EXECUTIVE SUMMARY:

In support of the vision of becoming Canada’s most sustainable City, Recreation and Leisure Services and Public Works staff have developed a sustainable turf care management plan specific to sports fields and parks. The implementation of the practices in this plan will improve the seasonal longevity and quality of turf on sports fields, promote environmental sustainability, enhance the passive park experience and manage turf care maintenance costs through operational efficiencies.

RECOMMENDATION:

THAT the Arts, Recreation and Community Policies Committee recommend that Council approve the sustainable turf care management plan practices for sport fields described within and in Exhibits A and B to Report No.: ARCP-13-024; and

THAT the Arts, Recreation and Community Policies Committee recommend that Council approve the establishment of pilot turf naturalization areas in 2014 within each of Cloverdale Park, Edenwood Park, Lawrence Park, Meadowbrook Park and Snider Park as shown in Exhibit C to Report No.: ARCP-13-024.
AUTHORIZING SIGNATURES:

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<tr>
<th>ORIGINAL SIGNED BY COMMISSIONER</th>
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<tr>
<td>Lanie Hurdle, Commissioner, Community Services</td>
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<th>ORIGINAL SIGNED BY PRESIDENT &amp; CEO, UTILITIES KINGSTON</th>
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<td>Jim Keech, President and CEO, Utilities Kingston</td>
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<tr>
<td>Gerard Hunt, Chief Administrative Officer</td>
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CONSULTATION WITH THE FOLLOWING COMMISSIONERS:

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<th>Commissioner, Position</th>
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<tbody>
<tr>
<td>Cynthia Beach, Corporate and Strategic Initiatives</td>
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<tr>
<td>Denis Leger, Transportation, Facilities &amp; Emergency Services</td>
<td>N/R</td>
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*(N/R indicates consultation not required)*
OPTIONS/DISCUSSION:

Background
In April 2009, a cosmetic pesticide ban was added as an amendment to the Pesticides Act as part of the Ontario government's plan to reduce public exposure to pesticides. The ban applies to the cosmetic use of pesticides to control weeds and insects in an effort to reduce an unnecessary exposure risk to small children and pets with the understanding that non-toxic alternatives and practices were available. Since that time, municipalities have been exploring changes to turf care management practices on sport fields and in passive park areas. A balance between general turf condition and budgetary restrictions has been more challenging to achieve since the ban in 2009. Improved turf conditions on sport fields benefits users through improved play quality, increased programming hours, safety and aesthetics. Alternate turf practices in passive park areas, such as turf naturalization, can contribute to water runoff control, create wildlife habitat, help manage maintenance costs and improve aesthetics. This report recommends a turf care management plan that will improve the turf condition and playability of the City’s sport fields and implement five (5) turf naturalization pilot projects in passive park areas.

Sustainable Turf Care Management Plan (STCMP)
The STCMP includes best practices and standards for sport field turf management and recommends the implementation of five (5) turf naturalization pilot projects for passive park areas. The City engaged landscape architects Harry Kodors and Ben Tymchyshyn of the MMM Group to conduct a study and establish the terms of a management plan tailored to Kingston’s needs.

Research
The research and consultation undertaken as part of this study was extensive. Research included a complete field condition assessment, technical staff interviews, evaluation of existing City of Kingston turf care management practices, public consultation, surveys and the review of fifteen (15) other municipalities’ turf management best practices.

Kingston’s sport fields turf management budget, in comparison to other municipalities researched, was found to be approximately one third less per hectare and Kingston’s sport user programming hours on fields is considered to be high overall and very high on certain fields. Despite these findings, the assessment found that the sport fields in the City were generally in good condition when compared to the other municipalities researched.

The implementation of turf naturalization programs in passive park areas is occurring in other municipalities researched.

Recommendations for Sport Fields
1. Sport field resting:
   - Sport field resting is a key requirement of a sport turf management program as it allows turf to recover from wear and overuse and to re-establish a structural root zone essential for viability in high traffic areas and drought.
   - Based on the current usage of sport fields, a minimum of 1 to 3 fields annually are recommended to be taken offline from the mid-season onward to allow for a period of
rest and the implementation of a rehabilitation practice including over seeding, topdressing and intensive maintenance practices that would not otherwise be possible at the end of the current programming season.

