Bee Healthy Project Guide

toe Trust for Oxfordshire's Environment

CENTRE for SUSTAINABLE HEALTHCARE

SMITHS BLETCHINGTON

Wild Oxfordshire

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Bee Healthy Project Guide

The Bee Healthy Project was created through a partnership between the Trust for Oxfordshire's Environment, Wild Oxfordshire and the Centre for Sustainable Healthcare with support from the Postcode Local Trust. This guide is by Andriele Madison from the Centre for Sustainable Healthcare.

Acknowledgements

We'd like to thank the staff, patients and volunteers at Summertown Health Centre, St. Bartholomew's Medical Centre and Windrush Medical Practice for all their contributions to this project.

We would also like to acknowledge the help and training provided by the Bumblebee Conservation Trust throughout the life of the project.

Bee Healthy was made possible by funds provided by Postcode Local Trust, a grant-giving charity funded entirely by players of People's Postcode Lottery.

Why do bumblebees need our help?

Bumblebees are an essential part of our ecosystem and without them we cannot grow the crops we need to support our food chains. Worldwide, more than 75% of the leading crop species we consume depend directly or indirectly on pollinators (Klatt et al., 2014). This means that we need pollinators for growing crops such almonds, beans, berries, nuts, coffee and much more (*Bees and Pollinators: A Commonwealth Concern*, 2015).

Major increases in the demand for cheap and unblemished crops, the increased use of pesticides, loss of habitat and climate change are all contributors to declines in bumblebee populations (Marinelli, 2017; *Why Bumblebees Need Our Help*, n.d.). In the UK alone, during the 20th century two bumblebee species have gone extinct with another eight species experiencing large scale declines (*Why Bumblebees Need Our Help*, n.d.)

Bumblebees can generally only fly around 40 minutes between feedings. Because of this, supporting pollinator populations with additional plants is very important - as described by The Little Green Space Environmental Project: “one nectar-rich flower could be the pit stop that saves a bee” (*Help Nature, Nature Helps*, 2020).

Green spaces in built up areas can provide vital havens for pollinators (Marinelli, 2017) whilst also bringing enjoyment to the people who have access to them (Feldman, 2015). Building on this knowledge, we created the Bee Healthy Project.

What is Bee Healthy?

Bee Healthy was an innovative project that worked closely with GP surgeries in Oxfordshire to create attractive herbaceous borders containing nectar-rich plants to support nearby bee populations. The project was also well received by patients, staff and other community members who had access to these beautiful plant borders.

What is in this guide?

This guide provides practical information for community organisations such as NHS health centres, community centres, schools, places of worship and others that wish to create their own bee healthy plant borders. We discuss our own experiences with implementing this project as well as considerations for the implementation of similar projects in the UK.

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About the Bee Healthy Project

The Bee Healthy project was developed from an idea put forward by Oxfordshire-based ecologist Craig Blackwell. He worked with local volunteers at Chipping Norton Health Centre to create a garden of nectar-rich herbaceous perennials attractive to bumblebees and other pollinators, and for the benefit of patients, staff and visitors. Following this pilot, it became clear there was interest in expanding the project.

The Trust for Oxfordshire's Environment teamed up with the Centre for Sustainable Healthcare (CSH) and Wild Oxfordshire to organise and implement the Bee Healthy project at other surgeries. The project was supported by the Postcode Local Trust, a grant giving charity funded entirely by players of People's Postcode Lottery.

We set out to look for partner surgeries in Oxfordshire interested in developing green plant borders within their sites. CSH, an organisation with links to local health care providers, promoted Bee Healthy through the NHS Oxfordshire Clinical Commissioning Group, explaining that the project would support three surgeries in establishing Bee Healthy borders, both by funding plants and sharing knowledge.

We received expressions of interest from eight surgeries. The project's ecologist, Roselle Chapman carried out an analysis of sites to understand the land available for planting the Bee Healthy borders at each location. We also engaged with these surgeries to assess their connections to local volunteers who might be able to help in supporting the project, including

maintaining the spaces long term. The project's ecologist ensured that the plant borders would be developed in sunny locations with nearby green spaces. This was important for the health of our borders and to ensure that pollinating insects would be able to access the plants.

