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| Title | Weed Control Management – Trial of Market Available Options |
| Purpose of the report | To make a decision |
| Report status | Public report |
| Report author | Graeme Rasdall-Lawes, Neighbourhood Services Manager |
| Lead councillor | Cllr Karen Rowland, Environmental Services & Community Safety |
| Corporate priority | Healthy Environment |
| Recommendations | <ol style="list-style-type: none">1. That Housing, Neighbourhoods & Leisure Committee notes the current position on The Trial of Alternatives to Glyphosate.2. That Housing, Neighbourhoods & Leisure Committee approve the continued controlled use of glyphosate as the most cost effective and efficient method for the control of unwanted vegetation on paved areas and in and around grass verges.3. That Housing, Neighbourhoods & Leisure Committee agree that any new contract issued will include a requirement for the successful bidder to work with the Council to seek a suitable alternative to glyphosate.4. That the Streetscene Team will continue to explore and monitor the 'Herbicide Market' for any suitable new alternatives to glyphosate. The Streetscene Team will also remain vigilant as to how other councils are dealing with this issue. |

1. Executive summary

- 1.1 This report provides an update to Housing, Neighbourhoods & Leisure Committee on the trials that took place between May 2022 and October 2022 to explore the alternatives to the current weed control practice of using glyphosate to control unwanted vegetation across the borough.
- 1.2 This report seeks to inform the Housing, Neighbourhoods & Leisure Committee of progress to date and inform the Committee of the alternative methods trialled.

2. Background

- 2.1 Reading Borough Council remains committed to reducing the use of herbicides across its public estate wherever possible and has over previous years reduced its use considerably. There is however a necessary requirement to provide effective weed control on its highways network to protect the condition of its carriageways and footways. It also helps to maintain the quality of the investment Reading has made over the past 3 years and is continuing to make in its roads and pathways.
- 2.2 Reduction of herbicide use compliments the Wildflower Plan which is one of a suite of policies supporting Reading's declared climate emergency and included within the Climate Emergency Strategy and the Biodiversity Action Plan, as well as Reading Borough Council's Corporate Plan.
- 2.3 Initiated in 2020, the Rewilding Project identified large verges where more species-rich long grass could be grown in corridors along the highway and in limited areas in parks

and open spaces. An internal assessment was carried out, and feedback from residents proactively sought. Feedback was substantially positive, and the internal assessment concluded that the experiment had worked in most areas from the point of view of both maintenance and appearance. To date 48 hectares of parks and open spaces have been rewilded. Enhancing and where possible increasing those areas continues to be an aim of the Wildflower Plan.

- 2.4 Consistent with the majority of Local Authorities in the UK, Reading Borough Council employs a system of weed control, either through its own operations or via contracted services, that uses glyphosate as the principal chemical for the control of unwanted vegetation on land within its ownership. This process is currently carried out 4 x per year (March, Late May, Early August & Mid October) using a controlled droplet application (CDA). All applications are weather dependant and carried out when vegetation is actively growing.
- 2.5 Glyphosate based herbicides have been available for over 40 years and are generally considered cost effective, efficient and readily available. They are a systemic, non-residual, contact herbicide which will kill actively growing vegetation at the time of application but will not stop new vegetation from growing. Prior to this many Local Authorities used residual based herbicides as a preventative method, which could be sprayed without unwanted vegetation being present due to their capacity to remain in soil and detritus. Concerns around the environmental impact of residual herbicides led them to be banned.
- 2.4 The use of glyphosate-based products is legal in the UK, being licenced until December 2025. Nonetheless, a report from the International Agency for Research on Cancer in 2015, found that glyphosate was “a probable human carcinogen”, sparking a worldwide debate as to the validity of its continued usage. Recent court rulings in the USA have found in favour of claimants who cite glyphosate use as having caused them to develop cancer. The scientific data is however conflicting, with the European Food Safety Authority and the European Chemicals Agency’s Committee for Risk Assessment having found no safety concerns that would prevent continuing approval.
- 2.5 Weed control in public areas including footpaths and roadside channels is a crucial service undertaken by the Council on behalf of communities. A good quality, consistent weed control programme reduces slip and trip hazards and reduces the damage caused by root growth to the public highway and also improves aesthetic appeal.
- 2.6 Reading Borough Council manages a diverse range of green space including over 60 parks and open spaces which include play areas along with a number of public rights of way.
- 2.7 Through the use of mulches, growth retardant and weed suppressing membranes, as well as traditional hoeing and strimming on hard surfaces, the grounds maintenance teams have stopped using glyphosate in children’s play areas and parks and reduced the use around open spaces.
- 2.8 The use of glyphosate has been used for spot treatment of weeds only and to reduce growth around obstructions such as benches, trees and signs and has not been used in and around playgrounds for some time. It is also the most effective herbicide treatment for Japanese Knotweed.

