Transport and Environment Committee

10.00am, Thursday, 5 October 2017

Integrated Weed Control Programme

Item number	7.2
Report number	
Executive/routine	
Wards	All
Council Commitments	

Executive Summary

At its meeting of 1 November 2016, Committee considered a range of alternatives to the use of glyphosate-based herbicides for the control of weeds, and decided to:

- Adopt a policy that seeks to reduce the amount of glyphosate-based herbicide used by the authority to control weeds, limits the use of chemical herbicides only where there is no effective or reasonable alternative, uses the least harmful product and is applied in the safest way using the minimal amount of herbicide.
- Note the intention to develop, implement and report back to the Transport and Environment Committee within twelve months an Integrated Weed Control Programme with achievable targets and objectives for the control of weeds along roadsides, pavements, other hard surfaces, and in parks and other green spaces. This programme to focus on the application of mulches and cultural maintenance, mechanised weed brushes, rippers and path edgers, and electricity, and to include a timetable for the phasing out of the use of glyphosate within the authority and to have alternatives in place.

At the City of Edinburgh Council Committee meeting of 29 June 2017 Council considered the following motion and asked for a report from the Transport and Environment Committee to review full integration of weed removal into the Waste and Cleansing function as part of proposed improvements to street cleaning.

“Council recognises that the current surfeit of weeds and overgrown vegetation on our streets, pavements, footpaths and verges is unacceptable, undermines the fabric of the

city and has not been properly addressed since the ban of the use of glyphosate and that current arrangements to split weed control between Waste and Cleansing and Parks, Greenspace and Cemeteries are under-resourced and have failed to address the problem and that sporadic use of eight gardeners and one soon to be delivered weed stripper is not sufficient.

Council notes that current arrangements do not meet DEFRA's Best Practice Guidance Notes for Integrated and Non-Chemical Amenity Hard Surface Weed Control which state 'local authorities have a duty of care to the public untreated weeds in block paving may create a trip hazard.' and that weed build up is also covered by the Environmental Protection Act.

Council instructs the Director of Place to take immediate action on the recommendations of the report of the Transport and Environment Committee, 1 November 2016, Item 7.3 'Alternatives to the use of glyphosate based herbicide to control weeds on streets and green spaces be revisited' to be put into action within one cycle, particularly targeted on the worst affected areas, including a particular focus on the World Heritage Site ahead of the Festival season.

This Report provides an update to Committee on progress in controlling weed growth across the city and the proposed introduction of an Integrated Weed Control Programme.

Report

Integrated Weed Control Programme

1. Recommendations

1.1 It is recommended that the Transport and Environment Committee:

1.1.1 notes this update on the management of weeds in streets, parks and other public spaces.

1.1.2 notes the draft Integrated Weed Control Programme, in line with the decision taken at its meeting of 1 November 2016.

2. Background

2.1 Within the last six years many residual (i.e. forms a chemical barrier on plant surface for long term control) herbicides have been removed from the Government's approved list of available products. All remaining residual herbicides are water based and require regular application throughout the growing season (usually between March - October).

2.2 Glyphosate is the active ingredient in most licensed herbicides. It prevents plants from making proteins that are needed for plant growth. Glyphosate binds tightly to soil it can persist for up to six months until broken down by bacteria. Pure glyphosate is low in toxicity, but herbicide products usually contain other toxic ingredients that help it to get into plants. Potential symptoms of exposure to these products include nasal, eye, or skin irritation. Pets may also be at risk if they touch or eat plants that are still wet with spray from such products.

2.3 Some studies suggest that glyphosate has carcinogenic potential, whilst others have associated glyphosate use with non-Hodgkin lymphoma and reproductive problems. However, the European Chemicals Agency argues that scientific evidence does not meet the criteria to classify glyphosate as a carcinogen, as a mutagen or as toxic for reproduction. As a result, the European Commission has granted an 18-month extension of its approval of glyphosate and is shortly expected to restart Member State discussions over a renewal of a glyphosate licence.

2.4 Nevertheless, Member States are also advised to follow the rules in the EU's Sustainable Use Directive, including that they must pay particular attention to the

risks in "places such as public parks and gardens, sports and recreation grounds, school grounds and children's playgrounds, and in the close vicinity of healthcare facilities". The directive says that risks from exposure to pesticides are high in these areas and pesticide use should be minimised or prohibited.