Our project selected Summertown Health Centre and St. Bartholomew's Medical Centre in Oxford, and Windrush Medical Practice in Witney.

Summertown Health Centre

Although Summertown Health Centre is located in North Oxford near shops and on a busy road, it is near an open green space and an allotment, which was very important for ensuring pollinators could access the garden. There was a lot of potential around this site for developing a pleasant green space for both bees and people. Our main contact at the surgery was a local GP keen to support pollinator populations and develop the outdoor spaces available around the surgery.

Other nursing and administrative staff became involved with the project and participated in planting the garden. The garden at Summertown Health Centre now includes bee hotels and a bench. These were sourced and installed by staff who were enthusiastic about maintaining an enjoyable outdoor space at the surgery.

The space has been very popular among staff working during the Coronavirus outbreak:

"The bee garden is a source of great enjoyment every morning when we come into the surgery. Lots of people have commented on the flowers appearing. Especially in these strange times, it provides a nice distraction and a reminder of the natural world, oblivious to it all."

-GP, Summertown Health Centre

St. Bartholomew's Medical Centre

St. Bartholomew's Medical Centre is located in East Oxford, within a thriving and diverse community. The surgery is also placed next door to two other health centres and a dental clinic. Creating bee friendly borders at St Bartholomew's meant that many of the healthcare providers and patients from surrounding health centres would also be able to see and have access to the space.

Prior to Bee Healthy being implemented, the plants borders near the entrance of the surgery were degraded and in need of care. Although the outdoor space is quite limited, as the building is surrounded by a car park, the site offered an opportunity to show how urban health centres can adapt even very small outside spaces to benefit both pollinator and human health.

Windrush Medical Practice

Windrush Medical Practice is located approximately 12 miles west of Oxford, in Witney. Near the surgery there is also a pharmacy and a hospital. This site has ample outdoor space for developing a bee garden. The back of the site already contained a meadow including lavender plants which provide food for bees between June and July. Developing Bee Healthy borders here meant we could extend the availability of food for bees throughout the growing season.

The strong patient group at Windrush Medical Practice was a major driver for implementing Bee Healthy at this location as this ensured the gardens would be well looked after long term.

Selecting plants and purchasing guidelines

In choosing appropriate plants for our Bee Healthy borders, our project had the help of a community ecologist and a landscape designer We aimed to include plants to provide food for bees and other pollinators throughout their flight season. We also looked for plants that are low maintenance and do not need constant watering. Toward this, for each site we selected combinations of plants that flower from March through to October. This meant that each surgery had around 15 plant species in their garden.

We included perennials such as *Allium cristophii*, 'star of Persia', and *Allium hollandicum*, 'purple sensation', which flower in the spring alongside other plants such as the *Origanum vulgare,* 'oregano', *Stachys byzantine,* 'lamb's ear', and *Salvia nemorosa*, 'caradonna', which flower later in the year, usually between June and September. Variation is essential for a garden to be a source of food for pollinators throughout the year. Planting a combination of these plants in flower beds also allows for a green space that is very pleasant, with different flowers blooming at different times during the growing season.

At each location we worked to maximize the potential of the spaces available for planting the Bee Healthy borders. Developing a garden plan which included details of the selection of plants for each border and a map showing where they would be placed, also proved important when

purchasing plants. Our garden plans helped us understand the exact measurements of our planting areas and approximately how many plants were needed at each surgery.

When drawing up our garden maps we aimed to include plants in groups of three of the same species, avoiding straight lines and planting in a triangular shape. In borders with access from one side we placed tall species at the back, grading down to short species at the front, whereas, in borders with access from all sides we placed tall species in the middle with shorter species around them.

