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A

Residents' Services Select Committee

Councillors on the Committee

Councillor Wayne Bridges (Chair)
Councillor Colleen Sullivan (Vice-Chair)
Councillor Scott Farley (Opposition Lead)
Councillor Janet Gardner
Councillor Ekta Gohil
Councillor Sital Punja
Councillor Peter Smallwood

Date: **TUESDAY, 16 APRIL 2024**

Time: **7.00 PM**

Venue: **COMMITTEE ROOM 5 - CIVIC CENTRE**

Meeting Details: Members of the Public and Press are welcome to attend this meeting

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Published: Monday, 8 April 2024

Contact: Liz Penny, Democratic Services Officer
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https://modgov.hillingdon.gov.uk/ieListMeetings.aspx?CommitteeId=422

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Terms of Reference

Residents' Services Select Committee

To undertake the overview and scrutiny role in relation to the following Cabinet Member portfolio(s) and service areas:

Cabinet Member Portfolio	Cabinet Member for Residents' Services (Cllr Eddie Lavery)
Relevant service areas	1) Community Safety, Licensing, Standards and Enforcement 2) Planning & Regeneration 3) Housing policy, homelessness & tenancy management 4) Green Spaces, Sport & Culture 5) Waste Services

Statutory Crime and Disorder Scrutiny

This Committee will act as a Crime and Disorder Committee as defined in the Crime and Disorder (Overview and Scrutiny) Regulations 2009 and carry out the bi-annual scrutiny of decisions made, or other action taken, in connection with the discharge by the responsible authorities of their crime and disorder functions. In practice, this is undertaken currently by a bi-annual review of the Safer Hillingdon Partnership, which includes senior officers from the Metropolitan Police, London Fire Brigade and Probation Service attending to answer questions from Councillors. More guidance on this important aspect of external scrutiny will be provided to the Committee.

Cross-cutting topics

This Committee will also act as lead select committee on the monitoring and review of the following cross-cutting topics:

- Climate Change
- Local impacts of Heathrow expansion
- Local impacts of High Speed 2
- Community Cohesion

Agenda

1	Apologies for Absence	
2	Declarations of interest in matters coming before this meeting	
3	To receive the minutes of the previous meeting	
4	To confirm that the items of business marked as Part I will be considered in public and those marked Part II will be considered in private	

Part I - Members, Public and Press

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Minutes

RESIDENTS' SERVICES SELECT COMMITTEE

13 March 2024

Meeting held at Committee Room 5 - Civic Centre

	Committee Members Present: Councillors Wayne Bridges (Chair) Colleen Sullivan (Vice-Chair) Scott Farley (Opposition Lead) Janet Gardner Ekta Gohil Sital Punja Peter Smallwood **Others Present**: Melissa Blower (Housing Improvement Programme Manager) Sophie Coughlan (Arboricultural Manager) Stuart Hunt (Head of Green Spaces) Dan Kennedy (Corporate Director of Central Services) Maggie Nelson (Head of Housing Needs) Liz Penny (Democratic Services Officer) Ian Thynne (Head of Environmental Specialists) Richard Webb (Director of Community Safety & Enforcement) Debby Weller (Head of Housing Strategy and Policy)
56.	**APOLOGIES FOR ABSENCE** *(Agenda Item 1)* There were no apologies for absence.
57.	**DECLARATIONS OF INTEREST IN MATTERS COMING BEFORE THIS MEETING** *(Agenda Item 2)* There were no declarations of interest.
58.	**TO RECEIVE THE MINUTES OF THE PREVIOUS MEETING** *(Agenda Item 3)* In relation to the Community Infrastructure Levy and S106 Monitoring – Annual Report item, Members noted that, although "the statutory requirements in terms of the information required to be published had been met", the Committee had previously been informed that they would be provided with said information but this had not happened. **RESOLVED: That the minutes of the meeting dated 13 February 2024 be agreed subject to the aforementioned amendment in relation to the information provided to Committee Members.**
59.	**TO CONFIRM THAT THE ITEMS OF BUSINESS MARKED AS PART I WILL BE CONSIDERED IN PUBLIC AND THOSE MARKED PART II WILL BE CONSIDERED IN PRIVATE** *(Agenda Item 4)*

	It was confirmed that all items of business were in Part I and would be considered in public.
60.	**REVIEW OF HOMELESS PREVENTION & THE CUSTOMER JOURNEY - WITNESS SESSION 1** *(Agenda Item 5)* Dan Kennedy (Corporate Director of Central Services), Melissa Blower (Housing Improvement Programme Manager), Debby Weller (Head of Housing Strategy and Policy) and Maggie Nelson (Head of Housing Needs) were in attendance to present the report and answer Members' questions. The Corporate Director of Central Services acknowledged that the current situation in relation to homelessness was extremely challenging. There had been a 27% increase in demand with 100 people presenting as homeless each week. This was primarily being driven by evictions from private rental accommodation. It was noted that, over the last five years, there had been an increase in demand but a 41% reduction in affordable privately rented accommodation supply. The Council's strategy focussed on homelessness prevention and boosting of supply; 500 new homes were to be purchased and officers were also exploring ways in which they could increase supply in the private rental sector. The Council was also investing in improved systems and processes to improve the customer experience. The Head of Housing Needs addressed the Committee Members and provided an overview of the customer pathway from start to finish. Members heard that customers usually approached the Council via the website in the first instance by completing an online form. The information provided was assessed and advice and guidance given if necessary. If appropriate, the enquiry was then passed to the triage team who assisted the customer in providing the information required and determined which additional documents needed to be provided. This enabled the team to establish whether the customer was eligible for assistance; some applicants had limited / no recourse to public funds. If eligibility was established, the case was assigned to a case officer. Once assigned to a case officer, the first stage was prevention; officers tried to intervene as early as possible e.g. by negotiating with landlords in an attempt to enable the tenant to stay in their current accommodation. If prevention was unsuccessful, the next stage was the relief stage at which point alterative accommodation was sought. A maximum of 56 days was allocated for both the prevention and relief stages of the process. During the relief stage, advice and guidance was provided to assist the client in securing accommodation. If they had a priority need for temporary accommodation, this would be provided. Temporary accommodation for larger families was difficult to source and very expensive, so these families were sometimes encouraged to remain in situ for as long as possible i.e. until a bailiff warrant was secured; however, they had the right to assist on temporary accommodation being provided if they did not wish to wait. Once an individual or a family had been placed in temporary accommodation, officers then tried to secure private rented accommodation for them; affordability was a factor and the accommodation offered was sometimes out of borough. Once a property had been secured and the clients had moved in, the duty was discharged. If no accommodation had been organised by day 57 of the relief stage, officers would need to reach a decision within 15 days as to whether the Council had a longer-term duty to them.

It was acknowledged that the current situation was challenging with fewer houses becoming available. Many landlords were increasing their rents or choosing to sell their properties. Officers were aware that this was a very stressful situation for people and tried to be as empathetic as possible.

The Head of Housing Strategy and Policy was in attendance and provided an update on partnerships around homelessness. Members heard that the Council had a number of established partnerships with the voluntary sector, particularly with Trinity who assisted in meeting the needs of rough sleepers. Thames Reach also worked closely with the Council and helped with outreach projects to identify those who were sleeping rough at Heathrow and throughout the Borough. Heathrow presented a significant challenge - Thames Reach worked at the airport and a mental health worker also visited the airport to assist.

The Committee was informed that first stage accommodation was available at Olympic House which was managed by Trinity. There were other similar accommodation options across the borough which offered a lot of support including in relation to the health aspects associated with rough sleeping – this was mainly funded by CNWL. The funding was in place until the end of 2025, but it was hoped it would continue thereafter. Other support for those with drug or alcohol addiction was available through Arch – Hillingdon; grant funding was also available for this service.

Members heard that the Homelessness Strategy was a statutory 5-year document which ran until the end of 2024 and was in the process of being reviewed. It was anticipated that a draft of the new Strategy would be available in the autumn. There had been a number of key changes and 'Project Neptune' would feed into the new Strategy. There would be a focus on prevention and the issue of Autism / ADHD and the homeless would be explored which had not been included in the past. The current Strategy would be reviewed over the course of the next few months and the consultation process would be completed over the summer. Service users would be involved in this process to ensure their experience of the customer journey and how this fed into service provision was included.

Members sought further clarification regarding the current staff training programme noting that service users often presented with mental health issues, and some reported that officers were judgemental and lacked empathy. In response to this, it was confirmed that training was available for all staff. Trauma-informed issues training was to be introduced in the near future and was booked for 1 May 2024. New training was also to be introduced in response to new legislation which set out the duty of the Council in respect of domestic abuse.

In response to further questions from Councillors, it was confirmed that, in the past, customers often had the same case officer throughout the housing process. Unfortunately, this was no longer the case due to staff turnover and an increase in case numbers; there was a reliance on technology to ensure cases were effectively passed on to new officers.

Members sought further clarity regarding the 56-day relief stage of the process. It was confirmed that, if a suitable property were secured, it would be offered to the family in question. The family was not obliged to accept the property but, if they chose not to, the Council's duty would be discharged at that point. The customer could request an independent review and a decision would be taken independently – a further 56 days were allocated for this process. Should the Council's original decision be upheld, its

duty would be discharged at that point. However, if the Council's decision were overturned, the family would be offered an alternative property in due course.

With regard to accountability, the Committee was advised that officers were responsible for ensuring all the necessary information was on file. Senior officers carried out quality assurance checks and met with officers once a month to review their caseload and address any concerns.

Members expressed concern regarding the mental health and wellbeing of officers who were often overloaded with work. It was acknowledged that it was a very stressful role - some officers had previously had up to 100 open cases which was unmanageable. 5 new officers had been recruited to assist and 150 cases had been transferred across to said officers. Staff wellbeing was taken seriously, and extra support was available if needed.

In response to further questions from Councillors, it was confirmed that an out of hours housing service was available. It was acknowledged that not all people wanted to / were able to apply for housing assistance online. If necessary, those who presented in person were directed to support services who could assist them in registering online. Information was also available in other languages. It was confirmed that those who were granted leave to remain were given 28 days' notice then received an eviction letter which only allowed them one week to vacate their premises. Housing officers were working with the Home Office and it had recently been agreed that the 28-day letter would be accepted as notice giving local authorities more time to find appropriate accommodation. It was acknowledged that the situation in relation to single people was particularly challenging as they often did not have a priority need for accommodation.

Councillors enquired whether the IT systems currently in place were fit for purpose and asked how the expectations of clients were managed. In response to this, the Head of Housing Needs recognised that some people thought it was better to present as homeless rather than waiting for a Council property. This was never a good idea. Officers always tried to manage the expectations of customers and ensured they fully understood the process. In terms of the IT systems, Members were informed that Locata was currently used for housing allocations and Jigsaw for homeless applications. From April 2024, the current Jigsaw system would be changing to a Locata-based system thereby enabling the two systems to work together more efficiently. It was confirmed that the new systems would enable officers to drill further into the data to establish patterns and take a more proactive approach. Complaints data would also be used to drive improvements, inform training and improve communication.

Members requested a presentation on the new systems as this would be beneficial.

In terms of acquiring new properties, the Corporate Director of Central Services confirmed that all options were being considered and speed was of the essence. During the first year of a 3-year programme, it would be necessary to purchase property directly, but it was important to ensure that this process did not end up triggering homelessness. If landlords had empty properties or a portfolio to sell, the Council may consider such purchases where appropriate. All options were being considered to boost supply including private rentals of reasonable quality. The social sector was also being explored. The Council would also ensure it achieved the maximum possible in terms of grant funding.

	With regard to temporary accommodation, it was recognised that people were sometimes housed in an overcrowded situation for a while due to a lack of available accommodation. If the temporary accommodation provided was not acceptable, action would be taken and the customer would be removed. Councillors noted that the standard of accommodation provided by private landlords was often unacceptable. A charter was proposed to ensure properties were fully and appropriately vetted. It was suggested that properties should be inspected by other parties to ensure they met the required standard. ***At the request of Members, it was agreed that the Head of Housing Needs would prepare a step-by-step summary of the homelessness process which would be circulated to the Select Committee.*** ***It was suggested that a visit to the contact centre would be beneficial to enable Members to better understand the process and see firsthand how officers interacted with other departments across the Council when handling housing-related calls.*** **RESOLVED: That the Residents' Services Select Committee noted the evidence heard at the witness session and sought clarification as necessary in the context of its review of homelessness and the customer journey in Hillingdon .**
61.	**CRIME & DISORDER SCRUTINY: SAFER HILLINGDON PARTNERSHIP PERFORMANCE UPDATE** *(Agenda Item 6)* Richard Webb, Director of Community Safety & Enforcement, was in attendance to answer Members' questions regarding the Safer Hillingdon Partnership Performance Update report. Members commented that much of the data provided in the report was a little unclear and out-of-date. It was confirmed that older data had been provided as it related to the end of the strategy period. It was acknowledged that a new dashboard would be required in the future to provide further detail and a level of insight previously not available. More work was needed in the serious violence strategy to engage communities and make a difference in terms of serious violence in the Borough. With regard to the information set out on page 9 of the report regarding IRIS, Members noted that there was no mention of domestic abuse relating to men, the elderly and LGBTQ+ groups. It was important to ensure that GPs were fully trained to meet the needs of all. In respect of the utilisation of resources as mentioned in the report on page 9, point 4, Members heard that a new joint process between the local authority and the Police was in place. Each month a review was conducted to ensure Police / Council alignment on matters which would make the biggest difference across the Borough. It was noted that the Council had a Safer Communities Team; however, the Council's response to crime and disorder concerns covered several teams – it was important to pull together to address the problems most effectively. Members were informed that the IRIS project would provide training in GP surgeries noting that GP referrals into domestic abuse support services were currently very low.

	The aim was to ensure that all GPs were responding to the signs. With regard to knife crime, it was recognised that this was a broad term – a further breakdown of the different types of knife crime could be requested. It was confirmed that the main issue related to young people carrying knives in the vicinity of schools rather than inside the schools themselves. Members enquired how often the SHP priorities were reviewed noting the proliferation of burglaries in the Borough. The Committee was informed that the SHP reviewed its priorities annually – it was important to consider the impact of crime in addition to volume. The SHP was exploring better ways of factoring in all these elements. The Committee emphasised the importance of community engagement given the diverse communities across the Borough. The Director of Community Safety & Enforcement concurred with this and recognised the importance of involving local communities in helping to form the Strategy and determine priorities; this was not embedded in processes at present. Members were informed that the SHP would be meeting the following week and a Community Engagement event was one item for discussion. Councillors enquired whether members of the Safer Neighbourhood Board (SNB) could be more involved with the work of the Safer Hillingdon Partnership (SHP). The Director of Community Safety & Enforcement explained that the Chair of the SNB was a member of the SHP but agreed to consider additional ways in which other members could be involved. It was noted that the Strategy document provided was the starting point only which created the framework – it had been important to meet the 31 January 2024 deadline. The Strategy would be refreshed later in the year and would be supported by a more detailed plan. It was confirmed that the Theory of Change model was a relatively new concept hence the use of experienced trainers was recommended. Members thanked the Director of Community Safety & Enforcement for his input but felt it was imperative that a representative of the Metropolitan Police attend future meetings to provide a fuller update in relation to Crime and Disorder in the Borough. **RESOLVED: That the Residents' Services Select Committee noted the contents of the reports and asked questions in order to clarify matters of concern or interest in the Borough.**
62.	**TREE PLANTING** *(Agenda Item 7)* Stuart Hunt, Head of Green Spaces, and Sophie Coughlan, Arboricultural Manager, were in attendance to answer Members' questions in relation to the Tree Planting report. Members sought clarification regarding the apparent dip in the number of trees planted in the Borough this year. It was confirmed that, in previous years, the figures had included the planting of Whips; this year more Standards had been planted than Whips which accounted for the dip in numbers. Councillors enquired how often trees were planted in the same area as trees which had been cut down. Members heard that these figures were not recorded. However, it was

	important to note that trees fared better when planted in areas where the residents wanted them. If a tree had been removed, residents could submit a request for a replacement tree; however, it was not always possible to replace like for like. Members were informed that sponsorships in collaboration with residents were also encouraged; a one-off sponsorship fee was chargeable and multiple residents could come together to sponsor a tree as a group should they wish to do so. Trees for Streets carried out leaflet drops in relation to this, and further information would be provided in Hillingdon People magazine. Sponsorships could also come from companies – particularly in the case of more deprived areas. Members welcomed this approach and felt businesses should be encouraged to support the Trees for Streets initiative. It was confirmed that the map on page 83 of the agenda pack reflected sponsorships only; additional tree planting was carried out across the Borough to even things out and ensure good coverage. The Committee sought further clarification regarding the information in the table on page 81 of the agenda pack which showed the numbers of trees removed / planted year by year. It was confirmed it could take ten or more years for Whips to be helpful in tackling air pollution. However, Whips reached maturity much better than Standards and were generally more successful. **The figures in the table showed the total number of trees planted but a breakdown of these figures separating out Standards and Whips could also be provided.** In response to further questions from the Committee, Members were advised that, when deciding on locations for tree planting, all things were taken into account in an attempt to ensure 'right tree, right place'. A lot of trees had been planted around schools to act as pollution screens. Members suggested that the Council could possibly do more tree planting on housing land / TfL land in the pockets of space available. A more joined up approach would be welcomed. Councillors heard that watering had been brought in-house during the summer of 2023. This had enabled the Council to be more in control and act more quickly if trees were struggling. The same procedure was planned for the summer of 2024. Climate change was a challenge, but officers were learning what worked well and sought to plant resilient species where possible to suit the environment. **RESOLVED: That the Residents' Services Select Committee:** **1. Noted the Tree Planting update; and** **2. Suggested any specific areas / locations where Members / residents would like to see more trees to be considered further.**
63.	**STRATEGIC CLIMATE ACTION PLAN** *(Agenda Item 8)* Ian Thynne, Head of Environmental Services, was in attendance to answer Members' questions regarding the Strategic Climate Action Plan. Members noted that the Strategy relied heavily on carbon offsetting which was difficult to measure. The world was moving away from carbon offsetting, and it was important

	to understand what came next. The Committee heard that the Council's approach to carbon offsetting was not yet fully established. The aim was to reduce emissions first and consider the purchase of green energy. There was also a potential train of thought around the local authority producing its own energy. The Committee observed that, once the Council sold energy into the grid, it had to buy it back at the market rate. It would be beneficial if the Council could create and use its own energy. Planting trees was not an adequate solution to address climate change. Emissions in public buildings should be further investigated with a view to reducing consumption and it was important to have a vision for the future. The Head of Environmental Services acknowledged that this topic was still relatively new; local authorities were trying to find their feet and work through how much carbon needed to be offset. Building performance was a factor; good progress had been made to date, but it was acknowledged that further planning would be needed. Members observed that the green nature of the borough was an asset. However, it was important to move away from the language of 'carbon offsetting' and embrace a new term 'carbon credible'. This would enable the Council to be more innovative in its approach. It was confirmed that the Head of Environmental Services would be reviewing the Strategic Climate Action Plan in 2024 which would present a good opportunity to take stock of the current situation and plan for the future. In response to further requests for clarification from the Committee it was confirmed that housing stock was not included in carbon offsetting figures to ensure there was no double counting – the local authority did not have control of all housing stock energy. Members enquired how the Council could work with big businesses and energy companies. The Head of Environmental Services confirmed that, as this was all relatively new, it was important to get the Council's own house in order in the first instance using the Government funding available. The next step would be to approach big businesses and work with partners. Tentative discussions had already taken place with Brunel University and Heathrow airport. Councillors noted that Breakspear Crematorium was one of the few services which currently ran at a profit in partnership with Harrow. Members enquired whether future expenses relating to the upgrade of the Crematorium could potentially be shared with Harrow. **The Head of Environmental Services agreed to explore this further outside of the Committee meeting and report back.** **RESOLVED: That the Residents' Services Select Committee noted the content of the Strategic Climate Action Plan progress report.**
64.	**FORWARD PLAN** *(Agenda Item 9)* **RESOLVED: That the Forward Plan be noted.**
65.	**WORK PROGRAMME** *(Agenda Item 10)* **RESOLVED: That the Work Programme be noted.**

	The meeting, which commenced at 7.00 pm, closed at 9.11 pm.

These are the minutes of the above meeting. For more information on any of the resolutions please contact Liz Penny, Democratic Services Officer on epenny@hillingdon.gov.uk. Circulation of these minutes is to Councillors, officers, the press and members of the public.

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Review of Homelessness and the Customer Journey: Witness Session 2

Committee name	Residents' Services Select Committee
Officer reporting	Melissa Blower, Housing Project Manager
Papers with report	Scoping Report

HEADLINES

This item will encompass the second witness session regarding the Committee's review into Homelessness and the Customer Journey in Hillingdon.

RECOMMENDATION:

That the Residents' Services Select Committee notes the evidence heard at the witness session and seeks clarification as necessary in the context of its review of Homelessness and the Customer Journey in Hillingdon.

SUPPORTING INFORMATION

At its meeting on 16 January 2024, the Residents' Services Select Committee agreed to undertake a major review of the Council's Housing Advice and Homelessness Service, with a particular focus on the residents' journey through the system and customer service. The scoping report for the review was subsequently approved at the Select Committee meeting on 13 February 2024.

At this second witness session, representatives of key partners; namely Thames Reach (Benjamin Sebok, Lead Manager) and Trinity (Carys Hedley, Director of Services) will be in attendance to outline their roles and answer any questions that may arise.

Thames Reach – Benjamin Sebok, Lead Manager

Thames Reach is an organisation that works directly with those that are rough sleeping within London or in hostel accommodation and is committed to preventing vulnerable people from becoming homeless.

Thames Reach provides a Rapid Response Team that is funded by the Greater London Authority to provide an emergency response to those that are rough sleeping across London. The team delivers shifts every night of the year and early mornings, to look for people who are sleeping rough. The team's primary aim is to respond to referrals from Street link and refer clients who are new to the street to prevent them from spending a second night on the streets.

The team's target is to conduct a first visit to a sleeping site within 24 hours of a referral being received and then support those who are rough sleeping into accommodation pathways or agencies.

Trinity – Carys Hedley, Director of Services

Trinity is a local charity that is committed to ending rough sleeping through addressing the various root causes and contributing factors that lead to people becoming homeless. Trinity supports residents through community and faith groups, responsive outreach, emergency shelter, supported housing, affordable housing, access to physical and mental health support services and addiction treatment, employment opportunities, education, social support networks and more.

Trinity seeks to create sustainable solutions that empower individuals and families to thrive in their communities. And ending homelessness by curing all the situations that threaten and cause it in society.

They do this through creating the sort of society that delivers this, in the communities, in the neighbourhoods and in the accommodation they provide. Last year Trinity housed over 600 people who were / were at risk of suffering homelessness and helped 154 people move into their own home.

Terms of Reference

The following Terms of Reference were noted for this review, subject to any changes agreed by the Committee:

1. To gain a thorough understanding of the Council's Homeless Prevention Service and the resident's journey through this process.
2. To scrutinise the service delivery and review its effectiveness.
3. To review service users' feedback to explore the challenges faced by residents accessing the service.
4. To look at other local authorities that may have different models of service delivery for best practice, including research and findings from charities, housing bodies, regional bodies and organisations, e.g. GLA.
5. Subject to the Committee's findings, to make any conclusions, propose practical and deliverable actions, service and policy recommendations to the decision-making Cabinet.

How this report benefits Hillingdon residents

Select Committees directly engage residents in shaping policy and recommendations from the Committees are presented to Cabinet to consider, and ultimately seek to improve the way the Council provides services to residents.

Financial Implications

None at this stage.

Legal Implications

None at this stage.

BACKGROUND PAPERS

NIL.

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Residents' Services Select Committee Review Scoping Report - 2023/2024

A Review of Homeless Prevention & the Customer Journey

1. OBJECTIVES

Aim of the review

At its meeting on 16 January 2024, the Residents' Services Select Committee agreed to undertake a major review of the Council's Housing Advice and Homelessness Service, with a particular focus on the residents' journey through the system and customer service.

This review aims to consider ways in which the customer journey could potentially be improved to better support residents during this process and improve residents' satisfaction with the way in which they access advice and support, to prevent homelessness. It is advised that the scope of any Select Committee's review is limited to the customer journey and how residents access the services and how advice is given as the homelessness process is set out in legislation. This will ensure any review can remain focussed.

Terms of Reference

The following Terms of Reference are suggested for the review, subject to any changes agreed by the Committee:

1. To gain a thorough understanding of the Council's Homeless Prevention Service and the resident's journey through this process.
2. To scrutinise the service delivery and review its effectiveness.

3. To review service users' feedback to explore the challenges faced by residents accessing the service.
4. To look at other local authorities that may have different models of service delivery for best practice, including research and findings from charities, housing bodies, regional bodies and organisations, e.g. GLA.
5. Subject to the Committee's findings, to make any conclusions, propose practical and deliverable actions, service and policy recommendations to the decision-making Cabinet.

2. BACKGROUND

National Context

The quarterly data published by the Department for Levelling Up, Homes and Communities (DLUHC) shows that nationally demand for affordable housing has risen sharply, with homelessness presentations to local authorities a particular pressure. At the end of June 2023, nearly 139,000 families with children were living in temporary accommodation – 7,430 more than at the end of March. 68,070 families with children were living in temporary accommodation (TA) at the end of June, 7,510 in B&Bs; a 93% increase over one year.

Nationally, there were circa 21,000 homeless acceptances in the second quarter of the year, an increase of 19% on a year ago.

There has been an 18% increase in the number of households who were homeless and helped by councils as a result of no-fault evictions.

London Councils has urged the Government to end the freeze on Local Housing Allowance (LHA) to prevent almost 60,000 Londoners in the private rented sector from becoming homeless over the next six years.

Research, which was commissioned by a cross-party group and carried out by Alma Economics, has estimated that an additional 16,500 to 22,000 London households will become homeless by 2030 unless the LHA is raised. London Councils stated that 22,000 households equate to 58,740 individuals, including 28,000 children. One in seven private renters in London are reliant on LHA to meet their housing costs.

The research suggested that restoring LHA to cover at least 30 per cent of local market rents would save the public finances in London more than £100m each year. The majority of these savings would come from reduced pressure on London boroughs' homelessness services, but also from lower costs to other parts of the public sector such as the NHS and social care. London accounts for more than half (57 per cent) of England's total number of homeless households in temporary accommodation.

In August, London Councils found that almost 170,000 Londoners were homeless and living in temporary accommodation arranged by their local authority. This is equivalent to around one in 50 Londoners overall and one in 23 children in the capital.

Turbulence in the capital's private rented sector is a "critical factor" behind the growing numbers of homeless Londoners. Research from the group and partners, published in July 2023, revealed a 41 per cent drop in private rental listings in the capital since 2020, while listed rental prices rose by 20 per cent.

The Autumn statement 2023 has announced that LHA is to be restored to 30% percentile local market rents for 2024/25 and then held at that level in cash terms.

Local Context

In Hillingdon we have seen a 27% increase in Homeless Presentations since the same period last year. We are receiving on average 100 new approaches each week for housing advice and support. The main reason for homelessness remains the ending of private rented tenancies with 27% of approaches being for this reason.

Households leaving friends or family accommodation represent 24% of all approaches and those requiring a move due to domestic abuse is just under 8%. The Council has also seen a considerable increase this year in households leaving asylum accommodation following receipt of their status and this represents 10% of all approaches.

The increase in presentations coupled with the lack of affordable private rented accommodation has placed considerable pressure on the service with the use of temporary accommodation now at 1,126 which is an increase of 492 since 2022/23.

Legislative Context

Any homeless decisions must be made in line with the Homeless Reduction Act 2017 and the Housing Act 1996 Part VII amended in 2002.

Anyone who is eligible can access advice on how they are able to resolve their situation or where to look for alternative accommodation but to be entitled to a full homeless duty, residents must meet the below five criteria.

- ***Homeless or threatened with homelessness*** - within 56 days. This can be due to notice being served or because the property is unsafe for the person to continue to reside within.
- ***Eligible*** – this relates to a person's immigration status, persons without recourse to public funds or those that are not considered habitually resident are not eligible.
- ***Priority need*** – this can be granted due to a number of reasons; for example, the person may have dependent children, be at risk of domestic abuse or be vulnerable as a result of a health condition or disability.
- ***Not be intentionally homeless*** – this is when a person has deliberately done something to cause them to lose their home for example caused anti-social behaviour or did not pay the rent when they could afford to do so.

- ***Have a Local Connection*** – the person has resided within the area or have close family living within the area for a prescribed period of time.

Continuous Service Improvement

The Council has a homeless service improvement programme (Project Neptune) in place that is implementing change and improvement across twelve workstreams. These are:

1. Strategy
2. Leadership
3. Performance
4. People
5. Systems
6. Resources
7. Entice (web & messaging)
8. Engage (accessing the service)
9. Experience (case management)
10. Exit (access to accommodation)
11. Embed (develop learning from the latest trends or demands)
12. Broader Issues

Since the project began in July 2023 there have been several changes delivered within the service and work remains ongoing to make the relevant service improvements.

One of the ways in which the Council has improved the customer journey is through the reinstatement of the triage function. This means that following submission of an application for housing advice and assistance, residents receive contact within 48 hours from an officer who can advise them on the supporting information they need for their application. This not only means that the Council remains in close contact with the resident but also ensures their case is allocated to a caseworker as soon as possible. Upon the case being allocated the resident is then sent an update on who their caseworker is, along with their caseworker's direct contact details and a link to be able to book an appointment with their caseworker at a mutually agreeable time.

Work is currently ongoing to review the website and the information available to residents to ensure that the Council's website offers support to those looking for advice, whilst also ensuring that the Council is setting expectations from the first point of contact about the type of support on offer.

Work also continues to review our ICT systems to reduce the administrative burden on staff to create further capacity for officers to support residents with their housing situations.

We have also developed a fresh training offer for staff new into the service and have been delivering a programme of development for our existing staff to ensure officers

have the relevant skills and knowledge to support our residents in need of housing advice.

Connected work

The internal audit progress review report dated 31 January 2024 indicates that limited assurance was given on homeless housing applications and states that:

“To avoid duplicating the wider housing transformation project this review focused on the operational management of homeless housing applications.

