

The determination of pertinent contract document requirements for landscape projects in South Africa

by

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Preface

As the title: 'The determination of pertinent contract document requirements for landscape projects in South Africa' implies, the study investigates the landscape construction and maintenance contracting system in South Africa with the goal to identify those contractual issues that are unique and pertinent to landscape contracting.

The differences between working with live plant material as opposed to the inanimate components of other building trades are shown to render the forms of contract and subcontract typically used in the building industry in South Africa to some extent unsuitable for landscape work and that can lead to financial disadvantage for the employer, contractor or consultant. These forms of contract include the Joint Building Contracts Committee (JBCC) for building works, the *Fédération Internationale des Ingénieurs-Conseils* (FIDIC), the New Engineering Contract (NEC) and the General Conditions of Contract (GCC) for civil engineering works.

Through this study and its recommendations it is believed that the contract issues that do arise from using inappropriate contract documentation will be better understood and will enable writers and users of landscape and related environmental works contracts to reduce contractual risks or place them with the party most able to manage them.

This study does not purport to provide finite solutions to the identified problematic issues nor does it word its recommendations in adequate legal terminology.

The proposed addendum to the JBCC Nominated/Selected Subcontract Agreement (refer to Addendum E) to address the specific contractual requirements for landscape and environment related works should be seen as a first attempt still subject to refinement. In this respect the author welcomes criticism and comment from interested parties.

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- The South African Landscapers Institute (SALI) and their constituent bodies.
- All respondents in the survey conducted among developers, building owners, contractors and consultants, as well as to the organisations they represent.
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- Dr. Rienie Venter for assistance with the section on research methodology.
- My promoter Prof. AJ de Villiers (Department of Architecture, UP) and co-promoter Prof. MJ Maritz (Department of Construction Economics, UP).

In acknowledging their assistance, it must be emphasized that all opinions are my own unless otherwise stated, and were written from the perspective of a practicing landscape architect and academic and not that of a legal expert.

Abstract

The determination of pertinent contract document requirements for landscape projects in South Africa

Landscape and related environmental works are discussed as an integral and essential aspect of most land development projects, whether they are building or civil works, environmental protection, rehabilitation or landscape beautification.

Problematic contractual issues that regularly arise in landscape contracting from the use of standard forms of construction contracts for pre-main contract, in-main contract and post-main contract landscape work are identified and discussed. These forms of contracts have essentially been written for traditional building and engineering works and are shown to be inadequately addressing the unique contractual aspects relating to landscaping works.

The study focuses on the issues to be addressed in a contract between an employer and a landscape contractor for work to be undertaken before the main construction contractor has been appointed and on landscape subcontract work undertaken during the construction under the main contract. It addresses the problems surrounding the contractual practical termination of the landscape subcontract, the defects liability period and interim landscape maintenance as well as landscape maintenance work after the landscape installation has reached final completion.

The study points towards an appropriate form of contract for use in conjunction with the JBCC contract system to provide for the particular requirements of landscape contracting. It indicates the

necessary compatibility between landscape subcontractual requirements and the JBCC Nominated/Selected Subcontract Agreement. This required compatibility warrants a revision of or an addendum to the JBCC document. The requirements for a landscape maintenance contract, for use after termination of the landscape installation (sub)contract, are shown to be sufficiently different from the installation contract to warrant changes or addenda to the standard construction contract form.

From a review of literature on the landscape contractual environment in South Africa and a study of contracts commonly used in South Africa, pertinent landscape contractual issues are identified for the three phases in which landscape and related environmental works are performed, i.e. before the main construction contract, during the main construction contract and during the landscape maintenance period after completion of the main contract.

These issues are formalised and tested for validity and relevance by means of a survey conducted amongst developers and owners of building and engineering works, contractors and professional consultants.

The research is summarised, findings and conclusions for each of the three landscape works phases are presented and recommendations made to address the confirmed contractual problematic issues. The survey confirms the JBCC suite of contracts as the most widely used for landscaping contracts in South Africa and the recommendations therefore focus thereon.

The study concludes with a proposal for an addendum to the JBCC's Nominated/Selected Subcontract Agreement entitled "General and specific conditions of subcontract for landscape and related works"

and recommendations for further study of related issues identified in the survey but which fall outside the focus of this study.

KEYWORDS

building contract, contract law, landscaping, landscape architect, landscape architecture, landscape construction, landscape maintenance, subcontract.

***Die bepaling van pertinente kontrakdokumentvereistes vir
landskapprojekte in Suid-Afrika***

deur

Pieter Tobias Vosloo

Landskap- en verwante omgewingswerk word bespreek as 'n integrale en noodsaaklike aspek van meeste grondontwikkelings-projekte, hetsy bou- of siviele ingenieurswerk, omgewings-beskerming en – rehabilitasie of landskapverfraaiing.

Problematiese kontraktuele sake soos wat gereeld ontstaan deur die gebruik van standaard vorms van konstruksiekontrakte vir voor- hoofkontrak-, tydens hoofkontrak- en na-hoofkontrak landskapwerk word identifiseer en bespreek. Hierdie kontrakvorms is essensieel geskryf vir tradisionele bou- en ingenieurswerk en dit word getoon dat hulle nie die unieke kontraktuele aspekte verwant aan landskapwerk voldoende aanspreek nie.

Die studie fokus op die aspekte wat aangespreek behoort te word in 'n kontrak tussen 'n werkgewer en 'n landskapaannemer vir werk wat onderneem moet word voor die hoofaannemer aangestel is en op landskaponderkontrakwerk onderneem tydens die konstruksie onder die hoofkontrak. Dit spreek die probleme aan rondom die kontraktueel praktiese beëindiging van die landskaponderkontrak, die aanspreeklikheidstydperk vir gebreke en tussentydse landskaponderhoud, asook landskaponderhoud nadat die landskapinstallasie finale voltooiing bereik het.

Die studie dui op 'n geskikte vorm van kontrak vir gebruik saam met die Gesamentlike Boukontraktekomitee (GBK) se kontraksisteem om te voorsien in die besondere vereistes van landskapkontraktering. Dit toon die vereiste versoenbaarheid tussen landskaponderkontrakvereistes en die GBK se Nomineerde/Selekteerde Onderkontraak-ooreenkom. Hierdie vereiste versoenbaarheid regverdig die hersiening van of 'n addendum tot die GBK dokument. Dit word ook getoon dat die vereistes van 'n landskaponderhoudskontrak, vir gebruik na beëindiging van die landskapinstallasie-(onder)kontrak, voldoende verskil van die installasiekontrak om veranderings aan of addenda tot die standaard konstruksiekontrakvorm te regverdig.

Uit 'n oorsig van literatuur oor die landskapkontraktuele omgewing in Suid-Afrika en uit 'n studie van die mees dikwels gebruikte kontrakte in Suid-Afrika, word pertinente landskapkontraktuele aspekte geïdentifiseer vir die drie fases waarin landskap en verwante omgewingswerk gedoen word, teweete voor die hoofkontrak, tydens die hoof konstruksiekontrak en tydens die landskaponderhoudstydperk na die voltooiing van die hoofkontrak.

Hierdie aspekte word geformaliseer en getoets ten opsigte van hul geldigheid en toepaslikheid deur 'n opname onderneem onder ontwikkelaars en eienaars van bou- en ingenieurswerke, aannemers en professionele konsultante.

Die navorsing word opgesom, die bevindings en gevolgtrekkings vir elk van die drie landskapwerk fases word aangebied en aanbevelings word gemaak om die bevestigde kontraktueel-problematiese sake aan te spreek. Die opname bevestig dat die GBK se stel kontrakvorms die meeste gebruik word vir landskapkontrakte in Suid-Afrika en die aanbevelings fokus gevolglik daarop.

Die studie sluit af met 'n voorstel vir 'n addendum tot die GBK se Nomineerde/Selekteerde Onderkontrakoooreenkoms getitel "Algemene en spesifieke voorwaardes van onderkontrak vir landskap- en verwante werke" en aanbevelings vir verdere studie van verwante sake wat in die opname geïdentifiseer is maar wat buite die studiefokus val.

SLEUTELWOORDE

boukontrak, kontraktereg, landskapargitek, landskapargitektuur, landskapkonstruksie, landskaponderhoud, landskapping, onderkontrak.

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Abbreviations

CIDB	The South African Construction Industry Development Board established in terms of Act 38 of 2000.
CID FG 6	Focus Group 6 (Procurement) of the Inter-Ministerial Task Team on South African Construction Industry Development, which was the precursor to the CIDB.
COLTO	The Committee of Land Transport Organisations.
CSIR	The Council for Scientific and Industrial Research.
ECC	Engineering and Construction Contract (the principal form of contract in the New Engineering Contract (NEC) suite of Contracts as published by the Institution of Civil Engineers in the United Kingdom (UK)).

FIDIC	<i>Fédération Internationale des Ingénieurs-Conseils</i> and their Conditions of Contract for Works of Civil Engineering Construction.
GCC	The General Conditions of Contract for Works of Civil Engineering Construction, prepared and endorsed by the South African Federation of Civil Engineering Contractors' (SAFCEC) and the South African Institution of Civil Engineers (SAICE).
ILASA	The Institute of Landscape Architects of South Africa.
JBCC	The Joint Building Contracts Committee Incorporated (of South Africa).
JBCC MWA	The Joint Building Contracts Committee Series 2000's Minor Works Agreement.
JBCC N/S	Subcontract Agreement The Joint Building Contracts Committee Series 2000's Nominated/Selected Subcontract Agreement.
JBCC PBA	The Joint Building Contracts Committee Series 2000's Principal Building Agreement.
JCLI	The UK's Joint Council of Landscape Industries.
JCT	The UK's Joint Contracts Tribunal.
LI	The Landscape Institute (The Chartered Institute in the UK for Landscape Architects).
MBSA	Master Builders South Africa.
NEC	The New Engineering Contract suite of contracts as published by the Institution of Civil Engineers in the UK.
SACLAP	The South African Council for the Landscape Architectural Profession.
SAFCEC	The SA Federation of Civil Engineering Contractors.
SALI	The South African Landscapers Institute.
SCSLW	Specific conditions of subcontract for landscape and related works (document proposed by the author).

Introduction

1.1 The problem and its setting

Landscape works form an integral part of most land development projects, whether they are building works or civil works, environmental protection, rehabilitation or landscape beautification, and are often considered an essential aspect of such works.

The varied nature and wide scope of landscaping and environmental projects often make them difficult to reconcile with the standard forms of contract commonly in use in the construction industry and which were written specifically for building or civil works projects.

Building contracts developed over many years through the changing needs of employers, levels of technological skills, development of new materials and methods, as well as continued experience with the legal implications of their application.

The way the formalised building industry structures and regulates itself has led to specialist subcontractors being involved in an ever-increasing way.

Landscape work at building projects in South Africa has over time become “specialist” work, and since 1935 developed into an industry with a turnover of R1 314m in 1999 (Staples, 2002:36). In Table 1.1 the breakdown of the turnover for the exterior and interior plantscaping industries in South Africa is given.

TABLE 1.1
Breakdown of turnover for the exterior and interior
plantscaping industries in South Africa in 1999
(Staples, 2002: 36)

DESCRIPTION	TURNOVER R million
Exterior installation	600
Exterior maintenance	400
Interior installation	10
Interior maintenance	84
Golf course installation	40
Golf course maintenance	180
TOTAL	1 314
This industry had approximately 160 000 employees.	

The landscaping or plantscaping industry in South Africa has developed steadily since the early 1970s and by 2002 constituted 14% of the horticultural sector of the agricultural industry (Staples, 2002: 36).

The plantscape and landscape maintenance sector is generally considered part of the services industry in South Africa, and from Table 1.2, which indicates the estimated size of the industry, it can be seen that this sector makes up more than 8% of the total services industry (Staples, 2002: 36).

TABLE 1.2
Estimated size of the services industry in South Africa in 1999
(Staples, 2002: 37)

SERVICES DIVISION	TURNOVER R million	%
Contract cleaning	2 000	12.85
Hygiene	500	3.21
Laundry	300	1.93
Security guarding	4 800	30.84
Security surveillance	300	1.93
Office services	5 000	32.13
Waste removal/disposal	1 200	7.71
Pest control	150	0.96
Plantscaping (incl. landscape maintenance)	1 314	8.44
Total	15 564	100

Through expedience and a lack of widely accepted alternative forms of contract, contracts developed for the building trades have been and still are widely used for landscaping work.

There are however intrinsic differences between working with live plant material as opposed to the inanimate components in all other building trades. This renders the forms of contract and subcontract typically used in the building industry in South Africa to some extent unsuitable for landscape work and can lead to financial disadvantage for the employer, consultant and/or contractor. These forms of contract include the Joint Building Contracts Committee (JBCC) for building works, the *Fédération Internationale des Ingénieurs-Conseils* (FIDIC), the New Engineering Contract (NEC), and the General Conditions of Contract (GCC) for civil engineering works.

Carson (1992:52) finds that in the United Kingdom

Much of the practice of landscape architectural contracts has followed that of architectural and building work, even in areas where the basic materials are of a fundamentally different character. Building contracts deal basically with inert materials such as concrete, steel and timber...Inspection of these items is fairly straightforward and defects which are not detected at the building stage may appear and be rectified during the 'defects liability period'. Applying this type of contract to tree and shrub planting leads to problems which building contracts do not have. Firstly, inspection is much more difficult than with a building contract. It is easy to see if plants are of the size and species specified, but much more difficult to ascertain if they are viable, especially during the dormant season.

Loots (1995:985) states that the demand for standardization in the construction industry is totally appropriate;

Numerous man-hours are wasted by senior people in the industry being required to understand and accommodate the many different ways of expressing the same action in over fifty different forms of contract issued by professionals and major employers in any one country.

The South African Institute of Architects (SAIA, 1999:4.312:1) describes some of the benefits of using pro-forma contract documentation, namely:

The advantage of using model documentation is that there is a fair distribution of risk between the parties to the agreement. A further advantage is that the parties become familiar with their obligations and are in a position to enter into the building agreement with confidence.

The need for some standard form of contract is motivated by Clamp (1995:44) when he says:

If a new contract is drafted for each new project, or a local authority drafts its own, contractors will be suspicious of it and price accordingly

A standard form contract that was drafted unilaterally, i.e. without both parties having had the opportunity to make their contributions, may contain clauses that could be construed by the courts to be unenforceable. Where ambiguities exist in such contracts, those will be held to be *contra proferentum*, i.e. the interpretation most favourable to the contractor will be adopted by the court. In the UK, however, courts have held that where all sides of the industry have agreed a contract, this principle will not apply (Clamp, 1995:44).

The Construction Industry Development Focus Group 6: Procurement (CID FG 6), which was the precursor to the Construction Industry Development Board (CIDB), recommended in 2004 (refer to Section

2.2.2) that only the following forms of construction industry contracts be used in South Africa:

- FIDIC.
- GCC 2004 (incorporating the COLTO General Conditions of Contract of 1998).
- JBCC Series 2000.
- NEC (incorporating the Engineering and Construction Contract, ECC).

Whereas the JBCC is a contract documentation system that originated in South Africa and historically has been widely used in the private construction industry and more recently also in the public sector, it has up to now not had any representation from an organised landscape contractors' body such as the South African Landscapers Institute (SALI) or the Institute of Landscape Architects of South Africa (ILASA).

It is assumed that the majority of large landscaping projects in South Africa use the JBCC Series 2000 contract documentation and this exacerbates problems experienced by using inappropriate forms of contract for landscaping.

1.2 Statement of the main problem

Problematic contractual issues in respect of pre-main contract, in-main contract and post-main contract landscape work arise when using the JBCC and other forms of contract documentation for landscaping and related environmental works in South Africa. There are important issues that are not sufficiently addressed in these forms of contract that may require modifications to such contracts.

1.3 Statement of the sub-problems

1.3.1 Sub-problem 1

What are the issues to be addressed in a contract between an employer and a landscape contractor for landscape or related environmental work to be undertaken on a project before the main construction contractor for that project has been appointed and where such landscape contractor may eventually be a subcontractor to the main contractor for the further execution of the landscape work, and how can they be resolved?

1.3.2 Sub-problem 2

Are the most often used forms of construction contract or subcontract, such as the JBCC, suitable to be used for landscape work during the construction of the main works and do these contracts provide for practical termination of the landscape subcontract at the start of the defects liability period during and after which landscape maintenance may be required?

1.3.3 Sub-problem 3

What are the problems encountered when using standard forms of construction contract, such as the JBCC, for landscape maintenance work after the landscape installation subcontract of the main contract has reached final completion, and how can they be resolved?

1.4 Hypotheses

1.4.1 Hypothesis 1

It is hypothesized that an appropriate form of contract can be formulated to be used in conjunction with the JBCC contract system for situations where an employer requires landscape or related environmental work to be done by a landscape contractor, who may eventually be a subcontractor to a building or civil works main contractor, before the latter has been appointed.

1.4.2 Hypothesis 2

It is hypothesized that the extent of compatibility required between landscape subcontractual requirements and the JBCC Nominated/Selected (N/S) Subcontract Agreement provisions is sufficiently large to warrant a revision of or at least an appropriate addendum to the JBCC N/S Subcontract Agreement.

1.4.3 Hypothesis 3

It is hypothesized that the requirements of a landscape maintenance contract, for use after the termination of the landscape installation (sub)contract, are sufficiently different from the standard forms of construction contract, such as the JBCC, to warrant either changes or addenda to those forms of contract.

1.5 Delimitations

- 1.5.1 This study will be limited to the contractual issues related to a main- or subcontract for landscape construction and maintenance work between an employer or a main contractor and a landscape contractor or subcontractor.
- 1.5.2 This study will not include project-specific design and technical issues or project specifications but may refer to such to illustrate a principle.

- 1.5.3 The study will focus on the JBCC Series 2000 contract documents as a basis for landscape contracts in South Africa while only brief overviews will be made of the forms of contract produced by FIDIC, GCC, NEC and others.

1.6 Definition of terms

The following specific terms have been developed for use in this study and are defined and clarified as follows:

Contractor

Means the party contracting with the employer for the execution of the works. In this study the terms “main contractor” and “principal contractor” are used synonymously with “contractor”.

Employer

Means the party contracting with the contractor for the execution of the works. The employer usually employs consultant(s) to undertake the design and inspection of the construction of the project on his or their behalf. In this study the terms “developer” and “owner” are used synonymously with “employer”.

In-main contracts

The term is used to describe those landscape contracts that are entered into between the landscape contractor and the employer or between the landscape subcontractor and the main contractor during the duration of the main project construction contract.

Landscape projects

Those projects that include landscaping, environmental rehabilitation and conservation work.

“pertinent” contractual aspects

Those contractual aspects that cause problems/confusion/conflict to any participants in the contractual process of a landscape project.

Post-main contracts

The term is used to describe those contracts that are entered into between the employer and the landscape contractor for landscape work (usually landscape maintenance) to be done after the main contractor, usually a building or civil works contractor, has completed the main construction contract and it becomes contractually difficult for him to have the landscape subcontractor under his control for an extended period normally not allowed for in the principal construction contract agreement.

Pre-main contracts

The term is used to describe those contracts that are entered into between a landscape contractor and the employer for certain work to be done before and in anticipation of a main contractor appointment for the bulk of the construction works. Pre-main contracts typically include growing contracts to ensure the required number and species of plants will be available for the main contract, including environmental protection and rehabilitation work, and the relocation and protection of existing flora.

“problematic” issues

Those contractual issues pertaining to aspects of landscaping work not sufficiently catered for, or not catered for at all, in the contract.

Standard contract documentation

Those forms of contract or contract forms as distinct from consultant-prepared project specific contract documentation.

Subcontractor

Means the party contracting with the contractor for the execution of the subcontract works.

1.7 Assumptions

- 1.7.1 It is assumed that the JBCC forms of contract are currently the most widely used for construction contracts which contain landscape work in South Africa, and that this will continue to be the case in the foreseeable future. This assumption will however need to be confirmed in the study.
- 1.7.2 It is assumed that the FIDIC, NEC and GCC forms of contract are currently the most widely used for civil works contracts which may contain landscape work, and that this will continue to be the case in the foreseeable future. This assumption will however need to be confirmed in the study.
- 1.7.3 It is has been indicated that the JBCC will not support attempts to provide trade-specific forms of subcontract (e.g. landscape subcontracts), and that at best they will support an appendix to the standard JBCC N/S Subcontract Agreement provisionally titled *Specific conditions of subcontract for landscape work* (Bold, 2006).

1.8 Goals and objectives

- 1.8.1 The purpose of the study is to identify the unique aspects which landscape contracts (as opposed to building contracts) need to address. This will include those contract conditions which create problems for employers, consultants and contractors during the pre-main, in-main and post-main contract periods.
- 1.8.2 This study will attempt to establish relevant criteria and propose appropriate content and structure for landscaping contracts in South Africa.
- 1.8.3 In the case of the JBCC contract system, one of the objectives will be to formulate and integrate the criteria and considerations identified under 1.8.1 and 1.8.2 above in compatible addendum to the JBCC N/S Subcontract Agreement.

1.9 Research methodology

1.9.1 Introduction

Leedy (1985:4) describes research as a way of looking at accumulated facts so that those data become meaningful in the total process of discovering new insights into unsolved problems.

The Odhams Dictionary of the English Language (Smith & O'Loughlin, *sine die*:896) defines research as

Methodical and original inquiry into, or study of..., some subject....in order to add materially to existing knowledge of....that subject.

The purpose of this section is to provide background to the research design and methodology that were followed in this study and to discuss the reasons thereof. Reference is made to the research paradigm and methodology; the manner of data collection and data analysis methods in order to address the main problem and its sub-problems.

The research paradigm in this study investigates and explains phenomena, i.e. perceived problem issues in landscape contracting in South Africa, provides orientation in terms of the landscape contractual environment, and guides the study.

According to Denzin and Lincoln (2000: 19) a research paradigm is based on the following points of departure:

- Ontology: What is the nature of reality?
- Epistemology: What is the relationship between the inquirer and the known?
- Methodology: How do we know the world or gain knowledge of it?

These points of departure shape how the researcher sees the world and acts in it.

The researcher is bound within a net of epistemological and ontological premises which – regardless of ultimate truth or falsity – become partially self-validating.

(Bateson, in Denzin & Lincoln, 2000: 19)

Denzin and Lincoln (2000: 19) suggest that the net that contains the researcher's epistemological, ontological and methodological premises can be termed the paradigm, or interpretive framework, or the basic set of beliefs that guides his actions. They furthermore suggest that all research is interpretive, it is guided by a set of

beliefs and feelings about the world and how it should be understood and studied.

In this regard some authors also refer to *reflexivity* which is a subjective concept that refers to personal experience, which influences the thoughts and meanings of a researcher. Denzin and Lincoln (2000:19) find that the researcher's beliefs guide the research work and his background influences the interpretation of data. In this respect the author acknowledges that his qualifications and experience may have resulted in a certain bias and subjectivity to the research design in terms of the compilation of the survey questionnaire and interpretation of the results.

In order to address the risk of subjectivity and to avoid the

...net of epistemological and ontological premises...