When selecting a local nursery, it was important to bear in mind that a number of pesticides can be toxic for bees. Before purchasing the plants, our team researched different nurseries to understand more about their practices. Our plants came from nurseries that do not use neonicotinoids, for example, as these pesticides have been shown to be harmful to both honeybees and wild bees (Kom et al., 2019). We selected nurseries which used natural processes such as beneficial bacteria to ensure healthy plants.

What else to keep in mind?

Potted plants advertised as 'bee-friendly' can sometimes include soil which has been treated with neonicotinoids, among other pesticides (Lentola et al., 2017). When selecting a nursery, it is important to investigate that both the plant and the soil do not contain harmful pesticides.

Below are some examples of pollinator friendly plants used in the Bee Healthy project with management advice written by our project's ecologist. The Royal Horticulture Society's website offers extensive information on over 3,000 pollinator-friendly plants, including advice on plant care. More information on bee-friendly nectar-rich plants can also be found on the Bumblebee Conservation Trust's website.

Bumblebee on Allium at Summertown Health Centre

	Plant	Flowering period	Management advice
	*Allium christophii* 'star of Persia'	April-June	Will self seed. Cut back flower stalk after flowering. Cut back leaves when they start to decompose.
	*Allium hollandicum* 'purple sensation'	May-June	Dies back to below ground level each year in autumn. Fresh new growth appears in spring. No pruning required. Clear the leaves from the bed once they start to decompose. Split and divide large clumps in autumn or spring.
	*Cotoneaster horizontalis* 'wall spray'	May-June	After flowering, lightly cut back any branches that spoil the symmetry of the plant. Apply a generous 5-7cm (2-3in) mulch of well-rotted garden compost or manure around the base of the plant. In autumn trim back lightly any branches that obscure the display of fruit.
	*Rosmarinus officinalis* 'Arp'	May-June	Prune after the first main flush of flowers. Regular picking of the leaves, especially the tips of the branches for cooking, acts as an ongoing pruning regime and helps keep the plant bushy and compact. Keep trimmed to shape in the summer. Avoid hard pruning into old wood.
	*Digitalis purpurea 'common floxglove'*	May-July	Perennial dies back to below ground level each year in autumn, then fresh new growth appears again in spring. No pruning required.
	*Hyssopus officinalis* 'hyssop'	June-September	Herb may lose some of its leaves in winter. In colder regions or more exposed gardens, it may lose them all, but fresh new foliage appears again in spring. Don't cut back the faded flower stems until early spring, as they provide interest in the winter months. Lift and divide congested colonies in spring.

	Plant	Flowering period	Management advice
	*Origanum vulgare* 'oregano'	June-September	Herb dies back to below ground level each year in autumn and fresh new growth appears again in spring. Cut back old faded flower-heads and stems in spring.
	*Stachys byzantina* 'lamb's ear'	June-September	Perennial dies back to below ground level each year in autumn, then fresh new growth appears again in spring. Avoid excessive winter wet and lift and divide large clumps in early spring.
	*Salvia nemorosa* 'pink friesland'	June-September	To prolong flowering remove the flower spikes as soon as they start to fade. Perennial dies back to below ground level each year in autumn, then fresh new growth appears again in spring. Apply a generous 5-7cm (2-3in) mulch of well-rotted garden compost or manure around the base.
	*Echinops*	August	Cut down to the ground after flowering to encourage a second flush of flowers. Lift and divide congested colonies in autumn or spring.
	*Aster amellus* 'King George'	August-October	Water regularly during dry spells and deadhead to prolong flowering. After flowering cut the flowered stems to the ground and apply a generous mulch of well-rotted garden compost or horse manure around the base of the plant.

What else to keep in mind?

It is also important to note that in a garden setting a carefully selected range of non-native flowers, in addition to native flowers, can lengthen the flowering season- providing nectar for early emerging and late flying bees. Different bees will like different shaped flowers – long-tongued bees will love Salvias with deep flowers, whereas short-tongued bumblebees will prefer shallower flowers. Create large patches of the same kind of flowers so the bees can find lots of nectar without having to fly too far.

Bringing people together for planting day

Our project benefited from the participation of both individual volunteers and organised volunteering groups. At Windrush Medical Practice, for example, in addition to having ongoing participation from patients, a group of volunteers from the Witney Land Army assisted with the project on planting day.

