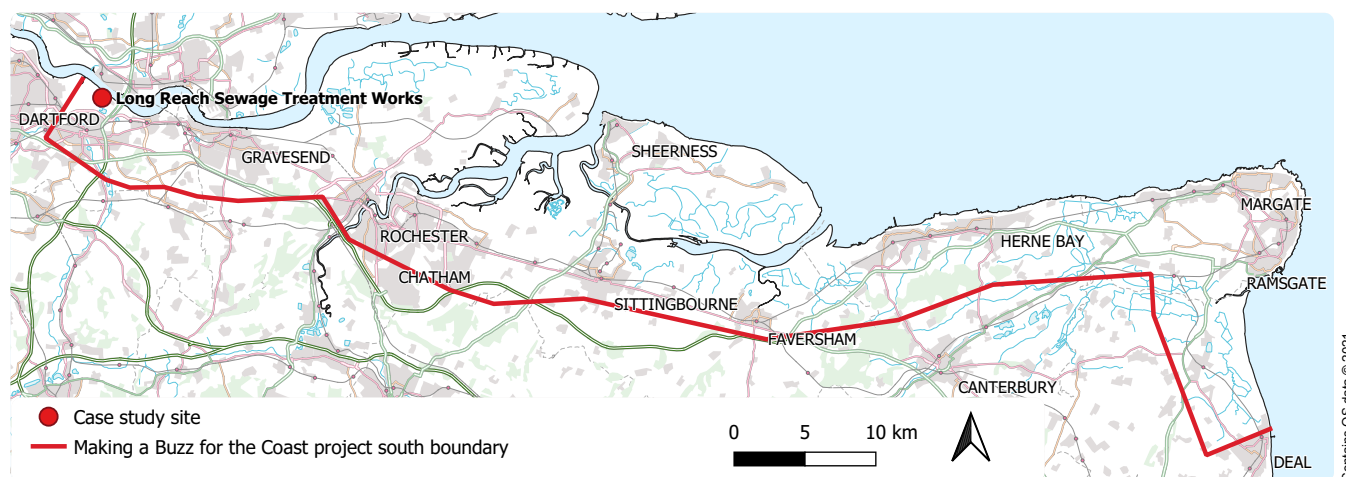


Making a Buzz for the Coast

The north Kent coast is recognised nationally for the diversity of bumblebee species it supports with 22 of the 24 UK species, including five of the seven nationally rare and scarce bumblebees. Much of Kent's cultural and economic heritage is intrinsically linked to bees, with a landscape of orchards, arable flowering crops and grassland. Kent's bumblebee diversity can be linked to its varied habitats and the milder southern climate.



The Making a Buzz for the Coast project was set up to re-address the decline and help to conserve wild bees in north Kent. Making a Buzz for the Coast is working to safeguard Kent's wild bees, focusing on coastal areas from Dartford to Deal. The aims of this ambitious project, are 1) to create and restore flower-rich habitat 2) recruit, train and support volunteers to take action for bumblebees and other wild bees 3) raise awareness about the value of these important insects and their conservation needs.

Making a Buzz for the Coast is a multi-partner project led by Bumblebee Conservation Trust (BBCT) and with key partners including Kent Wildlife Trust, Kent County Council, Natural England, and Royal Society for the Protection of Birds, Swale Borough Council, Thames Water and Thanet District Council, as well as numerous landowners and supporters. Its primary funder is the National Lottery Heritage Fund.



Abundance of White dead-nettle in Compartment 1b.

Site introduction

Long Reach is a fully operational sewage treatment works on the Kent coast owned and managed by Thames Water Utilities Ltd. The 27ha site is situated on the Thames Estuary at Dartford and is comprised of patches of improved grassland, trees and scrub surrounding the site infrastructure. The site has previously been a receptor site for Common lizard (*Zootoca vivipara*) and maintains a good population on site.

The River Thames forms the northern boundary of the site and Dartford Marshes lie to the west. Industrial/brownfield land is situated to the east (and the M25) and a residential housing estate has recently been built to the south.

The site is not open to the public but is well used by Thames Water staff and other operational site visitors. The site can be seen from the Thames river pathway and by local residents in the adjacent housing estate. In addition, Thames Water built an education centre onsite in 2018 to enable organised visits and tours of the site by schools and local community groups.

Soil tests were carried out and soil fertility was found to be very high throughout the site, suggesting the grassland areas were once artificially improved. Due to this, an approach was taken to work with the existing soil conditions and what is already on the site and choose plants to add accordingly.

