Chapter 2

The organisation of landscape management

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2.1 Introduction

In addressing the organisation of urban landscape management this chapter rests on the premise that the overriding goal is to deliver the maximum possible benefits from landscape provision, be this in terms of recreation, education, conservation, to client groups, for the least possible input of resources. In this context the 'resources' should be seen as referring to all inputs into the landscape, for example water for irrigation, directly or indirectly consumed fossil fuels as well as obvious costs such as labour. Sustainability should be considered along with economics, as the former encourages a longer term perspective to balance the typically shorter term economic view.

The bulk of urban landscape management is carried out by public sector organisations which vary in size from very small to very large. Landscape management agencies involving only a handful of staff can often be very successful in terms of delivering an appropriate quality of landscape, without being highly developed in terms of the organisation of maintenance works. They generally operate as a classic pyramidal hierarchy with a 'manager' and subordinates. Communication difficulties are generally minimal and a sense of common purpose is readily achievable. Examples of these simple management structures can be found in heritage landscapes, and other gardens in private or institutional ownership, for example the National Trust. Day-to-day decisions are made by the head gardener and implemented by the gardeners. Supervision of work by the head gardener allows an appropriate quality of landscape to be delivered. Where the latter does not materialise, the problem can be quickly identified and rectified. The head gardener may also operate as a landscape manager by developing policies (sometimes in conjunction with advisory committees) to guide the development of the landscape in question.

Success or failure of landscape management is largely attributable to the head gardener's ability to interpret or develop policy, plus the skills and attitudes of individual gardeners and head gardener, and the nature of the relationship between them.

As a result of the ease of communication and high level of supervision and motivation, small landscape management agencies are more likely to deliver high quality landscapes than are larger organisations.

The aim of Table 2.1 is to highlight the fundamental challenge faced by the landscape managers of large organisations in attempting to deliver quality public landscapes. The relationship between local government landscape maintenance and the garden are much stronger than commonly appreciated. Current day systems of public open space landscape maintenance closely mirror the approach employed in the nineteenth century estate garden, and introduced into the new parks departments by ex-head gardeners.

Table 2.1 might suggest that one means of improving the performance of landscape management organisations is to recreate the organisational relationships inherent in garden management and locate appropriate staff at each discrete landscape resource. This traditional approach is of real merit in some public open space landscapes and warrants contemporary re-evaluation. It is not, however, a panacea and can create more problems than it solves.

Size is a convenient but crude means to compare the demonstrable variation in the quality of landscape management across a range of organisations. There are also low performing, small, as well as large, landscape management agencies. It is not increase in organisation size in itself that leads to a greater risk of low performance, but the effect of size on the factors identified in Figure 2.1. One approach to these difficulties is to utilise organisational re-design, and methods of planning and organising landscape maintenance management that are dealt with later in this chapter.

A more fundamental approach is to review the overall style of management, and its effect on factors such as motivation, perception of organisational mission, communication, etc. Once organisations reach a certain size, if the management style adopted is hostile to the factors responsible for success identified in Figure 2.1, then successful landscape management becomes difficult to achieve no matter how much attention is paid to organisational design. One of the most enduring of the management philosophies that aim to optimise appreciation of organisational and personal mission, motivation, communication, productivity and effectiveness is Management by Objectives (MBO). The basis of MBO is that it is a participative approach to management that involves managers, supervisors and workers sitting down and agreeing upon what the organisation's role is, and the role of individuals and groups within this. It aims to harness the fact that when people have some sense of involvement and intellectual ownership of what they do they are often happier, and more motivated than when they feel themselves to be merely cogs in a greater machine. Motivation and performance are discussed in Chapter 3. MBO inevitably involves some decentralisation of control and decision making but is not to be confused with worker control. The key steps in MBO are identified in Figure 2.1.

MBO is a potentially very valuable approach for landscape management to adopt; however, it cannot be successfully applied to all situations. It is particularly difficult to implement in organisations which are used to a very traditional non-participative management style. It is also difficult to implement in situations where the work force has low commitment to their work. If MBO is to be adopted
Table 2.1  The influence of the size and nature of landscape management organisations upon their performance

<table>
<thead>
<tr>
<th>Factors affecting success of landscape management</th>
<th>Size and nature of landscape management organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical capacity of staff to clearly perceive appropriate landscape management objectives</td>
<td>very high  high—medium  medium—low</td>
</tr>
<tr>
<td>Typical level of motivation of decision makers</td>
<td>very high  high—medium  high—low</td>
</tr>
<tr>
<td>Typical level of motivation of ‘hands on’ workers</td>
<td>very high  high—medium  medium—low</td>
</tr>
<tr>
<td>Likelihood of communication being effective</td>
<td>very high  high—medium  medium—low</td>
</tr>
<tr>
<td>Typical capacity to deliver quality landscapes (in terms of satisfaction of previously identified objectives)</td>
<td>very high  high—medium  medium—low</td>
</tr>
</tbody>
</table>

\*1 = Very small, that is, the domestic garden of the enthusiastic amateur gardener (who may in practice be hindered to some degree by insufficient technical or design expertise); 2 = Medium, that is, institutional gardens, such as Botanic Gardens; 3 = Very large, for example, public open space management.

It must be pursued by managers with genuine conviction if it is not to be viewed by staff as a ploy to keep them happy through a sense of involvement. More in-depth coverage of the application of MBO to public open space management can be found in Howard and Crompton (1980).

2.2 Organisational structures for urban landscape management

2.2.1 Structures at the departmental level

As landscape management organisations increase in size the physical and intellectual distance between the decision maker (manager) and decision implementor (supervisors and field staff) becomes increasingly stretched. In addition, as a result of the large number of people employed within the organisation, managers tend to become removed from the detail of what happens in the field, due to the continuous demands of personnel management, and communication with the senior levels of the organisation, the public and politicians. Two-way processes such as communication between decision makers and implementors have to take place between a series of intermediaries (supervisors or middle management). The lengthening of this chain frequently leads to poor communication in both directions but especially from the bottom up, leading to a sense of disenfranchisement. This, in turn, often expresses itself in a loss of identification of the most junior staff with the organisation’s goals.

It is, however, important not to oversimplify causative relationships between these issues. Even in organisations that are models of communication and enlightened management it is unrealistic to expect unanimity of view between different levels within the organisation. The views of people in organisations are very often heavily determined by the context in which they work and what they do, and the culture of their peers. It is naive to believe that improved communication will by itself eliminate these differences. Good communication can lead to a sense of involvement which can assist in
gaining broad acceptance if not consensus on what the organisation should be doing.

In addition to the communication difficulties created by lengthening vertical hierarchies, larger organisations also suffer from the problem of the development of lateral hierarchies. Large organisations such as local government, within which most landscape managers operate, involve people from a wide range of disciplines and traditionally these have been organised into departments or sections within the overall organisation on the basis of like disciplines. The establishment of such groups, each with a well defined hierarchy, does much to simplify line management responsibilities of the overall organisation but does not always facilitate good landscape management.