3. The Trial

- 3.1 The trial of alternative methods was carried out on Northumberland Avenue which was identified as the preferred highways trial site as it easily subdivides into different areas and has a mixture of land use types (grass verges, footways, parking bays) as well as having areas of on-street parking. This made the effects of the alternative treatments easier to compare and quantify.
- 3.2 Rabson’s Recreation Ground and Cintra Park were chosen as parks trial sites as they are physically linked to Northumberland Avenue and as such offered practical advantages.

3.3 The alternative methods used are as follows:

1. Fatty acid (Pelargonic Acid) spray.
2. Hot water and steam and manual removal.
3. Hand Removal.
4. Glyphosate
5. Acetic acid spray.

3.4 Northumberland Avenue was divided up as shown in the table below:

3.5 The alternative treatments were chosen in relation to the practicality of their use in the different sections of the road. For example, steam and hot water cannot be used in area 1 for safety reasons due to on-street parking.

| Area | Extents | Length (km) | Wards | Treatment |
|------|-----------------------------------|-------------|------------------------------|---------------------------------|
| 1. | Christchurch Gardens to Hexham Rd | 0.62 | Katesgrove, Redlands | Pelargonic Acid |
| 2. | Hexham road to Buckland Rd | 0.42 | Church, Katesgrove, Redlands | Steam and hot water |
| 3. | Buckland Rd to Honiton Rd | 0.33 | Church, Whitley | Hand removal |
| 4. | Honiton Rd to Hartland Rd | 0.68 | Church, Whitley | Glyphosate |
| 5. | Hartland Rd to Whitley Wood Rd | 0.64 | Church, Whitley | Acetic Acid |
| 6. | Rabson's recreation ground | | Church | Hot air and steam and hot water |
| 7. | Cintra Park | | Park, Redlands | Hot air and steam and hot water |

3.6 The trials were designed to measure:

- How effective are the proposed alternatives compared to glyphosate as a herbicide?
- The optimum frequency of each treatment required to keep weed coverage at a level similar to that achieved when using Glyphosate.
- The reaction of the treatment.
- What are the costs of alternative weed control?
- Seek member and resident feedback to the various methods used.

4. Findings

4.1 Treatment 1 – 19/5/22

Weather conditions – passing clouds, warm – no rain.