Note: Staff, in consultation with sport user groups, implemented a trial of this practice in 2013 with successful results.

2. Fertilizing, over seeding and top dressing practices for soccer fields:
   - Grass cutting: continue same frequency as current practice at 1 time per week.
   - Fertilization:
     - Class A (lighted major) fields to have increased fertilizing to 3 times per year - up from 1 time per year.
     - Class B (non-lighted major and medium sized) fields to have increased fertilizing to 2 times per year - up from 1 time per year.
     - Class C (minor) fields to continue same frequency of fertilizing as current practice at 1 time per year.
   - Deep Tyne Aeration:
     - Class A (lighted major) fields to have increased tyne aeration to 3 times per year - up from 1 time per year.
     - Class B (non-lighted major and medium sized) fields to have increased tyne aeration to 2 times per year - up from 1 time per year.
     - Class C (minor) fields to continue same frequency of tyne aeration as current practice at 1 time per year.
   - Topdressing, over seeding and core aeration:
     - Continue same frequency as current practice at 1 time per year.

Note: Staff, in consultation with sport user groups, implemented a phase-in trial of these practices in 2012 and 2013 with successful results. Increased operational cost for the above works was offset through operational efficiencies and by alternate material procurement practices.

3. Fertilizing, over seeding and top dressing practices for ball diamonds:
   - Turf repairs:
     - Increase repairs to all ball diamonds on an as-required basis up from 1 time per year.
     - Class A (lighted major) diamonds to have increased fertilizing and tyne aeration to 2 times per year up from 1 time per year.
   - Tyne aeration: continue same frequency as current practice on Class B (non-lighted major and medium sized) and C (minor) diamonds at 1 time per year.
   - Over seeding: all diamonds to be over seeded 1 time per year up from none.
   - Topdressing and core aeration: continue same frequency as current practice at 1 time per year.
   - Infield grooming (dragging): increase frequency to an as-required basis up from two times per year.


- Mound/infield repairs: continue same frequency as current practice on an as-required basis.

Note: Staff has begun to implement a phase-in trial of these practices with successful results. Increased operational costs for the above works is being offset through operational efficiencies and by alternate material procurement practices.

4. Soil testing:
   - Conduct a full nutrient and soil composition analysis on all fields.
   - Retest every two years.

Note: Staff has begun to implement a phase-in trial of these practices with successful results.

5. Equipment replacement through fleet lifecycle planning:
   - Acquire Weidenmann S-500: dethatcher; aerator (verticut), flail cutter and debris capturer with 3 cubic yard hopper.

6. Irrigation Audits:
   - Bi-annual practice.

Other recommendations for future consideration:
- Alternate sport field user groups to reduce wear patterns on field.
- Evenly distribute sports field usage by increasing number of fields programmed for active play across the City.
- Improve ball diamond infield maintenance: increase inspections and maintenance.
- Investigate applicability of a central irrigation system: centralized computer and control system for all fields.
- Invest in staff training and education: equipment operation, soil analysis, irrigation management, etc.
- Increase use of portable goal posts for rectangular fields with alternating field layout marking to rotate heavy wear patterns at goal creases and center field locations.

Recommendations for Turf Naturalization in Passive Park Areas
MMM Group’s best practice review of other municipalities found that turf naturalization in passive park areas is occurring while the approach is varied between communities. Some of the researched municipalities referenced an ad-hoc approach to turf naturalization projects and some had more specific examples of implementation. Formal turf naturalization policies and detailed implementation standards were absent in some municipalities and others had more consistent approaches. The STCMP recommends turf naturalizing in passive park areas as a method that can contribute to water runoff control, create wildlife habitat, restore and increase natural areas, improve aesthetics and help manage maintenance costs.
1. Turf naturalization practice:
   - The provision of a 10 to 25% naturalization area should be targeted where feasible in consideration of park configuration, intensity of use and programming.
   - Prioritize turf naturalization areas for parks adjacent to watercourses and woodlots.
   - Prioritize turf naturalization areas in low use locations not otherwise suitable for active or passive recreation functions.
   - Naturalization areas should be demarked and legible to park users such as through signage, defined mown edges and low post markers.
   - Naturalization areas should be inspected and maintained for debris and noxious weeds on a frequency similar to mown park areas.
   - Naturalized turf should be maintained by flail cutting on a seasonal basis. Alternate occasional as-needed practices such as over seeding, controlled burning and drainage management should be implemented where feasible.