(Bateson, in Denzin & Lincoln, 2000:19)

researchers should make their observations from multiple positions. This approach is referred to as the *triangulation of method* (Neuman, 2000:125) and means the mixing of qualitative and quantitative styles of research and data. Neuman (2000:124-125) finds that most researchers develop an expertise in one style only, but the two methods have different, complementary strengths, thus counter-balancing subjectivity and bias.

1.9.2 The research approach: Positivism versus Interpretivism

The positivistic approach represents a search for external and internal causes of behaviour, i.e. those caused by environmental influences and those caused from within. The focus of this search is on predicting and controlling the environment that produces that behaviour. The search employs objective and quantitative methods in artificial settings (e.g. experiments and surveys) (Lindlof &

Taylor, 2002:8). Thus, the positivistic approach results in objective research which yields quantifiable data.

The interpretive approach, as opposed to the positivist approach, refers to knowledge that is intentionally obtained by means of the interpretation of the meaning of constructs through a person's lived experience (Leedy & Ormrod, 2001:147). Interpretive research thus leads to a considered opinion of a qualitative nature. In qualitative research, data may differ between researchers but the focus remains on the uniqueness and quality of the personal experience.

Both qualitative and quantitative methods were employed in this study. These are complementary and parallel as each addresses various aspects of the research process and jointly the problem statement.

1.9.3 Qualitative research approaches

Leedy and Ormrod (2001:147) suggest that all qualitative research approaches have two things in common. They firstly focus on phenomena that occur in the real world and secondly they involve studying these phenomena in all their complexity and components.

It is widely accepted that researchers should strive towards objectivity in their research and that their observations should be influenced as little as possible by any perceptions, impressions or biases that they may have (Leedy & Ormrod, 2001:147). These authors however suggest that although objective methods may be appropriate for studying physical events, such as may occur in chemistry or physics, an objective approach to studying human events such as social structures (author's note: such as a contract

between two parties which can be termed a creative product) may neither be desirable or perhaps even possible,

Qualitative researchers believe that the researcher's ability to interpret and make sense of what he or she sees is critical for an understanding of any social phenomenon
(Leedy & Ormrod, 2001: 147).

Many qualitative researchers believe that there isn't necessarily a single ultimate Truth to be discovered, instead there may be multiple perspectives held by different individuals, with each of these perspectives having equal validity or truth
(Cresswell, in Leedy & Ormrod, 2001:147).

Leedy and Ormrod (2001: 148) find that when little information exists on a topic, when variables are unknown or when a relevant theory base is inadequate, a qualitative study can help define what is important and what needs to be studied.

1.9.4 Qualitative research paradigm applicable to this study

The qualitative research approach for this study combined literature reviews, interviews and workshops or focus groups.

Literature relating to contract document requirements for landscape projects on both international and local levels was studied. In addition, various interviews were conducted and three workshops were presented in the period 2003 to 2006.

The purposive sampling method was employed to decide on appropriate persons to be interviewed. Neuman (2000:517) defines purposive sampling as

A type of nonrandom sample in which the researcher uses a wide range of methods to locate all possible cases of a highly specific and difficult to reach population.

The interviews were conducted in a semi-structured format in order to both gain answers to specific questions and also to stimulate dialogue between the author and the interviewee on pertinent landscape contractual issues. As a phenomenological research method in qualitative research, interviews are considered a valuable tool. Phenomenological research (phenomenology refers to a person's perception of the meaning of an event, as opposed to the event as it exists external to the person) is described by Leedy and Ormrod (2001: 153) as a study that attempts to understand people's perceptions, perspectives and understanding of a particular situation.

The interviewees consisted of widely acknowledged specialists in the fields of building and landscape contractual law.

The workshops, conducted under the auspices of the trade magazine *Landscape SA* and attended primarily by landscape contractors and landscape architects, took the form of focus groups. A focus group is a qualitative research method that relies on the researcher's focus and the group's interaction. The defining features of a focus group are that it gives direct access to information that may not be easily observed by the researcher and that it targets data directly. The researcher tables a concentrated amount of data on the topic of interest and the group responds by adding reports on a wider but still relevant range of issues which are then redirected by the researcher to his field of interest. A focus group is a more efficient way to gather the equivalent amount of data in comparison to individual interviews.

In this study's case the author presented certain problematic landscape contractual issues that emanated from his own professional experience and the study of relevant literature. Through interaction between the participants in the focus group, the tabled issues were expanded on and agreed upon.

After the first two focus groups, oral and written feedback from participants were collated, recurring issues were identified, evaluated and summarised in a report submitted to a subsequent workshop. At this workshop the report was discussed and accepted, after which the author was mandated to validate these results by means of a survey amongst a broader population that included developers or owners of building projects, contractors and consultants active in the broader construction industry.

Leedy (1985:134) suggests that data in descriptive survey research are particularly susceptible to distortion through the introduction of bias into the research design and cautions that attention should be given to safeguard the data from the influence of bias. It is acknowledged that the objectivity of the author in the qualitative research employed, particularly in Chapter 3, as well as in the identification of the perceived problematic landscape contractual issues, used afterwards in the compilation of the survey questionnaires (refer to Chapter 4), may be questioned. However, in an attempt to minimise this risk and to increase objectivity, the identification of the perceived problematic landscape contractual issues was, as stated above, done through work-shopping by a panel of persons experienced in landscape contracting and representing landscape contractors and landscape architects.

In spite of the above, some degree of bias in the way these issues were identified and subsequently stated in the questionnaire is inevitable and the author readily admits to this.

In Figure 1.9 hereafter the qualitative research method followed is diagrammatically illustrated.

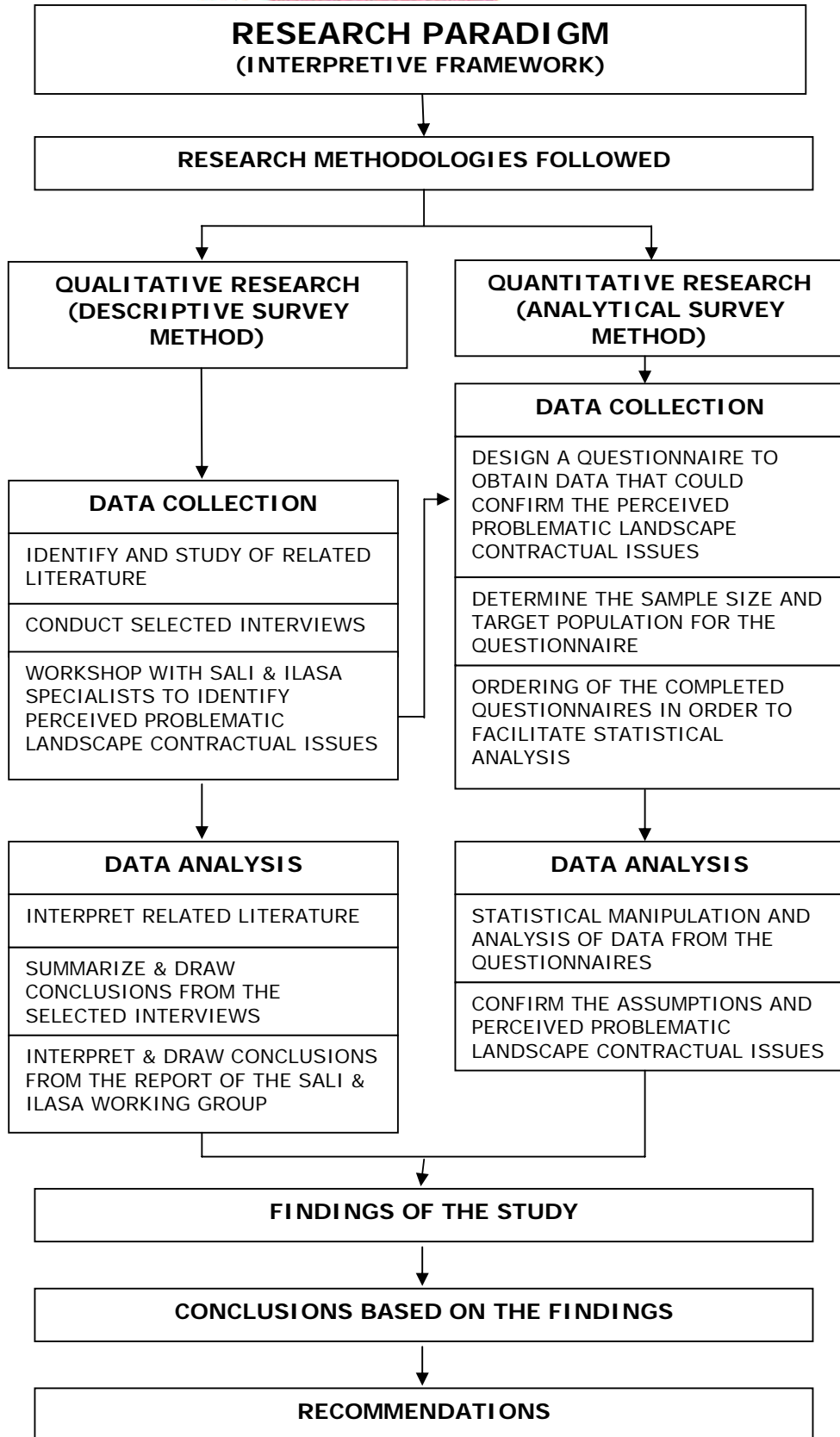


FIGURE 1.9
A diagrammatic overview of the research methodology followed in this study

1.9.5 Quantitative research

Quantitative research stresses objectivity by using the principles of standardised methodological procedures, measuring with numbers and analysing the data with statistical methods.

Quantitative research relies on a number of techniques, such as experiments, content analysis, existing statistics and surveys.

In *experimental techniques* logic and principles found in natural science are used to explain phenomena which occur in real life or created in laboratory conditions.

According to Neuman (2000: 34) and Leedy and Ormrod (2001: 155) *content analysis* allows the researcher to discover features in the content of large amounts of material. It may be used for exploratory and explanatory research, but is most often used in descriptive research for the purpose of identifying patterns, themes or biases.

In the *existing statistics* technique a source of previously collected information is used in a new way to address a research question.

Neuman (2000: 34) describes the *survey technique* as a written questionnaire given to people to respond to. The answers are recorded in percentages, tables or graphs. Surveys give the researcher a picture of what many people think or report doing. A survey researcher often uses a sample or a smaller group of selected respondents, but generalises the results to the larger group from which the smaller group was chosen.

For this research project, a part of the relevant data is essentially quantitative in nature; therefore the analytical *survey technique* was applied to gather such data.

Data resulting from this technique are then analysed by means of appropriate statistical tools. Leedy (1985:173) finds that the purpose is to probe the data by means of statistical analysis so that we may infer certain meanings or to discern the presence of certain potentials and dynamic forces that may warrant further investigation.

Leedy states (1985:173 & 179) that analytical survey data can be classified into four basic scalar categories, i.e.

- *Nominal scale*: Expresses the basic categorical classification. Nominal data is distinguished by giving them different names.
- *Ordinal scale*: Indicates a measurement of the degree of difference, such as: more – less – twice as many, etc. Ordinal data have been assigned an order of sequence.
- *Interval scale*: Is used when a unit of measurement has been established. Interval data are measured in terms of difference in standard units between one object and another.
- *Ratio scale*: Measures values from an absolute or arbitrary designated zero point. It measures multiples of one value over another, such as: the temperature is 25°C). Ratio data are those which indicate that one item is so many times as large, more powerful, etc. than another.

The quantitative data gathered in this research are measured in the nominal and interval scales. An example of nominal data may be found in the responses to Question 1 (refer Chapter 4) put to all categories of respondents, such as: architect, landscape architect,

engineer etc. An example of interval scale data appears in Question 2 (refer Chapter 4) where the JBCC suite of documents is used in X% of cases and the FIDIC documents is used in Y% of cases.

1.9.6 The survey questionnaire

- **What is a survey questionnaire?**

Leedy (1985:135) finds the survey questionnaire to be an appropriate instrument of observing (gathering) data beyond the physical reach of the observer.

The survey is the most widely used data gathering technique...

and

Survey research developed within the positivist approach to social science.

Neuman (2000:247).

Neuman (2000:250) states that when developing a questionnaire the researcher conceptualises and operationalises variables as questions. Questions are organised in the questionnaire based on the research topic, the respondents and the type of survey. In addition the researcher must plan how to record and organise the data for analysis.

- **Why use a survey questionnaire?**

A survey questionnaire has the advantage of being given or sent to respondents directly and who then can read the instructions themselves, respond by answering the pre-determined questions and afterwards allow the researcher to record their answers in a predetermined efficient manner for data analysis.

The researcher can send the questionnaires to a wide geographical area. Neuman (2000:271) finds the survey questionnaire is a cost effective tool and can be conducted by a single researcher.

The disadvantages of a survey questionnaire lie primarily with the possible low response rate and with the researcher's inability to control or monitor the conditions under which the mailed questionnaires are completed.

In this study the target populations to be surveyed are spread out over the whole of South Africa and as such the survey questionnaire, sent by post or e-mail, was deemed the most practical research tool to gather data of a quantifiable nature. In Section 4.2 of Chapter 4 the location and sizes of the target populations are described in more detail.

Since the questionnaire is an impersonal probe or a tool, Leedy (1985:135) suggests that it should satisfy the following requirements:

- Clear language should be used to solicit precisely what the researcher wishes to learn. The researcher should inspect the assumptions underlying the questions and ascertain if these assumptions fit the realities of life.
- Questions should be designed to provide answers to a specific research objective. The researcher should avoid aimless and vague questions and careless imprecise expression.
- The respondent should be informed in a covering letter accompanying the questionnaire about its objectives and possible potential benefit to him or her. In Addendum F a copy of the letter accompanying the questionnaire for this study is given.

- **Designing a questionnaire**

In designing the questionnaire the following considerations should be kept in mind to ensure its success as a research tool:

- Length of the questionnaire: Despite the advantages that a long questionnaire have for the researcher, such as cost effectiveness (since the respondent is already sampled and the “cost” of extra questions is small), Neuman (2000:265) suggests that in the case of educated (author’s note: or experienced) respondents and of a salient topic, questionnaires of up to 15 pages may be possible. In this study the three questionnaires varied in length from eight to eleven pages.
- Question sequence: the order in which questions are put should relate to the context effect of answering specific questions before others in order to avoid confusion with the respondent.
- Expected response rate: Neuman (2002:266) finds that researchers become cautious about generalising from a low response rate since this may create a bias and weaken the validity.
- Format and layout: Neuman (2000:269) suggests that questionnaires should be clear, neat and easy to follow. Any instructions on how to respond should be printed in a different style from the questions. In this study’s case the questions were printed in a bold font and the different options from which the respondent could select were printed in a normal font.
- Open-ended or closed questions: Questions can be formulated to be open-ended, e.g. *What do you consider to be problematic issues in landscape contracting in South Africa?* or closed in cases where the respondent is given the option to respond within a given range of options only.

The questionnaire may also contain statements to which the respondent is requested to react. In this study's case the questions were either all closed or statements were given that had to be responded to.

- Total Design Method: In this approach, developed by Dilman, (Neuman, 2000: 270), he suggests that since a survey is a social interaction in which the respondents act on the basis of what they can expect in return for their cooperation, the social costs in terms of time spent should be commensurate with the expected benefits or with the feeling that they are doing something of value or being important. Refer in this instance to the wording of the covering letter (refer to Addendum F) accompanying this research project's questionnaires.

- **Pre-testing the questionnaire and other ethical considerations**

In this research, the author pre-tested the questionnaires on a representative from each of the three survey target categories. From the resultant feedback and comments the author realised that the volume and scope of questions were still too large and subsequently reduced the number and complexity of the questions. Before sending the questionnaires to respondents, the author presented them for vetting to the University of Pretoria's Faculty Committee for Research Ethics and Integrity.

- **Selecting the target population**

Leedy (1985: 144) suggests that the results of a survey are no more trustworthy than the quality of the target population or the representativeness of the sample.

Leedy (1985: 147) furthermore finds that

The sample should be so carefully chosen that through it the researcher is able to see all the characteristics of the total population in the same relationship that he would see them were he actually to inspect the totality of the population in fact.

The size of the populations in some of the data categories to be sampled resulted in either random sampling (through the use of standardised Random Number Tables), or sampling *in toto* where the population sizes allowed this to be done. In Section 4.2 of Chapter 4 the sampling methods for each of the survey data categories and sub-categories used in this study are explained in more detail.

1.9.7 The researcher's expertise to comment on the research topic

Since the author comments on pertinent landscape contractual issues throughout the study and in particular in Chapter 3, a brief statement is given hereafter on the author's expertise to make such comments.

The author has been involved in practising architecture since 1978, landscape architecture since 1990 and project management since 1985 (the profession was regulated by an Act of Parliament in 2000). His professional affiliations include being registered as a South African Professional Landscape Architect, a South African Professional Architect and a South African Professional Construction Project Manager and he has served on the Council for Architects and the Board of Control for Landscape Architects. He holds a BSc in Building Science, a BArch and a Masters degree (Cum laude) in landscape architecture.

Through his practice he has won a number of architectural and landscape architectural competitions and awards in South Africa and he has served as National Judge for the South African Landscape Contractors Institute from 2005 to date.

With regard to specific research in the study's topic, the author lectures landscape architectural practice to undergraduate and post-graduate landscape architecture students at the University of Pretoria and is the author and co-author of published articles on this topic. He is the chairperson of a working group consisting of landscape architects and landscape contractors addressing contractual problems experienced both from the consulting and contracting perspectives.

1.9.8 Summary of the research design

The research design for this study is diagrammatically illustrated in Figure 1.9 and may be summarised as follows:

- A literature review to identify and analyse available information on landscape contractual issues that may be perceived to be problematic to landscape (sub)contractors, main contractors, employers and consultants.
- From the qualitative data thus gathered, through selected interviews, from the contractual criteria proposed by the CIDB, as well as from the problematic contractual issues that were identified by the ILASA/SALI working group on landscape contracts (refer to Vosloo, 2003), three survey questionnaires were compiled to obtain quantitative data that could confirm or reject the nature and extent of the problematic landscape contractual issues that had come to the fore.
- These quantitative data sets were then used to formulate the conclusions and recommendations.

1.10 Importance of the study

The study addresses a problem in the construction industry that has developed over a long period, but recently became more pressing as employers, contractors, subcontractors and consultants increasingly use standard forms of construction contracts for landscape works. These standard forms of contract have most often not been written to cater for the distinct and unique requirements of a landscape contract that protects the interests of an employer, a main contractor, a landscape (sub)contractor and the consultant.

1.11 Conclusions

In Chapter 1 an introductory discussion of the South African landscape contractual environment was given, the research problem and sub-problems were identified and the associated hypotheses stated. Study goals and objectives were determined and the research design and methodology were formulated. The chapter concluded with stating the importance of the study.

In Chapter 2 the South African landscape contractual environment is discussed in more detail, contractual criteria as determined by the South African Construction Industry Development Board (CIDB) are investigated and commonly used forms of construction contract are discussed to determine their suitability to be used for landscape and related construction works.

Review of related literature

2.1 Introduction

This review of literature is focussed on the landscape contractual environment in South Africa and selected other countries with the view to identify contractual and landscape issues of relevance to the problem and its stated hypotheses. The forms of construction contract generally used in South Africa are analysed to determine their suitability for use in landscape contracts or subcontracts.

2.2 The landscape contractual environment in South Africa

2.2.1 Introduction

In the Green Paper on their Public Sector Procurement Reform policy the South African Department of Public Works (DPW, 1997) noted:

There is little uniformity in contract documentation and delivery systems in South Africa. In works contracts the tendency is to follow the recommendations laid down by professional associations and learned societies and to utilise standard industry documents and systems and to adapt them to suit the need, style and culture of the organisation calling for bids.

The Construction Industry Status Report of 2002, prepared by the Council for Scientific and Industrial Research (CSIR) for the Department of Public Works (DPW, 2002:28), emphasises the need

for the construction industry to adhere to modern forms of contract in order to promote procurement process reform in South Africa. In the report the CSIR noted (DPW, 2002: 30) that although there may be a perception of an increase in the use of standard forms of contract by the public sector, only a few such branches of government are using them. They find that local governments in particular regularly amend standard forms of contract to suit their own needs.

In response to this Procurement Reform policy, and in order to promote new industry capacity and to assist the emerging sector, the CID FG 6 (DPW, 2000a: 1) calls for the simplification of contract documents, specifically for persons whose mother tongue is not English. It also refers to the needed streamlining of payment procedures and surety arrangements as well as the constant review of contract documentation to remove any conditions that may be seen to be barriers to increased participation. They further note (ibid) that:

The current approach of having, probably, as many standard forms of contract as there are disciplines in the industry, together with a considerable number of in-house, bespoke forms of contract, neither makes for efficient nor does it enable a focussed approach to skills training necessary for development and growth.

2.2.2 CIDB and other contract criteria

The CID FG 6, which was the precursor to the CIDB, considers acceptable forms of construction contract to be those that:

- *do not contain unreasonable provisions that could unfairly prejudice the interests of any contracting party,*
- *completely separate the conditions of tender from the conditions of contract thus permitting the utilisation of standard formats,*

- *are not tailor-made to suit particular technical specifications or methods of measurement and valuation,*
- *provide for an interrelated management system that clearly defines roles and responsibilities of all persons involved,*
- *in which the Client's representative, identified in the contract, is fully empowered to act on the client's behalf,*
- *permit the appropriate allocation of risks for individual projects, with each risk allocated to the party best able to manage, estimate and carry it,*
- *clearly set out the period within which interim payments must be made to all participants, failing which they will have automatic right to compensation by the payment of interest at a sufficiently high rate to deter slow payment,*
- *provide reasonable flexibility to accommodate both public body and private industry administrative practices. Such flexibility would permit, within limits, the selection of, inter alia, different periods allowed for payment, levels of surety, retention percentages, penalties, defects correction periods, limitations of liability for latent defects and contract insurance provisions,*
- *encourage the role players to take all possible steps to avoid conflict, whilst providing for speedy dispute resolution by a pre-determined impartial dispute resolution procedure should conflict arise,*
- *contain provisions for both interim and final dispute resolution by an independent person(s) which are not prejudicial to either party, and*
- *stipulate formal contractual relationships between the contractor and all subcontractors, whether nominated, selected or domestic, which provide for fair and equitable conditions of subcontract.*

(DPW, 2000a: 2-4)

With regard to the previous point, it is worth noting that the CID FG 6 (DPW, 1999:1) has prepared a guideline document entitled *Fair conditions of subcontract* that has as its aim the identification of problems usually encountered in subcontracting and proposing best practice measures. Problems described as such are:

- Subcontractors having very little negotiating power with principal contractors due to the “next job syndrome”.
- Non-payment by the principal contractor.
- Victimization by the principal contractor.
- “Hawking” of prices submitted to principal contractors by them to obtain lower prices from others.
- The use by principal contractors of subcontractors’ monies as an interest-free overdraft facility.
- Principal contractors representing the subcontractors’ interests at forums and meetings.
- Unreasonable retention percentages and periods of retention after completion. In this regard landscape subcontractors run a bigger risk than most other subcontractors, especially if there was no provision made for landscape maintenance during the defects liability period.