Testing identified weaknesses with the completion of documentation, including insufficient evidence of any segregation of duties with regards to approving decisions. We found no evidence to suggest the applications tested were not eligible for the support they received, however the gaps in the controls may have allowed other fraudulent applications.

Demand pressures and ongoing changes within the service also contributed to our findings in relation to the wider governance arrangements within the Service. However, these are being addressed as part of the wider housing transformation project.

Internal Audit was also able to see evidence of proactive preventative action being taken to reduce demand on the service. Key performance indicators in relation to these preventative measures are in place to help ensure appropriate action is taken.”

Executive Responsibilities

The portfolio Cabinet Member responsible is Councillor Eddie Lavery.

3. EVIDENCE & ENQUIRY

Potential witnesses (including service users)

- Dan Kennedy – Corporate Director of Central Services
- Maggie Nelson – Head of Housing Needs
- Debby Weller – Head of Strategy & Policy
- Melissa Blower – Housing Project Manager
- Representatives from other local authorities / housing organisations / charities, e.g. Citizens Advice Bureau, P3, Trinity, Thames Reach and Bell Farm Christian Centre
- service users (local residents who have required housing assistance)
- social prescribers

Lines of Enquiry

Lines of enquiry can be expanded as the review progresses or included in relevant witness session reports. However, lines of enquiry may include:

- establishing how effectively the housing advice service is being delivered.
- focus on the end user and how they have found the service in practice.
- exploring what support functions are in place and whether these can be improved.
- experiences from other local authorities and housing related organisations

Potential Witnesses

Witnesses will be identified by the Committee in consultation with relevant officers.

Surveys, site-visits or other fact-finding events

Such opportunities will be identified as the review progresses and could include a site visit to Housing Services Reception or a particular advice surgery.

Performance data and future information that may be required

To undertake this review the following data sources could be examined and provided:

- Anonymous summary details of Members' Enquiries, Service Requests and Customer complaints or suggestions received relating to residents' housing experiences.
- Satisfaction surveys or other feedback methods of eliciting customer feedback on their journey and experience e.g. mystery shopping.
- Case studies.
- Ombudsman decisions.
- Further information may also be identified as the review progresses.

4. REVIEW PLANNING & TIMETABLE

Proposed timeframe & milestones for the review:

Meeting Date	Action	Purpose / theme	Witnesses / officers attending
16 January 2024	Agree Review Topic	Information and analysis	Dan Kennedy Melissa Blower Debby Weller Maggie Nelson
13 February 2024	Agree Scoping Report	Information and analysis	Melissa Blower
13 March 2024	Witness Session 1	Information and analysis	Dan Kennedy Melissa Blower

			Maggie Nelson
16 April 2024	Witness Session 2	Information and analysis	Close partners - Trinity, Thames Reach
13 June 2024	Witness Session 3	Information and analysis	IDVAs P3 Local residents Local support services / representatives of local charities (CAB, Bell Farm Christian Centre)
18 July 2024	Witness Session 4	Information and analysis	Representatives of Camden Council Social Prescribers
Outside the Committee – Survey, networking session, consultation, informal meeting with users, site visit, mystery shopper etc...			
24 September 2024	De-brief and emerging findings	To discuss key findings and identify potential recommendations	
27 November 2024	Approval of draft final report	Proposals – agree recommendations and final draft report to Cabinet	

Resource requirements

None.

Equalities impact

The 2010 Equality Act outlines the provisions of the Public Sector Equalities Duty which requires Public Bodies to have due regard to the need to:

• eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Equality Act 2010.

• advance equality of opportunity between people from different groups.

• foster good relations between people from different groups.

The broad purpose of this duty is to integrate considerations of equality into day-to-day business and keep them under review in decision making, the design of policies and the delivery of services. There are no equality impact issues relating to the matters set out in this report.

Background Papers / further reading

Housing advice - Hillingdon Council

Weed Control

Committee name	Residents' Services Select Committee
Officer reporting	Stuart Hunt – Head of Green Spaces
Papers with report	Appendix A – Cardiff Council Weed Control Trial 2021 Appendix B - Approval Extension for Glyphosate
Ward	All

HEADLINES

The purpose of this report is to provide Members of the Select Committee with an update on our recent and future Boroughwide Hard Surface Weed Control

RECOMMENDATIONS

To note the contents of this report and the update on weed control measures going forward for the next 12 months.

INFORMATION ON SUMMER 2023 WEED CONTROL

Following on from issues with performance during the 2nd application, the term contractor made significant changes to the organisational structure of the business. Machinery issues were also highlighted, and changes made to ensure that machinery was available. We have since audited the Borough and are now happy with results following the completion of 3rd application. We are confident that Complete Weed Control will continue to provide the expected standard when commencing the 1st application in April of this year.

SUPPORTING INFORMATION

Glyphosate has been fully tested and approved to be used as specified and as such is not a risk to human and animal health. The chemical has undergone a thorough review in Europe and been re-approved for use in amenity situations as a safe chemical. This review, conducted by the Expert committee of scientists in Europe and approved by a vote of member states, considered some concerns expressed about the active ingredient possibly having carcinogenic effects. Based on all the science and evidence available, it was concluded that these were unfounded, and it was safe to use. This has been our stance when asked.

Glyphosate is currently approved for use until December 2025, so further testing and assessment will be conducted to see if this period is extended. As this is not far away it is prudent to look at alternatives in the event that our use of glyphosate is further controlled within public spaces or removed altogether, as a result of public opinion rather than based on pure science.

We have looked at alternatives, which are currently on the market, one of these is the use of hot foam. The outcome was to review and seek learnings from others rather than funding the outlay for our own trials. A review and trial carried out in Cardiff* has found that these have been proven

to be very labour intensive, use a great deal of fuel, emit high levels of C02 in heating the water and are very expensive, therefore are not an appropriate replacement for chemical control.

*The research found that:

- Across 18 different environmental impact categories, hot foam had the highest impact in all but one category, with the environmental impact of glyphosate being lowest in all but two categories.
- Total product usage per season km was lowest, at 1.05 litres for glyphosate, compared to 16.25 litres of acetic acid (16 times more herbicide), and 22.9 litres of hot foam (22 times more than glyphosate).
- Hot foam required 2671 litres of water per kilometre - 65 times more water than glyphosate, which required 41 litres per season kilometre. Acetic acid required 33.75 litres per kilometre.
- Applying glyphosate used less fuel - just 0.18 litres of diesel per km treated, compared to 0.19 litres for acetic acid, and 12.33 litres of diesel, plus 2.13 litres of petrol for hot foam – that's 63 times more diesel and 100% more petrol than required for glyphosate.
- It took 0.16 hours of labour to treat one kilometre with glyphosate, compared to 0.23 hours for acetic acid, and 4.89 hours for hot foam.
- Glyphosate was also the product that worked best – generating only four complaints, compared to 22 for acetic acid, and 29 for hot foam.

The Amenity Forum* have been developing an integrated approach in how we address the issue of weeds on hard surfaces. This work is to develop a management document, which will aid local authorities in best practice and to look at all the options before reaching for the bottle of chemical.

**The Amenity Forum is a UK Initiative which works with Government and industry promoting best practice in maintaining safe and healthy public spaces fit for purpose*.

What is an integrated approach to weed management?

Integrated weed management (IWM) is the control of weeds through a long-term management approach, using several weed management techniques such as:

Toleration of weeds ("weediness") - public perception of 'attractiveness' is gradually changing, especially if such features have colour and diversity - so reviewing where and when control is required.

Designing out weed problems - use curved rather than right angles in town centre designs to aid mechanical sweeping, reduce the number of potential "traps" for silt and detritus. To consider impermeable sealed hard surfaces to prevent weed growth in joints when selecting paving.

Removal of detritus - as plants need a growing medium to survive, keeping areas well swept and clear of the build-up of organic matter will prevent weed growth and reduce the need for chemical control.

Biological control - Biological weed control aims to utilise insects, pathogens or even other plants to do the work of weed management.

Chemical methods of managing weeds chemical - are seen as the last resort but are acknowledged as a useful management tool; application needs to be targeted i.e. only treating the plants present rather than a 'blanket' application of the footpath etc.

What next for Hillingdon

Our proposal is that officers in Green Spaces work closer with colleagues in both Street Cleansing and Highways in adopting an integrated weed management programme approach for Hillingdon. This will have the desired affect for Hillingdon to reduce further the requirement in chemicals for the control of weeds on its pavements etc.

Our current contractor uses the most recent innovations in 'artificial intelligence' equipment '**WEED it**' to apply the chemicals, only treating the weeds rather than a 'blanket application' approach. This is achieved with equipment that picks up the chlorophyll (green pigment) in the plant and only targets this with its application of chemical, therefore only treating the weed and not the whole environment.

WEED it

WEEDit technology, exclusive to Complete Weed Control, is a computer-controlled herbicide application system specifically designed for use on footpaths and other hard surfaces. The system consists of a shrouded spraying head mounted on the front of the carrier vehicle. The shrouded head contains sensor units and spray nozzles.

The sensor units detect the presence of weeds and trigger the appropriate spray nozzles to apply accurately the correct amount of herbicide to the weeds. This technology results in high levels of weed control, with greatly reduced herbicide input.

WEEDit, with its unique optic sensors, launched by Complete Weed Control in 1997, has become the most environmentally efficient method of weed control, with a typical herbicide reduction of up to 80%. Many local authorities have not only been able to achieve their environmental objectives of reducing glyphosate use but have seen improvements in their overall weed control programmes.

Cited as a “major advance in the field of weed control”, WEEDit uses infrared technology to intelligently detect and automatically spot-treat weeds resulting in:

- Vastly reduced (up to 80%) herbicide usage
- Minimised off-target spray drift
- Increased operator productivity
- Reduced number of complaints by the public
- Enables local authorities to meet the objectives of their environmental policies

Since its introduction, WEEDit technology has been used to treat hundreds of thousands of kilometres of street pavements nationwide whilst using only a fraction of the herbicide compared to traditional application methods. This has enabled local authorities to meet – and surpass – the objectives of their environmental and social policies.

Example of a Schedule of Application

Weed treatment is extremely weather dependent. When weather is particularly bad (wet and windy weather), this will cause delays.

It takes 7 to 10 days for weeds to die back once treated.

Ward	ESTIMATED HIGHWAYS Start date	ACTUAL START DATE HIGHWAYS	COMPLETION DATE HIGHWAYS	ESTIMATES ESTATES START DATE	ACTUAL START DATE ESTATES	COMPLETION DATE ESTATES
Heathrow Villages	20th April			20th April		
West Drayton	24th April			22nd April		
Pinkwell	26th April			25th April		
Yiewsley	28th April			28th April		
Hayes Town	2nd May			3rd May		
Wood End	4th May			5th May		
Uxbridge	9th May			10th May		
Colham/ Cowley	11th May			15th May		
Charville	15th May			18th May		
Belmore	18th May			22nd May		
Yeading	24th May			25th May		
Hillingdon West	25th May			30th May		
Hillingdon East	30th May			23rd May		
Ickenham/ S Harefield	26th May			19th May		
South Ruislip	23rd May			16th May		
Harefield Village	19th May			12th May		
Ruislip	16th May			9th May		
Ruislip Manor	10th May			4th May		
Eastcote	5th May			2nd May		
Northwood	3rd May			27th April		
Northwood Hills	2nd May			21st April		

The schedule will be published and updated on the Council web site throughout the three applications

Financial Implications

None at this stage.

Legal Implications

None at this stage.

BACKGROUND PAPERS

Nil.

Cardiff Council

Testing & Evaluation

Weed Control Trial 2021: Final Project Report

Advanced Invasives

Version 2 | 28th October 2022

ADVANCEDINVASIVES

Document

Final report: this document contains the final project report for testing and evaluation of pavement weed control methods by Advanced Invasives on behalf of Cardiff Council.

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Advanced Invasives

Advanced Invasives is the leading invasive plant species consultancy in the UK.

We solve invasive plant species problems, with a specialist focus on Japanese knotweed and the complex technical, legal and public relations challenges faced by large landowners, private companies and herbicide manufacturers.

Based in South Wales, Advanced Invasives was founded in 2016 by Dr Dan Jones (PhD, MSc, BSc, MA, CIEEM) from Swansea University's Department of Biosciences out of a desire to set a new standard of evidence-led invasive species management.

We work across six main areas with our clients: expert witness, research and product testing, best practice strategy, complex ecological projects, continuing professional development (CPD) and public guidance services.

Summary of research findings

In 2021 Cardiff Council and its weed control contractor trialled three pavement weed control methods across the City of Cardiff to find out how effective and sustainable each method was, as measured against four key criteria: cost, environmental, customer satisfaction and quality. Control methods trialled included glyphosate-based herbicide (applied three times per year), acetic acid-based herbicide (applied four times per year) and hot foam herbicide (applied three times per year). Efficacy and sustainability results showed that glyphosate was the most sustainable, being cost effective, with low environmental impacts and high customer satisfaction and quality. In contrast, acetic acid delivered intermediate costs and environmental impacts with low customer satisfaction and quality, while hot foam generated high costs and environmental impacts, but high customer satisfaction and quality.

Based on the cost, environmental, customer and quality criteria (efficacy and sustainability criteria) measured, the most effective and sustainable weed control method currently available for pavement weed control in the UK involves the use of glyphosate-based herbicide.

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1. Introduction

1.1 Sustainability

Sustainability is an often-used term with a wide range of meanings and interpretations. Commonly, sustainability means that current economic activities are carefully considered in order that such decisions do not place an unequal burden on future generations (Foy 1990, Tisdell 1996, Giddings et al. 2002). In practice, this means that we reduce our impacts on the environment now, rather than continuing with 'business as usual' and leaving future generations to deal with the problems that we cause today. More generally, sustainability is now often used in the context of the capacity for Earth's biosphere and human civilisation to co-exist in the present and in the longer term.

Sustainability involves three sectors, including environment (ecology), society (people, including those who manage weeds) and economy (monetary; Figure 1.1). Sustainability in the context of the three sectors is difficult to resolve because of the timescales in which they operate: economic timescales are shorter than social, which are in turn shorter than ecological. Further, although sustainability is presented as bringing the three sectors together in a balanced way and resolving conflicts, this is often not the case. Economic considerations are frequently placed above societal and environmental concerns and land management systems will not be sustainable unless they are economic in the present and remain so in the future. Crucially, a project may be economically viable in the short-term, yet in the longer term could be unsustainable with respect to other sectors (Foy 1990, Tisdell 1996, Giddings et al. 2002).

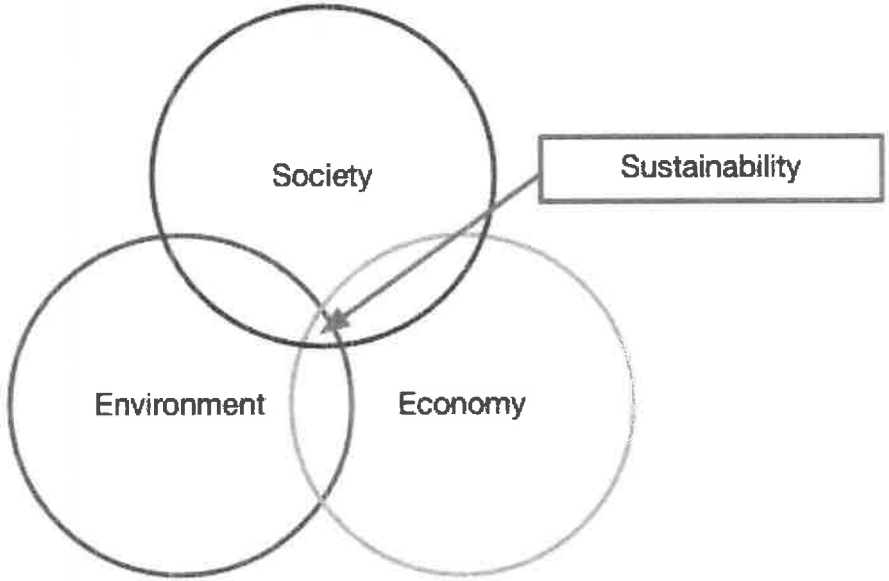

Figure 1.1: Sustainability in the context of the environment (ecology), society (people, including those who manage weeds) and economy (monetary). Note that 'sustainability' occupies a small area of overlap between these three sectors.

There are at least two ways in which sustainability is used in the context of land management systems:

1. Describe properties or features of outputs from the system and/or
2. Refer to whether use/adoption of a system will be continued or maintained in the longer term.

Even when sustainability is used in the context of long-term adoption (second context), sustainability in the sense of system outputs (first context) will be relevant as it should determine whether a system will be adopted or maintained. From an environmental and/or societal perspective, weed management practices cannot be judged without consideration of impacts beyond the area of interest (Tisdell, 1996, Jones, 2015).

Focussing on the amenity sector, calculating how sustainable processes are is made difficult by different ways of measuring things (multiple evaluation criteria), working in different places and over different time periods (i.e., a range of assessment criteria at different spatial and temporal scales). This is often made worse by the lack of evidence-based research investigating the efficacy of control methods and their respective environmental and economic costs (Tisdell 1996, Hanegraaf et al. 1998, Giddings et al. 2002, Jones and Eastwood 2019). However, control methods are most likely to be adopted sustainably when they:

- Are less costly than the alternatives
- Involve (comparatively) low levels of investment or financial requirements
- Create little risk or uncertainty (i.e., they are evidence-based)
- Define control and management timeframes through evidence-based research (Cobb & Reade 2010, Wynn et al. 2014, Jones and Eastwood 2019).

Welsh Government sustainability legislation

In 2015 Welsh Government introduced The Well-being of Future Generations (Wales) Act 2015 which requires public bodies in Wales to think about the long-term impacts of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change (Welsh Government 2015). This legislation that is unique to Wales aims to ensure that future generations have at least the same quality of life as we do now, i.e., ensuring that sustainability underpins long-term decision-making at the local level through to the national scale. Effective control of pavement weeds requires such long-term thinking and where this is informed by evidence-based research, the impacts of these processes on climate change can be minimised, particularly where the results can be scaled to the Wales-level.

1.2 Pavement weed control

In the UK, there are three key sectors where weed management is practised extensively:

1. **Agricultural -** e.g. arable and pastoral farming.
2. **Horticultural -** non-agricultural (e.g. flower production, landscape design).
3. **Amenity -** non-agricultural (e.g. public sports grounds, hard surfaces).

Amenity hard surfaces are defined as:

'areas with a ground-covering, such as asphalt, paving-stone and concrete, or surfaces with a top layer of sand, gravel or crushed material.'

Weeds grow easily in the open spaces present, such as joints and cracks (Rask & Kristoffersen 2007). Within the urban environment, weed management on hard surfaces is undertaken to:

- Ensure public safety - minimise the risk of slips, trips and falls to the public and ensure adequate surface drainage of roads (weed growth can reduce water flow).
- Reduce infrastructure asset maintenance costs - weed growth impairs the function of hard surfaces and the growth of roots reduces their useful lifetime (i.e., replacement or renewal of pavement materials are required).
- Improve the visual appearance of infrastructure (highly subjective; Hansson et al. 2006, Ramwell 2006, Fagot et al. 2011, Rask et al. 2013, East Malling Research 2015).

Local government has a duty of care to maintain safe pavements for residents (i.e., removing weed trip hazards), minimise the cost of infrastructure asset maintenance and maintain clean pavements for residents. Further, Different pavement types need different levels of weed control (Rask et al. 2013). To successfully achieve these objectives, control methods must be effective in addition to being economically sustainable (practical and cost-effective) to remain viable. Further, methods should aim to minimise herbicide, fuel and water use to ensure the environmental sustainability of weed management (Wynn et al. 2014).

However, herbicide-based weed control on amenity hard surfaces often leads to different environmental issues compared with their agricultural use. Hard surfaces are normally constructed for rapid penetration of water or to encourage run-off to avoid flooding. As a result, contamination of nearby ditches, drains, sewage systems or ground water with herbicide may occur, as these compounds do not stick to the surface (absorption) and degrade over time as they would in agricultural soils. As a result of this, some Northern European countries have restricted the use of herbicides for weed control in urban areas, increasing the need to investigate alternative control methods (Kempenaar & Saft 2006, Rask & Kristoffersen 2007, Fagot et al. 2011).

1.3 Herbicide regulation

In response to public concern and medical evidence demonstrating the harmful effects of pesticides on human and wildlife health, the most common herbicide-based weed control methods are coming under considerable scrutiny. While increasingly restrictive national and supranational legislation has minimised the range of herbicide active ingredients (herbicide types) that can legally be applied and reduced the overall quantities of herbicide used, there is considerable appetite for alternative weed control methods to be found which can reduce overall herbicide use still further. However, few of these alternative weed control methods have been evaluated in terms of control method efficacy (weed killing ability) and overall environmental and economic impact and sustainability.

To address this knowledge gap, Advanced Invasives recommended independent evaluation of pavement weed control methods trialled by Cardiff Council under realistic 'real world' conditions. Further, to determine treatment sustainability, key economic and environmental criteria associated with treatment deployment were considered to inform overall council decision-making.

1.4 Integrated Pest Management (IPM)

Amenity sector weed management may be achieved using a range of weed control methods, including:

- Cultural (preventative)
- Physical (mechanical)
- Biological (biocontrol or bioherbicides)
- Chemical (herbicides, also known as plant protection products; PPPs)
- Integrated Pest Management (IPM)

True IPM systems combine cultural, physical, biological and/or chemical methods, helping to mitigate selection of resistant weed populations (Van der Weide et al. 2008, Harker & O'Donovan 2013, Cordeau et al. 2016). Figure 1.2 summarises the pros and cons of IPM weed control methods available to the UK amenity sector. Ideally, pavement weed control should be directed toward immature annual and perennial plants for a short period after plant emergence. This is because at this time, weeds have accumulated fewer resources from which to recover from control method application (Rask & Kristoffersen 2007).

Figure 1.2: Pros and cons of Integrated Pest Management (IPM) weed control methods available to the UK amenity sector (De Cauwer et al. 2013, Rask et al. 2013, EMR 2015b, Bristol City Council 2017, Hanson et al. 2006, Kempenaar & Saft 2006, SKL 2006, Kempenaar et al. 2007, Rask & Kristoffersen 2007, Neal & Senesac 2018, APSE 2019a, APSE 2019b, APSE 2020, Martelloni et al. 2020, APSE 2021, Corbett pers comm. 2021, Kay pers comm. 2021, Mason pers comm. 2021, South Lanarkshire Council 2021, City of York Council 2022).

Control category	Desired effect	Control method(s)	Examples	How do they work?	Does it work?	Positives	Negatives
Cultural	Prevent and/or minimise weed population growth	Design and build of infrastructure	Planning and initial design integration	Prevent and/or minimise weed population growth	Yes	- Long-term reduction in costs and carbon emissions associated with weed management	- Costly, resource and carbon intensive in the short-term - Long lead-in time
Physical	Bring weed population under control	Machine-based	**Cutting:** - Mower - Flail	Destroy above ground weed growth	Yes	- Does not use herbicides	- Costly and carbon intensive in the short to longer-term - Increased treatment frequency relative to glyphosate-based herbicides
			Friction: - Steel brushes	Destroy above ground weed growth	Yes	- Does not use herbicides	- Costly, resource and carbon intensive in the short to longer-term (e.g. production of steel for brushes is carbon intensive) - Brush systems involve very heavy work (reduce shift length to minimise occupational vibration) - Increased treatment frequency relative to glyphosate-based herbicides
			Thermal: - Flame - Hot water - Hot foam - Electricity	**Flame, hot water & hot foam:** - Destroy above ground weed growth **Electricity:** - Destroy above and below ground weed growth	**Flame & hot water:** - No **Hot foam & electricity:** - Yes	- Does not use herbicides **- Hot foam:** 1) Fewer excluded areas 2) Can be applied in all weather conditions	- Costly, resource and carbon intensive in the short to longer-term - Currently use is unregulated - Increased treatment frequency relative to glyphosate-based herbicides - H&S risks may arise **- Flame:** excluded areas as flame poses a significant H&S and environmental risk (cannot be used near parked cars/other flammable materials (e.g. leaves)
		Labour-based	**Cutting:** - Mower - Strimmer - Brush cutter	Destroy above ground weed growth	Yes	- Does not use herbicides	- Costly and carbon intensive in the short to longer-term - Increased treatment frequency relative to glyphosate-based herbicides - Can cause overuse injuries to operator

Figure 1.2 continued.

			Friction: - Hoe	Destroy above ground weed growth	Yes	- Does not use herbicides	- Costly in the short to longer-term - Increased treatment frequency relative to glyphosate-based herbicides - Can cause overuse injuries to operator
			Thermal: - Flame	**Flame:** - Destroy above ground weed growth	Yes	- Does not use herbicides	- Currently use is unregulated - See H&S risks above
Biological	Bring weed population under control	Biocontrol or bioherbicides	N/A	Minimise weed population growth	N/A	N/A	N/A
Chemical (PPPs)	Bring weed population under control	Machine and/or labour-based	**Systemic herbicide:** - e.g. glyphosate	Destroy above and below ground weed growth	Yes	- Low costs and carbon emissions in the short to longer-term	- Uses herbicides
			Non-systemic: herbicide (e.g. acetic and pelargonic acids)	Destroy above ground weed growth	Variable	- Less costly and carbon intensive in the short to longer-term than other physical control methods	- More costly and carbon intensive in the short to longer-term - Increased treatment frequency relative to glyphosate-based herbicides - Products are significantly more expensive than glyphosate-based herbicides
Integrated pest management (IPM)	Bring weed population under control	Combine cultural, physical, biological and/or chemical methods	IPM system (e.g. brush cutter + systemic herbicide)	Destroy above and below ground weed growth	Yes	- Can be more effective than the use of individual control methods in isolation	- Do not integrate weed control methods unnecessarily, for example by treating twice with two different methods where one effective method would be sufficient (doubling the treatment mileage)

1.5 Aims

To test the efficacy and sustainability of three pavement weed control methods in the City of Cardiff. All three weed control methods will be compared with sites throughout the city receiving no weed management (i.e., untreated scientific 'controls'). Further, acetic acid and hot foam weed control methods will be benchmarked against the existing glyphosate-based control method under realistic 'real world' conditions.

Weed control methods will be evaluated against four key criteria:

1. **Cost** - labour is the largest cost component of weed management activities and here it is used to provide a relative economic evaluation of all weed control methods. Costs are a key consideration for the long-term economic sustainability of weed control programmes.
2. **Environmental** - frequently, the environmental impacts of weed management activities are not quantified due to cost considerations. To address this information gap, in the present study the following key variables were measured to address control method environmental sustainability:
    - ***Product use (total)*** - to include all herbicides and/or other compounds added to the water used for each weed control method.
    - ***Water use (total)*** - to include all water used in each weed control method.
    - ***Fuel use (total)*** - to include all hydrocarbons (diesel and petrol) used in each weed control method.
    - ***Life Cycle Analysis (LCA)*** - this will quantify carbon dioxide emissions (CO_2) and other environmental burdens (e.g. primary energy) associated with each control method.
3. **Customer satisfaction** - public complaint data held by Cardiff Council will be used to assess satisfaction with each of the three weed control methods; these results will be compared with previous years (i.e., change in public complaints between 2020 and 2021).
4. **Quality** - direct evaluation of weed control method efficacy (weed level). This will be undertaken 4 times, once before (pretreatment) and three times after (post treatment) weed control methods are applied.

2. Methods

2.1 Experimental design: Cost and environmental data

Prior to undertaking any of the tested weed control methods, Advanced Invasives in consultation with Dr Trisha Toop (Agri-EPI Centre) specified the data required to evaluate control method cost and environmental impacts (e.g. water use), and undertake Life Cycle Analysis (LCA) of control method processes. Data was collected and supplied by Complete Weed Control Ltd (CWC), Cardiff Council and Advanced Invasives (Figure 2.1); details of the equipment, products and materials required to undertake application of the three weed control methods are provided in Appendix 1.

LCA may differ in objectives, scope, simplicity and data intensity. However, all provide a structured, comprehensive and internationally standardised approach to environmental assessment. LCA quantifies all relevant emissions and resources consumed and the related environmental and health impacts and resource depletion issues that are associated with the entire life cycle of any goods or services ('products'). Increasingly, this approach is being recognised as an important technique for managing the environmental impacts of human activities. LCA can be defined as:

'the interdisciplinary process of identification, analysis and appraisal of all the relevant natural and human processes, which affect the quality of the environment and environmental resources.'

(Kempenaar & Saft 2006)

Life Cycle Analysis (LCA) treatment modelling was undertaken in SimaPro, with report preparation complying to the relevant ISO standards for LCA (Appendix 2).

Data & materials	Supplier
Product specifications (e.g. glyphosate)	CWC Cardiff Council
Product Material Safety Data Sheets (MSDS)	CWC Advanced Invasives
Equipment specifications	Cardiff Council CWC
Product required to undertake the weed control methods	CWC
Water required to undertake the weed control methods	CWC
Fuel required to undertake the weed control methods	CWC
Time taken to undertake the weed control methods	CWC

Figure 2.1: Data & materials specified to evaluate control method cost and environmental variables, and undertake Life Cycle Analysis (LCA) of control method processes. Data & materials suppliers are shown.

Note: only direct labour costs of control method application were included in the cost (economic) and LCA analyses.

2.2 Experimental design: Customer satisfaction

Public complaints regarding weed control standards across the City of Cardiff are collected routinely by Cardiff Council staff via telephone and email correspondence. Prior to analysis, Cardiff Council staff ensured that complaints for the three evaluation wards (Penylan, Riverside Ward, Pontprennau & Old St Mellons) related only to public perception of weed control standards and not 'missed streets' (i.e., streets which have not received weed control).

Note: a ward is a local authority area that is frequently used for electoral purposes.

2.3 Experimental design: Quality

Evaluation wards

Three pavement weed control methods (glyphosate, acetic acid and hot foam) were assigned and trialled in three separate wards of the City of Cardiff and selected areas across the city received no weed management (i.e., untreated scientific 'controls'): weed control methods were applied across the whole of each evaluation ward (Figure 2.2).

