

GUIDE TO CREATING AN INTEGRATED WEED MANAGEMENT PLAN

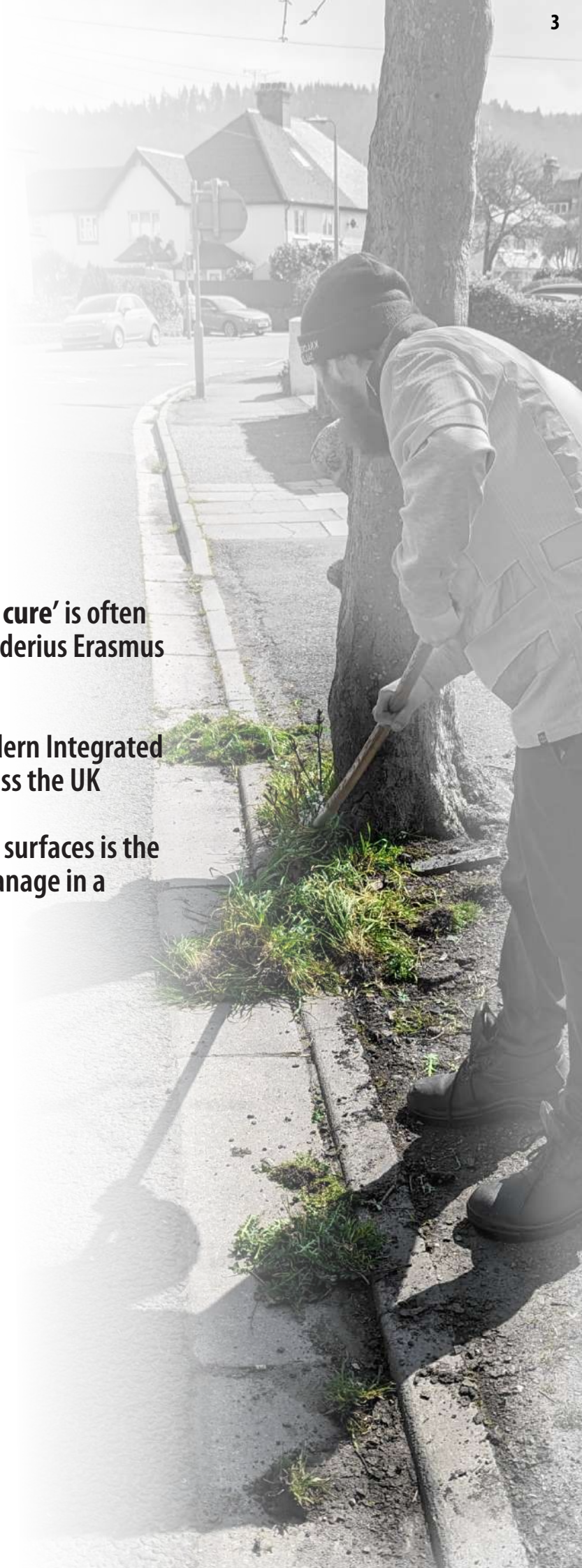


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The phrase ‘prevention is better than cure’ is often attributed to the Dutch philosopher Desiderius Erasmus in around 1500.

It is now a fundamental principle of modern Integrated weed management strategies across the UK

The impact of soil accumulation on hard surfaces is the biggest external factor we must manage in a preventative approach.

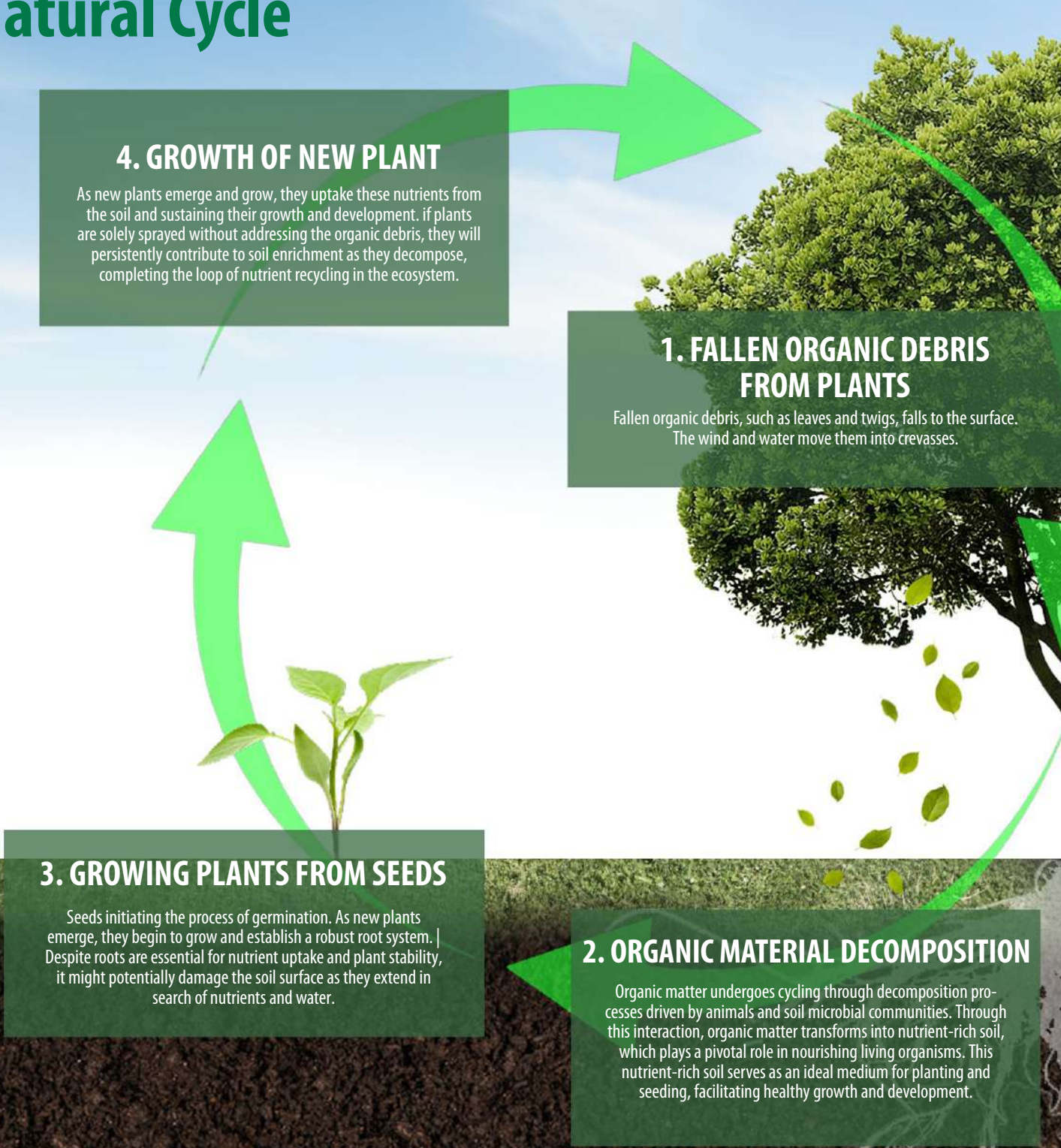


Soil Cycle

In natural ecosystems, the initial stage of the soil cycle is triggered by fallen organic debris, which is fundamental for fostering plant growth and healthy ecosystem. However, human interventions such as asphalt paving and drainage systems disrupt this cycle, impeding nutrient availability and destabilizing soil conditions.

Therefore, the utilization of ground maintenance equipment becomes imperative to counteract these disruptions. This equipment facilitates tasks such as debris removal, soil aeration, and nutrient replenishment, thereby promoting the restoration of healthier ecosystems and enabling sustainable soil management practices.

Natural Cycle



After human interventions

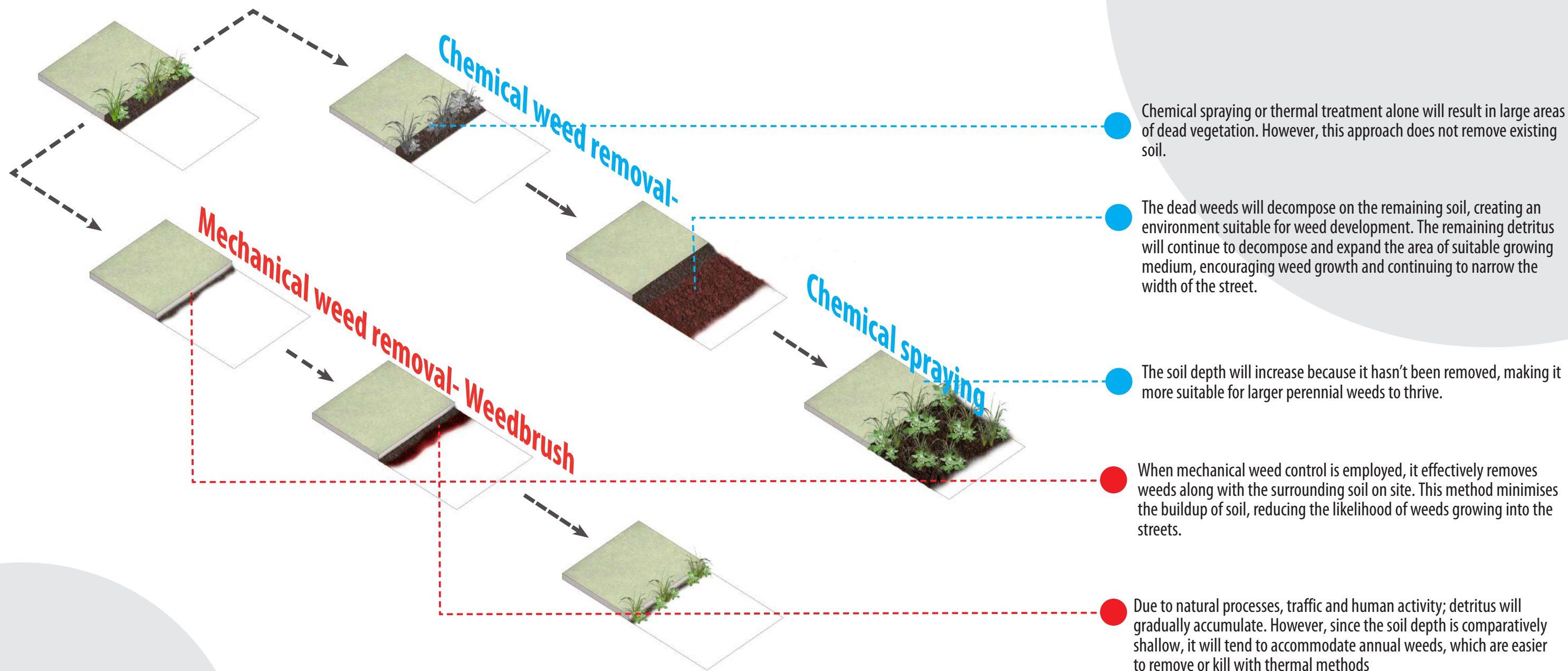


The difference between reactive and preventative weed management approaches

- **Reactive weed management approaches** such as chemical and thermal methods of weed control deal only with the current weed burden and do nothing to reduce the weed burden in the future.