Generally, volunteers were invited to participate in both the weeding and planting of the gardens. They were made aware of activity times as these happened separately. Notices were placed inside the surgeries and on surgery websites to keep the community informed. Weeding, for example, took place a fortnight before planting day. Planting took place during convenient times that would not disrupt the provision of services at the health centres and avoid overcrowding of car parks. Two of our sites chose to have planting on a Saturday while one opted for a weekday.

Plants were delivered early in the morning of planting day. The Bee Healthy team was on site to help unload them and ensure the plants were positioned according to the planting plan to make the planting process easier for the volunteers. The volunteers were divided into groups, with someone nominated as the group leader and each group leader had a laminated copy of the planting plan. Group sizes varied between sites with 15 volunteers present at Windrush Medical Centre for planting day, 12 at Summertown Health Centre and five at St Bartholomew's Medical Centre.

We chose to plant the Bee Healthy borders in the autumn as this was beneficial for the plants. Over the winter, growth usually occurs in the roots of plants rather than above ground, so planting in the autumn provided our plants with a good period for establishing their roots. As it happened, we found that the ground in the Bee Healthy gardens was very wet during planting days, and our plants also benefited from a very wet autumn. As a result, we did not need to water them following planting day. Watering needs should be kept in mind, however, when planting in drier autumns or in the spring.

What else to keep in mind?

Although planting bee-friendly plants is a low-risk activity, it was important for the Bee Healthy team to carry out a risk assessment for each session involving volunteers. In addition to this, volunteers were asked to come along wearing old clothes and appropriate footwear. Before sessions started, the flower beds were checked for syringes, with a sharps box available for disposal should any be found. The volunteers were supervised at all times and assistance was available in case of any problem.

Knowledge sharing

To help our participating surgeries, our project shared knowledge with staff and patients in several key areas.

Learning about bees and creating Bee Healthy gardens

Once sites were selected, we worked to inform participating surgeries on the types of plants we would be installing at different borders and how they contribute to feeding bee populations. Our project ecologist discussed with leading staff details on the plants we would be using (see pages 9-11).

Bee Healthy also provided staff members with the opportunity to participate in a bumblebee identification course organised with the Bumblebee Conservation Trust. This was an opportunity for more individuals to get involved in helping monitor the presence of pollinators at the Bee Healthy borders. Those who participated in the training course learnt how to carry out simple

bee count assessments in different green spaces and how to report this information to the UK Pollinator Monitoring Scheme.

Maintaining Bee Healthy borders

Our project ecologist carried out discussions with volunteers and surgery staff to help them in caring for the Bee Healthy borders. Maintenance needs were greatly reduced by the selection of low-maintenance plants. However, location-specific written advice on watering and pruning of was provided by the project's ecologist for surgeries in need of extra guidance.

Involving the community

In addition to providing pleasant green spaces for bees, patients, staff and the community, the Bee Healthy project aimed to raise awareness that bumblebees are an essential part of our ecosystem and show how individuals, through initiatives within their own gardens, can help bee populations. To this end, our bee borders include informative signs for patients, staff, visitors and community members.