Ward	Weed control method	Frequency
Penylan	Glyphosate-based herbicide (Monsanto Amenity Glyphosate XL)	3 times per year
Riverside	Acetic acid-based herbicide (New-Way Weed Spray)	4 times per year
Pontprennau & Old St Mellons	Hot foam herbicide (Foamstream®)	3 times per year

Figure 2.2: Evaluation wards showing weed control method tested and frequency of control method application.

Monitoring sites

Six monitoring sites were identified in each of the three evaluation wards (total number = 18), with a further six untreated control monitoring sites (receiving no weed management) across the City of Cardiff (overall total = 24).

Monitoring sites for each evaluation ward and the untreated control monitoring sites included two:

- Main thoroughfare routes
- Representative residential street routes
- Residential street routes in close proximity to open space/parkland

Details of all monitoring sites are provided in Appendix 3. All monitoring site routes were provided with a route map (see Figure 2.3 below) showing the start and finish of the data collection route.

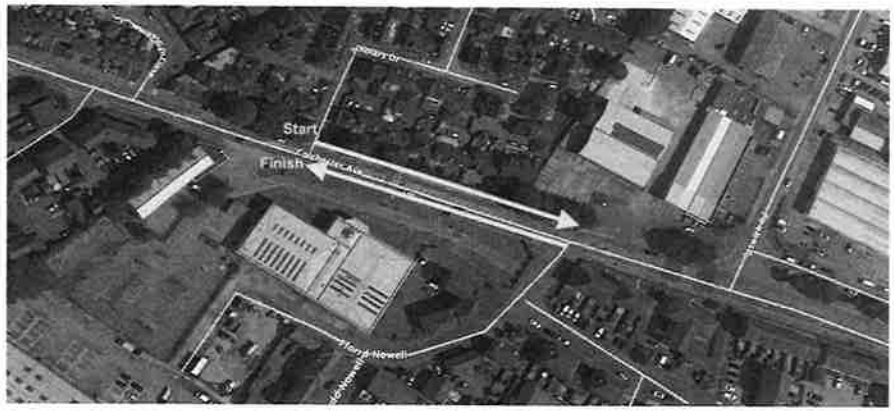

Figure 2.3: Example of monitoring site route map, showing start and finish point of route (image acquisition date 2021; map data © 2022 Google).

Data collection

The overall aim of data collection was to evaluate treatment efficacy throughout 2021 on an on-going basis (i.e., to take comparative 'snapshots' of treatment efficacy throughout the growing season). Data collection was undertaken four times at each monitoring site:

1. Pretreatment - completed by 17/04/21
2. Post treatment 1 - completed by 23/06/21
3. Post treatment 2 - completed by 14/09/21
4. Post treatment 3 - completed by 02/11/21

Data collection involved digital photographic image capture (minimum image resolution settings: 4032 x 3024 pixels). Pretreatment data collection was undertaken by Advanced Invasives, while Cardiff Council staff performed all three post treatment assessments. Cardiff Council staff data collection was preceded by training from Advanced Invasives, supported by a data collection Method Statement (28/04/21).

Digital photographic image capture was undertaken 8 times total per monitoring site (four times on each side of each monitoring site route; Figure 2.3), to include:

- Start of route (looking forwards; image 1)
- Middle of route (looking backwards; image 2)
- Middle of route (looking forwards; image 3)
- End of route (looking backwards; image 4)
- **Repeated for second (opposite) side of route (images 5 to 8)**

Logical landmarks were selected as fixed point photography locations (e.g. street signs, drain covers, lamp posts) during the pretreatment assessments as opposed to marking the pavement as paint may be removed for a variety of reasons during the experiment. Landmark images preceded data image capture to ensure that the same images were captured (including landmarks) at each assessment time.

Weed level

Digital photographic images were retained prior to 'batch' image assessment by one individual (Dr Jones). Each image was assigned a 'weed level' following methods described by East Malling Research (2015a, b) and Bristol City Council (2017) and training received from Cardiff Council staff (Figure 2.4); weed levels were subsequently used to compare weed control method efficacy.

Criteria			Score	Level	Description
Height (mm)	Weed diameter /length (mm)	Joint coverage (mm)			
<10	<50	<10	<3	1	No noticeable weeds
10-50	50-100	0-20	4-6	2	Occasional small weeds
50-100	100-150	20-30	7-9	3	Patchy weed growth with some flowering weeds
100-150	150-200	30-40	10-12	4	Numerous weeds, many flowering, view annoys/irritates public
150-200	200-300	40-50	13-15	5	Numerous large weeds presenting risk, slip and/or trip hazard
>200	>300	>50	16-18	6	Numerous large weeds, many tall and flowering causing an obstruction

Figure 2.4: Weed level scale and evaluation criteria (adapted from East Malling Research (2015a, b) and Bristol City Council (2017).

Assessments were based on the following:

- 8 observations per street (mean weed level score 1-6)
- 6 streets per ward
- 4 wards (mean weed level score 1-6)
- 192 observations per assessment
- 4 assessments
- 768 observations overall

Weed levels were based on the following areas of operation:

- Pavement
- Base of trees and tree pits

The following areas were excluded from the assessment:

- Gutters
- Gully pots (drains)
- Roads
- Landscaping

2.4 Data analysis

Cost data

Number of treatment applications (treatment frequency), treatment application time (hrs), equipment cleaning time (hrs) and the number of operators required to undertake each weed control method were calculated to provide:

- *Labour time/treatment (hrs/person)*
- *Total labour time (hrs/person)*

Note: due to changes in how the hot foam machine was vehicle mounted and the reduced working day length in the second and third treatments, relevant cost data was averaged across the three treatments, to provide working day mean values supplied in Figure 2.5.

Process	Average time (mins)
Equipment pickup - yard	60.0
Fill up tank (780 L)*	45.0
Empty tank**	72.9
Fill up tank (780 L)*	45.0
Empty tank**	72.9
Lunch	60.0
Fill up tank (780 L)*	45.0
Empty tank**	72.9
Equipment drop - yard	60.0
Total time	**533.8 mins (8.9 hrs)**

Figure 2.5: Working day mean values for hot foam application processes based on three treatments undertaken by CWC. Where: *tank fill using street hydrant - this time is longer using lower pressure mains supply from a residential property (c.1 hr); **tank emptying speed is based on mean time per tank, averaged across the three treatments. **Note:** older residential areas also do not have as many street water hydrants, meaning that that tank filling is slower than in newer residential areas. Application time can be increased further through operator and equipment downtime and obstacles such as inaccessible roads etc.

Environmental data - product, water and fuel use

Number of spray tanks, spray volume (L), total product use per treatment (L) and the product/tank (L) required to undertake each weed control method were calculated to provide:

- *Total product use (L)*
- *Total water use (L)*

Treatment (machine) fuel (L), vehicle fuel (L) and fuel use/treatment (L) required to undertake each weed control method were calculated to provide:

- *Total diesel use (L)*
- *Total petrol use (L)*

Treatment distance and units of analysis

Distance per treatment (km; glyphosate, acetic acid, hot foam) was calculated from ward route data suppliec by CWC. These data were then used to calculate:

- *Labour (hrs)/km*
- *Product use (L)/km*
- *Water use (L)/km*
- *Diesel use (L)/km*
- *Petrol use (L)/km*

Life Cycle Analysis (LCA) data

Product, water and fuel use per unit distance (km) were used to assemble the LCA.

Customer satisfaction data

Public complaint data supplied by Cardiff Council before (2020) and after (2021) the application of the pavement weed control methods (glyphosate, acetic acid and hot foam) was used to highlight any change in customer satisfaction across three Cardiff electoral wards (Figure 3.5).

Quality data

Following 'batch' image assessment, a single overall average (mean) weed level was calculated for the glyphosate, acetic acid and hot foam treatments and untreated control at each assessment before (pretreatment) and three times after (post treatment) weed control methods were applied.

2.5 Data collection and reporting

Data collection and archiving was conducted in accordance with ORETO standards (certification held by Swansea University; Advanced Invasives operate under this certificate).

Further to the final report provided in journal format style, the following has been made available:

- Raw data
- Statistical package analysis outputs
- Graph images (high resolution)
- Digital photograph record pre and post treatment (high resolution)

3. Results

3.1 Cost comparison

Glyphosate was the least labour intensive of the three pavement weed control methods tested with a labour requirement of 0.16 hrs/km to undertake (Figure 3.1). Acetic acid was more labour-intensive than glyphosate requiring 0.23 hrs/km to undertake. The labour requirement of hot foam was the largest, being 31 times greater than that of the glyphosate-based weed control method (4.89 hrs/km).

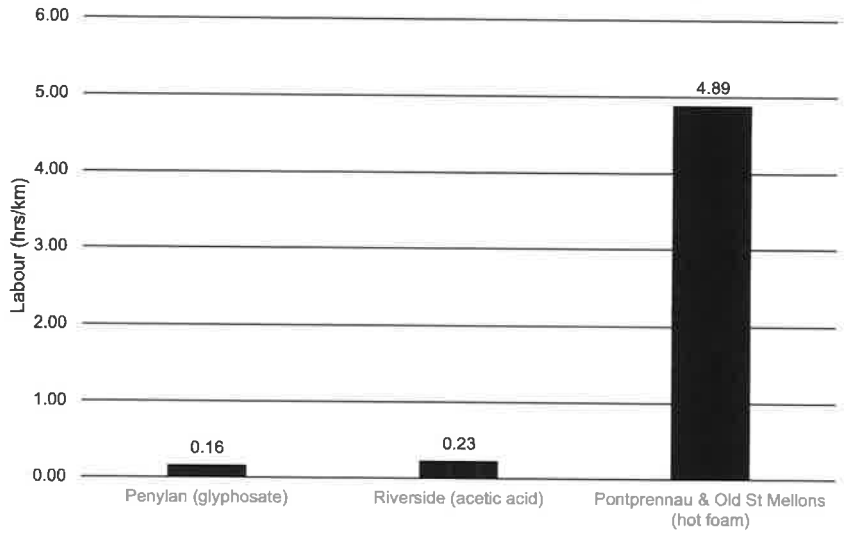

Figure 3.1: Total labour requirement (hours per kilometre) to undertake three pavement weed control methods (glyphosate, acetic acid and hot foam) across three Cardiff electoral wards.

3.2 Environmental comparison

Product use (total)

Glyphosate required the least product of the three pavement weed control methods tested using 0.33 L/km of glyphosate (Figure 3.2). Acetic acid used 4.06 L/km of acetic acid i.e., 12 times more herbicide than glyphosate. The product requirement of hot foam was the largest, being 16 times greater than that of glyphosate (5.38 L/km).

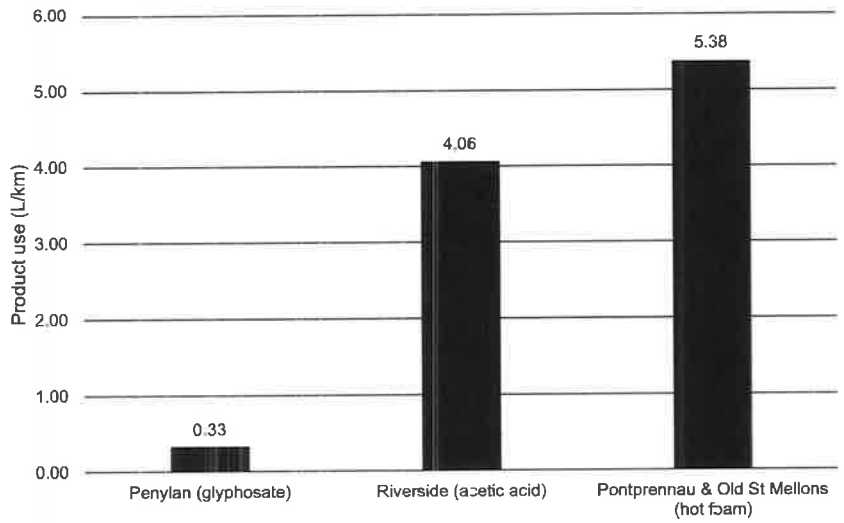

Figure 3.2: Total product use (litres per kilometre) to undertake three pavement weed control methods (glyphosate, acetic acid and hot foam) across three Cardiff electoral wards.

Water use (total)

Glyphosate used 13.00 L/km of water to apply (Figure 3.3), while acetic acid used 8.44 L/km i.e., less water than glyphosate to apply. Water use of hot foam was significantly greater than that of the glyphosate or acetic acid-based weed control methods and was 48 times larger than that of glyphosate (629.64 L/km).

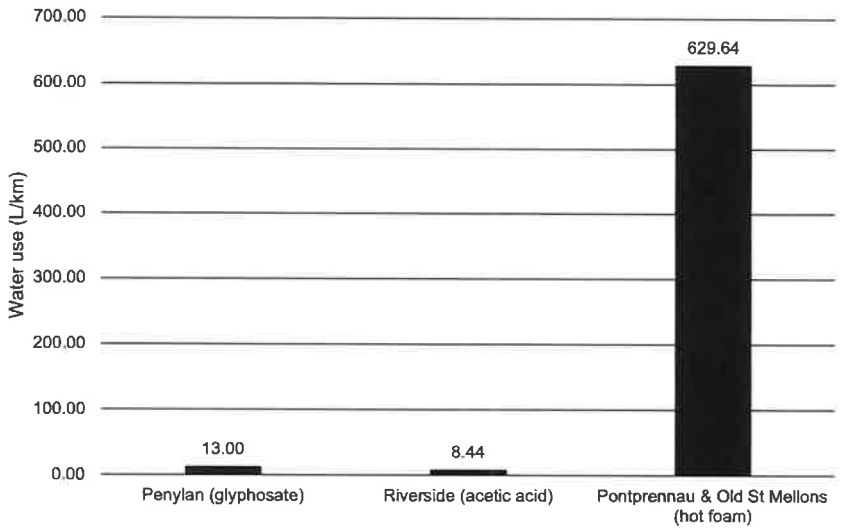

Figure 3.3: Total water use (litres per kilometre) to undertake three pavement weed control methods (glyphosate, acetic acid and hot foam) across three Cardiff electoral wards.

Fuel use (total)

Glyphosate used the least fuel of the three pavement weed control methods tested requiring 0.18 L/km of diesel and no petrol (Figure 3.4). Acetic acid-based weed control used more fuel than glyphosate requiring 0.19 L/km diesel and no petrol. The fuel use of hot foam weed was greater than that of glyphosate or acetic acid-based weed control: hot foam diesel use was 63 times greater (12.33 L/km) and petrol use was 100 % greater (2.13 L/km) than that required for the glyphosate-based weed control method (12.33 and 0.00 L/km, respectively).

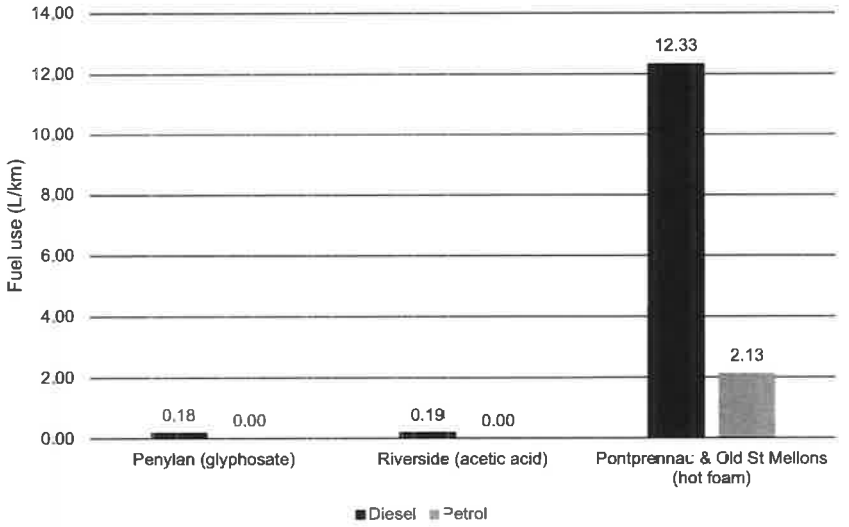

Figure 3.4: Total fuel use (litres per kilometre) to undertake three pavement weed control methods (glyphosate, acetic acid and hot foam) across three electoral wards in the City of Cardiff.

3.3 Life Cycle Analysis (LCA)

Direct comparison was made between all weed control methods per 1 km of pavement treated (Figure 3.5; Appendix 2). Foamstream® has higher environmental impacts in all impact categories calculated except for freshwater eutrophication.

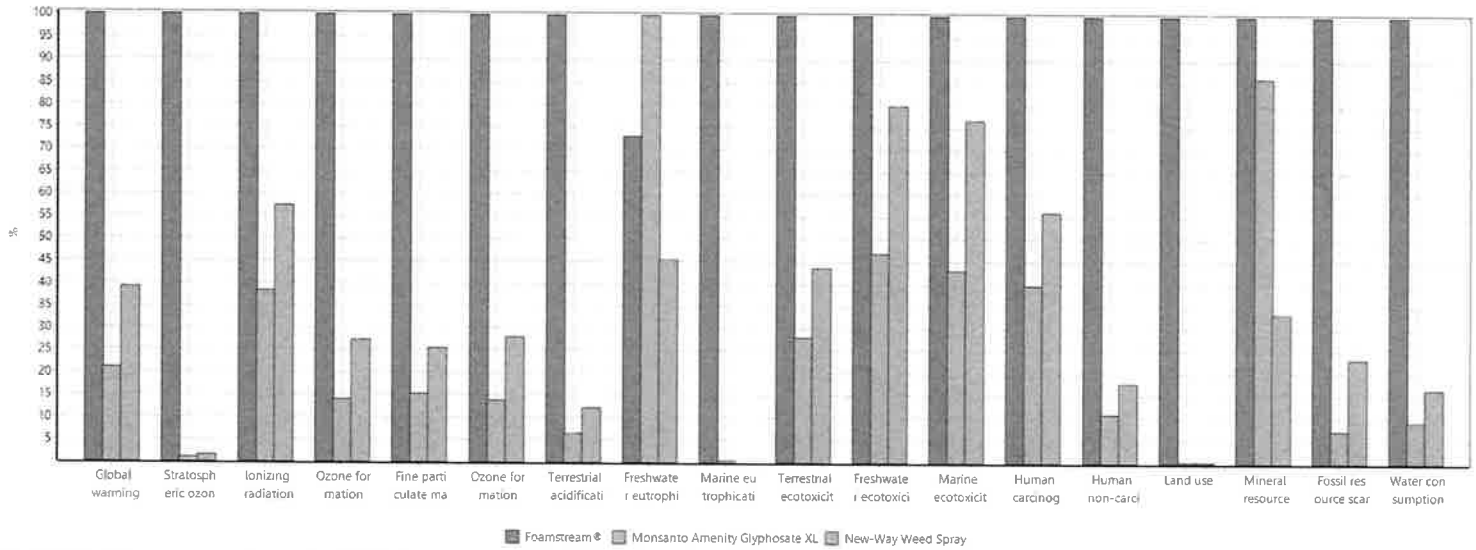

Figure 3.5: LCA comparison of three pavement weed control methods (hot foam, glyphosate and acetic acid) environmental impacts across three electoral wards in the City of Cardiff. Relative percentage (%) contribution of each treatment to assessed impact categories is shown.

Details of the environmental impacts for the weed treatments tested are shown in Figure 3.6 (see Appendix 2). All impacts relate back to the functional unit of 1 km of pavement treated.

Impact category	Unit	Monsanto Amenity Glyphosate XL	New-Way Weed Spray	Foamstream®
Global warming	kg CO2 eq	3.725906632	6.920265219	17.62954775
Stratospheric ozone depletion	kg CFC11 eq	0.00	3.71233E-06	0.000219686
Ionizing radiation	kBq Co-60 eq	0.333211153	0.499734199	0.870118201
Ozone formation, Human health	kg NOx eq	0.008903155	0.01745232	0.064022231
Fine particulate matter formation	kg PM2.5 eq	0.00736806	0.0123352	0.048506821
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.009142212	0.0186019	0.066531821
Terrestrial acidification	kg SO2 eq	0.014106715	0.02609239	0.215053388
Freshwater eutrophication	kg P eq	0.005180359	0.002346239	0.003780149
Marine eutrophication	kg N eq	0.000345545	0.000150603	0.059807027
Terrestrial ecotoxicity	kg 1,4-DCB	16.26066476	25.29477007	58.13958906
Freshwater ecotoxicity	kg 1,4-DCB	0.250487795	0.427871658	0.534874363
Marine ecotoxicity	kg 1,4-DCB	0.31026383	0.554566163	0.72170849
Human carcinogenic toxicity	kg 1,4-DCB	0.167244915	0.236177538	0.421593391
Human non-carcinogenic toxicity	kg 1,4-DCB	4.463951492	7.370060901	41.27578609
Land use	m2a crop eq	0.101314072	0.127103301	33.33581954
Mineral resource scarcity	kg Cu eq	0.064759475	0.025142473	0.075130588
Fossil resource scarcity	kg oil eq	1.337191228	4.259576156	18.29370741
Water consumption	m3	0.104360548	0.186825836	1.133128599

Figure 3.5: Results from the LCA comparison of the environmental impacts of three pavement weed control methods (glyphosate, acetic acid and hot foam) across three electoral wards in the City of Cardiff.

3.4 Customer satisfaction comparison

From a single complaint in 2020, glyphosate weed control complaints rose four-fold to 4 in 2021, though this control method overall received the fewest complaints in 2020 and 2021 (Figure 3.7). Between 2020 and 2021 public complaints more than tripled following the application of acetic acid from 8 complaints in 2020 to 29 complaints in 2021. Only hot foam public complaints declined between 2021 and 2020 from 23 to 22 complaints.

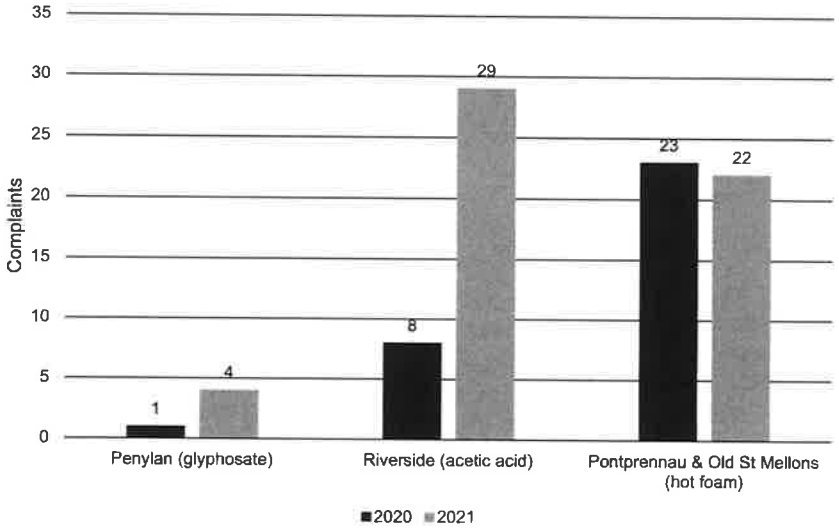

Figure 3.7: Total public complaints before (2020) and after (2021) the application of three pavement weed control methods (glyphosate, acetic acid and hot foam) across three Cardiff electoral wards.

3.5 Quality

Figure 3.8 shows average (mean) weed levels for all weed control methods and the untreated control. In Penylan (green line), Riverside (blue line) and the untreated control (grey line) spring growth of annual and perennial weeds is underway in April (weed level range 1.6 to 1.8), despite extended cold conditions in spring 2021. As summer approaches in June (weed level range 2.1 to 3.1), maximum weed level is reached for Riverside (acetic acid; 3.1) and this is maintained until early November 2021. Independently, Penylan (glyphosate) and CONTROL (no treatment) weediness increases to September (POST 3) though both show a decline thereafter; it is notable that glyphosate-based weed control provides the greatest reduction in between assessment weed level of the three pavement weed control methods (glyphosate, acetic acid and hot foam) from 2.4 in POST 2 to 1.3 in POST 3 (lowest observed value). The Hot foam control method maintains the weed population at a low level throughout the year (1.4 from PRE to POST 2), before the weed level rises slightly to 1.6 in POST 3.

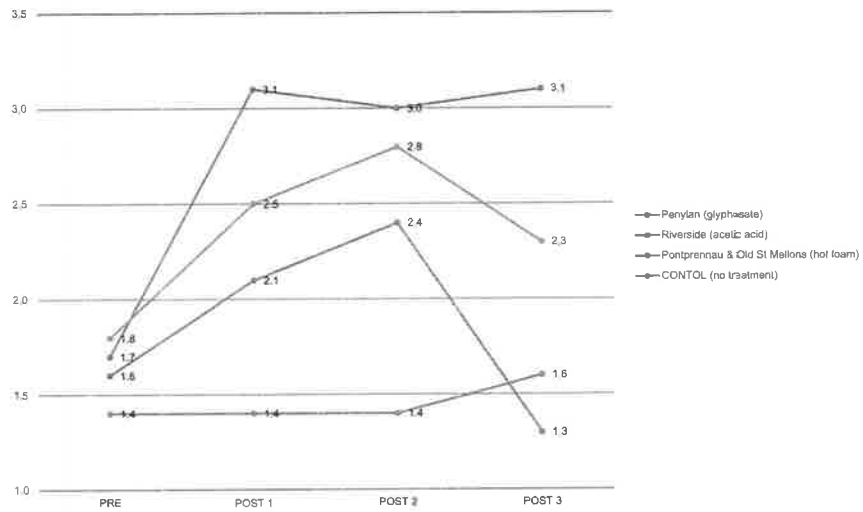

Figure 3.8: Weed level (low = 1; high = 6) before (PRE) and after (POST 1-3) the application of three pavement weed control methods (glyphosate, acetic acid and hot foam). Where: Pretreatment (PRE) completed by 17/04/21; Post treatment 1 (POST 1) completed by 23/06/21; Post treatment 2 (POST 2) completed by 14/09/21; Post treatment 3 (POST 3) completed by 02/11/21.

4. Discussion

4.1 Key criteria - results summary

Section 3 reports on pavement weed control testing results in the context of four key criteria (cost, environmental, customer satisfaction and quality). These results are summarised in Figure 4.1 and discussed further in the context of efficacy, practicality and sustainability at the UK and European levels below.

Control method	Cost	Environmental	Customer	Quality
Glyphosate	Low	Low	High	High
Acetic acid	Medium	Medium	Low	Low
Hot foam	High	High	High	High

Figure 4.1: Summary of pavement weed control results evaluated against four key criteria (cost, environmental, customer satisfaction and quality). Where: red = negative outcome vs. key criteria; orange = intermediate outcome vs. key criteria; green = positive outcome vs. key criteria. Environmental criteria include: product use (total), water use (total), fuel use (total) and Life Cycle Analysis (LCA) outputs.

4.2 Cost

Project evaluation

Labour is the largest cost component of weed management programmes and here it is used to provide a relative economic evaluation of the weed control methods. Glyphosate required the least labour to undertake (0.16 hrs/km Figure 3.1). Acetic acid took longer to undertake (0.23 hrs/km), while hot foam took 4.89 hrs/km to undertake; this is 31 times greater than the glyphosate-based weed control method (0.16 hrs/km). This is because glyphosate-based herbicides provide almost complete kill of most pavement weed species, while other control methods mainly affect the above ground plant parts (Figure 1.2; Rask et al. 2013). Therefore, control methods which do not involve the use of glyphosate require repeated treatments and increased costs and may lead to the unnecessary waste of energy (Rask et al. 2013).

Based only on labour costs, application of hot foam alone is therefore 31 times more expensive than glyphosate; however, it is notable that this estimated cost does not account for the greater equipment purchase costs associated with hot foam treatment compared with the application of both acetic acid and glyphosate. From a practical standpoint, all control methods were tested on individual wards and it should be emphasised that if control methods were to be applied at the city scale (29 wards), these costs would rise substantially (in part due to the impracticalities of hot foam application).

Based on the Cardiff Council weed control contract route (c. 2,000 km), Chris Phillips (Managing Director, CWC) estimated the following labour requirement for glyphosate and hot foam control methods citywide:

- Glyphosate
  - 8 weeks labour (40 hr weeks)
  - 2 machines, 2 people per machine
- Hot foam
  - 248 weeks labour (40 hr weeks)
  - 5 machines, 3 people per machine
  - Machines would be working constantly

This research and practical understanding of control method application demonstrates the economic sustainability of glyphosate and, to a lesser extent, acetic acid (Figure 4.1). In contrast, the economic sustainability of hot foam is limited, particularly over larger spatial areas (i.e., citywide), though this control method may prove useful in smaller (discrete) areas where it is earmarked for specific tasks (e.g. children's play areas).

Note: it is possible to rebuild the Weed-IT machines for acetic acid application by changing the internal seals to minimise clean down times between treatments (Bristol City Council 2017, Phillips pers comm. 2021).

Wider context

In the UK, North Yorkshire County Council tested hot foam in 2021 and due to cost and logistical considerations in more rural areas of the county they will not be deploying this control method in the coming years (City of York Council 2022). During 'The Cotham Trial' undertaken by Bristol City Council (UK), Bristol Waste Company (BWC) estimatec that the relative cost of each control method trialled:

- Glyphosate = £60,000 per application
- Acetic acid = £216,000 per application
- Hot foam = £392,000 per application

BWC noted the difficulty of assembling these cost estimates. Further, cost estimates were based on the 20 km distance of The Cotham Trial; in contrast the total treatment distance of the Cardiff Council Trial was 10 times larger (c.235 km), meaning that cost estimates (and the comparability of these) is based on more extensive data. Regardless, the BWC cost estimate for acetic acid treatment was 3.6 times greater than glyphosate, while hot foam treatment was 7 times more than that of glyphosate. In short, as Bristol City Council state:

'What is clear is that the use of acetic acid and hot foam are always considerably more expensive than glyphosate.'

(Bristol City Council 2017)

Note: New-Way Weed Spray is the only legally approved and available professional acetic acid based herbicide in the UK. For comparative purposes other pavement weed control trials in the UK and Europe utilising acetic acid-based herbicides are referred to in this section, though application details (i.e., product formulation and application rates) are frequently not reported. It is notable that New-Way Weed Spray has a very low acid content, relative to

diluted acetic acid and other non-optimised product formulations tested 10-15 years ago, being specifically co-formulated with adjuvants, spreaders etc. to increase herbicidal activity.