Organisational structures at this overall level are determined by the heads of departments, city manager and councillors. Landscape managers generally have little capacity to directly influence these structures; however, this does not mean that these issues are not of significance to them, and that they should not argue for a review of structures at this level. A survey of public open space managers views on organisational structures (Hitchmough, 1990) suggests that most are surprisingly neutral to this issue, even though tree diagrams of their organisation suggests that existing structures may be suboptimal from a landscape management perspective. There is no perfect structure, as the success of landscape management is largely determined by the relationships between personalities, rather than tree diagrams per se. There are, however, better and worse structures to support landscape management.

(i) Functional organisation

This is the most basic and in practice most common type of organisational structure. An example of the functional model is illustrated in Figure 2.2. As with all organisational structures there are both advantages and disadvantages. Some of the most significant of these from a landscape management perspective are as follows (adapted from Eunson 1987):

**Advantages**

(a) Facilitates clear unambiguous job roles. The principle of unitary command (i.e., no one having more than one boss) is fundamental to functional organisation.
(b) Reduces possible duplication of effort or resource utilisation.

**Disadvantages**

(a) Frequently encourages a short-term, narrow approach to management, as the perceived mission is often based on the views of only one discipline.
(b) May encourage detachment from the overall goals of the organisation.
(c) Restricts coordination and communication between different disciplines.

This last point is particularly important with landscape management, an activity which needs to involve a number of disciplines. In functional structures, these disciplines are often located in different sections of the organisation. Multidisciplinary input becomes cumbersome and depends heavily upon the personal relationships between managers and subordinates in different sections. This may not necessarily be a problem as organisations generally function on the basis of the unofficial or shadow structure rather than that identified in official documents.

In Figure 2.2, disciplines with a key role to play in landscape management, for example, planning, landscape design, and horticulture, are located under separate managers. Recreation professionals are generally located within a separate department, frequently Community Services. These types of arrangements are particularly unfortunate with regard to landscape architects and the landscape managers, as the latter ultimately inherit the landscapes that the former design, post implementation. These two professions are only rarely found in the same sections in functional structures and some designs are created without full appreciation of the long-term capacity of management to sustain these landscapes. Landscapes designed in isolation from horticulturists not only cost more to manage but...
than need be, but also frequently perform much less well than is possible.

The separation of professional landscape designers from the decision making of landscape managers may result in crude or insensitive use of plant materials and hard surfaces, parks which are a collection of plants rather than a stimulating landscape. Parallel problems are associated with the separation of planning and recreation studies, from landscape architecture and horticulture. Under these types of functional structures, it is likely that all these disciplines believe they are doing a sound professional job, but due to the limitations of their specific discipline suboptimal landscape management occurs.

(ii) Divisional organisation
Divisional structures differ at least in principle from functional structures in that they are more likely to be the result of the question: 'what outcomes do we wish to achieve?' rather than 'what are the major disciplines working within our organisation?' A divisional structure for landscape management is illustrated in Figure 2.3.

Some of the characteristics of this type of organisation are as follows:

**Advantages**

(a) Make it easier to stay in touch with the overall objective of the organisation. Divisions are organised and staffed specifically to meet organisational objectives.

(b) Encourages communication and coordination between various disciplines within the division.

**Disadvantages**

(a) Risk of duplication of effort as different divisions confront similar issues.

(b) Isolates specialists from peers in other divisions.

(c) Encourages empire building (as do all formal permanent structures).

In Figure 2.3 the key knowledge and skills required in urban landscape management are all represented in the same group, greatly facilitating the possibility of achieving a multidisciplinary approach to landscape management. The reduction in contact with groups such as engineering operations involved in streetscape and other works may be detrimental, however, and detract from the overall gains of re-organisation. In the example given, administration has been devolved to the divisions to facilitate the objectives of the division and to take on board some of the tasks that might otherwise restrict the effectiveness of the dominant doing groups. Another characteristic of the divisional approach to landscape management which is demonstrated by a number of the local authorities that use this structure is that the number of hierarchies above the landscape management group is greatly reduced. In some cases, the manager is a member of the corporate management team of the organisation. This is a very important point regardless of whether the overall structure is functional or divisional, as where there are a number of tiers of managers from other disciplines each with their own agenda above landscape management, representation at the corporate level can be ineffective. Some of the most effective structures for landscape management have come about via the corporatisation of local government in which decision making at the highest levels is broadened to include the heads of the key divisions or departments.

Divisional organisation is most common in larger landscape management organisations where some of the additional costs of possible duplication of function can be more readily defrayed against the potential improvements in service delivery.

(iii) Matrix organisation
A matrix is a form of organisation where horizontal relationships are temporarily overlaid on the vertical relationships or chain of command of a functional organisation. The aim of this type of organisation is to allow multidisciplinary teams to be created to tackle specific projects without dismantling the overall organisational apparatus. (See Figure 2.4.)

**Advantages**

(a) Increases job variety.

(b) Combines the strengths of functional and divisional structures.

(c) Breaks down empires, improves communication.

(d) Increases officers capacity to handle complexity.

(e) Gets things done quickly.

![Figure 2.3 A landscape management organisational structure based upon divisional principles.](image-url)
Disadvantages
(a) Most suitable for specific projects rather than everyday work.
(b) Combines weaknesses of functional and divisional structures.
(c) Creates uncertainty due to individuals having more than one boss, an overthrow of the classic management principle of unitary command.
(iv) Informal organisations
This is common in consultancy-type organisations that involve teams of staff essentially operating at the same level, with a team leader to coordinate and provide direction. This can work very effectively where staff are motivated primarily by professional values, and can be utilised within a landscape management group. It is most effective when there is a clear goal for those involved, as even when restricted to management staff only, there may be a loss of clarity as to whom is responsible for what. Broader application to line management situations that involve a variety of hierarchies, groups and individuals in which professional values are poorly developed, is probably unworkable.

Organisational structures at the supervisory to field staff level
One of the major factors that influences organisation at this level is whether work is carried out by day (permanent or part-time employees) or contract labour. Much of what follows is primarily targeted at situations involving day labour, but is still of some relevance to contract situations. Beneath the level of landscape manager and assistant manager(s), the three key groups that can be identified are as follows:
Technical officers
Middle management and supervisors (landscape officers, forepersons and leading hands)
‘Hands on’ field staff

The position of technical officer differs from the other positions in that it is not directly involved in line management. In organisational terms, technical officers exist as a box on the side of the vertical line management hierarchy. Their role is primarily to provide information to line managers and supervisors to allow them to carry out works more effectively in the landscape.

