COMMUNITY VISION & STRATEGIC PLAN OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>We Thrive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>Develop and maintain effective infrastructure connections that support economic and social development.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>We Connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3</td>
<td>Provide infrastructure and resources that promote a healthy environment and improve social development.</td>
</tr>
</tbody>
</table>

PURPOSE

Council resolved to commission “an independent review of the Parks, Gardens & Maintenance Contract.”

The purpose of this report is to communicate findings and provide a recommendation to Council for the ongoing management of recreational space within the Port Augusta Community.

RECOMMENDATION

That Council:

1. In consideration of the independent report highlighting long-term under investment in recreational space the Parks, Gardens & Footpath Maintenance Contract Review proceed incrementally.

2. Commission a technical specification detailing a costed program of remedial work and seasonal maintenance activities for recreational space.

BACKGROUND

In 2011 a contract was awarded for the Parks, Gardens and Footpath Maintenance. The current contract represents expenditure of $453,093.72 per annum with annual CPI adjustment.
The scope includes areas that can be described as green space and non-irrigated areas under Council control. Specifically, the contract requires mowing of sporting ovals and passive recreational areas (parks and playgrounds), median strip areas, and weed control in cemeteries, walkways, cul-de-sacs, and road reserves.

The service frequency and standard is established by way of categorising and prioritising the various community spaces based on use, location, and profile. Irrigation, turf hygiene, maintenance, and fertiliser regimes are not included in the scope of the agreement.

Sports and recreational space in Port Augusta represents approximately 20 hectares of turf. In addition, the contract scope includes weed control of median strips, walkways, and footpaths.

Living Turf, a national Turf Management company with industry experience and expertise in providing consultancy and expert advice to golf courses, sports fields, and open space operations, were engaged to undertake a review of the Parks, Gardens, and Footpath Maintenance contract as per Council Resolution (reference AR17/38193).

**DISCUSSION**

**Technical review**

The key finding from the independent report is that "the existing maintenance contract does not adequately reflect the needs of turf surfaces." The contract was found to be inadequate in its detail and open to interpretation by either party. There appears to be inconsistencies in the maintenance guidelines at times, and responsibility for certain outcomes is unclear, and when combined with the inability for the contractor to be supervised adequately on behalf of PACC, substandard outcomes are observed in a number of turf areas.

The existing contract classifies areas based on significance, location, and use. The standard then translates to a mowing outcome based on turf/grass height. For example, Gladstone Square is a 'high profile parkland' and therefore requires the contractor to maintain the site to standard 4.

Standard 4 simply refers to turf height and minimum frequency over a 12-month period. The contract does not have any requirement to address overall turf health. Therefore if the mowing frequency and height is being met, the contractor has fulfilled the obligations of the contract, however, the overall quality of the space is poor as it fails to address all aspects associated with healthy turf.

Reasons cited for poor standard include, but not limited to the following:

- Inadequate specification
- Limited resources within PACC to supervise maintenance standards
- Specific turf management focus
- Irrigation efficiency
- Travel time between sites
- Conflict with landscape planting
- Assorted hardware
- Public access

The key recommendations contained within the report are as follows:

- Clarify roles and responsibilities of internal staff and contractors
CONFIDENTIAL

• Revise site classifications and simplify management
• Implement fertility and pest control programs
• Implement landscape design parameters
• Reduce turf areas

It is evident that the scope of the agreement, resource allocation and existing infrastructure and design are the contributing factor to turf quality rather than the resource model. It is therefore necessary to address the technical gap in turf management practices prior to resolving the resource model.

Establishing turf maintenance and inspection regimes provides a quality framework tailored to local conditions. A programmed approach allows for clear allocation of tasks, predictability in cash flow, and has a focus on prevention which is key to sound asset management practices.

The conditions and challenges for the management of open space is not only related to the arid environment and soil type it extends to the existing irrigation infrastructure, use of treated water and lack of redundancy within the system.

It is therefore recommended that Council seek suitable technical advice and implement the recommendations that address role clarity and turf management including but not limited to revising site classifications and therefore service standards, development of a tailored turf maintenance plan detailing seasonal routine and non-routine activities, approach to mowing, nourishing, pest control, inspection and testing requirements.

The technical report is critical to targeted and tailored proactive management of turf in line with industry standards and intended use of the various spaces. The recommendation is therefore to firstly address the technical aspects and gaps in current practices in order to quantify the financial impact to Council of increasing the amenity and quality of existing open space.

CONFIDENTIALITY PROVISIONS

The Council is satisfied that, pursuant to Section 90(3)(b) of the Act, the information to be received, discussed or considered in relation to this Agenda Item is information the disclosure of which could reasonably be expected to confer a commercial advantage on a person with whom the Council is proposing to conduct business, and the information would prejudice the commercial position of the Council, in that the Council is currently undertaking a review of its Parks, Gardens and Footpath Maintenance contract and the information outlines options that may be considered by Council to achieve a positive outcome for the benefit of the community and a process that achieves value for money in regard to this activity.

The information to be considered in relation to this agenda item will outline the current value of the contract and other options moving forward for the provisions of the Parks, Gardens and Footpath Maintenance contract. It is considered that the open discussion in relation to these options including financial information, the disclosure of which would prejudice the Council’s commercial position in the review process should to considered under confidential provisions.

In addition, the disclosure of this information would, on balance, be contrary to the public interest. The public interest in public access to the meeting has been balanced against the public interest in the continued non-disclosure of the information. The benefit to the public at large resulting from withholding the information outweighs the benefit to it of disclosure of the information. The Council is satisfied that the principle that the meeting be conducted in a place open to the public has been outweighed in the circumstances because the disclosure of Council’s commercial position may severely
prejudice Council’s ability to be able to negotiate a cost-effective proposal for the benefit of the Council and the community in this matter and in relation to other contract negotiations.

Having considered this agenda item in confidence under Section 90(2) and (3)(b) of the Local Government Act 1999, the Council, pursuant to Section 91(7) of that Act orders that report, discussions & minutes be retained in confidence until a Parks, Gardens and Footpath Maintenance Contract has been executed or another option has been approved by Council; and that this order by reviewed every 12 months.

RISK MANAGEMENT

1: Financial/Budget/Asset Management

A budget estimate to review classification of recreational spaces and development of seasonal maintenance plans has indicated an investment of $4,000 is required. Final costing will be subject to a procurement process and funded from within the existing budget under the established delegation framework.

2: Legal/Policy

Council policy 1.1.09 Purchasing and Tendering is silent in respect to the practice of extending contracts however it is not considered best practice to engage in multiple contract extensions.