In the Netherlands, Kempenaar & Saft (2006) reported the cost of hot water being approximately 4 times greater than that of glyphosate-based weed control (Figure 4.2), while Kempenaar & van Dijk (2006) reported costs of physical weed control methods being 2-8 times greater than those of glyphosate-based weed control. 'The Thanet Trial' undertaken by East Malling Research on behalf of Defra provided similar cost estimates, with hot foam being upto 8 times more expensive to apply than the application of glyphosate alone (EML 2015b). It is likely that the increased costs reported in the present Cardiff Council Trial reflect the size (spatial scale) of the experiment and the smaller number of control methods tested, providing detailed comparison of relative treatment costs at the citywide scale (i.e., 'like-for-like comparisons'; Rask & Kristoffersen 2007, Fagot et al. 2011, Martelloni et al. 2020).

It is notable that few weed control experiments outside of the agricultural sector are big enough (scaled appropriately) that strong (robust) conclusions can be made and later applied practically over large areas. Rather, large-scale management recommendations are based on small-scale case studies and experiments which do not provide enough information to inform wider best practice management (Jones et al. 2018).

System	Threshold weed growth specification			
	Little weed growth*		Very little weed growth**	
	Frequency	Costs (€ m^{-2})	Frequency	Costs (€ m^{-2})
1. Brushing	3	0.19-0.38	3.5-5	0.20-0.40
2. Flame	N/A	N/A	5	0.15-0.35
3. Hot water	2.5	0.22-0.32	3-4	0.30-0.40
4. Herbicides	2	0.05-0.08	2.5	0.07-0.10

Figure 4.2: Annual frequency of application and cost per square metre (m^{-2}) of four pavement weed control methods in the Netherlands in 2005. Where; *little weed growth means less than 25 % of bare soil in the pavement is covered by weeds, very few weeds taller than 5 cm and no clumps of weeds; **very little weed growth means less than 5 % of bare soil is covered by weeds, no weeds taller than 5 cm and no clumps of weeds (adapted from Kempenaar & Saft 2006).

4.3 Environmental - product, water and fuel use

Weed control practices in the UK amenity (non-agricultural) sector differ from those in agriculture. For example, while 'blanket' herbicide application in agricultural crops may be permitted, in the amenity sector such treatments in paved areas (i.e., non-porous hard surfaces) are not permitted as there is little surface absorption of pesticide and consequently, there is a high risk of run-off to drains and water bodies (HSE 2012). Therefore, to meet legislative

requirements, pavement weed control methods are 'spot treatments' made to visible weed vegetation only when the plants are actively growing. In practice, all control methods evaluated in the present study (acetic acid, glyphosate and hot foam) are spot treatments and were not applied in a blanket fashion along the whole length of the Cardiff Council weed control contract route (c. 2,000 km).

Product use

Understanding that pavement weed control involves the direct targeting of weeds is important for understanding product use volumes (Figure 3.2). Glyphosate application used the least product (0.33 L/km), while acetic acid and hot foam used larger product quantities (4.06 and 5.38 L/km, respectively). The low product application volume associated with glyphosate is the result of a number of key factors:

- Glyphosate poisons whole plants effectively at low application rates (i.e., it is highly specific and 'systemic' through all parts of the plant).
- Precision targeting of herbicides directly at living green plant material (via near infra-red (NIR) light) using devices such as the Weed-IT.
- Effective, low herbicide application rates achieved through the inclusion of appropriate spray additives such as water conditioners that buffer acid-base balance (pH) in the herbicide spray, freeing up glyphosate molecules to do more work.

The larger acetic acid product application volume mainly relates to the fact this molecule is not specifically poisonous (herbicidal) to plants, does not work at low concentrations and does not move around all parts of the plant (i.e., it is not systemic). Consequently, despite the use of Weed-IT machines, the product application rate is far greater than that associated with glyphosate-based weed control. This presents a logistical challenge for operators as large product volumes are required for relatively small areas of pavement, reflecting results reported by Hansson et al. (2006) in Sweden.

Hot foam required the most product per unit distance, in part due to the application of hot foam with a hand lance as opposed to precision equipment. Importantly, the herbicidal component of hot foam is not the product, but rather the (non-specific) hot water applied with the foaming product mix; therefore, a larger volume of water and product are required compared with specific chemical control methods such as glyphosate. Further, the hot foam product contains plant oils and sugars and such molecules require sourcing, processing, manufacture and transport to the point of use. Therefore, the environmental burdens of such processes are high and accompanied by greater overall product use (16 times more hot foam product is used that glyphosate), which may lead to wider human health and ecotoxicological concerns (see: Life Cycle Analysis (LCA); section 6.4 Report statement: impact of weed control methods on pollinators).

Water use (total)

Understanding that pavement weed control involves the direct targeting of weeds is important for understanding water use volumes (Figure 3.3). Acetic acid application used the least water (8.44 L/km), while glyphosate used 13.00 L/km and hot foam application used 629.64 L/km; this represents a water use 48 times greater than that of glyphosate application. The large associated

water use of hot foam is principally due to the use of hot water as a non-specific herbicide. While this is addressed in the Life Cycle Analysis (LCA) section, it is important to note that the abstraction, supply and subsequent heating of drinking (potable) water to 98 °C (Appendix 1) requires large amounts of energy and consequently, these carbon intensive processes undermine both the economic and environmental sustainability of hot foam for pavement weed control.

Note: less water is used to apply acetic acid compared with glyphosate as the herbicide product volume per unit distance is much greater than that of glyphosate i.e., more herbicide and less water is required for application.

Fuel use (total)

Per unit distance, glyphosate and acetic acid-based control methods required the least fuel to undertake, with glyphosate requiring 0.18 L/km petrol and 0.00 L/km diesel (Figure 3.4) and acetic acid requiring 0.19 L/km petrol and 0.00 L/km diesel. The slightly higher petrol requirement of the acetic acid control method is due to the additional treatment per year (four), compared with glyphosate (three; Figure 2.2). In contrast, hot foam requires 12.33 L/km petrol and 2.13 L/km diesel i.e., 100 % more petrol than glyphosate or acetic acid application and 63 times more diesel than glyphosate application. There are two main reasons for the greater hydrocarbon requirement of the hot foam control method:

- Hot foam was originally applied using an L12 Foamstream machine mounted on a flatbed truck; in the second and third treatment, the machine was remounted on a Toyota Hilux. In contrast, Weed-IT machines are mounted on much smaller quad vehicles with lower fuel requirements.
- Water in the hot foam control method is heated by the Foamstream machine to 98 °C (Appendix 1) prior to application and this requires very large amounts of energy, particularly when this control method is applied over larger areas.

Hot foam is therefore a carbon intensive control method, the environmental sustainability of which should be carefully considered prior to widespread deployment as a pavement weed control method (see Life Cycle Analysis; Figure 4.1; APSE 2020).

Wider context - product, water and fuel use

Often, hard surface weed control methods which are not based on the use of systemic herbicides (normally glyphosate) lack information about their product, water and fuel use. Further, due to the need for more frequent treatments, their use of product, water and fuel are often greater than control methods based on the use of glyphosate (Figure 1.2). More frequent treatments are required using these methods because they mainly affect the aboveground plant parts, whereas systemic herbicides (i.e., glyphosate) kill the entire plant and therefore only require one or two treatments per year (Rask & Kristoffersen 2007).

Treatment frequency depends on factors including:

- Type of hard surface
- Weed control method
- Weed acceptance level
- Weed cover
- Climate
- Weed species composition

In Denmark, experiments evaluating different thermal methods and brushing on pavements during a three year period suggested that 11-12 treatments per year were necessary to achieve acceptable weed control on areas heavily infested with perennial weeds, regardless of the method applied. In the Netherlands, experiments on pavements used fewer treatments, with 4-6 brushing treatments, and 3-5 flame and hot water treatments per year. In general, treatment at an early developmental stage reduced fuel inputs, increased driving speed and reduced labour costs (Rask & Kristoffersen 2007).

In the UK, Bristol City Council (2017) estimated that hot foam application used between 75-85 times more water (15,000 to 17,000 L/hectare) than glyphosate application (200 L/hectare). While the estimated units provided by Bristol City Council differ from those provided in the present Cardiff Council Trial (L/hectare as opposed to L/km); proportional estimated hot foam water use compared with glyphosate application was greater in Bristol (75-85 times more water) than that recorded in the Cardiff Council Trial (48 times greater). City of York Council (2022) reported that hot foam application used on average between 1,000 to 1,500 litres of water per day, depending on how soiled/weeded the treatment area; this equates to around 0.5 tonnes carbon dioxide (CO_2) emissions per day. Reported water use in the City of York (2022) was less than that recorded in The Thanet Trial (c.4,000 to 6,000 litres of water per day; EMR 2015b) and the Cardiff Council Trial (2,340 litres of water per day; Figure 2.5). In summary, product, water and fuel use was consistently lower for glyphosate application than all other control methods tested in The Thanet Trial, the Cardiff Council Trial and by the City of York (EMR 2015b, Bristol City Council 2017, City of York Council 2022'. Bristol City Council note:

'The operational speed, problems with transporting large amounts of water combined with high energy use give a high price and environmental impact. Whether the high energy doses needed for thermal treatments can be considered as sustainable needs careful consideration.'

(Bristol City Council 2017)

4.4 Environmental - Life Cycle Analysis (LCA)

Foamstream® had the highest environmental impacts in all categories except for that of freshwater eutrophication, where Monsanto Amenity Glyphosate XL had the higher impact (Figures 3.5 & 3.6; Appendix 2). Both Monsanto Amenity Glyphosate XL and New-Way Weed Spray control methods have an overall lower environmental impact than Foamstream®; and the treatment that has the lowest overall environmental impact is Monsanto Amenity Glyphosate XL. These impact assessment results were not surprising given the higher number of inputs into the Foamstream® system. Further information from the

manufacturers on the overall composition of the control method product (Foamstream® V4) would give more accurate results.

Note: a conservative approach was taken on how to determine the composition of the Foamstream® V4 product from information that was available and this will have resulted in an underestimation of the environmental impact. If further information becomes available at a later date it is recommended that the LCA be recalculated.

Wider context - Life Cycle Analysis (LCA)

In summary, the overall LCA conclusion is that Monsanto Amenity Glyphosate XL has less environmental impact than the other control methods tested in this study. Results found in the Cardiff Council Trial above are comparable to those found in a similar UK study of weed treatments for controlling weeds on hard surfaces (The Thanet Trial; EMR 2015b). East Malling Research (EMR) found that freshwater impacts are the only ones where glyphosate-based control methods are higher than those of non-herbicide approaches. However, EMR only investigated the use of integrated (IPM) treatment approaches, making direct comparison of figures difficult, but broadly comparable in general.

In the Netherlands, an LCA investigating pavement weed control methods (Kempenaar & Saft 2006) also found that freshwater impacts (aquatic ecotoxicity) contributed toward elevated glyphosate-based control method results, but noted that physical control methods (brushing, flaming and hot water) produced less favourable results than herbicide application.

4.5 Customer satisfaction

Customer satisfaction was measured by comparing the change in public complaints between 2020 and 2021 for each pavement weed control method (Figure 3.7). Between 2020 and 2021, glyphosate showed a small increase in complaints (from 1 to 4), while hot foam showed a small decrease in complaints (from 23 to 22). In contrast, the application of acetic acid more than tripled public complaints between 2020 and 2021, from 8 to 29. Consequently, customer satisfaction is rated high for glyphosate and hot foam, but low for acetic acid (Figure 4.1).

In the UK, City of York Council (2022) reported public complaints only following the application of acetic and pelargonic acids. In contrast, complaints were received by Bristol City Council (2017) following application of all control methods in equal numbers. Due to differences in trial approach, it is not possible to make more general comments regarding customer satisfaction following the application of pavement weed control methods.

4.6 Quality

Weed control method efficacy was measured four times using a weed level (low = 1; high = 6) before (PRE) and after (POST 1-3) the application of the three pavement weed control methods (Figure 3.8). The quality of acetic acid was poor throughout the year, while glyphosate took some time to bring the pavement weed population under effective control following plant growth in spring and summer. In contrast, the hot foam control maintained the weed population at a low level until late in the year, when the weed level increased slightly from 1.4 to 1.6 in POST 3. This late increase in weed level is likely to

reflect regrowth of weeds with deeper roots treated earlier in the year; hot foam does not kill the root systems of perennial pavement weeds allowing recovery from control method application.

Glyphosate and hot foam were the most effective control methods, though the underlying design and build of pavements in the respective wards are likely to have influenced treatment efficacy. Paving in Pontprennau & Old St Mellons (hot foam) consisted of sealed tarmac paths which leave few gaps for weed growth; in contrast, footpaths in Riverside and Penylan (acetic acid and glyphosate, respectively) consist of slab paving with many more gaps available for weed colonisation and subsequent growth. These differences in design and build should be considered in the context of overall treatment quality (Figure 4.1; Rask & Kristoffersen 2007).

Wider context - quality

In the UK, Bristol City Council (2017) state that acetic acid can be as effective as glyphosate for weed control if it is applied more frequently; however the treatment frequency and likely costs associated with this are not provided, though they are likely to be prohibitively expensive (Bristol City Council 2017). Following the application of acetic and pelargonic acids, City of York Council reported that weeds survived application of the control methods and continued to grow, resulting in more public complaints (Bristol City Council 2017, City of York Council 2022). Mirroring trial results in the UK, Hasson et al. (2006) state that acetic acid does not work against perennial weeds growing in paved areas, resulting in increased treatment frequency and presumably greater negative environmental impacts (Figure 4.1).

In Belgium, Fagot et al. (2011) note that while there are a large number of alternative (non-herbicide) weed control methods available for use on hard surfaces, these are less effective than glyphosate-based herbicides, requiring more frequent treatments. Further, the effectiveness of alternative control methods is strongly related to weed species and growth stage at the time of treatment. For example, weeds which grow flat on the ground (prostrate), with protected growth points (meristems) and narrow, thick leaves such as Procumbent Pearlwort (*Sagina procumbens*), show a greater tolerance to thermal treatments. This is because lethal heat transfer to the growing points and deeper plant tissues is reduced compared with upright plants which are fully exposed to treatment. Similarly, mechanical weed control methods are less effective in removing deep-rooted, broad-leaved perennials with protected growth points near or below ground level (e.g. Dandelion, *Taraxacum officinale*; Broadleaf Plantain, *Plantago major*). Further, these species can regrow quickly, even after full removal of all aboveground plant growth (defoliation; Rask & Kristoffersen 2007, Fagot et al. 2011).

Rask et al. (2013) reported that there was no significant difference between the number of required treatments per year with hot water or glyphosate. However, while hot water, air and steam are safer than flame (Figure 1.2), the energy consumption associated with these control methods are greater. Further, while hot foam systems may be practical in certain settings (e.g. traffic islands), the purchase price of the equipment is high compared with flamers on the market (Rask & Kristoffersen 2007, Rask et al. 2013). Broadly, these findings align with those of the present Cardiff Council Trial; while hot foam is an effective control method, the costs and environmental impacts of

the system are in most cases greater than those of glyphosate-based pavement weed control methods (Figure 4.1).

Due to the efficacy, ease of use and low cost of glyphosate, this herbicide is the mainstay for weed control on hard surface areas such as roads and pavements in the UK and Europe (Hasson et al. 2006, Rask & Kristoffersen 2007, Bristol City Council 2017, City of York Council 2022). However, a concern with the frequent use of glyphosate in urban areas is that despite having a safe environmental profile, if it is the only herbicide used in these settings it is highly likely that it will be detected in surface waters due to the total quantity being used (Ramwell 2006). Correct (legal) use of glyphosate is therefore fundamental to minimising the environmental risks posed by this compound. For example, avoiding gully pots (drains) reduced potential contamination of water courses with glyphosate-based herbicides in the Netherlands by 15 % (Ramwell 2006, Kempenaar et al. 2007).

5. Conclusions

5.1 Overview of findings

Previous pavement weed control trial experiments have been limited by:

- **Small-scale studies** - logistical problems and increased environmental and economic costs (e.g. equipment access, water use) may not show up in smaller trials and are only seen when the control methods are scaled up to larger areas.
- **Short-term studies** - studies that are very short (less than one month) often overestimate the effectiveness of weed control methods that damage aboveground weed growth as the experiment does not last long enough to observe any weed regrowth.
- **Not comparing 'like with like'** - control methods are not compared directly with one another or are compared with non-standard approaches; this may result in overestimating control method efficacy and sustainability (Rask & Kristoffersen 2007, Fagot et al. 2011, EMR 2015b, Martelloni et al. 2020).

Further, previous research has found that in all but a few limited settings, the efficacy of a number of physical weed control methods (friction, thermal, covering) has been limited (Kempenaar et al. 2007, De Cauwer et al. 2013, Wynn et al. 2014).

To deliver sustainable weed management over large areas it is essential that control methods are examined scientifically to determine how well they work (efficacy) and how large their environmental and economic impacts are i.e., using an Integrated Pest Management (IPM) approach to testing (Jones & Eastwood 2019). The scientific (reproducible) approach followed in the current experiment enables us to find out what works under 'real world' conditions and then make evidence-based decisions on how we want to manage weeds. This is in sharp contrast to the 'trial and error' approach normally taken, which frequently results in the application of more expensive and environmentally harmful control methods due to increased resource use (labour, water, product) and carbon dioxide (CO_2) emissions. Further, there is a misunderstanding that IPM means that herbicides should not be used. What IPM actually means is that weed control methods should be sustainable; where experiments show that control methods which are not based on herbicides are ineffective and unsustainable, they should not be used to ensure that overall sustainability criteria are met. The IPM approach to testing control method efficacy and practicality followed in the Cardiff Council Trial is crucial to ensuring treatment sustainability in the longer-term.

If pavement weed control is understood to be necessary, it must be accepted that the management approach selected will involve compromises - it is unlikely there is a 'silver bullet' control method. The results of the present trial, based on testing over large areas (large spatial scales e.g. citywide) show that glyphosate was the most effective and sustainable weed control method tested, while hot foam was effective but unsustainable and acetic acid was both ineffective and unsustainable. However, glyphosate is not without proven drawbacks, such as freshwater eutrophication (Figure 3.5; Appendix 2) which has led to its use in water being banned in all but a few European countries (Kudsk & Mathiassen 2020). Understanding the pros and cons of each control

method enables us to make reasoned decisions on how we reduce the environmental and economic impacts of weed control, ultimately improving management sustainability at the landscape scale.

5.2 Wider context - overview

Urban areas throughout Europe spend a great deal of time and money on hard surface weed control. Historically, because of the effectiveness, low cost and ease of use of glyphosate, it was widely used as the main tool used for weed management in these settings. However, as pesticide use has been restricted at the EU-level through to the regional scale in some EU countries, alternative control methods have been sought (DIAS Report No. 126 2006).

However, 'alternative' implies a 'substitute' for glyphosate-based herbicides; presently, there are no comparable control methods available for the large-scale management of weeds in urban and rural areas. To illustrate this, many Swedish municipalities implemented a total ban or restrictions on the use of glyphosate and other herbicides since 1996. In 2006, reporting on 10 years of glyphosate restrictions, SKL reported that

'The situation is in several cases so critical that one must at the strategic decision level decide to either increase the resource allocation for sanitation and weed control, or start a long-term work to phase out hardened surfaces to reduce the resource-intensive area in the long run.'

(SKL 2006)

Consequently, SKL (2006) recommended that more research was required to better understand alternatives and find effective and sustainable control method substitutes for glyphosate before banning the use of this herbicide outright (SKL 2006).

5.3 Pavement weed control: sustainable approaches

Figure 5.1 summarises IPM sustainability considerations for the effective reduction of pavement weed populations. Further details of pros and cons of IPM weed control methods available to the UK amenity sector are provided in Figure 1.2.

To achieve more sustainable control of pavement weeds, Cardiff Council has considered its use of glyphosate within the context of IPM approaches. Total herbicide use has been reduced by the council through the sparing and targeted use of glyphosate, specifically:

- Improved herbicide efficacy by the inclusion of appropriate spray additives.
- Reduced herbicide application volumes, achieved by diluting the glyphosate-based herbicide product 166 times more than legal guidelines.
- Use of precision sensors to target actively growing weeds i.e., through the use of contractor Weed-IT machines (Figure 5.1).

Figure 5.1: Integrated Pest Management (IPM) approach for the sustainable management of pavement weeds control methods (SKL 2006, Kempenaar et al. 2007, Rask & Kristoffersen 2007, Fagot et al. 2011, De Cauwer et al. 2013, APSE 2019a, Kay pers comm. 2021, Mason pers comm. 2021, Phillips pers comm. 2021).

Control category	Desired effect	Approach
Cultural (preventative)	Prevent and/or minimise weed population growth	Weed growth can be limited, and control method application can be reduced on hard surface areas by changing the design of the surface and by selecting suitable materials and construction techniques. However, the conversion of surfaces will take a long time and incur high investment costs.
	Permit weed population growth in other areas	Set-aside areas of unmanaged land to which minimal/no control methods will be applied.
Physical (mechanical)	Bring weed population under control	Sweeping pavements regularly for maintenance will remove soil and other detritus, thereby reducing the chances of weed establishment and growth. However, sweeping is expensive, it can be difficult to coordinate sweeping with weed control operations and removal of soil and surface joint material (particularly in older urban areas) should be avoided. **Note:** sweeping is not included in Figure 1.2 as it is not defined as a standalone weed control method.
Chemical (herbicides)	Bring weed population under control	**Increase herbicide efficacy** Pavement weed control methods should be directed toward immature annual and perennial plants early in the growing season. This is because at this time, weeds have accumulated fewer resources from which to recover from control method application and control methods are therefore more likely to be successful.
		Reduce herbicide application volumes Herbicide use (mainly glyphosate) was reduced by 11–66 % compared to standard practice, with weed control levels maintained in the Netherlands. Cardiff Council's contractor (Complete Weed Control Ltd; CWC) has been applying glyphosate at low application volumes for some time, using a glyphosate-based product diluted 166 times lower than legal guidelines (0.00288 milligrams of active ingredient per litre).
		Use of precision sensors Precision sensors developed in agriculture can also be used in UK amenity settings. CWC uses the Weed-IT system (Appendix 1) to reduce herbicide usage (60-80 %) through precision targeting of active weed growth and avoid gully pots, drains etc. which are the principal points through which glyphosate-based herbicides may enter water infrastructure.
		Increase number of herbicide applications Counterintuitively, increasing treatment frequency using glyphosate-based herbicides is likely to reduce overall herbicide use through better management of the weed population. For example, increasing from two to three sprays means that successive treatments are targeting smaller, less mature plants and/or plants which have recovered from previous treatments; these weeds can be managed at lower application rates. Further, if weeds are controlled before they flower, any pollinator exposure to herbicides will be reduced.
Integrated Pest Management (IPM)	Bring weed population under control	Over time, approaches to weed management based on single control methods may run the risk of stimulating herbicide resistance in pavement weeds. However, the pressure imposed on pavement weed populations by herbicides that may lead to resistance development is much smaller in the amenity sector than in agriculture because: - Fewer weeds are sprayed - Weeds are sprayed less often - Weed may be larger (deep-rooted) and not killed outright by herbicide application Wider integration may be possible in the future once effective and sustainable alternatives are identified; it is important that it is not done 'for the sake of it'. For example, application of ineffective alternatives followed by glyphosate application doubles treatment mileage, reducing the environmental and economic sustainability of weed control.

5.4 What happens if we do nothing?

Within the one-year timeframe of the Cardiff Council Trial, council staff observed some local residents in the untreated areas of the city beginning to undertake their own management of pavement weeds. In this specific case, it was likely that residents had been using hot water to control the weeds, but the use of bleach, salt and diesel have been reported by other local government organisations in Wales. Not only are bleach, salt and diesel unregistered products (i.e., they cannot legally be used for weed control), they are also non-specific, meaning that a lot must be used to kill weeds. Further, salt and diesel are persistent compounds that are toxic to most forms of life, despite being 'natural' in origin (Adam and Duncan, 1999; Sobhnaian et al., 2011). Possible increasing and widespread use of these chemicals is likely to result in greater environmental burdens and risks posed to environmental and public health and safety (APSE 2021a).

Given these concerns, it is notable that some local government organisations are beginning to recommend a range of DIY weed control methods to reduce herbicide use. However, these recommendations are not evidence-based and have the potential to pose risks to public safety and the environment. To minimise environmental and societal risks associated with weed control methods and enhance their sustainability, it is suggested that professional use should be the preferred option for the safe maintenance of infrastructure assets.

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6. Summary statements

6.1 Report statement: herbicide regulation

The European Union (EU) Pesticide Reduction Strategy was developed in response to public concern and medical evidence demonstrating the harmful effects of pesticides on human and wildlife health. This legal framework (which the UK currently remains a part of) is the most stringent and comprehensive strategy in place worldwide for the sustainable use of pesticides (including herbicides; Hillocks 2012, Hillocks 2013, Kudsk & Mathiassen 2020). Since introduction of the strategy, around 75 % of herbicides used in Europe before 1993 have been withdrawn from the market with this process continuing to the present day. While this ongoing work is important, it is also essential that further herbicide withdrawals do not outpace development of alternative (effective) control measures (i.e., how and where do we strike the balance; Hillocks 2012, Hillocks 2013).

Hazards, such as herbicides are something that can cause harm, while a risk is the chance, high or low, that a hazard (e.g. pesticides) will actually cause somebody harm. Currently, there a highly contentious debate between:

- Those who advocate a precautionary (preventative) approach to pesticide regulation, where potential hazard is viewed as a benchmark for pesticide removal and
- Those who hold the view that the risk of harm posed by pesticides is effectively managed through strict regulation of use (Hillocks, 2013).

Regardless of the position held by the reader, it is very important to note that there are serious concerns regarding approval based upon hazard: a product may be potentially hazardous, though there is little risk to health or environment from a chemical, if correctly used (Hillocks, 2012). Assessment of potential hazard is also frequently complex and subjective anc there is no clear definition of hazard, or scientific definitions of some hazard criteria (e.g., endocrine disruptors; Hillocks, 2012; Hillocks, 2013). Further, consideration of the significant benefits conferred through pesticide use are often omitted, particularly in the smaller amenity and horticultural sectors (Hillocks, 2012; Jones and Eastwood, 2019).

6.2 Report statement: glyphosate controversy and sustainability

The widespread use of herbicides (and pesticides more widely) has been debated since the 1960's. However, the publication of an International Agency for Research on Cancer (IARC) report in 2015 which found that glyphosate was 'probably carcinogenic to humans' (Group 2A) sparked intense debate worldwide, specifically around the safe use of glyphosate-based herbicides (Guyton et al. 2015). Glyphosate is considered to be one of the least toxic and environmentally safe herbicides in use and all other regulatory agencies have asserted that glyphosate is safe to use, including the European Food Safety Authority (EFSA), the European Chemicals Agency (ECHA), the Joint Meeting on Pesticide Residues of FAO and WHO in addition to the United States (US) EPA and the Australian, Canadian and New Zealand pesticide authorities (Kniss 2017, Neal & Senesac 2018, Kudsk & Mathiassen 2020).

There are two key differences which may go some way to explaining the

differences in the findings of IARC and EFSA:

1. IARC only assessed reports published in scientific journals, while EFSA also considered confidential research done by the manufacturers.
2. EFSA only assesses the active ingredient i.e., glyphosate, whereas IARC assessed reports on glyphosate and formulated commercial products (Kudsk & Mathiassen 2020).

However, regardless of any differences in safety evaluation, some countries have moved to limit the use of this herbicide, while others work toward an outright ban on use. In part, such government restrictions on glyphosate use are in response to:

- Ongoing scientific debate around the widespread use of glyphosate in agriculture;
- Difficulties associated with translating carcinogenicity research into appropriate public health policies and recommendations for risk management and
- Court rulings in the United States (US) which awarded multi-million dollar damages to citizens who claimed that the long-term use of glyphosate has caused them to develop cancer (The Lancet Oncology 2016, Duke 2017, Andreotti et al. 2018).

In short, ongoing scientific debate, and perhaps more importantly United States (US) court rulings have driven increasingly cautious government decision-making and led many users to reconsider glyphosate's safety as well as the possibility of legal action being taken against them. However, these decisions are somewhat independent of scientific evidence of the risks and hazards posed by the use of glyphosate (Neal & Senesac 2018).

In the UK 95 % of PPPs (percentage of a.i. by mass) applied are herbicides (Wynn et al. 2014, fera 2016). Application of glyphosate in the UK totals around 2 million kilos per year, constituting approximately 25 % of total herbicide use (Kudsk & Mathiassen 2020). While agriculture accounts for approximately 90 % of use (fera 2016), the amenity sector accounts for just 8-10 % of the total amount of herbicide applied in the UK (much of this will be glyphosate-based). However, it is important to note that while agriculture can switch to other effective synthetic herbicides, the amenity sector cannot because the market for such products is relatively small, while the cost of re-registration continues to grow. Manufacturers are consequently reluctant to re-register products for 'minor use', despite these products being essential for maintaining efficacy and profitability of operation within the amenity sector (Hillocks 2012). Therefore, once such products are removed from sale they are likely to be lost forever, regardless of whether the alternative control methods that replace them perform as effectively.

At present, there are few safe and truly sustainable alternatives to glyphosate, with many alternative weed control methods and herbicide products delivering far less effective weed control along with larger environmental and economic costs (Kniss 2017, Neal & Senesac 2018). Examples of alternative herbicides based on naturally occurring chemicals such as acetic acid, pelargonic acid and other 'natural oils' are largely ineffective and in many cases prohibitively expensive (APSE 2020, APSE 2021a, APSE 2021b). Further, some are more

toxic than the synthetic herbicides which they are replacing and operators must therefore carefully avoid contact with the skin or eyes, and avoid inhaling fine sprays (Neal & Senesac 2018). Also, of the weed control methods which are comparable to glyphosate in their ability to control weeds, these are often much more expensive and/or environmentally damaging than the targeted use of glyphosate.