- **Preventative weed management approaches**, such as weed brushing and cultural control methods focus on removing the causes of weeds, reducing the future weed burden in addition to dealing with the current weed burden.

Preventative measures reduce the overall need for reactive measures in the future, saving time, money and labour in the long run.



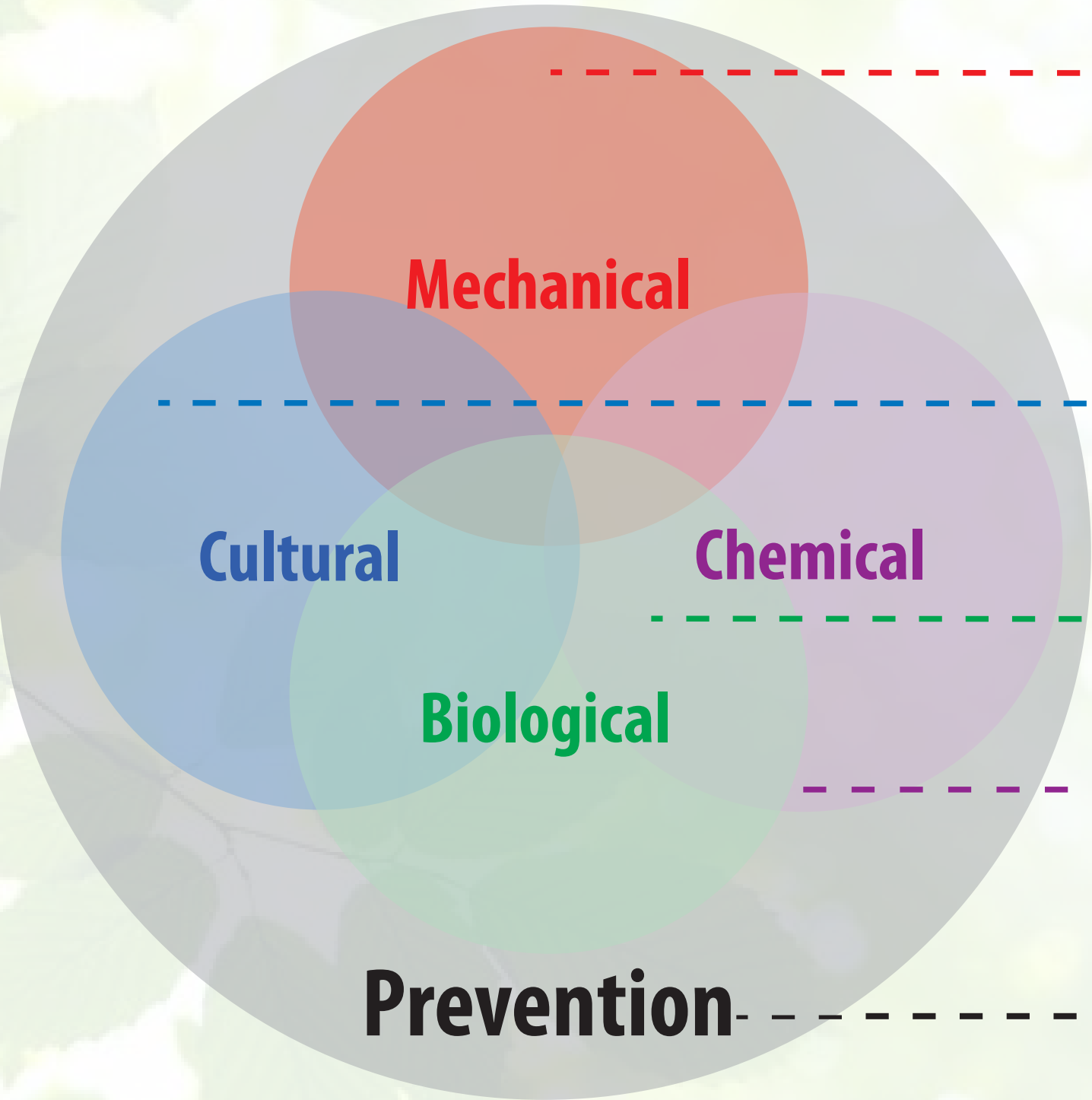
Mechanical weed control and chemical weed control are both methods of treating weeds. Many councils are committed to reducing the use of glyphosate by only applying it to areas where necessary. The diagram above compares streets treated with mechanical weed control and chemical weed control, illustrating why mechanical weed control is preferred.

It is inevitable that weeds will grow along the verges of the streets. When chemical spraying is employed, glyphosate is applied across entire edges, resulting in large patches of dead vegetation. These brown patches not only detract from the aesthetics and safety of the street but also decompose over time, enriching the soil and encouraging further weed growth. Consequently, vegetation encroaches more into the street, narrowing its width. Conversely, when mechanical weed control is correctly carried out, it prevents the opportunity for vegetation decay, preserving the street's appearance and functionality.

Using mechanical weed control methods makes it easier for future treatments to be applied as spot treatments; minimising the amount of thermal or chemical treatment required to maintain a weed free street. This preventative approach not only minimises the negative environmental impacts associated with herbicide use but also promotes the long-term health and sustainability of urban landscapes. By adopting mechanical weed treatment practices, councils can achieve their goals of reducing glyphosate usage while maintaining the cleanliness and safety of public spaces.

Integrated weed managment

Integrated weed management (IWM) is a weed management program based on a combination of preventative, cultural, mechanical, biological and chemical practices. Through using the combination of weed control methods, especially with a focus on weed prevention, we can reduce the reliance on herbicides alone, and increase the chances of successful control or eradication, whilst also improving the condition of our hard surfaces.



Mechanical weed managment

Mechanical weed management refers to removing weeds using mechanical solutions such as sweepers, weedbrushes, and gravel path renovators, as well as using thermal tools such as hot air, hot water or electricity to kill weeds.



Cultural

Cultural weed management practices involve utilising design, planting strategies, and community involvement that enhance plant health and suppress weed growth.



Biological

Biological weed management refers to using living organisms (e.g. animals, insects, and bacteria) to control weed populations.



Chemical

Chemical weed control refers to using plant protection products to kill existing weeds



Prevention

Preventive measures involve a proactive approach to prevent weed growth. This is the foundation of a successful programme



Create your integrated weed management plan

Each site has its own goals, characteristics, and issues, which make them different from each other. Therefore, their weed management plan would vary while sharing many of the same principles. Here we suggest a guide on how to create an integrated weed management plan tailored to your site.

In this document, we will explore how to utilize the Integrated Weed Management Plan as a framework to create site-specific plans that adhere to regional policies while achieving local goals. We will follow the steps below in order to create and implement a successful and sustainable strategy.



Phase 1

Envision

Delivering a shared vision

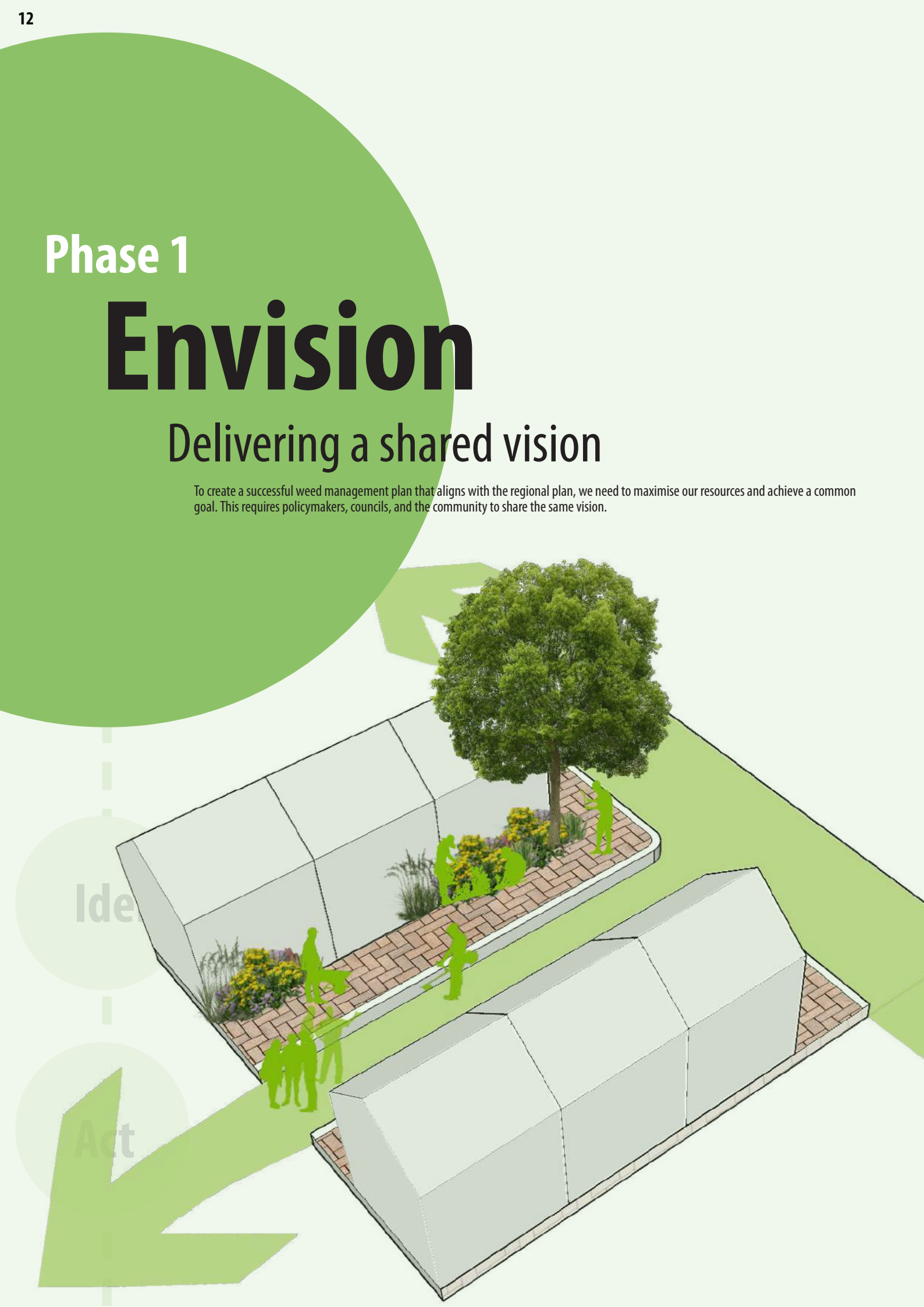
To create a successful weed management plan that aligns with the regional plan, we need to maximise our resources and achieve a common goal. This requires policymakers, councils, and the community to share the same vision.