It is therefore necessary to be mindful of time required to undertake a comprehensive procurement process and the September 2019 expiry date of the current agreement.

3: Environment/Planning

Not applicable

4: Community

4.1 General
Not applicable.

4.2 Aboriginal Community Consultation
Not applicable

SUZANNE McKELL
11/01/2019
1. INTRODUCTION

The Port Augusta City Council (PACC) has engaged Living Turf to undertake a review of the parks and gardens maintenance operations that currently service the variety of grassed areas within the Council precinct.

This review aims to identify opportunities to improve maintenance efficiency as well as improve standards where possible to ensure “fit for purpose” facilities are provided, and takes into consideration the likely additional provision of open space areas within the Council precinct.
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2. EXECUTIVE SUMMARY

There are significant opportunities to improve the efficiency of maintenance operations and quality of outcomes within the PACC.

The existing maintenance contract does not adequately reflect the needs of turf surfaces, in particular those associated with organized sport. At times, the existing contract seems contradictory in its specification of mowing frequency for various sites, with sporting fields appearing to be allocated less frequency of mowing than passive reserves, despite the need to provide fit for purpose conditions that should consider player safety and surface playability.

The existing contract is delivering lower than desirable maintenance standards for a number of reasons, including but not limited to;

- Inadequate specification
- Limited resources within PACC to supervise maintenance standards
- Specific turf management focus
- Irrigation efficiency
- Travel time between sites
- Conflict with landscape planting
- Assorted hardware
- Public access

Key recommendations of this review of the existing maintenance contract include;

- Clarify roles and responsibilities of PACC and contractors
- Revise site classifications and simplify management prioritization
- Revise mowing frequency by site classification
- Implement fertility and pest control programs for sports sites and generally for passive sites
- Implementing landscape design parameters
- Reducing turf areas to practical, functional spaces that are efficient to maintain to a suitable standard
3. BACKGROUND

Parks and green space form a significant portion of the land under the control of the PACC, and play a significant role in the health and welfare of the communities that interact with them.

A key driver for this review has been the desire to determine if maintenance standards for turf areas are equivalent to other local government precincts, and if maintenance is in line with industry best practice.

Within the PACC precinct it is estimated there are approximately 20ha of sports and recreation turf, and an unknown area of median strips, walkways, footpaths and the like. These areas include major sporting fields:

- Central Oval 2.51ha
- Chinnery Park Oval 1.62ha
- ETS A Oval 1.8ha
- Braddock Oval 1.54ha

Figure 1 - Overview of PACC region
Area classification

The following table outlines the classification of each space and the standards applicable.

CLASSIFICATION OF AREAS:

The current scope relates to mowing of turf, grass areas, footpaths, walkways, cul-de-sacs and traffic islands. Scope also includes 2 of the 3 cemeteries and council owned carparks.

The object is stated as "maintain turf and grass height levels within the areas at acceptable parameters and provide a manageable regime of control that produces a consistent standard, making the areas suitable for appropriate sporting and recreational activities."

The current agreement sets out 8 standards which is used for classifying each space and the required outcomes.

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>As per contract description</th>
<th>Notes / Example locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 1</td>
<td>Recreational areas, Sports Fields (Central Oval, Chinemory Oval &amp; ETSA Oval)</td>
<td>Central Oval – sports field area Chinemory – sports field area</td>
</tr>
<tr>
<td>Standard 2</td>
<td>Recreations areas, Sports Fields (Stirling North Primary School, Flinders View Primary school and Braddock Oval)</td>
<td>Note that Stirling and Flinders View recently removed from scope. Braddock Oval – sports field area</td>
</tr>
<tr>
<td>Standard 3</td>
<td>Passive recreational areas (excluding sports fields). High profile parklands with elements of cultural or aesthetic values.</td>
<td>Bert McKenzie Park – grassed area</td>
</tr>
<tr>
<td>Standard 4</td>
<td>Passive recreational areas (excluding sports fields high profile parklands with elements of cultural or aesthetic values). High profile Parklands.</td>
<td>Apex Park – grassed area Pastoral Lawn Water tower</td>
</tr>
<tr>
<td>Standard 5</td>
<td>Nature areas</td>
<td>Apex Park – non grassed area Westside beach area</td>
</tr>
<tr>
<td>Standard 6</td>
<td>Medians and other unwatered areas</td>
<td>Braddock Oval – extremities Central Oval – unwatered areas within perimeter of complex</td>
</tr>
<tr>
<td>Standard 7</td>
<td>Weed Control, Cemeteries, Footpaths, Walkways and cul-de-sacs</td>
<td></td>
</tr>
<tr>
<td>Standard 8</td>
<td>Weed Control Road Reserves</td>
<td></td>
</tr>
</tbody>
</table>
While reviewing mowing operations with staff members, it was revealed areas were grouped into the following broad function categories:

- Passive
- Active
- Botanic Gardens
- Structured sports facility
- Passive footpath network
- Public boat ramp
- Road verge
- Laneway
- Foreshore
- Network link
- Walkway
- Tourism
- Civic
- Open space/play space
- Stormwater catchment
- Road reserve
- Drainage easement
- Buffer
- Traffic island
- Horse stables
- Cemetery
- Education
- Undeveloped

Within these categories, areas were then classified by their hierarchy, which effectively reflects each sites’ range of influence.

- Regional
- District
- Neighbourhood
- Local
- Ancillary
- Undeveloped
4. OBSERVATIONS AND FINDINGS

4 (a) Staff feedback

An initial meeting with senior staff was conducted to gain some insight to existing operations and opportunities for improvement. This was a valuable exercise with the following key points identified;

- Turf management was not able to be a focus under the existing structure
- Typically a three-week period at the end of football season is assigned to turf “maintenance” on sports fields, generally focusing on turf replacement and repairs following football season
- Minimal turf maintenance work is undertaken in parks
- Repeated, annual turf replacement in same areas is frustrating
- Poor standard turf outcomes were resulting
- There is a lack of turf specific knowledge within the PACC team
- Regular criticism of sporting field conditions in particular affects staff morale
- Unclear as to responsibilities for maintaining edges, implementing weed/pest control, or reporting irrigation faults or other problems
- Limited opportunity for maintenance standards to be supervised due to other requirements of staff time (e.g. tree maintenance, water treatment plant, projects, administration etc.)
- Outsourcing of water treatment plant operations would free up existing staff to focus on turf management more consistently and utilize existing skill set more appropriately
- Lack of clarity as to variations from existing contract that have been implemented or absorbed
- Irrigation maintenance is well behind with generally only repairs attended to
- There are opportunities to implement alternative landscape features that could reduce irrigation and mowing demands