In addition to the “essential criteria” above, the CID FG 6 (DPW, 1999:1) considers the following criteria for contracts to be desirable that:

- *may be used across the full range of engineering and building disciplines and commonly encountered strategies by any client,*
- *encourage co-operative attitudes with shared financial motivation to meet such obligations. This should result in a general objective to achieve “win-win” solutions to problems that may arise during the course of the project,*
- *permit and encourage the application of partnering techniques between the client and contractor but in a manner that preserves contractual protection of rights,*

- *use clear and unambiguous language, are not unnecessarily complex and contain guidance notes where necessary,*
- *encourage the client to avoid changes to pre-planned works information. However, where variations do occur, the contract should facilitate for these to be priced in advance of implementation,*
- *contain appropriate provision for assessing interim payments by methods other than just monthly valuations,*
- *provide for designs to be carried out by either party to a pre-determined extent, either by the employer through his agents or by the contractor,*
- *provide for standard subcontract agreements and other related documents that are compatible with the main contract, and*
- *contain appropriate provision to enable work that cannot be adequately described or specified at the time tenders are called for, to be readily executed and paid for when such work can be adequately specified.*

The CID FG 6 recognises that while in practice it may not be possible to achieve all the above essential and desired criteria in any one single contract, it should not preclude drafters of contracts from striving to do so.

As a result of this policy, and in order to comply with the provisions of the Best Practice Guideline #C2: *Choosing an appropriate form of contract for engineering and construction works*, the CID FG 6 (CIDB, 2004a:2) recommended that:

The public sector should procure engineering and construction works in terms of a limited range of standard and approved procurement documents...

and that only the following forms of contract be used:

- FIDIC,

- GCC 2004 (incorporating the Committee of Land Transport Organisations (COLTO) General Conditions of Contract of 1998),
- JBCC Series 2000, and the
- NEC (incorporating the Engineering and Construction Contract, ECC).

The CIDB (2004a: 11-12) identified the following factors to be taken into account when selecting an appropriate form of contract:

- The complexity of the works,
- management capacity, capabilities and expectations of the parties and their agents,
- requirements for specific contracting and pricing strategies, such as:
 - Construction management,
 - Design by employer,
 - Management contract,
 - Design and build,
 - Develop and construct,
 - Activity schedules,
 - Bills of quantities,
 - Cost reimbursable,
 - Target cost; and
 - Partnering,
- requirements relating to:
 - the assignment/management of risk,
 - back to back contracts for the engagement of all types of subcontractors, and
 - the management of cost and time overruns,
- the ability and capacity within the employer body to handle different administrative procedures for building and civil engineering contracts (e.g. the use of the JBCC on building contracts and the GCC or FIDIC on civil engineering contracts),

The CIDB (2004a: 2) concludes by stating:

There is no doubt that the reduction in the prolific number of forms of contract in use in South Africa to the aforementioned four series of documents will assist in eliminating many of the inefficiencies and losses associated with having to interpret the many varied approaches used to establish the risks, liabilities and obligations of the parties to a contract and the administration procedures associated therewith.

It is worth noting that the work done by the CID FG 6 has led to the development of SANS 10403:2003 by the StanSA Technical Committee for Construction Standards. This standard establishes a format for the compilation of procurement documents for civil engineering activities and sets out the general principles for compiling the procurement documents (SANS, 2003).

2.2.3 The JBCC Series 2000 publications

2.2.3.1 Background to the JBCC Series 2000 suite of documents

The Royal Institute of British Architect's building agreement was used at the beginning of the twentieth century for building construction works in South Africa. The South African Joint Study Committee, constituted from representatives from the South African Institute of Architects, the South African Chapter of Quantity Surveyors and the then Building Industries Federation of South Africa realised the need for a form of contract that was more representative of the interests of all parties involved in building projects in South Africa and in 1984 the JBCC was convened as a first step to achieve that goal. The JBCC represents most of the major professional and contracting

bodies in the building industry in South Africa, and at the start of 2006 was constituted from representatives of:

- the Association of South African Project Managers (ASAPM),
- the Association of South African Quantity Surveyors (ASAQS),
- the Master Builders South Africa (MBSA),
- the South African Association of Consulting Engineers (SAACE),
- the South African Institute of Architects (SAIA),
- the South African Property Owners Association (SAPOA), and
- the Specialist Engineering Contractors Committee (SECC).

Significantly none of the landscape related professional or contracting bodies, such as ILASA, representing the professional landscape architects or SALI, representing the landscape contractors, were neither nor are currently represented and it is considered one of the objectives of this study (refer to Items 1.8.2 and 1.8.3) to provide some guidelines to the JBCC to make provision for the specific requirements of landscape related contracts and subcontracts.

The JBCC PBA and the JBCC N/S Subcontract Agreement were first published in 1991 and were replaced by the Series 2000 published in 1998. The JBCC Series 2000 makes provision for it to be used for private and public sector projects by taking into account the specific contractual needs of the State (such as insurance, notice periods and time bars).

In the preface to the JBCC PBA (JBCC, 2003: 1) it is stated that the Series 2000 documents:

..are compiled in the interests of standardisation and portray the consensus view of the Joint Buildings Contract Committee of good practice and an equitable distribution of contractual risk in the building industry. The documentation sets out a clear, balanced and enforceable set of procedures, rights and obligations, which when competently managed and administered, protect the employer, contractor and subcontractors alike.

The Department of Construction Economics at the University of Pretoria (UP) (UP, *sine die*: 3) summarises the objectives of the JBCC as follows:

- *Foster good and consistent management by all concerned.*
- *Provide standardisation of defined terminology, thereby eliminating ambiguities in interpretation.*
- *Clearly define and identify the responsibilities of the contracting parties.*
- *Define notice periods and time bars required to protect the parties against prejudice and error.*
- *Set standard methodology for dealing with contractual responsibilities and obligations.*
- *Promote contractual protection of the innocent party in the event of default.*
- *Provide practical options within the contracting process.*
- *Provide for reciprocal guarantees between the contracting parties.*
- *Set payment conditions that offer significant protection to the contractor and subcontractors.*
- *Ensure the maintenance of the independent duty of the principal agent to act fairly between the parties.*

The UP (2000: 14) finds that the JBCC has the following advantages:

- All the documents in the JBCC Series 2000 suite have been generated from the PBA which ensures consistency of language, definitions, clause numbering and layout; all of which ensures a good measure of standardisation and ease of use.
- It has been in use since 1991 and has the support of the major sectors of the building industry in South Africa.
- An improved distribution of risk is offered to both contracting parties.
- Better and more effective security is offered to the employer.
- It does not allow for retention to be kept on the contractor; the construction guarantee replaces retention and which will help the contractor to keep a better cash flow.
- The final account has to be completed in three months.
- Before the agreement can be signed and the site handed to the contractor, the construction and payment guarantees and the agreed bills of quantities must be in place.
- One subcontract agreement for both the nominated and selected subcontractor situation.

One of the generally perceived disadvantages of the JBCC approach is that of accepting an adversarial paradigm as the real situation and stressing damage control as opposed to the philosophy of the NEC to pro-actively identify and resolve potential disputes. In the NEC's stated objectives concepts occur such as:

collaboration, teamwork, partnering, shared standards, common objectives, trust and the sharing of costs, risks and reward.

(CIDB, 2004a).

The UP (2000: 14) believes that the following other aspects could be disadvantageous in the use of the JBCC forms of contract:

- It is complex to use for the uninitiated; the JBCC regularly offers workshops on the use of its documents.
- Some employers still prefer to have the retention clause in place of the construction guarantee.

The JBCC Series 2000 currently includes the following documents that are relevant to landscape and related works:

- The JBCC PBA.
- The JBCC Minor Works Agreement (MWA).
- The JBCC N/S Subcontract Agreement.
- The Standard Preliminaries.
- The Contract Price Adjustment Provision.
- The Tender Form.
- Waiver of Contractor's Lien.
- The Construction Guarantee.
- The Contract Instruction by the Principal Agent.
- The Contractor's Instruction.
- The Payment Certificate.
- The Payment Certificate Notification.
- The Recovery Statement.
- The Transfer of Ownership.
- The Certificate of Practical Completion.
- The Certificate of Works Completion.
- The Certificate of Final Completion.

The JBCC also supports the Master Builders South Africa's (MBSA) domestic subcontract agreement insofar as those issues that are common between the JBCC PBA and the MBSA domestic subcontract have been addressed and cross-referenced.

There was a need to internationalise the documents and this meant removing all references to South African laws and institutions. In July 2000 an international version was published and neighbouring and other sub-Saharan countries have shown particular interest in adopting this version (UP, *sine die*:2).

The following JBCC documents are discussed in more detail since they constitute the interface between the landscape contractor and the employer or between the landscape subcontractor and the main contractor:

2.2.3.2 The JBCC PBA

The JBCC PBA is the cornerstone of the JBCC Series 2000 document range, and also contains standard provisions to cater for the requirements commonly associated with government contracts.

The JBCC PBA (JBCC, 2003:i) is structured in such a way that the logical project execution sequence reflects in the numbering of the clauses. The JBCC PBA starts off with definitions of the primary elements and phrases that regularly occur throughout the Series 2000 suite of documents. The 41 clauses of the JBCC PBA are divided into nine sections that follow the logical sequence of events on a construction project, namely:

- Definitions (Clause 1);
- Objectives (Clause 2);

- Preparation (Clauses 3-14);
- Execution (Clauses 15-22);
- Completion (Clauses 23-30);
- Payment (Clauses 31-35);
- Cancellation (Clauses 36-39);
- Dispute resolution (Clause 40); and to conclude,
- the schedule of contract variables (Clause 41) that contains contract specific information.

The JBCC PBA caters for both bills of quantities and lump sum contracts and strives to bring about a strong consistency in the use of contractual language and administrative procedures. For the sake of uniformity the respective JBCC contracts retain the same numbering of their clauses resulting in “no clause” in some instances.

The JBCC standard form of Preliminaries for use with the JBCC PBA and subcontracts should form part of the contract documentation and needs only to be referred to in bills of quantities and not reproduced therein.

2.2.3.3 The JBCC N/S Subcontract Agreement

The JBCC N/S Subcontract Agreement is entered into by the principal contractor and a subcontractor (of which landscape subcontractors are typical) who has been nominated or selected in terms of either Clause 20 or 21 of the JBCC PBA. The JBCC N/S Subcontract Agreement is modelled along similar lines to those of the JBCC PBA with all common clauses retaining the same numbering (JBCC, 2005a: i). The difference between a Nominated and Selected Subcontract lies principally with placing the risk of the subcontractor’s malperformance. The employer takes on some risk when insisting on a nominated

subcontractor whereas the principal contractor is wholly responsible for the performance of his selected subcontractors.

2.2.3.4 The JBCC MWA

The JBCC also produces a minor works form of contract (JBCC, 2005b) aimed at projects that are comparatively small in extent, uncomplicated and where less sophisticated contractors with a low capital base can be accommodated.

This contract makes provision for an agent of the employer to administer the contract that is based on a lump sum tender. The contract does not cater for nominated or selected subcontractors nor does it make provision for contract price adjustments.

In this contract the works risk and works insurance are carried by either the employer or contractor as indicated in the schedule of variables. At its inception it was envisaged that in the MWA no surety (in the form of a construction guarantee) would be required from the contractor; the practical implication hereof was that if things went wrong, the employer paid. For the latest version of the JBCC MWA it was decided to spread the risk more equitably by introducing both the concepts of construction and payment guarantees.

The JBCC MWA is designed for use where:

- The contract is for minor works of simple content and preferably not longer than nine months in duration,
- the employer appoints only a principal agent to administer the contract, and

- the employer appoints direct contractors for specialised work or installations not to be undertaken by the contractor.

The agreement is suitable but not limited for use where the contractor is a small to medium enterprise, the employer carries the major liabilities related to the works, and the employer is responsible for the primary insurances related to the works (CIDB, 2004a:8). The third edition of the JBCC MWA (JBCC, 2005Bb) now provides for a choice to be made on some issues such as responsibility for insurances.

The wording of definitions used in the JBCC MWA is the same as used in the JBCC PBA as far as doing so is considered practical. The UP (*sine die*: 17) notes that

..although the Minor Works Agreement is part of the JBCC Series 2000 documents it has been formulated for use specifically with its own supplementary documents. Documentation designed for the Principal Building Agreement and N/S Subcontract Agreement is not suitable and should not be used.

In what could be applicable to typical domestic scale landscaping contracts, the JBCC has recognised the need for an agreement for micro-minor works of a value generally under R100 000.00. A draft document has been drawn up by the JBCC with the instruction to its authors to limit the document to a maximum of four pages (UP, *sine die*: 18 and SAIA, 2000: 4).

2.2.3.5 The Engineering General Conditions (EGC) for use with the JBCC N/S Subcontract Agreement

The JBCC's SECC produced this document (JBCC, 2001, and discontinued since 2005) to fulfil an identified need for JBCC compatible engineering works contract conditions. This need was identified as a result of an increase of construction projects that require specialist engineering subcontractors' input.

The CIDB (2004b: 3) noted that this document was specifically designed for cases where the appointed subcontractor is responsible for the installation and performance of a dynamic system related to the building contract and for which a specialist engineer is appointed in terms of the JBCC PBA.

The issues principally dealt with were intellectual property rights, additional general conditions for design by an agent of the employer, the duties of such an agent, royalties, patent rights and associated fees.

Provision is made for a 12 month guarantee period against defects that commences on the date of practical completion of the nominated/selected subcontract works. This guarantee specifically excludes consumables and any regular maintenance by the subcontractor and requires of the employer to maintain the works in accordance with provided operating and maintenance manuals.

Bold (2006) notes that the lack of updating the EGC by the SECC, constituted for that purpose, has led to a situation where the EGC is no longer synchronised with the current updated JBCC PBA and N/S subcontract agreements, with the result that the JBCC had to withdraw their support for the EGC.

2.2.3.6 Using the JBCC forms of contract for landscaping work

The JBCC agreements make full provision for subcontracting, whether for the contractor's domestic subcontracts, nominated/selected subcontracts or direct contracts. According to Vosloo & Maritz (2005:50) the contracts within the JBCC family of contracts suited to landscape construction work are:

- The JBCC N/S Subcontract Agreement Edition 4.1 (published since March 2005) for use between a main contractor and the subcontractor:
The same form of agreement is used for both nominated and selected subcontracts, as the contractual relationship between the contractor and the subcontractor is essentially the same, whether the subcontractor is nominated or selected. The differences are dealt with in the JBCC PBA, as they affect the main contractor's liability to the employer for the consequences of the subcontractor's default or insolvency (Vosloo & Maritz, 2005:50), and
- the JBCC MWA (currently Edition 3 of August 2005):
This is a form of contract suitable for a direct contract between the employer and landscape contractor for the landscape works. It can be used with the JBCC PBA as a direct contract in terms of *Clause 22: Employer's Direct Contractors*, or as an independent direct contract on its own.
- The EGC for use with the JBCC N/S Subcontract Agreement:
Despite the fact that this document has been discontinued by the JBCC, it is worth noting that under Clause 11.4 of the EGC (JBCC, 2001: 7) it was required of the employer to operate and maintain the subcontract works in accordance with the operating and maintenance manuals prepared by the subcontractor and handed over

to the employer. Any damages to the works resulting from the failure of the employer or his agents to comply with the procedures set out in such manuals would not be covered by the guarantee.

The EGC was not written for and does not make provision for the unique and pertinent issues pertaining to landscape installation and maintenance works.

2.2.4 The General Conditions of Contract (GCC) for Works of Civil Engineering Construction

2.2.4.1 Background to the GCC

The foreword of the 2004 Edition of the GCC document, prepared and endorsed by the South African Institution of Civil Engineers (SAICE) and the South African Federation of Civil Engineering Contractors' (SAFCEC), states that SAICE has a strong tradition of developing, publishing and maintaining forms of contract (SAICE, 2004: 1) and has over several decades published updated editions of the GCC for civil engineering works, being thus explicitly geared to that contractual environment. The sixth (1990) edition of the GCC was modified by COLTO and republished by SAICE as the *COLTO 1998 General Conditions of Contract for Road and Bridge Works for State Authorities*. Loots (1985: 4) finds that up to and including the fifth edition of the GCC, its conditions of contract were modelled very closely on the fourth edition of the British Institution of Civil Engineers' (ICE) General Conditions of Engineering Contracts.

Vosloo & Maritz (2005) note that whilst the GCC 2004 contract replaced the GCC 1990 and COLTO 1998 contracts, it retained

to a large extent the language, style, ethos and current wording of these documents. It remains a form of contract primarily for use in contracts where the contractor undertakes construction on the basis of full designs issued by the employer and a provisionally measured schedule of quantities that is remeasured as the work progresses for payment purposes. The tendered rates are fixed as opposed to most building contracts where the tendered price is often fixed.

At tender stage there is therefore a greater onus on the tenderer to ensure accuracy with his rates, whereas in cases where bills of quantities are used in building contracts the quantity surveyor needs to be accurate in the measured quantities.

The South African National Standards (SANS, previously the South African Bureau for Standards) publishes a standard specification (SABS 1986:1200) for the description and measurement of work in civil engineering construction contracts. This document is currently under review and will be republished under a SANS standards code.

The GCC standard form of contract limits legal variations to only those contained in the Special Conditions of Contract section of the contract, thereby safeguarding the tenderer against hidden variations or variations where the consequences are not immediately clear.

Lane (1998:8) finds that the GCC tends to prevent conflict on a project to a large extent by being very specific on the rights and obligations between the contracting parties. It also provides for mediation as an inexpensive and non-aggressive manner of resolving disputes.

The GCC satisfies the CIDB requirements for a standard form of contract, and is suitable for use in procurement documents that are prepared in accordance with the provisions of SANS 10403 of 2003: *Formatting and Compilation of Construction Procurement Documents*.

Since the COLTO 1998 document was used as the point of departure for the revised GCC 2004 contract and which closely follows the provisions of the equivalent sub-clauses of COLTO, this resulted in the omission of the term “nominated subcontractor” from the new document, it being replaced by the term “selected subcontractor”. All subcontractors, such as for landscape works, will be appointed in terms of *Clause 6: Subcontracting*; the contractor being fully responsible for their performance. Vosloo & Maritz (2005) note that under the GCC 1990 contract the nominated subcontractor could be selected by either the employer or his representative, typically the engineer, whereas under the GCC 2004 contract the appointment is the exclusive prerogative of the contractor and the role of the employer or his representative in the selection of subcontractors has now been reduced to being “consulted” by the contractor.

There is no short form of contract as the SAICE Procurement and Delivery Management Panel resolved that the Short Conditions of Contract (1996) for minor works be withdrawn.

The engineer represents the employer and administers the contract, but can nominate a person as his representative, or can delegate certain of his duties to others to act on his behalf.

2.2.4.2 Using the GCC for landscaping work

Vosloo & Maritz (2005: 51) suggest that since the concept of a Nominated Subcontractor has now effectively become redundant and all subcontractors, including a landscape subcontractor now being selected by the contractor and appointed in terms of *Clause 6: Subcontracting*, of the GCC 2004 document, the contractor will be fully responsible for their performance.

The role of a consultant such as the landscape architect is probably diminished unless the engineer delegates the supervision and inspection role of the landscape works to such a landscape architect.

In terms of Clause 49(1) of the GCC, “maintenance “ is described as that work to be done by the contractor to rectify manifest defects for a specified period after the completion of the works and which also generally covers the teething period of the works (Loots, 1985:227). The GCC definition of “period of maintenance” corresponds closely with the JBCC’s defects liability period. Loots (1985:228) thus finds that the GCC, despite using the wording “maintenance” in clause 49(2), in fact refers to the contractor’s duty to repair and reconstruct defects and imperfections, excluding accidental damage to the works. Powell-Smith & Chappell (1985:290) also note that the *...word (maintenance) is used to denote the defects liability period. It is regrettable because to use the word in this way does violence to its ordinary meaning.*

In the case of the GCC the maintenance of any landscape works completed as part of the “works” during the specified “period of maintenance” cannot reasonably be interpreted to fall under

this definition of maintenance. As a result the maintenance of any landscape work that formed part of the “works” after the issue of the completion certificate will probably have to be dealt with using another contractual vehicle.

2.2.5 The COLTO General Conditions of Contract

In a newsletter of SAFCEC (SAFCEC, 2004) it is stated that *COLTO 1998 is basically a revised version of the GCC 1990 document which incorporates certain standard amendments previously issued together with the GCC 1990 by individual road authorities ... There are, however, two issues which differ significantly between the two documents, namely the authority of the Engineer and the status of the nominated/selected subcontractor. The COLTO document requires the Engineer to act as the agent of the Employer and does not make provision for a nominated subcontractor.*

Whereas the COLTO 1998 document may still be used by certain public sector employers, the revised GCC 2004 effectively supersedes COLTO.

2.2.6 The FIDIC Conditions of Contract for Work of Civil Engineering Construction

2.2.6.1 Background to the FIDIC contract documents

FIDIC, the French acronym for the International Federation of Consulting Engineers was founded in Belgium in 1913 and is an association of national member associations. At present

membership is drawn from more than 60 countries, of which more than 10 are from Africa (CIDB, 2004a: 2) –South Africa being one of the early members. Vosloo & Maritz (2005) note that the documents prepared and published by FIDIC are widely used internationally, mostly for civil engineering and process plant projects. It includes both professional-driven and contractor design and construct variants. Loots (1985: 4) finds that the FIDIC conditions of contract were modelled very closely on the then UK Institution of Civil Engineers' (ICE) Conditions of Contract (4th Edition) which were also the precursor to the NEC series of contract documentation.

Since its formation FIDIC has addressed a whole range of professional issues affecting consulting engineers, but it has become widely known outside that profession, particularly amongst client bodies, the international financing institutions, lawyers and contractors, etc. because of its work in preparing and publishing a number of standard forms of contract, often referred to as the "FIDIC Rainbow" (referring to the different front page colours of each of the different forms of contract).

The conditions of contract document for the construction of building and engineering works (known popularly as the "Red Book") is commonly used by professional engineers in South Africa and for projects ranging from civil, electrical, mechanical, and structural engineering works to general building work. The UP (2000: 11) finds that the World Bank insists in some cases on the use of FIDIC on projects that they finance.

The emphasis and focus of the FIDIC range of contracts are on the rights and obligations of all parties identified in the contract but, due to its origins, tend to focus more on the duties of the engineer than found in other forms of contract. In fact it uses

the term “Engineer” when referring to the responsible consultant as opposed to “Principal Agent” or “Project Manager” used in other forms of contract.

The UP (2000: 11) notes that the FIDIC contracts are intended for works that will be measured and valued using a bill or schedule of quantities and are not intended, without alteration, to cover lump sum contracts or target/cost plus contracts or similar.

In 1999 FIDIC extended its ambit into other disciplines in the built environment with the publication of first editions of a new family of standard forms of contracts:

- General Conditions of Contract for construction (“Red Book”),
- Conditions of Contract for plant and design-build (“Yellow Book”),
- Conditions of Contract for engineer-procure-construct/turnkey projects (Silver Book”), and
- Short Form of Contract (“Green Book”).

In addition to the above documents FIDIC has produced a number of other documents for use by its members. These include:

- Tendering procedure,
- Model Services Agreement between Client and Consultant,
- Joint venture agreement,
- Sub-consultancy agreement, and
- various guides and supplements.