The role of the technical officer should, however, involve more than the supply of technical information. In some cases this information can be abstracted from the existing literature; however, in other cases the information may not exist in written form, and may require the commissioning of research. In the long term, the costs of commissioning specific research via universities, colleges, and commercial contractors is less than the recurrent costs of remaining ignorant. A barrier to this occurring is the relatively small size of many Australian local government units. The problems that need to be addressed by research are often common to a number of authorities, so pooling of monies into a central research fund would allow substantial research to be carried out at a very limited cost to the individual organisation. Large municipalities, such as the City of Melbourne, support a number of research projects, for example, the capacity of different tree species to cause building damage on shrinkable clay soils (Misra and Sands, 1989).

The two other important roles for this position are the evaluation of landscape management
objectives, and long-term planning of future landscape management works. These two very important tasks should be carried out by the landscape manager; however, in reality managers are often so overburdened with administrative issues that evaluation of performance and planning are not fully addressed. Investigations carried out by Thorpe (1983) and Patrick (1990) suggest that the effectiveness of the decisions involved in operations such as tree planting in public open space are rarely evaluated. In many cases, no formal mechanism exists to undertake this important task and streets may be planted several times without a thorough review of why plantings are failing.

In this environment the role of the technical officer is a pivotal one in landscape management and will become ever more so as the need to manage landscapes more cost effectively requires that managers base their decisions upon a more in-depth understanding of landscapes, vegetation and clients. Unfortunately, the position of technical officer in local government tends to be the exception rather than the rule (Amerena, 1990). In order to function effectively the minimum level of education for a technical officer in landscape management should be a degree in horticulture or a related discipline.

As line management positions, middle managers and supervisors are much better understood within local government. A question that does need to be addressed, however, is: how many of these levels are required in landscape management organisations?

The answer to this question is in part determined by the size of the organisation, but to a considerable degree is the result of a decision on how tall or flat the organisation should be. Tall organisations involve a large number of supervisory levels each controlling only a small number of immediate subordinates. Tall organisations tend to work on the traditional premise that supervisors can only effectively control 5–6 direct subordinates. Some of the characteristics of tall organisations are as follows:

**Advantages**
(a) May allow close working relationships to develop between supervisors and immediate subordinates.
(b) Provides a ladder with a number of rungs for promotion, an important issue in maintaining staff morale.

**Disadvantages**
(a) There are many intermediaries between the most junior staff and senior managers, making communication more difficult and fostering a sense of isolation from the centres of decision making.
(b) Large numbers of supervisors are required adding unnecessary complexity to the process of communication and greatly reducing the speed of decision making.
(c) Supervisors are likely to be relatively conservative, and when present in significant numbers can be a impediment to effective organisational change.
(d) Costs of supervisors are high.

Flat organisations come about by having fewer levels of hierarchy with each supervisor responsible for a larger number of staff. Some of the advantages and disadvantages of flat organisations are as follows:

**Advantages**
(a) Fewer supervisors are required bringing about potential reductions in costs.
(b) The number of intermediaries between managers and the most junior staff are relatively few, fostering good communication and a sense of identity with the decision makers, the organisation and its objectives. Actual communication between management and a person within a tier may be relatively slow (depending upon the physical distribution of staff on the ground) and offset the advantages of the reduced number of tiers.
(c) The frequently inert central mass of the organisation is reduced, allowing change to be more readily implemented.

**Disadvantages**
(a) The ratio of supervisor to subordinates may be too low to allow the former to function satisfactorily. The maximum effective ratio of field staff to supervisor will vary depending upon the nature of the work and the characteristics of the supervisor and field staff in question.

Flat structures are currently in vogue in the organisational literature because they are superficially less expensive to resource and appear more enlightened. Flat structures are probably most effective in situations where a management by objectives approach has been implemented, and field staff understand and support the objectives of the organisation for whom they work. Neither flat nor tall forms of organisation can be seen as a panacea, but rather two options one of which may in some situations be more successful than the other.

(i) **Organisation of landscape maintenance staff in the field**

A review of urban landscape management organisations reveals a diversity of approaches to the organisation of maintenance staff. This diversity reflects the nature of the agencies themselves, past and present, and demonstrates that there is no one route by which to achieve effective or ineffective landscape maintenance. A common approach to landscape maintenance organisation involves the
allocation of staff (forepersons plus workers) with specific skills to high profile, specialised, landscape resources, such as golf courses, or municipal botanic gardens. The remaining staff are divided into two groups, each under a middle manager, one of which deals with maintenance of existing landscapes, the other, smaller group with new landscape works, such as construction, planting, irrigation, etc.

Staff within the maintenance group are allocated to the remaining territory of the landscape agency. This is divided into a number of sub-areas (frequently 3–6) with a more junior middle manager (foreperson or landscape officer) in charge of day-to-day maintenance under the supervision of the manager of maintenance. The size of maintenance areas vary dramatically. In an intensively managed botanic garden it may be only a few hectares in extent, but involve the same number of field staff that in local government public open space would cover several square kilometres.

Within these geographical areas supervisors and field staff are organised in accordance with one of the following approaches:

(a) Maintenance staff more or less permanently assigned to an identified unit of public open space

This traditional approach is often utilised to maintain distinctive landscapes that require advanced skills and knowledge. Some of the characteristics of this form of maintenance organisation are as follows:

**Advantages**

(a) **Maintenance staff more or less permanently assigned to an identified unit of public open space**

This is the probably the most widely used form of maintenance of a resource due to the difficulties in accurately matching the supply of day labour with the actual needs of the resource. Where a park needs say 0.6 of a maintenance person this may be achieved via the employment of a part-timer. Utilisation of existing full-time staff may be more difficult. More problematic are the seasonal fluctuations in work load in many resources which mean that staff may be chronically under- or over-staffed at various times of the year. Work often expands to fill the time available leading to overmaintenance of the landscape, i.e. the carrying out of unnecessary tasks, tasks at unnecessarily high frequencies, and the use of techniques that are hopelessly inefficient.

(b) **Maintenance staff assigned to a general mobile crew which moves from project to project as required**

This is the probably the most widely used form of organising staff in landscape maintenance. As with the preceding method, it is characterised by a number of strengths and weaknesses.

**Advantages**

(a) When working well, this approach is potentially very cost effective. Tasks are completed quickly due to the competition associated with peer group pressure and the stimulus of moving on to the next job at another site.

(b) Supervision of crews is more efficient than when workers are widely dispersed across a number of individual parks.

(c) Crews are likely to be far less emotionally attached to a given site than when work is carried out by staff based at the resource. This, in turn, may reduce resistance to implementing new management policies.

**Disadvantages**

(a) Crews may have little understanding of a particular site and may also feel little responsibility for the immediate consequences of their actions. Crew maintenance is likely to be least
successful in complex landscapes. This may restrict the quality of maintenance that is achievable, although this is more a reflection on the skills and motivation of the crew and their supervisors rather than an absolute characteristic. That crew maintenance can deliver very effective maintenance is demonstrated by the high standard of prestige domestic and commercial landscapes maintained by contract, crew-based labour.