| Area treated | Linear metres | Ratio of chemical to carrier ML | Time taken in mins | Usage | Inspection 1 to 3 days | Inspection 5 days | Inspection 10 days |
|---------------------|---------------|-------------------------------------------|----------------------|-------------|-----------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------|
| Pelargonic acid | (1) 1200m | 0.1:1 | 25 min X 1 operative | 1 litre | Signs of kill within 1 day. Leaves turning black and wilting. | Treated plants dead. Some signs of regrowth. | Weed beginning to recover and new shoots appearing. New plants visible. |
| Steam HOT WATER | (2) 1600m | <u>NA</u> 400 litres of water per hour | 217 min X1 operative | 800 litres | Some weeds jettied off; plant matter disappears, some damage to untarmacked areas. | Regrowth of perennial weeds. | Re-established perennial weeds and new annuals present. |
| Hand removal | (3) 1320mm | <u>NA</u> | 60 min X1 operative | NA | Instant removal of overground vegetation. | Some new weeds. | New weeds and perennials have returned. |
| Glyphosate | (4) 1280mm | 0.025:1 | 41 min X1 operative | 0.25 litres | Some effects visible, slight wilting of plants with some discolour. | Plants wilting and discolour to leaves. | Nearly all treated plants are dead - no sign of new plants growing. |
| Acetic | (5) 1200m | 0.33:1 | 36min X1 operative | 3.33 litres | Visible effects within 1 hour of spraying. Yellowing vegetation. Strong aroma detected. | Treated plants dead. Some signs of new growth. | New annuals and perennial plants have returned. New growth detected. |
| Steam and hot water | Rabson's Rec | <u>NA</u> 400 litres of water per hour | 40 min X1 operative | 260 litres | Some plants jettied off; plant matter disappears, some damage to untarmacked areas. | Regrowth of perennial plants. | Re-established perennial plants and new annuals present. |
| Steam and hot water | Cintra Rec | <u>NA</u> 400 litres of water per hour | 45 min X1 operative | 300 litres | Some weeds jettied off; plant matter disappears, some damage to untarmacked areas. | Regrowth of perennial plants. | Re-established perennial plants and new annuals present. |

4.2 Treatment 2 – 6/7/22

Weather conditions – passing cloud, warm – no rain

| Area treated | Linear metres | Ratio of chemical to carrier ML | Time taken in mins | Usage | Inspection 1 to 3 days | Inspection 5 days | Inspection 10 days |
|---------------------|---------------|-------------------------------------------|----------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------|
| Pelargonic acid | (1) 1200m | 0.1:1 | 25 min X 1 operative | 1 litre | Signs of kill within 1 day. Leaves turning black and wilting. | Treated plants dead. Some signs of regrowth. | Regrowth of some treated plants particularly Mare's tail. |
| Steam HOT WATER | (2) 1600m | <u>NA</u> 400 litres of water per hour | 217 min X1 operative | 800 litres | Very little impact on anything with underground tap root system. Removes grass and soil in places. | Regrowth in places. | New weeds and regrowth in places. |
| Hand removal | (3) 1320mm | <u>NA</u> | 60 min X1 operative | NA | Instant removal of overground vegetation. | Some new plants visible. | New plants and perennials present. |
| Glyphosate | (4) 1280mm | 0.025:1 | 41 min X1 operative | 0.25 litres | Some effects visible, slight wilting of plants with some discolour. | Treated annual plants dying. Signs of wilting of perennials. | Nearly all treated plants are dead - no sign of new plants growing. |
| Acetic | (5) 1200m | 0.33:1 | 36min X1 operative | 3.33 litres | Visible effects within 1 hour of spraying. Yellowing vegetation. Strong aroma detected. | Treated plants dead. Some signs of new regrowth. | New plants and old regrowth in places where perennials are present. |
| Steam and hot water | Rabson's Rec | <u>NA</u> 400 litres of water per hour | 40 min X1 operative | 260 litres | Very little impact on anything with underground tap root system. Removes grass and parts of resin bonded surface in places. | Regrowth in places. | New plants and regrowth in places. |
| Steam and hot water | Cintra Rec | <u>NA</u> 400 litres of water per hour | 45 min X1 operative | 300 litres | Some weeds jettted off; plant matter disappears. | Regrowth in places. | New plants and regrowth in places. |

