

National Manual of Assets and Facilities Management Volume 6, Chapter 23

Landscaping & Grounds Maintenance Plan for Parks & Recreation

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Table of Contents

1.0	PURPOSE	. 5
2.0	SCOPE	. 5
3.0	DEFINITIONS	. 5
4.0	REFERENCES	. 6
5.0	RESPONSIBILITIES	. 7
6.0	PROCESS	. 7
6.5.2	Computerized Work Order System Occupational Health and Safety Landscape and Grounds Maintenance Routine Maintenance Preventative Maintenance Trees and Shrubs Maintenance Lawn Maintenance Palm Tree Maintenance Seasonal Maintenance	. 8 . 9 . 9 . 9 . 11 12
7.0	ATTACHMENTS	13
	hment 1 – EOM-ZM0-TP-000019 – Landscape Preventative Maintenance Schedule Parks a Recreation Checklisthment 2 – EOM-ZM0-TP-000020 – Landscape Seasonal Maintenance Schedule Parks a Recreation Template	14 nd



1.0 PURPOSE

The purpose of this document is to provide guidelines and best practices to the Entity/Service provider for maintaining aesthetically pleasing landscaping facilities for the general public. In addition, its purpose extends to promote industry-accepted standards and to meet the requirements of the user groups, regular maintenance services, and monitoring is required for Parks & Recreational facilities to a standard level.

These are the minimum requirements applicable to common and typical Parks & Recreational facilities. The Entity shall modify the requirements specific to its maintenance needs.

The maintenance shall conform to requirements detailed in this document, Section 4 – References, and any specific Entity maintenance requirements.

2.0 SCOPE

- Parks serve a recreational purpose for local communities which is provided through the following typical assets:
 - o Soft and Hard Landscape
 - Children's playgrounds and sports facilities
 - Drinking Fountains
 - Gates
 - Irrigation Systems
 - Buildings and Structures
 - Park Furniture
- This document covers the soft and hard landscape aspects of the park asset.
- This document applies to the following existing parks types:
 - Neighborhood Parks
 - o City Parks
 - o National Parks
 - Public Facility Parks
 - o Botanical Gardens
 - o Beach Parks
 - o Zoo Parks
- The maintenance requirements provided herein, or cited by reference, are based on the Ministry of Municipal and Rural Affairs (MOMRA) landscaping standards, international landscaping standards, and best practices that should be incorporated by the relevant Entity.
- This document provides minimum requirements to be adopted by the relevant Entity and/or Contractors to enable safety, quality, and cost-effectiveness in the operations of landscape maintenance.
- The Entity shall establish and develop set procedures for the continuous maintenance of components of the existing Parks & Recreation landscapes.

3.0 DEFINITIONS

Term	Definition
Maintenance	The undertaking of preventative or corrective actions, or both, including repairs, to ensure that the condition of the asset continues to meet the required standards over the service life of an asset
Hard Landscaping	The process of working certain types of landscape elements that utilize hard materials, like stone and metals, rather than 'soft' soil and planting
Soft Landscaping	The process of working with landscape elements that require no construction. These elements include turf, trees, and shrubs.
Mulch	Protective covering (i.e., bark chips, straw, or plastic sheeting) placed around plants to suppress weed growth, retain soil moisture, or prevent freezing of roots



Preventative Maintenance	The planned strategy of cost-effective treatments that preserves the asset, prevents future deterioration, and maintains or improves the functional condition Selective removal of specific parts of a plant, tree, or vine; controlling or redirecting growth), improving or sustaining health, reducing risk from falling branches, increasing the yield or quality, no longer aesthetically pleasing, or injurious to the health/development of the plant.		
Pruning			
Routine Maintenance	Maintenance activities pertaining to regular inspections/machine servicing performed on a regularly scheduled basis.		
Acronyms			
ANLA	American Nursery & Landscape Association		
AOSA	Association of Official Seed Analysts		
ARAMCO	Arabian American Oil Company		
HSSE	Health, Safety, Security, and Environment		
MOMRA	Ministry of Municipal and Rural Affairs		
NMA&FM	National Manual of Assets and Facilities Management		
Park	A large public garden or area of land used for recreation		
PPM	Planned Preventative Maintenance		
RCJY	Royal Commission for Jubail and Yanbu		
SASO Saudi Arabian Standard Organization			

4.0 REFERENCES

Parks & Recreation landscapes and grounds maintenance shall be based on the requirements of this section and existing landscape standards. These shall be from the Ministry of Municipal and Rural Affairs (MOMRA) to ensure interoperability or those of the authority having jurisdiction over the parks (i.e., Arabian American Oil Company (ARAMCO) and Royal Commission for Jubail and Yanbu (RCJY) as most appropriate for individual application). Where the requirements stipulated by these standards are in conflict, the most stringent shall govern, unless otherwise noted herein and shall require the entity's approval. A list of the adopted references are as follows:

- Kingdom of Saudi Arabia MOMRA, General Directorate of Operation and Maintenance (Parks Operation and Maintenance Manual)
- Saudi Arabian Standard Organization (SASO)
- Landscape Plants for ArRiyadh Region, a Reference Manual by High Commission for the development of ArRiyadh
- American Nursery & Landscape Association (ANLA)
- Minimum Landscape Maintenance Specification of Services and Works, Guidelines for Urban Development. City of Whittlesea, Australia
- Landscape Maintenance Specifications Standards Manual Nevada Landscape Association
- Association of Official Seed Analysts, Inc. (AOSA)
- Environmental Protection Act 1990 (Duty of Care) Regulations
- Wildlife and Countryside Act 1981

The Entity/Contractor should also refer to the following relevant volumes/chapters/sections of the National Manual of Assets and Facilities Management (NMA&FM) for further guidelines while compiling landscape and grounds maintenance plans:

- NMA&FM Volume 2: Asset Management
- NMA&FM Volume 3: Condition Assessment
- NMA&FM Volume 4: Financial Planning
- NMA&FM Volume 5: Operation Management (Chapter 14 and Chapter 18)
- NMA&FM Volume 6: Maintenance Management (Chapters 3 to 15, Chapters 17, Chapters 19 to 22, and Chapter 24)



- NMA&FM Volume 7: Work Control
- NMA&FM Volume 10: Health, Safety, Security, and Environment (HSSE)
- Volume 6 Chapter 21 Pest Control Plan for Parks & Recreation (6.21.6)
- Volume 5 Chapter 17 Waste Management Procedure for Parks and Recreation

5.0 RESPONSIBILITIES

- The Entity and the specialized Contractors/Operators should employ competent staff that operate at the highest standards of horticultural excellence.
- Key staff shall have current knowledge of best practices regarding: safety, hazardous materials, spill response, plant health, pruning, integrated pest management, pesticide application, and irrigation maintenance.
- All work shall be performed under the direct on-site supervision of a qualified landscape professional.
- All maintenance activities must comply with current environmental legislation, approved codes of
 practice, and authoritative guidance literature issued by relevant statutory bodies and Entities.
- The Entity and the specialized Contractors/Operators shall have an organizational structure with adequate staff with clear roles, responsibility, and competency to effectively oversee and monitor the maintenance activities and works.
- The Entity and the specialized Contractors/Operators shall have continuous training programs on developing and maintaining staff competence.

6.0 PROCESS

The maintenance process for landscaping of Parks & Recreational facilities entails the following critical steps. These are illustrated in the process flow diagram below and are described in greater detail in the following sections.

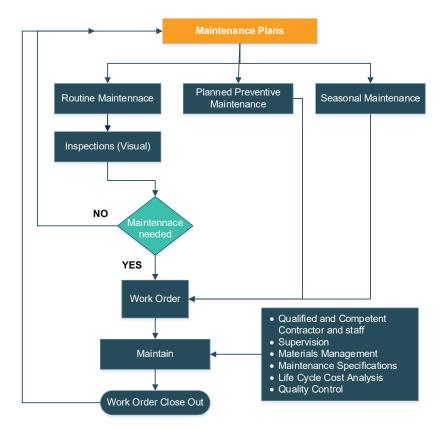


Figure 1: Landscaping (Parks & Recreation) Maintenance Process



6.1 Computerized Work Order System

The Entity/Contractor should utilize a work order system that may be electronic/paper-based to track work orders, including but not limited to the following variables:

- Assets location and sub-location.
- Personnel/Craftsman identification number, competencies, trade work order details (i.e., work order number, issuance/close out dates, and total work hours).
- Maintenance costs (i.e., contractor costs (if any), miscellaneous costs, total labor costs, materials' costs, and total work order costs).
- System/equipment utilized by the maintenance worker.
- Description of the task(s) performed.

The Computerized Work Order System data shall be sorted by the variables contained in the work order database which enables Park Maintenance Managers to perform the following:

- Accurately estimate the average time required for a work order to be completed after a request has been submitted.
- Estimate recurring costs for certain areas and/or equipment, indicating a requirement for replacement. Ensure the implementation of cost-effective measures during repair evaluations.
- Calculate seasonal and total costs for maintaining each park area or facility.
- Identify variations in costs for maintaining similar areas/facilities.
- Identify differences in labor productivity for specific job classifications.
- Estimate use of materials and supplies per week/month for better planning, purchasing, and inventory management.