This meeting illustrated a genuine desire to improve turf management practices throughout PACC to improve quality outcomes and improve long term maintenance efficiency.
4 (b) Existing conditions

A review of a cross section of sporting fields and parks was undertaken with PACC staff and independently, with the following observations made:

Sporting fields
- conditions were fair to poor for their intended use
- a number of areas considered unsatisfactory due to poor surface levels and inconsistent grass coverage
- weed and mite infestations were excessive in some cases
- there was evidence of poor irrigation performance/coverage
- subsurface irrigation was delivering unsuitable results where utilized and being replaced with pop up irrigation where possible
- mowing frequency and fertility appeared to be inadequate based on turf density and quality
- soil compaction was evident

Parks (Irrigated)
- conditions ranged from very good to very poor for their intended use
- a number of areas considered unsatisfactory due to poor surface levels and inconsistent grass coverage
- weed and mite infestations were excessive in some cases
- there was evidence of poor irrigation performance/coverage
- subsurface irrigation was delivering unsuitable results where utilized and being replaced with pop up irrigation where possible
- irrigation being applied to some areas not able to sustain turf coverage due to landscape competition, soil conditions, topography or excessive traffic
- mowing frequency and fertility generally appeared to be adequate based on turf density and quality
- soil compaction was evident, and usually worse in areas of subsurface irrigation
- turf areas were often compromised by competition from landscape planting
- evidence of maintenance efficiency being compromised by landscape planting and hardware placement
- evidence of irrigation failures not being addressed for some time
Parks (unirrigated)

- conditions ranged from good to poor for their intended use
- weed infestations were excessive in some cases, and adjacent to irrigated turf parks
  - mowing often only required to reduce weed growth rather than any desirable grass species
  - due to the above, mowing frequency often appeared inadequate to achieve desired outcomes with weed growth excessive
- mowing of area often presented safety issues due to proximity to roads and public access areas
- evidence of maintenance efficiency being compromised by landscape planting, hardware placement and vehicle/public access
- excessive areas being mown that served no functional purpose
4 (c) Existing resources

The existing Parks Maintenance team comprising thirteen staff members, and are complimented by contracting staff;

<table>
<thead>
<tr>
<th>Source</th>
<th>Allocation</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>PACC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field staff - 7</td>
<td>8 x tree crew</td>
<td>Tree maintenance</td>
</tr>
<tr>
<td>1 x turf qualified</td>
<td>8 x parks crew</td>
<td>Planting, slashing, spraying, drainage etc.</td>
</tr>
<tr>
<td>3 x horticulture qualified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations staff - 6</td>
<td>2 x Leading hands</td>
<td>Estimated 75% administration</td>
</tr>
<tr>
<td></td>
<td>1 x Cemeteries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 x Water truck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:1.5 x Waste water treatment plant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 x Irrigation</td>
<td></td>
</tr>
<tr>
<td>Contractor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field staff – 4.5</td>
<td>1 x Owner operator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 x full time employees</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 x maintenance worker/mechanic</td>
<td></td>
</tr>
<tr>
<td>Administration/other</td>
<td>1 x Support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 x on call boiler maker (repairs)</td>
<td></td>
</tr>
</tbody>
</table>

PACC turf maintenance equipment is understood to be limited to;

- 1 x Aerovator – a machine used to provide shallow (75-100mm) soil compaction relief
  - Selected due to the prominence of sub surface irrigation which limits the depth of compaction relief that can be achieved
- 1 x boom spray with tractor
Contractor turf maintenance equipment is understood to include:

- 2 x Tippers
- 2 x Reelmaster cylinder mowers
- 3 x Walker ride on mowers
- 3 x Z tracks
- 2 x tip trucks
- 1 x ute with spray unit
- Tractor and slasher
- 1145 John Deere
- 2 x trailers
- Spray unit
- Line trimmers, blowers and assorted hand tools

Between the PACC and Contractor resources, there is a shortfall in specialized equipment to undertake routine maintenance practices such as deep soil compaction relief, hollow tining, top dressing, and over sowing.
4 (d) Existing contract

The Parks, Gardens and Footpath Maintenance Contract has been reviewed and is found to be inadequate in its detail and open to interpretation by either party. There appears to be inconsistencies in the maintenance guidelines at times and responsibility for certain outcomes is unclear, and when combined with the inability for the contract to be supervised adequately on behalf of PACC, substandard outcomes are observed in a number of turf areas.

A summary of some key findings is outlined in the following tables.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Point</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>When and why is height of cut to be varied? Inadequate mowing frequency for sports fields (28 minimum/year)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Mowing Thursday may compromise Saturday play – should be Friday</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Should not be any grass clippings laying on surface if frequency is adequate</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Height of cut range inappropriate and impractical, and unclear as to why or when height should change Inadequate mowing frequency for sports fields (28 minimum/year)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Mowing Thursday may compromise Saturday play – should be Friday</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Should not be any grass clippings laying on surface if frequency is adequate</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Height of cut range very variable and unclear as to when or why height should change Greater mowing frequency than sports fields (38 minimum/year)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Unclear as to what defined edge is to be retained</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Height of cut range very variable and unclear as to when or why height should change Similar mowing frequency to sports fields (26 minimum/year)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Should not be any grass clippings laying on surface if frequency is adequate</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Cylinder mower inappropriate Height of cut very variable and unclear as to when or why height should change Frequency may be inadequate given weed dominance at certain times of year</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Weed control would assist this and keep demand more predictable</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Cylinder mower inappropriate Height of cut very variable and unclear as to when or why height should change Frequency may be inadequate given weed dominance at certain times of year</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>Weed control would assist this and keep demand more predictable</td>
</tr>
<tr>
<td>7</td>
<td>2 &amp; 3</td>
<td>Better herbicide and management options should be considered to manage species composition in some areas</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>Scale of role/contract makes this impractical</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
<td>No indication of specific chemical to control Caltrop</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Height of cut very variable and unclear as to when or why height should change Frequency may be inadequate given weed dominance at certain times of year Better herbicide and management options should be considered to manage species composition in some areas</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>What herbicide(s) should be used?</td>
</tr>
<tr>
<td>Associated works</td>
<td>Point</td>
<td>Issue</td>
</tr>
<tr>
<td>------------------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Evidence this is not taking place</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Evidence this is not resulting in adequate control, particularly of weeds</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>Evidence this is not proving to be effective</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>Should clarify for exceptions such as damaged/repaired areas</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Unclear as to who makes this decision</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Record keeping should be specified</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>Evidence this is not proving to be effective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part</th>
<th>Point</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.1</td>
<td>Mowing frequency and heights inappropriate for sports field use</td>
</tr>
<tr>
<td></td>
<td>2.1</td>
<td>Mowing frequency conflicts with earlier specification (52 versus 28)</td>
</tr>
<tr>
<td></td>
<td>3.1</td>
<td>Mowing frequency and heights inappropriate for sports field use</td>
</tr>
<tr>
<td></td>
<td>3.6</td>
<td>Mowing frequency and heights inappropriate for sports field use</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>Topography and soil type may not be conducive to efficient use of irrigation, or require specific management to assist</td>
</tr>
<tr>
<td>B</td>
<td>1.1</td>
<td>Greater mowing frequency than sports fields; highlights inadequacy of sports field mowing requirement</td>
</tr>
<tr>
<td></td>
<td>5.1</td>
<td>Greater mowing frequency than sports fields; highlights inadequacy of sports field mowing requirement</td>
</tr>
</tbody>
</table>
4 (e) Passive Reserves