In short, there is no 'magic bullet' for weed control in any sector of the economy and each control method comes with its own set of drawbacks. So, it is essential to consider all of the positives and negatives of each control method, rather than deciding on what the 'ideal' weed control method is and working back from this position. To restate, in order that weed control methods are adopted sustainably, they must:

- Be less costly than the alternatives.
- Involve (comparatively) low levels of investment or financial requirements.
- Create little risk or uncertainty (i.e., they are evidence-based).
- Have well-defined control and management timeframes, provided by evidence-based research (Wynn et al. 2014).

6.4 Report statement: impact of weed control methods on pollinators

There is a current focus on the negative impacts of herbicides on pollinators and other bugs (invertebrates), particularly in the agricultural sector (Lundin et al. 2021). Also, it has been suggested that herbicides (glyphosate in particular) are having negative effects on microorganisms in the soil (soil biota; Kepler et al. 2020) and larger animals such as invertebrates via a number of mechanisms, such as reduced invertebrate movement and a reduction in beneficial gut flora (Gaupp-Berghausen et al. 2015, Motta et al. 2018). Further research has identified direct toxicity of herbicide products against Honey bees (*Apis mellifera*), though this research suggests that it is the co-formulants (also termed adjuvants, spreaders etc.) which are toxic, as opposed to the glyphosate molecule itself (Straw et al. 2021).

However, the evidence for these impacts at the landscape scale remains blurred even for the scientific community. For example, Kepler et al. (2020) found no evidence that glyphosate increased the relative abundance of soil pathogens, while the experiments of Gaupp-Berghausen et al. (2015) and Motta et al. (2018) were small to conclude effects (extrapolate) at the landscape scale. In the case of the Straw et al. (2021), experiments tested herbicide products available to the public on Bumble bees (*Bombus* spp.). Here the results suggested that it was not the herbicide itself killing bees, but the other co-formulants in the spray. Quite reasonably Straw et al. (2021) conclude that use of such products in agricultural and urban settings should be carefully considered; the author agrees and adds that herbicides and other non-chemical control methods in general should be undertaken by trained professionals, as opposed to the public.

While there is a growing body of predominantly laboratory-based research investigating lethal and non-lethal effects of pesticides on a range of organisms, there is surprisingly little research into the impacts of non-chemical control methods, which may be equally damaging to wildlife in agricultural settings (Vincent et al. 2003, Lundin et al. 2021). For example, while the

application of steam to control the Colorado beetle (*Leptinotarsa decemlineata*) is ineffective, the steam applied will kill other invertebrates in the treated area. Further, other methods (e.g. trenches) which are technically and environmentally acceptable, are impractical, costly and carbon intensive relative to the use of effective pesticides (Vincent et al. 2003). Vincent et al. (2003) also note that successful implementation of physical control methods tends to occur in postharvest situations i.e., once the plant is removed from the field.

These considerations raise two key questions:

1. Can the findings of agricultural research be transferred directly to our understanding of the impacts of pavement weed control methods, and herbicides in particular, on pollinators?
2. Are alternative weed control methods applied in urban areas equally damaging to pollinators as the application of herbicides?

In response to the first question, the use of herbicides to control pavement weeds involves herbicide spot treatments directly to growing plants, with herbicides being applied 1-3 times per year. In contrast, agricultural herbicide application may involve blanket sprays of different herbicides made several times throughout the year, depending on the crop being grown. Therefore, the scale of herbicide use is entirely different and so too are the impacts of the use of herbicides on pollinators, if only due to the relative product volumes used in the agricultural and amenity sectors, respectively. In short, we must be careful about generalising the impacts of herbicides on pollinators across economic sectors, particularly where the negative impacts are being debated and the cost of losing effective herbicides such as glyphosate are so great.

With respect to the second question, presently, the impacts of non-chemical weed control methods in agriculture have not been measured scientifically (Vincent et al. 2003, Lundin et al. 2021) and this is also the case in the amenity sector. However, there is an assumption that a reduction in herbicide use will automatically lead to increased biodiversity as non-chemical control methods and/or IPM systems do not have negative impacts on biodiversity: this assumption remains to be measured (quantified). From a common-sense perspective, it is likely that the application of lethal heat (flame, hot water, foam) and mechanical damage (metal brushes) to plants and animals will cause immediate death, in contrast with debated sub-lethal effects of herbicides on these organisms (APSE 2020, City of York Council 2022, Corbett pers comm. 2021). Another key consideration is that effective and regular weed management counterintuitively reduces pollinator exposure to any weed control method as flowers are less likely to be produced, reducing the attraction of weeds to pollinators.

To summarise, in 2020 the scientific journal Science published a letter entitled *'Support Austria's glyphosate ban'* (Peng et al. 2020), based on the idea that alternative weed control methods such as root exudates, crop rotation or mulching can replace, like-for-like, the use of glyphosate. In response Pergl et al. (2020) published a response to this article entitled *'Don't throw the baby out with the bathwater – ban of glyphosate use depends on context'*. In the response published in the scientific journal NeoBiota, the authors argued that:

'risks associated with using this herbicide on a large scale exist, but on a small scale, such as in invasive plant control, glyphosate has an important role and is not easy to replace. Therefore, the context and scale need to be taken into account when applying such bans.'

(Pergl et al. 2020)

This concept of scale and proportion are also key to sustainable pavement weed control. Without supporting experiments to determine the efficacy and sustainability of alternative control methods, removing glyphosate as a weed control tool is likely to result ir difficult situations such as those reported in Sweden by SKL (2006), where:

'The situation is in several cases so critical that one must at the strategic decision level decide to either increase the resource allocation for sanitation and weed control, or start a long-term work to phase out hardened surfaces to reduce the resource-intensive area in the long run.'

(SKL 2006)

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Appendix 1 - Equipment, products and materials

Foamstream® machine (Weedingtech™ Ltd., London, UK)
Brief technical specifications:

- Foamstream® machine L12
- Small lance used
- Water and foam mix leaves nozzle at 98 °C

The combined heater unit and water tank is mounted on the rear of a vehicle and driven to the site. Water is heated and mixed with a biodegradable foam which is applied through a lance onto the weeds or area being treated. The foam helps concentrate the heat onto the plant by reducing heat loss to the atmosphere. To kill plants, a minimum temperature of 58 °C is required (Weedingtech n.d., Bristol City Council 2017).

WEED-IT (Weed Economical Eradication Detection – Intelligent Technology) machine
Brief technical specifications:

- WEED-IT is a computer controlled herbicide application system specifically designed for use on hard surface areas.
- The system consists of a shrouded spraying head mounted on the front of a purpose-built, articulated carrier vehicle.
- Within the shrouded head are sensor units and spray nozzles. Sensor units detect the presence of weeds and trigger the appropriate spray nozzles to apply accurately the correct amount of herbicide just to those weeds and their immediate surroundings (CWC n.d.).

Monsanto Amenity Glyphosate XL - product label

March 2017

LABEL

H - Herbicide

MONSANTO AMENITY GLYPHOSATE XL

A foliar applied translocated herbicide for the control of emerged weeds in industrial and amenity situations, in forestry and on hard surfaces.

Degraded by micro-organisms*microbes in the soil.

A soluble concentrate containing 360 g/l glyphosate, present as 41.6 w/w of the isopropylamine salt of glyphosate

The (COSHH) Control of Substances Hazardous to Health Regulations may apply to the use of this product at work

MAPP Number: 17997

Contents e 5 litres

PROTECT FROM FROST

mopilled

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No licence is granted under any patent

© Monsanto 2017
Label number/production date

The Voluntary Initiative

This label has been produced according to the Crop Protection Association Voluntary Initiative (VI) guidance.

Page 1

March 2017

FRONT LABEL

MONSANTO AMENITY GLYPHOSATE

A soluble concentrate containing 360 g/l glyphosate present as (41.6% w/w) of the isopropylamine salt of glyphosate

MONSANTO (UK) LIMITED,
PO Box 663, Cambridge, CB1 0LD
Tel: (01954) 717550
Tel: (01954) 717575 - Technical Enquiries
E-mail: technical.helpline.uk@monsanto.com
Website: www.monsanto-ag.co.uk

In case of emergency day or night, telephone National Chemical Emergency Centre: (01865) 407333

IMPORTANT INFORMATION

FOR PROFESSIONAL USE ONLY AS AN INDUSTRIAL/AMENITY/FORESTRY HERBICIDE

Crops/situations:
Natural surfaces not intended to bear vegetation, permeable surfaces overlying soil, hard surfaces;
Amenity vegetation;
Forest nursery, forest (weed control, stump application and chemical thinning).

Maximum individual dose:	}
Maximum number of treatments:	} Full details are given in
Latest time of application:	} the attached leaflet
Other specific restrictions:	} (see Crop Specific Information - marked #)

READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.

BACK & BASE LABEL

SAFETY PRECAUTIONS

Operator protection

Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment:

*WEAR SUITABLE PROTECTIVE GLOVES when handling the concentrate or handling contaminated surfaces.

*WEAR SUITABLE PROTECTIVE GLOVES AND RUBBER BOOTS when applying by hand-held controlled droplet application, (CDA) equipment.

*WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES AND RUBBER BOOTS when applying by hand-held weed wiper.

** However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection.*

WHEN USING DO NOT EAT DRINK OR SMOKE.
WASH HANDS AND EXPOSED SKIN before eating and drinking and after work.

Environmental protection

Do not contaminate water with the product or its container. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.

Storage and disposal

KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDINGSTUFFS.
KEEP OUT OF REACH OF CHILDREN.
KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.
RINSE CONTAINER THOROUGHLY by using an integrated pressure rinsing device or manually rinse three times. Add washings to sprayer at time of filling and dispose of safely. Triple rinsed containers may be disposed of as non-hazardous waste.

Medical advice

Medical guidance is available on a 24 hour basis by telephoning the National Chemical Emergency Centre on 01865 407333 or for doctors, from the National Poisons Information Service on 0844892011

DIRECTIONS FOR USE

IMPORTANT: This information is approved as part of the Product Label. All instructions within this section must be read carefully in order to obtain safe and successful use of this product.

Warnings

EXTREME CARE SHOULD BE TAKEN TO AVOID SPRAY DRIFT AS THIS CAN SEVERELY DAMAGE NON-TARGET PLANTS.
DO NOT MIX, STORE OR APPLY MONSANTO AMENITY GLYPHOSATE XL IN GALVANISED OR UNLINED STEEL CONTAINERS OR SPRAY TANKS.
DO NOT leave spray mixtures in tank for long periods and make sure tanks are WELL VENTED.

Restrictions

A period of at least 6 hours and preferably 24 hours rain free must follow application of Monsanto Amenity Glyphosate XL.

Do not spray onto weeds which are naturally senescent, or where growth is impaired by drought, high temperatures, a covering of dust, flooding or frost at, or immediately after application, otherwise poor control may result.

Do not spray in windy conditions as drift onto desired crops or vegetation could severely damage or destroy them.

After application, large concentrations of decaying foliage, stolons, roots or rhizomes should be dispersed or buried by thorough cultivation before crop drilling.

Applications of lime, fertilizer, farmyard manure and pesticides should be delayed until 5 days after application of Monsanto Amenity Glyphosate XL.

Weeds controlled

Monsanto Amenity Glyphosate is a foliar acting herbicide which controls annual and perennial grasses and most broad-leaved weeds when used as directed. It is important that all weeds are at the correct growth stage when treated, otherwise some re-growth may occur and this will need re-treatment.

Apply Monsanto Amenity Glyphosate herbicide once grasses and broad-leaved weeds have emerged and they have ACTIVELY GROWING green leaves.

- PERENNIAL GRASSES must have a full emergence of healthy, green leaf. (Common Couch, for example, becomes susceptible at the onset of tillering and new rhizome growth commences which usually occurs when plants have 4-5 leaves, each with 10-15cm of new growth).
- PERENNIAL BROAD-LEAVED WEEDS are most susceptible around the flowering stage.
- ANNUAL GRASSES AND BROAD-LEAVED WEEDS should have at least 5 cm of leaf, or 2 expanded true leaves respectively.
- OTHER SPECIES recommendations for specific Areas of Use are given in the Recommendation Tables, pages 6 and 7
- This product will not give an acceptable level of control of Horsetails (*Equisetum arvense*) - repeat treatment will be necessary.

Following Crops

Upon soil adsorption the herbicidal properties of Monsanto Amenity Glyphosate XL are lost permitting the drilling of crops 48 hours after application. Planting of trees, shrubs etc may take place 7 days after application. Grass seed may be sown from 5 days after treatment.

#Crop specific information

COMPLIANCE WITH THE FOLLOWING CONDITIONS OF USE AND ALL SAFETY PRECAUTIONS MARKED* IS A LEGAL REQUIREMENT

Crops/situations:	Maximum individual dose (litres product/ hectare):
Natural surfaces not intended to bear vegetation, permeable surfaces overlaying soil, hard surfaces	5.0
Amenity vegetation	5.0
Forestry, forest nursery: • Weed control	5.0

Other specific restrictions:

The maximum individual dose must not exceed 22.5g/l glyphosate for hydraulic knapsack sprayers.

When applying through rotary atomisers the spray droplet spectra produced must be of a minimum Volume Median Diameter (VMD) of 200 microns.

Weed wipers may be used in any crop where the wiper or chemical does not touch the growing crop.

For weed wiper applications, the maximum concentrations must not exceed the following:

Weed wiper Mini	1:2 dilution with water (Refer to weed wiper guidance under
Other wipers	1:1 dilution with water) 'Mixing & Spraying' section

READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.

RECOMMENDATION TABLES

AREA OF USE	TARGET WEED/USAGE	CROP/SITUATION	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
NATURAL SURFACES NOT INTENDED TO BEAR VEGETATION PERMEABLE SURFACES OVERLYING SOIL RAILWAY BALLAST	Vegetation management	Including roadsides, paths and along fences & total weed control on industrial sites	Annual weeds	[illegible]	Hydraulic sprayers: 80-250 l/ha or Rotary atomisers* water volumes 40 l/ha or hand held equipment. See Mixing & Spraying section	Use areas include: Clearing up weedy ground prior to planting or sowing and as a directed spray in ornamental plantings. Hydraulic sprayers, rotary atomisers or weed wipers may be used. DO NOT USE IN OR ALONGSIDE HEDGEROWS. DO NOT USE UNDER POLYTHENE OR GLASS
			Perennial grasses and broad-leaved weeds	[illegible]		
Hard surfaces (excluding railway ballast)	Vegetation management	Including roadsides, paths, concrete and alongside walls	Annual weeds	[illegible]	Hydraulic sprayers 80-250 l/ha or Rotary atomisers* water volumes 40 l/ha or hand held equipment. See Mixing & Spraying section	Apply this product carefully. Ensure spraying takes place only when weeds are actively growing (normally March to October) and is confined only to visible weeds including those in the 30cm swath covering the kerb edge and road gulley – do not overspray drains
			Perennial grasses and broad-leaved weeds	[illegible]		
AMENITY VEGETATION	Vegetation management	Areas of semi natural or ornamental vegetation including trees. Areas of bare soil around ornamental plants or areas intended for ornamental planting or clearance of allotments	Annual weeds	[illegible]	[illegible]	Hydraulic sprayers, rotary atomisers or weed wipers may be used. DO NOT USE IN OR ALONGSIDE HEDGEROWS. DO NOT USE UNDER POLYTHENE OR GLASS
			Perennial grasses and broad-leaved weeds	[illegible]		

* Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns

Forestry weed control

Monsanto Amenity Glyphosate XL can be used for site preparation and for weed control in planted out trees

AREA OF USE	TARGET WEEDS/USAGE	WEED INFESTATION	APPLICATION RATE L/HA	WATER VOLUME	APPLICATION TIMING & GUIDANCE
Forestry [illegible]	Arable land planting, replanting & grassland areas	Arable weeds	[illegible]	Hydraulic sprayers 80-250 l/ha or rotary atomisers 40 l/ha*	All tree species may be planted 7 days or more after treatment. *Where rotary atomisers are used their droplet diameter must fall within the range 200-300μm
		[illegible]	[illegible]		
Forestry Post planting (directed) in conifers & broad-leaved trees	[illegible]	[illegible]	4.0	Knapsack 200-250 l/ha or [illegible] apply as a concentration of 1 part Monsanto Amenity Glyphosate XL to 2 parts water (see Mixing & Spraying section)	It is ESSENTIAL to use a TREE GUARD for all applications made in the growing season. Treat bracken after frond tips are unfurled but before senescence. [illegible] All other woody weeds are treated June August before leaf senescence (but after new growth of crop has hardened)

Mixing and spraying

Monsanto Amenity Glyphosate XL mixes readily with water and can be applied in spray volumes ranging from 80-400 l/ha using tractor mounted, knapsack, rotary atomisers and hand-held sprayers. Specialised application equipment such as weed wipers and spot gun applicators may be used where indicated

Correctly calibrate all sprayers under field or use conditions prior to application.

a) Tractor mounted and powered sprayers

These should be capable of applying accurately 80-400 l/ha within a pressure range of 1.5-2.5 bars (20-35 psi).

Half fill the spray tank with clean water, start gentle agitation, and then add the correct amount of Monsanto Amenity Glyphosate XL. Top up the tank with water to the required level. To avoid foaming do not use top tank agitation. Use of a defoamer may be necessary.

All applications using hydraulic sprayers (including knapsack sprayers) to be as 'MEDIUM' or 'COARSE' spray quality (BCPC definition).

Medium Volume application (150-300 l/ha)
Avoid high water volumes (>300 l/ha) which may lead to run off from the treated vegetation, resulting in reduced control. Low drift nozzles such as air induction and pre-orifice types producing a medium or coarse spray (BCPC definition) should be used to minimise the risk of drift.

Low Volume Application (minimum 80 l/ha)
Low volume application can be achieved by reducing pressure and the appropriate nozzle selection. Low drift nozzles which produce a medium spray quality (BCPC definition) should be used to minimise the risk of drift.

b) Knapsack sprayers

Recommended delivery range is 80 - 300 l/ha. Half fill the spray tank with clean water, add the correct amount of Monsanto Amenity Glyphosate XL and top up with water. Fill according to best practice as given on the CPA's Voluntary Initiative website (www.vountaryinitiative.org.uk)

When used at a walking speed of 1 m/sec to apply a swath of 1 m width, most knapsack sprayers filled with a Hypro AN 0.6-AN2.4 or similar nozzle deliver approximately 200 l/ha spray volume (or 10 l per 500 m^2). To apply 5.0 l/ha of MONSANTO AMENITY GLYPHOSATE XL, therefore, use 50ml of product for each 2 litres of spray liquid required. Similarly, knapsack sprayers fitted with low volume nozzles such as D/0.23/1 - D/0.68/1 typically deliver approximately 100 l/ha spray volume. To apply 5.0 l/ha MONSANTO AMENITY GLYPHOSATE XL in this case, use 100ml of product for each 2 litres of spray liquid required.

c) Rotary Atomisers

Tractor mounted boom sprayers and hand-held machines are suitable for use in some situations to apply a minimum spray volume of 40 l/ha.

When rotary atomisers are used to apply Monsanto Amenity Glyphosate XL ensure that the droplet diameter falls within the range 200-300 microns for all uses

Stir the correct amount of Monsanto Amenity Glyphosate XL to control the particular target species into the sprayer bottle half filled with clean water. Top up with water, close the top and shake gently to ensure good mixing.

Do not tank mix Monsanto Amenity Glyphosate XL when using rotary atomiser sprayers.

d) Weed Wipers

For ropewick applicators use a concentration of 1 part Monsanto Amenity Glyphosate XL to 2 parts of water and add a water-soluble dye if required. Care should be taken to avoid dripping onto wanted vegetation.

For new generation weed wipers, use 1 part Monsanto Amenity Glyphosate XL to 10 or 20 parts of water or as directed by manufacturer's instructions or as directed by manufacturer's instructions.

e) Spot Gun Applicators

Spot gun applicators are for the treatment of individual weeds.
Apply 5 ml of spray to target weed, using a narrow cone TG-3 or TG-5 nozzle.

Spot Diameter (metres)	Amount of Monsanto Amenity Glyphosate XL (ml) per 5 litres spray solution for targeted dosages of:		
	3.0 l/ha	4.0 l/ha	5.0 l/ha
0.3	20	28	35
0.6	85	110	140

Compatibility

Do not tank mix Monsanto Amenity Glyphosate XL with adjuvants, pesticides or fertilisers except as advised by Monsanto. For up to date information on compatible products contact Monsanto UK Limited (tel: 01954 717575)
For hydraulic sprayers: maintain continuous agitation when using Monsanto Amenity Glyphosate XL in tank mixture.

For knapsack sprayers: mix thoroughly and use immediately when using Monsanto Amenity Glyphosate XL in tank mixture.

COMPANY ADVISORY INFORMATION

This section is not part of the Product Label under the Plant Protection Products Regulations 1995 and provides additional advice on the product.

General Information

Monsanto Amenity Glyphosate XL herbicide is a foliar acting herbicide with broad-spectrum activity. It is taken up by foliage and translocated to underground roots, rhizomes and stolons, providing control of both annual and perennial grasses and broad-leaved weeds. Monsanto Amenity Glyphosate XL is rapidly adsorbed onto particulate matter in soils and water and is quickly degraded by the micro-organisms present in soil and aquatic bottom sediments. Upon adsorption, the herbicidal properties of Monsanto Amenity Glyphosate XL are lost, permitting drilling of crops within 48 hours of application. When used as directed, any water subjected to Monsanto Amenity Glyphosate XL spray drift may be used immediately for irrigation purposes. Until degraded, the active ingredient in Monsanto Amenity Glyphosate XL, glyphosate, is practically immobile in soils and is, therefore, unlikely to contaminate groundwater.

To maximise the safe use of Monsanto Amenity Glyphosate XL to operator, consumer and environment, the label recommendations and the DEFRA/HSC/NAW publication "Code of Practice for Using Plant Protection Products" of January 2006, should be adhered to.

Symptoms on the weeds

Symptoms of treatment are generally first seen 7-10 days, or longer (if growth is slow), after spraying. These take the form of leaf reddening followed by yellowing and are usually quicker to appear on grasses than on broad-leaved weeds. Reaction of nettles is slow.
Effects of weather

See Directions for Use (Restrictions).

Monsanto Amenity Glyphosate will remain efficacious at low but not freezing temperatures however the onset of symptoms will be delayed.

A covering of dew may reduce efficacy where run-off occurs.
Reduced control is likely where weed growth is impaired by natural senescence, drought, high temperature, a covering of dust, flooding or severe/prolonged frost or, immediately after, application.
Weed resistance strategy

There is low risk for the development of weed resistance to Monsanto Amenity Glyphosate XL. There are no known cases of weed resistance to glyphosate in UK.
Strains of some annual weeds (e.g. black-grass, Wild oats and Italian Ryegrass) have developed resistance to herbicides which may lead to poor control. A strategy for preventing and managing such resistance should be adopted. This should include integrating herbicides with a programme of cultural control measures. Guidelines have been produced by the Weed Resistance Action Group and copies are available from the HGCA, CPA, your distributor, crop adviser or product manufacturer (Monsanto).

Growers are encouraged to implement a weed resistance strategy based on (a) Good Agricultural Practices and (b) Good Plant Protection Practices by:

- Following label recommendations
- The adoption of complimentary weed control practices
- Minimising the risk of spreading weed infestations
- The implementation of good spraying practice to maintain effective weed control
- Using the correct nozzles to maximise coverage
- Application only under appropriate weather conditions
- Monitoring performance and reporting any unexpected results to Monsanto UK Ltd (01954 717575)

General Cautions

Take extreme care to avoid drift, particularly when using near or alongside hedgerows. The use of low drift nozzles such as 'air induction' and 'pre-orifice' nozzles are recommended.

After application, large concentrations of decaying foliage, stolons, roots or rhizomes should be dispersed or buried by thorough cultivation before crop drilling.

New Generation Weed Wipers
Logic Contact 2000
Carlor Rollmaster
Allman Ecowipe

Rotowiper (UK) Ltd
C-Dax™ Eliminator
Weedswiper™

Sprayer Maintenance
Ensure the sprayer is in good working order and replace damaged, worn or malfunctioning parts before use. Carry out maintenance according to the instructions of the sprayer manufacturer.

Sprayer Hygiene

It is essential to thoroughly clean out spray tanks, pumps and pipelines and nozzle or disc assemblies, with a recommended detergent cleaner, between applying this product and other pesticides to avoid contamination from pesticide residues. Traces of Monsanto Amenity Glyphosate XL left in the equipment may seriously damage or destroy crops sprayed later.
Calibration

All sprayers should always be calibrated before use. This is essential when nozzles are changed or if a different dose of product is to be applied.

Unused Spray Mixture

Once Monsanto Amenity Glyphosate XL has been diluted in the spray tank, it should be used as soon as possible. However, if unexpected delays occur the diluted spray can be safely stored. Agitate well before use. Storage for longer than 3 days may result in reduced efficacy.

Disposal

Follow the guidance on the disposal of surplus spray solution, tank washings, concentrate and containers as given in section 6 of the DEFRA/HSC/NAW publication "Code of Practice for Using Plant Protection Products", January 2006.

Environmental Information Sheet

An Environmental Information Sheet for this product is available from the CPA's Voluntary Initiative website (www.voluntaryinitiative.org.uk)

Material Safety Data Sheet

A material safety data sheet for this product is available on request (telephone 01954 717575) or can be downloaded from the Monsanto website:
www.monsanto-ag.co.uk

Trade Mark References

Monsanto® and the Vine symbol are registered trademarks of Monsanto Technology LLC. All other brand names referred to are trademarks of other manufacturers in which proprietary rights may exist.

Monsanto does not warrant that the purchase or use of equipment mentioned in this document will not infringe any patent or trade mark registration.

March 2017

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Monsanto Amenity Glyphosate XL - material safety data sheet (MSDS)

MONSANTO Europe S.A./N.V.
Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. **Product identifier**
Monsanto Amenity Glyphosate XL
1.1.1. **Chemical name**
Not applicable for a mixture.
1.1.2. **Synonyms**
None.
1.1.3. **CLP Annex VI Index No.**
Not applicable.
1.1.4. **C&L ID No.**
Not available.
1.1.5. **EC No.**
Not applicable for a mixture.
1.1.6. **REACH Reg. No.**
Not applicable for a mixture.
1.1.7. **CAS No.**
Not applicable for a mixture.

1.2. **Product use**
Herbicide

1.3. **Company/(Sales office)**
MONSANTO Europe S.A./N.V.
Haven 627, Scheldelaan 460, B-2040
Antwerp, Belgium
Telephone: +32 (0)3 568 51 11
Fax: +32 (0)3 568 50 90
E-mail: safety.datasheet@monsanto.com

1.4. **Emergency numbers**
Telephone: Belgium +32 (0)3 568 51 23

2. HAZARDS IDENTIFICATION

2.1. **Classification**
2.1.1. **Classification according to Regulation (EC) No. 1272/2008 [CLP], National classification: U.K.**
Not classified as dangerous.
Hxxx Not applicable.

2.2. **Label elements: U.K.**
Labelling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictogram/pictograms: U.K.
Not Applicable
Signal word: U.K.
Not applicable.
Hazard statement/statements: U.K.

Hxxx	Not applicable.
Precautionary statement/statements: U.K.	
P234	Keep only in original container
Supplemental hazard information: U.K.	
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.

2.3. Other hazards
0% of the mixture consists of ingredient/ingredients of unknown acute toxicity.
0% of the mixture consists of ingredient/ingredients of unknown hazards to the aquatic environment.

2.3.1. Potential environmental effects
Not expected to produce significant adverse effects when recommended use instructions are followed.

2.4. Appearance and odour (colour/form/odour)
Pale yellow /Liquid / Odourless

Refer to section 11 for toxicological and section 12 for environmental information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance: Not applicable.

3.2 Mixture: Yes.

Composition/information on ingredients

Components	CAS No.	EC No.	EC Index No./ REACH Reg. No./ C&L ID No.	Concentration	Classification
Isopropylamine salt of glyphosate	[illegible]	[illegible]	[illegible]	41.50 %	Aquatic Chronic - Category 2; H411 [e]
Quaternary [illegible] compound			[illegible]	9.80 %	Skin corrosion/irritation - Category 2; Eye damage/irritation - Category 1; Aquatic Chronic - Category 3; H315, 318, 412
Water and [illegible] formulating ingredients			[illegible]	48.70 %	Not classified as dangerous

Active ingredient
Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

Full text of classification code: See section 16.

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

4.1. Description of first aid measures

4.1.1. Eye contact
Immediately flush with plenty of water. Continue for at least 15 minutes. If easy to do, remove contact lenses. If there are persistent symptoms, obtain medical advice.

4.1.2. Skin contact

Take off contaminated clothing, wristwatch, jewellery. Immediately wash affected skin with plenty of water. Wash clothes and clean shoes before re-use.

4.1.3. Inhalation
Remove to fresh air.

4.1.4. Ingestion
Rinse mouth thoroughly with water. Remove particles from mouth. Immediately offer water to drink. Do NOT induce vomiting unless directed by medical personnel. If symptoms occur, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

4.2.1. Potential health effects
Likely routes of exposure: Skin contact, inhalation, eye contact, ingestion
Eye contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Single ingestion: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.3. Indication of any immediate medical attention and special treatment needed

4.3.1. Advice to doctors
This product is not an inhibitor of cholinesterase.

4.3.2. Antidote
Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

5.2. Special hazards

5.2.1. Unusual fire and explosion hazards
Minimise use of water to prevent environmental contamination.Environmental precautions: see section 6

5.2.2. Hazardous products of combustion
Carbon monoxide (CO), Phosphorus oxides (PxOy), nitrogen oxides (NOx), Ammonia (NH3)

5.3. Advice for firefighters
Self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

5.4. Flash point
Does not flash.

6. ACCIDENTAL RELEASE MEASURES

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

6.1. Personal precautions
Use personal protection recommended in section 8.

6.2. Environmental precautions
Minimise spread. Keep out of drains, sewers, ditches and water ways. Notify authorities.

6.3. **Methods for cleaning up**
Absorb in earth, sand or absorbent material. Dig up heavily contaminated soil. Refer to section 7 for types of containers. Collect in containers for disposal. Flush residues with small quantities of water. Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.