The FIDIC General Conditions of Contract represent those clauses that will generally be applicable in most contractual

relationships. Provision is also made for particular conditions of contract that deal with those clauses and requirements unique to a specific contract and which will require amendments or additions to the general conditions to avoid possible conflicting clauses. General and particular conditions will together comprise the contract conditions governing the rights and obligations of the parties.

In terms of Clause 59(6) of the Red Book Editions up to the 4th Edition (1987, reprinted up to 1992), or Clause 63(4) of the 1999 Edition, provision can be made to assign a nominated subcontractor's continuing obligation to the contractor to the employer. Sawyer & Gillott (1990:12) comment that

There can be occasions when the work performed by a Nominated Sub-Contractor (author's note: typically a nominated landscape subcontractor's landscape maintenance work) under a Provisional Sum will be in respect of works to be executed, or goods, materials or services to be supplied by him, which have an ongoing obligation which extends beyond the date of issue of the Maintenance Certificate. (author's note: The maintenance certificate refers to the certificate issued by the engineer at the expiry of the period of "maintenance" or the defects notification period of the 1999 Edition of the FIDIC Red Book) which commenced after the issuing of the certificate of completion (or the taking-over certificate of the 1999 Edition of the FIDIC Red Book) of the works as a whole or any section thereof. This period of "maintenance" may be compared to the defects liability period of the JBCC contract). If this situation arises, then the Contractor shall, if requested by the Employer, assign to him the benefit and cost of such an obligation for the unexpired duration – for this to be done it is necessary for the Contractor and the

Engineer (author's note: or employer's representative) to ensure when placing the order with the Nominated Sub-Contractor that these arrangements affecting the Employer are properly recognised and included in the terms of the Sub-Contract.

Sawyer & Gillott (1990:54) point out that, in terms of FIDIC 1977 Edition, Clause 49, during the period of "maintenance", the contractor shall also keep the permanent works in the conditions which were required by the contract when the engineer issued the certificate of completion, except for items of fair wear and tear.

Provision is made in the FIDIC contracts for the determination of "value engineering" which is an incentive for the contractor to propose alternative techniques and materials that could benefit the employer. When implemented the net cost benefit to the project is shared between the employer and contractor.

2.2.6.2 Using the FIDIC contracts for landscaping work

According to Ahier (personal communication, in Vosloo & Maritz, 2005) the FIDIC Short Form of contract is particularly well suited to small construction projects and landscaping work. Being a member of the FIDIC family of standard form contracts, it uses the same philosophy, format and terminology as other members of the family. It is basically a contract between the employer and the contractor with the provision of an employer's representative an optional extra. It also deals with the provision of the design by the contractor, which could sometimes be the case in landscaping contracts.

Lane (1998:8) however is of the opinion that FIDIC is not easily customisable to specific industry cultures. This could affect contract situations where deviations from the standard clauses become necessary to deal with the specific requirements of landscaping work, such as access to work areas, the definition of practical completion of the landscape work, and the recommended landscape maintenance after practical completion.

Under the FIDIC conditions of contract the employer may himself administer the contract, or may delegate any of his actions to a representative, such as an architect or landscape architect, to act on his behalf.

2.2.7 The NEC suite of contracts

2.2.7.1 Background to the NEC contract documents

The NEC suite of contract documents is an integrated and multidiscipline set of contracts for engineering and construction projects covering both construction and the associated professional services (CIDB, 2004a:8). The documents were first conceived in 1985, when the ICE Council approved a recommendation from its Legal Affairs Committee to 'lead a fundamental review of alternative contract strategies, with the objective of identifying the needs for good practice'. This recommendation arose out of the belief of many engineering and construction professionals that there was an urgent need for a whole new approach to contracting, in line with modern approaches to project management, and which included a new way of addressing contractual disputes. The adversarial stance taken between the employer and his agents on the one and the contractor on the other side was an inherent feature and the

result of the forms of contract in use then. Loots (1995:986) finds that the NEC has as its focus:

- flexibility in use,
- clarity and simplicity in format, and
- stimulus to good management.

Loots (1995:987) furthermore believes that the NEC looks first and foremost at the most equitable basis of allocating or sharing risk in order to lay the basis of a win-win partnership between employer and contractor with each motivated to manage the events over which it is best able to control, plan or influence.

A consultative version was published in 1991, which after use and feedback resulted in the issue of the first edition in 1993. The ICE published a second edition in 1995 which incorporated refinements and changes prompted by comments from the industry and feedback from projects that had been executed under the first edition (ICE, 1995 and Lane, 1998:2).

The NEC is the title for the complete family of documents that consists of:

- Engineering and Construction Contract (ECC) (the "Black Book");
- ECC Guidance Notes (the "Brown Book");
- Engineering and Construction Subcontract;
- Flow charts;
- Main (contract strategy) options A–F;
- Secondary options G–Z;
- NEC Professional Services Contract;
- Adjudicator's contract; and
- Engineering and Construction Short Contract (ECSC).

Lane (1998:4) notes that the NEC system has been designed to be suitable for use anywhere in the world and by any organisation, whether public or private. The NEC is currently being considered for use by major developer organisations in South Africa on large and complex projects. Lane (1998:5) states that by 1998 projects in excess of R6bn have been carried out in South Africa under the ECC. Organisations such as ESKOM, who first introduced the NEC to South Africa (Prisgrove, 1998), SASOL, ABSA and the National Department of Public Works have indicated their intention to let future large capital cost projects under the NEC system.

The SAIA (1999) considers the NEC suitable for prompt dispute resolution and facilitating good management. Clamp (1995:61) considers the NEC as applicable to building contracts as to civil engineering works. The NEC introduced a new and different approach to that of the UK's Joint Contracts Tribunal's (the JCT, very similar to the JBCC in South Africa) contracts developed for their building industry, in that provision is made for a project manager (no mention is made of an architect, engineer, or quantity surveyor), who is required to collaborate with the contractor towards the satisfactory completion of the project but nevertheless is still expected to act solely in the interest of the employer. Loots (1995:986-7) however finds that while the NEC recognises and retains all the traditional roles of the "Engineer", i.e.:

- project manager,
- designer,
- supervisor of construction, and
- adjudicator of disputes,

it defines the first three roles as being carried out on behalf of the employer, but the fourth to be carried out independently.

Clamp (1995: 61) furthermore suggests that the NEC can be tailored to be equally suitable for lump sum, cost plus, or design and build contracts, dependent on the clauses selected.

The philosophy underlying and supporting the NEC is to:

- Encourage collaboration and teamwork.
- Improve opportunities for partnering. The CIDB (2004a: 9) describes partnering as working together in a way that suits the particular partners and which suits the particular project. Whilst there is no pro forma for partnering, the keywords that must be present to ensure the benefits from a true partnership include: “co-operation, openness, shared standards, common objectives, respect for each partner’s motivation, trust, and sharing costs, risks and rewards”. A partnering arrangement between the contracting parties can be achieved by using and including the *Option X12 (Partnering Option)* with the ECC.
- Provide effective control of change, speedy agreement of time, quality and cost impacts of change.
- Improve early forecasting of final costs.
- Obtain greater accuracy of end date forecasts.
- Identify risks earlier.
- Complete the final account earlier.
- Minimise “contractual claims” after completion.

Lane (1998: 4) however suggests that the following characteristics of the NEC may be disadvantageous:

- *It is more open-ended in setting out the obligations and rights of the parties,*
- *It requires a high level of competency of all role players, which possibly does not exist sufficiently in South Africa.* (author’s note: Prisgrove (in SAIA, 2000: 1) adds:

I leave it to construction professionals to assess the likelihood that the necessary highly skilled managers are in place today in South Africa to ensure the competent and trained responses needed to create the operating environment on sites to sustain the reality of the intended NEC principles of operation in the hands of the general management of many South African project managers, professionals, contractors and subcontractors.

- *Nominated or selected subcontractors have only the same rights as domestic ones do. (Author's note: this may be very prejudicial to the rights of specialist subcontractors such as landscapers).*
- *The "Works Information", written specifically for each contract in place of the more Standard Preliminaries used in the JBCC forms of contract, requires careful scrutiny by the tenderer each time he tenders, which might be a problem in the limited time usually available to tender. Much of the risk to the contractor comes primarily from these Works Information clauses, and in South Africa many contractors are probably more familiar with the printed Standard Preliminaries of the other forms of contract. (Author's note: Prigrove, (in SAIA, 2000:2) finds that failure by a contractor or subcontractor to understand the implications of an item in the "Works Information" could lead to the tenderer having contracted to do work not included in the price).*

The CIDB (2004a:8) finds that the NEC incorporates three key components:

- Conditions of contract,
- risk management, and
- process/project management.

In effect it establishes a “real time” contract management process by addressing the “when”, “what” and “how” in the form of instructions, compensation events, early warnings and supporting documentation and identifies the “who” by assigning responsibilities (CIDB, 2004a:8).

The NEC makes no provision for nominated or selected subcontractors. One benefit of this could be to eliminate the harmful effect on the management of projects that share responsibility for controlling their activities and payments. Preferred subcontractors may be listed in the enquiry or bid documents, but all subcontractors will be appointed by the principal contractor in terms of a normal (or domestic) subcontract and they would have no contractual relationship to the employer.

2.2.7.2 Using the NEC contracts for landscaping work

According to Baird (personal communication, in Vosloo & Maritz, 2005) the NEC has four contracts within its family of eight forms of contracts suited to landscape work. They are:

- NEC ECSC that would be used between an employer and contractor for the design and construction of typically straight forward simpler work and which does not require a high degree of project management. The ECSC does not make provision for an employer’s agent, but the employer may however delegate his authority. The extent of delegated authority remains as though it was the employer who took the action;
- NEC Engineering & Construction Short Subcontract (ECSS) which is a back-to-back form of subcontract for use with the above document, typically when the

landscaping contractor is required to subcontract any of the construction or installation work;

- NEC Professional Services Contract (PSC2) that is a form of contract suitable for the appointment of professionals of any discipline. This contract would be used on larger projects where a landscape professional is appointed to carry out project design and perform services for a client on a fiduciary basis; and
- NEC Term Services Contract (TSC1) which is a form of contract used by an employer with a contractor for the management and/or maintenance of an existing facility for a term of say two to five years. It also includes provision for a certain amount of design during that period.

Vosloo & Maritz (2005) suggest that the form most likely to be used for landscaping work would be the ECSC. Being a member of the NEC family of standard form contracts it uses the same philosophy, format and terminology as other members of the family. A set of guidance notes and flow charts is also available to assist preparation and administration of contracts using the form, and its back-to-back subcontract, the ECSS. The Term Services Contract (TSC1) could form the basis of an extended landscape maintenance contract after the completion of the landscape installation (sub)contract and its associated defects liability period.

2.2.8 The SALI standard agreement for the landscape industry

This standard agreement between an employer and a member of SALI for the construction of landscape work was developed by SALI from the understanding that other forms of contract in use in South

Africa did not satisfactorily address issues specific to the landscape industry. The latest edition of the agreement was published in 1992.

The agreement is a direct contract between the landscape contractor and the employer, hence the landscape contractor becomes the principal contractor. Provision is made for nominated subcontractors. The contractor retains the right not to appoint any nominated subcontractor against whom he may have reasonable objections.

The roles of two of the professional consultants, i.e. the landscape architect and quantity surveyor, are described as those of independent professional consultants, being the “agent of neither the employer nor the contractor” (SALI, 1992: 13, author’s underlining) and it is expected of them to act in a fair and reasonable way between the parties. The agreement makes it compulsory on the employer to inform the landscape architect and quantity surveyor in writing of these provisions.

The agreement goes so far as to require of the landscape architect to be a “professional member of ILASA” (sic). The agreement also places no obligation on the contractor to heed the instructions from any person except the landscape architect. In what is considered to be onerous to the employer, the agreement allows the contractor to, if he so selects, require of the landscape architect to also not heed the requests of an employer for any purpose under the agreement (SALI, 1992: 13). This is perhaps one of the reasons for this form of contract not gaining wider acceptance in South Africa.

The agreement however does address the problem of late and restricted access for the landscape contractor to the site. The term “commencement date” refers to the date on which the contractor is given full and unrestricted access to the site and the term

“designated period” refers to the period from awarding the contract to the commencement date.

The perennial problem encountered by landscape contractors of having their work interrupted and damaged by other contractors working in the same areas is extensively addressed in this agreement. Clause 9.4 (SALI, 1992:19) clearly states that the employer shall, except for right of passage through the works, under no circumstances give any access to any other contractor to work in a portion of the site of which possession has been given to the landscape contractor.

The issues of early plant procurement, payment thereof and the resultant risk of ownership are also addressed in the agreement. The contractor shall be entitled to, immediately after signing the agreement, procure the plants required for the project and receive payment therefore in the next payment certificate. Such plant material then becomes the property of the employer but Clause 17.2.1 (SALI, 1992:23) places the risk for and to such plant material with the contractor until such time as practical completion for that portion of the work has been certified. The contractor is obliged to sign a letter of cession for such plant material to the employer and undertakes to take all reasonable steps to secure and protect the plant material against any damages. He is obliged in the case of new work, i.e. excluding additions and alterations, to insure the works and all unfixed materials jointly in the names of the employer and the contractor against physical destruction or damage.

The agreement makes provision (although not unambiguously stated) for a maintenance period of twelve months from date of practical completion of the works. Clause 28.1 of the agreement (SALI, 1992:36) places an obligation on the landscape architect to, ‘after the expiry of twelve months from the date of practical

completion...’ issue a certificate of completion and a final payment certificate. The agreement is unclear about payment for maintenance work during the said twelve month maintenance period as the penultimate certificate must be issued at practical completion and the final certificate at the completion of the maintenance period and any final defects lists. The confusion on this crucial issue in the agreement is perhaps one of the other reasons for this form of contract not being used widely in South Africa.

2.3 Landscape industry forms of contract used internationally

2.3.1 Introduction

From a casual investigation of landscape industry specific forms of contract in use elsewhere in the world, the author has to conclude that, apart from internationally used forms of contract such as FIDIC and NEC, most western countries tend to use locally developed forms of contract. In countries such as Argentina and Chile, there are no co-ordinated efforts to develop landscape specific forms of construction and maintenance contracts or subcontracts.

In the United States of America (USA) the American Society of Landscape Architects (ASLA) does not produce its own forms of contract but rather endorses the American Institute of Architects’ (AIA) forms of contract (Lebleu, 2007), such as:

- The A-series of documents which deals primarily with agreements and related issues between the owner and the contractor, but which also includes a Standard Form of Agreement between Contractor and Subcontractor – Form A 401 of 1997. It is worth noting that provision is made in the A-series of documents for agreements between the owner and

the supplier or contractor for furniture, furnishings and related interior work, but not specifically for landscape works.

- The B-series of documents deals with the agreements between the owner and the architect/consultant.
- The C-series of documents deals with agreements between the architect and other consultants.
- The G-series of documents deals with practice and related matters.

The Landscape Contractors Association of America (LCAA) has developed and produced a Subcontract Agreement (LCA Form 5 of 1992) for use between a principal construction contractor and a landscape subcontractor for the construction of landscape works at a construction project. Whilst this agreement is a stand-alone document that does not refer or relate to any of the AIA documents referred to above, it is nonetheless widely used in the USA between principal construction contractors and landscape (sub)contractors registered with the LCAA (Lebleu, 2007). LCA Form 5 is however a document intended only for landscape installation works and makes no provision for extended landscape maintenance.

in South Africa construction contract legal frameworks have historically been closely linked to United Kingdom (UK) and other European precedents and in the terminology used; this is perhaps evident in the CIDB's preference for the JBCC (which was originally closely modelled on the UK's Joint Contracts Tribunal [JCT] system), FIDIC (with its European origin) and the UK's NEC. Since this is also the case in landscape contracting, further discussion will focus on the UK's landscape contracting models; however, references are made to landscape contractual issues that have been raised and studied in Canada and Australia.

2.3.2 United Kingdom

In the UK the Joint Council of Landscape Industries (JCLI) have developed forms of contract for landscape related works since 1969 (Clamp, 1988:99) at which time the JCT 1968 Minor Works Form (developed essentially for smaller building construction works) was used as a point of departure.

The UK's JCT is an organisation very similar to South Africa's JBCC and is the author of a series of construction contract forms widely used in the UK and some Commonwealth countries such as Australia and New Zealand.

The JCLI was established in an effort to co-ordinate and standardise the contract documentation in use by various organisations involved in the larger landscaping industry such as the Arboricultural Association, the Institute of Leisure and Amenity Management, The Landscape Institute, the National Farmers' Union, the British Association of Landscape Industries, the Horticultural Trades Association and the Institute of Chartered Foresters.

Up to the publication of the JCLI standard documents, and to some extent even after that, UK landscape architects had to use an assortment of standard contract documents designed chiefly for other professions (Stiles, 1993:18). He found that:

In those areas where landscape is a peripheral issue it has only received superficial treatment in existing standards, the preparation of which has been led by other professions and

...where landscape issues have formed the central consideration they have been dealt with in isolation and are generally not compatible with other, more widely used, approaches.

(ibid: 18-19).

The primary documents currently in use in the UK for landscape contracting are the JCLI Landscape Works Agreement and JCLI Landscape Maintenance Works Agreement.

2.3.2.1 The JCLI Landscape Works Agreement

This agreement (JCLI, 2002a) is based to a large extent on the JCT Minor Works Agreement.

The JCLI agreement makes provision for contracts where the landscape contractor is the principal contractor or where he is not the principal contractor but neither a subcontractor, thus he will be a direct contractor in JBCC terminology. In what could be considered the biggest difference between the JCLI contract system and forms of contract used in South Africa for landscape works, is that under the JCLI Landscape Works Agreement (2002a:8-9) provision is made for the following different contractual situations:

- *Failures of plants (pre-practical completion):*

This clause places the responsibility for replacing dead or missing plants, except those resulting from malicious damage or theft with the contractor, unless otherwise instructed by the employer's agent.

- *Malicious damage or theft (before practical completion):*

The options are given in the agreement for either the contractor to be responsible for repairs to work and replacements of plants in such cases at his own costs, or for such damages to be paid from a provisional sum

allowed for in the agreement and to be expended as instructed thereto by the employer's agent.

- *Plants defects liability and post practical completion care by contractor:*

This optional clause, if so selected, has two sub-options. The first places the care of plant material and the resultant obligation to replace defective plants during a specified defects liability period with the contractor. Provision is made for varying defects liability periods for grass, shrubs and ordinary nursery stock trees, and semi-mature, advanced or extra large trees.

The second sub-option excludes the care of all plant material after practical completion from the agreement.

- *Plants defects liability and post practical completion care by employer:*

This optional clause, if so selected, places the care of trees, shrubs, grass and other plants, after practical completion of the works, with the employer who shall also be responsible for the replacement of any plant subsequently found to be defective. This option could place the employer at risks not able to be ascertained at practical completion, especially in the case of plants that were planted during the dormant season and before they can show acceptable new growth.

It is also worth noting that in the UK's construction industry, specifically when using the JCT contract system, there may be occasions where the traditional "soft landscaping" work such as

top-soiling, grading, soil amelioration, planting and grassing, tree works and the preparation for these works (including site clearance and excavations) and “soft landscape” maintenance are not considered to fall within the definition of construction work and should therefore only be commenced with as a separate contract after the practical completion of the building/engineering contract (JCLI, 2002b:1). The reason for this approach lies primarily in the numerous industry regulations regarding labour, health and safety and site supervision applicable to traditional construction works contracts.

2.3.2.2 The JCLI Landscape Maintenance Works Agreement

This model form of contract (JCLI, 2002c) is currently available in its February 2002 edition since first issued in 1998 for use by UK landscape architects and landscape contractors for landscape maintenance projects up to a value of £150 000 per year.

It is based on the 1998 Edition of the JCLI Agreement for Landscape Works but with certain non-applicable clauses such as references to bills of quantities, nominated subcontractors and works insurance omitted. It specifically addresses those sections that deal with the different circumstances applicable to maintenance as opposed to construction works.

It is intended to be appropriate for all types of landscape maintenance projects and has considerable flexibility to accommodate varying circumstances (JCLI, 2002d:1). One of which is the use thereof for landscape maintenance during the defects liability period in conjunction with the JCLI Landscape Works Agreement.

The JCLI Landscape Maintenance Works Agreement is also suitable for landscape maintenance work after practical completion of landscape construction works undertaken under the JCT or NEC forms of contract.

It is interesting to note that the JCLI Agreement for Landscape Works (JCLI, 2002a) specifically omits the maintenance of plants after practical completion:

If a defects period(s) is required for the plants a separate agreement between the Contractor and Employer is required to cover the care of plants during the defects period(s) after practical completion

(JCLI, 2002d:1)

It is proposed that in cases where the Landscape Maintenance Works Agreement is used in conjunction with the Landscape Works Agreement:

- The maintenance contract should last for at least the longest soft landscape defects liability period specified in the construction contract.
- Partial possession under the construction contract will cause phased commencement of the maintenance contract, but the end of the maintenance should be the same for all parts.
- The construction and maintenance contracts should be separate but tendered together, accepted together and signed at the same time.

(ibid:1)

2.4 Conclusions

The multitude of forms of contract used in the construction industry in South Africa probably results in inefficiency, unnecessary complexity, uncertainty amongst tenderers when preparing tenders and which results in higher tender prices, the marginalisation of emerging contractors and unnecessary difficulties in skills training in the construction industry.

The recommendation of the CIDB that only four forms of contract, i.e. the JBCC, GCC, FIDIC and the NEC, be used and further developed in South Africa should therefore be rigorously promoted.

Preliminary conclusions indicate varying degrees of inadequacy in the forms of contract used in South Africa for landscape works. In the UK the JCLI contractual system used for landscape installation and maintenance works has been designed specifically for those purposes and contains possible solutions to some of these inadequacies.

An analysis of the CIDB criteria for construction contracts suggests that addenda to contracts within the recommended series of contracts will be preferable to developing forms of contract specifically for landscape works.

Pertinent issues for landscaping contracts

3.1 Introduction

In this chapter relevant criteria and requirements for landscape contracts in respect of pre-main contract, in-main contract and post-main contract landscape work will be identified and extracted. In order to do so, construction contracts as such and landscape contracts, as discussed in Chapter 2, are analysed particularly in terms of their ability to meet such landscape contract requirements.

3.1.1 The main contract

From the consideration of literature on construction contracts in Chapter 2, the nature and purpose of a main contract need to be clarified in order to understand the role and function of the subcontract; which is the form of contract under which a large portion of landscaping work is undertaken in South Africa.

Brümmer (1998:2) defines a contract as:

...an agreement between two or more parties by virtue of which certain legal rights and obligations are created.

He furthermore states that

...a building contract may be defined as a contract in terms of which one party, called the builder or contractor, agrees to perform building or engineering works for another. There exists no separate law of contract for building as opposed to engineering construction.

Loots (1985:387) notes that a contract can be seen as:

...a legally binding agreement, written, oral or flowing from conduct, to give, do or refrain from doing something.

In *Construction Law and related issues* Loots (1995:13-14) defines a contract as an agreement that is intended to be enforceable at law.

This intention is essential, and is sometimes referred to as 'animus contrahendi' – the intention to contract. The courts will not entertain an action between parties to an agreement made without 'animus contrahendi'.

The Odhams Illustrated Dictionary of the English Language defines a contract as

a document containing the terms of an agreement; the terms or conditions of a solemn agreement or compact.