The broad classification of passive reserves within PACC comprise a mix of open turf and landscaped areas, pathways, playgrounds and other passive recreational features. They provide valuable green space within the urban areas, and offer social, environmental and health benefits to the communities.

- Total area 15-20ha (approx.)

The existing equipment resources for contract maintenance consist of a combination of the following:

- 2 x Tippers
- 2 x Reelmaster cylinder mowers
- 3 x Walker ride on mowers
- 3 x Z tracks
- 2 x tip trucks
- 1 x ute with spray unit
- Tractor and slasher
- 1145 John Deere
- 2 x trailers
- Spray unit
- Line trimmers, blowers and assorted hand tools

**Barriers to efficiency and quality**

Mowing efficiency is seriously compromised when physical barriers need to be negotiated by the operator. This is largely due to the need to slow down and negotiate often tight turns and the resulting duplication of mown areas, as well as the inevitable need for line trimming (or hand mowing to attend to areas that cannot be reached by a ride on mower).

Examples of physical barriers include:

- Equipment types
- Landscape design
- Irrigation design and efficiency
- Travel time between sites
- Topography
- Roads and traffic
- Assorted hardware
- Public access
The following table illustrates indicative mowing times (ha/hour) for similar equipment, highlighting the difference in efficiency that can be achieved in open space as opposed to negotiating obstacles.

<table>
<thead>
<tr>
<th>Mower</th>
<th>Productivity (ha/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 inch (open space)</td>
<td>1.6</td>
</tr>
<tr>
<td>72 inch (barriers) - estimated</td>
<td>0.5</td>
</tr>
<tr>
<td>Tractor and slasher (open space)</td>
<td>3</td>
</tr>
<tr>
<td>Tractor and slasher (barriers)</td>
<td>0.5</td>
</tr>
</tbody>
</table>

The limited availability of specialized turf equipment and staff is also considered to impede efficiency and quality of turf management at times for reasons that include the following:

- Soil compaction cannot be relieved regularly
- Thatch management cannot be managed effectively
- Specialized applications cannot be made consistently (e.g. wetting agents)
Opportunities for improvement

It is felt a range of options could be implemented to varying degrees to assist in the improvement of mowing efficiency throughout the passive reserves.

<table>
<thead>
<tr>
<th>Option</th>
<th>Impact</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement turf management programs</td>
<td>Based on existing resources and being reviewed as these change, management programs will assist minimum standards to be achieved and deliver more consistent outcomes</td>
<td>Immediate</td>
</tr>
<tr>
<td>Mulch areas of mass tree planting</td>
<td>Often significant reductions of in mowing area May require adjustment of irrigation system coverage</td>
<td>Short term</td>
</tr>
<tr>
<td>Removal of unnecessary trees in some cases</td>
<td>Reduce mowing times Improve maintenance efficiency Improve growing conditions for turf</td>
<td>Short term</td>
</tr>
<tr>
<td>Incorporation of signage and hardware into mulched/non-turf areas as much as possible</td>
<td>Reduce need for time consuming edging, use of small mowers or excessive turning</td>
<td>Short term</td>
</tr>
<tr>
<td>Reduce and simplify irrigated areas to those conducive to quality, functional turf</td>
<td>Less weeds, less spraying Improved turf quality and aesthetic value while reducing time mowing</td>
<td>Long term</td>
</tr>
<tr>
<td>Alternative planting in difficult to access sites</td>
<td>Appropriate species will be more aesthetically pleasing and functional than poor grass coverage that require mowing without compromising functionality of the areas</td>
<td>Medium term</td>
</tr>
<tr>
<td>Minimal planting on northern and eastern side of turf areas</td>
<td>Reduce shading of turf to improve quality and improve fit for use functionality</td>
<td>Medium term</td>
</tr>
<tr>
<td>Irrigation system design</td>
<td>Replace subsurface irrigation with pop up irrigation, especially in areas of high traffic wear soil compaction needs to be relieved and a variety of depths (to 250mm) on a regular basis</td>
<td>Medium term</td>
</tr>
<tr>
<td>Mower selection</td>
<td>Based on times and areas provided, and implementation of the points above, review the selection of mowers to ensure the most appropriate options are utilized, as time savings as high as 50% on existing practices could be realized</td>
<td>Medium to long term</td>
</tr>
</tbody>
</table>
Figure 2 - Example of fit for use neighborhood park

Figure 3 - Effective hard edge and native landscape planting minimizing irrigated turf
Figure 5 - Trees and hardware placement can compromise maintenance efficiency through extra line trimming or hand mowing.
Figure 6 - Example of poorly placed sign that compromising mowing efficiency

Figure 7 - Example of well-placed hardware in mulched bed
Figure 8 - Excellent examples of the use of alternative sustainable landscape planting to surround functional turf spaces.
Figure 9 - Tree planting within turf areas compromises efficiency of mowing and other maintenance practices.
Figure 30 - Trees within turf areas also compete for light, nutrients and water, compromising turf growth and wear tolerance.
Figure 11 - Examples of trees and hardware that add to maintenance demands due to additional manual labour requirements in edging, and excessive turning of mowers.
Figure 12 - Examples of areas that may be better suited to mulch beds than turf to improve maintenance efficiency and presentation.
Figure 13 - The development of more efficient maintenance practices will allow high profile areas to receive more attention, and be better presented.

Figure 14 - While edges are trimmed, the integrity of designed edges has been lost in areas due to the migration of turf growth.
Figure 15 - Example of poor irrigation performance compromising turf coverage.