4.3 Treatment 3 – 4/10/22 (Hot water / Steam 11/10/22)

Weather conditions – overcast, cool – some overnight rain

| Area treated | Linear metres | Ratio of chemical to carrier ML | Time taken in mins | Usage | Inspection 1 to 3 days | Inspection 5 days | Inspection 10 days |
|---------------------|---------------|-------------------------------------------|-----------------------|-------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------|
| Pelargonic acid | (1) 1200m | 0.1:1 | 25 min X 1 operative | 1 litre | Signs of kill within 1 day. Leaves turning black and wilting. | Treated plants dead. No signs of regrowth. | Minor regrowth of some treated plants particularly Mare's tail. |
| Steam HOT WATER | (2) 1600m | <u>NA</u> 400 litres of water per hour | 217 min X 1 operative | 800 litres | Very little impact on anything with underground tap root system. Removes grass and soil in places. | Minor regrowth in places. | Minor new weeds and regrowth in places. |
| Hand removal | (3) 1320mm | <u>NA</u> | 60 min X1 operative | NA | Instant removal of overground vegetation. | Minor regrowth in places. | Minor regrowth in places. |
| Glyphosate | (4) 1280mm | 0.025:1 | 41 min X1 operative | 0.25 litres | No real difference in appearance. | Some effects visible, slight wilting of plants with some discolour. | Annual weeds visibly wilting, little to no effect on perennials. |
| Acetic | (5) 1200m | 0.33:1 | 36min X1 operative | 3.33 litres | Visible effects within 1 hour of spraying. Yellowing vegetation. Strong aroma detected. | Treated plants dead. No new signs of new regrowth. | Minimal growth on perennials. |
| Steam and hot water | Rabson's Rec | <u>NA</u> 400 litres of water per hour | 40 min X1 operative | 260 litres | Very little impact on anything with underground tap root system. | Minor regrowth in places. | Minor regrowth in places. |
| Steam and hot water | Cintra Rec | <u>NA</u> 400 litres of water per hour | 45 min X1 operative | 300 litres | Some weeds jetted off; plant matter disappears. | Minor regrowth in places. | Minor regrowth in places. |

5. Options Considered

5.1 Pelargonic Acid - Pelargonic acid occurs naturally in many plants and animals.

| Positives | Negatives |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Not glyphosate • Fast acting (plants show signs of treatment within 2-3 hours) • Organic • Can be applied using knapsack system | <ul style="list-style-type: none"> • Has a classification as an irritant/COSHH • Requires training to NPTC Level PA1 & PA6 (National Proficiency Test Council) • Harmful to bees • Non systemic does not kill root system • High application rate • Significantly more expensive than glyphosate or acetic acid • Weather dependant • Unpleasant aroma • Kills surface growth only |

5.2 Hot water / Steam

| Positives | Negatives |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Nonchemical application • No issue with drift • Non residual • Not harmful to bees or pets • No licence required • Non-hazardous to health • Not weather dependant • Instant results • Can be used near water | <ul style="list-style-type: none"> • High water usage • Rapid cooling which reduces effectiveness • Labour intensive/slow • Use of fuel to heat water • Plant roots are not killed • Potential damage to surfaces • Ineffective against perennial/established vegetation • Access issues in area with on street parking • Potential to increase weed growth |

5.3 Hand Removal – use of mechanical and handheld tools

| Positives | Negatives |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Nonchemical • Instant result • Not weather dependant • Environmentally friendly | <ul style="list-style-type: none"> • Labour intensive/slow • Potential for increased work-related injuries • Roots may remain • Access issues in areas with high on street parking • Increased disposal costs |

5.4 Glyphosate - a systemic, non-residual, contact herbicide

| Positives | Negatives |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Translocated properties, work throughout the plant. Kills roots • Gives a complete kill • Low CO2 impact on the environment • Lower application rate compared to Acetic acid and Pelargonic acid • Speed of application • Cost effective • Can be mixed with a carrier to lessen drift • Biodegradable in soil • Reduces the need for strimming • Broad spectrum herbicide | <ul style="list-style-type: none"> • Poor public perception/negative press • Requires training to NPTC Level PA1 & PA6 (National Proficiency Test Council) • Weather dependant. Needs 6 hours before it is rain fast • Manual handling issues / COSHH • Harmful to bees • Less effective in drought conditions. Weeds need to be actively growing at time of application. • Non residual • Can take up to 2 weeks for desired result |