Two rare priority bumblebee species were recorded at Long Reach during BBCT site visits in the development phase of the project. The Brown-banded carder bee (*Bombus humilis*) was recorded in both 2015 and 2016. Three Shrill carder bee workers (*Bombus sylvarum*) were recorded during 2015, this was the last time these species were recorded prior to the project delivery phase starting. By enhancing habitat on this and other greenspaces along the Thames Estuary, there is potential to create connectivity for these species to thrive in this area.

The Shrill carder bee *Bombus sylvarum*

The Shrill carder bee is one of the rarest and most vulnerable bumblebee species in England and Wales; now only found in five isolated population areas across England and Wales. The Shrill carder bee is a late-emerging species (seen from late-April) of open, flower-rich landscapes and requires abundant forage close to suitable nesting areas, throughout its flight season (April–October). Males and new queens are produced in late August to September and the colony life cycle is completed by the end of September or early October. This long-tongued bee prefers to forage on plant species with tube-like flowers including White dead-nettle and Black horehound.

Nesting sites should be warm, sheltered and undisturbed. Nesting takes place on or close to the surface of the ground in undisturbed long vegetation or in grass tussocks in sunny areas. Ideally nesting habitat should be cut on a 2–3-year cycle to allow a denser sward to develop.

Habitat management and site condition

2.5ha of the site are included in Making a Buzz for the Coast management plans written during the development phase of the project.

Previous management

Prior to the project, the grounds maintenance cutting regime (eight times a year, mostly over spring and summer with cuttings left and not removed) drastically reduced the amount of forage available for bees at Long Reach. However, when these areas were allowed to grow, good forage patches for bumblebees and other insect pollinators were present. White dead-nettle is a key forage plant for rare long-tongued bumblebee species which the site has an abundance of when managed correctly. All three of the Shrill carder bees recorded at Long Reach in 2015, prior to the project, were foraging on White dead-nettle.

New management

Key priorities identified for this site were to increase the floristic diversity and the abundance of forage for bumblebees and other pollinators, and to create connectivity across the site as well as connect to surrounding marsh land and the Thames River Pathway.

Management changes were focused on reducing the number of amenity cuts in improved grassland areas and adding extra forage through horticultural planting around site buildings. The areas for reduced cutting were identified in parts of the site that do not need amenity asset management around active site buildings, therefore not impacting site operations. A flowering hedgerow with a long blossom sequence (providing hedgerow forage throughout spring and summer) has also been added, increasing the available forage and also doubling as a screen for site activities.

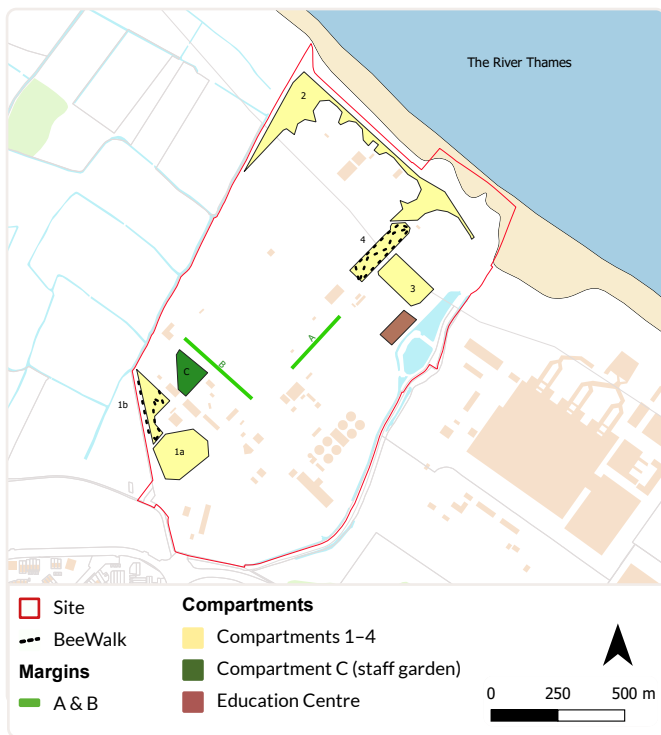
Patches of improved grassland are now cut once a year in late summer or early autumn, allowing plants to flower and provide forage throughout the bumblebee season. A particular focus to provide late season forage for late flying priority bumblebee species such as the Shrill carder and Brown banded carder. Cuttings are removed which helps to reduce nutrient levels in the soil and keeps the grass sward more open which benefits wildflower diversity and helps reduce weed burden. These areas have been fenced and signage added to alert staff of management changes specifically for bumblebees as these areas look drastically different and can appear 'unkept' compared to the amenity cutting regime prior.