2.5 Glyphosate products currently on sale in the UK are authorised until the end of December 2018. Should there be any further delay in the European decision-making process then further extensions would most likely be issued.

2.6 Herbicide application by the Council is carried out by officers trained in National Proficiency Tests Council (NPTC) Certificate of Competence PA1 and PA6 using knapsack sprayers and Controlled Droplet Applicator (CDA) lances. CDA lances significantly reduce the volume of glyphosate used. They produce a controlled droplet which minimises the production of very tiny droplets, which are prone to drift, ensuring that the chemical goes exactly where it is put.

2.7 Glyphosate-based herbicides are ineffective if applied in rain, when rain is imminent or likely within 4-6 hours of application, or when foliage is wet. It can take up to 2-3 weeks for weeds to die back completely, a process that takes longer in cooler weather. Essentially, glyphosate-based herbicides are most effective when applied in dry, warm, wind-free conditions.

2.8 In 2016 the Council's used approximately 4,560 litres of glyphosate-based herbicide. The volume used during 2017 (to the 16 August) is significantly less at 2,710 litres.

2.9 At its meeting of 27 October 2015, the Transport and Environment Committee approved the following motion:

> That earlier this year, the International Agency for Research on Cancer (IARC), an arm of the World Health Organisation (WHO), classified glyphosate as “probably carcinogenic to humans”;
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> That several countries, including Holland, Denmark and Sweden, have banned or restricted the use of glyphosate by local authorities and that some cities, including Chicago and Paris, have voluntarily made their public spaces glyphosate-free;
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> That glyphosate forms the basis of herbicides used by the Council to control weed growth on streets and in parks and green spaces, and that around 4,700 litres of herbicide are applied by the Council each year;
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> That Council officers are already investigating alternatives to the use of glyphosate;
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> This committee believes that:
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> Where substantial evidence of the negative impact of chemicals on human health and the wider environment exists, the Council should pursue the precautionary principle and should seek to utilise other weed control methods where evidence of such negative impacts does not exist;
>
> The Committee therefore agrees:

To continue to investigate alternatives to the use of glyphosate for weed control and undertake at least two pilots to trial alternative weed control strategies, presenting a report to committee within twelve months with options and costs of alternative weed control methods.

To phase out the use of glyphosate by the Council as soon as an effective and cost-effective alternative weed control strategy has been identified.

3. Main report

3.1 Following service transformation during 2016-17 the control of weeds in public spaces became the responsibility of Place Management. The Parks, Greenspace and Cemeteries service applies herbicide to street weeds. The Waste and Cleansing service removes dead weeds and detritus (the usual growth medium) in streets and other hard-surface locations as part of its cleansing operations. Where time and resources permit, the Waste and Cleansing service will also remove weeds that have not yet been treated. This is more likely to take place in 'barrow beat' areas, however this is very labour intensive and re-growth can be vigorous as a result of this approach alone. The Parks, Greenspace and Cemeteries service also controls weeds in public parks, cemeteries, and other green spaces, as required.

3.2 Weeds in parks and other green spaces are now either tolerated, strimmed, manually removed, or suppressed by mulch. Those around many cemetery gravestones are still controlled using glyphosate, usually because of difficulties in strimming around graveside tributes and mementos, and because of the potential damage caused to headstones (which are not Council property).

3.3 Cleansing operatives remove weeds as part of their routine street cleaning duties. However, as non invasive weed control is not a statutory obligation under the Environmental Protection Act and litter removal often takes precedence when prioritising tasks.

3.4 A daily average of eight gardeners have been applying herbicide to street weeds since April 2017. A further two gardeners treat Invasive Non-Native Species (INNS) along the Water of Leith and other water corridors, principally giant hogweed, Japanese knotweed, and Himalayan balsam. In addition, by the end of June, some 469 hours of overtime had been accrued to enable weedkilling during suitably dry evenings and weekends.

3.5 The Water of Leith (INNS) weeds have been treated once this summer, whilst around two-thirds of the city's highways, pavements and streets had been treated. Good progress was made in Edinburgh's driest recorded April, but this was followed by the city's wettest ever June and subsequent damp months. There were twelve days of rainfall in May, nineteen in June, and twenty-two in July, hindering both our ability to treat weeds and the efficacy of the herbicide applied.