Mobile crews may be difficult to control in some circumstances. This is, however, largely a reflection of the values of the workers and supervisors rather crew maintenance per se.

(c) Specialised mobile crews for specific and often highly skilled maintenance activities

Whilst as a general principle it is desirable to maintain as much job variety as possible for maintenance crews, there are a number of activities, e.g. herbicide application, grass mowing, tree maintenance, irrigation installation and maintenance, and general landscape construction and establishment, which are best carried out by properly trained and equipped specialist crews. Some of the characteristics of these are as follows:

Advantages

(a) Work is likely to be carried out in a more professional manner with fewer hazards to both workers and the public.
(b) Crews are, at least in principle, more accountable for their actions.
(c) Provides some staff with an opportunity to specialise into an area in which they are particularly interested.

Disadvantages

(a) The repetitive nature of the work may produce casual attitudes in staff or low morale resulting in low performance and unsafe working practices. Crews may also be exposed to a higher level of hazard as a result of the recurrent nature of the work. For example, workers involved in the routine application of pesticides may face a heightened risk from long-term low level exposures.

(d) Short- or long-term hybrids between the above

A number of intermediaries between the organisational approaches previously discussed exist and may be of value in specific situations.

Decisions on the nature of maintenance organisation must ultimately be made in the light of the nature of the workforce and resources being managed. The skill, with which people are matched to a particular task or means of carrying out a task, may ultimately be more critical than the form of maintenance organisation. In general, the mobile crew is the most productive method for public open space maintenance. In some sites, however, it is necessary to utilise the three forms of maintenance organisation discussed to satisfy the management objectives for those sites.

2.2.3 Organisational structures for contract labour

The use of contract labour in the management of public landscapes is much less common in Australia than in some other parts of the western world. It is, however, difficult to believe that this situation can continue indefinitely. In the United Kingdom, local government legislation was passed in 1988 to compel all local government agencies with an annual landscape maintenance budget in excess of approximately $500,000 to complete the transition to almost total contract maintenance of urban landscapes by 1994. Similar legislation has also been enacted in New Zealand.

Given the federal nature of Australia, such sweeping changes seem unlikely; a more probable scenario is a marked increase in contract maintenance in politically receptive local authorities. Maintenance is likely to be undertaken by a mix of contract and day labour, with contract labour being most popular for activities that require specific skills and equipment, for example, the application of herbicides and other chemicals. This mix of day labour and contract labour does not always work satisfactorily as the two systems require landscape managers to adopt a different approach. Successful contract management requires landscape management organisations to be absolutely clear as to their aims and objectives so that this can be communicated to the contractor. They must possess a landscape resource inventory to show exactly what has to be managed, where it is, and detailed specifications to guide and control the work of the contractor.

These devices for guiding landscape maintenance are discussed later in this chapter, but arguably none are absolutely essential for day labour maintenance, where the capacity to be laissez-faire without disaster, is considerable. The same is not true of contract management where organisations literally get only what they ask for in their specifications. If the specification is not clearly worded or conceived, the desired outcome will not be achieved. The other fundamental element in the success of contract maintenance lies in the rigorous supervision and checking of works to ensure the specified level of quality is delivered. This is less critical in day labour maintenance. Landscape managers who have tried and rejected contract landscape maintenance have sometimes failed to
recognise the fundamental changes in approach necessary for contract management to be successful. The overlaying of contract maintenance onto a day labour systems without these changes being implemented is likely to be unsuccessful.

The fundamental changes in outlook and organisation necessary with contract maintenance are illustrated by the approach presently being implemented in Britain. Changes in organisational structure and role begin at the landscape manager level, where the removal of the administration associated with the employment of day labour frees up managers to become involved in landscape planning and assessing the degree to which the organisation is satisfying its stated objectives. Technical officer positions pass on some roles to management, and play a major role in the writing of specifications, identification and resolution of maintenance problems.

Middle management operating at an area level is retained within the landscape management agency to supervise contracts and ensure that specified works are delivered at an appropriate standard. Quality control is fundamental to successful contract landscape maintenance. Supervisory and field staff activities are undertaken by the contractor.

Managing landscapes by contract produces very flat organisations consisting largely of management-orientated personnel. The main reason for politicians, local government and other organisations wishing to embrace contract maintenance is to reduce costs, via assumed increases in productivity and by transferring some costs to the contractor (some of which indirectly or directly are ultimately paid by the authority or state government). From a landscape management perspective, the most attractive feature of contract management is the opportunity for landscape management and maintenance to become more concerned with meeting the needs of clients rather than in-house staff. The advantages and disadvantages of contract management are discussed in Chapter 3. In the European countries where this form of landscape management is well established, the landscapes are often encouragingly successful. In countries more recently converted to this system, such as the United Kingdom, it is too early to judge success or otherwise. Some urban landscape managers within local government are now far more positive about the new approach than they initially were and believe that it has led to an increase in the standard of landscape maintenance (Labey, 1991). The process of arranging and managing contracts for landscape maintenance is reviewed in Audit Commission (1988) and Parker and Bryan (1989). (See Figure 2.5.)

### Figure 2.5

Respective roles of landscape management organisations and contractors in contract landscape maintenance. (Adapted from Audit Commission, 1988.)

#### 2.3 The role of planning in urban landscape management

Planning should be a fundamental component of urban landscape management. This activity is well represented in the literature that addresses the use of the landscape for recreation, for example, Gold (1980), and Hultsman, Cottrell and Zales-Hultsman (1987), but less so in that addressing the management of the landscape resource. Planning has previously been introduced in Chapter 1.

#### 2.3.1 Landscape management planning

This is a process of variable complexity that results in the development of a plan or document that assists in the effective management of a landscape resource. At the very least it aids the development of a clearer set of management objectives and may go much further and involve the community and all other stakeholders, and lead to the development of detailed policies and strategies.

Plans of this type are increasingly in vogue in landscape management. They are now seen as a necessity for publicly owned rural landscapes, and
may be a statutory requirement under state National Park legislation. Despite their reverent status, management plans run the risk of becoming an end in themselves rather than a means to an end. Management plans do not substitute for intelligent decision making by managers, but rather narrow down the range of possible decisions that can sensibly be made. Plans addressing the management of landscape vegetation appear to have first been developed by foresters, as a means to provide a longer term view, and some consistency to the management of silvicultural crops (Green, 1985). These plans were often fairly simple, consisting of a map of the resource in conjunction with the management actions or strategies necessary to satisfy the objectives identified for the landscape unit. The advantage of these types of management plans is that they are readily utilised by management in the field and do not overwhelm through information overload. These types of management plans are still in use, and are recommended even in very recent texts, for example Cobham (1990). In many cases, however, they have been replaced by a much more exhaustive approach to management plans. Unlike the first developed management plans which were designed to provide information to managers, a major goal of these latter plans is to involve the community in a public participation–consultation process. The management planning process currently in vogue in Australian landscape management is discussed in depth in Lipscombe (1987) and is outlined in Figure 2.6.