6.2 Occupational Health and Safety

The Entity/Specialized Contractor shall adhere to the following minimum health and safety requirements while performing landscape maintenance activities:

- Workers should wear safety goggles, sturdy shoes, and pants to avoid injuries while using power tools.
- Workers should wear approved for task gloves to lower the risk of skin irritations, cuts, and contaminants Loose-fitting or torn clothing shall not be used.
- Provide supervision of staff on-site to ensure that standards are met.
- In order to protect workers from sunburn or sunstroke during the summer season, long sleeves, wide-brimmed hats, sunshades, and other protection measures should be utilized.
- First-aid supplies should be available on-site for all types of injuries that may occur at the workplace, and its location must be known to all employees.
- Only trained and authorized employees must be permitted to operate vehicles and equipment.
- Harmful/poisonous plants should be identified and removed immediately.
- Respiratory protection shall be used while cleaning u-waste as leaves/dust could contain animal droppings.
- Safety instructions shall be followed for any machinery use as per the manufacturer's guidelines.
- During maintenance activities, the Contractor/Entity shall consider health and safety, safe access, and egress of customers and users.
- Safeguard the health and safety of users, employees, inspectors, and members of the general public.
- Waste and arising's should be disposed of appropriately and not cause a hazard/harm to the surrounding environment.

Further guidance on HSSE and Environmental Protection can be obtained from Volume 10 of NMA&FM.



6.3 Landscape and Grounds Maintenance

The Entity shall establish and develop procedures for continuous maintenance and performance efficiency of the landscape components of the parks. The comprehensive landscape maintenance plan shall exercise actions and strategies (i.e., routine maintenance, inspection, and Preventative maintenance activities, which are described in the following sections), in order to preserve and maintain the landscape of parks.

6.4 Routine Maintenance

Specialized Contractors/Operators should visually inspect the assigned area daily. Routine inspections shall include, but are not limited to, the following:

- Evaluating site conditions and identify potential maintenance needs or safety hazards which require immediate attention.
- Identify excessive litter or debris, graffiti, broken or vandalized facilities, which may create a safety hazard.
- Daily schedule adjustments should be made based on the findings of these inspections.
- Additional inspections need to be planned during holiday periods (traffic within the facility will be significantly higher).
- Perform maintenance services as required.

The specialized Contractors/Service Providers shall follow the work order procedures and set priorities to action requests for maintenance and repairs. Problem areas identified through daily visual inspections and emergency reports by the Contractor and park users should be documented. Specialized Contractors/Service Providers shall follow-up and schedule maintenance as required.

6.5 Preventative Maintenance

The specialized Contractors/Operators should perform Preventative Maintenance to avoid issues that could become a hazard to park users and result in redundant costs. The Preventative Maintenance tasks listed in Attachment 1 shall be performed as part of Preventative Planned Maintenance (PPM) by the relevant Entity. The Attachment 1 list is not comprehensive and represents a collection of typical activities. The relevant Entity/Contractor shall develop programs and activities as part of the PPM plan.

The Entity/Contractor shall adhere to the following minimum requirements while performing landscaping maintenance activities.

6.5.1 Trees and Shrubs Maintenance

6.5.1.1 Pruning

- Pruning shall not be conducted without clear objectives.
- Pruning shall be conducted for rejuvenation purposes and the removal of hazardous, broken, diseased, or deadwood from a tree/shrub.
- Sharp and clean pruning equipment shall be utilized only.
- General pruning activities should aim to attend to the following satisfactorily:
 - o Deadwood and dying branches
 - o Broken and split branches
 - Weak limb structures
 - o Epicormic growth, water shoots, and stump sprout the main trunk
 - Removal of spent flower heads
 - o Regular trimming of hedges
 - Regular trimming of standard specimens for the desired shape
 - Seasonal pruning of herbaceous species and woody perennials
 - Maintaining sightlines in traffic treatments
 - o Removal of dead plants
- Final cuts should adhere to approved arboricultural techniques. Avoid bark tearing by using under cut, top cut, and final cut.

34

Landscaping & Grounds Maintenance Plan for Parks & Recreation

- Pruning should be removed from the site by the developer and recycled as mulch/soil ameliorant.
- Removal of lower branches/shrubs is not a permitted method of improving the ease of maintenance
 of the underlying area unless the development of a clean lower trunk is part of the natural
 development of the relevant plant species.
- Pruning shall be conducted at a specific time of the year, based on the tree type and the pruning objectives.
- If removing branches more than 3 centimeters in diameter, the location of the cutting site shall be sealed, and an approved cover shall be utilized and painted with a sealing material (this prevents sap flow, signs of wilting, and insect and fungal infections).
- Pruning should be conducted in a manner that does not affect/damage the stem tissue of the tree.