2. Turf Naturalization Pilot Projects
   - Managed naturalized turf pilot project areas would be injection seeded with a conservation blend meadow grass mixture. The areas would be signed, demarked with an edge control that may include cedar posts and a mowing strip adjacent to residential homes. The areas would be maintained on a seasonal basis thus reducing grass cutting and adding year round visual texture to the park landscape. Preferred candidate sites for turf naturalization strategy include passive areas in parks that are larger than 0.5 hectares that:
     - are not programmed for active use/play or accommodate significant passive use
     - are adjacent to natural areas or watercourses
     - contain steeper slopes such as 3:1 or 2:1
     - contain turf areas that are not easily maintained by mowing (eg. low-lying areas, rocky terrain)
   - Staff proposed 27 parks as candidate sites for turf naturalization areas. The community was consulted and discussion regarding local park usage patterns and the merit of turf naturalization in the below parks was hosted:
   - Feedback resulting from public meetings on March 4th and 6th indicated a preference for the development of turf naturalization areas in the following five (5) parks:
     - Cloverdale Park, Edenwood Park, Lawrence Park, Meadowbrook Park and Snider Park
   - Following the March public consultation, the five (5) preferred sites were proposed to
be developed into turf naturalization pilot projects and circulated, by notice, to adjacent
property owners including a summary of the process, the proposed program and a park
plan showing the area in their park proposed to be naturalized.

- Feedback was supportive of the proposal and it is recommended that the five (5)
sites be developed into naturalized turf areas in 2014 in collaboration with Parks
Development and Public Works.
- The pilot sites would be monitored and evaluated for 3 years following their first
season of establishment.
- Should the projects be considered successful they would continue as permanent
naturalized turf areas.
- Staff should explore future opportunities for the development of naturalized turf
in passive park areas of newly constructed parks and during park revitalization
projects.

EXISTING POLICY/BY LAW:
N/A

NOTICE PROVISIONS:
Over the course of the sustainable turf care management plan study, sports field user groups
were surveyed, met with staff and consultants to provide input and feedback.

Advertisement for public meetings for the passive park area naturalization pilot projects were
placed in the Whig Standard on February 12th and 19th and were held on March 2nd and 4th. All
property owners adjacent to the 27 parks identified as candidates for naturalization were sent
notices of the meetings including a summary of the proposed program and a park plan showing
areas in their park for naturalizing. Based on feedback resulting from the public meetings, the five
(5) recommended sites were circulated by notice to adjacent property owners including a
summary of the process, the proposed program and a park plan showing the area in their park for
naturalizing.

ACCESSIBILITY CONSIDERATIONS:
All public sessions adhered to the accessibility requirements for public meetings.

This report is available in alternate formats upon request.

FINANCIAL CONSIDERATIONS:
The proposed turf care practices for sport fields have been accommodated within existing budgets
through operational efficiencies. The implementation of the proposed turf naturalization pilot
projects can be accommodated within the 2014 capital budget.