Figure 16 - Leak that has not been reported despite mowing being undertaken recently, and other staff members being in the area regularly.
Figure 17 - Example of subsurface irrigated passive park

Figure 18 - Adjacent to the above is a vast area of unirrigated open space that requires extensive mowing but has limited functional value
Figure 19: Examples of landscape concepts that would be more practical for unirrigated open space, and complement irrigated turf space.
Figure 20 - Further examples of unirrigated spaces that consume mowing resources for little return, but could be better presented with more appropriate landscape planting.
Figure 21 - In some high-profile sites, weed populations have become dominant and compromise presentation and turf coverage.
Figure 22 - Turf that is free of excessive weed populations (top) is more efficient to manage due to lower mowing demands throughout the year than areas of seasonal weed growth (bottom).
Figure 23 - Irrigated turf areas adjacent weed affected unirrigated areas are prone to weed infestation, compromising turf coverage and quality.
Figure 24 - An opportunity exists to create an appealing turf "link" or formal path to the adjacent playground, and could be enhanced with some bordering dryland planting and selective tree removal to improve visibility of the playground.

Figure 25 - Example of weed competition for desirable kikuyu.
Figure 26 - Trees compete strongly for water and nutrients, as well as denying sunlight for turf. Mulching may be a more desirable treatment in areas where turf struggles to grow and cope with wear.
Figure 27 - The inability to sustain turf in high wear areas can present safety issues such as unstable footing and trip hazards.

Figure 28 - Water repellency is a common issue that limits turf quality and compromises the efficiency of applied irrigation.
Figure 29 - The cemetery lawns are presented neatly, but are very labour intensive due to extensive edging and the manual watering system in areas. Weed control is also compromised by the proximity of roses.
Figure 30 - Median strips have some desirable turf grasses that could be promoted to provide a “green belt” to soften the streetscape.

Figure 31 - Example of couch grass that would benefit from some simple management strategies to control weeds and promote growth at certain time of year.
Figure 32 - The scale of some median strips provides an opportunity for a significant enhancement to the "feel" of a neighbourhood, and assist with localised cooling. The promotion of the correct species and controlling of weeds will also reduce mowing demands throughout the year.

Figure 33 - Existing "cracker dust" islands
Figure 34 - Example of "barren" streetscape, saved by the impressive gum trees.

Figure 35 - Leaf litter accumulating on "crocus dust" areas, detracting from presentation and street appeal, and that migrates to street gutters, unable to be retained on footpaths.
Figure 36 - Example of existing footpath that is prone to erosion during rain events

Figure 37 - Erosion can lead to sediment washing into stormwater and producing unsatisfactory footing in areas
Figure 38 - Excellent examples of alternative streetscapes that enhance presentation and can prevent leaf litter and soil erosion from migrating to paths and streets.
Figure 39 - Effective use of scoria and native vegetation

Figure 40 - Central Oval has some excellent examples of vegetation that could be used effectively in streetscape situations, reducing mowing and general maintenance once established, and enhancing areas considerably.
4 (f) Sports Fields (Central, Chinnery Park, ETSA, Braddock)

The sports fields within PACC provide for sporting clubs and community use. They provide valuable green space within the urban areas, and offer social, environmental and health benefits to the communities.

- Total area 7.5ha (approx.)

The existing mowing practices generally service the playing fields and their immediate surrounds, and consist of a combination of the following:

The existing mowing practices consist of a combination of the following:

- 2 x Tippers
- 2 x Reelmaster cylinder mowers
- 3 x Walker ride on mowers
- 3 x Z tracks
- 2 x tip trucks
- 1 x ute with spray unit
- Tractor and slasher
- 1145 John Deere
- 2 x trailers
- Spray unit
- Line trimmers, blowers and assorted hand tools

Barriers to efficiency

- Oval access
- Travel distance between sites
- Trees
- Seating
- Lighting
- Gates and fences

- Irrigation coverage
- Topography
- Roads and traffic
- Assorted hardware
- Public access
The following table illustrates indicative mowing times (ha/hour) for similar equipment, highlighting the difference in efficiency that can be achieved in open space as opposed to negotiating obstacles.

<table>
<thead>
<tr>
<th>Mower</th>
<th>Productivity (ha/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>72 inch (open space)</td>
<td>1.6</td>
</tr>
<tr>
<td>72 inch (barriers) - estimate</td>
<td>0.8</td>
</tr>
<tr>
<td>Tractor and slasher (open space)</td>
<td>3</td>
</tr>
<tr>
<td>Tractor and slasher (barriers)</td>
<td>0.5</td>
</tr>
<tr>
<td>Cylinder</td>
<td>1.5</td>
</tr>
</tbody>
</table>

The limited availability of specialized turf equipment and staff is also considered to impede efficiency and quality of turf management at times for reasons that include the following:

- Soil compaction cannot be relieved regularly
- Thatch management cannot be managed effectively
- Specialized applications cannot be made consistently (e.g., wetting agents)

**Opportunities for improvement**

It is felt a range of options could be implemented to varying degrees to assist in the improvement of mowing efficiency throughout the sporting fields.

<table>
<thead>
<tr>
<th>Option</th>
<th>Impact</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement turf management plan</td>
<td>Based on existing resources and being reviewed as these change, management programs will assist minimum standards to be achieved and deliver more consistent outcomes</td>
<td>Immediate</td>
</tr>
<tr>
<td>Increase mowing frequency at all grounds</td>
<td>Improve surface quality and density, reduce weed pressure, improve wear tolerance Improved surface quality, greater efficiency of quality outcomes</td>
<td>Short term</td>
</tr>
<tr>
<td>Manage mowing height more precisely</td>
<td>Improved surface quality, greater efficiency of quality outcomes</td>
<td>Short term</td>
</tr>
<tr>
<td>Increase frequency of renovation practices</td>
<td>Improve soil management and turf health, improved surface quality, greater efficiency of quality outcomes</td>
<td>Short term</td>
</tr>
<tr>
<td>Commit consistent level of staff time to sports turf management</td>
<td>Greater sense of ownership, improved sense of purpose, more consistent quality outcomes, better able to meet community expectations Equip FACCC staff with resources to manage sporting fields and other turf areas as required, and respond to turf needs in a more timely manner; Better program implementation</td>
<td>Medium to long term</td>
</tr>
</tbody>
</table>
Figure 43 - Central Oval has numerous areas where safety is compromised due to sharp depressions and poor turf coverage.
Figure 42 - in areas of lower wear, rye grass has established well to support winter use.

Figure 43 - Areas of higher wear are more reliant on kikuyu coverage, and this is compromised by soil and water conditions and quality during the summer, and compromised irrigation efficiency.
Figure 44 - 175A Oval, with large areas of poor to no turf coverage, presenting safety issues due to unstable footing.
Figure 45 - Numerous depressions are significant in depth.