6.5.1.2 Planting

- The specialized Contractors/Service Provider should replant failed, damaged, or stolen plants as soon as practicable after identification. Planting can be performed at any time of the year, subject to ambient weather, irrigation conditions, and availability of suitable species. The majority of the planting program should be completed during late autumn to early spring (based on the species). Preparations for planting should be completed in advance of this period (i.e., stock orders to suppliers).
- Incorporate any necessary preparation and protection of plants to maximize established capacity (including adequate herbicide treatment, group plantings in prepared and mulched beds, tree guards, mulching, and weed competition control).
- Suitable protection, in the form of mulching and tree guards, is required for the planting of individual trees in open grassed areas.
- The specifications of the supplied trees should be as follows:
 - o The main stems are straight, and the branches are in good condition.
 - Trees should have three of the main branches at the growth stage with adequate spacing distances.
 - The stems of the trees should be at least 1.5 to 2.0 meters long; stem length is calculated from the surface of the soil to the base of the branches.
 - The diameter of the stem should be no less than 8 to 10 centimeters, measured at the height of 60 cm from the ground.

6.5.1.3 Mulching

- Mulch shall be maintained to an even depth not greater than 100mm and not less than 75mm (depending on the material used) to cover exposed soil on shrubs, perennial beds, and mass planted tree areas (mulch cover shall be maintained to ensure the establishment of the plants and minimal weed growth).
- Mulch shall not be cultivated/incorporated into the soil.
- Mulch is not to be stockpiled on-site for extended periods and is to be utilized within one week from delivery.

6.5.1.4 Weed Control

Weeding activities should be conducted daily; they should be removed from the roots directly with care (so as not to leave the tree pans and green areas). For further information and guidance pertaining to weed control using pesticides, refer to Volume 6 Chapter 21: Pest Control Plan for Parks & Recreation (6.21.6) of National Manual of Assets and Facilities Management. If pesticides are utilized, then the precautions outlined in the Material Safety Data Sheet must be strictly followed. Isolating areas should be considered for the general public when pesticides are utilized, and warning signs should be considered as part of the maintenance plan/Risk and Method statement.



6.5.1.5 Fertilizing

The amount and type of fertilizer required vary according to the age of the plant and the quality of the soil. There are two types of fertilizers:

 Organic Fertilizers: Applied in the winter season and spread at the base of the trees in a circular manner, then combined with soil and watered immediately. The application rate and quantities should follow the supplier instructions/as follows:

Trees: (10-15) kg/tree
Large shrubs: (7) kg/shrub
Small shrubs: (5) kg/shrub
Hedges: (5) kg/meter

• **Chemical Fertilizers:** Applied two to four times annually, based on the plant age and in accordance with the supplier's instructions. It should be spread on the plant stem and watered immediately. The application rate and quantities should follow the supplier instructions/as follows:

Trees: (150-200) gm/tree
Large shrub: (100) gm/shrub
Small shrub: (50) gm/ shrub
Hedges: (50) gm/meter

6.5.1.6 Staking Newly Planted Trees and Shrubs

The Staking Method is based on the tree age, type, and purpose of planting. The objectives of tree staking are the following:

- Direct trees towards vertical growth without any distortion/curvature.
- Prevent movement (by wind) of the roots in planted trees (movements can tear new roots and slow down formation).
- Support the tree during the formation of firm roots.

Based on the tree type, there are different types of staking methods pertaining to the size and method of planting. All stakes should penetrate the soil by at least 60 centimeters.

- **Single Stake:** Utilized for staking bare-root trees, stakes shall be inserted before planting. The stake should be one third (1/3) of the height of the tree.
- **Double Stake:** Utilized for container-grown and root balled trees and beneficial on windy sites. Two/three can be inserted opposite to one another/equally spaced around the tree outside the root ball and secured to the trunk by long ties.
- Angled Stake: Utilized for trees planted on slopes, stakes should be inserted at a 45-degree angle and leaning towards the prevailing wind direction.

6.5.2 Lawn Maintenance

6.5.2.1 Mowing

- Except for the summer season, winter grass shall be moved regularly during the spring and fall season.
- Turf shall not be mowed when wet; watering shall be stopped for 24 hours before mowing.
- Mowing shall be uniform, at a regular speed, should be conducted in parallel paths and one direction (ensure no spaces are left between the paths).
- Mowing must not be conducted until the area is inspected and cleared of all litter and debris.
- All grassed areas shall be maintained in a weed-free state before mowing.
- After mowing, all hard surfaces (i.e., footpaths and roads) shall be cleared of cut material.