Tussocky grassland habitat for nesting priority carder bumblebees has also been created on site, these areas are cut and removed on a 2–3-year rotation; this habitat also benefits the onsite reptile population.



Photo credit: Kate Fildczuk-Sterry/Bumblebee Conservation Trust

'Pardon the weeds' signage around all compartments.



Engagement

Over the course of the project much effort has been directed to engage and educate Thames Water site staff with the hope that they would carry on monitoring the bumblebee species on site after the project and also continue to practice and promote bumblebee habitat management.

The active presence of the project team on site generated much interest for the project and bumblebees with Thames Water staff with a bumblebee identification training being held to encourage this. A group of site staff became regular attendees of the BeeWalk surveys and joined the multiple conservation task days. With the help of Thames Water staff, extra forage, such as a 10m long lavender hedge, has been added to site.

The onsite Education Centre has become a hub for project activity on site, with conservation task days being run from the centre as well as horticultural planting around the building itself. Raising awareness of bumblebee conservation and the work being carried out through Making a Buzz for the Coast have formed part of the educational tours of the site.

Survey and monitoring overview

Baseline monitoring for plants and bumblebees took place in 2015 and 2016.

During 2018, 2019 and 2020, plant monitoring has taken place on site. Surveys took place three times a year in the bumblebee flight season (early, mid and later season surveys). 1m² quadrats were randomly selected across Compartments 1b and 4 and all plant species were recorded within each. The percentage cover of each species was estimated and other measurements were taken such as vegetation height and percentage of bare ground.

In 2018, two bumblebee transects were set up at either end of site using the BeeWalk methodology, which forms part of Bumblebee Conservation Trust's national monitoring scheme. Bumblebees were counted monthly along this fixed route between March and October each year. The transect was walked by a Making a Buzz for the Coast conservation officer with the help of Thames Water site staff. Other insect species were recorded on an ad-hoc basis as well as bumblebee species found in other compartments on site.

Results

2017-2020 survey results

The botanical surveys provided a record of the appearance of grassland flowering species once cutting was reduced, with an increase in the number of species recorded overall in Compartments 1B and 4.

There was a noticeable increase of white dead nettle coverage in Compartment 1b and an increase of flower species in Compartment 4. An increase in key grassland forage plants in Compartment 4 was also evident.



Task day: Lavender hedge planting.



Shrill carder bee, on White dead-nettle.

Bee survey results

Sightings of the Shrill carder bumblebee have changed over the course of the project. During summer 2018, before any major planting and when the management changes were fairly new, only one Shrill carder bee was recorded during the surveys (BeeWalk and ad hoc walkover surveys). In August 2019, just one year later, 27 Shrill carder bees were recorded during the August BeeWalk alone, a very exciting moment to find such numbers previously not seen on site. Distribution had also changed, previous historical records have recorded the Shrill carder bee in one compartment only at Long Reach (C1B) but in 2019 sightings of Shrill carder bee elsewhere on site were recorded for the first time (C1B, C4 C2 and the Education Centre), feeding on forage we had added during the project all the way to the other end of site!

Good numbers of the rare and scarce Brown banded carder were recorded regularly during BeeWalks, becoming the most commonly recorded bumblebee throughout the course of the project, with the Shrill Carder bee coming in second.

A further nationally scarce bumblebee species was recorded during a BeeWalk in July 2019, the Red-shanked carder bee (*Bombus ruderarius*). This bumblebee has not been recorded on site previously and is an exciting addition to the already rare and scarce bees found at Long Reach.

Ongoing management

Thames Water ground maintenance contractors will continue to cut and remove compartments in line with the management plan guidelines with onsite Thames Water staff taking regular care of horticultural planting areas.

Four interpretation boards will be installed at key points on the site, to provide information about the importance of Long Reach for rare bumblebees, together with identification illustrations. These panels will help staff and visitors to understand the different habitat management being carried out. Site staff have suggested they will keep a regular eye out for Shrill carder bees on site and hopefully the BeeWalks will be walked by site staff after the project finished at least three times a year to capture bumblebee species present during spring, summer and early autumn.