Phase 1.1 Working Towards the Same Goal

Understanding regional and local contexts and policies helps create a plan that is feasible, achievable, and site-specific. Aligning local and national goals.

Phase 1.2 Community Engagement

Effective communication creates opportunities for the community to be involved and engaged in the decision-making process. This allows us to identify gaps and encourages stakeholders to participate in future planning.



Phase 1.1

Working Towards the Same Goal

Understanding regional and local contexts and policies helps create a plan that is feasible, achievable, and site-specific.

Site specific strategies

Local Council Plan

Regional planning

Identify

Act

Connect with the Regional Plan

The UK government sets goals and regulations, which must be an essential part of the local strategy for managing weeds. Some examples can be seen below;

Environmental Improvement Plan 2023

The plan highlights the importance of:

- Minimizing the use of chemicals and pesticides
- Increasing people's connection to and access to nature



Image of EIP¹

UK National Action Plan (2013 NAP)

The plan aims to reduce the risks and impacts from pesticides on human health and the environment by:

- adopting an integrated approach as described in the Directive, drawing on all available techniques to tackle pests, diseases and weeds;
- complying with all relevant regulations and record keeping requirements for pesticides;
- complying with any Codes of Practice and following guidance – including that from industry groups such as the VI - for using pesticides appropriate to the local situation;
- supporting the measures in this plan relevant to their sector.



Image of NAP²

Develop the Local Council Plan Under National Goals

When developing the local council plan, it's crucial to consider the site's social, historical, and cultural characteristics. We must also explore strategies that can achieve local goals while supporting broader regional objectives. When creating strategies and goals, we ensure they are:

- **Measurable:** Using quantitative measures to ensure results are accurate and trackable.
- **Site-specific:** Addressing the site's unique problems.
- **Time-framed:** Establishing time frames and phases to gradually achieve the goals.

Example - Herbicide Reduction Plan (HRP), Cambridge City Council (See page 41)

In May 2019, Cambridge City Council declared a Biodiversity Emergency and committed to reducing and eliminating herbicide use on highway verges, roads, and pavements. This initiative led to the creation of the Herbicide Reduction Plan (HRP) which is influenced by the National Action Plan (NAP).

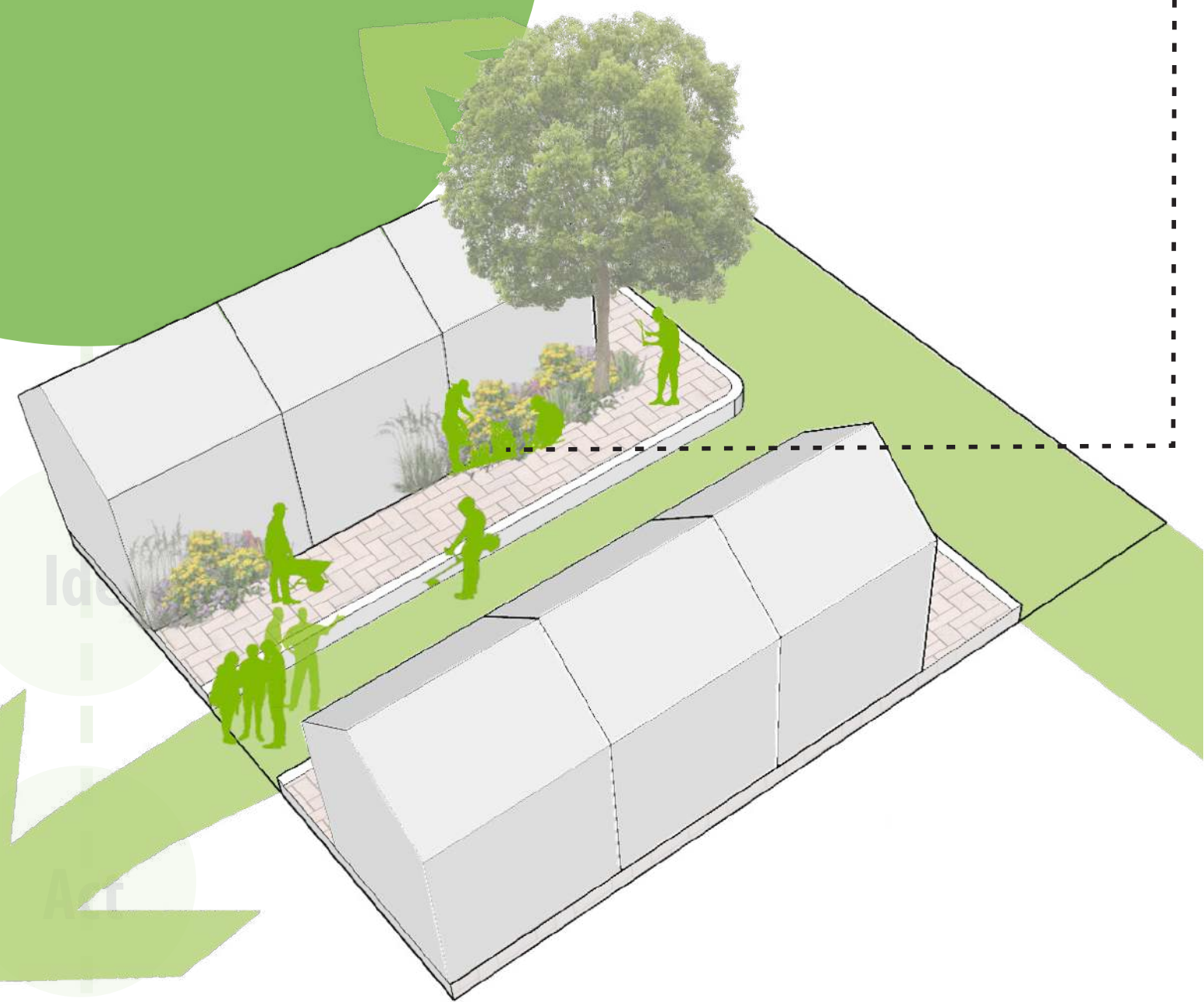
Key strategies include:

- **Phasing out pesticide use in urban areas.**
- **Supporting and training farmers in integrated pest management (IPM), which involves:**
 - Considering all available methods,
 - Ensuring actions are ecologically and economically justified,
 - Minimizing risks to human health and the environment.

Phase 1.2

Community Engagement

Effective communication creates opportunities for the community to be involved and engaged in the decision-making process. This allows us to identify gaps and encourage stakeholders to participate in future planning.



Promoting Shared Responsibility and Building Trust

Meetings, discussion boards, and surveys are effective ways to engage and educate the community about the weed management plan. These communication channels help build understanding of the plan and involve the community in the decision-making process, promoting shared responsibility among stakeholders.

Through these interactions, councils can identify the most effective methods for community engagement based on the specific project and its goals, as well as reduce conflict when initiating new methods of tackling weeds.

Surveys

Surveys can be conducted by telephone, in person, and online. Conducting surveys helps the council understand the community's experiences, assess gaps between the plan's strategies and existing issues, and allocate resources effectively to achieve the best outcomes for the projects.

Discussion Board

A discussion board is an online platform where community members can share their views, ask questions, and engage in conversations about the weed management plan. It helps achieve the best outcomes by facilitating open communication, allowing the council to gather diverse perspectives and identify common concerns. This collaborative approach ensures that the plan is well-informed and effectively meets the community's needs.

Meetings

Setting up meetings with different stakeholders can encourage their involvement in various phases of the weed management plan. During information sessions, stakeholders can directly raise their concerns with the council. In the planning phase, they can suggest ideas and eventually participate in community campaigns. This approach allows the council and community to regularly review the management plan and support its successful execution.

Phase 2

Identify

Understand your current situation

At this stage, you need to assess and identify the current weed burden in the areas the plan is responsible for managing, as well as the factors contributing to the problem.



Act

Adapt

Phase 2.1 Identify the current weed and detritus burden

Create a weed and detritus level map to identify the areas that need the most attention.