3.6 Those streets constructed with setts or block paving are particularly difficult to keep weed-free, as the joints attract both detritus and weed seed that is difficult to

remove. Similarly, cracked and broken paving slabs, curbs and tarmac create excellent growing medium for plants unless regularly repaired. On these surfaces the application of herbicide has been the most effective treatment of these areas, and indeed the manual or mechanical removal of weeds can cause extensive damage that can be extremely expensive to repair.

3.7 Alongside Parks, Greenspace and Cemeteries and Waste and Cleansing, the Place Management division also contains Roads Services. Moving forward road and pavement designs need to consider future maintenance requirements, particularly in relation to litter and weeds.

3.8 In addition to increasingly controlling weed growth using mulches and by manual sweeping/scraping, the Report of 1 November 2016 recommended the use of four pedestrian and four vehicle mounted weed-ripper machines. However, due to budget restrictions only one multi-use pedestrian machine and two tractors with weed brush attachments have been purchased to date. The tractor-mounted machines have not yet been delivered. The Cleansing service has two additional compact mechanical sweepers with weed ripping arms delivered in August. The effectiveness of these machines will be reviewed before any additional units are purchased in advance of Spring 2018.

3.9 An Integrated Weed Control Programme has been drafted (summarised in Appendix 2). This presents a series of actions that will collectively enable the Council to reduce the amount of glyphosate-based herbicide it uses.

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4. Measures of success

4.1 Successful development and implementation of an Integrated Weed Control Programme that sees satisfactory control of weeds and significant reduction in the use of glyphosate-based herbicide by the Council.

5. Financial impact

5.1 The control of weeds across Edinburgh using glyphosate-based herbicide currently costs the Council approximately £200,000 per year. This includes expenditure on chemicals, chemical applicators, training, and operator costs. As application is largely by operator-borne knapsack sprayers and CDA (Controlled Droplet Applicator) lances, capital costs are minimal.

5.2 There is no dedicated budget within the Waste and Cleansing service for weed treatment. However, hand and mechanical removal of weeds is expected of staff in undertaking their street cleansing duties, wherever possible. However manual and mechanical weed removal only removes the visible growth, and regrowth can be vigorous dependent on the of time of year and weather conditions.

5.3 Alternative methods of control require variable levels of operator time, mechanisation generally being the least labour intensive method of control. Additional budget is required for the purchase and maintenance of machinery.

Ultimate costs will be dependent on the number and mix of machines/techniques applied, and will be subject to competitive procurement. It should be noted that, at the time of writing, there is no allocated capital budget to allow for the purchase of additional plant and machinery for weed removal.

5.4 Growth barriers/mulching for parks and trees cost around £15,000 per year. The purchase of one pedestrian and two tractor-mounted weed-rippers has cost £77,066. An estimated additional capital budget of £165,000 is required in order to bring numbers up the full complement of four pedestrian and four tractor-mounted units.

5.5 The Cleansing Service currently has a high reliance upon large mechanical sweepers which can only tackle roads and gullies. As part of the intended transformation of the service there is a desire to reduce reliance on large machinery in favour of smaller, more compact, sweepers with weed ripping attachments that can be deployed on pavements as well. However, these machines effectiveness will be limited to locations where there are little or no on street parking.

5.6 Small mechanical sweepers with weed ripping attachments operated on a four days on four days off shift over seven days per week (with operator costs, fuel, maintenance, consumables (brushes) cost in the region of £87,000 per year per machine.

6. Risk, policy, compliance and governance impact

6.1 There is a risk that alternative approaches to the use of glyphosate-based herbicide will be less effective. Evidence from research and trials has been used to reduce this risk, but trials have only been on a localised basis.

6.2 Financial risk is being controlled by initially purchasing a limited number of weed-ripper machines, and the short-term lease of small mechanical sweepers with weed ripping attachments. Only once their effectiveness has been determined will further purchases/leases be considered.

7. Equalities impact

7.1 Given recent research findings, a reduction in the use of Glyphosate-based herbicide may have a positive impact on both life and health. There are no identified infringements of rights or protected characteristics.

8. Sustainability impact

8.1 The reduction of glyphosate-based herbicides may lesson impact on local ecology. However, greater use of machinery to control weeds means that additional carbon fuels will be consumed.