Landscape contracts, like most building contracts, differ from a typical sale of goods contract in that they comprise of the supply of labour and material components for the purpose of constructing the works. The employer provides the construction site while the contractor, together with his subcontractors, constructs a building or structure, or in the case of landscape contracts, also the supply and planting of plant material.

They are not contracts solely for the sale of goods at common law, ...even though the title in such materials, as is required, ultimately passes to the building owner.

(Clamp, 1995:43).

Loots (1995:89) notes that construction contracts are generally classified in terms of the method of measurement and the method of payment by the employer to the contractor and that these methods of payment range from a single lump sum to the actual cost plus a fee.

The different types of contract offer different degrees of flexibility, different levels of incentive, and different allocations of risk between the parties (Loots, 1995: 89-90)

3.1.2 Standard forms of contract

Brümmer (1998: 2) comments that all construction contracts have one common goal, which is the completion of the building or engineering works by one party (the contractor) for the benefit of the other (the employer). As a result, he finds that the majority of the various construction contracts' clauses have become more or less standard with the differences being only in the style of writing.

Collier (2001:51) suggests that the need for standard forms of contract arises from a need for written contracts that can be economically executed, usually without the need for extensive legal services, and from a desire to standardize certain relationships and practices according to the general agreement about contract fundamentals reached by representatives of those associations of designers and contractors directly involved in construction contracts. One advantage of using a standard form of contract is that it probably needs not to be included in a project specification except by a reference in the specification to that contract's latest edition.

In the case of landscape works contracts in South Africa it is worth noting that up to the current time, as discussed in Section 1.1 in Chapter 1, the organised associations of landscape architects and landscape contractors have not been consulted or represented in those organisations that prepare often used standard forms of contract, such as the JBCC or the GCC.

Standard landscaping forms of contract are contracts that have been prepared by representatives of the consulting as well as the

contracting side of the landscape industry. The clauses of such contracts are normally compromises that attempt to strike a fair balance between both parties. Such contracts also attempt to include only those clauses that are universally applicable and acceptable on all contracts and any alterations therefore will almost certainly mean increased tender prices. (Clamp, 1986: 2).

Collier (2001:52) finds that standard forms of contract are often criticised for such things as bias in favour of the members of the publishing bodies, typically the professional consultant associations, and perpetuating outmoded practices.

Construction projects are always unique, and Collier (2001:57) suggests that standard forms of contract invariably require amendments and supplements. The drafters of standard forms of contract such as the JBCC and JCLI however recommend to their users to avoid or limit changes or supplements to the standard forms of contract. Collier (2001:52) argues that while it is true that an increase in the number of contractual supplements can decrease the effectiveness of a standard form to the extent that the contracting parties have to read and understand more, and providing that the supplements do not conflict with the original unchanged contents, there is no reason not to make supplements to a standard form of contract.

Indeed, if a construction project requires additional statements, terms or conditions, they must be included, otherwise the documents will be inadequate.

In a typical landscape contract the contractual documents consist of:

- The **specification** which gives specific details as to the exact quality of the required workmanship and materials.
- The **schedule of quantities** which lists the quantity of material to be provided.

- Construction **drawings** which indicate the precise location of the materials.
- The **articles of agreement** and the **conditions of contract**, setting out the obligations of the parties, when the contract is to be carried out, how it is to be controlled, paid for, insured against accidents during its execution, and how disputes between the parties are to be solved. (Clamp, 1986: iii-iv)

3.1.3 The purpose or objective of a contract

The primary purpose of a contract is to determine the various parties' rights and obligations. Resulting from this is the identification, allocation and management of risks on a construction contract. Loots (1985:2) suggests that the employer, being one of the two contracting parties should have as prime objective

...to secure the construction and completion of the works timeously and within the financial budget, and the employer will ultimately seek out the ...project manager who best prepares contract documentation and administers the contract so as to minimize this risk of litigation arising through ill considered and imprecise allocation of risk.

In the above statement of the contract objective, four key concepts emerge that may be considered essential criteria for a contract:

- construct and complete,
- timeously,
- within the financial budget, and
- minimize the risk of litigation.

The CID FG 6 (DPW, 2000b: 4) suggests that contracts should aim to:

- set realistic contract periods, and

- set out all available data, particularly geotechnical data, as subsurface work (e.g. digging of service trenches and tree holes) can have time and cost implications on a contract.

3.1.4 What constitutes risk on a contract?

The CID FG 6 (DPW, 2000b:1) describes "risk" as the

...concept of loss, generally, but not necessarily financial, arising from the occurrence of a hazardous event, and is the product of the cost of the hazardous consequences and its probability of occurrence.

The sources of risk can include:

- commercial and legal relationships,
- economic circumstances,
- human behaviour and individual activities,
- natural events,
- political circumstances,
- technology and technical issues, and
- management and control activities.

(DPW, 2000b: 1)

Loots (1995:260), in stating that risk arises when project uncertainties impact on project constraints, identified the following uncertainties and constraints:

Project uncertainties:

- technology,
- work scope,
- productivity,
- contracts,
- weather,
- politics,

- trade unions, and
- currencies

Project constraints:

- time deadlines,
- budget ceilings,
- resources,
- technology,
- environmental regulations, and
- political dispensation.

When the above constraints and uncertainties are juxtapositioned in a matrix the intersection of an uncertainty with a constraint will give rise to a risk. The magnitude of such a risk will mostly be determined by the time and cost to the project.

Contract documents can be important tools for managing risk. The CID FG 6 (DPW, 2000b:4) suggests that contract documents should determine the consequences of particular identified risks. Contracts should therefore clearly define and assign the respective responsibilities of the parties and be flexible to deal with changes. Loots (1985:3, and 1995:89) finds that the success or failure of a construction contract is greatly dependent on the managerial effort expended by the employer and his responsible professional consultant when formulating and awarding that contract. He furthermore states that

The basis of a successful contract is established by the preparation of concise, unambiguous conditions of contract that give a clear picture of the division of responsibility between the parties. Risk areas should be identified and allocated between the parties and incorporated into the relevant documents.

(1985:3)

Stemming from the process of tendering and where the employer accepts the lowest tender, an adversarial contractual relationship is invariably established in that the contractor will then through the entire duration of the contract attempt to produce the materials and do the work for as little as possible in order to maximise his profit. This often places the consultant primarily in a policing role and having to spend time adjudicating claims from the contractor.

3.1.5 Contractual rights and obligations

The contractor's rights and obligations can be summarised as follows (Brümmer, 1998:3):

...to execute the construction Works with due care, expedition and diligence, to provide all things necessary for the construction and to accept responsibility and be accountable for the safety and stability of Site operations. The Contractor is required to complete the Contract Works on time, subject to any adjustments allowed for under the Contract, and to fulfil all his obligations as laid down in the Conditions of Contract, as he would expect the Employer to fulfil his obligations.

Other essential clauses that need to be addressed and spelled out include:

- Who are the contracting parties?
- What are their *domicilia*?
- What is the extent of the works?
- What procedures are to be followed in case of a disagreement between the parties in order to resolve such dispute? In contracts where highly professional skills are involved, it is often more advantageous to employ a skilled arbitrator or mediator than to go to a public court, especially a magistrate's court.

- How and when will payment be made?
- Who may and how are instructions given to the contractor?

3.1.6 Stages of work and associated maintenance

3.1.6.1 Practical completion

Practical completion refers to that date when the principal agent of the employer certifies that the works have reached a stage where it can be considered fit for the intended use and usually that determines the date of the commencement of the defects liability period or, as is proposed by the author in the case of landscape contracts, determines the commencement of the landscape maintenance contract.

The practical completion definition given by Clamp (1988:105) is when, in the landscape architect's opinion,

...the works can safely be used for the purpose for which they were designed.

He also finds that the phrase has not yet been defined in courts in the UK and expresses the hope that it never will be, since this may legally confine the way in which the landscape architect arrives at his decision.

In the JCLI Practice Note No. 5 (JCLI, 2002b:2) it is recommended that in cases where the project manager or landscape architect is unable to certify practical completion due to factors such as seasonal planting requirements, he may nevertheless certify practical completion upon receiving the contractor's written undertaking to complete the outstanding work within an agreed time. This will of course also affect the defects liability period and

where applicable, the commencement and completion dates of any landscape maintenance contract.

In the JBCC forms of contract, works completion is defined in three stages (refer to Figure 3.1):

- Practical completion: When the works, in the opinion of the principal agent, have reached the stage where it is fit for the intended use and the employer can take beneficial occupation of the works. At this stage the contractor must be provided within seven days with a list of defective or outstanding works items.
- Works completion: When the listed works items, in the opinion of the principal agent, have been satisfactorily completed, a works completion certificate must be issued after which the ninety days defects liability period commences.
- Final completion: At the end of the defects liability period, and provided that all defective works items that may have been noted have been satisfactorily completed, the principal agent issues a certificate of final completion. At this stage the principal contractor's liabilities in terms of his N/S subcontracts end and any remaining N/S subcontractors' obligations to the principal contractor have to be ceded to a direct contract between such subcontractors and the employer.

3.1.6.2 Partial or sectional completion

Clamp (1988:106) notes that Clause 2.6 of the JCLI form of contract used in the UK provides for sectional completion of the landscape work and partial possession by the employer. While the landscape contractor remains responsible for the balance of the site, a certificate of practical completion can be issued for those

part(s) handed over. The relevant proportion of retention or the construction guarantee may be released and the contractor relieved of responsibility for any liquidated and ascertained damages for the part(s) handed over.

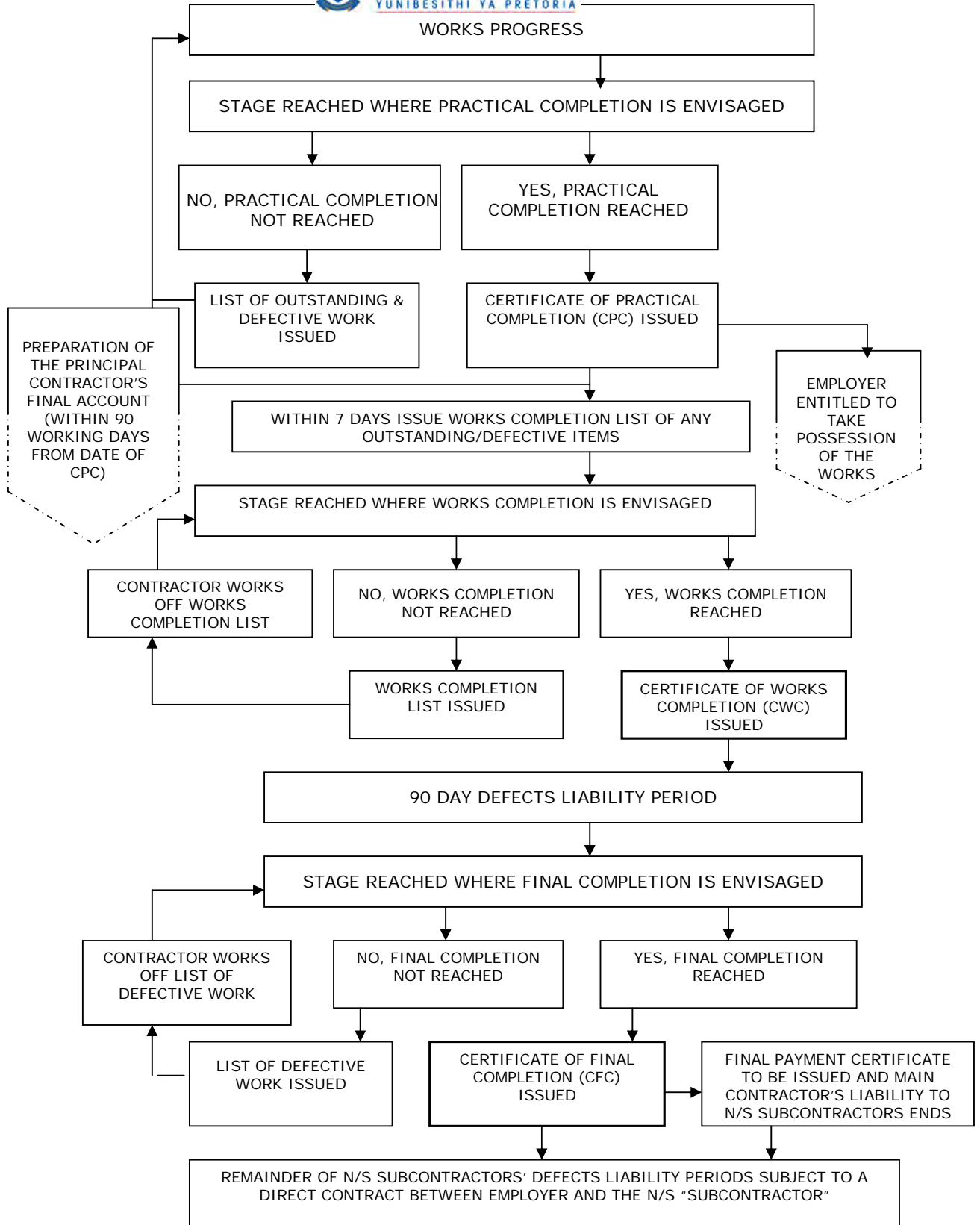


FIGURE 3.1 Schematic flow diagram of the works completion process of the JBCC Principal Building Agreement

A consequence of partial or sectional completion of the landscape works will be the staggered commencement of the defects liability and maintenance periods; in this regard the JCLI (2002b:2) recommends that the staggered completion of the maintenance works be avoided. This can be achieved by deciding on appropriate dates when the tender documents are prepared.

3.1.6.3 Defects liability periods and associated landscape maintenance

The risk for the works is usually transferred back to the employer when practical completion has been certified and the employer takes occupancy of the works. Some contract formats such as the GCC make provision for the contractor, or any of his subcontractors, to remain responsible for the care of any part of the work upon which they are performing any outstanding work during the defects liability period until that work is completed (Loots, 1995:540).

However, it is the author's belief that such clauses are intended for electro-mechanical building systems that may require a measure of maintenance until such time as those works are completed, and clearly not for landscape works that require daily or very regular maintenance over an extended period.

The JBCC EGC's *Section 11: Guarantee* (JBCC, 2001:7) makes provision for the specialist subcontractor to guarantee his work against defects for a period of one year. Under Clause 11.4 it is required of the employer to operate and maintain the subcontract works in accordance with the operating and maintenance manuals prepared by the subcontractor and handed over to the employer. Any damages to the works resulting from the failure of the employer or his agents to comply with the procedures set out in these manuals will not be covered by such guarantee.

The fact that such clauses in the JBCC EGC were never intended for landscape maintenance is however in itself not sufficient reason to justify a separate landscape specific contract. A landscape works specific addendum to the JBCC N/S Subcontract Agreement can be worded in such a way to address the pertinent issues.

If it is expected of the landscape subcontractor to maintain the landscape works, specifically the planting and associated irrigation works, during the principal contractor's defects liability period, the subcontract will require a specification (as proposed in Item 3.4.3 hereafter) for such maintenance work and, where applicable, the corresponding bills of quantities item. The landscape subcontractor will contractually somehow have to receive payment for such maintenance work through the main contractor, even though at that stage the instruction for and certification of new work should have ended and the parties should be in the process of determining the final account and payment certificate.

An extended landscape maintenance contract, not contractually linked to the main construction or subcontracts, could therefore be a practical solution to this contractual dilemma.

3.1.6.4 Extended landscape maintenance contracts

The question could well be asked what purpose is served to install any landscape work if the employer or developer has no commitment to maintain the landscape over the lifetime of the project. If the answer is to gain a short-term visual effect only to enable the employer or developer to on-sell at a better price as soon as possible after completion, the necessity for a maintenance

contract between the employer and a landscape maintenance contractor becomes questionable.

Clamp (1986:129) finds that in the UK

Most landscape contracts ... provide for the regular maintenance of planted areas for the first year after practical completion by the contractor who has supplied and installed them. At the same time the firm then also accepts responsibility for the replacement of all trees, shrubs and grassed areas which may have failed during the same period for any reason other than theft or vandalism. Only in the most rare instances is it advisable for an employer to use his own staff or pay another contractor to carry out this work during the first 12 months after practical completion. The risks of dispute arising from such divided responsibility are self evident. If the subsequent maintenance is entrusted to the initial contractor problems arising from lack of communication between the parties and resulting in the second contractor being blamed for the death of the initial contractor's plants, can be avoided.

In the JCLI Practice Note No. 5 (JCLI, 2002b:2-3) it is recommended that at the time of preparing tender documents, a decision must be made by the employer and/or the landscape architect as to whether the contractor or employer will be responsible for the care of planting after practical completion in terms of the JCLI landscape construction agreement.

If a defects liability period is required for the planting, a separate landscape maintenance agreement between the employer and the landscape contractor will be needed to cover this responsibility. Even when the contractor is responsible for care after practical

completion, the defects liability period should still not exceed the duration of the maintenance contract.

The JCLI (2002b:2) recommends that the landscape construction and maintenance agreements should be separate but tendered together, accepted together and signed at the same time. The landscape maintenance works should commence immediately after practical completion of the construction works has been reached.

In forms of contracts such as FIDIC that were designed specifically for building or engineering constructions the term “maintenance” refers to the obligation of the contractor to maintain the works in the same state as at the inception of the “maintenance period” (or as referred to in the JBCC; the defects liability period)

Loots (1995:686) finds that in the Lesotho Highlands Development Authority’s Katse Dam project it was the principal contractor’s responsibility to maintain the plants in

...good condition throughout the Contract, including the Defects Liability Period. The plants shall be fully maintained during this period, including watering, and any losses of plants due to lack of maintenance, including diseases developed during the contract period and the Defects Liability Period, shall be replaced at the Contractor’s expense.

In the above project, which was based on the GCC, it would appear that the landscape subcontractor had to allow for or price for the landscape maintenance work during the defects liability period of the main contract in his landscape construction subcontract.

It is however suggested in this study that the nature of landscape maintenance work is clearly outside of the intended meaning in FIDIC and GCC since it entails further intentional work (such as plant pruning, feeding and fertilisation, staking and tying, and irrigation) that may be construed to imply long term operational maintenance.

Clamp (1988:106) states that, in terms of Clause 2.7 of the JCLI Form of contract for landscape construction, all plants that are found to be missing or defective prior to practical completion, except those that can be shown to have been stolen or vandalised, remain the responsibility of the landscape contractor and must be replaced at his own cost. Alternative Clauses 2.7A or 2.7B cover plants which die subsequently to practical completion. The choice of clauses depends on whether subsequent landscape maintenance after practical completion is to be undertaken by the contractor or the employer. Clause 2.7A covers the subsequent maintenance by the contractor and allows the parties to insert the required periods of maintenance. At the end of such a period(s) any defective or missing plant material has to be replaced by the contractor at his cost.

If however all maintenance subsequent to practical completion is undertaken by the employer in terms of Clause 2.7B, Clamp (1988:106) points out that this clause then relieves the contractor of all further responsibilities and any plants that subsequently die, for any reason, are the responsibility of the employer.

3.1.7 The subcontract

Collier (2001:28) suggests that specialisation in construction projects is the result of seeking efficiency. Few general building contractors have the in-house expertise to undertake all the trades required on a

typical construction project. Specialised construction work requiring skills, materials and processes not normally associated with general building work such as concrete and masonry work, are usually undertaken through subcontracts. Landscaping work is one such trade that has evolved to the extent that most landscape and related works on a construction project are carried out by a specialist landscape subcontractor.

Loots (1985:278) makes it clear that a contract confers rights and duties only upon those who are parties to it, and as a result the rights and duties of a subcontractor are in no way affected by the terms of the main contract, unless they are expressly incorporated into the subcontract. Loots (1995:609) in quoting Abrahamson: *Engineering Law and the ICE Contracts 1969 (2nd Edition)* finds that *The basis for subcontracting is subletting the physical construction of the works only, not assignment of liability – the main contractor remains fully liable to the employer for the works and cannot excuse himself by proving that bad work was done or delay caused by a subcontractor.*

Collier (2001:149), in emphasizing this point, states:

In the former (principal contract), only one person is responsible (to the employer) – the contractor. In a subcontract there are always at least two parties between whom responsibilities are to be divided, and a subcontract must make clear who is responsible for what.

The SAIA (1999:3.431:1) describes a subcontractor as

...a firm or person that undertakes work on a site, usually of a specialised trade and skills nature, and that performs the work in terms of a subsidiary contract (subcontract) to the principal contractor that contracts with the employer for the whole of the construction contract.

The most significant issues that determine a subcontract relationship are those relating to the management of risk to the employer, contractor and subcontractor. SAIA (1999:3.431:1) notes that these risks relate primarily to performance to the requisite quality of the work, timeously and of payment for the work. Loots (1985:278) notes that the main principle governing subcontracts is that the basis of subcontracting is the sub-letting of the physical construction of the works only, not an assignment of the liability, and that the principal contractor remains fully liable to the employer for the works and cannot excuse himself by proving that the bad work was done or the delay was caused by a subcontractor.

This fundamental interpretation of a subcontract is perhaps the reason for the concept of nominated subcontractors diminishing and that all subcontractors are rather seen as “selected” in the sense that the principal contractor has satisfied himself timeously on the selection and appointment of these subcontractors.

Uher (1991:507) notes that in Australia the subcontracting process is negatively affected by an inequitable relationship between principal contractors and subcontractors with regard to subcontract conditions. He found that the risk for subcontractors is directly related to the proliferation of non-standard subcontract conditions prepared by the principal contractor and in which the risks to the principal contractor are usually minimised to the detriment of the subcontractor. He also found that domestic subcontractors are commonly exposed to harsher subcontract conditions than nominated or selected subcontractors.

Uher (1991:507) furthermore stresses the fact that because subcontractors make risk allowances for onerous subcontract conditions, final project costs are likely to be higher, and concludes

that risks associated with subcontract conditions are likely to increase the employer's risks as well. (1991:507)

Collier (2001:151) finds that a principal contractor and a landscape subcontractor may find that they have specific obligations to each other arising from the nature of the work of the subcontract and its division of responsibility may not be specifically addressed in the principal contract, or, at best only implied. With specific reference to landscape subcontracts, these may include:

- To provide temporary facilities such as an on-site holding nursery to accommodate plants harvested on the site or to store contract-grown plants.
- To provide a temporary water supply for the irrigation of plants referred to above.
- To provide specific construction equipment such as hoists and cranes to get large plants and planter soil and compost to interior courtyards and planters.
- To make good the damages caused by the principal or other subcontractors to areas already planted and provided with irrigation equipment, bearing in mind that landscaping and irrigation are usually the last trades to be completed on construction projects.
- To comply with health and safety requirements that the principal contractor is obliged to satisfy under the principal contract.
- To prepare co-ordination drawings of irrigation pipe layouts with other subsurface site services.
- To furnish work programmes and progress reports not required by the principal contract.
- To carry special insurances not specifically required by the principal contract.

In Table 3.1 the CIDB (2004b: 3) lists the recommended forms of subcontract for use in engineering and construction works contracts. These recommendations are in line with the provisions of the Best Practice Guideline #C2: *Choosing an appropriate form of contract for engineering and construction works*; refer to CIDB 2004a: 2.