5.5 Acetic Acid - also known as ethanoic acid, is a clear colourless liquid which has a pungent, vinegar-like odour.

| Positives | Negatives |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Not glyphosate • Fast acting (plants show signs of treatment within 2-3 hours) • Biodegradable • Broad spectrum herbicide • Can be applied using knapsack system | <ul style="list-style-type: none"> • Has a classification as an irritant • Requires training to NPTC Level PA1 & PA6 (National Proficiency Test Council) • Manual handling issues / COSHH • Harmful to bees • Cost • Non systemic • Unpleasant aroma • Non broad spectrum • Low strength • Weather dependant • Slower and greater application rate |

6. Summary

- 6.1 Glyphosate application was the least labour intensive of the methods tested at 0.47 hrs per Km. Pelargonic and Acetic acid were more labour intensive than glyphosate at 0.59 and 0.58 hrs per Km respectively. The next most labour-intensive process was hand weeding at 1.97 hrs per Km and lastly, the most labour intensive, hot water / steam at 2.35 hrs per Km.
- 6.2 Product use, glyphosate used the least of the three chemical applications using 0.25 Lt/Km. Pelargonic acid used 1.13 Lt/Km and Acetic acid the largest at 3.75 Lt/Km.
- 6.3 Water usage was similar for all 3 products and would typically use between 10 - 12 Lt/Km but the hot water / steam method would use up to 78 times more water at 940 Lt/Km. The use of Pelargonic and Acetic acids would require 5 treatments per year, as opposed to 4 treatments using glyphosate, and would therefore use an additional 20% extra water per year.
- 6.4 Fuel use across all three chemical applications would again be very similar at approximately 0.18 Lt/Km. However, the use of Pelargonic and Acetic acids would

require 5 treatments per year, as opposed to 4 treatments using glyphosate, and would therefore use an additional 20% additional diesel fuel. The fuel use for hot water / steam is estimated to be 12.00 Lt/Km for diesel and 2.25 Lt/Km for petrol.

6.5 If weed control is understood to be necessary, it must be accepted that the management approach selected will involve compromises. The results of the trial show that glyphosate was the most effective and efficient weed control method used. Whilst hot water and steam produced effective results it is unsustainable and not as efficient as the other methods tested. Hand weeding had the least environmental impact but is not a sustainable option. Pelargonic and Acetic acid treatments produced quicker results but is less efficient, more costly and requires the use of more chemicals.

6.6 The table below details the financial implications for each of the options trialled

| Application | Cost per application | No applications | Total £000 per annum |
|-------------------|----------------------|-----------------|----------------------|
| Pelargonic | £45000 (Est) | 5 | 225 |
| Steam / Hot water | £73000 | 4 | 292 |
| Hand Removal | £66000 | 4 | 264 |
| Glyphosate | £13133 | 4 | 52.5 |
| Acetic | £35000 (Est) | 5 | 175 |

7. Contribution to Strategic Aims

7.1 Reading Borough Council's vision is:

To help Reading realise its potential – and to ensure that everyone who lives and works here can share the benefits of its success.

7.2 The Control of Unwanted Vegetation will contribute to the Council's Corporate Plan 2022 - 2025

- **Healthy environment** - Keeping the town clean, safe, green and active
- **Inclusive economy** - Providing infrastructure to support the economy
- **Thriving Communities** - Remaining financially sustainable to deliver these service priorities and to ensure everyone has an equal chance to use the public highway

7.3 **Together** – Collaborative working approach between the Council, property owners, volunteers and the public

Efficiency – Identifying the most cost efficient and appropriate method for the control of unwanted vegetation across the borough.

Ambitious – Investing to improve the public realm

Make a Difference – Providing a safe, welcoming and inclusive public realm for all

8. Environmental and Climate Implications

8.1 The Council has made commitments relating to climate change and the UK Government declared a Climate Change emergency in 2019 and as such recognises the need to minimise the climate impacts of its decisions.