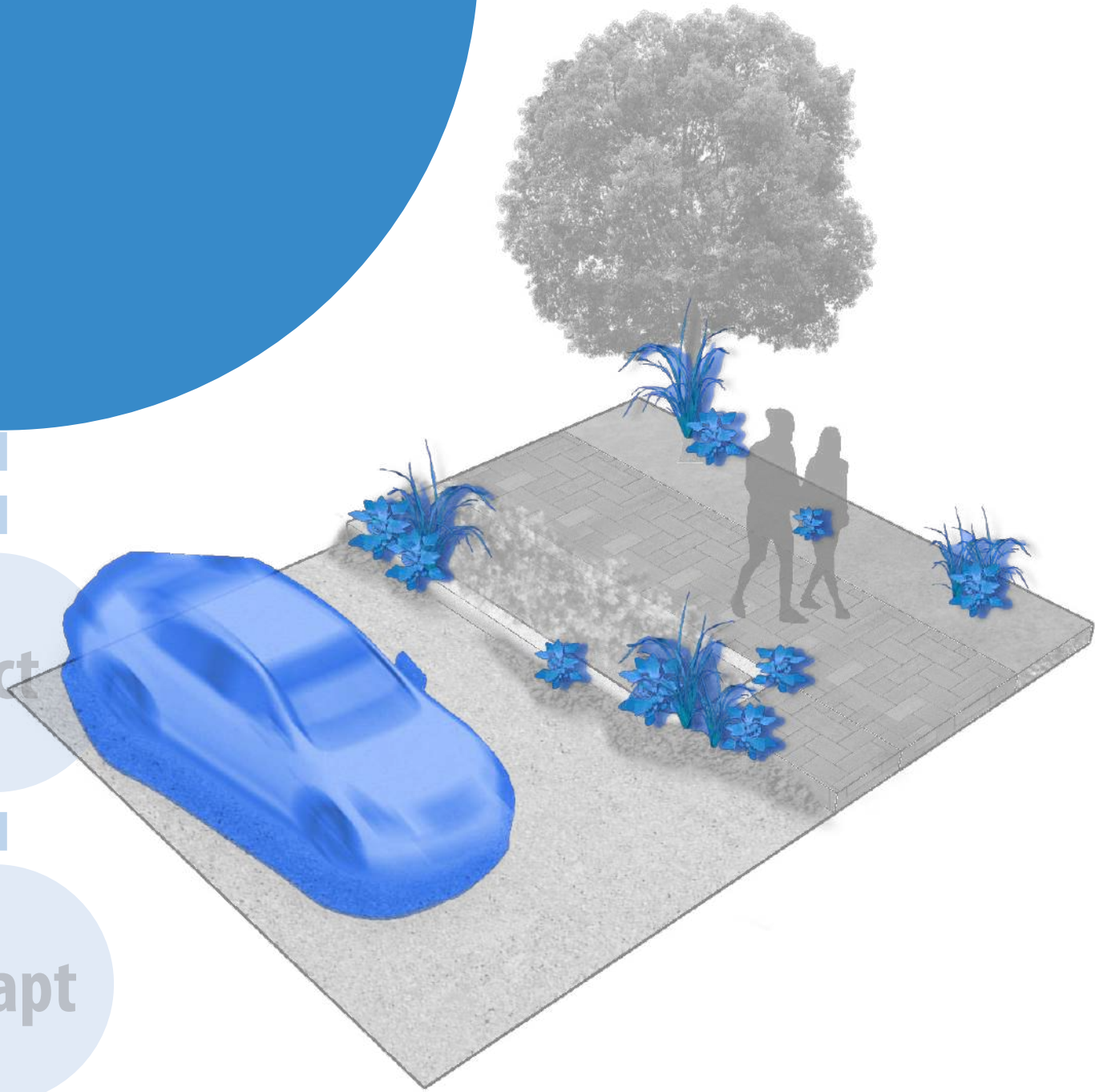
Phase 2.2 Identify the reasons for accumulated detritus

Through identifying the source of the detritus, we are able to suggest methods to reduce its accumulation

Phase 2.1

Identify the weed and detritus burden

Create a weed and detritus level map to identify the areas that need the most attention.



Act

Adapt

How To Create a Weed-density map

To measure the weed density in your area, you can create a chart consisting of images of different weed density (using the weediness scale from Defra's Best Practice Guidance Notes for Integrated and Non-chemical Amenity Hard Surface Weed Control. Detritus levels should also be assessed using the detritus scale from Defra's Code of Practice; Litter and Refuse.

1. Select an area

2. Compare the street with weed/detritus density charts

Using weed density and detritus chart to assess the street's weed density and detritus level and record them onto the map.

Examples of detritus density chart			
No detritus present	Light detritus present	Medium detritus present	Heavy detritus present
			

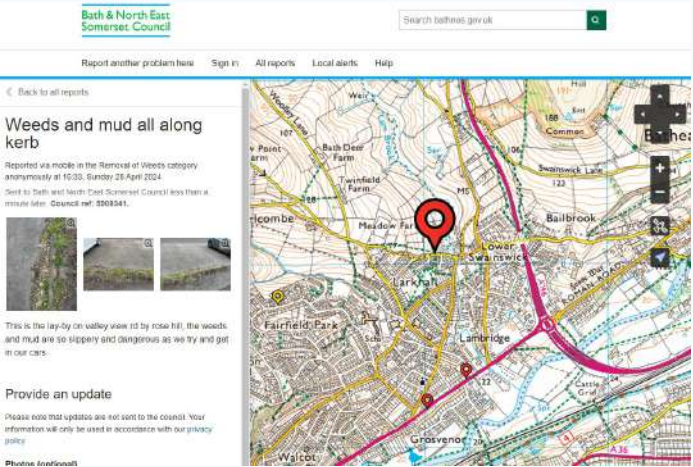
The chart can establish standards to help people identify and understand potential areas for improvement. (See Index B)

3. Compare with Traffic Maps

Traffic maps can also contribute to the weed density map. Using Google Maps traffic layers and the council traffic measure report, they help identify the possibility of weeds present in the area. Areas with heavy traffic might have more debris.

4. Community involvement - Report a weed issue online

The council can also set up a website that allows the community to report existing weed issues. This could serve as a valuable source of information, helping to identify areas where weeds are causing the most issues for residents.



1. Select an area



2. Base on the detritus chart, highlight street with the according colour



3. Compare the traffic map and assess if traffic contributes to detritus accumulation.



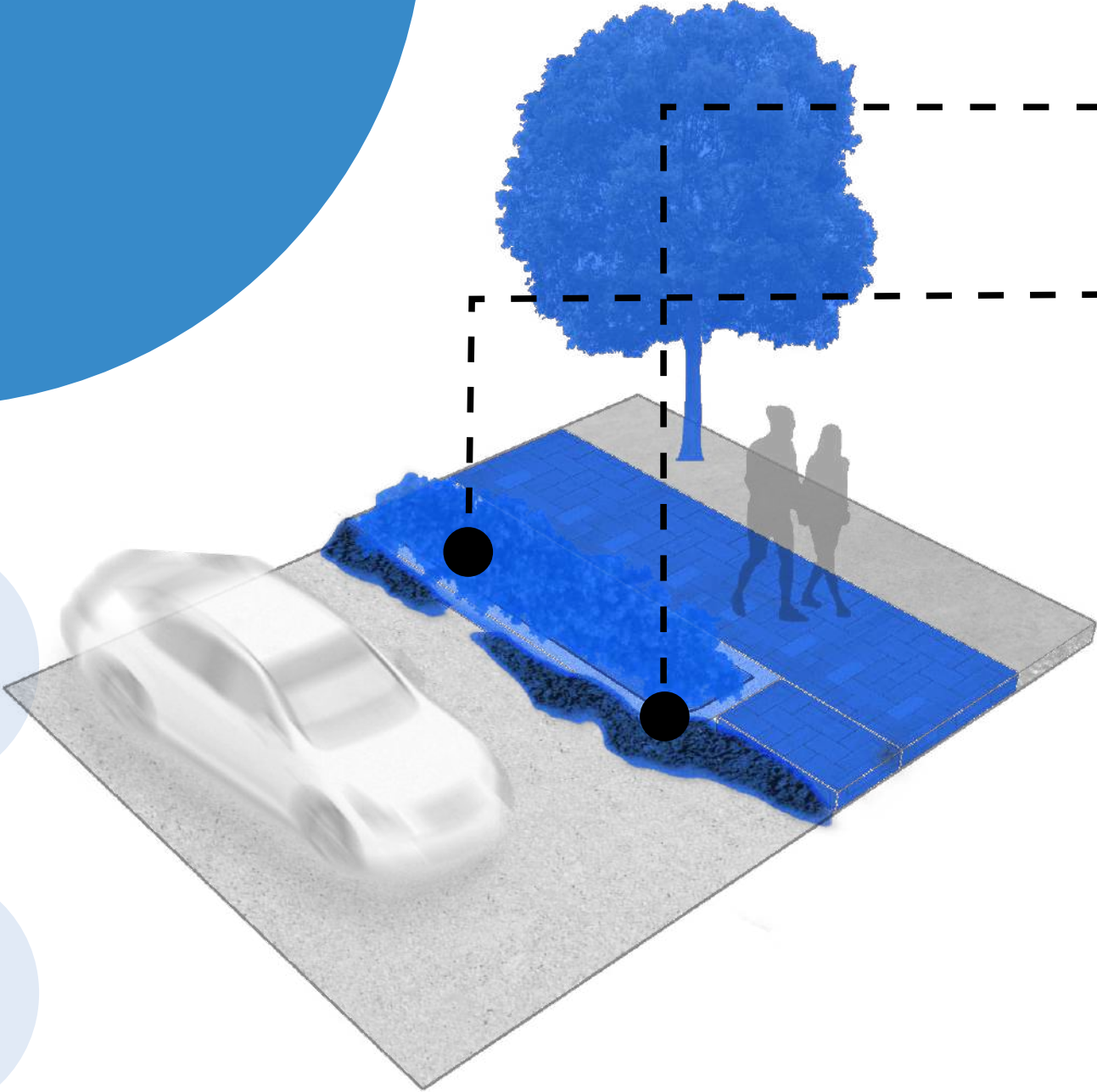
4. Additionally, indicate areas where weed and detritus accumulation have been reported.



Phase 2.2

Identify the reasons for accumulated detritus

Through identifying the source of the detritus, we are able to suggest methods to reduce it's accumulation - preventing future weed growth



Act

Adapt

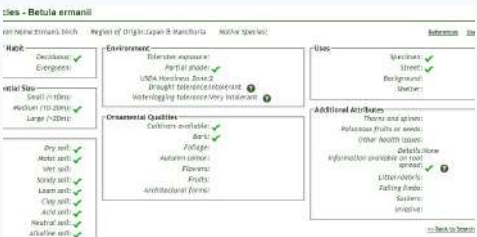
Reasons for accumulated detritus

Below are the reasons why detritus might accumulate in your area

- Plant selection

Selecting plants with lots of foliage will lead to an increase in detritus present on the street. Forest Research has created a website that helps you to find the suitable tree based on your criteria.

However, we suggest you talk your your local Parks and Open Space Management Team and Horticulturists before selecting the plants



<http://www.righttrees4cc.org.uk/members/search.aspx>

- Street design

Paving

Choosing surfaces that provide less traps for detritus, such as tarmac rather than block paving can help to reduce traps where detritus accumulates.

Block paving



Tarmac



Kerb

Use kerbs that are easily swept to; e.g. use sweeping bends, rather than sharp corners; see image to the right, which shows the problems the sharp corners can cause

Round corner¹



Sharp corner



Hedges and fences

Design hedges and fences to be easily accessed for maintenance and incorporate low litter plants.

Condition of the street

Identify the condition of the street and assess other disruptions (human, planting, traffic) leading to detritus accumulation.