TABLE 3.1

Recommended combinations of forms of contract and subcontract

(Adapted from CIDB, 2004b: 3)

Series of contract	Recommended form of subcontract
FIDIC	<ul style="list-style-type: none"> • BIFSA (now MBSA) Standard Subcontract Agreement for use with principal building agreements other than the JBCC PBA • BIFSA (now MBSA) labour only subcontract • CIDB Standard subcontract (labour only) • SAFCEC General conditions of subcontract, 2003 Ed.
GCC	
JBCC	<ul style="list-style-type: none"> • BIFSA (now MBSA) Non-nominated Subcontract for use with the JBCC PBA • JBCC N/S Subcontract Agreement • The EGC for use with the JBCC N/S Subcontract Agreement.
NEC	<ul style="list-style-type: none"> • NEC Engineering and Construction Subcontract • NEC Engineering and Construction Short Subcontract

Ordinarily three categories of subcontract are recognised. They are:

- nominated subcontracts,
- selected subcontracts, and
- domestic subcontracts.

3.1.7.1 Nominated subcontracts

A nominated subcontractor is one chosen by the principal agent, usually following a tendering process or by negotiation on behalf of the employer. Such a tendering process is usually an “open tender” and the employer is not bound to accept any or the lowest tender.

Nominated subcontractors can be identified in parallel time with that of the principal contractor's tenders (SAIA, 1999:3.431:1).

The performance of a nominated subcontractor is at the risk of the employer with regard to insolvency and completion on time. As the SAIA (1999:3.431:1) points out:

...in effect, the employer guarantees to the contractor the performance of the nominated subcontractor.

The advantage of a nominated subcontract is that the employer or his principal agent can choose a firm that has the most suitable combination of skill and price according to their informed opinion.

The disadvantages of this form of subcontract are, as stated above, for the employer to bear the full risk of default of such a subcontractor. The consequence of a delay caused by the nominated subcontractor is usually an entitled claim for extension of time by the principal contractor.

3.1.7.2 Selected subcontracts

A selected subcontractor is usually one chosen jointly by agreement between the principal agent (on behalf of the employer) and the principal contractor, usually following a tender process or by negotiation. Since these processes are conducted with the listed pre-selected "subcontractors", the employer is morally bound to accept one of the tenders and usually the lowest. As the SAIA (1999:3.431:2) points out:

It follows that the (principal) contractor must have been awarded the principal contract prior to the selection process.

Some forms of contract place the full right and responsibility of deciding on a selected subcontractor with the principal contractor

and merely require of him to “consult” on these matters with the employer or his principal agent.

The risk of poor performance or default by, or delay caused by the selected subcontractor, is solely that of the principal contractor.

The advantage of this form of subcontract for the employer is that it transfers all the risks of subcontractor malperformance to the principal contractor. The disadvantage for the employer is that the appointment of selected subcontractors can only occur after the appointment of the principal contractor; on projects with a high proportion of complex subcontract work this can have a delaying effect on the overall project duration.

3.1.7.3 Domestic subcontracts

A domestic subcontractor is a person or firm appointed by and at the sole risk of the principal contractor. Any delays caused by the domestic subcontractor are at the risk of the principal contractor. Clamp (1986:62) states that in the case of landscape domestic subcontracts

...the main contractor still accepts full responsibility for its (the landscape subcontract works) satisfactory completion; he has to arrange for it to be carried out at a time to suit his own convenience and programme, compatible with the needs of the plants for seasonal lifting and their subsequent establishment.

The disadvantage of the domestic subcontract for the principal agent is that he has little direct control over the work quality of such a subcontractor since they are often appointed solely on price.

Payment of a domestic subcontractor is a matter entirely within the purview of the principal contractor and the principal agent has no authority in this matter.

3.1.8 Risks in subcontracting

Uher (1991:495-6) claims that employers undoubtedly pay more for their projects than they need to as a result of onerous subcontract conditions and unfair contracting practices enforced on subcontractors by principal contractors.

The presence of such conditions may increase the client's risk either through the insolvency of subcontractors, an increase in the level of claims and disputes, or by cost-cutting measures on the part of subcontractors which affect the quality of the works.

(Uher, 1991:496).

He found in a 1990 Australian survey that subcontract conditions are considered the most critical risk by subcontractors and that they make a risk allowance of up to 7.6% in their tenders.

The most feared subcontract conditions are (in decreasing order of importance):

- Terms of payment.
- Extension of time.
- Rise and fall (referring to a price escalation clause in the contract).
- Liquidated damages.
- Delays and cost of delays.

3.1.8.1 Terms of payment

The conditions relating to "terms of payment" by the principal contractor to subcontractors are seen to be the biggest risk. The

exposure to risk for subcontractors is the most severe when the “pay when paid” condition, which provides for a payment to be made to a subcontractor only when the principal contractor secures payment from the employer, is made part of the subcontract agreement. This condition is commonly included in in-house prepared subcontracts by the principal contractor and gives no guarantee when payment will be made to the subcontractor.

Loots (1995:640) finds that such a provision severely distorts the contractual bargain, to the detriment of the subcontractor, and states that it is

...inequitable, unfair, and legally questionable. The subcontractor is strictly obliged to perform his side of the bargain, but the main contractor's corresponding obligation is greatly reduced being only obliged to make payment when, or if, he receives payment from the client.

Loots (1995:640) further suggests that since the main contractor's own financial arrangements, including his contractual links to other parties such as the employer are irrelevant to the subcontract, they may have no proper bearing on his obligations to the subcontractor.

Standard forms of subcontract mostly stipulate specific periods of time for payments but Uher found that they are very rarely applied (1991:499). Other problematic payment practices relate to discounts that are offered by subcontractors to principal contractors for prompt payment being deducted even though payments are not made on time, Loots (1995:641) confirms this fraudulent practice.

Uher (1991:500) found that whereas the principal contractor is contractually entitled to withhold, reduce or defer payment of any

sums due, provided there are valid reasons for doing so and he has to give written notice of the reason, this right is often abused.

3.1.8.2 Extension of time

Time is the scarcest of all the resources of construction: capital, labor, materials, plant, equipment, and other services required.

(Collier, 2001: 10)

Usually the subcontractor is entitled only to extensions of his contract period in relation to delays to the practical completion date of the principal contract. Uher (1991: 501) however found that the subcontractor's right to an extension of time where the principal contractor receives an extension is not guaranteed, and indeed, is often denied. In a situation which often arises in landscape subcontracting works, delays caused by the principal contractor or other subcontractors do not necessarily form legitimate grounds for granting an extension to that specific subcontractor, irrespective of whether or not the delay affects the critical path. Collier (2001: 135) suggests that a principal contractor should not be granted an extension of time for delays caused by his subcontractors since these are or should be under his control and management.

Loots (1995: 641) finds that main contractors often seek to arbitrarily control the time period for completion of subcontract work by including terms such as 'the time for completion will be as directed by the main contractor' in the subcontract agreement.

3.1.8.3 Price escalation

Uher (1991:502) found that in cases where a price escalation clause has been deleted from a subcontract (thereby fixing the contract value irrespective of increases in the cost of labour or materials), the prudent subcontractor should assess the risks associated with likely causes of delays on the specific contract and make an appropriate allowance in his price. By excluding the escalation clause from his subcontracts, the principal contractor attempts to transfer the risk of escalation to his subcontractors; often as a result of the employer doing the same to him. Collier (2001:141) suggests that it is probably the norm for principal contractors to pass on most, if not all, of this risk to their subcontractors.

Uher (1991:502) suggests that the employer ultimately pays for escalation in one way or another, by undertaking the risk of either paying too much if the principal and subcontractors make excessive allowance in their prices, or by exposing himself to an increased level of risk that the principal and subcontractors will deliver poor quality work or even become insolvent.

It is generally accepted by the construction industry that risk should be assigned and borne by those parties who are best able to control them. In this regard Uher (1991:502) found that on short term contracts of up to six months in duration (Author's note: typical of landscape subcontracts in South Africa) both the principal and subcontractors should be able to predict with a reasonable degree of confidence the most likely rate of inflation and be able to control such a risk by early ordering of material and equipment.

On longer term contracts the accurate forecast of the likely rate of inflation becomes difficult and Uher (1991:502) suggests that since only the employer should be in the position to control that

risk, an escalation clause should be inserted in the principal contract and hence into the subcontracts.

3.1.8.4 Liquidated damages and penalties

The “liquidated damages” clause occurs in practically all subcontracts. Its objective is to compel the subcontractor to complete his work by the completion date, failing which will expose the subcontractor to the risk of compensating the principal contractor for resultant losses, often as a result of delays. Clamp (1988:104) stresses that damages for non-completion of subcontracts are provided to ultimately reimburse the employer for any damages he has suffered as a result of the landscape (sub)contractor not having completed the work within the contract period. Damages are normally considered to arise under three headings (Clamp, 1988:104):

- Notional loss of interest on capital,
- inconvenience or any actual consequential loss, or
- additional professional fees.

Chambers (1956b:213) however points out that liquidated damages must represent actual damages suffered by the employer through the principal contractor and not be included as a penalty. Collier (2001:132) finds that in the North American construction industry courts of law appear to disfavour penalties in contracts, particularly if they are not balanced by a provision for a bonus for early completion. There may however be cases where timely completion is of utmost importance for an employer, such as the completion of a holiday resort in time for the holiday season; however an early completion will bring no benefit in this situation.

When it is stated in the subcontract that time is of the essence, the date of completion becomes a part of the consideration of the agreement and failure to meet the date may make a party liable for damages. Unreasonable liquidated damages imply a penalty, and like Collier, Chambers (1956a: 137) also finds that most often courts will only accept an assessment as a penalty if an equal amount is allowed in the contract or subcontract as a bonus for each day the work is completed before the contract completion date.

Collier (2001: 130) suggests that before an amount for liquidated damages is prescribed in a contract or subcontract agreement, the employer and his consultant or agent should calculate the amount of damages per time unit that the employer would in fact suffer in the event of a delay in the completion of the work. For commercial projects the assessed and liquidated damages are not difficult to calculate, but in other types of projects the calculation of loss of income may not be feasible and some other means of assessment based on a cost-benefit analysis may have to be found. This is particularly applicable in the case of landscape contracts or subcontracts where the completed landscape construction is often not critical in the occupation and use of the works by the employer or for the occupation permit to be issued by the approving statutory authority.

3.1.8.5 Delays and cost of delays

Uher (1991: 503) found that it is common practice (at least as proved in his survey conducted in New South Wales in Australia in 1987) for a principal contractor to delete clauses that impose upon him any obligation to compensate the subcontractor for

delays caused by his actions. Clauses however that operate in the reverse direction are left in. In his 1990 survey (1991:503) Uher identified industrial matters such as safety, the competency of the principal contractor, inclement weather and work variations as being the main causes of delays on subcontracts. Only with the work variations cause did subcontractors have little trouble being reimbursed.

Other subcontract conditions and existing practices that increase the subcontractor's risk have been identified by Uher (1991:504) and Loots (1995:641-4) to be:

3.1.8.6 Completeness of the contract documents

Uher (1991:504) found that subcontractors often complain about the lack of information available to them during tendering. They are often given only the documentation pertaining to their specific subcontract, thereby denying them the opportunity to better understand the whole project and the context in which their own work will be done, specifically referring to aspects such as material handling and the co-ordination of the activities of other subcontractors.

Prisgrove (in SAIA, 2000:2-3), in referring to the risks to subcontractors using the NEC form of construction subcontract, suggests that the possible lack of understanding the implications of items described in the 'Contractor's Works Information' or because these were not brought to their attention by the principal contractor, but to which they are also contractually bound, will result in subcontractors remaining in a mendicant relationship with the principal contractor.

Loots (1995:641) finds that significant delays in receiving information about the project or alternatively serious shortcomings in the project information when supplied constituted ‘...contractual abuses to which subcontractors and suppliers are subjected...’

3.1.8.7 Inappropriate acceptance of responsibility

Unsuspecting or unsophisticated subcontractors may be manoeuvred into accepting responsibility for work normally performed by the principal contractor. Uher (1991:505) gives the examples of a subcontractor made responsible for the co-ordination of preceding or following trades, or required of to provide his own materials handling equipment. In both these examples the subcontractor is exposed to risks that he may be unable to control.

3.1.8.8 Negative variations

Negative variations, referring to those subcontract variations issued by the principal contractor that reduce the value of the subcontract, are perceived by subcontractors as a risk for which they often make allowance in their tender prices.

3.1.8.9 Retention monies not released

A principal contractor uses the retention monies held by him on a subcontractor as a form of security to ensure that the subcontract work is completed in accordance with the subcontract conditions. Uher (1991:505) also finds that the principal contractor uses the non-release of retention monies as an incentive to the subcontractor to complete his work on time and to the required quality. Often the nature of the subcontract work is such that the

withholding of retention money is obviously unnecessary and unfair. Demolishers and excavators, whose work is by its nature finished, free of maintenance or faulty workmanship are often subjected to this practice. It is argued in this study that the same holds true in cases where the principal contractor withholds retention money on a landscape subcontractor after practical completion of the works and where there is no obligation on the landscape subcontractor to further maintain the newly constructed landscape.

Runsen and Uher (in Uher, 1991:506) regard retention as an unnecessary contributor to high construction costs. This was perhaps the biggest reason for modern forms of construction contracts, such as the JBCC, to discard the retention system in favour of the performance bond or construction guarantee.

3.1.8.10 Stops/starts

Time lapses often occur between planting operations on a landscape subcontract due to other construction activities not timeously completed in a particular area and thereby denying the landscape subcontractor the opportunity to plan and execute his work as a continuous process. The contract documents should make provision for either an estimate of the number and timing of completely separate “new starts” that the landscape subcontractor can expect to encounter or make provision for such stop/start events to be priced during the tender process.

3.1.8.11 Guarantee or warranty periods extending past the normal main contract defects liability period

Loots (1995:614) finds that astute employers, in the selection of selected subcontractors, frequently require guarantees or

warranties for periods greater than the normal defects liability period specified in the main contract and for such guarantees to be ceded by the main contractor after the expiry of the defects liability period.

3.1.8.12 Extended “protection” of work

Loots (1995: 642) suggests that principal contractors sometimes put unrealistic, impractical and often uninsurable obligations on the specialist subcontractor (author’s note: this practice is prevalent in the case of landscape subcontractors) to “protect” his work for an extended period, long after satisfactory completion of his other obligations and after leaving the site.

Such obligations are common features of many management contracts and, together with other common features such as the obligation for the specialist to ‘co-ordinate’ with other specialist firms on site, raise questions about the role of the management/main contractor.

Main contractors often require of landscape subcontractors to maintain the completed landscape for an extended period even in the case where no provision has been made for such extended maintenance, either during the principal contract’s defects liability period or thereafter.

3.1.8.13 Subcontractor’s cash flow

Loots (1995: 642) finds that unscrupulous main contractors starve the subcontractor’s cash flow with the view to forcing the subcontractor into inequitable compromises – ‘wiping the slate

clean’ – meaning the release of payments which are properly due to the subcontractor in exchange for a waiver by the subcontractor of all claims against the main contractor.

In the case of landscape subcontractors the author has noted that the typical claims referred to by Loots are those that relate to inaccessibility or late accessibility to areas in which the landscape subcontractor was supposed to work.

3.2 Pre-main landscape contracts

3.2.1 Introduction

It is usually the responsibility of the landscape architect, as the employer’s agent, to advise his client well in advance of the construction of the project if there could be benefits or requirements to have plant material grown for the project or to protect and conserve existing flora on the site. The landscape architect is probably also the best independent person to advise on the most appropriate form and conditions of contract.

A landscape contractor may be appointed by the employer to do certain work, before a main contractor is employed, for the following purposes:

- Pre-contract growing or procurement of plant material, and
- pre-contract removal, relocation and conservation of on-site flora and other natural features.

The awarding of one of these pre-main landscape contracts to a specific landscape contractor does not necessarily imply that this contractor will be awarded the landscape installation or construction contract that normally is associated with the main project construction contract. Steinepreis (1996:23) however stresses the

importance to both parties of entering into a pre-development (or pre-main) contract that addresses issues such as the proper acceptance of the work by the landscape contractor, the purpose of the works, payment conditions and any implied commitment by the employer to appoint the landscape contractor for future further work on the specific project.

In the Canadian National Master Specification (CCDC, 1985:5) provision is made for the (main) contractor to enter into a contract with a supplier of goods or services for which the employer had earlier placed orders for. On execution of the main contract, the main contractor shall appoint the supplier under the conditions of the supply agreement between the employer and such suppliers. The consultant is advised to specify such long delivery speciality items in the tender documents and to include copies of the employer/supplier purchase agreement for the tenderers' information. The pre-sourcing of plant material prior to a landscape construction (sub)contract being entered into is a typical example.

For any of these pre-main contracts, the landscape contractor will be in direct contract with the employer under the direction of the project manager and/or landscape architect on the employer's behalf. The landscape architect will usually undertake work inspections and issue payment certificates.

3.2.2 Growing contracts

3.2.2.1 Purpose of a growing contract

The objectives of a growing contract could be one or more of the following:

- To procure/collect the specified plant species at a lower cost (due to their smaller size) than that of the same species obtainable in retail nurseries.
- To have the required number of plants available at the specified time.
- To have plants of the required size available at the specified time.
- To have the plants acclimatised to the intended planting conditions.
- To provide replacement stock for landscape maintenance on large contracts.

As an example Loots (1995:686) quotes from the Lesotho Highlands Development Authority's Landscape Specification for the Katse Dam project as follows:

Where directed by the Engineer or as indicated on the Drawings, local indigenous scrub forest shrubs will be required. As these shrubs are not commercially available, it will be necessary to establish an on-Site nursery or make other special arrangements for their propagation. These shrubs shall be established 18 months prior to the date when they shall be required for planting out.

3.2.2.2 Growing contract conditions

Growing contract conditions that will require special attention are:

- Transfer of ownership;
- work/material insurance;
- guarantees/liability for planting material, which guarantees should cease on acceptance of the plant material by the In-main contract landscape (sub)contractor;
- payment conditions (for the costs of procurement and plant growing/maintenance costs); and

- plant handling issues such as time of lifting (for ex-open ground plants), labelling, protection on the nursery site, during transportation and during temporary on-site storage.

3.2.2.3 Growing contract specification clauses to be addressed

The following growing contract specification clauses will need to be addressed:

- The size of plants that are required on delivery date;
- specific growing conditions (e.g. cold acclimatised plants);
- specific horticultural requirements (e.g. pruning, root development, propagation methods, regular replanting to bigger containers, fertilizing, etc.); and
- if the growing of plants is to be undertaken on the site of the eventual works, the detailed specification of required or allowed temporary structures (such as shade-net structures) must be clearly spelt out with instructions on their removal once the growing contract has been completed.

3.2.3 Conservation contracts

3.2.3.1 Purpose of a conservation contract

Almost all engineering and construction projects have an impact on the environment to a greater or lesser degree. Loots (1995:663) states that these projects

...almost invariably generate noise; land surface disturbance and a variety of other environmental ills are associated with the provision of infrastructure services such as impoundments, road-building, ..

Loots (1995:679) finds that although environmental law is relatively young in South Africa, construction contracts have through the years contained provisions to protect the environment, such as the protection of artefacts, structures of geological and archaeological value and the rehabilitation of construction sites. Refer in this instance to Clauses 18 and 22(1) of the GCC and to FIDIC Clauses 27.1 and 33.1. These clauses are however insufficient to effectively protect the environment and Loots (1995:680) suggests that environmental aspects should be considered in a project's design stage and embodied in the conditions of contract and subcontract.

Recent expanded environmental legislation, such as contained in Chapter 5 of the National Environmental Management Act (Act 107 of 1998, effective from 1 July 2006), imposes an obligation on most land developments to follow an environmental approval process which usually results in an Environmental Management Plan that is enforceable through its inclusion in the relevant construction contracts and subcontracts.

Wright & Parker (1979:228), in referring to the *Sinews for Survival* report following the 1972 Stockholm Conference, list the following justifications for conservation of wildlife (fauna and flora):

- As a contributory component of ecological stability and as a monitor of environmental pollution.
- For the maintenance of genetic variability and the provision of a source of renewable biological resources.
- For the needs of scientific research of the environment.
- For its cultural and recreational value and as a component of the aesthetic quality of the landscape.
- For environmental education.

- For the economic value of its resource, scientific and recreational components.
- To provide future generations with a wider choice of biological capital.
- For moral and ethical reasons.

The objectives of a conservation contract could include:

- To conserve existing flora under threat of building/construction activities.
- To relocate, maintain and replant existing flora. As an example Loots (1995:682) quotes from the Lesotho Highlands Development Authority's Specification Clause 1.13.3 for the Katse Dam project as follows:

At the commencement of the Contract, the Employer will identify to the Contractor any rare or endangered flora.

The Contractor shall thereafter demarcate such and undertake all necessary measures to ensure the protection of such flora, including replanting and any special care required.

- To propagate rare endemic species from those that have to be relocated to allow building/civil works activities.
- To create site conditions before and during site constructions that would prevent environmental degradation such as:
 - plant cover loss,
 - soil erosion,
 - sedimentation of water bodies and courses,
 - lowering of water quality, and an
 - increase in storm-water runoff.

In South Africa the legal framework in which environmental protection and conservation are required is mainly regulated by

the following Acts of Parliament and by Regulations gazetted in terms of these Acts:

- The Constitution of the Republic of South Africa Act (Act 108 of 1996): Chapter 2: Bill of Rights, Section 24b.
- The Environment Conservation Act, Act 73 of 1989 (repealed by Regulations 385, 386 and 387 gazetted in terms of Chapter 5 of the National Environmental Management Act, Act 107 of 1998, effective from 1 July 2006.
- The National Environmental Management Act, Act 107 of 1998.
- The National Water Act (Act 36 of 1998): Chapter 2 Water Management Strategies and Chapter 3 Protection of Water Resources.
- The National Environmental Management: Biodiversity Act (Act 10 of 2004: Chapter 4 Sections 52 to 58. This Act replaced the Conservation of Agricultural Resources Act, Act 43 of 1983.
- The Mineral and Petroleum Resources Development Act (Act 28 of 2002): Chapter 4 Sections 37 to 46, and Government Notice R527 Part III Sections 47 to 62, issued in terms of the Act.

3.2.3.2 Conservation contract conditions

The following aspects of a conservation contract need to be addressed by means of specific contract conditions:

- Transfer of ownership (if any) of relocated plant material.
- Work and material insurance.
- Guarantees/liabilities for plant material relocated, conserved and replanted.
- Payment conditions.

- Description of the site. Landscape conservation works often take place over wide areas with no readily recognizable limitations or boundaries, often already occupied by the employer or other persons, and of which the conservation works may only form a small part. Loots (1985:86) finds that accessibility in all such contracts is of vital importance, as is possession of some, but not necessarily all, of the land occupied by the employer for the purpose of such a conservation contract. He states (1985:86):

... a very precise definition of what is or is not the site is obviously essential for the operation of clauses.. (author's note: referring to those clauses on damage to adjoining lands and crops and to possession of the site; as may be found in the GCC form of contract).