The planning approach to management plans may result in large, complex documents, which are extremely cumbersome to use. Much of the bulk is due to the presence of large volumes of resource inventory data, which whilst intrinsically valuable is rarely evaluated or integrated into the deliberations of the plan itself. A further problem with this style of management plan is that the critical issues that the plan was to address, may not be resolved. The most critical intellectual process in the development of the management plan is the synthesis of clear prioritised management recommendations from the mass of resource and other base data. To do this requires that those carrying out this task can, and are prepared to, distinguish between profound and trivial data. Far too frequently, the question ‘what is the relevance of this information?’ appears not to have been asked.

Some of the more recent management plans (Ernst and Young et al., 1990) have adopted a far more concise approach to plan production with a slim volume containing recommendations and the inventory data in a separate volume. The study in question was headed by management consultants and resulted in a punchy, highly usable document. A further characteristic of these types of plans is that they place considerable emphasis on how to implement the plan in the prevailing economic, social and political context.

The planning process identified in Figure 2.6 involves a very considerable input of time and money, and in its entirety is probably unrealistic for all but the largest, or most significant components of local government public open space. Public open space differs from many rural and wildscape parks in that it often consists of a large number of often quite disparate landscape settings. There are recurring issues in public open space landscapes which can be addressed by an overall management plan. Many of the component landscapes, however, require individual attention. In this context, comprehensive management planning is probably too expensive for local government to embrace seriously except at the overview level, or where management is particularly contentious. In the case of the large numbers of relatively low priority sites that comprise the everyday landscape, is there a half way point between a thorough management plan and no plan at all? The answer to this is clearly yes, and requires identifying and abstracting the elements from the management planning process that are most critical to local circumstances.

All of the activities in Table 2.2 are of value to management; given, however, restricted resources, the most fundamental and broadly valuable activities are the identification of general and specific management objectives. Once these are identified and broadly agreed upon by the organisation and the community using the resource then many of the issues that the rest of the headings aim to address tend to fall into place as a matter of course, irrespective whether a formal plan is developed or not. Objective setting is discussed in 2.4.1.
2.4 Landscape maintenance—management process

In addition to management plans, other approaches to improve the effectiveness of public open space maintenance and management and maintenance have been developed (Anon., 1979; Sternloff and Warren, 1984). The first half of these processes are concerned with planning and decision making, and are largely analogous to the development of a management plan as described in 2.3.1.

The latter part of the landscape maintenance—management process has no real parallel in management plans as it is concerned with day-to-day management in the landscape. The landscape maintenance—management process consists of a progression of steps as shown in Figure 2.7.

Whilst a useful model for how to approach the management of landscape maintenance the process outlined in Figure 2.7 is rather simplistic. The political and human realities of the organisation cannot be reversed at a stroke by such a process. Similarly, some parts of the process are less essential than others, for example, maintenance times, and specifications are not essential for day labour landscape maintenance. Despite these qualifications, the maintenance—management process provides a framework within which landscape managers can develop their own systems.
2.4.1 Formulating objectives for landscape management

The starting point of the landscape maintenance—management process is to develop written objectives in order to:

(a) guide short- and long-term landscape management, maintenance and design towards appropriate end points. Landscape management is frequently a complex activity carried out for periods of time longer than human working lives. The continuity of thought and action that objectives help to provide is very valuable.

(b) to facilitate management by objectives.

(c) measure the success or otherwise of the organisation's policy.

Without clear definitions of what the organisation is attempting to achieve, it is extremely difficult to assess actual performance.

Identifying landscape management objectives is a challenging process as it addresses the fundamental reason for the organisation to exist and its relationship with its main clients, the public. It follows that this process should involve not only other parts of the organisation but also whenever possible the community, via a public participation process, before the objectives become part of an organisation's policy.

The words 'goal', 'aim' and 'objective' are widely used by those involved within urban landscape management; however, in practice there is confusion as to the precise meaning of these words. This discourages managers fully embracing these concepts as a practical means to clarify and establish direction. The word 'objective', in particular, is widely used in a very general sense to encompass any statement of future thought or action. Words such as 'goal' and 'policy', and their hierarchical relationship with objectives, create further uncertainty.

This uncertainty is reflected in the literature with Green (1985) diverging from the mainstream by equating goals with policy or strategy, and objectives with proposals. Standardisation of application of these terms is required to make them more user friendly to those who are inexperienced in this area of landscape management. In this text, the above words are used as follows:

(i) Goals and aims

These are broad statements of intent which set the general direction towards which landscape management agencies should channel their efforts. Such statements are the starting point for the formulation of objectives but due to their general nature are insufficient by themselves. Goals and aims should address philosophical as well as more mechanistic ideas, e.g. issues such as quality of experience as well as concerns about tidiness, etc. When goals—aims are formalised into a document they are generally subdivided for ease of reference into a hierarchy starting with:

1 General goals—aims
2–n Specific goals—aims for identified landscape resources or issues

Although sometimes difficult to do, there is value in attempting to organise goals—aims for both general and specific resources and issues in order of priority. Some examples of goals and aims for an urban landscape management organisation are shown in Table 2.3.

(ii) Objectives

This is a statement of intent generally addressing specific issues or problems. The key difference between goals—aims and objectives is that the latter are formulated so that it is possible to assess to what degree they have been achieved. It is this element of measurability that makes objectives so valuable as a yardstick to the landscape management process. Objectives should address significant rather than trivial issues, be readily understandable, and linked to a time frame. A widely used objective writing format is shown in Table 2.4.

Within policy documents, etc., objectives are to be nested under related general and specific goals and aims. An example of a nesting format is given in Table 2.5.

(iii) Policy

Frequently a combination of goals—aims and objectives formulated into a formal document used to guide and confine the scope of management. Policy is essentially goals—aims and objectives expressed in a more accessible sentence form. In practice, policy is used loosely to cover almost any premeditated course of action or thought.