CONTACTS:
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Neal Unsworth, Manager, Parks Development 613-546-4291 ext. 1811
Kristine Hebert, Parks & Open Space Planning Coordinator 613-546-4291 ext. 1256
OTHER CITY OF KINGSTON STAFF CONSULTED:
Luke Follwell, Acting Director, Recreation and Leisure Services
Troy Stubinski, Manager, Public Works
David Swinton, Supervisor, Public Works
Wayne Freeman, Supervisor, Public Works
Darrin Richmond, Supervisor, Public Works

EXHIBITS ATTACHED:
Exhibit A  Turf Care for Rectangular Sports Fields
Exhibit B  Turf Care for Baseball Diamonds
Exhibit C  Park Plans Pilot Naturalization Areas
Exhibit D  Sustainable Turf Care Management Plan - Public Presentation March 2013
# Exhibit A - Turf Care for Rectangular Sports Fields

<table>
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<th>AERATE (CORE)</th>
<th>TOPDRESSING</th>
<th>OVER SEEDING</th>
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## Previous Practices

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- 1 per year
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### Class B
- 1 per 7 days
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### Class C
- 1 per 7 days
- 1 per year
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## Recommended Practices (Phased in Trial for 2012 and 2013)

### Class A
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- 3 per year
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- 1 per year
- 1 per year
- 1 per year
- As required

### Class B
- 1 per 7 days
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### Class C
- 1 per 7 days
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- As required
# Exhibit B - Turf Care for Baseball Diamonds

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## Previous Practices

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## Recommended Practices (Phased in Trial for 2012 and 2013)

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CLOVERDALE PARK
NATURALIZATION
PILOT PROJECT

LEGEND
- PATHWAY / PARK TRAIL
- PARK BOUNDARY
- NATURALIZATION BOUNDARY
- CEDAR POST (20m ON CENTRE)

PARK AREA = 66,000 sm
NATURALIZATION AREA = 1,995 sm

1995 sq m

CITY OF KINGSTON
TURF CARE
MANAGEMENT PLAN
2013

Exhibit C

CITY OF KINGSTON
TURF CARE
MANAGEMENT PLAN
2013

Exhibit C
EDENWOOD NATURALIZATION PILOT PROJECT

2500 sq m

CITY OF KINGSTON TURF CARE MANAGEMENT PLAN 2013

LEGEND
- PATHWAY / PARK TRAIL
- PARK BOUNDARY
- NATURALIZATION BOUNDARY
- CEDAR POST (20m ON CENTRE)

PARK AREA = 45,000 sm
NATURALIZATION AREA = 2,500 sm
600 sq m

LEGEND
- Yellow: Pathway / Park Trail
- Red: Park Boundary
- Naturalization Boundary
- Cedar Post - 20m on Centre

PARK AREA = 49,000 sq m
NATURALIZATION AREA = 600 sq m

SCALE 1:2000 (m)
MEADOWBROOK PARK NATURALIZATION PILOT PROJECT

LEGEND
- **PATHWAY / PARK TRAIL**
- **PARK BOUNDARY**
- **NATURALIZATION BOUNDARY**
- **CEDAR POST (20m ON CENTRE)**

PARK AREA = 15,000 sq m
NATURALIZATION AREA = 5,300 sq m
EXISTING

5,370 sq m

PARK AREA = 26,000 sm
NATURALIZATION AREA = 5,370 sm

LEGEND
PATHWAY / PARK TRAIL
PARK BOUNDARY
NATURALIZATION BOUNDARY
CEDAR POST - 20m ON CENTRE

CITY OF KINGSTON TURF CARE MANAGEMENT PLAN 2013
SNIDER PARK NATURALIZATION PILOT PROJECT

PARK AREA = 26,000 sm
NATURALIZATION AREA = 5,370 sm

35

MMG GROUP
Sustainable Turf Care Management Plan

A strategy to promote increased environmental sustainability and enhance the park experience for sport and passive use.
Sustainable Turf Care Management Plan

1. Overview

2. Inventory and Research by MMM Group Ltd.

3. Active Sports Turf
   - Best Practices Other Municipalities
   - Recommended Practices
   - Soccer Fields Comparison
   - Ball Diamonds Comparison
   - Future Considerations

4. Parks and Open Space
   - Best Practices Other Municipalities
   - Potential Naturalization Recommendations
   - Naturalization in Park Design - Examples
   - Potential Future Candidate Sites - Naturalization Pilot Projects

5. Discussion
1.0 Overview

Why do a Sustainable Turfcare Plan?