7. HANDLING AND STORAGE

7.1. **Precautions for safe handling**
Good industrial practice in housekeeping and personal hygiene should be followed. Avoid contact with eyes. When using do not eat, drink or smoke. Wash hands thoroughly after handling or contact. Wash contaminated clothing before re-use. Thoroughly clean equipment after use. Do not contaminate drains, sewers and water ways when disposing of equipment rinse water. Refer to section 13 of the safety data sheet for disposal of rinse water.
Emptied containers retain vapour and product residue. FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.

7.2. **Conditions for safe storage, including any incompatibilities**
Compatible materials for storage: stainless steel, fibreglass, plastic, glass lining
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Minimum storage temperature: -5 °C
Maximum storage temperature: 35 °C
Keep out of reach of children. Keep away from food, drink and animal feed. Keep container tightly closed in a cool, well-ventilated place. Keep only in the original container. Minimum shelf life: 2 years.

7.3. **Specific end use(s)**
Not applicable.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. **Control parameters**

Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.
Quaternary ammonium compound	No specific occupational exposure limit has been established.
Water and minor formulating ingredients	No specific occupational exposure limit has been established.

8.2. **Exposure controls**
Engineering controls
No special requirement when used as recommended.
Eye protection:
No special requirement when used as recommended.
Skin protection:
If repeated or prolonged contact: Wear chemical resistant gloves. Chemical resistant gloves include those made of waterproof materials such as nitrile, butyl, neoprene, polyvinyl chloride (PVC), natural rubber and/or barrier laminate.
Respiratory protection:
No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

9.1 **Information on basic physical and chemical properties**

Colour (colour range):	Pale yellow
Form:	Liquid
Odour:	Odourless
Odour threshold:	No data.
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable
Boiling point:	Not available.
Flash point:	Does not flash.
Explosive properties:	No explosive properties
Auto ignition temperature:	460 °C
Self-accelerating decomposition temperature (SADT):	No data
Oxidizing properties:	Not available.
Specific gravity:	1.167 @ 20 °C / 4 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Dynamic viscosity:	24.9 mPa s @ 20 °C
Kinematic viscosity:	Not available.
Density:	1,167 g/cm3
Solubility:	Water: Soluble
pH:	5.0 @ 10 g/l
Partition coefficient:	log Pow: < -3.2 @ 25 °C (Glyphosate)

9.2 **Other information**

Evaporation rate:	No data

10. STABILITY AND REACTIVITY

10.1. **Reactivity**
Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.2. **Chemical stability**
Stable under normal conditions of handling and storage.

10.3. **Possibility of hazardous reactions**

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.4. Conditions to avoid
None.

10.5. Incompatible materials
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Compatible materials for storage: see section 7.2.

10.6. Hazardous decomposition products
Hazardous products of combustion: see section 5.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

11.1. Information on toxicological effects

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Acute oral toxicity: Based on available data classification criteria are not met.
Acute dermal toxicity: Based on available data classification criteria are not met.
Acute inhalation toxicity: Based on available data classification criteria are not met.
Skin corrosion/irritation: Based on available data classification criteria are not met.
Eye corrosion/irritation: Based on available data classification criteria are not met.
Skin sensitization: Based on available data classification criteria are not met.
Respiratory sensitization: Based on available data classification criteria are not met.
Mutagenicity: Based on available data classification criteria are not met.
Carcinogenicity: Based on available data classification criteria are not met.
Reproductive/Developmental Toxicity: Based on available data classification criteria are not met.
Specific Target Organ Toxicity - Single Exposure: Based on available data classification criteria are not met.
Specific Target Organ Toxicity - Repeated Exposure: Based on available data classification criteria are not met.
Aspiration hazard: Based on available data classification criteria are not met.

Most important symptoms and effects, both acute and delayed
Potential health effects
Likely routes of exposure: Skin contact, inhalation, eye contact, ingestion
Eye contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.
Single ingestion: Not expected to produce significant adverse effects when recommended use instructions are followed.

Data obtained on product and components are summarized below.

Acute oral toxicity
Rat, LD50 (Method: OECD 401): >2 000 mg/kg body weight
Slightly toxic.
Acute dermal toxicity

Rat, LD50: > 2 000 mg/kg body weight
Skin irritation
Rabbit, number of animals unknown, OECD 404 test:
Non-irritant
Eye irritation
Rabbit, number of animals unknown, OECD 405 test:
Non-irritant
Skin sensitization
Guinea pig, Negative.
No skin sensitization

N-(phosphonomethyl)glycine; fosfonoacetic acid:

Genotoxicity
Not genotoxic.

Carcinogenicity
Not carcinogenic in rats or mice.
Reproductive/Developmental Toxicity
Developmental effects in rats and rabbits only in the presence of significant maternal toxicity.
Reproductive effects in rats only in the presence of significant maternal toxicity.

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on product and components are summarized below.

12.1 Toxicity

Aquatic toxicity, fish
Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, LC50: > 100 mg/L.
Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, EC50: > 100 mg/L.
Aquatic toxicity, algae/aquatic plants
Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, ErC50 (growth rate): 54,5 mg/L.
Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, NOEC (growth rate): 4.8 mg/L.

12.2 Persistence and degradability
No data.

12.3 Bioaccumulative potential
Refer to section 9 for partition coefficient data.

12.4 Mobility in soil
No data.

12.5 Results of PBT and vPvB assessment

Not a persistent, bioaccumulative or toxic (PBT) nor a very persistent, very bioaccumulative (vPvB) mixture

12.6 Other adverse effects
Not expected to produce significant adverse effects when recommended use instructions are followed.

12.7 Additional information
If available, data obtained on similar products and/or on components are summarized below.

N-(phosphonomethyl)glycine; [n/a phosate acid]

Avian toxicity
Bobwhite quail (Colinus virginianus):
Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight
Arthropod toxicity
Honey bee (Apis mellifera):
Oral, 48 hours, LD50: 100 µg/bee
Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 100 µg/bee
Bioaccumulation
Bluegill sunfish (Lepomis macrochirus):
Whole fish: BCF: < 1
No significant bioaccumulation is expected
Dissipation
Soil, field:
Half life: 2 - 174 days
Koc: 884 - 60,000 L/kg
Adsorbs strongly to soil.
Water, aerobic:
Half life: > 7 days

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
13.1.1. Product
Follow all local/regional/national/international regulations on waste disposal. Follow current edition of the General Waste, Landfill, and Burning of Hazardous Waste Directives; and the Shipment of Waste Regulation. Keep out of drains, sewers, ditches and water ways. According to the manufacturer self-classification, following Regulation (EC) No. 1272/2008 [CLP], the product can be disposed as a non-hazardous industrial waste. Disposal in a waste incinerator with energy recovery is recommended.

13.1.2. Container
Follow all local/regional/national/international regulations on waste disposal, packaging waste collection/disposal. Follow current edition of the General Waste, Landfill, and Burning of Hazardous Waste Directives; and the Shipment of Waste Regulation. Do NOT re-use containers. Triple or pressure rinse empty containers. Pour rinse water into spray tank. Properly rinsed container can be disposed as a non hazardous industrial waste. Store for collection by approved waste disposal service. Recycle if appropriate facilities/equipment available. Recycle the non-hazardous container only when a proper control on the end use of the recycled plastic is possible. Suitable for industrial grade recycling only. Do NOT recycle plastic that could end in any human or food contact application. This package meets the requirements for energy recovery. Disposal in a incinerator with energy recovery is recommended.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

ADR/RID
14.1 **UN No.:** Not applicable.
14.2 **Proper Shipping Name (Technical Name if required): Not regulated for transport under ADR/RID Regulations.**
14.3 **Transport hazard class: Not applicable.**
14.4 **Packing Group:** Not applicable.
14.5 **Environmental hazards: Not applicable.**
14.6 **Special precautions for the user:** Not applicable.

IMO
14.1 **UN No.:** Not applicable.
14.2 **Proper Shipping Name (Technical Name if required): Not regulated for transport under IMO Regulations**
14.3 **Transport hazard class: Not applicable.**
14.4 **Packing Group:** Not applicable.
14.5 **Environmental hazards: Not applicable.**
14.6 **Special precautions for the user:** Not applicable.
14.7 **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:** Not applicable

IATA/ICAO
14.1 **UN No.:** Not applicable.
14.2 **Proper Shipping Name (Technical Name if required): Not regulated for transport under IATA/ICAO Regulations**
14.3 **Transport hazard class: Not applicable.**
14.4 **Packing Group:** Not applicable.
14.5 **Environmental hazards: Not applicable.**
14.6 **Special precautions for the user:** Not applicable.

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance/mixture
SP1 Do not contaminate water with the product or its container.

15.2. Chemical Safety Assessment
A Chemical Safety Assessment per Regulation (EC) No. 1907/2006 is not required and has not been performed.
A Risk Assessment has been performed under Regulation EC 1107/2009.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.
This Safety Data Sheet has been prepared following the Regulation (EC) No. 1907/2006 (Annex II) as last amended by Regulation (EC) No. 2015/830
|| Significant changes versus previous edition.
In this document the British spelling was applied.

Classification of components

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Monsanto Amenity Glyphosate XL Version: 1.0 Effective date: 03/02/2017

[illegible]	[illegible]
Isopropylamine salt of glyphosate	Aquatic Chronic - Category 2 H411 Toxic to aquatic life with long lasting effects
Quaternary ammonium compound	Skin corrosion/irritation - Category 2 Eye damage/irritation - Category 1 Aquatic Chronic - Category 3 H315 Causes skin irritation H318 Causes serious eye damage H412 Harmful to aquatic life with long lasting effects
Water and minor formulating ingredients	Not classified as dangerous

Endnotes
{a} EU label (manufacturer self-classification)
{b} EU label (Annex I)
{c} EU CLP classification (Annex VI)
{d} EU CLP (manufacturer self-classification)

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), STOT SE (Specific Target Organ Toxicity, Single Exposure), STOT RE (Specific Target Organ Toxicity, Repeated Exposure), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

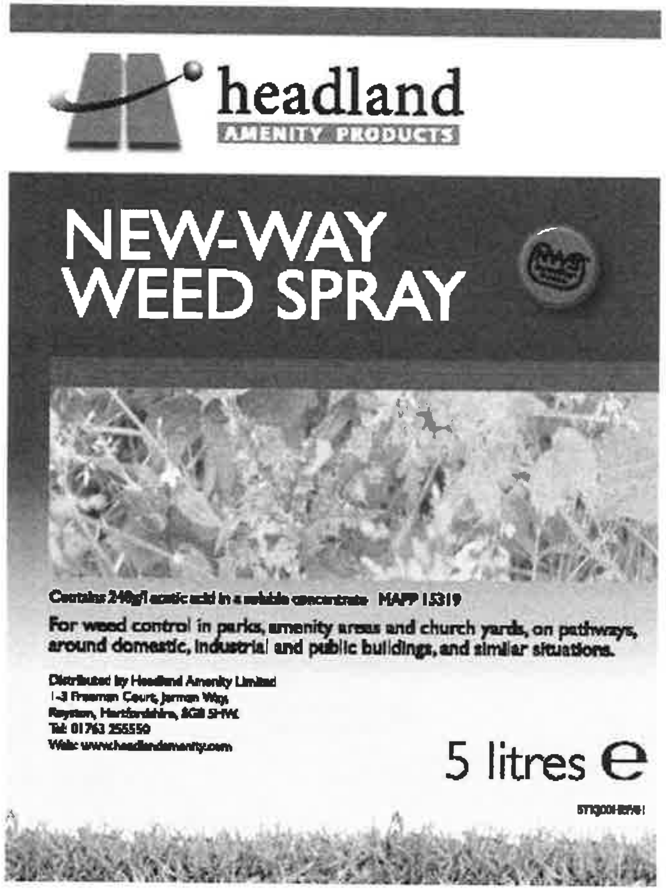
> Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

Safety Data Sheet (SDS) Annex

Chemical Safety Report:
Read and follow label instructions.

[illegible] End of document

New-Way Weed Spray - product label


headland
AMENITY PRODUCTS
NEW-WAY
WEED SPRAY
Contains 240g/l acetic acid in a soluble concentrate MAPP 15319
For weed control in parks, amenity areas and church yards, on pathways, around domestic, industrial and public buildings, and similar situations.
Distributed by Headland Amenity Limited
1-3 Freeman Court, Jarman Way,
Royston, Hertfordshire, SG8 5HW.
Tel: 01763 255550
Web: www.headlandamenity.com
5 litres ℮


headland
NEW-WAY WEED SPRAY
5 Litres ℮
Contains Alcohol ethoxylate, C13 EC 931-138-8; Acetic acid 240g/l EC 200-580-7 MAPP 15319
For weed control in parks, amenity areas and church yards, on pathways, around domestic, industrial and public buildings, and similar situations.
The Control of Substances Hazardous to Health (COSHH) Regulations may apply to the use of this product at work.
DANGER
IMPORTANT INFORMATION
FOR USE ONLY AS A PROFESSIONAL HERBICIDE AND MOSSKILLER
SAFETY PRECAUTIONS
DIRECTIONS FOR USE

New-Way Weed Spray - material safety data sheet (MSDS)

headland

SAFETY DATA SHEET
NEW-WAY WEED SPRAY

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	NEW-WAY WEED SPRAY
Product number	PST012/5

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	As a horticultural/industrial herbicide and mosskiller.

1.3. Details of the supplier of the safety data sheet

Supplier	Headland Amenity Ltd, 1-3 Freeman Court Jarman Way, Royston Hertfordshire SG8 5HW +44 (0)1763 255550 sds@headlandamenity.com
Contact person	Wendy Johnson

1.4. Emergency telephone number

Emergency telephone	+44 (0)1763 255550 (09.00 - 17.00 GMT Monday - Friday)
National emergency telephone number	111

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2006)

Physical hazards	Not Classified
Health hazards	Skin Irrit. 2 - H315 Eye Dam. 1 - H318
Environmental hazards	Not Classified

2.2. Label elements

Hazard pictograms

Signal word	Danger
Hazard statements	H315 Causes skin irritation. H318 Causes serious eye damage.

NEW-WAY WEED SPRAY

Precautionary statements	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P302+P352 IF ON SKIN: Wash with plenty of water. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER/ doctor. P332+P313 If skin irritation occurs: Get medical advice/ attention. P362+P364 Take off contaminated clothing and wash it before reuse.
Supplemental label information	EUH401 To avoid risks to human health and the environment, comply with the instructions for use.
Contains	ACETIC ACID

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

ACETIC ACID			24% (240g/l)
CAS number: 64-19-7	EC number: 200-580-7	REACH registration number: 01-2119475328-30-XXXX	
Classification Flam. Liq. 3 - H226 Skin Corr. 1A - H314 Eye Dam. 1 - H318			
ALCOHOL ETHOXYLATE, C13			3-10%
CAS number: 69011-36-5	EC number: 500-241-6		
Classification Aquatic Chronic 3 - H412			

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Remove person to fresh air and keep comfortable for breathing. Get medical attention if symptoms are severe or persist.
Ingestion	Rinse mouth thoroughly with water. Get medical attention if symptoms are severe or persist.
Skin contact	Take off contaminated clothing and wash it before reuse. Wash skin thoroughly with soap and water. Get medical attention if symptoms are severe or persist after washing.
Eye contact	Remove any contact lenses and open eyelids wide apart. Rinse immediately with plenty of water. Get medical attention immediately. Continue to rinse.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation	Irritating to respiratory system.
Ingestion	Irritates mucous membranes in mouth and gastrointestinal tract.
Skin contact	Redness.
Eye contact	Eye contact may result in deep caustic burns, pain, tearing and cramping of the eyelids. Risk of serious damage to eyes. Loss of sight.

4.3. Indication of any immediate medical attention and special treatment needed

Specific treatments — Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media — The mixture is not classified as flammable. Use fire-extinguishing media suitable for the surrounding environment.

Unsuitable extinguishing media — Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards — Product decomposes in fire and may release toxic gases such as carbon monoxide and hydrocarbons.

5.3. Advice for firefighters

Protective actions during firefighting — Move containers from fire area if it can be done without risk. Avoid breathing fire gases or vapours.

Special protective equipment for firefighters — Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions — Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate.

6.2. Environmental precautions

Environmental precautions — Do not discharge onto the ground or into water courses.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up — Wipe up with an absorbent cloth and dispose of waste safely. Absorb in vermiculite, dry sand or earth and place into containers.

6.4. Reference to other sections

Reference to other sections — For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions — Use only in well-ventilated areas.

Advice on general occupational hygiene — Eye wash facilities and emergency shower must be available when handling this product. Wash hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions — Keep out of the reach of children. Keep away from food, drink and animal feeding stuffs. Store in a cool and well-ventilated place.

7.3. Specific end use(s)

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

ACETIC ACID

Long-term exposure limit (8-hour TWA): WEL 10 ppm 25 mg/m³ vapour
Short-term exposure limit (15-minute): WEL 20 ppm 50 mg/m³ vapour
WEL = Workplace Exposure Limit.

ACETIC ACID (CAS: 64-19-7)

DNEL	Workers - Inhalation; Short term local effects: 25 mg/kg Workers - Inhalation; Long term local effects: 25 mg/kg General population - Dermal; Short term local effects: 25 mg/kg General population - Inhalation; Long term local effects: 25 mg/kg
PNEC	- Fresh water; 3.06 mg/l - Sediment (Freshwater); 11.4 mg/kg - Soil; 0.478 mg/kg - STP; 85 mg/l

8.2. Exposure controls

Eye/face protection	Use approved safety goggles or face shield. Personal protective equipment for eye and face protection should comply with European Standard EN166.
Hand protection	Wear protective gloves. Butyl rubber. To protect hands from chemicals, gloves should comply with European Standard EN374.
Other skin and body protection	Wear protective clothing. Boots.
Hygiene measures	Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Remove contaminated clothing and protective equipment before entering eating areas.
Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. Gas filter, type E. Respiratory protection must conform to one of the following standards: EN 136/140/145.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Colourless
Odour	Characteristic
Odour threshold	No information available.
pH	pH (concentrated solution): 3.19
Melting point	No information available.
Initial boiling point and range	100oC
Flash point	No information available.
Evaporation rate	No information available.
Evaporation factor	No information available
Flammability (solid, gas)	No information available
Upper/lower flammability or explosive limits	No information available.

NEW-WAY WEED SPRAY

Vapour pressure	No information available
Vapour density	No information available
Relative density	1.065
Solubility(ies)	Miscible with water
Partition coefficient	No information available
Auto-ignition temperature	No information available
Decomposition Temperature	No information available
Viscosity	372 mPa s @ °C
Explosive properties	No information available
Oxidising properties	Does not meet the criteria for classification as oxidising

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Strong reducing agents. Strong oxidising agents. Strong alkalis.

10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	No potentially hazardous reactions known.

10.4. Conditions to avoid

Conditions to avoid	None known.

10.5. Incompatible materials

Materials to avoid	Strong reducing agents. Strong oxidising agents. Strong alkalis.

10.6. Hazardous decomposition products

Hazardous decomposition products	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological information on ingredients.

ACETIC ACID

Acute toxicity - oral	
Acute toxicity oral (LD_{50} mg/kg)	3,310.0
Species	Rat
ATE oral (mg/kg)	3,310.0
Acute toxicity - inhalation	

NEW-WAY WEED SPRAY

Acute toxicity inhalation (LC_{50} vapours mg/l)	40.0
Species	Rat
ATE inhalation (vapours mg/l)	40.0

ALCOHOL ETHOXYLATE, C13

Acute toxicity - oral	
Acute toxicity oral (LD_{50} mg/kg)	2,000.0
Species	Rat
ATE oral (mg/kg)	2,000.0

SECTION 12: Ecological information

12.1. Toxicity

Ecological information on ingredients.

ACETIC ACID

Acute aquatic toxicity	
Acute toxicity - fish	LC_{50}, 96 hours: 300.82 mg/l, Freshwater fish LC_{50}, 96 hours: 300.82 mg/l, Marinewater fish LC_{50}, 21 days: 52.2 mg/l, Oncorhynchus mykiss (Rainbow trout) NOEC, 21 days: 34.3 mg/l, Oncorhynchus mykiss (Rainbow trout)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: >300.82 mg/l, Daphnia magna NOEC, 21 days: 31.4 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 72 hours: >300.82 mg/l, Skeletonema costatum
Acute toxicity - microorganisms	NOEC, 16 hour: 1150 mg/L, Pseudomonas putida

ALCOHOL ETHOXYLATE, C13

Acute aquatic toxicity	
Acute toxicity - fish	LC_{50}, 96 hour: 2.5 mg/l, Brachydanio rerio (Zebra Fish) EC_{50}, 30 days: 1.097 mg/l, Pimephales promelas (Fat-head Minnow)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: 1.5 mg/l, Daphnia magna EC_{50}, 21 days: 0.74 mg/l, Daphnia magna
Acute toxicity - aquatic plants	ErC20, 72 hours: 0.979 mg/l, Desmodesmus subspicatus ErC50, 72 hours: 2.5 mg/l, Scenedesmus subspicatus NOEC, 72 hours: 1.7 mg/l, Scenedesmus subspicatus
Acute toxicity - microorganisms	EC_{50}, 3 hours: 140 mg/l, Activated sludge EC_{50}, 16.9 hours: > 10g , Pseudomonas putida

12.2. Persistence and degradability

Persistence and degradability The product is biodegradable

12.3. Bioaccumulative potential

NEW-WAY WEED SPRAY

Bioaccumulative potential	Bioaccumulation is unlikely.
Partition coefficient	No information available

12.4. Mobility in soil

Mobility	The product contains at least one substance with low soil mobility.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information	Avoid discharge to drain or surface water. Collect spills and waste in closed, leak-proof containers for disposal at the local hazardous waste site.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID)	2790
UN No. (IMDG)	2790
UN No. (ICAO)	2790
UN No. (ADN)	2790

14.2. UN proper shipping name

Proper shipping name (ADR/RID)	ACETIC ACID SOLUTION
Proper shipping name (IMDG)	ACETIC ACID SOLUTION
Proper shipping name (ICAO)	ACETIC ACID SOLUTION
Proper shipping name (ADN)	ACETIC ACID SOLUTION

14.3. Transport hazard class(es)

ADR/RID class	8
ADR/RID classification code	C3
ADR/RID label	8
IMDG class	8
ICAO class/division	8
ADN class	8

Transport labels

14.4. Packing group

ADR/RID packing group	III
IMDG packing group	III

Revision date: 24/03/2021 Revision: 5 Supersedes date: 24/06/2019

NEW-WAY WEED SPRAY

ICAO packing group	III
ADN packing group	III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No

14.6. Special precautions for user

EmS	F-A, S-B
ADR transport category	3
Emergency Action Code	•2R
Hazard identification Number (ADR/RID)	80
Tunnel restriction code	(E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU legislation	Product Registration Number: MAPP 15319.

15.2. Chemical safety assessment

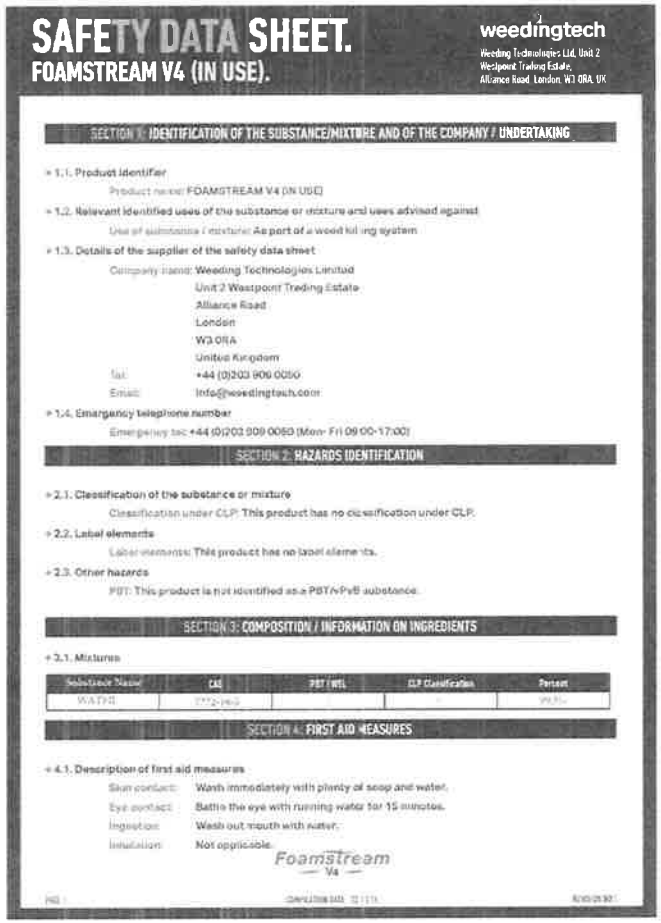
A chemical safety assessment has been carried out.

SECTION 16: Other information

Revision comments	Section 2.2 'Supplemental label information' updated. Section 12.6 'Other adverse effects' updated. Supplier company address updated. Emergency contact details updated.
Revision date	24/03/2021
Revision	5
Supersedes date	24/06/2019
Hazard statements in full	H226 Flammable liquid and vapour. H314 Causes severe skin burns and eye damage. H315 Causes skin irritation. H318 Causes serious eye damage. H412 Harmful to aquatic life with long lasting effects.

Foamstream® - product label

Foamstream® - material safety data sheet (MSDS)



SAFETY DATA SHEET.
FOAMSTREAM V4 (IN USE).

weedingtech
Weeding Technologies Ltd, Unit 2
Westpoint Trading Estate,
Alliance Road, London, W3 0RA, UK

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY / UNDERTAKING

- 1.1. Product identifier
  Product name: FOAMSTREAM V4 (IN USE)
- 1.2. Relevant identified uses of the substance or mixture and uses advised against
  Use of substance / mixture: As part of a weed killing system
- 1.3. Details of the supplier of the safety data sheet
  Company name: Weeding Technologies Limited
  Unit 2 Westpoint Trading Estate
  Alliance Road
  London
  W3 0RA
  United Kingdom
  Tel: +44 (0)203 909 0050
  Email: info@weedingtech.com
- 1.4. Emergency telephone number
  Emergency tel: +44 (0)203 909 0050 (Mon- Fri 09:00-17:00)

SECTION 2: HAZARDS IDENTIFICATION

- 2.1. Classification of the substance or mixture
  Classification under CLP: This product has no classification under CLP.
- 2.2. Label elements
  Label elements: This product has no label elements.
- 2.3. Other hazards
  PBT: This product is not identified as a PBT/vPvB substance.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

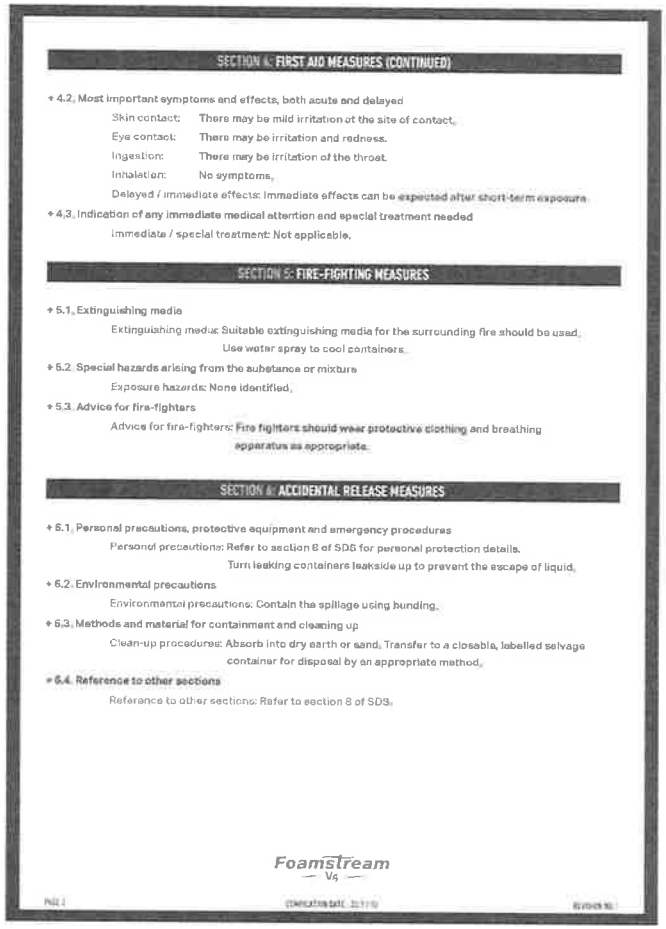
- 3.1. Mixtures

Substance Name	CAS	PBT / WEL	CLP Classification	Percent
WATER	[illegible]			[illegible]

SECTION 4: FIRST AID MEASURES

- 4.1. Description of first aid measures
  Skin contact: Wash immediately with plenty of soap and water.
  Eye contact: Bathe the eye with running water for 15 minutes.
  Ingestion: Wash out mouth with water.
  Inhalation: Not applicable.

Foamstream V4



SECTION 4: FIRST AID MEASURES (CONTINUED)

+ 4.2. Most important symptoms and effects, both acute and delayed

Skin contact: There may be mild irritation at the site of contact.
Eye contact: There may be irritation and redness.
Ingestion: There may be irritation of the throat.
Inhalation: No symptoms.
Delayed / immediate effects: Immediate effects can be expected after short-term exposure.

+ 4.3. Indication of any immediate medical attention and special treatment needed

Immediate / special treatment: Not applicable.

SECTION 5: FIRE-FIGHTING MEASURES

+ 5.1. Extinguishing media

Extinguishing media: Suitable extinguishing media for the surrounding fire should be used.
Use water spray to cool containers.

+ 5.2. Special hazards arising from the substance or mixture

Exposure hazards: None identified.

+ 5.3. Advice for fire-fighters

Advice for fire-fighters: Fire fighters should wear protective clothing and breathing apparatus as appropriate.

SECTION 6: ACCIDENTAL RELEASE MEASURES

+ 6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Refer to section 8 of SDS for personal protection details.
Turn leaking containers leakside up to prevent the escape of liquid.

+ 6.2. Environmental precautions

Environmental precautions: Contain the spillage using bunding.