(iv) Strategies, tactics, prescriptions and proposals

All these terms are essentially interchangeable and refer to the means by which resources (intellectual, economic and physical) are employed to achieve goals, aims, and objectives. These are not always needed, in some cases the objectives will be sufficiently explicit by themselves. Strategies are sometimes analogous with specifications; however, as specifications are generally developed to serve as the basis of a contract, they are generally far more carefully worded. Strategies are primarily intended to provide direction on appropriate approaches within a management by objectives system rather than totally prescribe decision making. They are most valuable when maintenance requirements are complex or poorly understood, as in the case of semi-natural vegetation or a herbaceous border.
Table 2.3 Examples of general and specific goals and aims for landscape management

<table>
<thead>
<tr>
<th>Policy terminology</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General goals and aims</strong></td>
<td>Design and manage landscapes in order to minimise cost and maximise client quality of experience</td>
</tr>
<tr>
<td></td>
<td>To provide a diversity of landscape experiences ranging from urban bushland through to formal heritage parks</td>
</tr>
<tr>
<td></td>
<td>To take into account and where possible reinforce the unique sense of place of all sites when developing new parks and other public open space landscapes</td>
</tr>
<tr>
<td></td>
<td>To increase the effectiveness of public open space management in the authority by regular re-assessment of the landscape management department’s structure and relationship with other departments</td>
</tr>
<tr>
<td></td>
<td>To minimise pesticide usage to situations where no efficacious alternative is available, and to restrict choice to the least toxic pesticides that will effectively control the pest organism</td>
</tr>
<tr>
<td></td>
<td>To reduce recurrent landscape costs where possible by greater initial capital outlays</td>
</tr>
<tr>
<td></td>
<td>To manage landscapes (where possible) within a framework of sustainability</td>
</tr>
<tr>
<td><strong>Specific goals and aims</strong></td>
<td>To improve the quality of experience associated with children’s playgrounds within a framework of concern for safety</td>
</tr>
<tr>
<td></td>
<td>To employ design and management techniques to extend the aesthetic value of urban grasslands</td>
</tr>
</tbody>
</table>

Table 2.4 A suggested objective writing format (adapted from Howard and Crompton, 1980)

<table>
<thead>
<tr>
<th>Style</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>to .</td>
<td>to decrease</td>
</tr>
<tr>
<td>action verb</td>
<td>the amount of water applied via irrigation to mown turf by 30%</td>
</tr>
<tr>
<td>results</td>
<td>by 199x</td>
</tr>
</tbody>
</table>

Specifications are dealt with in detail in 2.4.4. An example of a strategy nested under goals–aims and objectives is given in Figure 2.3.

2.4.2 Resource inventories for landscape maintenance–management

Recognition of the role resource inventories play in urban landscape management has been slow to materialise. The exception to this is interest in the past decade in street tree inventories. Some of the initial enthusiasm for this activity has dissipated as the recurrent costs of maintaining some of these information systems has become apparent. Street tree inventories are discussed further in Chapter 9. For inventories to be useful the information must be readily accessible. Database or Geographical Information System (GIS) formats that link graphical and written information are most suitable for this purpose. The role of resource inventories are as follows:

(a) To provide information on what is to be managed, how much exists, and where it can be found. Within any landscape management agency there is a need to document:

- the location of land parcels;
- the area of each discrete unit and the total area;
- the nature of the land in question, e.g. what percentage is mown turf, unmown turf, hard surfaces, bushland, etc.;
- the nature, condition and length of linear features such as boundary fences;
- the presence of service corridors, rights of way over the land;
- the presence, condition and significance of built and other components on the site.
### Table 2.5 Nesting of objectives and strategies within a goals and objectives framework

<table>
<thead>
<tr>
<th>Policy terminology</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General goals—aims</strong></td>
<td>To design and manage landscapes in order to minimise cost and maximise client quality of experience</td>
</tr>
</tbody>
</table>
| **General objectives**
  (to satisfy general goals and aims) | To increase contract maintenance of landscapes by 50% by 199y
  To ensure all re-development plans for parks are approved by both the landscape manager and landscape architect
  To review the success of all major landscape works on an annual basis |
| **Specific goals—aims**
  for tree management | To select trees to be in scale with the width of streets and to allow for eventual canopy closure over the centre of the road |
| **Specific objectives**
  (to satisfy specific tree management goals and aims) | To develop and implement a tree selection policy by 199y
  To minimise street tree pruning by installing bundled overhead cables in all major streets by 199y
  To minimise root effects on domestic property by installing root barriers in all newly planted streets |
| **Strategy**
  (to satisfy the final tree management objective) | Install ‘Biobarrier’ as a continuous drape to 1–1.2 m depth along the interface of nature strip and pavement. The barrier must extend to 25 mm above finished ground level |
| **Specific goals—aims**
  for grassland management | To employ design and management techniques to extend and diversify the aesthetic value of urban grasslands |
| **Specific objectives**
  (to satisfy specific grassland management goals and aims) | To introduce differential mowing regimes in all semi-natural parks commencing spring 199x
  To reduce mowing frequency in spring to maximise displays of flowering broadleaves in parkland situations, commencing spring 199x
  To commence work on the re-establishment of areas of native grasses in all large semi-natural parks by 199y |
| **Strategy**
  (to satisfy the final grassland management objective) | Establish 10 m² plots of *Themeda triandra* and *Danthonia setacea* at the council nursery to provide a reliable source of seed |

Most of this information is relatively static and does not require frequent updating. Where resources permit, more detailed information on landscapes vegetation should also be added. With regard to trees, researchers (See, 1987; Smiley and Baker, 1988) have identified a range of information fields that are required for an inventory that will be of value to management. Inventories should also address staff and equipment resources within the landscape management department.

(b) To assist in estimating necessary and potential costs of management Knowing how much of a landscape type is to be maintained in a given area allows managers...
to assess, independent of historical levels of input, the approximate costs involved. This facilitates objective cost-benefit analysis for a range of landscape types.

(c) Allows for the prioritising of management inputs in a resource limiting situation
Without readily available up-to-date information, it is extremely difficult for landscape managers dealing with large areas of public open space to assign work priorities in an appropriate order. In some authorities specialist crews drive around the streets looking for what is to be done, rather than work to a predetermined list of priorities.

(d) To allow the production of documents for contract management
Without an accurate resource inventory, it is impossible to do this.

(e) To allow for the utilisation of computerised landscape maintenance—management scheduling systems
To date the most widely used of these software packages are 'Park Man', 'Turf Man' and 'Press-Go' (Elliot, 1987). These systems can be used at a basic maintenance scheduling level to prompt managers and supervisors as to what has to be done in a given time period, through to, in the more sophisticated packages, producing detailed contract documentation, and providing budgetary control information. A fundamental requirement of all of these software packages is an in-depth landscape resources inventory.

2.4.3 Landscape maintenance standards

Landscape maintenance standards are a means of trying to establish the intensity, in terms of number of hours of labour expended per year that should be expended on a landscape. While maintenance standards are qualitative in nature, they are valuable as a means by which to assess the appropriateness of landscape maintenance and establish the labour resources necessary to maintain new landscapes. Standards are generally described by hierarchical terms such as: very low, low, medium, high and very high.

It is important that maintenance standards should be seen purely in terms of levels of resource input and not become confused by value-laden judgments as to what is good or bad. Traditionally educated horticulturists, and the general public, are prone to view landscape management involving low levels of labour input as inferior. Superior landscape management has been seen as that involving intensively maintained landscapes analogous to the domestic garden. These attitudes encourage the wasteful use of resources and restrict the development of a diverse suite of landscapes in public open space. The mowing of all public open space grasslands to resemble the domestic lawn is an example of the implications of these attitudes.