Phase 3

Act

Remove and control the growth of weeds

After identifying the location and source of the weeds, you can plan methods to remove, remediate and prevent weed growth



Adapt

Phase 3.1 Remediate

Based on the site condition and location, select the suitable equipment to remove weeds and detritus.

Phase 3.2 Prevent and control

After eliminating existing detritus and weeds, we need to implement weed prevention strategies to minimize the chances of weeds regrowing. Additionally, planning regular maintenance will help upkeep the site.

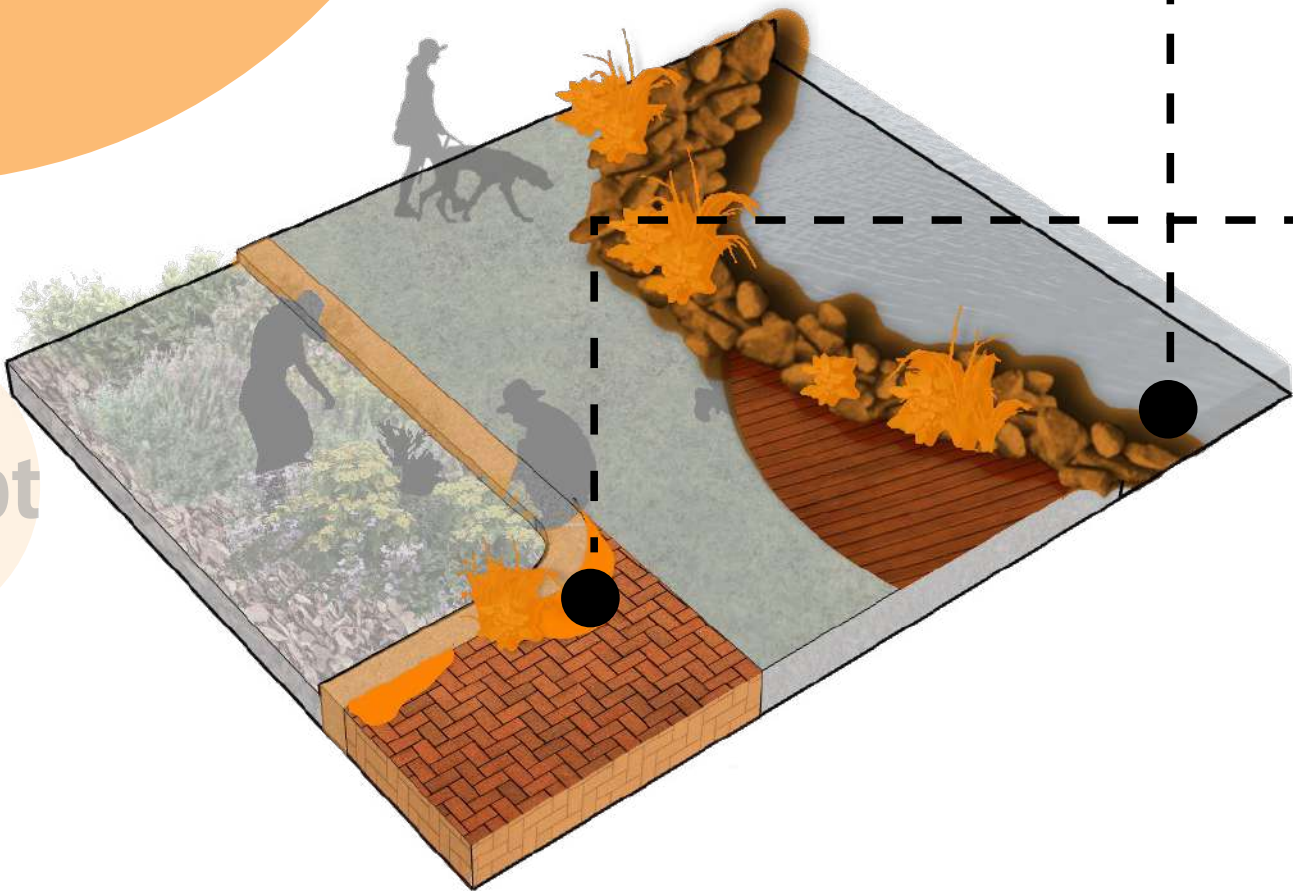
Phase 3.3 Community engagement

Promoting the involvement of volunteers from the community can significantly improve the levels of weed control in an area whilst fostering a sense of pride in the community. Enhancing the results of council resources.

Phase 3.1 Remediate

Based on the site conditions and location, select the suitable equipment to remove the weeds and detritus.

Adapt



-1. Select suitable equipment

Types of Surfaces

Block paving	Tarmac	Artificial surfaces	Gravel	Grass	Granite paving
					

Different surfaces require different equipment. For example, a weed brush is not suitable for granite paving as the wire bristles might damage the surface. Instead, we recommend using a sweeper.

Refer to Index A for a chart suggesting tools based on surface types.

Location

Close to water	School/playground	In a cemetery	Highway
			

The context of the site should guide tool selection. Some sites may require equipment with low noise levels, while areas near water need tools that prevent detritus from polluting the water quality.

-2. Remove accumulated detritus and emerging weeds

1. Remove the accumulated detritus

Using mechanical weed control methods such as **sweeping** and **weed brushing** to remove detrius

2. Removing the weeds that remained on site by:

- Thermal - Hot water or Hot air
- Electricity
- Chemical



Examples of hot air weed control



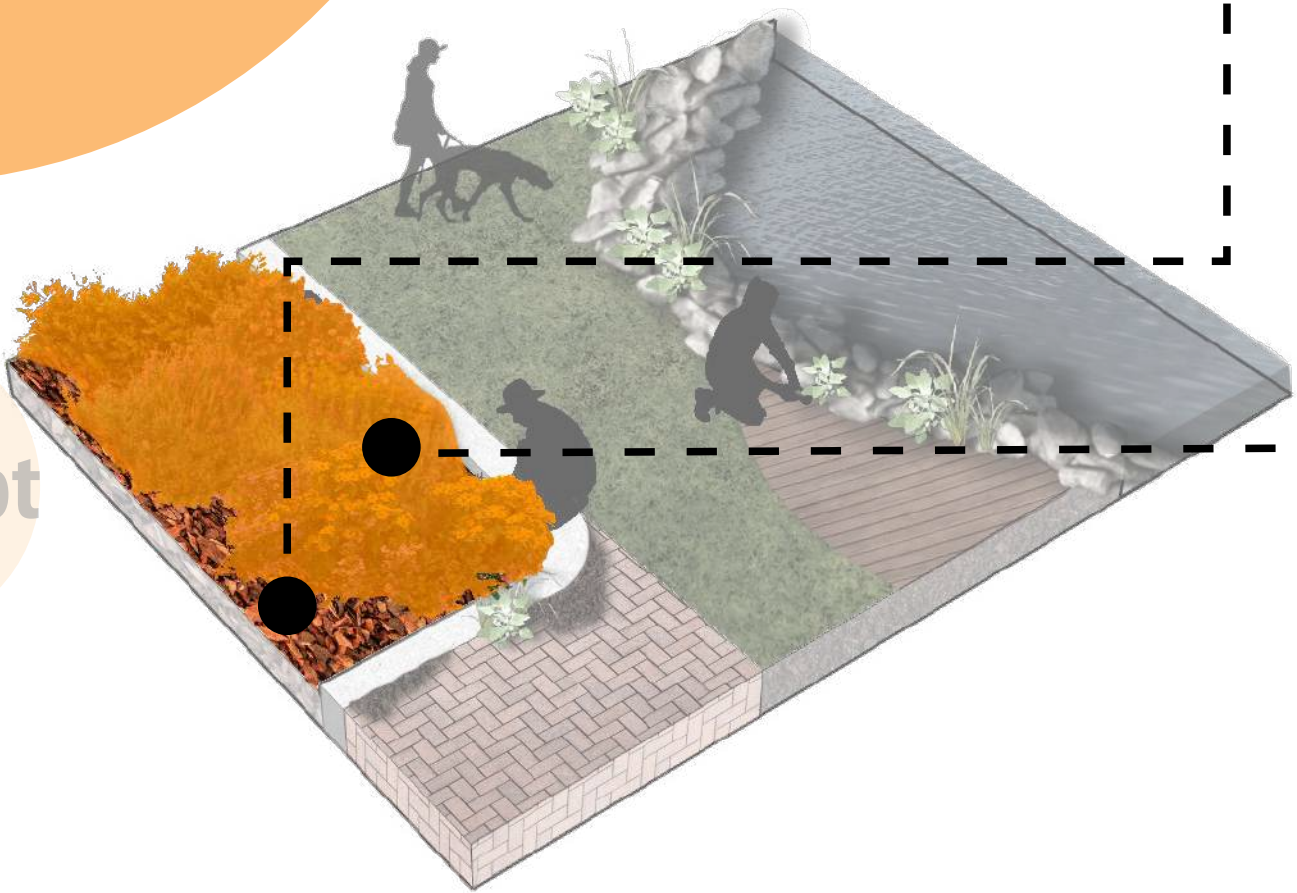
Examples of mechanical weed brushing

Phase 3.2

Prevent and control

After eliminating existing detritus and weeds, we need to implement weed control strategies to minimize the chances of weeds regrowing. Additionally, planning regular maintenance will help upkeep the site, reducing detritus accumulation.

Adapt



-Mulch

Mulching is one of the simplest methods to suppress weeds. By blocking sunlight to the soil, mulch minimizes the chances of weed growth reducing competition for desired plant species.



-Planting strategies

Consider implementing strategies such as weed suppression and detritus reduction through plant choices. Other goals such as increasing biodiversity can also be achieved in the same strategy.

The right plant in the right place

Ground cover plants

Ground cover plants have a similar effect to mulching. As they also reduce sunlight onto soil, out competing weed species, it also keeps soil moist, by preventing the sun drying out the soil which benefits the overall plant health and growth. This is most suitable under trees, and fences.

Low-litter shrubs

Low-litter shrubs result in less detritus on adjacent hard surfaces, making them ideal for areas where minimal sweeping is preferred, such as surrounding car parks.

Planting method

Planting density

Planting in **high-density** patterns enhance competitiveness against weeds and effectively suppresses weed growth.

Regular maintenance

Implementing a regular sweeping schedule will help maintain low levels of detritus on the site, naturally preventing its decomposition into the soil.

