# Title

## Introduction

*Begin with explaining what work is being done. Also, who is involved in the project? State these parties. This will lead to a standing offer, which cements prices for products or services purchased for the project, and a more formal contract that goes into greater detail.*

Transport Canberra and City Services (TCCS) delivers a wide range of services which Canberrans rely on every day. These include collecting recycling and rubbish removal, running public libraries, mowing open spaces, maintaining our sports grounds and facilities, building and managing our roads, footpaths and cycle paths, building light rail, delivering and operating an integrated public transport network, and maintaining many of Canberra's lakes and ponds. A number of the ACT Government’s commercial operations are run by TCCS, including ACT NOWaste, Capital Linen Service, Yarralumla Nursery, and the ACT Public Cemeteries Authority.

TCCS is made up of 4 divisions, including:

* Chief Operating Office
* TCCS Finance, Legal and Contracts
* Transport Canberra, and
* City Services

City Presentation is a branch of City Services consisting of four teams including; Place Management, Urban Treescapes, Sport and Recreation Facilities and Licencing and Compliance.

The Sports and Recreation Facilities (SRF) Team is responsible for managing a significant sportsground asset base across the city, including approximately 280 hectares of irrigated sportsgrounds, 100 buildings and a number of recreation parks. The focus of management is to ensure that the existing facilities remain safe and fit for purpose.

The watering of sportsgrounds is required to keep the grounds safe and fit for purpose, they are currently managed through a Rainbird IQ system.

## Problem Statement

*Describe the issue to be addressed or condition to be improved upon and identify the gap between the current state and desired state of a process or product.*

Government do not always fully understand watering techniques and question expenditure, sporting organisations require a fit for purpose surface to limit injuries, and to give a true playing surface. Member s of the public often recreate on the sportsgrounds and enjoy the irrigated grass especially in the heat of the summer period, environmentally irrigated sportsground have a cooling effect on the city.

The current budget for the watering of sportsground is approx. $5M, but consistently requires an additional $2-3M per year to meet operational requirements. Under funding has occurred over the last decade, the reason for this is the difficulty to forecasting water usage when reliant on the weather. Each year TCCS has to request additional Treasury funding to cover the funding shortfall.

Irrigation watering is quite scientific, water usage depends on many factors including; environment, soil type, grass species, irrigation line pressure and sprinkler layout.

SRF continues to review all aspects of operational maintenance and where possible benchmark against best practice, with the aim of achieving best value for money services. Through this practice, SRF has continued to pursue and invest in a range of water efficiency measures that are aimed at reducing the required consumption of water for irrigation. Measures have included;

* Conversion of many sportsgrounds to a drought tolerant, less water requiring, couch grass surface (requires approximately 50% less water that other grass types);
* Development of Community Recreation Parks as part of a revised sportsground provision model with a smaller footprint of turf to replace larger neighbourhood ovals;
* Replacement of old inefficient irrigation infrastructure;
* Using less expensive non-potable supply including harvested stormwater and recycled effluent where available;
* The 2013 installation of Rainbird IQ, a computerised irrigation management system, to increase the efficiency and effectiveness of the irrigation system and ensure that systems are more reliably and accurately shut off in response to rain events;
* The installation of synthetic sports surfaces that require no water; and
* The continued trial of a range of soil amendment products that either hold water in the soil profile for longer or minimise the need for water.

Placing a price on the savings achieved through these initiatives is also difficult given the variables (primarily rainfall) contributing to the level of water expenditure each year. Water volume usage by site can be monitored but reduced water requirement can be attributed to a number of things including different grass type (if newly sewn), localised rainfall and evaporation or soil amendments. Thus a multi-pronged approach has been taken by SRF to reduce overall water consumption, however in recent years any water savings have been offset by limited rainfall and the need to irrigate.

## Objective

*What is the reason for the project? Explain such in a purpose statement.*

Undertake an analytics project to predict the amount of water required to perform optimal watering operations.

To find business operational efficiencies and also understand the baseline funding required for watering sports grounds in Canberra.

To gain the relevant information required to support future business cases to upgrade the existing irrigation infrastructure as needed.

## Project Benefits

*What is the return on investment?*

* Application of data science methods to identify potential efficiency gains in existing watering / operating strategy.
* Application of data science methods to also predict likely future water / funding costs to provide evidence basis for funding application.