Even if resources are sufficient to allow maintenance at whatever level is desired, it is rarely sensible to do so. Over-maintenance may produce landscapes that are unattractive in that context.

Landscape quality is not dependent upon hours expended but whether maintenance produces an endpoint that is aesthetically and functionally appropriate to the landscape in question. In some landscapes, a large input is required to achieve the appropriate result, in others very few. A grassland of tall fescue, Festuca arundinacea, may require mowing at weekly to fortnightly intervals for much of the year. A more natural grassland of kangaroo grass, Themeda triandra, may only require mowing once or twice a year to 150 mm to provide an appropriate effect. There is a strong case to replace the value-laden 'maintenance standard' with the value neutral term 'maintenance input'.

What is 'appropriate' in maintenance must be decided by the landscape manager alone, or in concert with colleagues and the community. Deciding on maintenance standards requires sensitivity and a degree of firmness as the community may not be fully aware of the full range of demands placed on the landscape. These demands may be strategic in nature and include issues such as the need to reduce the use of irrigation, on-going reductions in labour resources for maintenance, swings in public taste, and demographic change.

A review of maintenance standards allows managers to rank landscapes in terms of consumption of resources. This listing can be used as a reference point to assess the appropriateness of the current level of maintenance, and secondly, as a means of prioritising resource allocations where the latter are insufficient to meet the demands of all landscapes. Where resourcing deficits are more or less permanently below what is needed then a different approach must be taken to ensure that the lowest priority sites receive at least some maintenance input.

Some of the criteria that managers can refer to, to assist in determining landscape maintenance standards, are as follows:

(i) The innate characteristics of the landscape in question
Landscapes, such as a rose garden, require more labour and other resource inputs than an equivalent area of shrub mass, or semi-natural bushland. Table 2.6 ranks a number of landscape types-elements in terms of typical maintenance standards.

(ii) Level of usage
The greater the level of usage and subsequent wear, the greater the inputs that have to be expended to
Table 2.6  Typical maintenance standards for a range of landscape types

<table>
<thead>
<tr>
<th>Location/style</th>
<th>Landscape type</th>
<th>Maintenance standard or maintenance input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban/formal</td>
<td>Specific sports turf, e.g. bowls, tennis</td>
<td>very high</td>
</tr>
<tr>
<td></td>
<td>Annual bedding</td>
<td>very high to high</td>
</tr>
<tr>
<td></td>
<td>Heritage 19th century gardens</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>High quality sports turf</td>
<td>high</td>
</tr>
<tr>
<td></td>
<td>Contemporary planting around buildings, mulched soil, shrubs and ground cover</td>
<td>high to medium</td>
</tr>
<tr>
<td></td>
<td>Urban streetscapes</td>
<td>medium</td>
</tr>
<tr>
<td></td>
<td>Parkland (mown grass and trees)</td>
<td>medium</td>
</tr>
<tr>
<td></td>
<td>Urban road verges</td>
<td>medium</td>
</tr>
<tr>
<td></td>
<td>General sports turf</td>
<td>medium</td>
</tr>
<tr>
<td></td>
<td>Urban shrub mass</td>
<td>medium to low</td>
</tr>
<tr>
<td></td>
<td>Urban bush (natural and re-created)</td>
<td>low to medium</td>
</tr>
</tbody>
</table>

Rural/informal  | Urban fringe road verges                                                      | low to very low                            |
|                | Urban fringe bushland\(^\text{A}\)                                           | very low                                  |

\(^\text{A}\) Largely depends upon the condition of the community and the number and type of alien plants present. At worst, may be medium.

Table 2.7  Physical carrying capacity of different landscape types

<table>
<thead>
<tr>
<th>Level of physical carrying capacity</th>
<th>Landscape type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>Resilient hard surfaces, for example (\text{in situ}) poured concrete</td>
</tr>
<tr>
<td>High</td>
<td>Mown turf on high nutrient and irrigation regime</td>
</tr>
<tr>
<td>Medium</td>
<td>Mown turf on low nutrient and irrigation regime</td>
</tr>
<tr>
<td>Medium</td>
<td>Parkland (trees with exotic mown turf understorey)(^\text{A})</td>
</tr>
<tr>
<td>Low</td>
<td>Bushland with indigenous grass dominated understorey(^\text{b})</td>
</tr>
<tr>
<td>Very low</td>
<td>Low woody or herbaceous ground covers</td>
</tr>
</tbody>
</table>

\(^\text{A}\) Depends on soil type and moisture status. On frequently irrigated fine-textured soils, surface compaction will often result in slow decline of all but the most tolerant tree species.

\(^\text{b}\) Many understorey species sensitive to the shearing forces imposed by traffic, and which indirectly leads to mechanical disturbance that favours alien ruderals.

prop up the resource at an acceptable, sustainable level. As can be seen from Table 2.7, landscapes vary considerably in the level of wear or physical carrying capacity that they can sustain.

(iii) The proximity of the landscape to the viewer or user, plus the user’s perception of what the resource is or should be

Landscapes that are seen largely from afar and rarely visited, or are identified in the mind of most viewers as natural or semi-natural can be managed at a lower maintenance standard. (See Figure 2.8.) Closely associated with this is the speed at which a landscape is viewed. Detail cannot readily be appreciated when viewed from a moving as opposed to static vantage point.

(iv) The designer’s vision of what the landscape was to be

For most urban landscapes there is no documentation on the designer’s long-term intent. Consequently there is a need for managers to attempt to interpret this as accurately as possible. Considerable sensitivity and understanding is required for this process to be successful. In historically significant landscapes the current trend is to undertake a conservation analysis of the landscape in order to establish what is significant and what is not. From this, the nature and intensity of maintenance can
be established. The management of heritage landscapes is discussed in Chapter 16. A current trend in landscape architecture is to develop at least a basic plan of management concurrent with the design. Ironically, these management guidelines are often seen as an unwarranted extra cost by the client and not taken up.

(v) The phase of maturity of the landscape

Maintenance standards can rarely be uniform across the life of landscape vegetation. They must change in response to the growth, development and decline of the constituent plants. The distribution of maintenance costs across plant life cycles are discussed in Chapter 4.

2.4.4 Landscape maintenance specifications

Traditionally, urban landscape management involving day labour has not utilised maintenance specifications to any degree. Specifications have been regarded as superfluous, as it has been assumed the field staff will know, or will be told by the supervisor how the work is to be carried out. Whilst these assumptions are not always correct, with day labour specifications are probably only essential with hazardous tasks. To develop good specifications requires a large input of time, knowledge and intellectual effort. (See Figure 2.9.) Some specifications have a potentially long life span without the need for on-going amendment, others require regular review as new techniques, and changed circumstances come into play. Where specifications do not evolve they can become a retarding device. This can be seen in commercial landscape architecture where suboptimal specifications linger long after having been shown to be out of date.