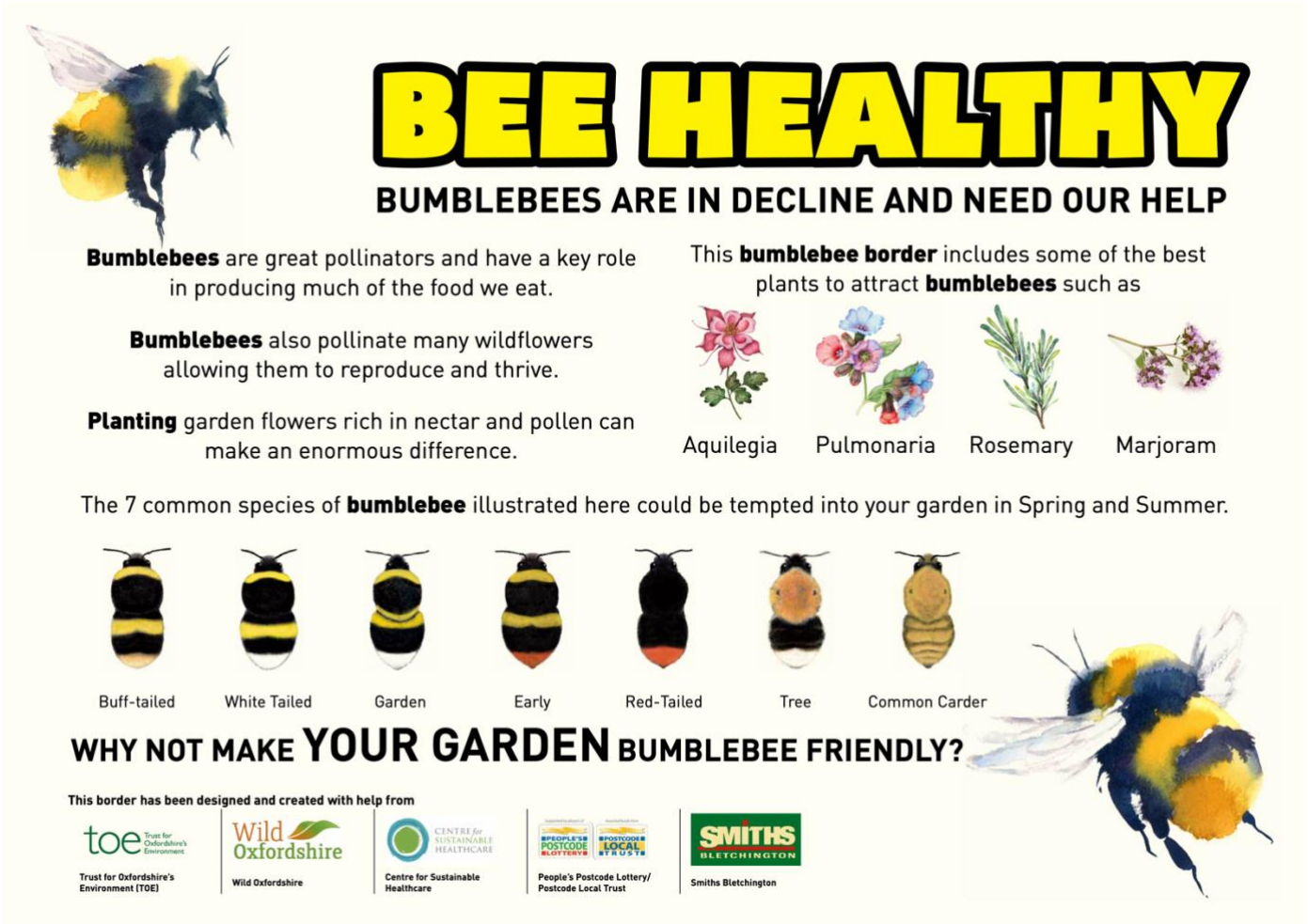
Our signs contain information on the importance of bumblebees; images of bumblebees to help people identify which bees are visiting the Bee Healthy border; information on pollinator-friendly plants; and an invitation to action to inspire others to create similar spaces at home in their garden or window box.

Having information signs in place is an important aspect of our project as this helps extend project benefits to individuals who were not involved with the creation of the borders. These were well received by the community and are helping to educate the public on the issue of declining bee populations as well as raising awareness about the special nature of our borders:

"I think the information sign is brilliant. I've taken a picture of it so I can show my children" – Staff member

We also advertised the project on the electronic screens inside the surgeries. This invited patients to visit and learn more about the Bee Healthy borders.

Bee Healthy information sign design:



Information sign in place at Summertown Health Centre:

Project costs

The costs associated with our project included hiring an ecologist and a landscape designer, procuring plants, creating informative signs, delivering a training course to volunteers and measuring the project's impact.