- To improve longevity and quality of our sport fields.
- To improve biodiversity in parks with naturalization areas.
- To contribute to a reduction in greenhouse gases.
- To undertake practices and programs that provide more efficient, effective & sustainable maintenance and operational practices in parks and sport fields.
- To balance environmental sustainability through turf maintenance practices.
2.0  Inventory and Research by MMM Group Ltd.

Inventory:
Evaluation of each park and sports field was conducted. Park and sports field usage was considered and turf condition was assessed.

Research:
- Field investigations
- Staff interviews
- Current and historical practices
- Sport user interviews
- Review of best practices – other municipalities

Viability of historic and current turf care practices assessed and recommendations for future improvements established.

Recommendations identify sustainable turf management practices for sports fields and a potential naturalization program for passive park areas.
3.0 Best Practices Other Municipalities - Active Sports Turf:

- 15 other municipality best practices were reviewed. Municipalities researched were similar in size or larger than Kingston.

- Many municipalities are using sports turf management best practices as an approach to balance the quality of sports field turf against programming demand and budget.

- Following a cosmetic pesticide ban in 2009, Ontario municipalities are increasing maintenance practices and initiating field resting programs to improve sports turf.

- Active sports turf management employs specific recommendations to balance field playing time against maintenance practices. Poor turf condition results in loss of playing time, decline in turf health and increased maintenance costs over the long term.
3.0 Recommended Practices - Active Sports Turf

1. Sports Field Resting - A Key Practice - Starting 2013
   • Sports field resting allows turf to recover from use and wear.
   • Provides extended growth period for over seeding, topdressing and permits specialized intensive maintenance practices.
   • Based on current usage, up to three fields each year be taken offline mid-season.

2. Improved Seasonal Maintenance Practices – During Study Period (2012) the Following Recommendations Initiated

   All Fields: Fertilizer nutrient optimized and increased.
   Soccer: Fertilizing and Tyne Aeration - Class A fields - three times per year, up from one time.
           Fertilizing and Tyne Aeration - Class B fields - two times per year, up from one time.
           Field repairs - minimum one time per year or as required, up from one time.

   Ball Diamonds: Fertilizing and Tyne Aeration - Class A diamonds – two times per year, up from one time.
                   Over seeding – one time per year, up from zero.
                   Diamond dragging - minimum two times per week or as required, up from two times.

3. Soil testing - Starting 2013
   • Conduct nutrient and soil composition (sand/silt/clay) analysis on fields every two years.

4. Equipment Replacement – Planned 2013
   • Weidenmann S-500 – multifunctional turf maintenance
   • Modernize current equipment through fleet lifecycle planning – aerators, top dresser and seeder

5. Irrigation Audits – Starting 2013
   • One time per two years, up from zero.
### Active Sports Turf Comparison

#### Previous Practices

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#### Recommended Practices (in practice for 2012 season)

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#### Previous Practices

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#### Recommended Practices (in practice for 2012 season)

<table>
<thead>
<tr>
<th>Class</th>
<th>Grading</th>
<th>Mowing</th>
<th>Fertilising</th>
<th>Aerate (TYNE)</th>
<th>Aerate (Core)</th>
<th>Topdressing</th>
<th>Over Seeding</th>
<th>Diamond Dragging</th>
<th>Mound Repairs</th>
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<td>Class A</td>
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The SUPER 500 is compact, rugged and multifunctional. Park grounds, recreational areas, extensively maintained areas, ecological meadows, sports fields are its ‘home turf’. It sweeps, aerates by vertical cutting, mows, flail cuts long turf and collects grass, leaves and debris in 3 cubic yard hopper.
3.0 Future Considerations - Active Sports Turf

1. Diversify sports field use and reduce wear patterns – rotate practice use with game use, alternate sport user groups and alternate programming types by age and sport – initial trials occurring in 2012/2013.