Specifications are essential for contract maintenance; in day labour organisations that operate via a management by objectives approach, and where computer based, maintenance scheduling systems are used. In the latter, without specifications the computer cannot calculate what is to be done, how long it will take, etc. There are two main types of landscape maintenance specification:

(i) Descriptive

These are formulated on the basis of attempting to foresee all of the possible inputs necessary to maintain a landscape at an identified maintenance standard. Specifications based on this exhaustive approach tend to be long and rather cumbersome. Their advantage is that when thoroughly thought through they present the contractor or day labour with few excuses for why the work was not completed as specified. On the negative side, they compete with, and in some cases substitute for, common sense, encouraging the contractor to proceed with an action against their better judgment. The contractor is placed in a no win situation, and may follow the letter of the contract even if the outcome appears likely to be undesirable. Even with the most carefully conceived specifications there will always be situations on the ground where a descriptive specification is inappropriate and must be re-interpreted for changed circumstances.

(ii) Performance-based specifications

Unlike descriptive specifications, these are outcome, rather than input orientated. They specify a prescribed level of performance to be attained by the contractor and leave considerable latitude as to how this level of performance is achieved. It is necessary to have safeguards built into the specifications to ensure that performance is achieved by acceptable means, for example, hand weeding bark undersurfacing in playgrounds, rather than the use of residual herbicides. Performance-based specifications are most suitable for highly skilled contractors or day labour who are sufficiently sophisticated to perform to the desired level within what are essentially specific objectives rather than task descriptions.

Whilst in some ways less cumbersome to write, performance specifications require landscape managers to think more deeply about what they are attempting to achieve via maintenance. The capacity to link physical works on the ground with previously identified landscape management objectives is inherent in performance-based specifications.

2.4.5 Times for landscape maintenance activities

When combined with inventory data, work rates provide managers with a measure by which to assess productivity in existing landscapes, and assist in

**Figure 2.8** Maintenance standards in the country cemetery. The relaxed appearance might be considered to imply a lack of care by some, but in such an infrequently visited landscape is probably appropriate in terms of resource inputs as well as contributing to the semi-natural ambience of old roses and native grasses.
planning labour requirements for future landscape developments. Determining realistic values for landscape maintenance work is often rather difficult. In Australia, time and motion studies have never had a major impact on urban landscape management. Some of the reasons for this would appear to be community tolerance of low productivity, and unwillingness on the part of management and politicians to antagonise labour unions. These views are now changing, and this is reflected in award restructuring and the introduction of contracts that link productivity to pay.

Most published maintenance work times are of North American and British origin. The North American times are generally derived from the commercial landscape contracting industry (Robinet, 1983; Anon., 1986; Anon., 1990). The British data are for local government day labour employed via a bonus scheme arrangement (Anon., 1973). Given cultural and climatic differences neither data are necessarily applicable to Australian conditions, without judicious interpretation.

An alternative source of information on times is to analyse how many hours were expended in the past on maintaining landscapes. Historical data are, however, potentially misleading, unless it involves some evaluation of the productivity of the labour and management systems employed at the time.

### Maintenance scheduling

Maintenance scheduling is the process by which works which have previously been identified and prioritised are relayed to supervisors and finally to hands-on maintenance staff. Scheduling is a vital part of the maintenance–management process as it is the link between what should be done and what is done. Landscape management organisations may spend considerable amounts of time identifying objectives, maintenance standards, but then fail to deliver due to problems at the scheduling level. The complexity of the process increases as the area being managed and the number of staff involved increases. At the heart of the scheduling process is the need to produce a checklist for an identified time period: what is to be done?, at what frequencies?, where does it have to be done?, who, and what equipment is available to do it?, and, what is the order of priority for task initiation and completion?

Carried out manually, scheduling is potentially a very time-consuming activity. Computer scheduling systems such as 'Press-go' are time consuming to set up, but once established more than repay this input, especially in situations where experienced supervisors are unavailable due to illness, leave or resignation. An intermediate between computer and diary-based scheduling is the use of wall-mounted scheduling boards. These are essentially a matrix of maintenance periods (often a week or a fortnight) and the tasks that have to be undertaken. They are particularly useful for landscapes of limited size in which maintenance activities are generally fairly predictable.

There will always be some tasks that are not completed, and scheduling systems must be capable of taking these into account, so that they can be assigned a higher priority in the next scheduling period and not forgotten. In practice, maintenance scheduling is often carried out via a *laissez faire* approach, with supervisors making a decision on what has to be done at the beginning of each day or week. In small-scale landscapes intimately understood by a competent supervisor, this approach may be satisfactory. It is, however, just as likely to lead to a situation whereby tasks are not completed or high priority is ascribed to tasks that are really low priority. Irrespective of the means by which it is achieved, planning is essential to ensure scheduling addresses strategic as well as day-to-day issues.

### Implementation, review and adjustment of the maintenance–management process

Review is a critical phase in all management processes. In landscape management, due to the tendency to be concerned with what is done rather than what is achieved, it is often seen as a luxury rather than an essential. There is a need to establish a process of formal review of activities on a three–six monthly basis, at the end of each major project undertaken, so that individuals and the organisation can learn from their successes and failures. This type of review should involve managers, supervisors, and field staff and address objectives as well as activities.

The feedback this process generates is essential
if the organisation is to be responsive to the environment in which it operates, and be capable of amending its goals and objectives as need arises. Without a review process, activities that are seen by other professional groups or the public to be grossly ineffective may continue to occur at considerable cost both in terms of resources and organisation image.

Whilst formal review is extremely important, a review mentality also needs to be built into organisational culture at all levels. This can be achieved by training and participative management and the adoption of a total quality management program. Review needs to become a way of thinking rather than a one-off judgment of the success or failure of a project. It is only when this happens that landscape maintenance—management organisations become fully intelligent.

2.5 Summary

Because urban landscape management is predominantly undertaken by large organisations involving many people, often with widely divergent views and values, it is necessary to develop systems to aid the delivery of quality, cost-effective landscapes. One of the most fundamental means to contribute to achieve these goals are management philosophies such as MBO. This involves a participative approach to management in order to gain broad understanding of, and support for, the agreed mission of the organisation. Other means of facilitating quality landscape management involve the review of management structures and work organisation, from senior management to hands-on field staff. Management planning also has an important role to play, especially in terms of setting objectives to provide direction, and as a means of measuring the success of landscape management. It is, however, important that management planning be kept in perspective and be seen as a means to an end and not an end in itself. The process of identifying what works have to be done, the levels of input necessary, scheduling and reviewing these inputs on the ground, is vital in achieving the overall objective of quality, low-cost urban landscapes.

2.6 References

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