Figure 46 - Corridor that has benefited from the recent installation of pop up irrigation, allowing better kikuyu coverage to be promoted during summer, leading to better density during football season.
Figure 47 - Evidence of mite activity compromising kikuyu growth and recovery.

Figure 48 - Example of weed populations that establish when turf coverage and density are compromised.
Figure 47 - Chinnery Park has a base of kikuyu that needs to be promoted to assist with wear tolerance and competing with weed populations.

Figure 48 - Areas are dominated by broadleaf weeds and less desirable grass species. These compromise playing surface quality and ultimately kikuyu coverage which is critical during summer.
Figure 45 - Example of weed dominance

Figure 50 - Weed populations are strongest in areas of weaker kikuyu coverage, which also correlate with areas of poor irrigation coverage, resulting from pressure and flow issues during summer.
Figure 53 - Brodstock Park has a base of kikuyu that was in poor condition at the time of inspection.
Figure 52 - Evidence of subsurface irrigation and variable growth aligned with moisture levels.

Figure 53 - There was evidence of extensive mite activity, kikuyu is under stress for extended periods.
Figure 54 - Areas of more intensive wear are severely impacted, compounded by the fact that deep compaction relief cannot be undertaken due to the subsurface irrigation system.
5. SUMMARY OF OBSERVATIONS AND FINDINGS

Alignment of current scope against industry practice – are we asking for the correct level of service?
Based on the observations of the existing PACC resources, the review of the maintenance contract, and the size and mature of turf surfaces being maintained, it is felt there is significant scope to improve the efficiency of services standards and quality outcomes.

Observations in respect to contractor compliance – is the contractor performing as required?
The existing maintenance contract is open to a great deal of interpretation and therefore it is difficult to determine the level of compliance being adhered to by the contractor. From the observations made, it is felt there are no obvious issues of non-compliance, but rather opportunities to improve maintenance efficiencies and outcomes for all parties.

Benchmarking against other Councils – how do we compare on cost and quality, and what are the resourcing models working well elsewhere?
From the data provided, it is understood the following are examples of the annual expenditure being undertaken at Central and Chinnery Park Ovals.

<table>
<thead>
<tr>
<th>Venue</th>
<th>Expense line</th>
<th>Cost</th>
<th>Cost/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central (2.5ha)</td>
<td>Salaries and Wages</td>
<td>$39,800</td>
<td>$42,800 (S$26,880 without S&amp;W)</td>
</tr>
<tr>
<td></td>
<td>Plant &amp; Machinery</td>
<td>$4,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contractual Services</td>
<td>$42,800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Materials</td>
<td>$20,400</td>
<td></td>
</tr>
<tr>
<td>Chinnery Park (1.6ha)</td>
<td>Salaries and Wages</td>
<td>$26,800</td>
<td>$55,250 (S$38,500 without S&amp;W)</td>
</tr>
<tr>
<td></td>
<td>Plant &amp; Machinery</td>
<td>$2,500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contractual Services</td>
<td>$38,700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Materials</td>
<td>$20,400</td>
<td></td>
</tr>
</tbody>
</table>

*Utilities and insurances have been removed from this list*
By comparison, the table below highlights some benchmark standards and maintenance costs for irrigated public open space. It should be noted that Central and Chinnery Park would be classified as TQVS3, and for certain events planned for Central Oval it would need to be at a TQVS2 standard.

<table>
<thead>
<tr>
<th>Item</th>
<th>TQVS1</th>
<th>TQVS2</th>
<th>TQVS3</th>
<th>TQVS4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>2.5 ha</td>
<td>1.5 ha</td>
<td>0.5 ha</td>
<td>0.5 ha</td>
</tr>
<tr>
<td>Mowing</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
</tr>
<tr>
<td>Pest / Weed Control</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
</tr>
<tr>
<td>Aeration (vert / drain / dig)</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
</tr>
<tr>
<td>Rolling</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
<td>8 x per annum</td>
</tr>
<tr>
<td>Wetting Agent</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Top Dressing</td>
<td>100 tonne per annum</td>
<td>100 tonne per annum</td>
<td>50 tonne per annum</td>
<td>None</td>
</tr>
<tr>
<td>Seed / Turf Replacement</td>
<td>900 m2 per annum</td>
<td>900 m2 per annum</td>
<td>300 m2 per annum</td>
<td>None</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>As required</td>
<td>As required</td>
<td>As required</td>
<td>As required</td>
</tr>
</tbody>
</table>


The above table provides guidelines to mowing frequencies (and other practices) based on desired surface standards. While helpful, it must be remembered the climate at Port Augusta can be conducive to strong growth and more demanding maintenance requirements than Adelaide’s, hence some of the recommendations in this report are for higher levels of maintenance.

Experience with other prominent local governments indicate the following in relation to mowing frequency for open space areas:

- City of Port Adelaide Enfield
  - TQVS 2 – twice per week during growing season (approx. October to April), once per week during winter
  - TQVS 3 – weekly

- City of Onkaparinga
  - TQVS 3 – weekly, twice weekly for major events or if growth demands
Figure 5.5 - Examples of surface quality being produced by City of Onkaparinga (top) and City of Port Adelaide Enfield (bottom).
The following provides a guide to the intensity of maintenance (including mowing) recommended by Brisbane City Council for higher level playing field maintenance:

### Brisbane City Council

#### Annual field maintenance plan (advanced)

<table>
<thead>
<tr>
<th>Week</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- Cylinder mowing
- Fertilizer rate (2.5g per 1000 Sq. Ft. x 10.0 lbs)
- Turf replacement (standards to be updated)
- Irrigation weekly
- Mowing height
- Irrigation maintenance
- Working agents
- Aeration (150mm each, 20mm lines)
- Pre-emergent application
- Weed control
- Turf dressing (100m each)
- Scarify
- Fertilizer / Accelerator

Source: Brisbane City Council website

Due to the limited detail of the expense lines, it is difficult to draw accurate comparisons, but it does appear that Central and Chimney Park are currently expensive to manage against the documented industry standards. This is supported by personal observations that indicate maintenance expenses closer to the suggested benchmark are common at equivalent standard grounds in other local governments in Adelaide.

The following table provides a summary of the industry standard classification, current standard of maintenance, and comparable expense level (where known) for the four sports fields.