2. Distribution of sports field usage and reduce concentrations of use.

3. Infield diamond maintenance - sod edging one time per year, interim grading for low areas as required.

4. Increased staff education and training – turf science, practices and new equipment.

5. Portable nets for soccer fields – reduce wear patterns at goal mouths and centre fields.
4.0 Best Practices Other Municipalities - Parks and Open Space

- Prudent avoidance of pesticides and herbicides (with exception for noxious weeds).
- Use of ‘green’ vehicle fleets.
- Renewable horticultural products such as compost, and wood chips recycled from yard waste programs.
- Planting of drought tolerant and native plant species.
- Encouraging naturalization projects within parks and open space areas.
- Alternate mowing regimes to promote and support naturalization – reduction of greenhouse gas emissions
- Promote naturalization in a variety of forms – low maintenance turf areas, buffer areas for woodlots, streams and storm water ponds as well as intensive naturalization planting areas
1. **Naturalization Pilot Projects**
   - Based on early feedback on proposed turf naturalization areas of 27 parks, pilot projects are only recommended to be established in some of the candidate sites. Pilot site(s) to be determined based on community feedback and impact/benefit assessment. Long term effectiveness of the pilot sites will be evaluated and public interest considered.

2. **Provide dedicated areas of naturalized turf and grassland meadow where possible – target 10% to 25% depending on park configuration and programming.**
   - Candidate parks should have a minimum area of 0.5 hectares and naturalization opportunities should meet one or more of the following site criteria:
     - park areas that are not actively programmed.
     - park areas that could provide buffer to adjacent natural areas such as wetlands and woodlots.
     - park areas adjacent to watercourses and storm ponds.
     - park areas with slopes steeper than 3 in 1.
     - park areas with open space that cannot easily be maintained (low lying areas, areas with natural obstructions - rocky terrain, tree stumps)
3. Prioritize turf naturalization efforts for parks adjacent to watercourses and woodlots.
   • Naturalization can act as buffering and aid in protecting sensitive natural park amenities.

4. Develop and maintained naturalized areas as a valued park amenity.
   • Well designed turf naturalization - minimal impact on park use, creates visual interest, increased seasonal colour and sensory experience, increased wildlife habitat (birds and pollinating insects), reduced downstream erosion and the protection of sensitive areas from active park use.

   • Well constructed turf naturalization – crops existing turf, scarifies thatch and soil, injects conservation grass seed blends, delineates natural areas with layout markers and signage and removes invasive species through establishment.

   • Well maintained turf naturalization - seasonal mowing during plant seeding to assist in continual propagation of the turf, seasonal mowing to maintain tidy appearance / eliminate woody plant material from establishing and the removal of litter, debris and noxious weeds if needed.
4.0 Naturalization in Park Design - Examples - Parks and Open Space

Regional parks: (< 5 hectares)
These are recreation areas that attract patrons from the wider regional area and may include multiple functions on a property.

City-wide parks: (1 hectare – 5 hectares)
These parks attract patrons from a wide area across the municipality and may be designed for multi-purposes or specialized functions, including civic and cultural activities and recreational and social functions.
4.0 Naturalization in Park Design - Examples - Parks and Open Space

District parks and playfields: (1–5 hectares) These serving a number of neighbourhoods, provide for a variety of outdoor or indoor facilities for sports, recreation and community centre uses.

Neighbourhood parks: (¼ – 1 hectare) Accommodate a range of more informal recreational, leisure and play activities, frequently oriented to children’s facilities.
Typical Pilot Program

Based on early feedback on proposed turf naturalization, pilot projects are recommended to be established in some of the candidate parks. Pilot site(s) to be determined based on community feedback and impact/benefit assessment. Effectiveness of the pilot sites will be evaluated and public interest considered.
5.0 Discussion

Help us define Kingston’s sustainable future by sharing your ideas and thoughts.

Neal Unsworth, Manager, Parks Development, Recreation and Leisure Services
Kristine Hebert, Parks/Open Space Planning Coordinator, Parks Development
Wally Ferris, Director, Recreation and Leisure Services
Damon Wells, Director, Public Works
Troy Stubinski, Manager, Operations, Public Works

Feedback will be recorded. Additional feedback to be provided to Kristine Hebert at 613-546-4291 ext. 1256 or by email to KHEBERT@cityofkingston.ca.

Thank You!