9. Consultation and engagement

9.1 To date, there has been no public consultation on the report recommendations.

10. Background reading/external references

10.1 Information of the EU Sustainable Use Directive can be found at: http://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides/index_en.htm

10.2 Best practice guidance for non-chemical weed control can be found at: http://www.emr.ac.uk/wp-content/uploads/2015/03/BPWeeds2015web1.pdf

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11. Appendices

1 – Summary of Alternatives to Herbicide

2 - An Integrated Weed Control Programme for the City of Edinburgh

Appendix 1

Summary of Alternatives to Herbicide

1.1 During the spring and summer of 2016 officers identified, investigated and trialled a number of alternatives to glyphosate-based herbicide. Findings for each of those alternatives researched is summarised as follows:

1.1.1 Toleration

1.1.2 Design out problem

1.1.3 Growth barriers (e.g. fabrics, wood mulch and bonded materials)

1.1.4 Cultural maintenance and mechanical tools

1.1.5 Turf edging

1.1.6 Thermal treatment

1.1.7 Electrical treatment

1.1.8 Alternative chemicals and applicators

1.2 The outcomes from each of these potential options are considered in turn:

1.3 Toleration

1.3.1 The principal reason for controlling weeds in amenity areas is aesthetic – areas look neat and tidy. When managing any amenity area the level of toleration needs to be understood. Does an area need to be completely weed-free or can a lower tolerance level be set? The growing popularity of wildflower meadows and less-frequently cut grasslands under the Edinburgh Living Landscape initiative has shown that people's perceptions of attractiveness is changing – with increasing acceptance of more natural and biodiverse landscapes in some locations, notably "countryside" sites such as woodlands, nature reserves, and some walkways and cycleways.

1.4 Design out the problem

1.4.1 A continuous surface cover such as asphalt generally has less weed growth than slab, block or sett paving because the majority of hard surface weed problems occur in cracks and joints where there is a build up of detritus which provides a substrate for weeds to germinate. Many weed problems can therefore be minimised by considering materials that reduce maintenance requirements at the design stage, as well as regularly replacing cracked or broken surfaces, adequately closing joints with appropriate sealant, and frequently sweeping and collecting detritus build-up.

1.4.2 Similarly, the design of new landscaping areas should consider weed maintenance factors. For example, combining wildflower plantings with grass mixtures on road verges can naturally suppress unwanted weed growth, and replacement of formal shrub beds, which have significant weed maintenance demands, with flowering meadow areas.

1.5 Growth barriers

1.5.1 Weed-suppressant fabrics can be laid over recently cleared soil to suppress re-growth of old weeds and prevent new weeds from establishing. However, this will restrict the amount of air and water reaching the soil, and can inhibit soil organism activity. Furthermore, any organic material laid over the barrier, or detritus that forms on top of the barrier, will become a new growth medium. This method is therefore best limited to locations where there is no desire to grow plant material, and should be done in combination with a non-biodegradable “topping” such as gravel.

1.5.2 The use of slow-biodegradable organic mulch such as woodchip and barkchip is a better solution for most formal perennial shrub and flower beds and at the base of trees. However, once applied, it will need to be regularly replenished to an appropriate depth. The Council chips much of its own felled tree material so has a sustainable source of woodchip.

1.6 Cultural maintenance and mechanical tools

1.6.1 Manual weeding and the use of hand tools (e.g. hoes, weed pullers, claws and spinners) can be used in some hard surfaces, but is usually more suited to controlling weeds in shrub and flower beds. However, these methods, although precise, are comparatively labour intensive.

1.6.2 Mechanical weed-ripping machines that use stiff rotating brushes can be used to control weeds on hard surfaces. As well as removing the weeds they also help remove the detritus which forms the seed bed for later growth, and do not leave dying or dead weeds in-situ as with chemical application. They are available in both pedestrian and vehicular formats and are particularly effective on block paving, cobbles and setts. However, pedestrian usage has to be limited due to high vibration levels and potential HAVS (Hand and Arm Vibration Syndrome) implications.

1.7 Turf edging

1.7.1 Only the Council’s botanic gardens currently receive any regular turf edging alongside footpaths and other boundaries, the vast majority of amenity grassland areas having their boundary growth either left unchecked or suppressed by glyphosate herbicides. The use of mechanical edgers would be an effective form of growth control in many locations – notably parks and gardens. However, it should be noted that mechanical edgers cannot be used for any significant periods of time due the high amount of vibration that they impart on staff using them.