<table>
<thead>
<tr>
<th>Venue</th>
<th>Classification</th>
<th>Current standard</th>
<th>Expense level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Oval</td>
<td>TQVS 3 / 2</td>
<td>TQVS 3</td>
<td>TQVS 2</td>
</tr>
<tr>
<td>Chimney Park</td>
<td>TQVS 3</td>
<td>TQVS 3 / 4</td>
<td>TQVS 2/1</td>
</tr>
<tr>
<td>E1SA</td>
<td>TQVS 3</td>
<td>TQVS 3 / 4</td>
<td>Unknown</td>
</tr>
<tr>
<td>Bradfield</td>
<td>TQVS 3</td>
<td>TQVS 4</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

This table highlights the disparity between the investment being made and quality being achieved, and suggests a review of the maintenance operations is warranted.
The following tables provide data sourced from City of Armadale (WA) and City of Marion (SA).

### Table No. 15: Turf Maintenance Costs – Current Active Sports Grounds

| Description | Summer | Winter | Spring | Autumn | Total
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Table No. 26: Turf Maintenance Costs – Current Passive Reserves

| Description | Summer | Winter | Spring | Autumn | Total
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Source: City of Armadale – Park Services Departmental Activity Report 2014/15

Source: City of Marion – Landscape Irrigation Management Plan – 2013

Note: Active Sports Grounds $23,943/ha/yr, Passive Recreation $27,884/ha/yr
Resource level requirements (skill, head count, equipment) – are the resources appropriate to carry out the work to an appropriate standard?

Both passive and sports field areas have significant opportunities to improve maintenance efficiency and the quality outcomes through a combination of:

- Irrigation design/performance and infrastructure investment
- Landscape design
- Species management
- Site management/classification
- Equipment investment
- Staff training and investment

The existing operations struggle to maintain adequate mowing frequency throughout the year, which is emphasized during periods of peak growth. At times, excessive growth is generated by undesirable species (weeds) which is considered unproductive use of staff time.

In addition, the inadequate mowing frequency can compromise the quality of cut produced, which can impact surface quality and performance in sporting surfaces, as well as damage the turf to allow weed species and other pests to infest the turf areas, compromising aesthetics, functionality and longer-term maintenance efficiency.

The improvement of mowing efficiencies will provide the opportunity to improve the necessary maintenance standards in all turf areas throughout the Council.

The current contractor appears to be adequately resourced for the minimum requirements of the maintenance contract in terms of the nature and quantity of the equipment, although it is felt there would be shortcomings should mowing demands across the PACC precinct peak for a sustained length of time.

To perform additional, essential turf management practices (compaction relief, hollow tining, top dressing etc.), it is felt that PACC is poorly resourced in terms of equipment.

Of greatest concern however is the lack of staff time committed to turf management on a consistent basis. As a guide, it is estimated that between 20-25 hours per week would be required as a minimum to maintain the four major sporting fields to an appropriate standard.
6. RECOMMENDATIONS

General observations and recommendations that would assist in identifying and addressing any gaps and impediments to achieving quality and value outcomes for the community.

Equipment

The combination of the existing of contractors and PACC equipment is delivering only basic maintenance standards, compromising productivity and hence quality of turf areas at times. By investing in equipment to undertake more turf maintenance operations internally, it is felt PACC would realize considerable quality and efficiency gains. As an example, improving mowing efficiency and frequency will be possible where required, resulting in greater turf quality and density. Mowing quality and frequency are important components of an Integrated Pest Management program, resulting in less weed and other pest pressure.

Examples of equipment required include:

<table>
<thead>
<tr>
<th>Equipment and approximate cost</th>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep-tine aerator x 1 ($30,000)</td>
<td>Allows variable depth compaction relief to 300mm Can accommodate hollow tines and solid tines for specific purposes</td>
<td>Improves water use efficiency Promotes deep root growth Promotes healthier soil biology Assist salinity management</td>
</tr>
<tr>
<td>Top dresser x 1 ($25,000)</td>
<td>Efficient application of top-dressing material to assist soil amendment and manage surface levels</td>
<td>Manages thatch accumulation Amends existing soil profiles Corrects surface levels Promotes healthier soil biology</td>
</tr>
<tr>
<td>Overseeder x 1 ($20,000)</td>
<td>Allows over sowing of kikuyu with rye grass to assist winter playability and wear tolerance</td>
<td>Provides better control of timing of oversowing at the start of winter seasons Can be used to efficiently &quot;top up&quot; areas of high wear during season</td>
</tr>
</tbody>
</table>
| Cylinder mower x 1 ($80,000) | Currently not in fleet | Greater maneuverability and operator comfort than trailing gangs  
Superior quality of cut than rotary mower  
Potentially lighter footprint  
May require transport option |
|-------------------------------|------------------------|------------------------------------------------------------------|
| Wide area rotary mower x 1 ($80,000) | Capable of approx.  
Sha/br  
Currently not in fleet | To replace stealth mower and assist 72" mowers by utilising centre deck only, improving fleet flexibility and productivity |
| 72" Rotary mowers x 2 ($30,000 each) | Mows small to large passive reserves, and some surrounds of active reserves | Establish as minimum width mowing option |

*Images are for illustrative purposes only*
Staff

Turf management is not able to be given the time and attention it requires under the current operational arrangement, and it is very clear there needs to be additional human resources allocated to this area if the necessary improvements in quality outcomes are to be realized.

It is felt there would be significant quality benefits in the irrigated turf maintenance being the responsibility of PACC staff, and potentially economic and efficiency benefits as well as reporting and “troubleshooting” would be streamlined, allowing quicker response to specific turf needs and more consistent implementation of programs. An "SMS" based system or similar should be considered to assist in this area.

This would also allow better weed hygiene practices to be implemented more consistently, as the contractor would be able to focus on unirrigated or lower priority grassed areas.

It is recommended that a designated turf management "crew" be established for this purpose, and it is felt staff morale and sense of purpose would be enhanced.
Landscape Design

It is recommended that the adoption of some basic principles related to the design of landscape areas will greatly assist the efficiency of maintenance, quality and functionality of turf areas, and aesthetics of parks and reserves throughout the council precinct. The following are provided as concepts for discussion.