The ecologist's engagement with the project included scoping sites that had applied to be part of the scheme, assisting in drawing up plans for the gardens, selecting appropriate plants, taking part in planting activities and performing bee count assessments. Our costs for having an ecologist involved with the project for three sites was approximately £2,400, averaging at £800 per site.

Our project also benefited from the participation of a landscape designer who was responsible for drawing up planting plans and assisting in selecting appropriate plants for different areas. The cost of having a landscape designer help with the three sites was £1,400.

The gardens planted at these surgeries averaged approximately 28m² in area. Buying plants for three gardens was priced at approximately £2,786 (£928 per site) although it was felt by the project ecologist that purchasing slightly fewer plants would have been appropriate for our gardens as plants will spread as they grow in the coming years. We also purchased mulch for the gardens at £144 but this was not strictly necessary for creating pleasant spaces. Our project did not purchase any additional soil given that plants were placed within existing borders located at each surgery.

Our volunteers were advised to bring their own gardening equipment such as gloves, trowels and gardening mats, which were used during planting sessions. Because of this approach, we did not purchase other materials besides plants and mulch. Our project ecologist also brought large buckets along to planting day which were used for placing soil and rocks while plants were being put into the soil. Making use of these materials avoided extra costs.

As previously mentioned, our project worked to educate beneficiaries on the importance of bees as part of our ecosystem and ways which we can support bee populations. Part of this was done through the training course offered by the Bumblebee Conservation Trust which focused on the biology of bumblebees and how to carry out bee counts in different green spaces. The full day's training course for 12 volunteers cost £250.

Summary of Costs

Ecologist	£2,400
Landscape designer	£1,400
Plants	£2,786
Mulch	£144
Training	£250

Lessons learned and bee counts

Feedback from patients and staff has allowed us to learn lessons from the development of Bee Healthy at these three sites. Our evaluation interviewed seven staff members from participating sites, their accounts demonstrated the importance of enthusiastic individuals in helping establish these projects and inspire others to take part. These project champions often headed the application process and facilitated communication between surgery staff and the Bee Healthy team. They were also helpful in arranging meetings which were needed for getting the necessary permissions for carrying out the project at these sites. People capable of taking on similar roles will most likely be needed in the case of communities and/or local organisations looking to implement similar projects.

Bee Healthy successfully engaged staff members and wider members of the community with the creation of these spaces. Good communication was important in keeping these surgeries' staff members, patients and volunteer groups informed of when weeding and planting were taking place.

The implementation of Bee Healthy at these three sites has been well received by staff and patients. Particularly, they have enjoyed the pleasant spaces created by Bee Healthy and the project's ability to support declining bee populations in settings that traditionally have not been thought of as spaces to promote biodiversity:

"I think having health centres help with declining bee populations is a really good idea. I think our health is completely tied up with the health of the planet. Staff becoming more aware in whatever way, it is really good and patients as well, thinking about those things. Yes, I think it all makes sense with my concept of health." – Staff member

Although patient feedback was limited due to the Coronavirus pandemic, nine out of nine patients questioned either strongly agreed or agreed with the idea of surgeries planting bee-friendly borders to support local bee populations. Similarly, all of these patients either strongly agreed or agreed that it is of value to patients' wellbeing to see these flowering borders at their local health centres.

An early evaluation of these sites has shown positive results in terms of attracting pollinators. A total of 32 Flower-Insect Timed (FIT) counts were performed at the three sites over the months of May, June, July, August and September. These demonstrated that although this was the borders' first season, the seven most common species of bumblebees were observed across the sites and 100 bumblebees were spotted during these visits. Windrush Medical Practice was the only site with all seven most common bumblebee species, although it is important to consider that this is the largest Bee Healthy garden and more FIT counts were performed at this location. During counts, a total of 147 pollinating insects were observed including bumblebees, honeybees, butterflies, moths, solitary bees, beetles and a hoverfly. The Bee Healthy FIT count results have been reported to the UK Pollinator Monitor Scheme and they help expand the availability of data on wild pollinators.