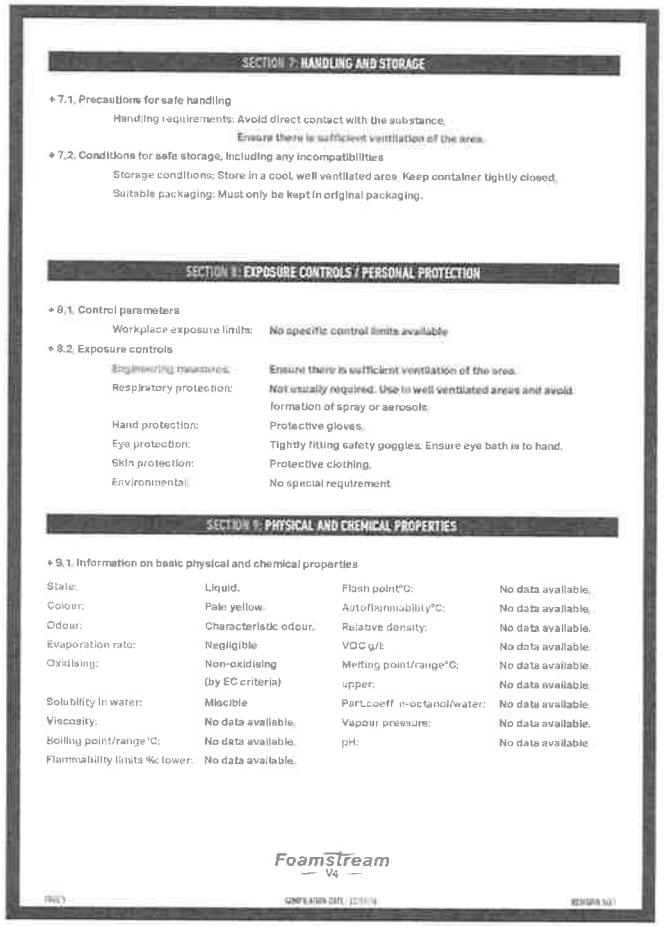
+ 6.3. Methods and material for containment and cleaning up

Clean-up procedures: Absorb into dry earth or sand. Transfer to a closable, labelled salvage container for disposal by an appropriate method.

+ 6.4. Reference to other sections

Reference to other sections: Refer to section 8 of SDS.

Foamstream V4



SECTION 7: HANDLING AND STORAGE

+ 7.1. Precautions for safe handling

Handling requirements: Avoid direct contact with the substance.
Ensure there is sufficient ventilation of the area.

+ 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in a cool, well ventilated area. Keep container tightly closed.
Suitable packaging: Must only be kept in original packaging.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

+ 8.1. Control parameters

Workplace exposure limits: No specific control limits available

+ 8.2. Exposure controls

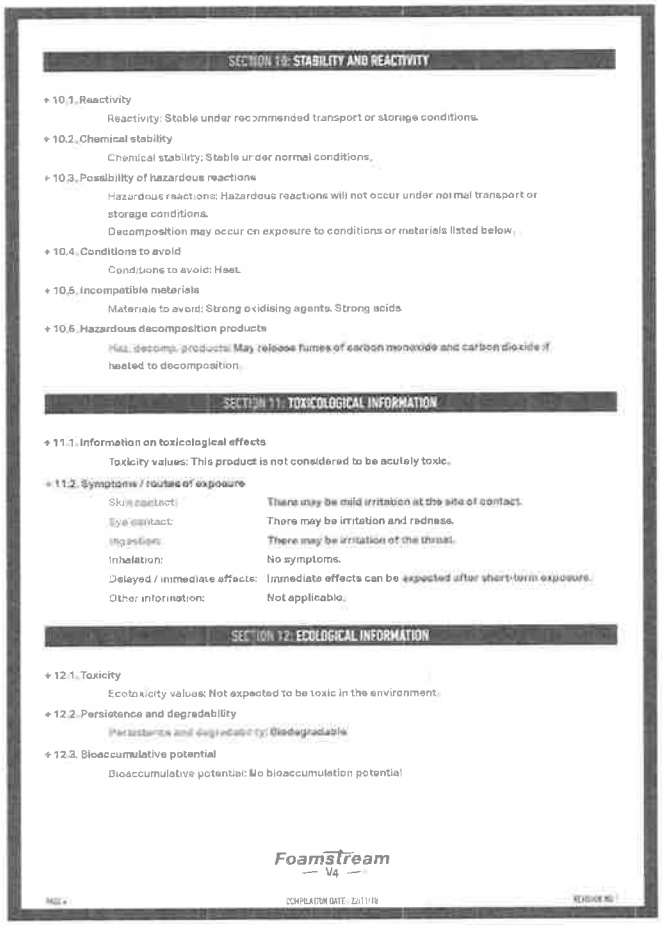
Engineering measures:	Ensure there is sufficient ventilation of the area.
Respiratory protection:	Not usually required. Use in well ventilated areas and avoid formation of spray or aerosols.
Hand protection:	Protective gloves.
Eye protection:	Tightly fitting safety goggles. Ensure eye bath is to hand.
Skin protection:	Protective clothing.
Environmental:	No special requirement.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

+ 9.1. Information on basic physical and chemical properties

State:	Liquid.	Flash point°C:	No data available.
Colour:	Pale yellow.	Autoflammability°C:	No data available.
Odour:	Characteristic odour.	Relative density:	No data available.
Evaporation rate:	Negligible	VOC g/l:	No data available.
Oxidising:	Non-oxidising (by EC criteria)	Melting point/range°C: upper:	No data available.
Solubility in water:	Miscible	Part.coeff. n-octanol/water:	No data available.
Viscosity:	No data available.	Vapour pressure:	No data available.
Boiling point/range°C:	No data available.	pH:	No data available.
Flammability limits %: lower:	No data available.		

Foamstream V4



SECTION 10: STABILITY AND REACTIVITY

+ 10.1. Reactivity

Reactivity: Stable under recommended transport or storage conditions.

+ 10.2. Chemical stability

Chemical stability: Stable under normal conditions.

+ 10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

Decomposition may occur on exposure to conditions or materials listed below.

+ 10.4. Conditions to avoid

Conditions to avoid: Heat.

+ 10.5. Incompatible materials

Materials to avoid: Strong oxidising agents. Strong acids.

+ 10.6. Hazardous decomposition products

Haz. decomp. products: May release fumes of carbon monoxide and carbon dioxide if heated to decomposition.

SECTION 11: TOXICOLOGICAL INFORMATION

+ 11.1. Information on toxicological effects

Toxicity values: This product is not considered to be acutely toxic.

+ 11.2. Symptoms / routes of exposure

Skin contact:	There may be mild irritation at the site of contact.
Eye contact:	There may be irritation and redness.
Ingestion:	There may be irritation of the throat.
Inhalation:	No symptoms.
Delayed / immediate effects:	Immediate effects can be expected after short-term exposure.
Other information:	Not applicable.

SECTION 12: ECOLOGICAL INFORMATION

+ 12.1. Toxicity

Ecotoxicity values: Not expected to be toxic in the environment.

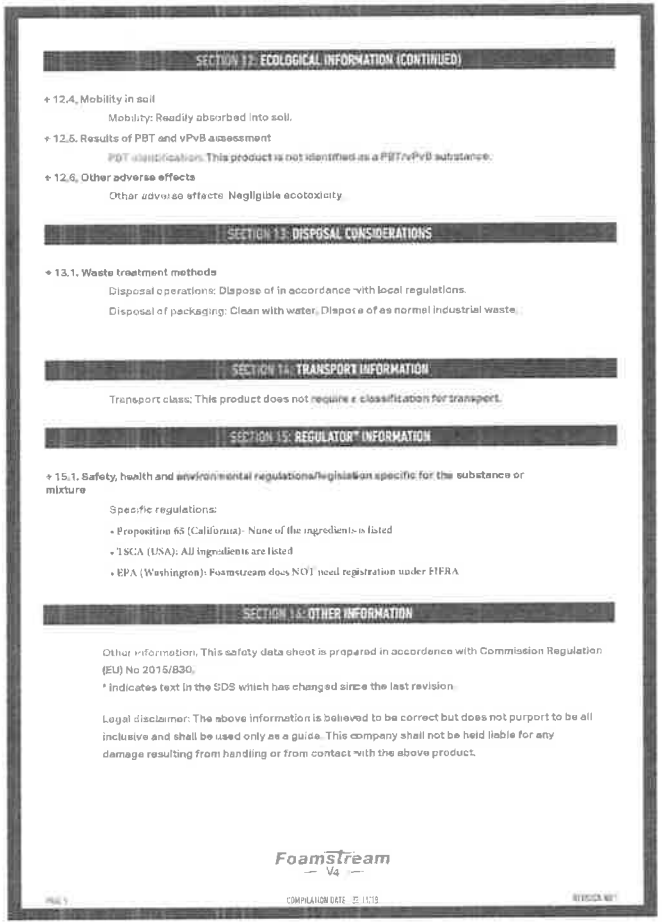
+ 12.2. Persistence and degradability

Persistence and degradability: Biodegradable

+ 12.3. Bioaccumulative potential

Bioaccumulative potential: No bioaccumulation potential

Foamstream V4



SECTION 12: ECOLOGICAL INFORMATION (CONTINUED)

+ 12.4. Mobility in soil

Mobility: Readily absorbed into soil.

+ 12.5. Results of PBT and vPvB assessment

PBT identification: This product is not identified as a PBT/vPvB substance.

+ 12.6. Other adverse effects

Other adverse effects: Negligible ecotoxicity

SECTION 13: DISPOSAL CONSIDERATIONS

+ 13.1. Waste treatment methods

Disposal operations: Dispose of in accordance with local regulations.

Disposal of packaging: Clean with water. Dispose of as normal industrial waste.

SECTION 14: TRANSPORT INFORMATION

Transport class: This product does not require a classification for transport.

SECTION 15: REGULATORY INFORMATION

+ 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Specific regulations:

- Proposition 65 (California): None of the ingredients is listed
- TSCA (USA): All ingredients are listed
- EPA (Washington): Foamstream does NOT need registration under FIFRA

SECTION 16: OTHER INFORMATION

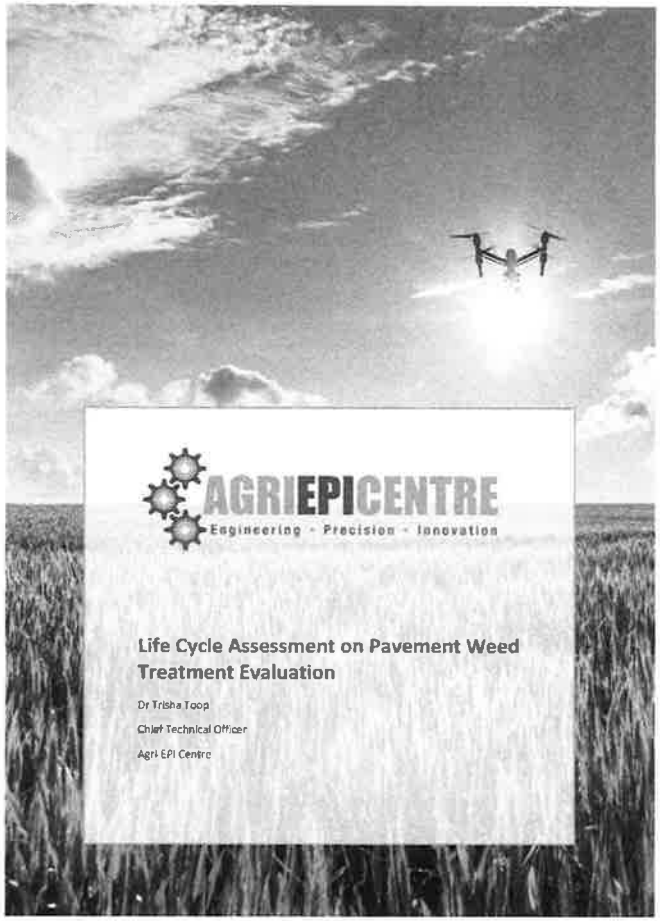
Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 2015/830.

* Indicates text in the SDS which has changed since the last revision

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Foamstream V4

Appendix 2 - LCA report



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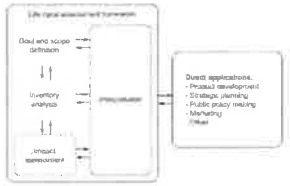
1. INTRODUCTION

Life Cycle Assessment (LCA) is a structured, comprehensive and internationally standardised method. It quantifies all relevant emissions and resources consumed and the related environmental and health impacts and resource depletion issues that are associated with the entire life cycle of any goods or services ("products").

The framework used to conduct a LCA is shown in Figure 1. This shows the stages of an LCA and the direct applications of the results



The LCA detailed in this report has been conducted to the international standards in LCA ISO 14040 and 14044 (Arvanitoyannis, 2008). And uses best practice outlined in the International Reference Life Cycle Data System (ILCD) which was developed to provide guidance for consistent and quality assured Life Cycle Assessment data and studies (European Commission - Joint Research Centre, 2010)

An evaluation of the efficacy of different pavement weed control methods was undertaken across the City of Cardiff by Advanced Invasives for Cardiff Council. Full details of the methodology and results can be found in that report. As part of the evaluation three different weed control treatments were evaluated all inputs of the treatment were measured and this data was be used for calculations in this LCA

There have been studies on weed treatment techniques in amenity areas done previously but none have applied a full LCA done by an independent expert on the treatment systems in this study to assess the environmental impacts of the different methods

2. GOAL OF THE STUDY

The goal of the study is to compare the weed treatments tested in the study to determine which has the lowest environmental impacts. Therefore, a comparative LCA will be completed on all three treatments tested in the study conducted with primary usage data provided by Advanced Invasives

This study will be presented to Cardiff Council for decision making on pavement weed treatments. A peer review has been undertaken externally by Dr Sophie Hocking (Department of Biosciences, Swansea University) on the study which allows for this use following ISO guidelines.

The intended audience for this LCA is weed control specialists within Advanced Invasives who have experience of accessing LCA results and members of Cardiff Council who have not. Therefore, methodologies for non-expert distribution have been followed so normalisation and weighting of results

will not be used. This LCA report should be used in conjunction with the weed control trial report in which the methodology for the trial and data collection is detailed.

3. SCOPE OF THE STUDY

Functional unit

The function of the products in this study are to treat pavements for weed control. The functional unit was determined as 1 km of pavement treated. The efficacy of treatment is assessed in a report that preceded the completion of the LCA. The functional unit quantifies the amount of each product used to give weed control to an equal efficacy.

System boundaries

All inputs into the production of the treatments have been included in the system along with the inputs into the production of tap water which was used by many of the treatments. Petrol and diesel use have been included where used in the treatment system. Production of equipment used to apply the products and transport to the treatment site has not been included. A general system boundary is shown in Figure 2.

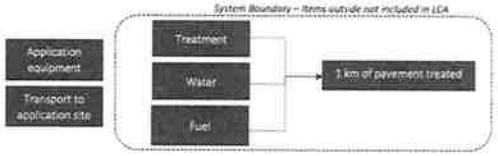


Figure 2 – General system boundary

The Ecoinvent database 3 in Simapro release 9.3.0.3 was used to in all aspects of the LCA.

Where possible European data was used for the inputs into the process with global data only selected when that was not available.

This LCA was conducted in 2022 using the data available for production, use, emissions and waste scenarios available at that time in Ecoinvent and Simapro. The LCA will need to be updated regularly to capture changes and to keep the results current. This particularly important if product formulations or usage changes.

Allocation is embedded into the database on the following principles. The system model 'allocation, recycled content' or 'cut-off' is based on the approach that primary production of materials is always allocated to the primary user of a material. If a material is recycled, the primary producer does not receive any credit for the provision of any recyclable materials. The consequence is that recyclable materials are available burden-free to recycling processes and secondary (recycled) materials bear only the impacts of the recycling processes. Also, producers of wastes do not receive any credit for the recycling or re-use of products resulting out of any waste treatment.

Assumptions and limitations

Information on the treatments and their constituents were gained from product information printed on product packaging and MSDS sheets.

Further clarification on product composition was requested in the case if Foamstream but no further information was gained from the manufacturer. Due to being unable to get an exact composition of the product Rapeseed oil was used as the reference product for the LCA as information obtained indicated that this was the majority constituent. Other items such as plant husks are also referenced but not included as no details as to the amounts in the product could be obtained. This omission in the data will result a very small underestimation of the emissions for this treatment and further modelling would be recommended if more product details could be obtained.

Standard Ecoinvent database data was used for all other products based on the information provided by the manufacturer.

Impact categories and impact assessment method

ReCiPe 2016 Midpoint (H) V1.04 / World (2010) (Hierarchist) method was used to calculate the impact categories which are as shown below in Table 1.

Table 1 – Impact categories and units as calculated by ReCiPe 2016 Midpoint (H) V1.04 / World (2010) H method

Impact category	*Unit*
Global warming	kg CO2 eq
Stratospheric ozone depletion	kg CFC11 eq
Ionizing radiation	kBq Co-60 eq
Ozone formation, Human health	kg NOx eq
Fine particulate matter formation	kg PM2.5 eq
Ozone formation, Terrestrial ecosystems	kg NOx eq
Terrestrial acidification	kg SO2 eq
Freshwater eutrophication	kg P eq
Marine eutrophication	kg N eq
Terrestrial ecotoxicity	kg 1,4-DCB
Freshwater ecotoxicity	kg 1,4-DCB
Marine ecotoxicity	kg 1,4-DCB
Human carcinogenic toxicity	kg 1,4-DCB
Human non-carcinogenic toxicity	kg 1,4-DCB
Land use	m2a crop eq
Mineral resource scarcity	kg Cu eq
Fossil resource scarcity	kg oil eq
Water consumption	m3

Normalisation and weighting

Due to the target audience for the LCA no allocation or weighting was used in the production of the results.

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4. LIFE CYCLE INVENTORY ANALYSIS

Process flowcharts

Detailed process flows are shown in the figures below for all treatments.

The process flow for the Glyphosate treatment used is shown in Figure 3.

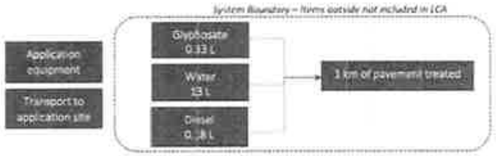

Figure 3 - Process flow for Glyphosate treatment used to treat 1 km of pavement

The process flow for the New Wave treatment is shown in Figure 4.

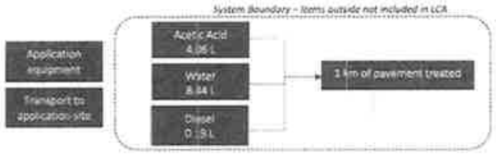

Figure 4 - Process flow for New Wave treatment used to treat 1 km of pavement

The process flow for the Foamstream treatment is shown in Figure 5.

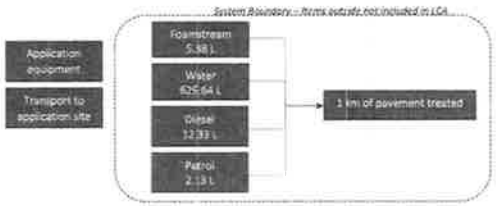

Figure 5 - Process flow for Foamstream treatment used to treat 1 km of pavement

6

Data

Primary data was collected as part of the trial conducted by Advanced Invasives on all treatments. Aggregated data was provided to Agri-EPI Centre to use for the LCA along with raw data for reference and query if needed.

Clarification was sought from the data provider to ensure that an accurate representation of the treatments was being made and all figures used were checked by Advanced Invasives prior to inclusion in the LCA and were reviewed during the peer review process. The figures used to calculate the emissions are shown in Table 2.

Table 2 – Data used in LCA calculations for each of the treatments

Control Method	Product Use L/km	Water Use L/km	Diesel Use L/km	Petrol Use L/km
Glyphosate	0.33	13.00	0.18	0.00
New Wave	4.06	8.44	0.18	0.00
Foamstream	5.37	629.64	12.33	2.13

5. Results

The results of the LCA are as follows in this section. A direct comparison was made between all treatments on km of pavement treated, the results of which are shown in Figure 6.

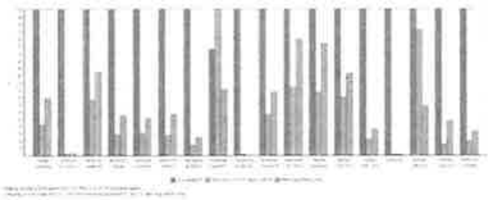

Figure 6 - Comparison of treatments across environmental impact categories

It can be seen from above that Foamstream has higher environmental impacts in all impact categories calculated except for freshwater eutrophication.

The details of the environmental impacts for the weed treatments tested are shown in Table 3 below. All impacts relate back to the functional unit of 1 km of pavement treated.

7

AGRIEPICENTRE

Table 4 Results from comparison of pavement weed treatments environmental impacts

Impact category	Unit	Monsanto Amenity Glyphosate XL	New-Way Weed Spray	Foamstream®
Global warming	kg CO2 eq	3.725906632	6.920265219	17.62954775
Stratospheric ozone depletion	kg CFC11 eq	0.00	3.71233E-06	0.000219686
Ionizing radiation	kBq Co-60 eq	0.333211153	0.499734199	0.870118203
Ozone formation, Human health	kg NOx eq	0.008903155	0.01745232	0.064022231
Fine particulate matter formation	kg PM2.5 eq	0.00736806	0.0123352	0.048506821
Ozone formation, Terrestrial ecosystems	kg NOx eq	0.009142212	0.0186019	0.066531821
Terrestrial acidification	kg SO2 eq	0.014106715	0.02609239	0.215053388
Freshwater eutrophication	kg P eq	0.005180359	0.002346239	0.003780149
Marine eutrophication	kg N eq	0.000345545	0.000156603	0.059807027
Terrestrial ecotoxicity	kg 1,4-DCB	16.26056476	25.29477007	58.13958006
Freshwater ecotoxicity	kg 1,4-DCB	0.250487795	0.427871658	0.534874363
Marine ecotoxicity	kg 1,4-DCB	0.31026383	0.554566163	0.721708439
Human carcinogenic toxicity	kg 1,4-DCB	0.167244915	0.236177538	0.421593391
Human non-carcinogenic toxicity	kg 1,4-DCB	4.463951492	7.370060901	41.27578609
Land use	m2a crop eq	0.101314072	0.127103301	33.33581954
Mineral resource scarcity	kg Cu eq	0.064759475	0.0251424/3	0.075130588
Fossil resource scarcity	kg oil eq	1.337191228	4.299576156	18.29370741
Water consumption	m3	0.104360548	0.186825836	1.183128589

The process flow of Foamstream was further investigated to determine the major factors contributing to its environmental impacts and are shown in Figure 7.

AGRIEPICENTRE

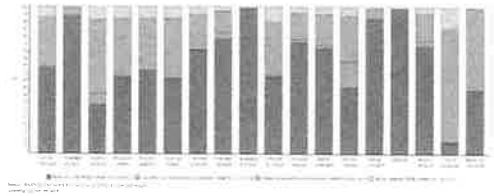

Figure 7 Processes contribution to impacts for Foamstream

As there is no one contributing factor no further investigation was made at this stage.

6. CONCLUSIONS

The goal of the study was to compare the three pavement weed treatments detailed in the work done by Advanced Invasives for Cardiff Council. Data was collected in a detailed, systematic way which allowed for accurate calculation of the amount of product used to treat 1 km of pavement for treatment type.

As shown in Figure 6 and Table 3, Foamstream has higher environmental impacts in all categories calculated except for that of freshwater eutrophication in which Monsanto Amenity Glyphosate had a higher impact.

The conclusions that can be made from these results is that both Monsanto Amenity Glyphosate and New Wave weed treatments have an overall lower environmental impact than Foamstream; and the treatment that has the lowest overall environmental impact is Monsanto Amenity Glyphosate.

The results from the impact assessment were not surprising given the higher number of inputs into the Foamstream system. Further information from the manufacturers on the overall composition of the treatment would give more accurate results. A conservative approach was taken on how to determine the composition of the product from information that was available and this will have resulted in an underestimation of the environmental impact. If further information becomes available at a later date it is recommended that the LCA be recalculated.

The results above are comparable to those found in a similar study of weed treatments for controlling weeds on hard surfaces (Department for Environment, Food and Rural Affairs, 2015). They found that freshwater impacts were the only ones that Glyphosate were higher than those of non-herbicide approaches. They had an integrated treatment approach which makes direct comparison of figures difficult but the findings were comparable in general.

The conclusions from the LCA are that overall Monsanto Amenity Glyphosate has less environmental impact than the other treatments in this study. However, these are not stand alone results and this report should be used in conjunction with the full study compiled by Advanced Invasives. (Arvanitoyannis, 2008)

References

Aryanitoyannis, I. (2008). ISO 14040: Life Cycle Assessment (LCA) – Principles and Guidelines. ISO/TC 207/SC 5 Life cycle assessment.

Department for Environment, Food and Rural Affairs. (2015). *Development of zero and minimal herbicide regimes for controlling weeds on hard surfaces and determining their emissions*. East Malling: Department for Environment, Food and Rural Affairs.

European Commission - Joint Research Centre. (2010). *Institute for Environment and Sustainability: International Reference Life Cycle Data System (ILCD) Handbook – General guide for Life Cycle Assessment – Provisions and Action Steps*. Luxembourg: Publications Office of the European Union.

Appendix 3 - Details of all monitoring sites

Six monitoring sites were identified in each of the three evaluation wards (total = 18), with a further six untreated control monitoring sites across the City of Cardiff (overall total = 24). Monitoring sites for each evaluation ward and the untreated control monitoring sites included two:

- Main thoroughfare routes
- Representative residential street routes
- Residential street routes in close proximity to an open space/parkland

All monitoring sites are provided in the Figures below, together with monitoring site route distances.

Route type	Street name	Route distance (m)
Main thoroughfare A	Cathedral Road (Dogo Street to Berthwin Street)	81
Main thoroughfare B	Cowbridge Road (Market Road to Llandaff Road)	120
Residential street A	Despenser Place (Beauchamp Street to Clare Street)	78
Residential street B	Sneyd Street (Kings Road to Plasturton Avenue)	90
Residential street + open space/parkland A	Despenser Gardens (Beauchamp Street to Clare Street)	80
Residential street + open space/parkland B	Plasturton Gardens (Plasturton Place to Plasturton Avenue)	141

Figure: Riverside Ward monitoring sites, showing route type, street names and route distances (m).

Route type	Street name	Route distance (m)
Main thoroughfare A	Colchester Avenue (Scholars Drive to Fforrd Nowell)	116
Main thoroughfare B	Penylan Road (Ty-Draw Road to Boleyn Walk)	118
Residential street A	Amesbury Road (Blenheim Road to Waterloo Road)	93
Residential street B	Baron's Court Road (Dorchester Avenue to Hampton Court Road)	178
Residential street + open space/parkland A	Waterloo Gardens (Waterloo Road to turning point)	133
Residential street + open space/parkland B	Sandringham Road (Trafalgar Road to Grenville Road)	81

Figure: Penylan Ward monitoring sites, showing route type, street names and route distances (m)

Route type	Street name	Route distance (m)
Main thoroughfare A	Heol Glandulais (Clos Nant Y Cor to Sindercombe Close)	95
Main thoroughfare B	Heol Pontprennau (Kenmare Mews to Youghal Close)	96
Residential street A	Speedwell Close	119
Residential street B	Idencroft Close	75
Residential street + open space/parkland A	Cottingham Drive	108
Residential street + open space/parkland B	High Bank	45

Figure: Pontprennau & Old St Mellons Ward monitoring sites, showing route type, street names and route distances (m).

Route type	Ward	Street name	Route distance (m)
Main thoroughfare A	Llanedeyrn	62-82 Llanedeyrn Road + Bro Edern	79
Main thoroughfare B	Fairwater	Plas-Mawr Road (Clos-Y-Nant to Poplar Road)	108
Residential street A	Ely	Moore Road (Windsor Clive Primary to Moore Close)	105
Residential street B	Trowbridge	58-66 Coleford Drive	105
Residential street + open space/parkland A	Splott	23-57 Whitaker Road	105
Residential street + open space/parkland B	Rhiwbina	42-62 Ty Wern Road	105

Figure: Untreated control monitoring sites confirmed across the City of Cardiff, showing route type, ward, street names and route distances (m).

Approval Extension for Glyphosate

Following the UK departure from the EU, the following position regarding approvals and authorisations of plant protection products has been confirmed.
All existing active substance approvals, PPP authorisations and MRLs continue to be valid in Great Britain. Existing PPP authorisations remain valid until their current expiry date.

Active substance approvals due to expire before December 2023 have been extended for 3 years to allow time to plan and implement the GB review programme.

Please note that the above refers to Great Britain. Under the terms of the Withdrawal Agreement and Northern Ireland Protocol, EU plant protection product legislation continues to apply in Northern Ireland.

So, in the case of glyphosate whose current EU authorisation is due to expire on 15th December 2022, in Great Britain this approval has been extended until at least December 2025. Application for re-approval of glyphosate in the EU, which currently affects Northern Ireland, has been made and a due process of review is underway.

Further information is available on the HSE website www.hse.gov.uk/pesticides/brexit.htm

Professor John Moverley
Independent Chairman

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Food Waste - Success of the Scheme

Committee name	Residents' Services Select Committee
Officer reporting	Nicola Herbert – Head of Waste Services
Papers with report	N/A
Ward	All

HEADLINES

This report summarises the food waste collection service within Hillingdon, detailing an ongoing communications and engagement programme, and summarising projects that are currently underway to support expansion of the service.

The key successes of the programme to date are:

- A 60% increase in houses subscribing to the service since November 2020.
- More than 10,000 tonnes of food waste recycled since separate collections began in May 2021.
- Introduced to schools in April 2023 with 28 schools currently participating.
- 2,300 flatted properties now have access to the food waste recycling service.
- Food waste collections launched for businesses in April 2024.
- A door knocking programme has increased participation from 20% to 60% in targeted areas and will be expanded borough wide in 2024.