**Proposed landscape design (turf) guidelines**

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Criteria</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topography</strong></td>
<td>Areas to be mown to have slope &lt;10%</td>
<td>Ensures only functional areas are assigned to turf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduces likelihood of turf damage from “scalping” and slippage</td>
</tr>
<tr>
<td><strong>Hardware</strong></td>
<td>Fixtures and fittings to be removed from turf areas and incorporated into mulched beds wherever possible</td>
<td>Avoids unnecessary and inefficient negotiating by mowers</td>
</tr>
<tr>
<td><strong>Trees/shrubs</strong></td>
<td>Trees and shrubs to be removed from turf areas and incorporated into mulched beds wherever possible</td>
<td>Avoids unnecessary and inefficient negotiating by mowers</td>
</tr>
<tr>
<td></td>
<td>Minimise tall planting or reduce canopy density on northern side of turf areas wherever possible</td>
<td>Improve light levels reaching turf throughout the year to support stronger growth</td>
</tr>
<tr>
<td><strong>Irrigation</strong></td>
<td>Only areas able to achieve industry standard distribution uniformity to be retained as turf</td>
<td>Integrate with the natural landscape, provide contrast with irrigated turf, and ultimately reduce maintenance inputs</td>
</tr>
<tr>
<td></td>
<td>To be confined to managed, functional turf areas</td>
<td>Ensures turf areas are irrigation efficiently to retain density and vigour as part of Integrated Pest Management Program</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduces wastage of water on areas of marginal turf quality and coverage</td>
</tr>
</tbody>
</table>
Species Management

Numerous sites have poor coverage of desirable turf species, enabling weed species to dominate open spaces and impact mowing demands at different times of year.

Couch (Cynodon spp.) and kikuyu (Pennisetum clandestinum) are warm season grass species well suited to active and passive open space use in a climate such as Port Augusta’s. Although summer active, their growth (and hence mowing demand) can be managed effectively through appropriate irrigation and fertility management and the use of specific turf growth regulators in some situations. During the cooler months of the year, they are in varying stages of dormancy, so their mowing demand is minimal, making them efficient to manage.

However, the ability to exploit the growth patterns of couch and kikuyu is compromised when they are not managed effectively and weed species are allowed to dominate areas. In the case of winter active weeds, this can result in significantly unnecessary mowing demands during winter and spring, reducing maintenance efficiency and comprising the quality of the turf areas in the long term.

Often the areas greatest affected are roadside verges and median strips, so the enhancement of species management will not only improve mowing efficiency and quality outcomes, but also staff and public safety issues by reducing the frequency of high risk mowing operations.

The promotion of the desirable couch and kikuyu should be a priority during the growing season (October to April) in all areas, along with the control of weed species that require unnecessary mowing. This will require a combination of the following to maintain a competitive advantage for the desirable species throughout the year;

- fertility management
- irrigation management
- pre and post emergent herbicide applications
- soil management (i.e. compaction relief)
- diligent mowing programs
Classification System

It is felt the existing system can be enhanced by placing a qualitative value against quality rather than a simple statement. The existing “Suggested Standard” could be interpreted to suggest that regional parks are expected to provide the same high quality of surface as regional sportgrounds. By placing a numerical value (i.e. objective) against each Open Space Type, it is easier to distinguish that regional sportgrounds are expected to be of a higher quality than regional parks, and to reduce the likelihood of subjective interpretation.

It is also recommended that these values be adjusted for different growing seasons and usage requirements, while still providing fit for purpose surfaces. For example, the same oval does not need to have the same level of turf quality and density during winter to be fit for use for football as it does for cricket during summer, due to the nature of the sports and the reliance on ball roll for cricket.

The following table also provides guidelines for mowing heights and frequency, as well as a simplified mower options to promote quality, efficiency and flexibility based on the recommendations of landscape design being adopted.

Importantly the table also provides priority guidelines should maintenance resources be limited to the point that some rationalization of time need to take place.
# Proposed classification and maintenance standard guidelines

<table>
<thead>
<tr>
<th>Open Space Type (Priority)</th>
<th>Existing Suggested Standard</th>
<th>October – April</th>
<th>May – September</th>
<th>Mowing Type(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Sportsground (1)</td>
<td>High quality, with the capacity to support higher level competitions and events, and cater for spectators</td>
<td>8-9</td>
<td>8-10</td>
<td>8-12</td>
</tr>
<tr>
<td>District Sportsground (2)</td>
<td>Good quality, with the capacity to support higher level competitions</td>
<td>7-8</td>
<td>7-8</td>
<td>8-10</td>
</tr>
<tr>
<td>Neighbourhood Sportsground (3)</td>
<td>Safe and appealing quality</td>
<td>6-7</td>
<td>7-8</td>
<td>8</td>
</tr>
<tr>
<td>Regional Park (4)</td>
<td>High quality, with the capacity to cater for large numbers of visitors</td>
<td>7-8</td>
<td>7-8</td>
<td>8</td>
</tr>
<tr>
<td>District Park (5)</td>
<td>Good quality</td>
<td>6-7</td>
<td>7-8</td>
<td>8</td>
</tr>
<tr>
<td>Neighbourhood Park (6)</td>
<td>Safe and appealing quality</td>
<td>5-6</td>
<td>6-7</td>
<td>8</td>
</tr>
<tr>
<td>Local Park (7)</td>
<td>Safe and appealing quality</td>
<td>5-6</td>
<td>6-7</td>
<td>4</td>
</tr>
<tr>
<td>Cemetery (8)</td>
<td>Good quality</td>
<td>6-7</td>
<td>6-7</td>
<td>8</td>
</tr>
<tr>
<td>Unirrigated Linear Open Space and Corridors (9)</td>
<td>Quality will vary depending on the topography, adjacent uses, related facilities, vegetation and urban context and environment</td>
<td>4-6</td>
<td>4-6</td>
<td>4-6</td>
</tr>
</tbody>
</table>

*Note - the retention of turf density throughout the year will also assist in weed control*
Monitoring

Due to the diversity of factors that can influence the efficiency of mowing operations across PACC, and the staged nature of change implementation, it is very difficult to accurately predict the time and cost savings that could be realized by implementing the recommendations in this report.

It is strongly recommended that a system is adopted that will allow the efficient monitoring of current and future time and costs associated with mowing of at least a representative sample of sites. In addition, turf quality assessments should also be monitored to demonstrate the improvements being achieved against classification benchmarks along with improved efficiency.

It is imperative to the successful implementation of such a monitoring program that it is easily adopted by field staff utilizing mobile technology to ensure accuracy of data entry, and that changes in influencing factors (e.g. landscape changes, irrigated areas, species conversion, mower types) can be recorded over time as well.
7. SUMMARY

Port Augusta City Council has the opportunity to build on some solid foundations of sporting fields and parks to enhance the presentation, functionality and reputation of the greens space within the city.

The recommendations aim to provide the opportunity for improvement in service and quality outcomes, staff engagement in turf management generally and operational efficiency, through a combination of contractor and PACC staff inputs.

It is acknowledged that a number of recommendations will require some capital investment to implement, however it is felt that this is reflective of the existing infrastructure that is limiting productivity despite the best efforts of Council staff and the current contractor.

The implementation of the recommendations will result in improved maintenance efficiencies throughout the Council precinct, but it is recommended that these time savings be initially re-invested in the maintenance of turf areas to assist in the consistent delivery of fit for use standards.