## Scope

*What needs to be done and what processes will be used to do it?*

* Understand business problem
* Consolidate data from different data sources
* Perform data analysis of business problem
* Produce a final report detailing;
  + Existing process/strategy
  + Data analysis
  + Recommendations for potential process improvements/requirements
  + Required funding to meet optimal watering conditions

## Milestone Schedule

*Note the phases of the project as milestones to break up the larger schedule and note the purpose of each phase/milestone.*

*List the tasks for each phase of what the person/team has to do in logical order and note who is responsible for delivering each task and expected completion date (or week).*

*List and explain what deliverables are due and when.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Task Description** | **Responsible** | **Due** |
| **Phase 1** | **Title** | | |
| Purpose | Brief description on the purpose of this phase | | |
|  | List tasks of what the person/team has to do in logical order |  |  |
|  | (add additional rows below) |  |  |
| Deliverables | | | |
|  | List and explain what deliverables are due and when |  |  |
|  | (add additional rows below) |  |  |
| **Phase 2** | **Title** | | |
| Purpose | Brief description on the purpose of this phase | | |
|  | List tasks of what the person/team has to do in logical order |  |  |
|  | (add additional rows below) |  |  |
| Deliverables | | | |
|  | List and explain what deliverables are due and when |  |  |
|  | (add additional rows below) |  |  |

**Phase 1** **Project Initiation**

**Purpose** To explore the problem faced by business stakeholder, understand their business context, make agreements on deliverables, project deadlines (if any), cost.

**Activities**

* + - Project start-up meeting
    - Stakeholder contacts
    - Roles and responsibilities

**Deliverables**

* + - Acknowledge and agree project requirements
    - Agree project commencement

**Phase 2** **Data Acquisition**

**Purpose** To explore data landscape to solve the business problem, understand their business system, databases, external data sources etc.

**Activities**

* + - Explore required data sets
    - Access to data sets

**Deliverables**

* + - Data access form signed off

**Phase 3** **Data Analysis / Hypothesis Testing**

**Purpose** Data analysis will be performed to solve the business problem

**Activities**

* + - Preliminary analysis
    - Present preliminary analysis to stakeholders

**Deliverables**

* + - Data analysis technical report
    - Data analysis code/program

**Phase 4** **Project Closure**

**Purpose** Present final report.

**Activities**

* + - Present findings to stakeholders

**Deliverables**

* + - Final Business report

## Deliverables

*List the final deliverables due upon completion of the project.*

* Technical Report
* Data analysis code/program
* Final Business Report

## Cost and Resources

*List any resourcing requirements including; people, software, hardware or datasets and note any associated costs for each.*

**Potential datasets**

* Icon Water (meter data / previous bills past 10yrs)
* Rainbird system data (water monitoring & control)
* Bureau of Meteorology data (evaporation rates / weather patterns)
* Sportsgrounds booking system data
* Sportsgrounds asset data (spatial data)

## Risk, Issues or Constraints

*List any risks, issues or constraints associated with this project.*

*Minor risks may be dot pointed below.*

* Risk 1
* Risk 2 etc

*High level risks to be presented in the table below (delete if not required).*

| Risk No. | Description | Risk Level | Treatment Option | Mitigation Strategy | Revised Risk Rating |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
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## Success

*Define what the Sponsor and/or stakeholder define as a successful project completion.*

* Identification / confirmation that current watering strategies are required
* Development of data science model
* Completion of report outlining funding recommendations

## Closure

*List how deliverables will be received and reviewed and finally approved with project closure report, as well as signing off and archiving all records.*

* Provide approved project closure report.

## Additional Information

*List any additional information that did not fit in any previous heading such as potential data sets, tooling, additional resourcing requirements and additional costs e.g. specialised software/licensing costs, travel expenses etc.*

**Sport and Recreation Facilities overview**

* Sport and Recreation Facilities maintains:
  + Total area maintained - 440 hectares
  + Total  irrigated – 280 hectares
  + Total dry land -160  hectares
  + SRF manage a total of 884 individual playing fields available for hire
  + 66 sites have sportsground floodlights
* Key Operational activities performed:
  + Mowing and edging
  + Fertiliser, spraying and growth regulator
  + Top soil dressing, de-compaction and aeration
  + Over-seeding and thatch control
  + Watering and irrigation system operation
  + Sodding replacement/replanting (sections and whole)
* Formal hire of sportsgrounds comprised 82,000 hours of use in 2017/18, including 24,826 hours under lights. These figures do not include all the informal use by local schools and members of the community.
* Fees and Charges - The ACT Government funds around 88% of the cost of maintaining sportsgrounds with the remaining 12% generated from user fees and charges. All revenue received from the hire of ACT Government sportsgrounds offsets the costs associated with ongoing maintenance. Depending on what literature is used the national average benchmark for sportsground booking fee return is around 20%, the Government currently does not have an appetite to raise the fees and charges above WPI.