The extent to which beneficiaries have been spending time near the Bee Healthy gardens has been influenced not only by the Coronavirus epidemic but also by the characteristics of these sites' green spaces. At Summertown Health Centre, where the Bee Healthy border is part of a larger garden which also includes a bench, our evaluation demonstrated that despite the pandemic, the space has been used by both staff and patients. Meanwhile, at St. Bartholomew's Medical Centre, the location of the borders – near the main entrance – meant that patients waiting outside spent time near the plants while staff members, who customarily use a back entrance were less likely to do so. This finding demonstrates the importance of carefully considering the characteristics of the surroundings and how they might work in relation to the preferences of different target audiences.

Including information signs as part of the Bee Healthy borders was essential in expanding the benefits created by the project. These have provided information for anyone who sees them, including patients and staff members who were not part of the planting of the borders:

"A couple of the parents of children have said how the informational board was good because they we able to tell the children what bees they were even if they didn't know themselves... We have been able to learn from the sign. Everyone has been reading it and we've got it in a good position and people are taking an interest in it and when they are coming in they are mentioning which bees they've seen so it has gone down extremely well." – Staff member

"I know a couple of members of staff have planted bee friendly plants and two of them were inspired by this, which is really good. They've created nice spaces at their places and put up bee hotels and bee friendly plants, they've done all that." – Staff member

Lastly, our evaluation demonstrated the importance of involving volunteer groups to help maintain these spaces. While the Bee Healthy borders were designed as low-maintenance green spaces, plants do require some care such as pruning and watering. The strong patient group at Windrush Medical Practice is an example of how the participation of volunteers can make the Bee Healthy borders sustainable over time. At this surgery, once a month on a Saturday volunteers from the Patient Participation Group have been caring for the borders. As a result, the green spaces around the surgery have been very well maintained since planting. At other locations we found the lack of engagement from an organised volunteer group meant the borders are not as consistently cared for, although different staff members have worked to maintain the spaces. For this reason, we would encourage others hoping to create similar projects to seek the support of organised volunteer groups, alongside individual volunteers.

Creating a bee healthy green border – project checklist

Getting started, what to consider:

- Contact others who may be interested in the project and who might support your proposal. Get in touch with neighbours, gardening groups, volunteering groups or other relevant community organisations who might be interested in participating in the scheme. Can these form a steering group for assisting with the development and management of the project?
- Evaluate the outdoor spaces available for creating a bee healthy border. Does this space belong to someone or an organisation? Do you have permission to create a garden or border?
- Research possible funding opportunities available. Consider local funders such as businesses, councils and charities. National funders such as The National Lottery Community Fund may also be able to assist you with funding your project. Also consider carrying out local fundraising activities.
- Consider if you would like to employ professional help and take this into account when seeking out funding opportunities.
- Understand which plants you might be interested in acquiring. See pages 9-11 for guidance.
- Develop a planting plan. This can be a simple drawing of the space you have available showing where different plants will be placed.
- Calculate an approximate cost of materials based on your planting plan. Also consider the prices of materials through local nurseries.
- Develop a funding proposal or budget, if needed.

Once you've secured funds:

- Use your planting plan to order materials. Consider when these will be delivered, where they might be stored and how long following delivery planting will take place. Plan to plant shortly after receiving your plants.
- Let everyone know when weeding and planting will take place.
- Carry out a risk assessment of the site and ensure all safety procedures are in place prior to the start of activities.
- Ensure you have all the tools necessary. Liaise with partners on their access to gardening tools and the availability of these for helping with your project.
- Consider if you are able to create an information sign or other information tool which can teach others about your project and inspire them to carry out conservation activities.
- Obtain more information on how to carry out bee counts, if possible, as this will contribute to the body of research on pollinators.

Managing your bee border:

- Consider the time of year in which planting will take place and how often you might need to water your garden immediately after planting day.
- Write down clear guidelines on how and when different plants need assistance and if possible, assign clear tasks for different partners to follow up on.
- Organise a regular watering schedule taking into consideration the types of plants you have, how shaded your garden is and time of year.

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