- Mowing shall be conducted regularly to maintain the turf length of 2-4 centimeters (based on the growth patterns and the purpose of turf use).
- Where the grass is taller than usual, no more than one-third (1/3) of the grass length should be removed in mowing activities. Mowing shall be conducted several times to reach the optimum length of the grass.

6.5.2.2 Edging

- Turf edging shall be conducted in conjunction with mowing, and only approved equipment shall be utilized.
- The edging shall be conducted to produce straight and regular lines.
- Edging should ensure that grass is prevented from reaching the tree bed.
- Grass must be at the level of the upper surface of the sidewalks/about 1-2 centimeters.

6.5.2.3 Aeration

- Aeration allows seeds to penetrate the soil and shall be completed before seeding and fertilizing.
- Lawns should be cleared from all types of weeds before aeration.
- Aeration for newly planted lawn shall commence within one year of planting.
- During aeration, the soil should be wet and not fully saturated with water.
- Aeration shall not be conducted in drought season or during high temperatures.
- Aeration can be performed manually/with machinery.
- Cold weather grass shall be aerated between March and May/during the fall season.
- Warm-season grass shall be aerated in spring and the fall season.
- Before aeration, the soil should be tested by digging a small section of the grass and examining the roots. Should there be less than 5 cm of root growth, the lawn requires aerating.
- Aeration should begin by preparing the area, and lawn shall be watered at least one/two days in advance. Aeration shall not be conducted in muddy areas as that may block the machinery.

6.5.3 Palm Tree Maintenance

Palm Tree Maintenance should be performed by providing irrigation, fertilization, and other agricultural work (i.e., pruning, pollination, harvesting, cultivation, and removing dry fronds, fibers, corymb, control work and replacing damaged/missing palms with identical dimensions).

6.6 Seasonal Maintenance

Preventative maintenance activities should be conducted throughout the year, and consideration should be given to the specific landscaping seasonal requirements that dictate the maintenance frequency and other attributes (i.e., fertilization, pest control, and mulching). Seasonal maintenance is influenced by the type of plants, trees, and turfs. For example, two types of turf are commonly used in Saudi Arabia; the Cynodon Dactylon, which is a warm-season grass, and Lolium Perenne grass, which is a cold season grass.

The specialized Contractors/Service Providers should follow a Seasonal Maintenance Plan, as illustrated in Attachment 2.

The list shown in Attachment 2 is not wholly inclusive but represents activities to be conducted. The relevant Entity/Contractor shall develop/create a custom program and activities checklist as part of a structured Seasonal Maintenance Plan.

The Contractors/Service Providers should refer to "Landscape Plants for ArRiyadh Region, A Reference Manual by High Commission for the Development of ArRiyadh" for further information and seasonal maintenance requirements specific to local trees, grass, and other plants used in Saudi Arabia.



7.0 ATTACHMENTS

- 1. EOM-ZM0-TP-000019 Landscape Preventative Maintenance Schedule Parks and Recreation Checklist
- 2. EOM-ZM0-TP-000020 Landscape Seasonal Maintenance Schedule Parks and Recreation Template



Attachment 1 – EOM-ZM0-TP-000019 – Landscape Preventative Maintenance Schedule Parks and Recreation Checklist

Park N	umber/Name:		REV.		
No.	ITEM	Frequency	CHECKED SATISFACTORY N/A YES NO		
1.0	Trees and Shrubs				
1.1	Pruning	Quarterly*			
1.2	Trimming	Monthly*			
1.3	Stem Cleaning	Monthly*			
1.4	Dead Plants Replacement	Ongoing (as needed) *			
1.5	Weed Control	Ongoing (as needed) *			
1.6	Mulching	Monthly*			
1.7	Organic Fertilizing	Twice a year*			
1.8	Chemical Fertilizing	Twice a year*			
2.0	Lawn				
2.1	Mowing	Weekly*			
2.2	Trimming	Weekly*			
2.3	Weed Control	Ongoing (as needed) *			
2.4	Aeration	Annually*			
2.5	Chemical Fertilizing	Three times a year*			
* Task, nature and frequency to be determined by site-specific requirements - depends among other things upon materials, exposure, and location					
No.	Reviewer's Comments	Resolution			
		\searrow			
		•			
Originator's Name/Signature and Date:		Checker's Name/Signature and Date:			



Attachment 2 – EOM-ZM0-TP-000020 – Landscape Seasonal Maintenance Schedule Parks and Recreation Template