1.8 Thermal treatment

1.8.1 Treating weeds with heat destroys plant cells and causes plant proteins to coagulate, disabling normal plant functions. This can kill or weaken weeds. Sources for this thermal action can come from open flame, hot water, steam, hot foam, infrared, or electricity. Weeds vary in their response to heat control. Newly emerged, small, or weeds with small root reserves are more likely to

be killed by heat. Well established weeds, perennial weeds and weeds with substantial root systems recover from heat control. Repeated treatments are therefore often necessary to keep an area free of weeds.

1.8.2 A plant-based foam additive/surfactant (which enhances contact between the spray droplet and the plant by reducing surface tension) can help penetrate and collapse more resistant cell walls. The foaming action also helps the heat surround the target weeds and insulate the area.

1.8.3 The main advantages over glyphosate are that they can be applied in both wet and dry conditions, and do not require operators to have pesticide application certification. The main disadvantage is that the volume of hot water required is such that a suitable vehicle carrying the water-boiler and its fuel is required, as is easy access to street water standpipes, and because root structures are not always killed, application may need to be more frequent.

1.8.4 Flamers are portable gas torches that produce intense heat that quickly boils the water in plant cells, causing them to burst. Again, flaming kills annual weeds, but it doesn't kill the roots of perennial weeds. These will send up new shoots within a week or so after flaming. Additional treatments will eventually deplete the roots' stored energy, and the weeds will die. Propane is typically the fuel used to create the flame. Some flamers attach directly to small propane tanks but have limited operational time, whilst others can attach to larger tanks but require vehicle carriage.

1.8.5 Infrared radiation in combination with hot air is an alternative option. Propane is again required to fuel infrared weed burners, which apply heat via a hooded wheeled-frame. This technology is only useable on paving and other hard surfaces, but does use less fuel than flamers.

1.8.6 All heat treatments may damage materials such as plastic, paintwork, asphalt, and other surfaces. They may also impact on nearby soil micro-flora, desirable plants, tree trunks and surface roots. Foam surfactants may be of concern in sensitive areas, particularly aquatic sites, and flame may become hazardous in extended dry periods.

1.9 Electrical treatment

1.9.1 Electricity is a relatively new weed killing technology. Essentially, electric lances powered by a diesel generator put a high voltage through the plant, destroying cells from stem to root. The generator can be carried on relatively small vehicles or a trolley. Although it can be used on wet ground it should not be used during periods of rainfall.

1.9.2 Given the potential hazards associated with operating a 2500V charged machine, usage is limited to trained operatives and safeguarded by a biometric authorisation system.

1.10 Alternative chemicals and chemical applicators

10.1.1 A number of new herbicide products are being introduced to the market with reduced amounts of hazardous active ingredients. Using these products in combination with a Total Droplet Control system virtually eliminates spray drift and run-off, making it safer for operators, people, animals and the environment.

10.1.2 Where appropriate, suitable herbicide can also be applied to larger, hollow stemmed, non-woody weeds by stem injection, whereby a concentrated dose of herbicide is injected into each plant stem so that it translocates throughout the roots and rhizome of the plant. As stem injection is specific to the target species, the treatment can be completed in all weather conditions and near water. It can be particularly effective at controlling Japanese knotweed, Himalayan balsam and giant hogweed, invasive non-native species particularly prevalent alongside water courses and walkways/cycleways. However, application is also very labour intensive.

10.1.3 As well as glyphosate-based products with improved chemical action and application, there is also the option of non-selective products based on highly concentrated acetic or citric acid. If the product is created by the distillation or freeze evaporation of plant sources it is considered organic. Acetic acid made by synthetic processes is not. Repeat treatments will be required for perennial weeds as the product is non-residual; that is, it is not translocated throughout the plant. It cannot be applied in wet or windy conditions, it cannot be applied via Controlled Droplet Applicator so will spray onto non-target plants/areas, and regular application may increase soil and water acidity/salinity over time.

10.1.4 Salt desiccates plant cells and so can be effective as a weed killer. However, salt will not biodegrade and excess will kill earthworms, soil bacteria, fungi, and other micro-fauna; so regular use is not advised.