The frequency of sweeping can be determined by:

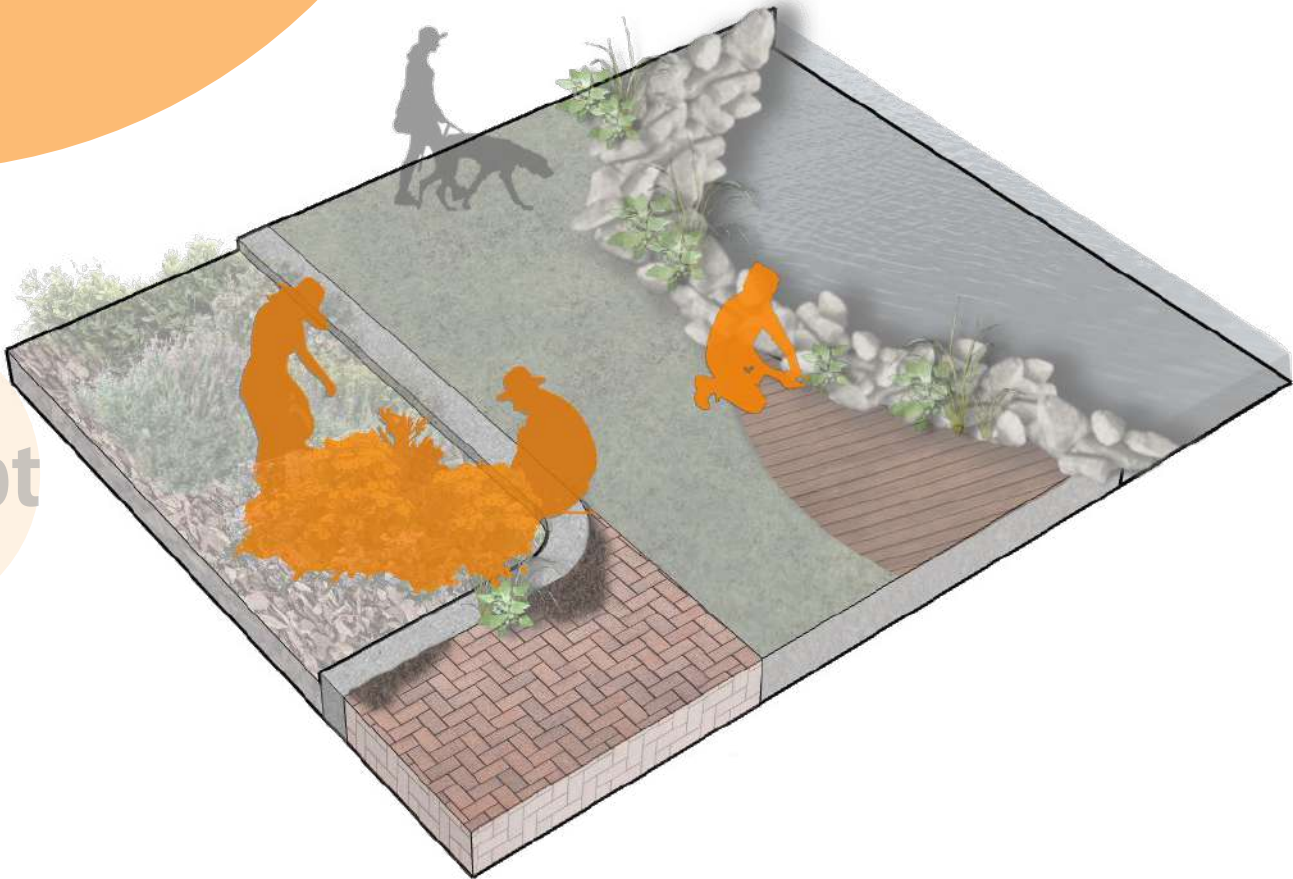
- **Traffic and human activity levels**
- **The presence of plants and surface that might contribute to or trap detritus (e.g., verges with dense vegetation)**

Phase 3.3

Community engagement

Promoting the involvement of volunteers from the community can significantly improve the levels of weed control in an area whilst fostering a sence of pride in the community. Enhancing the results of council resources.

Adapt



Sense of Stewardship

Creating a sense of stewardship in our neighbourhood is key to the success of the weed management plan. Establishing local campaigns that involve community engagement will foster a sense of ownership. When the community participates in the local management plan, they naturally collaborate and work towards the same vision as the council, facilitating the plan's success.

However, we need to **create incentives and provide council support to encourage participation in these campaigns. The council could set up guidelines, provide ongoing support, and offer advice to ensure that people can work together effectively.**

Example - Lambeth Council - Street Champion Scheme

In May 2021, the council ended its use of glyphosate for treating weeds on its streets and pavements. The council had already stopped using glyphosate in parks and housing estates. This was in response to residents' concerns of potential health risks associated with glyphosate use, along with its impact on the environment and local wildlife.

As part of the this, they introduced a community weeding scheme. This offered residents the chance to take their streets out of the glyphosate spraying schedule immediately by doing their own weeding by hand. The scheme was extremely successful with around 130 streets getting involved.

The collaborative efforts greatly contribute to the success of the scheme. The Lambeth Council Team regularly meets with the street champions to assess their street, identify difficulties, and gather suggestions. Through these interactions between the council and residents, adjustments are made to weed management practices and improvements are implemented on the streets.

The document below is the IFS (Institute for Fiscal Studies) briefing note which is the result of in depth research and trials carried out in co-operation with Lambeth Council and Community Engagement.

The authors of this research and the members of the council together with the residents of Lambeth deserve enormous credit.

Some of those involved include;

Daniel Rogger, Luke Sibieta - Authors of this research paper.
Elsie Grace, Jason Prentis and Liz Whitson-Cloud, Michael Clarke and Doug Perry from Lambeth Council.

Residents of Lambeth



Image of IFS Briefing Note¹

Phase 4

Adapt

An ongoing project

Continuously monitoring and reviewing the progress of the management plan, and readjusting strategies as needed is key to success in Integrated Weed Management.



Phase 4.1 Monitor and Evaluation

Monitoring and assessing the strategies and its results, we can identify the areas that require improvements.

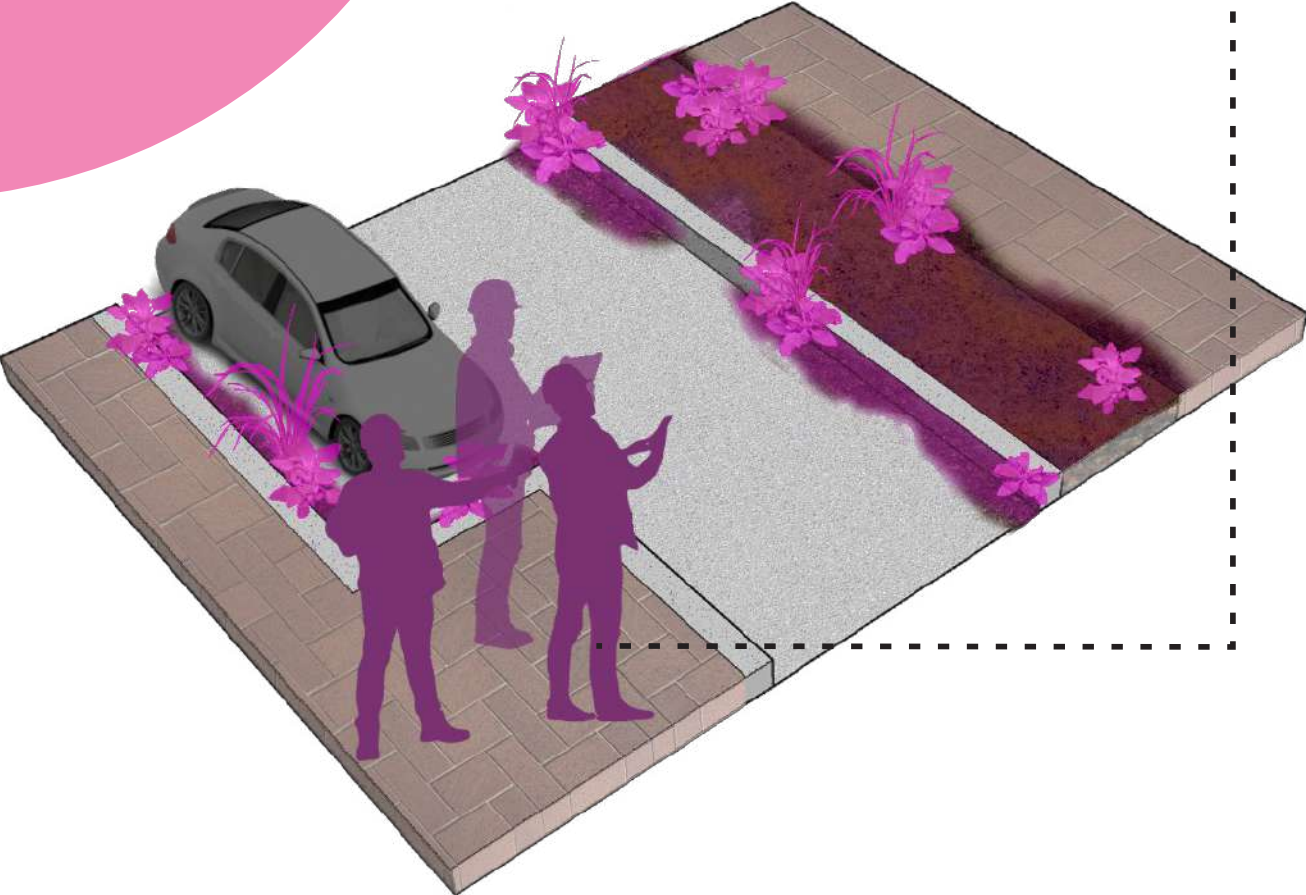
Phase 4.2 Readjust Strategies Based on Results

Based on the monitoring of results and reassessment of the reasons for unsuccessful outcomes, we will adapt and modify strategies to better align with local plans and goals, ensuring more effective weed management outcomes.

Phase 4.1

Monitoring and Evaluation

Monitoring and assessing the strategies and its results, we can identify the areas that require improvements.