3.2.3.3 Conservation contract specification items to be addressed

The following conservation contract specification clauses will need to be addressed:

- Responsibility for obtaining any permit that may be required from the relevant authorities for the removal, relocation, transport and possession of specified plant species, usually those that are threatened and have a Red Data classification.
- Specific horticultural requirements, e.g. pruning, root development, propagation, and regular replanting to bigger containers.
- The exact description of the area (the "site") over which the contractor is entitled to have freedom of operation, or any limitations on the use of the employer's land.

3.3. In-main landscape contracts

The term is used to describe those landscape contracts that are entered into between the landscape contractor and the employer or between the landscape subcontractor and the main contractor during the duration of the project's main construction contract.

Under this heading the following three forms of in-main landscape contracts are discussed:

- Direct contracts between the employer and landscape contractor.
- Landscape subcontracts.
- Domestic landscape subcontracts.

3.3.1 Direct contracts between the employer and landscape contractor

3.3.1.1 Introduction

Direct contracts refer to those entered into between the employer and other contractor(s) to undertake work at the same time and on the same site that was handed to a principal contractor to undertake the bulk of the works. In the Canadian Construction Documents Committee's (CCDC, 1982: 15) standard Unit Price Contract (similar to the JBCC PBA) and Stipulated Price Contract (also similar to the JBCC PBA), the right of the owner or employer is reserved to let certain parts of the works to others on condition that the principal contractor is compensated for all co-ordination and that the employer provides insurance cover for such other contractors and their works.

Collier (2001: 143) suggests that for vastly differing work by different contractors on the same project, an employer may be better served by entering into separate contracts. On projects where phased construction of the works can be accommodated,

separate contracts may be easier and result in cost-saving for an employer.

Loots (1995:613) however finds that in contractual situations like this

...any delays caused by the subcontractor in the direct employment of the employer would be delays for which the employer was responsible and the main contractor would be entitled to claim awards of extension of time and possibly additional cost compensation from the employer.

3.3.1.2 Purpose of the direct contract between the employer and a landscape contractor

The intention of such a direct contract is for the employer to have landscape work done on his site and for various reasons may elect not to have such work done by a landscape subcontractor through the main building or civil works contractor.

The advantages of this form of contract are:

- For the employer: no mark up for attendance and profit on the landscape contractor by the main contractor.
- For the employer: this contract can easily be an extension of a pre-main contract (refer to Item 3.2).
- For the landscape contractor: direct and probably earlier payment of certificates by the employer.

The disadvantages of this form of contract are:

- There is normally no contra-responsibility between the main building or civil works contractor and the landscape contractor. It is however possible to make reference in one contract to the other, and define the various parties' responsibilities.

- Due to the nature and timing of landscape works it is often difficult to prove liability and or responsibility for damages to landscape work caused by other contractors working in the same areas at the same time. Because of the absence of co-responsibility brought about through a main- and subcontractor relationship, the various contractors often do not display due care and consideration for the landscape work in progress, e.g. trenching through landscaped areas, trampling newly planted shrub beds, damaging irrigation pipe lines and control cables, etc.
- For the landscape architect who administers the contract on behalf of the employer, it creates an undefined, difficult and time consuming relationship between himself and other consultants, such as the employer's principal agent.

3.3.1.3 Direct contract conditions

Collier (2001:143) suggests that in such direct contracts, the contract specifications should amongst other address the following:

- Sharing of temporary services and facilities, plant and equipment, such as hoists and overhead cranes.
- Programming of work, equipment use and attendance of progress meetings.
- Specific technical requirements resulting from the interface between the different contractors' work.

The contract conditions that would be applicable in the case of a direct contract between the employer and a landscape contractor will normally also include all the typical construction contract clauses found in contracts such as the JBCC, and may contain:

- Definition of terms.
- Contract objectives.

- Works preparation.
- Execution of works.
- Completion of works.
- Payment.
- Cancellation of contract.
- Dispute resolution.
- A schedule of contract data.
- It is further recommended that a provision or reference be made to a landscape maintenance contract that should come into effect on completion of the landscape installation.

The contractor should also be made aware (through the preliminaries section, or 'contract data' as it is now known in the tender forms) of the fact that other contractor(s) will be working simultaneously in the same area. The tender form or schedule of quantities may provide an item to be priced by the landscape contractor to allow for this situation and its possible ramifications.

3.3.2 Landscape subcontracts

3.3.2.1 Introduction

In these forms of contract the landscape subcontractor is appointed by the principal building or civil works contractor on the instruction of the employer's principal agent in the case of nominated subcontracts, or after consultation with and approval by the principal contractor in the case of selected subcontracts.

It should be noted that in terms of the JBCC N/S Subcontract Agreement, only the principal contractor and principal agent may issue instructions to a subcontractor. This has the effect that a consultant such as the landscape architect may not issue

instructions to the landscape subcontractor except in cases where such authority has been delegated to the landscape architect. It is a recommended practice to have the principal contractor countersign all written instructions from the consultant to a subcontractor in order for the principal contractor to remain conversant with project variations.

In South Africa the bulk of commercial landscaping work is done under subcontracts and the JBCC N/S Subcontract Agreement and the SAFCEC General Conditions of Subcontract (2003 Edition) are probably most often used for this purpose. Internationally the NEC and FIDIC form of subcontract (for engineering type contracts) and the British JCT form of subcontract for building contracts are commonly used. In Table 3.1 the CIDB's recommended combinations of forms of contract and subcontract are listed.

All the forms of subcontract referred to above have been developed for the more "traditional" specialist building trades such as structural steelwork, electrical and mechanical installations, etc. and do not cater for the specific nature of landscape work, specifically planting. The inherent differences between these traditional specialist building trades and landscape work, and the contracts that govern them, can be summarised as follows:

- the use of inanimate components in the "traditional" specialist building trades as opposed to live matter (plants) used in landscape contracts;
- it is difficult to prove any contractual defects liability for landscape work (at least for the planting or "soft landscaping") if the landscape construction contract is not coupled to a landscape maintenance contract during such defects liability period or even thereafter; and
- these inherent differences seem to suggest that, although contracts can be modified to suit specific circumstances,

most of these contracts have not been designed to deal effectively with landscape work.

Clamp (1986:65) finds that the advantages of making the landscape subcontractor a selected subcontractor include:

- The principal contractor has no right to an extension of time for any delay on the part of the subcontractor.
- The principal contractor accepts full responsibility for the performance of the subcontractor he has selected.
- The principal contractor has the obligation and the authority to sort out any delayed starting date, sequence of trades and disputes with others employed on the works at the same time.

Disadvantages of these standard forms of subcontract however are:

- The standard forms of subcontract (e.g. the JBCC N/S Subcontract Agreement) were not written for, nor do they address, the inherent differences between “building” and “landscape” work as stated above.
- As retention or a construction guarantee for landscape work, specifically planting and the associated irrigation installation, cannot really be applicable after practical completion without a landscape maintenance contract in effect or without some provision in place for such maintenance work, the principal contractor often holds these against the landscape subcontractor to force him to undertake such maintenance nonetheless.
- If a three-month maintenance agreement is included in the subcontract (to coincide with the 90-day defects liability period of the main contract), it will, unless some special provisions have been made, require additional monthly maintenance payment certificates that could conceivably

delay the completion of the final account. In this regard Collens (1979:242) finds that:

The final account of the building contract may have to be delayed until the defects liability period of the landscape subcontract has expired which invariably is at a date much later than the end of the building defects liability period...

- With regard to payment to the landscape subcontractor, Collens (1979:242) states that:

Problems can also arise over the payment as this will come to the landscape contractor via the main contractor instead of direct from the employer. When the main contractor is behind schedule he must cooperate with the landscape subcontractor whose work is partly seasonal and cannot be reprogrammed easily, owing to the situation on planting seasons in particular.
- In practice one finds that, because landscape works are mostly executed at the end of a building or civil works project, the main contractor will often use the period allocated for landscape works to soak up delays caused by other works to the disadvantage of the landscape subcontractor, often forcing him to complete his work in unrealistic time and site circumstances.

3.3.2.2 Purpose and functioning of the landscape subcontract

The purpose of the landscape subcontract is usually to have landscape work done at a construction project and where the main contractor desires a landscape subcontractor to execute the landscape subcontract works and enters into an agreement with the landscape subcontractor for that purpose.

The landscape subcontractor normally provides everything necessary for the landscape subcontract works and executes the landscape subcontract works in terms of the agreement to the reasonable satisfaction of the main contractor and the employer's agent, such as the landscape architect.

The main contractor pays the landscape subcontractor for the execution of the landscape subcontract works in terms of their agreement and based on a valuation prepared by the landscape architect and included in the payment certificate to the main contractor issued by the employer's principal agent for payment by the employer.

3.3.2.3 Subcontract agreement clauses

The JBCC N/S Subcontract Agreement contains the same clauses as found in the JBCC PBA; these refer to:

- Definition of terms.
- Subcontract objectives.
- Works preparation.
- Execution of works.
- Completion of works.
- Payment conditions. It is worth noting that the JBCC N/S Subcontract Agreement provides for the main contractor to inform the subcontractor in the case where the employer has failed to pay him within five days after the due date. The subcontract also obliges the main contractor to pay the subcontractor within seven days after he himself had been paid, failing which the subcontractor can call upon his subcontract payment guarantee. If, after 90 days after the main contractor was due to pay his subcontractor, he still has not yet done so, the main contractor is obliged to pay

the subcontractor, even if he himself has not been paid by the employer.

- Cancellation of the subcontract.
- Dispute resolution.
- A schedule of subcontract details.

3.3.3 Domestic landscape subcontracts

3.3.3.1 Introduction

In these forms of contract, and in most cases, the main contractor appoints the landscape subcontractor directly without any approval by or instruction thereto by the employer or any of his agents. No prime cost amounts are allowed in the tender documents and the main contractor must price the landscape work from specified items in the schedule of quantities. The domestic subcontract agreement as prepared by the MBSA (MBSA, 2005), and which is compatible with and endorsed by the JBCC, is often used in these instances.

3.3.3.2 Purpose and functioning of the domestic landscape subcontract

The purpose of the domestic landscape subcontract is usually for the employer to have landscape work done under the main contract and for the following reasons may elect not to nominate or select a landscape subcontractor:

- The small scale or relative simplicity of the landscape work;
- there being too little time to go through selected subcontract tender procedures; and
- insufficient pre-planning of contract programming.

The landscape subcontractor provides everything necessary for the landscape subcontract works and executes the landscape

subcontract works in terms of the agreement to the reasonable satisfaction of the main contractor. Any comments, approvals or disapprovals of the landscape works by any of the employer's agents must be made via the main contractor.

The main contractor pays the landscape subcontractor for the execution of the landscape subcontract works in terms of the agreement. The payment amount is often not determined or certified by an agent of the employer, such as a landscape architect.

The disadvantages of this type of contract are:

- The landscape architect has very little input, if any, on the appointment of the landscape subcontractor; often the landscape architect is not involved at all in contract management and works inspections.
- In terms of the MBSA domestic subcontract (MBSA, 2005:11-12) only the main contractor may issue instructions to the subcontractor. All instructions from others, such as the principal agent and the landscape architect must be given and authorised via the main contractor.
- In terms of the MBSA domestic subcontract (MBSA, 2005:6) and on reaching interim completion on the subcontract works, the works risk and responsibility for that completed subcontract pass onto the main contractor.
- Although the MBSA Subcontract Construction Guarantee makes provision for the return of the subcontract construction guarantee to the subcontractor on reaching interim completion of the subcontract works, this rarely happens in practice unless the subcontractor expressly required this in his tender to the main contractor. More often the domestic subcontractor has to wait until the

project as a whole has reached practical completion before his construction guarantee starts reducing in terms of the JBCC PBA conditions (Griessel, 2007).

This risk of losing the securities from his domestic subcontractors has led to main contractors sometimes being disinclined to use this form of subcontract.

3.3.3.3 Domestic landscape subcontract agreement clauses

Since it is believed that the MBSA domestic subcontract is probably the most often used in South Africa, further comments on this form of contract are warranted.

This contract form is arranged in the following sections:

- Definitions and interpretations.
- Objectives.
- Preparation (including indemnities, insurances and securities).
- Execution.
- Completion.
- Payment.
- Cancellation.
- Dispute.
- Schedule of subcontract details.

With regard to the MBSA domestic subcontract's suitability for use for landscaping works, the following issues that have been identified in the JBCC's N/S Subcontract Agreement are pertinent in this case as well:

- Subcontract construction guarantee.
- Subcontract completion and the definition of "practical completion".

- Subcontract defects liability.

Refer to the discussion under Items 2.2.3.3 and 3.1.6 in this regard.

3.4 Post-main landscape contracts

3.4.1 Introduction

For landscape projects the need often exists for a post-main contract after installation of the landscape to maintain the work through its initial critical period. In areas where extreme climatic conditions such as frosts and droughts can occur, the survival of the plant material is largely determined by the maintenance care the landscape receives in this initial period.

For many (Employers) the conclusion of a lengthy and possible expensive (landscape installation) contract ends with the seeding and planting, and insufficient thought is often given to the importance of subsequent maintenance.

(Wright & Parker, 1979:211)

If it can be demonstrated to the employer that a sustainable and well maintained landscape at his project adds value as opposed to an under-funded and ill-maintained landscape that detracts from the value, a post-main landscape maintenance contract should be entered into.

The responsible agent of the employer, such as the landscape architect or project manager, should advise his client to allow, in the operational budget of the project, for landscape maintenance that will ensure a sustainable landscape or otherwise risk the chance that the capital spent on the landscape installation could be negated

within a short time. There are distinct benefits to have the landscape contractor that installed the landscape also take on the responsibility of maintaining it for a certain critical initial period. Even if the employer has in-house landscape maintenance resources, a transitional phase of say six months is recommended during which the landscape contractor will still be on site and can look after systems such as water features and irrigation installations.

Examples abound of so-called “construct-and-run” projects where speculative developers install the minimum landscaping and on-sell the projects as soon as possible. A typical occurrence in such landscape projects is the laying down of instant lawn sods over soil contaminated by concrete or other cementitious material or compacted by construction activities. Trees are often also planted in insufficiently sized holes without a proper growth medium backfill. In both these examples the short term appearance will probably deceive an observer but the landscape will soon display wilted and discoloured grass and stunted trees. The long-term owners more often than not have to then totally re-construct the landscape, having thereby incurred abortive costs. There are unfortunately also many examples of water features breaking down after a short period of operation due to insufficient or no maintenance and inadequate budgetary provision for such maintenance.

It is clear that such speculative developers will not appreciate the need for any landscape maintenance contract after completion of the project.

Clamp (1986: 128) finds that it is clearly inequitable for an employer to expect the landscape contractor (or subcontractor) to include the cost of landscape maintenance after the practical completion of the works in his initial tender for the construction of the landscape, unless it has been specified in detail and identified separately in

order that the landscape contractor (or subcontractor) could price for such work. Clamp furthermore finds (ibid: 128) that contractual disputes will inevitably arise if another landscape maintenance contractor is employed, or if the employer himself, adequately or inadequately accepts the responsibility for such maintenance:

In the event of plants being found to be dead at the end of the Defects Liability Period as a result of sub-standard stock, inadequate plant handling in transit or negligent planting by the landscape subcontractor, it is always difficult, if not impossible, to provide sufficient evidence to refute the counter-claim that their death arose from some act or lack of care or inadequate watering on the part of those responsible for their subsequent care during the Defects Liability Period.

3.4.2 Post-main landscape contract format

The post-main landscape contract (usually for landscape maintenance) is entered into by the employer and the landscape contractor and is distinctly separate from the landscape installation contract where the landscape contractor was most likely a subcontractor to a main building or civil works contractor.

Under the JBCC form of contract the main contractor and his selected and/or nominated subcontractors' defects liability period usually ends three months after the certificate of works completion has been issued. In the case of extended defects liability periods, typically for mechanical installations, such remaining defects liability periods are ceded to the employer by the main contractor and are then subject to a direct contract between the employer and the subcontractor(s).

The nature of maintaining a mechanical system, which usually consists of mostly pre-determinable works and material items, is different from that of maintaining landscape work consisting of live

plant material and supporting systems such as irrigation. The risk of unforeseen maintenance work and costs, intentional or accidental damages to the landscape by its users and the very fact that plant material grows and thus requires constantly changing maintenance, renders the transfer of a landscape subcontractor's liability to the employer inappropriate. The employer could be forced to enter into a contract with a landscape contractor without knowing what the extent of his obligations to that contractor will be.

The landscape maintenance contract cannot be a construction type contract, as issues such as liability for damages to plants due to vandalism and insufficient maintenance need to be spelled out. This is especially applicable at projects that are accessible to the public and subject to vandalism. An employer enters into a landscape maintenance contract to ensure that the project is and appears well maintained at all times. Performance is thus also time-related and if, during a specific time period, the landscape appears ill-maintained, that "loss" to the employer cannot be made up by the contractor in a subsequent period, hence the contract value has to be decreased accordingly.

Landscape maintenance contracts should ideally be for 12-months to ensure that at least one growing and winter season are included. On large landscape maintenance contracts the capital outlay required of the contractor for equipment and manpower will probably make contract costs proportionally exorbitant if they are less than 12 months.

Wright & Parker (1979:213) find that:

Few contractors have spare capacity at the height of the (landscape maintenance) season and they are therefore not usually willing or able to tender for short term work at economic prices and a term contract is usually preferable for a season or

several years. This is particularly important for large contracts where the contractor will need some security to justify his capital outlay both in equipment and manpower.

As previously suggested, the landscape maintenance contract should preferably be awarded to the landscape contractor who originally installed the landscape. Various reasons can be given for this recommendation:

- The responsibility for plant defects can then be carried by the landscape contractor as he will still be on site and cannot disclaim liability for patent, latent or maintenance defects.
- Any irrigation system normally requires adjustments to cater for differing micro-climatic conditions, e.g. local swirling winds, overshadowing, etc. The position, direction and height of irrigation emitters also need to be regularly adjusted to cater for growth in the plants.
- Water features, often constructed at huge costs, are notorious for falling into disrepair if not maintained with due care. A period of care by the specialist installer is necessary, also for training the employer's maintenance staff.
- Constructed ecological systems such as artificial wetlands and natural water purification systems frequently require man's intervention to be sustainable.

In instances where the employer is able, with his own staff and resources, to maintain the landscape, a reduced maintenance contract, typically of six month duration is, however, still recommended. Such a contract can so be worded that there is an overlapping period during which the landscape contractor will work alongside the employer's maintenance staff to point out the working of systems and any specific horticultural requirements.

The JCLI Agreement for landscape maintenance works (2002c:8) makes provision for a schedule of liquidated damages whose rates must be used to price losses suffered by the employer as a result of non-performance of the landscape maintenance contractor.

3.4.3 Landscape maintenance contract specification items to be addressed

In the specification that accompanies any landscape maintenance agreement, the following specification items amongst others need to be addressed:

- Upkeep, adjustment and replacement of defective irrigation components.
- Upkeep, adjustment and replacement of defective water feature hydraulic components.
- Accepted and required horticultural practices such as pruning, fertilising, staking, etc. Often plant species, such as the indigenous cycads (*Encephalartos* spp.) are used that require very specific treatment.
- The required programme of lawn mowing, veld slashing, cutting and burning.
- Seasonal planting of annuals.
- The description of any risk to the works that the employer expects of the landscape maintenance contractor to carry while performing his duties. These risks are best manageable by the employer and as such are usually carried by him.

3.5 Conclusions

From an analysis of the objectives and processes of main and subcontracts, it is clear that the three stages in which landscape work is undertaken, i.e. pre-main contract work, in-main contract

work and post-main contract work, require that certain problematic landscape specific issues be addressed in those contracts that govern them.

These landscape contract requirements that have been identified in Chapter 3 will be verified in Chapter 4 by means of a survey amongst the various role players in landscape contracting.

The survey, data and data interpretation

4.1 Introduction

In this chapter the validity of the problematic landscape contractual issues that have been identified in Chapter 3 will be evaluated by means of data gathered by appropriate research methods.

A number of methods were considered to gather the quantitative data required to confirm or reject these problematic landscape contractual issues. Interviews with representatives from all the sectors of the landscape contracting industry and which are spread over the whole country would have been logistically impractical. Data thus gathered would still require some corroboration in terms of the commonality of the perceived problematic landscape contractual issues between employers, contractors and consultants.

An analytical survey approach by means of a questionnaire was deemed to be logistically achievable and the questions could be so structured to yield comparable data between the three data categories.

In the section on *Research Methodology* of Chapter 1 the motivation for the use of the survey technique to gather data, specifically of a quantitative nature, was discussed. The methodology to be used in compiling and pre-testing the questionnaires was also investigated.

This quantitative data, together with the qualitative data gained in Chapter 3, will then be used to formulate recommendations in Chapter 5, including an outline of issues to be addressed in a

proposed addendum to the JBCC N/S Subcontract Agreement to cater for the specific requirements of landscape contracts. In Addendum E to this study a proposal is made for such an addendum to the JBCC N/S Subcontract Agreement.

The information required to compile the questions in the survey was gathered from the following investigations and analyses:

- An analysis of the different standard forms of construction contracts used in South Africa to determine their suitability for landscape and related environmental works in terms of the three sub-problems. Refer in this regard to Sections 2.2.3 to 2.2.8 of Chapter 2.
- An analysis of the different standard forms of construction contracts used in selected other countries and with the focus on their applicability to landscape and related environmental works and also to identify relevant experience and potential indicators towards solutions or criteria for a South African context. Refer in this regard to Section 2.3 of Chapter 2.
- A review of publications on construction contracts and specifically of issues relating to landscape contracts with the view to identify pertinent landscape contract criteria. Refer in this regard to Chapter 3.
- The findings of the ILASA/SALI working group (refer to Vosloo, 2003) with regard to problematic landscape contractual issues. Refer in this regard to Section 4.2.1 of Chapter 4.

4.2 The survey

4.2.1 Issues addressed in the survey questionnaire

The questionnaires were aimed at determining respondents' importance ratings, usage patterns and opinions on issues pertaining to landscape contracting. These issues included:

- Which standard forms of contract are being used for landscape works in South Africa and the relative extent of their use;
- the suitability of those standard forms of contracts, specifically for landscape work;
- contractual aspects requiring clearer definition or modifications to existing and widely used standard forms of contract;
- the perceived importance of landscape work in development projects in South Africa; and
- perceived problems experienced by users of these standard forms of contract.

With regard to the latter, these perceived problematic contractual issues that were put to respondents to confirm or reject, were formulated through a series of workshops conducted with members of ILASA and SALI and with facilitation by the professional and trade magazine *Landscape SA*; refer in this instance to Vosloo, 2003.

Table 4.2 contains the wording of the questions in each category and the objectives as to why the questions were asked or the statements made.

4.2.2 The categories of questionnaires

Three different categories of questionnaires were designed aimed at employers/developers/owners of buildings or related service facilities, contractors and consultants. Most of the questions are the same for each category in order to achieve some corroboration across the industry spectrum, but some questions are category specific and not applicable to the other categories.

The survey questionnaires were designed and pre-tested on one representative of each of the three categories to determine their reaction in terms of the questionnaires' length, complexity and ease of answering. This resulted in the reduction in the number of questions and issues that were addressed.

The three different categories of questionnaires were aimed at:

- Developers/Owners/Employers (Category 1, refer to Addendum A).
- Contractors (Category 2, refer to Addendum B).
- Consultants (Category 3, refer to Addendum C).