1.11 All these methods have their pros and cons, different surfaces, locations and plant materials requiring different solutions. The introduction of a Council policy that seeks to reduce the volume of glyphosate-based herbicides used by the authority to control weeds is therefore recommended, backed up by an Integrated Weed Control Programme that clearly identifies the most suitable approach for weed control specific to roadsides, pavements, other hard surfaces, parks and other green spaces, including water-courses. Areas and features can be zoned to indicate form of control measure and frequency of its application.

1.12 Investigation and tests to date suggest that this programme focus on the increasing application of mulches and cultural maintenance, mechanised weed brushes, rippers and path edgers. Policy, programme and practice should also ensure that where chemical herbicides must still be used, it is carried out using the least-harmful effective product and is applied in the safest way using the minimal amount

of herbicide. Where practical, acetic or citric acid-based products should increasingly be used to substitute for glyphosate-based products.

Appendix 2

An Integrated Weed Control Programme for the City of Edinburgh

Why Required?

Glyphosate based herbicides have, for many years, been used by the City of Edinburgh Council as the principal means to control weeds on hard surfaces (roads, pavements, cycleways civic spaces etc) and landscape areas (flower beds, shrub beds, grass edges, around seating/bins etc). Having considered a range of alternatives the Council has adopted a policy that seeks to limit the application of herbicide to just those locations where there is no effective or reasonable alternative; using the least harmful product applied in the safest way.

The approach to be taken is captured in an Integrated Weed Control Programme, which focuses on greater use of mulches and cultural maintenance, and mechanised weed brushes, rippers and path edgers to achieve acceptable levels of control. It presents a timetable for reduction in the use of glyphosate-based herbicides, but recognises that use will still be required in certain locations and circumstances.

A series of actions are required to deliver the programme, as follows:

Plan …….

- Map the features to be maintained
- Design out the need for weed control
- Agree treatment roles
- Clarify available budgets
- Communicate expectations

Determine Treatments …….

- Confirm treatment types
- Agree treatment standards

Implement Programme …….

- Monitor, record and report performance
- Review and adapt programme
- Ascertain timetable

Map the features to be maintained:

Most weeds needing control are those located on roads; along footpaths, cycleways and walkways; in landscaped beds; and at the base of trees. Mapping these different features on a Geographic Information System (GIS) provides a useful way of understanding the scale of treatment required and the appropriate frequency of treatment.

By zoning areas, problem locations can receive more targeted treatments with more regular monitoring and areas with fewer weed pressures can receive fewer treatments, making the best use of resources. Once mapped, this data should be accessible via the Confirm Connect asset management system so that treatments can be effectively targeted and works monitored.

ACTION 1: Identify and plot trees requiring weed control at their bases (Parks, Greenspace and Cemeteries)

ACTION 2: Identify and plot shrub/flower beds requiring weed control (Parks, Greenspace and Cemeteries)

ACTION 3: Zone weed locations into treatment zones (Parks, Greenspace and Cemeteries, Waste and Cleansing)

ACTION 4: Add data onto Confirm Environmental (Place Management)

Design out the need for weed control:

Many weed problems can be addressed or minimised at the design/construction stage and as part of structural maintenance programmes. The majority of weeds on hard surfaces occur in cracks or joints in the surface, where a build-up of detritus provides an organic medium for seed to germinate. A continuous surface cover such as asphalt generally has less weed growth than slabbed, block or setted paving.

Weed proliferation in landscaped areas can be reduced by the provision and maintenance of weed barriers and mulches, as well as by choice and density of plant material. In general, densely planted shrub or herbaceous beds will ensure fewer incidences of weed growth than sparsely planted annual or fine-leaved bedding.

ACTION 5: Identify cracked and gappy surfaces and prioritise repair or replacement (Roads, Housing)

ACTION 6: Choose plants and increase plant density in landscape beds to maximise cover and reduce opportunities for weed growth (Parks, Greenspace and Cemeteries, Localities, Housing, Planning)

Agree treatment roles:

Waste and Cleansing: Mechanical and manual removal of detritus as part of cleansing duties. Along roadsides, walkways, cycleways, footpaths and other hard surfaces.