Monitor

To evaluate the effectiveness of our strategies and plans, we need to establish indicators and record the data every one to three months. These indicators include:

- **Weed density**
- **Detritus density**
- **Number of reported weed occurrences**

Evaluate

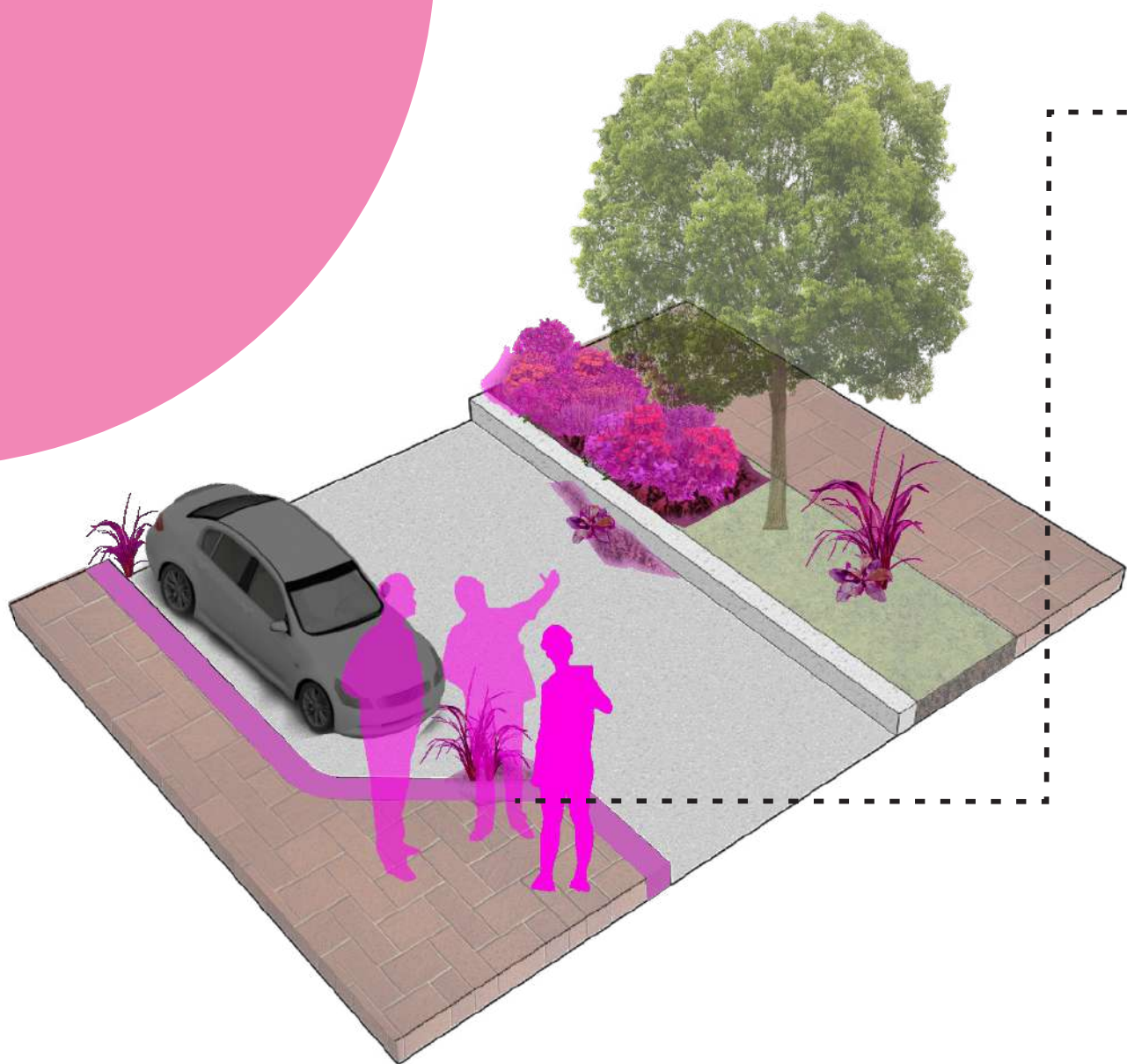
The weed density and detritus density could be evaluated with the same weed density and detritus density charts so the comparison is fair and accurate.

By using these quantifiers, we can create a progress map to visualise and assess the data. This map will provide quantitative indicators, allowing us to evaluate the percentage changes in weed density over time. The progress map can also be compared with the initial weed density map to identify areas that require additional attention.

Phase 4.2

Readjust Strategies Based on Results

Based on the monitoring of results and reassessment of the reasons for unsuccessful outcomes, we will adapt and adjust strategies to better align with local plans and goals, ensuring more effective weed management outcomes.



Adapt and Adjust strategies

After evaluating the results, we could identify areas where strategies have been unsuccessful. We must reassess the factors that may have been overlooked in relation to accumulated detritus and weed growth and review the methods applied in those areas, including:

- Implemented weed control methods
- Use of equipment
- Planting strategies
- Frequency of the sweeping schedule

Additionally, engaging with the community can provide valuable insights into the situation, helping us better understand and evaluate the effectiveness of our strategies.

Unsuccessful results suggest the need to adapt and readjust strategies to better align with local plans and goals. Reviewing these methods, strategies, and monitoring results will help identify gaps between strategies and real-life application, ultimately leading to more effective weed management outcomes.

Case study: Cambridge City Council

How the council created a weed management framework

Cambridge City Council follows national and regional planning and policy, and creates strategies based on local characteristics, and details the specific strategies in 2024

In this case study, we will explore how to utilize the Integrated Weed Management Plan as a framework to create site-specific plans that adhere to regional policies while achieving local goals.

Envision

- Aligning with the National plan
- Addressing Local Challenges
- Engaging with local community

Identify

Set up trials to identify:
Best evaluation system,
Suitable tools and weed control methods

Act

- Adjust sweeping schedule
- Community involvement and council support

Adapt

- Reviewing the national plan
- Evaluating the success of the strategy and making modifications

Phase 1

Envision

Cambridge City Council has considered the regional goal based on their local challenges, developing plans that are local, specific and community focused

- Aligning with the National plan
- Addressing Local Challenges
- Engaging with local community



Local Planning - HRP



HRP Site Specific Strategies -
Happy Bee street - Gwydir Street

National and Regional

Aligning with the National plan

Supporting the National plan

National Action Plan for the Sustainable Use of Pesticides (NAP) 2013

The NAP aims to promote sustainable chemical use by reducing the risks and impacts on human health and the environment. It encourages the development and adoption of integrated pest management and alternative approaches or techniques. One of the measures is to monitor the use of chemicals and their impacts.

Local

Addressing Local Challenges

Low percentage of Natural Green Space

In May 2019, Cambridge City Council raised a concern as it had one of the lowest percentages of natural green space and habitat in England. Hence they have declared a biodiversity emergency to recognise, act and reverse the decline in biodiversity.

Plan development

Develop plans while considering regional and local goals

Herbicide Reduction Plan (HRP)

In response to the NAP and to combat the loss of biodiversity in Cambridge, the Cambridge City Council created a **Herbicide Reduction Plan (HRP)** and established trial areas without herbicide use. These trials aim to assess the feasibility of phasing out chemical use, learn from the trial areas, and identify the most effective alternative weed management practices and equipment for the site.

Engaging with local community

The Council has also set up regular meetings with Councillors, Pesticide Free Cambridge, On the Verge, residents, volunteers, and community groups to discuss the development of the plan and review the strategies.

Phase 2

Identify

Set up trials to explore:

- Quantitative measures to assess the quality and effectiveness of weed control methods
- Alternative weed control methods

Site-Specific Strategies

Trial Ward and Street

Explore opportunities through trial areas

In 2022, Cambridge City Council selected Newnham and Arbury as herbicide-free trial wards, along with 12 other trial streets, to test the applicability and effectiveness of their weed control strategies.

The council developed quantitative assessments with standard guidelines to evaluate and measure the effectiveness of these methods.

Assessing the Application of Weed Control Methods

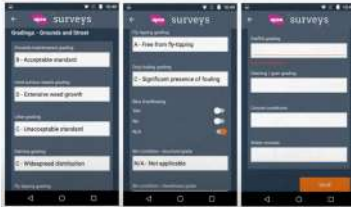
The council has evaluated alternative weed control methods, including thermal, mechanical, and mulching. They have examined the application areas, advantages, and disadvantages of each method to identify the most suitable option.

Method	Use	Advantages	Disadvantages
Hot water	Washes in hard surfaces. Move on hard surfaces and grass areas. Safety instructions: Close grass around trees. Non-chemical. 100%.	100% kills weeds. No herbicide. Can be used in all weather. Kills 100% of target weeds.	Needs re-treatment. Expensive to purchase. Additional cost of fuel. Some consumption and pollution.
Hot water / steam	Washes in hard surfaces. Move on hard surfaces and grass areas. Safety instructions: Close grass around trees. Non-chemical. 100%.	Lower initial purchase cost.	Requires more equipment and time to treat hard areas. Some consumption and pollution.
Flame gun	Washes in hard surfaces. Move on hard surfaces and grass areas. Safety instructions: Close grass around trees. Non-chemical. 100%.	Relatively cheap to purchase.	Heat and noise can be particularly effective and only suitable for small areas.
Manual weeding	Washes in general.	Very effective in some weeds. Low risk to wildlife. Recyclable.	Very time consuming. Requires large amounts of labour. Weeds will re-grow.

Assessment of alternative vegetation treatment methods (Cambridge City Council, 2023)

Proposing Indicators to Evaluate Effectiveness: Land Audit Management System (LAMS)

The council also provides quantitative measures to assess the quality and effectiveness of weed control methods. By collecting data on street length, time taken, and equipment used, we can calculate and aim to reduce cleaning time, machine use, and carbon emissions. This approach demonstrates how the council has improved street cleaning standards and evaluates the overall effectiveness of the weed control methods.



Examples of Land Audit Management Systems(LAMS) (The Association for Public Service Excellence, 2018)

Phase 3 Act

Learning from site trials and enhancing community involvement, the Council has adjusted the sweeping schedule and guidelines. This collaborative approach promotes integrated weed management and engages the community in maintaining clean, herbicide-free spaces.

- **Adjusting the Sweeping Schedule and Guidelines Based on Trial Results**
- **Community involvement and council support**



Barton Close before, during and after the use of the proposed new equipment¹

Site-Specific Strategies

Remediation and Maintenance

Learning from the Trial

During the trial, the council has considered the type of surfaces, location, and usage of the site. The council has trialled products such as pedestrian weed brushes and hot water lances on pedestrian walkways and highways. Through these trials, the council identified areas, such as gutters, that require additional maintenance, as well as areas such as play area safety surfaces, alongside private boundary walks, or on poorly degraded surfaces where the weed brush will cause damage. The use of hot foam will be used.