RECOMMENDATIONS

That the Residents' Services Select Committee:

1. **Notes the success of the food waste recycling scheme to date; and**
2. **Notes the planned works to continue the expansion of the food waste recycling service.**

SUPPORTING INFORMATION

Weekly food waste recycling collections have been available to Hillingdon residents living in low-rise properties since October 2013, with food waste initially being co-mingled with garden waste and the mixed materials composted at a site in Harefield.

Residents can obtain a free food waste recycling kit by signing up to the service online. Biodegradable food waste liners can be obtained free of charge by either signing up to an automatic delivery scheme, requesting an ad hoc delivery online, or collecting from any of the Borough's libraries.

In May 2021, food waste was segregated from garden waste with five purpose-built vehicles purchased using £500k of funding provided by the West London Waste Authority to support the growth of the food waste service, and a communications campaign was launched to advertise the newly 'refreshed' service.

At the time of the service refresh, a competition was run which gave local school children the opportunity to name the vehicles. More than 150 entries were received, and the winning entrants has their nominated name printed onto the vehicle and were invited to meet the vehicles. (appendix 1)

Segregating the food and garden waste has three main benefits:

1. The ability to monitor participation of both services and use better data to inform engagement campaigns and service changes.

2. A reduced disposal cost.

3. More environmentally friendly as food waste can now be processed through an anaerobic digestion process to generate energy whilst garden waste is still composted locally.

Data collected in November 2020, prior to the introduction of the new segregated service, showed that 27,600 kerbside properties had registered for a food waste recycling kit. In March 2024 this number had increased by 60% to 44,100.

Communications and Engagement

Roadshows and events

Since the introduction of a recycling team in 2020, officers have carried out a series of summer roadshow events across the Borough each year, promoting recycling services and answering residents' questions. 19 events were held in 2023, engaging with almost 5,000 residents and resulting in a further 240 new signups for the food waste recycling service.

For National Food Waste Action Week in March 2024, the team held two events, taking the 'smoothie bike' to Botwell Leisure Centre and The Great Barn in Ruislip to encourage residents to re-use leftovers and reduce food waste whilst having the opportunity to pedal to make their own smoothie. (appendix 2)

Schools

The recycling team works with our local schools to promote food waste recycling, assisting with lesson planning, providing worksheets and quizzes and hosting assemblies. In 2022, 5 schools participated in a trial to introduce food waste collections in the kitchens, lunch areas and classrooms. The service was officially launched to all schools in April 2023, with a free service provided to state-maintained schools which use Hillingdon for their general waste collections. 28 schools are now participating in the service. (appendix 3)

Online resources

Twice per year, the recycling team run a 'zero waste challenge' which encourages participants to reduce their waste and recycling with weekly tips communicated to help them along the way. 80 residents completed the most recent challenge, with food waste reducing by 11% amongst participants during the four weeks that the challenge was run. (appendix 4)

Targeted Engagement

From June 2023 – January 2024, the recycling team carried out a series of door-knocking days, to speak to residents at home about the food waste service, promoting the service to non-users and guiding existing users in how to use the service correctly (appendix 5).

Participation was monitored before and after the door-knocking exercise to ascertain how effective this approach was. The outcome of this is detailed below.

Total number of properties targeted	Previously using food waste service	Signed up on the day or online later	Refused
4,928	1,087	1,886	95
Users pre-engagement		22.06%	
Users post-engagement		60.33%	
Refusal rate		1.93%	

Given the success of the scheme, from April 2024, a team of six dedicated officers have been recruited to continue the door-knocking programme for a six-month period across the Borough with a target to increase the number of subscribing properties by a further 19,800.

Projects to expand the food waste service

Food waste from flats

In 2022, five Hillingdon Housing flatted developments took part in a trial to collect food waste from communal bin stores. A range of units were utilised and following the trial a tender exercise was carried out to purchase up to 600 units as part of a programme to introduce food waste recycling to all Hillingdon owned properties by 2025.

To date, 137 units have been installed, providing a food waste collection service to more than 2,300 flatted homes within Hillingdon's own housing stock and more than 50 tonnes of food waste have been collected.

The waste and recycling guidance provided to developers during the planning stage has been updated to include a requirement to provide containers for food waste recycling to ensure that all new properties have access to the service in the future.

Food waste from businesses

Hillingdon provides a commercial waste collection service for businesses within the Borough, servicing more than 1,500 customers. A trial of food waste recycling collections took place successfully with 3 businesses in 2023 with the service being advertised to all customers from April 2024.

PERFORMANCE DATA

Performance of the food waste service is measured on the number of participating properties and the tonnage collected.

In 23/24, 821 tonnes more food waste was collected than in 21/22 when segregated collections began.

The number of participating kerbside properties has increased by 60% from 22,700 in November 2020 to 44,100 in March 2024.

Additionally, each year a waste composition analysis exercise is undertaken to understand the make-up of the waste that we collect and inform future projects to reduce waste and increase recycling. A sample of properties across the Borough had their general waste collected separately and the contents were categorised and measured by weight to determine an average composition for the Borough.

The amount of food waste by weight within the general waste for each of the last two exercises is shown below and supports the continuation of the current engagement projects to help reduce

the amount of food waste present:

	Kerbside	Flats
Dec-23	41.50%	27.60%
Nov-22	42.70%	35.80%

RESIDENT BENEFIT

All the resources required to participate in the food waste service are free for residents to access conveniently online, with a home delivery within 10 days. The free biodegradable liners help residents to keep their kitchen area hygienic, and the vermin proof outdoor caddy prevents waste being spilled when presented for collection.

Once using the service, many residents report a reduction in their food waste and the associated costs as the amount of waste they produce is more visible to them.

Once collected, the food waste is deposited at Victoria Road transfer station in South Ruislip, and then transported in bulk by vehicles which are powered by energy created from food waste.

The material is processed at an Anaerobic Digestion facility in Mitcham, Surrey. The process uses temperature-controlled tanks to breakdown the biodegradable materials, producing biogas which is then pumped into the National Grid to provide renewable, clean energy to thousands of homes and businesses across the country.

Once the energy has been extracted, a high-quality fertiliser remains which is distributed to local farms to help them grow new crops which are then fed back into the food waste cycle.

FINANCIAL IMPLICATIONS

More than 50,000 tonnes of general waste are collected in Hillingdon each year.

The current cost per tonne to dispose of general waste is £135. For segregated food waste, the cost reduces to £12 per tonne; a saving of £123 for every tonne of food waste which is recycled.

The average household participating in the food waste recycling service produces c.140kg of food waste per annum.

Based on the targeted increase of 19,800 participating properties following the planned Borough wide door-knocking programme, a saving of c.£340k per annum could be achieved in disposal costs and has been included as an MTFF saving for 24/25 and 25/26.

The cost to provide a food waste recycling kit to a new user is c.£10 per property which includes an indoor caddy, an outdoor caddy, a roll of liners, and a user guide.

LEGAL IMPLICATIONS

As a ‘waste collection authority’, Hillingdon is required to provide waste and recycling collections to all properties within the Borough under the Environment Act 1990.

In October 2023, a new ‘simpler recycling’ reform was announced which will require businesses to recycle their food waste by March 2025, and all residential properties to have access to food waste recycling by March 2026.

Details of New Burdens funding to support these changes have not yet been provided in detail, however planning is currently underway to ensure that these new requirements can be met by Hillingdon, with the existing projects supporting improvements towards these targets.

BACKGROUND PAPERS

NIL.

APPENDICES

Appendix 1, 2, 3, 4 and 5.

Appendix 1 – Glebe School children with the food waste vehicle named by one of their students.

Appendix 2 – A resident using the ‘smoothie bike’ during a Food Waste Action Week event.

Appendix 3 – The recycling team presenting on food waste recycling to more than 350 children at Yiewsley Infant School

Appendix 4 – The winner of the most recent Zero Waste Challenge with his prize, a zero-waste kit with reusable items.

Appendix 5 – A Recycling Officer engaging with residents during door-knocking activities to promote the food waste service.

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RESIDENTS' SERVICES SELECT COMMITTEE - CABINET FORWARD PLAN

Committee name	Residents' Services Select Committee
Officer reporting	Liz Penny, Democratic Services Officer
Papers with report	Appendix A – Latest Forward Plan
Ward	As shown on the Forward Plan

HEADLINES

To monitor the Cabinet's latest Forward Plan which sets out key decisions and other decisions to be taken by the Cabinet collectively and Cabinet Members individually over the coming year. The report sets out the actions available to the Committee.

RECOMMENDATION

That the Residents' Services Select Committee notes the Cabinet Forward Plan.

SUPPORTING INFORMATION

The Cabinet Forward Plan is published monthly, usually around the first or second week of each month. It is a rolling document giving the required public notice of future key decisions to be taken. Should a later edition of the Forward Plan be published after this agenda has been circulated, Democratic Services will update the Committee on any new items or changes at the meeting.

As part of its Terms of Reference, each Select Committee should consider the Forward Plan and, if it deems necessary, comment as appropriate to the decision-maker on the items listed which relate to services within its remit. For reference, the Forward Plan helpfully details which Select Committee's remit covers the relevant future decision item listed.

The Select Committee's monitoring role of the Forward Plan can be undertaken in a variety of ways, including both pre-decision and post-decision scrutiny of the items listed. The provision of advance information on future items listed (potentially also draft reports) to the Committee in advance will often depend upon a variety of factors including timing or feasibility, and ultimately any such request would rest with the relevant Cabinet Member to decide. However, the 2019 Protocol on Overview & Scrutiny and Cabinet Relations (part of the Hillingdon Constitution) does provide guidance to Cabinet Members to:

- Actively support the provision of relevant Council information and other requests from the Committee as part of their work programme;
- Where feasible, provide opportunities for committees to provide their input on forthcoming executive reports as set out in the Forward Plan to enable wider pre-decision scrutiny (in addition to those statutorily required to come before committees*, i.e. policy framework documents – see para. below*).

As mentioned above, there is both a constitutional and statutory requirement for Select Committees to provide comments on the Cabinet's draft budget and policy framework proposals after publication. These are automatically scheduled in advance to multi-year work programmes.

Therefore, in general, the Committee may consider the following actions on specific items listed on the Forward Plan:

	Committee action	When	How
1	**To provide specific comments to be included in a future Cabinet or Cabinet Member report on matters within its remit.**	As part of its pre-decision scrutiny role, this would be where the Committee wishes to provide its influence and views on a particular matter within the formal report to the Cabinet or Cabinet Member before the decision is made. This would usually be where the Committee has previously considered a draft report or the topic in detail, or where it considers it has sufficient information already to provide relevant comments to the decision-maker.	These would go within the standard section in every Cabinet or Cabinet Member report called "Select Committee comments". The Cabinet or Cabinet Member would then consider these as part of any decision they make.
2	**To request further information on future reports listed under its remit.**	As part of its pre-decision scrutiny role, this would be where the Committee wishes to discover more about a matter within its remit that is listed on the Forward Plan. Whilst such advance information can be requested from officers, the Committee should note that information may or may not be available in advance due to various factors, including timescales or the status of the drafting of the report itself and the formulation of final recommendation(s). Ultimately, the provision of any information in advance would be a matter for the Cabinet Member to decide.	This would be considered at a subsequent Select Committee meeting. Alternatively, information could be circulated outside the meeting if reporting timescales require this. Upon the provision of any information, the Select Committee may then decide to provide specific comments (as per 1 above).
3	**To request the Cabinet Member considers providing a draft of the report, if feasible, for the Select Committee to consider prior to it being considered formally for decision.**	As part of its pre-decision scrutiny role, this would be where the Committee wishes to provide an early steer or help shape a future report to Cabinet, e.g., on a policy matter. Whilst not the default position, Select Committees do occasionally receive draft versions of Cabinet reports prior to their formal consideration. The provision of such draft reports in advance may depend upon different factors, e.g., the timings required for that decision. Ultimately any request to see a draft report early would need the approval of the relevant Cabinet Member.	Democratic Services would contact the relevant Cabinet Member and Officer upon any such request. If agreed, the draft report would be considered at a subsequent Select Committee meeting to provide views and feedback to officers before they finalise it for the Cabinet or Cabinet Member. An opportunity to provide specific comments (as per 1 above) is also possible.
4	**To identify a forthcoming report that may merit a post-decision review at a later Select Committee meeting**	As part of its post-decision scrutiny and broader reviewing role, this would be where the Select Committee may wish to monitor the implementation of a certain Cabinet or Cabinet Member decision listed/taken at a later stage, i.e., to review its effectiveness after a period of 6 months. The Committee should note that this is different to the use of the post-decision scrutiny 'call-in' power which seeks to ask the Cabinet or Cabinet Member to formally re-consider a decision up to 5 working days after the decision notice has been issued. This is undertaken via the new Scrutiny Call-in App members of the relevant Select Committee.	The Committee would add the matter to its multi-year work programme after a suitable time has elapsed upon the decision expected to be made by the Cabinet or Cabinet Member. Relevant service areas may be best to advise on the most appropriate time to review the matter once the decision is made.

BACKGROUND PAPERS

- Protocol on Overview & Scrutiny and Cabinet relations adopted by Council 12 September 2019
- Scrutiny Call-in App

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Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas: AS = Adult Services & Health P = Place C = Central Services R = Resources CS= Children's Services D = Digital & Intelligence							
Cabinet meeting - Thursday 18 April 2024 (report deadline 2 April)										
189	**Cowley House, Uxbridge**	Following consultation with residents, Cabinet will consider the decant and disposal of Cowley House, 181 Cowley High Road Uxbridge UB8 2AJ. Cowley House is a small general needs housing block and a listed building. Cabinet will be advised that it is not viable to bring the property up to the new Landlord Compliance standards, hence the recommendation to dispose of the property.	Uxbridge		Cllr Jonathan Bianco - Property, Highways & Transport / Cllr Eddie Lavery - Residents' Services	Residents' Services	P - Julie Markwell			Private (3)
207	**Beck Theatre, Hayes - contract extension**	The Beck Theatre provides an annual programme of professional theatrical productions, as well as contributing to the Borough's broader cultural offer. Cabinet will consider the extension of the management contract for the operation and cultural programme delivery at the Theatre.	N/A		Cllr Eddie Lavery - Residents' Services	Residents' Services	P - Darren Deeks			Private (3)
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	C - Democratic Services			Public
SI	**Reports from Select Committees**	Reports, findings and recommendations for consideration by the Cabinet, when referred from the appropriate Committee.	Various		All	TBC	C - Democratic Services	Various		Public
Cabinet Member Decisions expected - April 2024										
194	**Tenancy Strategy and Policy**	Following consultation, the Cabinet Member will consider the Council's Tenancy Strategy and Policy which provides guidance to registered social housing providers and sets out the approach to allocating and managing social housing tenancies, respectively.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	P - Debbie Weller			Public
196	**Shared Ownership Policy**	The Cabinet Member will be requested to approve an updated policy for the sale, allocation and management of shared ownership properties, also relating to those such properties as part of the Hayes Regeneration Project.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	P - Debbie Weller			Public
193	**Private Sector Placement Policy**	The Cabinet Member will consider approving an updated policy on placing tenants in temporary accommodation and private rented accommodation.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	P - Debbie Weller			Public
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of decisions each month on standard items - details of these standard items are listed at the end of the Forward Plan.	Various		All	TBC	C - Democratic Services	Various		Public

Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas: AS = Adult Services & Health P = Place C = Central Services R = Resources CS= Children's Services D = Digital & Intelligence							
Cabinet meeting - Thursday 23 May 2024 (report deadline 26 April)										
139a	**Housing Allocation Policy - Consultation Draft**	Cabinet will consider for public consultation an updated Housing Allocation Policy which sets out how social housing is allocated to those on the housing register.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	**P - Debbie Weller**	Public consultation		Public
205	**Support services contracts for the Single Homelessness Accommodation Programme**	Cabinet will consider the award of support services contracts for the Single Homelessness Accommodation Programme (SHAP). SHAP is a £200 million nationwide fund to deliver up to 2400 homes and support services for people sleeping rough or at risk of sleeping rough. The Council is in receipt of external funding for SHAP and an aspect of this programme will be the procurement of services within this, to support this endeavour.	N/A		Cllr Eddie Lavery - Residents' Services	Residents' Services	**CS / R - Maggie Nelson / Sally Offin**			Private (3)
186	**Draft Uxbridge Master Plan**	As part of reviewing the Local Plan, the Council has been looking at the future challenges and opportunities that face Uxbridge, the Borough's largest and only metropolitan town centre. Cabinet will consider commencing full public and stakeholder consultation on a proposed draft new masterplan for Uxbridge, which be the basis for a consensus on the future redevelopment and prosperity of the town.	Uxbridge / all wards		Cllr Eddie Lavery - Residents' Services	Residents' Services	**C - Julia Johnson**	Public consulation and also select committee		Public
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
Cabinet Member Decisions expected - May 2024										
199	**Anti-Social Behaviour Policy**	The Cabinet Member will consider whether to adopt a new Anti-Social Behaviour Policy explaining the Council's role and responsibilities and how it will respond to reports of anti-social behaviour.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	**P - Richard Webb**	Public consultation		Public
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of decisions each month on standard items - details of these standard items are listed at the end of the Forward Plan.	Various		All	TBC	**C - Democratic Services**	Various		Public
Cabinet meeting - 27 June 2024 (report deadline 10 June)										
043b	**Local Flood Risk Management Strategy**	Following broad public consultation to inform and update the Borough's Local Flood Risk Management Strategy, Cabinet will agree the Strategy which will set out the Council and partner's approach to tackling local flooding. The Strategy is a statutory requirement.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	**P - Ian Thynne**	Select Committee and public consultation.	NEW ITEM	Public

Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas:	AS = Adult Services & Health	P = Place	C = Central Services	R = Resources	CS= Children's Services	D = Digital & Intelligence	
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
Cabinet Member Decisions expected - June 2024										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All		**C - Democratic Services**	Various		Public
Cabinet meeting - Thursday 25 July 2024 (report deadline 8 July)										
SI	**Strategic Climate Action Plan**	Hillingdon Council passed a Climate Change Declaration at its full Council meeting on 16 January 2020 which set out targets to become carbon neutral and achieve 100% clean energy across the Council's services by 2030. Cabinet in July 2021 approved the Council's Climate Action Plan to achieve this and also agreed to review progress annually.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	**P - Jo Allen**	Residents' Services Select Committee		Public
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
SI	**Reports from Select Committees**	Reports, findings and recommendations for consideration by the Cabinet, when referred from the appropriate Committee.	All		All	All	**C - Democratic Services**	TBC		Public
Cabinet Member Decisions expected - July 2024										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All		**C - Democratic Services**	Various		Public
AUGUST 2024 - NO CABINET MEETING										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All	TBC	**C - Democratic Services**	Various		Public
Cabinet meeting - Thursday 12 September 2024 (report deadline 23 August)										
139b	**Housing Allocation Policy**	Following public consultation, Cabinet will consider approval of the Housing Allocation Policy, whcih sets out the Council's policy on how social housing is allocated to those on the housing register.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	**P - Debbie Weller**	Public consultation		Public

Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas:	AS = Adult Services & Health	P = Place	C = Central Services	R = Resources	CS= Children's Services	D = Digital & Intelligence	
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
SI	**Reports from Select Committees**	Reports, findings and recommendations for consideration by the Cabinet, when referred from the appropriate Committee.	All		All	TBC	**C - Democratic Services**	TBC		Public
Cabinet Member Decisions expected - September 2024										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All	TBC	**C - Democratic Services**	Various		Public
Cabinet meeting - Thursday 10 October 2024 (report deadline 23 September)										
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
Cabinet Member Decisions expected - October 2024										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All	TBC	**C - Democratic Services**	Various		Public
Cabinet meeting - Thursday 7 November 2024 (report deadline 21 October)										
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
SI	**Reports from Select Committees**	Reports, findings and recommendations for consideration by the Cabinet, when referred from the appropriate Committee.	All		All	TBC	**C - Democratic Services**	TBC		Public
Cabinet Member Decisions expected - November 2024										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All	TBC	**C - Democratic Services**	Various		Public
Cabinet meeting - Thursday 12 December 2024 (report deadline 25 November)										

Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas:	AS = Adult Services & Health	P = Place	C = Central Services	R = Resources	CS= Children's Services	D = Digital & Intelligence	
SI	**Infrastructure Funding Statement**	Cabinet will receive an annual report setting out the Council's Infrastructure Funding Statement, a document it is required to publish which also monitors spending on section 106 (developer contribution) monies along with the Community Infrastructure levy over the past year.	All		Cllr Eddie Lavery - Residents' Services	Residents' Services	**P - Andrew Tebbutt**	Residents' Services Select Committee		Public
110a	**The Council's Budget - Medium Term Financial Forecast 2025/26 - 2029/30 (BUDGET FRAMEWORK)**	This report will set out the Medium Term Financial Forecast (MTFF), which includes the draft General Fund reserve budget and capital programme for 2025/26 for consultation, along with indicative projections for the following four years. This will also include the HRA rents for consideration.	All	**Proposed Full Council adoption - 20 February 2025**	Cllr Martin Goddard - Finance	All	**R - Andy Evans**	Public consultation through the Select Committee process and statutory consultation with businesses & ratepayers		Public
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
SI	**Reports from Select Committees**	Reports, findings and recommendations for consideration by the Cabinet, when referred from the appropriate Committee.	All		All	TBC	**C - Democratic Services**	TBC		Public
Cabinet meeting - Thursday 9 January 2025 (report deadline 9 December 2024)										
SI	**Public Preview of matters to be considered in private**	A report to Cabinet to provide maximum transparency to residents on the private and confidential matters to be considered later in Part 2 of the Cabinet meeting and agenda.	TBC		All Cabinet Members	All	**C - Democratic Services**			Public
SI	**Reports from Select Committees**	Reports, findings and recommendations for consideration by the Cabinet, when referred from the appropriate Committee.	All		All	TBC	**C - Democratic Services**	TBC		Public
Cabinet Member Decisions expected - January 2025										
SI	**Standard Items taken each month by the Cabinet Member**	Cabinet Members make a number of non-key decisions each month on standard items - details of these are listed at the end of the Forward Plan.	Various		All	TBC	**C - Democratic Services**	Various		Public
CABINET MEMBER DECISIONS: Standard Items (SI) that may be considered each month										

Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas:	AS = Adult Services & Health	P = Place	C = Central Services	R = Resources	CS= Children's Services	D = Digital & Intelligence	
SI	**Urgent Cabinet-level decisions & interim decision-making (including emergency decisions)**	The Leader of the Council has the necessary authority to make decisions that would otherwise be reserved to the Cabinet, in the absence of a Cabinet meeting or in urgent circumstances. Any such decisions will be published in the usual way and reported to a subsequent Cabinet meeting for ratification. The Leader may also take emergency decisions without notice, in particular in relation to the COVID-19 pandemic, which will be ratified at a later Cabinet meeting.	Various		Cllr Ian Edwards - Leader of the Council	TBC	**C - Democratic Services**	TBC		Public / Private
SI	**Release of Capital Funds**	The release of all capital monies requires formal Member approval, unless otherwise determined either by the Cabinet or the Leader. Batches of monthly reports (as well as occasional individual reports) to determine the release of capital for any schemes already agreed in the capital budget and previously approved by Cabinet or Cabinet Members	TBC		Cllr Martin Goddard - Finance (in conjunction with relevant Cabinet Member)	All - TBC by decision made	**various**	Corporate Finance		Public but some Private (1,2,3)
SI	**Petitions about matters under the control of the Cabinet**	Cabinet Members will consider a number of petitions received by local residents and organisations and decide on future action. These will be arranged as Petition Hearings.	TBC		All	TBC	**C - Democratic Services**			Public
SI	**To approve compensation payments**	To approve compensation payments in relation to any complaint to the Council in excess of £1000.	n/a		All	TBC	**R - Iain Watters**			Private (1,2,3)
SI	**Acceptance of Tenders**	To accept quotations, tenders, contract extensions and contract variations valued between £50k and £500k in their Portfolio Area where funding is previously included in Council budgets.	n/a		Cllr Ian Edwards - Leader of the Council OR Cllr Martin Goddard - Finance / in conjunction with relevant Cabinet Member	TBC	**various**			Private (3)
SI	**All Delegated Decisions by Cabinet to Cabinet Members, including tender and property decisions**	Where previously delegated by Cabinet, to make any necessary decisions, accept tenders, bids and authorise property decisions / transactions in accordance with the Procurement and Contract Standing Orders.	TBC		All	TBC	**various**			Public / Private (1,2,3)

Ref	Scheduled Upcoming Decisions	Further details	Ward(s)	Final decision by Full Council	Cabinet Member(s) Responsible	Relevant Select Committee	Directorate / Lead Officer	Consultation related to the decision	NEW ITEM	Public or Private (with reason)
		SI = Standard Item each month/regularly	Council Directorate/Service Areas:		AS = Adult Services & Health	P = Place	C = Central Services	R = Resources	CS= Children's Services	D = Digital & Intelligence
SI	**Chrysalis Programme of Environmental Improvements**	The Cabinet Member will be asked to consider the approval of projects.	Various		Cllr Eddie Lavery - Residents' Services	Residents' Services	P - Neil O'Connor			Public
SI	**External funding bids**	To authorise the making of bids for external funding where there is no requirement for a financial commitment from the Council.	n/a		All	TBC	various			Public
SI	**Response to key consultations that may impact upon the Borough**	A standard item to capture any emerging consultations from Government, the GLA or other public bodies and institutions that will impact upon the Borough. Where the deadline to respond cannot be met by the date of the Cabinet meeting, the Constitution allows the Cabinet Member to sign-off the response.	TBC		All	TBC	various			Public

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RESIDENTS' SERVICES SELECT COMMITTEE - WORK PROGRAMME

Committee name	Residents' Services Select Committee
Officer reporting	Liz Penny, Democratic Services Officer
Papers with report	Appendix A – Work Programme
Ward	All

HEADLINES

To enable the Committee to note future meeting dates and to forward plan its work for the current municipal year.

RECOMMENDATIONS

That the Residents' Services Select Committee considers the Work Programme report and agrees any amendments.

SUPPORTING INFORMATION

1. The Committee's meetings will start at 7pm and the witnesses attending each of the meetings may include representatives from external organisations, some of whom travel from outside of the Borough. Forthcoming meeting dates are as follows:

Meeting Date	Room
14 June 2023	CR5
19 July 2023	CR6
26 September 2023	CR6
25 October 2023	CR5
29 November 2023	CR5
16 January 2024	CR5
13 February 2024	CR5
13 March 2024	CR5
16 April 2024	CR5

Site Visits

Members of the Residents' Services Select Committee have undertaken a number of site visits in recent months to include the CCTV room in the Civic Centre, Harlington Road Depot, Heathrow Imported Food Office, Hillingdon Fire Station, Botwell Leisure Centre and Breakspear Crematorium.

Implications on related Council policies

The role of the Select Committees is to make recommendations on service changes and improvements to the Cabinet, who are responsible for the Council's policy and direction.

How this report benefits Hillingdon residents

Select Committees directly engage residents in shaping policy and recommendations and the Committees seek to improve the way the Council provides services to residents.

Financial Implications

None at this stage.

Legal Implications

None at this stage.

BACKGROUND PAPERS

Nil.

MULTI-YEAR WORK PROGRAMME 2022 - 2026

2024/25

Residents' Services Select Committee	January 16	February 13	March 13	April 16	May No meeting	June 13	July 18	September 24	November 27	January 14	February 19	March 13	April 22
Review: Homeless Prevention and the Customer Journey													
Topic selection / scoping stage	Topic Selection	Scoping Report											
Witness / evidence / consultation stage			Witness Session	Witness Session		Witness Session	Witness Session						
Findings, conclusions and recommendations								Findings					
Final review report agreement									Final report				
Target Cabinet reporting													
Regular service & performance monitoring													
Infrastructure Funding Statement Update (previously CIL Expenditure Monitoring - Annual Report & S106) each November									X				
Mid-year budget / budget planning report													
Strategic Climate Action Plan: Annual Update (Note to move to July annually to align with Cabinet reporting in September)			X									X	
Cabinet's Budget Proposals For Next Financial Year	X									X			
Cabinet Forward Plan Monthly Monitoring	X	X	X	X		X	X	X	X	X	X	X	X
One-off information items													
ASB Service Update						X							
Local Flood Risk Management Strategy		X											
The impact of HS2 (parking and traffic)													
High Street Regeneration post-Covid													
Public Spaces Protection Orders													
Graffiti Removal						X							
Sports - facilities, engagement & inclusivity							X						
Tree Planting			X										
Animal Welfare									X				
Street Champions								X					
Food Waste - success of the scheme				X									
Locata - Live Demonstration													
Consultation on Uxbridge Master Plan							X						
Weed Spraying				X									
Housing Allocation Policy Consultation Draft						X							
Update on Canal Site Visit													
Resident usage of new digital system to report ASB & impact of increased fees on fly tipping	X												
Heathrow Expansion & Local Community Update							X						
Abandoned Vehicles									X				
Crime & Disorder - Statutory Scrutiny (themed)													
Safer Hillingdon Partnership Development													
Safer Hillingdon Partnership Performance			X					X				X	
Past review delivery													
Review of Alley Gating									X				
Internal use only													
Date deadline confirmed to report authors													
Report deadline	5 Jan	2 Feb	1 Mar	29 Mar									
Agenda publication date	8 Jan	5 Feb	5 Mar	2 Apr									

Committee Site Visits (dates tbc)
~~CCTV Control Room, Civic Centre (25 July 2022)~~
~~Botwell Leisure Centre (27 February 2024)~~
~~Harlington Road Depot (28 September 2022)~~
~~Weed Killing Contractor (6 June 2023)~~
~~Heathrow Airport (Imported Food Office) (4 October 2022)~~
Noise Team
~~Hillingdon Fire Station (7 December 2022)~~
Graffiti Removal
~~Breakspear Crematorium (25 January 2023)~~
Harefield and Yiewsley Civic Amenity Sites
Traffic wardens / Abandoned Vehicles *
~~Canal Visit - 1 November 2023~~
~~The Battle of Britain Bunker (26 July 2023 at 6pm)~~
Building Control
Planning Enforcement
HS2 Site Visit
Dogs Trust
Grundon waste disposal site in Colnbrook

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