Parks, Greenspace and Cemeteries: Barrier and chemical control in landscaped areas. Chemical treatment of weeds on roads, walkways, cycleways, footpaths and other hard surfaces, that is inappropriate for mechanical control.

Roads: Maintaining public highways and pavements, cycleways, and associated structures. Resurfacing/repairing damaged or worn surfaces, including cracks and joints.

Fleet and Workshops: Purchasing/hiring and maintenance of machinery, vehicles and equipment used for the control and treatment of weeds.

ACTION 7: Confirm the operational roles of relevant Council services (Place Management)

Clarify available budgets

The resources needed to control the incidence of unwanted weeds lie principally within the capital and revenue budgets of Place Management. It is important that the required budget allocated for weed control across the service is determined, and the available budget is known. Any differential will influence levels of performance.

ACTION 8: Determine the budgets required of each service to meet treatment needs (Parks, Greenspace and Cemeteries, Waste and Cleansing, Fleet and Workshops)

ACTION 9: Confirm the budgets available to each service to meet treatment needs (Parks, Greenspace and Cemeteries, Waste and Cleansing, Fleet and Workshops)

Communicate expectations

Applying alternative weed control techniques will generate interest from members of the public as integrated weed control will likely result in a more consistent background level of weed coverage than would traditionally have been the case when large volumes of chemicals were applied. Reduced chemical approaches certainly risk a higher level of weeds, unless the frequency of alternative treatment is significant.

Having a weed control policy available in an easily accessible format that clearly details the reasons, benefits, consequences and expected weed growth, and which is communicated via media and social media, should help minimise the number of enquiries received and help to manage customer expectations.

ACTION 10: Draft and communicate the Council's weed control policy (Parks, Greenspace and Cemeteries, Waste and Cleansing)

Confirm treatment types

Each zone will be treated using the information obtained through the mapping exercise, including the number of operations, treatment types, cost and constraints of the surrounding area. Timing will be an important component of the weed control programme. This will require programmes to be conducted at a time that either maximises impact or at

that a time that most efficiently complements other grounds and cleansing operations. Account also needs to be taken of awkward areas, particularly obstruction by parked vehicles and street signage/furniture.

Following the testing of herbicide alternatives during the summer of 2016, including thermal treatment, electrical treatment, the use of alternative chemicals applied via foam, steam or hot water, it was concluded that none of these had the same operational efficacy as glyphosate, and most would be significantly costlier to operate on a city-wide basis. Consequently, it was agreed to support an approach that combined greater use of mulching and strimming in parks and green spaces; greater use of mechanical sweepers/weed-rippers on roads and hard-standing areas; the further consideration of control by electricity in appropriate locations; with herbicides used primarily to target persistent and inaccessible weeds.

ACTION 11: Confirm and communicate the weed treatment types deployed by the Council as these become operational (Place Management)

Agree treatment standards

Prolification of weeds is not a straightforward measure. However, as part of the quarterly Cleanliness Index Monitoring (CIMS)it is noted within the independent surveys carried out by Keep Scotland Beautiful on behalf of the Council.

ACTION 12: Adopt CIMS as the methodology for determining the standard of weed growth in each of the identified zones (Place Management)

Monitor, record and report performance

ACTION 13: Record, monitor and respond to service requests via Confirm Environmental. Use collected data to report performance (Place Management)

Review and adapt programme

Mechanical, chemical and heat/electricity technologies are likely to improve as the weed control industry responds to demands for alternatives to glyphosate-based herbicide. Continuous assessment and review of new products is therefore required.

Given the pressures on current resources there may also be value in investigating if some, or all, of the Council's weed control operations may be more cost-effectively procured under tendered contract.

ACTION 14: Review and assess alternative weed control treatments to maximise efficiency and environmental gains (Place Management)

ACTION 15: Investigate opportunities to procure some, or all, of the weed control programme under contract.

Ascertain timetable

The speed of change from traditional forms of weed control to an Integrated Weed Control Programme will be driven by a number of factors, notably: technological change, available resources (for purchase and operation), legislation, acceptability, and effectiveness of current treatments.

Given current knowledge on the effectiveness of available technologies, available resources, legislation, and acceptable levels of weed growth, the timetable for implementation of actions is estimated as follows:

Year 1 Actions: 1 2 3 7 8 10 14 15

Year 2 Actions: 4 5 6 9 11 12 13

Year 3 Actions: 14