Adjusting the Sweeping Schedule and Guidelines Based on Trial Results

Cambridge City Council has been using large street-sweeping vehicles to remove surface debris. However, the effectiveness has been minimal, as these vehicles cannot loosen compacted soil or reach tight corners and narrow alleys. Following a trial, the Council found that pedestrian-operated machines were more effective in addressing these issues. As a result, they decided to incorporate these machines in applicable areas and adjust the sweeping schedule for optimal results.

Community Involvement

Example - Happy Bee Street, Cambridge City Council

One of the schemes under the HRP is Happy Bee Street, which aims to explore sustainable weed control practices. Happy Bee Street allows communities to nominate their streets as herbicide-free zones and provides tools and advice for managing these areas.

Physical participation

By participating in weeding activities, residents enhance their sense of ownership, actively contribute to local planning, and increase awareness of site-specific challenges, understanding how their actions support the NAP's overall goal of phasing out herbicides.

Collaborative Stewardship

The collaborative efforts greatly contribute to the success of the Happy Bee Street scheme. The Cambridge City Council Biodiversity Officer regularly meets with the Happy Bee group to assess their street, identify difficulties, and gather suggestions. Through these interactions between the council and residents, adjustments are made to weed management practices and improvements are implemented on the streets.

For example, the Happy Bee group raised concerns about damages on Ascham Road and suggested the installation of raised beds. The council accepted this suggestion and took action on streets with similar conditions. The ongoing monitoring and assessments by the council keep residents satisfied, knowing that their input is considered.

This collaboration illustrates how council support and resident participation drive the success of local weed management plans and enhance biodiversity.



Image of Happy Bee Group²



Image of Happy Bee Street Sign³

Cambridge City Council. (2024). Barton Close before, during and after the use of the proposed new equipment [PDF]. Available at: <https://democracy.cambridge.gov.uk/documents/s65481/Final%20of%20Herbicide%20Use%20Reduction%20Plan%20with%20Appendices%20and%20EQIA%20060324.pdf> [Accessed 24 May 2024].
Pesticide Free Cambridge. (2023). Image of Happy Bee Street Sign [Image]. Retrieved from: <https://www.pesticidefreecambridge.org/post/pesticide-free-cambridge-joins-happy-bee-streets-west-chesterton-meeting> [Accessed 20 May 2024].
Pesticide Free Cambridge. (2023). Image of Happy Bee Group [Image]. Retrieved from: <https://www.pesticidefreecambridge.org/post/plc-joins-happy-bee-streets-north-cambridge-tour> [Accessed 20 May 2024].

Phase 4

Adapt

Reviewing the national plan to ensure goals are aligned

Site-Specific Strategies

Reviewing the Regional and Local plan

Reviewing the national plan to ensure goals are aligned

In 2020, a revised version of the National Action Plan (NAP) was drafted. The plan aims to minimise the risks and impacts of pesticides on human health and the environment, while ensuring effective management of pests and pesticide resistance. Cambridge City Council has reviewed the 2013 and 2020 plan and developed guidelines and incorporated Integrated Pesticide Management into the HRP plan to align with the goals of the UK's National Action Plan.

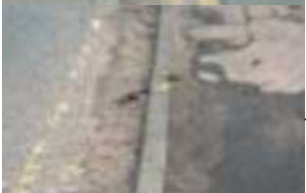
Evaluating the success of the strategy and making improvements

Cambridge will reuse the Land Audit Management System (LAMS) set up in the identify stage to assess ongoing detritus and weediness levels, evaluating the success of the actions that have been taken and deciding on any changes to the plan to improve results going forward, for example future equipment purchases to deal with specific problems or labour deficits.

Index A - Suggested equipment for different types of surface

Suggested equipment for different types of surface								
		Block paving	Tarmac	Artificial surfaces	Grass	Granite paving	Gravel	Invasive Weeds
Sweeper		✓	✓	✓	✓	✓		
Weed brush		✓	✓	✓				
Artificial brush				✓				
Moss brush		✓	✓	✓		✓		
Hot water machine		✓	✓	✓		✓	✓	
Hot air machine		✓	✓			✓	✓	
Mower					✓			
Gravel renovator							✓	
Electric Weeding		✓	✓			✓	✓	✓

Index B - Examples of Detritus density chart

Examples of Detritus density chart						
Detritus level	Photo	Descriptions				
Grade A		• No detritus accumulation on site				
Grade B		• Little detritus scattered on site; overall the street is mostly free of detritus				
Grade C		• A thin, visible layer of detritus widely spread across the area				
Grade D		• Heavily accumulated detritus present; detritus covers the gap between the edge of the curb and the street				

Examples of Weed Level Scale						
Criteria						
Height (mm)	<10	10-50	50-100	100-150	150-200	>200
Weed diameter or length (mm)	<50	50-100	100-150	150-200	200-300	>300
Joint coverage (%)	<10	0-20	20-30	30-40	40-50	>50
Score base on criteria						
Score	1	2-3	4-5	6-7	8-9	10-11
Level						
Total score (Height + Weed diameter or length + Joint coverage)	<3	4-6	7-9	10-12	13-15	>16
Level	1	2	3	4	5	6

Index C - Examples of Sweeping schedule

Sweeping schedule			
Person in charge:			
Responsible area:			
Date	Location	Complete	Note (Tick which applicable)
			☐ Requires addition maintenance
			☐ Degraded surface
			☐ Others: _____
			☐ Invasive Weeds present
			☐ Grass cutting required
			☐ Others: _____
			☐ Requires addition maintenance
			☐ Degraded surface
			☐ Others: _____
			☐ Invasive Weeds present
			☐ Grass cutting required
			☐ Others: _____
			☐ Requires addition maintenance
			☐ Degraded surface
			☐ Others: _____
			☐ Invasive Weeds present
			☐ Grass cutting required
			☐ Others: _____

Index D - Litter and refuse: code of practice

This code of practice outlines what a court of law might consider as applicable to different types of land.
<https://assets.publishing.service.gov.uk/media/5d8b766ded915d0372f8ac59/pb11577b-cop-litter1.pdf>

7.0 Grades of cleanliness

7.1 The graded standards shown below are as defined in the original Code of Practice on Litter and Refuse issued under section 89(7) of the Environmental Protection Act 1990. These four grades also correspond to the scales used by local authorities for recording levels of street cleanliness for best value indicator BV199.

For litter and refuse:
Grade A: No litter or refuse
Grade B: Predominately free of litter and refuse apart from some small items
Grade C: Widespread distribution of litter and/or refuse with minor accumulations
Grade D: Heavily affected by litter and/or refuse with significant accumulations

For detritus (to be removed on metalled highways and recommended to be removed on all hard surfaces):
Grade A: No detritus
Grade B: Predominately free of detritus except for some light scattering
Grade C: Widespread distribution of detritus with minor accumulations
Grade D: Heavily affected by detritus with significant accumulations

7.2 These standards may be applied to any site for litter and refuse, and, in the case of detritus, to metalled highways and (recommended) all hard surfaces, using the following principles. N.B.

Although the nature and characteristics of land may vary the principles on which the litter, refuse and detritus are graded remain the same. The photos that follow in 7.7 demonstrate graphically how these principles appear against different backgrounds.

- Grade A means that no litter, refuse (or detritus where applicable), is present in the area.
- The presence of even one small item of litter, refuse (or small scattering of detritus where applicable) downgrades the environment to a B.
- The presence of litter and/or refuse(and/or detritus where applicable) that is significant enough to form a few minor accumulations (grade C) or significant accumulations (grade D) is regarded as unacceptable.

7.3 It is recognised that a grade A cannot be maintained at all times, and the presence of a few small items of litter and refuse, not yet accumulating, are regarded by the public as acceptable for short periods of time. It is expected that managers of land should, through monitoring and the appropriate use of resources, keep their land clear of litter and refuse so that it does not fall below a grade B and is cleansed to an A on a regular basis. Metalled highways must be free from detritus after cleansing(to a grade A).

The inclusion of the recommendation that all hard surfaces be cleansed to be free from detritus in this code seeks to ensure that thorough cleansing is carried out on a regular basis. Without this, an area still appears dirty.

SWEEPERS

Kersten sweepers have been designed specifically for effective removal of detritus on hard surfaces. The 5 row spiral brushes are configured to effectively move bulky, heavy material such as soil, allowing your hard surfaces to stay clean and dry out more quickly to prevent moss from taking hold.

Kersten sweepers can be fitted with collection boxes and gully brushes to make collection of material easy, even right up to a kerb edge.



WEEDBRUSHES

Kersten Weed Brushes are ideal for removing larger amounts of soil and vegetation from hard surfaces. We have brushes to tackle a whole range of jobs, from moss in block paving, right up to path and highway edging, removing large amounts of verge that is encroaching onto the hard surface.

The Kersten Weed Brushes are available with different types of brush to suit different situations. The brush heads can be angled and the height adjusted to provide the best finish.



THERMAL DEVICES

We offer Thermal Weed Management solutions from Ripagreen, Hoaf and Eco WeedKiller. These machines use hot air or water to wilt the plant. This hot air or water instantly causes a thermal shock that breaks the chlorophyll producing part of the plant, meaning the process of photosynthesis is prevented. The plant then dries naturally with a visible result after a few hours.

Hot air is a quick and efficient way to treat young vegetation. The Ripagreen systems use 94% air to 6% gas, and the Eco Weedkiller system is 100% water, giving off no emissions.



GRAVEL PATH RENOVATORS

Kersten provide a range of gravel path renovators and graders capable of doing a range of tasks including de-compaction, filling in potholes, removing weeds, grading and rolling gravel surfaces.

Some of our machines use special knives for cutting under the plant and lifting it to the surface, other tools rip up and then grade the surface. Essentially re-laying the gravel path to allow better accessibility for vehicles and pedestrians.



ELECTRIC WEEDING DEVICES

Weeding with electricity, is a fast, economical and extremely effective method of weeding. We offer a full range of products, from hand held, and walk behind, through to tractor and side arm mounted machines, ensuring the right products for a wide variety of applications.

Weeds will wilt almost immediately and will dry off within 3-4 days. Because the treatment is systemic, there is far less regrowth than with other thermal methods, resulting in fewer applications per year for perennial plants.





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