- Energy Use – No known impacts.
- Waste Generation – which ever method is used to control the growth of unwanted vegetation there will be little impact on waste. Products used for these works are

purchased in 'bulk' and decanted into small receptacles for transportation – the receptacles are then refilled and reused.

- Transport –The use of glyphosate requires less applications and therefore requires the least amount of vehicle movements, 4 applications rather than 5.

It has also been assessed whether the decision will improve resilience to climate change impacts.

- Heatwaves – No known impacts
- Drought – No known impacts
- Flooding – No known impacts
- High Winds/Storms – No known impacts
- Disruption to Supply Chains – No known impacts

The overall rating assigned to this decision is low impact.

- 8.2 There will be some marginal increase in water usage if we use a hot water / hot water / steam process as a result of this proposal. This will also mean a very small increase in the use of fuel to power the pressure washer unit.
- 8.3 The use of the alternative control methods other than glyphosate will require extra applications to produce the same results – this will increase the use of fuel by a minimum of 20%
- 8.4 The chemicals that are used for the treatment of unwanted vegetation are standard industry chemicals which are neutralised in soil. The chemicals are also 'Expected to be ultimately biodegradable'.
- 8.5 The Reading Climate Emergency Strategy, which was endorsed by the Council in November 2020, highlights the importance of adapting to climate impacts as well as reducing the emissions which are driving climate change.

9. Community Engagement and Information

- 9.1 The Council involves local representatives when carrying out "any of its functions" by providing information, consulting or "involving in another way".
- 9.2 Residents were notified of the trial by formal letter and information boards were erected along Northumberland Avenue including QR codes to give further details if required.

10. Equality Impact Assessment

- 10.1 Under the Equality Act 2010, Section 149, a public authority must, in the exercise of its functions, have due regard to the need to—
- eliminate discrimination, harassment, victimisation, and any other conduct that is prohibited by or under this Act.
 - advance equality of opportunity between persons who share a relevant protected characteristic and persons who do not share it.
 - foster good relations between persons who share a relevant protected characteristic and persons who do not share it.
- 10.2 There is no overall change to service delivery at this time and all users will have an improved public realm. Should any future updates/amendments be required, which result in service delivery changes, an equality impact assessment will be carried out.

11. Legal Implications

- 11.1 Section 89(2) of the Environmental Protection Act 1990 places a duty on Local Authorities in respect of publicly maintainable highways in their area, to ensure that the

highway or road is, so far as is practicable, kept clean – meaning the removal of detritus as well as litter and refuse. The removal of detritus is deemed to be practicable from metalled surfaces only. Weed growth from seeds germinating in moist detritus would therefore be considered as requiring removal by the Council under the Act.

- 11.2 UK law requires operators hold at least NPTC PA1 and PA6 certifications to use glyphosate professionally. Training covers the safe use, storage, and handling of pesticides with emphasis on techniques that minimise use and off-target drift. All staff and contractors who use the product are suitably qualified. The specific PPE requirements are always detailed in the product label.

12. Financial Implications

The financial implications arising from the proposals set out in this report are set out below: -

12.1 Revenue Implications

Current method – use of Glyphosate 4 x applications per year.

| | 2021/22 £000 | 2022/23 £000 | 2023/24 £000 |
|------------------------------|-----------------|-----------------|-----------------|
| Employee costs (see note1) | | | |
| Other running costs | | 51.6 | 52.5 |
| Capital financings costs | | | |
| Expenditure | | 51.6 | 52.5 |
| Income from: | | | |
| Fees and charges (see note2) | | | |
| Grant funding (specify) | | | |
| Other income | | | |
| Total Income | | | |
| Net Cost (+)/saving (-) | | 51.6 | 52.5 |

13. Background papers

- 13.1 There are none.

14. Appendices

- Appendix 1: Location Maps