4.2.3 Survey target populations

It is the author's belief that the contractual positions and the points of departure of the three target populations are sufficiently different from each other to motivate three separate questionnaires. There was however an attempt to identify certain issues that could be considered to be common to all the categories and that the comparative results from the three categories to the same questions would yield information that would assist in formulating more valid recommendations.

To determine the most appropriate method to identify the target populations for each category, the following aspects were considered:

4.2.3.1 Category 1: Employers, developers and owners of public and private sector projects and buildings that include landscape works

Governmental departments at national and provincial level as well as the major metropolitan local councils that undertake and

manage construction projects were identified and questionnaires were sent to individual persons in those organisations. Certain parastatal organisations, or organisations in the process of privatisation, such as Rand Water, The Iron and Steel Corporation (ISCOR, now Mittal Steel and Kumba Resources), South African Synthetic Oils (SASOL), The Airport Company of South Africa (ACSA) and the Electricity Supply Commission (ESKOM) that invest extensively in construction and infra-structural projects were also targeted.

The target population in this group was 65 and all were sampled. These governmental and parastatal organisations are listed in Addendum D.

The 65 questionnaires were posted, but due to an unsatisfactory initial postal response, follow-ups were done via electronic mailing to the same target population. Eleven responses (16.92%) were received by the end of the survey target date.

The South African Property Owners Association (SAPOA) is considered to be the organisation most representative of South African private sector development, management and ownership of property and construction projects. The questionnaire was sent by post to 75 SAPOA members (which was the number of names provided by SAPOA) and the 18 responses received represent a 24% return.

For Category 1 as a whole the 29 responses represent 20.71% of the sample size of 140 out of a population of 140.

4.2.3.2 Category 2: Contractors for general construction and civil works projects that may include landscape and environment related works

In this category the organisations using such contracts were identified as:

- SAFCEC. They are organised on a provincial basis and through a random selection process and pro rata to the numbers of registered members in all the provinces, a sample size of 72 out of a population of 148 was decided upon. Questionnaires were posted to the sample population and the 16 responses represent a 22.33% return.
- MBSA. This organisation, representing general building works contractors, has a countrywide membership of 1050 and from a randomly selected sample size of 99, eight responses (an 8.08% return) were received.
- SALI. This body represents contractors in the landscaping industry in South Africa and the Landscape Irrigation Association (LIA) represents contractors involved in installing irrigation systems in the landscapes, often as subcontractors to SALI members. Of a combined population of 94, made up from 68 SALI and 26 LIA members, a randomly selected sample size of 81 yielded 25 responses representing a 30.86% return.

For the contractors' category as a whole, the sample size of 252 out of a population of 1292 resulted in 49 responses, which represents a 19.44% return.

4.2.3.3 Category 3: Planning and design professionals of construction projects that may include landscape and environment related works.

In this category the professional consultants that are normally involved in the planning, design, project and contract management and works inspection on projects that may include

landscape and environment related works were targeted. Names were randomly selected from the Professions Register and based pro-rata on the number of professional companies per province.

From the population of 1850 professional architectural companies, a sample size of 148 resulted in 15 responses that represent a 10.14% return.

Of a sample size of 100 out of a population of 600 professional consultant engineer companies (representing civil, structural and electrical/mechanical engineers), 12 responses (eight civil, one structural and three electrical/mechanical engineers) were received, representing a 12% return.

All 44 professional landscape architectural companies were sent questionnaires and the 17 responses represent a 38.63% return.

The five responses (6.33%) from a sample size of 79 out of a population of 560 professional quantity surveying practices cannot be considered a representative opinion of the profession, but the results are modelled nonetheless.

Questionnaires were sent to 30 of the 60 registered construction project manager consultancies, and the nine responses received represent a 30% return.

Although questionnaires were sent to 30 out of the 60 listed environmental consultancies, it should be realised that environmental consultants are rarely involved in the contracting stage of development projects; as a rule they are responsible for obtaining environmental approvals from the relevant authorities and the compilation of the project's environmental management plans. The three responses received represent a 10% return.

For Category 3 as a whole, the sample size of 431 out of a population of 3174 yielded 61 responses, representing a 14.15% return.

Table 4.1 shows the number of questionnaires sent and the number of responses received.

TABLE 4.1
Number of questionnaires sent out and the number of responses received

DATA CATEGORY	POPULATION	SAMPLE SIZE	METHOD	RECEIVED (% OF SAMPLE SIZE)
1. DEVELOPERS/OWNERS/EMPLOYERS				
Private sector (SAPOA members)	75	75	Post and subsequent e-mail	18 (24%)
Government departments and parastatal organisations	65	65	Post and subsequent e-mail	11 (16.92%)
Total	140	140		29 (20.71%)
2. CONTRACTORS				
MBSA	1050	99	post	8 (8.08%)
SAFCEC	148	72	post	16 (22.22%)
SALI	68	55+26= 81	post	25
LIA	26		post	(30.86%)
Total	1292	252	post	49 (19.44%)
3. CONSULTANTS				
Architects	1850	148	post	15 (10.14%)
Engineers	600	100	post	12 (12%)
Landscape Architects	44	44	post	17 (38.63%)
Quantity Surveyors	560	79	post	5 (6.33%)
Construction Project Managers	60	30	post	9 (30%)
Environmental Consultants	60	30	post	3 (10%)
TOTAL	3174	431	post	61 (14.15%)
GRAND TOTAL	4606	823		139 (16.89%)

TABLE 4.2
Comparison of the questions put to the three categories of respondents

TO DEVELOPERS/ OWNERS	TO CONTRACTORS	TO CONSULTANTS	OBJECTIVES OF THE QUESTION OR STATEMENT
<p>Question 1: Please indicate in which <u>one</u> of the categories listed (below) would you consider yourself</p>	<p>Question 1: Please indicate which one of the following contract works categories represents your <u>main activity</u>.</p>	<p>Question 1: Please indicate what kind of professional planning consultant you are.</p>	<p>To determine in which sub-category the respondent falls.</p>
<p>Question 2: In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed (below)?</p>	<p>Question 2: In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed (below)?</p>	<p>Question 2: In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed (below)?</p>	<p>To determine the respective actual usage of those forms of contract generally used in South Africa by the three parties and their constituents involved in contracts, i.e. developers/ owners/employers, contractors and consultants. To discern any patterns in the usage of any of the contracts To confirm the general assumptions made in the study about the usage of standard forms of contract, specifically for landscape and environment related works.</p>
<p>Question 3: To what extent would you <u>prefer</u> to use the forms of contract listed (below) for your projects that include landscaping and/or environment related construction works?</p>	<p>Question 3: To what extent would you <u>prefer</u> to use the forms of contract listed (below) for your projects that include landscaping and/or environment related construction works?</p>	<p>Question 3: To what extent would you <u>prefer</u> to use the forms of contract listed (below) for your projects that include landscaping and/or environment related construction works?</p>	<p>To discern any future preferences in the use of any of the contracts by the three parties involved in contracts, i.e. developers, contractors and consultants.</p>

<p>Question 4: How suitable are the forms of contract listed (below) for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance?</p>	<p>Question 4: How suitable are the forms of contract listed (below) for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance?</p>	<p>Question 4: How suitable are the forms of contract listed (below) for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance?</p>	<p>To determine the suitability of the standard forms of construction contract specifically for landscape and environment related works. The question was extended to allow respondents to comment on whether the contracts that are deemed suitable needed any alterations to improve their suitability.</p> <p>To determine if some of the listed forms of contract were in fact considered totally unsuitable.</p> <p>To determine which categories of respondents were not familiar at all with any of the listed forms of contract.</p>
<p>Question 5: What percentages, on average over a 5-year period, of your construction projects that include landscaping and/or environment related construction works, fall under the categories listed (below)?</p>	<p>Question 5: What percentages, on average over a 5-year period, of your construction projects that include landscaping and/or environment related works, fall under the categories listed (below)?</p>	<p>Question 5: What percentages, on average over a 5-year period, of your construction projects that include landscape or environment related works, fall under the categories listed (below)?</p>	<p>To determine the extent and type of projects of which landscaping and/or environment related works form a part. Although not directly related to the purpose of the study, information thus gathered could assist in determining the market demand for contract forms or addenda to existing contracts to be used for landscape and/or environment related works.</p>
<p>-----</p>	<p>Question 6: What percentages, on average over a 5-year period, of your <u>maintenance projects</u>, that include landscape and/or environment related maintenance work, fall under the categories listed (below)?</p>	<p>-----</p>	<p>To determine the extent and type of maintenance projects which include landscaping and/or environment related works that they typically undertake. Information thus gathered could assist in determining the market demand for contract forms or addenda to existing contracts to be used for landscape and/or environment related maintenance works.</p>

<p>Question 6: What percentage, on average, of your <u>capital cost budgets</u> for each of the following types of construction projects is allocated to a landscape and irrigation installation or to environment related work?</p> <p>-----</p>		<p>Question 6: What percentage, on average, of your <u>capital cost budgets</u> for each of the following types of construction projects, do you recommend to be allocated to a landscape and irrigation installation or to environment related work?</p>	<p>To determine the extent and relative value of landscape and irrigation installations or environment related works in relation to the total capital cost of development projects that developers and consultants usually budget for. Although not directly related to the purpose of the study, information thus gathered could assist in determining the market demand for contract forms or addenda to existing contracts to be used for landscape and/or environment related works.</p>
<p>Question 7: What percentage, on average, of your construction projects' <u>annual budgeted running/operational costs</u> for each of the following types of construction projects, is allocated to the maintenance of a landscape and irrigation installation or the maintenance of environment related works?</p> <p>-----</p>		<p>Question 7: What percentage, on average, of your projects' <u>annual budgeted running/operational costs</u> for each of the following types of construction projects, do you recommend to be allocated to the maintenance of landscape and irrigation installations or the maintenance of environment related works?</p>	<p>To determine the extent and relative value of landscape and irrigation or environment related maintenance works in relation to the total running/operational costs of construction projects that developers and consultants usually budget for. Although not directly related to the purpose of the study, information thus gathered could assist in determining the market demand for contract forms or addenda to existing contracts to be used for landscape and/or environment related maintenance works.</p>
<p>Question 8: Listed (below) are some social, economic, and environmental considerations that might influence the <u>capital cost budget</u> for landscape and/or environment related construction works on your projects, in relation to the total project costs. Please indicate your rating of the degree of influence of the listed considerations</p> <p>-----</p>		<p>Question 8: Listed (below) are some social, economic, and environmental considerations that might influence the <u>capital cost budget</u> for landscape and/or environment related works on your projects, in relation to the total project costs. Please indicate your rating of the degree of influence of the listed considerations.</p>	<p>To determine the importance of certain identified social, economic and environmental considerations, which may influence the capital cost budgets for landscaping, and/or environment related works. From the above, to determine the importance of "triple bottom line" reporting, i.e. for companies to report not only on financial performance of their companies' activities, but also on social and environmental performance. Although not directly related to the purpose of the study, information thus gathered could assist in the recommended further studies (refer Section 5.4).</p>

<p>Question 9: Listed (below) are some social, economic, and environmental considerations that might influence the annual <u>maintenance/operational cost budget</u> for the landscape and/or environment related works on your projects, in relation to the total project operational costs. Please indicate your rating of the degree of influence of the listed considerations.</p>	<p>-----</p>	<p>Question 9: Listed (below) are some social, economic, and environmental considerations that might influence the <u>maintenance/operational cost budget</u> for the landscape and/or environment related works on your projects, in relation to the total project operational costs. Please indicate your rating of the degree of influence of the listed considerations.</p>	<p>To determine the importance of certain identified social, economic and environmental considerations which may influence the <u>maintenance/operational cost budgets</u> for landscaping and/or environment related works. To determine the importance of "triple bottom line" reporting, i.e. for companies to report not only on financial performance of their companies' activities, but also on social and environmental performance. Although not directly related to the purpose of the study, information thus gathered could assist in the recommended further studies (refer Section 5.4).</p>
<p>Question 10</p>	<p>Question 7</p>	<p>Question 10</p>	<p>To determine the validity or relevance for developers, contractors, and consultants of certain contractual problematic issues that were identified by a working group consisting of mainly landscape contractors and landscape architects that meet quarterly under the auspices of the trade magazine <i>Landscape SA</i>. Refer to Vosloo, 2003. To relate these contractual problematic issues, if after being confirmed in the survey, to specific clauses in the forms of contract that are most commonly used in order that the authors of such contracts may take note thereof. To compile a list of potential problematic contractual issues that may be brought to the attention of the contracting parties and specifically to the consultants involved with such type of contracts.</p>
<p>The following contractual issues on landscape/environment related construction works might be problematic in the successful completion of such projects. Please indicate to what degree you are in agreement with the statements made (below).</p>			

Question 10 Item 1.1:	Question 7 Item 1.1:	Question 10 Item 1.1:	<p>Since the performance of the landscape, specifically the live plant material, is as much dependent on good plant stock and proper planting methods and maintenance thereafter, splitting these responsibilities between more than one contractor could lead to problems when allocating liability. The validity of this concern had to be determined.</p> <p>Plant defects often only show up after the initial 3 month defects liability period allowed for in many of the standard construction contracts. The motivation for an extended landscape maintenance contract with the installer of the landscape thus had to be determined.</p> <p>Water features usually fall under the work undertaken by the landscape (sub)contractor; the lack of proper maintenance thereof is often the main cause of them falling into disrepair. The need for an extended period of maintenance and training by the installer had to be determined.</p> <p>Newly installed plants usually require a full growing and winter season to determine their viability for survival and during this 12 month period proper maintenance is required. The appreciation of this requirement by both contracting parties and consultants had to be determined.</p> <p>The extent of awareness, specifically amongst employers and consultants, of the need to make provision for landscape and irrigation maintenance cost items resulting from vandalism and theft had to be determined.</p>
<p>LIABILITY FOR DEFECTS If the landscape contractor or sub-contractor who installed the landscape is not the person/company who also undertakes the longer term landscape maintenance thereafter, it is normally very difficult to prove liability/responsibility should plants start dying or the landscape performs unsatisfactorily.</p>			
Question 10 Item 1.2:	Question 7 Item 1.2:	Question 10 Item 1.2:	
<p>LIABILITY FOR DEFECTS When there is an extended (past any "normal" defects liability period of typically 3 months) landscape maintenance contract, the responsibility for plant defects can then be carried by the landscape contractor as he/she is still on site and cannot disclaim liability for patent, latent or maintenance defects.</p>			
Question 10 Item 1.3:	Question 7 Item 1.3:	Question 10 Item 1.3:	
<p>LIABILITY FOR DEFECTS Water features, often constructed at considerable costs, are notorious for falling into disrepair if not maintained with due care. A period of maintenance by the specialist installer is therefore necessary, also for training the employer's maintenance staff.</p>			
Question 10 Item 1.4:	Question 7 Item 1.4:	Question 10 Item 1.4:	
<p>LIABILITY FOR DEFECTS A landscape maintenance contract should ideally be 12 months in duration to ensure that plants are maintained for at least one growing season.</p>			
Question 10 Item 1.5:	Question 7 Item 1.5:	Question 10 Item 1.5:	
<p>LIABILITY FOR DEFECTS Landscaping and irrigation equipment are often very vulnerable to vandalism and theft - if provision is not made in the maintenance contract specifications and schedules of quantities (or a schedule of rates) for such incidences, these items do not normally get repaired or replaced.</p>			

Question 10 Item 2.1:	Question 7 Item 2.1:	Question 10 Item 2.1:	<p>Since plants require daily maintenance for their survival and to achieve the intended function and effect, problems resulting from a lack of maintenance due to non-provision for it in the landscape subcontract during the defects liability period, cannot be held against the landscape subcontractor. The extent of appreciation of this contractual situation by both contracting parties and consultants had to be determined.</p>
<p>GUARANTEES If no provision has been made in the landscape subcontract specification for landscape maintenance to be done by the landscape subcontractor during or after the defects liability period, the landscape subcontractor's construction guarantee to the main contractor should be released in a reasonable time after practical completion for the whole project has been certified and not only after the defects liability period has ended.</p>			
Question 10 Item 2.2:	Question 7 Item 2.2:	Question 10 Item 2.2:	<p>As stated above, the animate sections of landscape work (i.e. the plants) require continued maintenance after the landscape construction (sub)contract has been completed. Without a maintenance contract between the landscape installer and the employer/owner, liabilities in terms of the construction contract will be difficult to prove and guarantees provided by the landscape installer will probably not be enforceable. The extent of appreciation of this contractual dilemma by both contracting parties and consultants had to be determined.</p>
<p>GUARANTEES A landscape construction guarantee cannot realistically be given and liability for the landscape installation cannot be accepted if there is no further maintenance contract between the employer and the landscape contractor.</p>			
Question 10 Item 3.1:	Question 7 Item 3.1:	Question 10 Item 3.1:	<p>Landscaping is most often the last trade to be done on a project and relies on other work in the same area to be completed in order to have uninterrupted access and to prevent damage to vulnerable work such as planting. Bad programme planning by the main contractor or progress monitoring by the responsible consultants often forces the landscape (sub)contractor to complete his work in unrealistic timeframes and working conditions. The validity of this perceived problem had to be determined.</p>
<p>COMPLETION Other trades (e.g. electrical work) often only finish their work on the day before practical completion must be reached, and since the landscape work is usually the last trade to be completed, it often leaves the landscape subcontractor insufficient time to finish his/her work.</p>			

Question 10 Item 3.2:	Question 7 Item 3.2:	Question 10 Item 3.2:	<p>Stemming from the problem addressed above, landscape architects are often put under pressure by the employer's principal agent and/or the main contractor to accept incomplete landscape work since any outstanding landscape work probably has a relatively low value and/or is not seen to be critical to the use of the facility by the employer. The validity of this perceived problem had to be determined.</p> <p>Main contracting parties and consultants often don't consider the completion of "soft landscaping" (i.e. planting) to be critical to the use of the facility, bearing in mind the typical definition of "practical completion". Should the survey confirm this practice, a new definition of "practical completion" in the case of landscape work will be needed.</p> <p>Employers, main contractors and consultants often do not realise that since the availability and appearance of certain plant material are season-bound and the landscape (sub)contractor may not be able to source the material, he should therefore not be held liable for delays for this reason. The extent of appreciation of this contractual dilemma by both contracting parties and consultants had to be determined.</p>
<p>COMPLETION The possible severe financial implications for a main contractor on a project where only the landscape work is incomplete and delays the practical completion and where the monetary value of outstanding landscape work is small in comparison to the total project value or the penalties that will be applicable, often result in undue pressure on the landscape architect to accept incomplete work.</p>			
Question 10 Item 3.3:	Question 7 Item 3.3:	Question 10 Item 3.3:	
<p>COMPLETION The definition of the term "Practical completion" for building and construction work (typically: "fit for use") is not really applicable in the case of landscape work.</p>			
Question 10 Item 3.4:	Question 7 Item 3.4:	Question 10 Item 3.4:	
<p>COMPLETION Provision should be made for a non-penalty carrying and cost disbursing extension of a landscape (sub) contract in cases where delays to the completion of a project, for any reason not attributable to the landscape (sub) contractor, extend the completion date into a "non-growing season" or a season where the specified plant material, e.g. green instant lawn, is not commercially available.</p>			

Question 10 Item 3.5:	Question 7 Item 3.5:	Question 10 Item 3.5:	<p>In the case of the JBCC, the main contractor's final account is calculated once works completion has been certified and the 90-day defect's liability period has commenced. If, during this period, landscape maintenance work is still required under the landscape subcontract that will require monthly inspection and payment certification, this may delay the finalisation of the final account. If this problem could be confirmed from the survey, it would further motivate the need for a separate landscape maintenance agreement to be entered into by the employer and the landscape contractor once works completion of the construction contract has been reached.</p>
<p>COMPLETION Delays to the finalisation of the contract's final account could occur in cases where a 3-month landscape maintenance period (to coincide with the 90-day defects liability period of the main contract), is included in the landscape subcontract and which will require additional monthly maintenance payment certificates through the main contractor.</p>			
Question 10 Item 4.1:	Question 7 Item 4.1:	Question 10 Item 4.1:	<p>Working with live plant material requires appropriate maintenance and the contractual risks resulting from transferring the responsibility for such maintenance to others are also applicable to the professional liability of the landscape architect who specified and inspected the landscape work during the construction phase. This statement had to be verified.</p>
<p>PROFESSIONAL LIABILITY The landscape architect cannot accept professional liability for the successful performance of the landscape if the employer decides not to appoint the landscape contractor for an extended landscape maintenance period as well as appointing the landscape architect to inspect such maintenance.</p>			
Question 10 Item 5.1:	Question 7 Item 5.1:	Question 10 Item 5.1:	<p>This statement ties in with Question 10 Items 3.1, 3.2, 3.3 and 3.4 and needed to be verified in the survey.</p>
<p>DELAYS There is often very little or no programme float left for the landscape work since it is usually the last trade to be completed on a contract.</p>			
Question 10 Item 5.2:	Question 7 Item 5.2:	Question 10 Item 5.2:	<p>This statement ties in with Question 10 Items 3.1, 3.2, 3.3, 3.4 and 5.1 and needed to be verified in the survey since it is a concern often expressed by landscape (sub)contractors (refer to Vosloo, 2003).</p>
<p>DELAYS The main contractor will often use the period allocated for landscape works to soak up delays caused by other works to the disadvantage of the landscape subcontractor, often forcing him to complete his work in unrealistic time and site circumstances.</p>			
Question 10 Item 6.1:	Question 7 Item 6.1:	Question 10 Item 6.1:	<p>This statement ties in with Question 10 Items 3.1, 5.1 and 5.2 and needed to be verified in the survey since it is a concern often expressed by landscape (sub)contractors (refer to Vosloo, 2003).</p>
<p>ACCESS TO WORKS Unrealistic landscape sub-contract periods are often the result of inaccessibility of areas to be landscaped by the landscape subcontractor.</p>			

Question 10 Item 6.2:	Question 7 Item 6.2:	Question 10 Item 6.2:	<p>This statement ties in with Question 10 Items 3.1, 3.2 and specifically Item 3.3 and needed to be verified in the survey. If verified, it would further motivate the need for a separate landscape maintenance agreement to be entered into by the employer and the landscape contractor once works completion of the construction contract has been reached. In such an agreement the responsibility for works risk and public liability can be correctly allocated.</p>
<p>ACCESS TO WORKS In cases where the landscape sub-contractor has to complete his/her work in areas already in use by the employer, issues such as works risk, and public liability insurance become problematic.</p>			
Question 10 Item 6.3:	Question 7 Item 6.3:	Question 10 Item 6.3:	<p>This statement ties in with Question 10 Items 3.1, 3.3, 5.1, 5.2 and 6.1 above and needed to be verified in the survey since it is a concern often expressed by landscape (sub)contractors (refer to Vosloo, 2003). If verified, it would constitute an issue to be addressed in the study's recommendations.</p>
<p>ACCESS TO WORKS A comprehensive definition is needed of what constitutes an area to be "suitable for handover to the landscape sub-contractor to install the landscape work".</p>			
Question 10 Item 7.1:	Question 7 Item 7.1:	Question 10 Item 7.1:	<p>This statement ties in with Question 10 Items 1.1, 1.2, 1.4, and 2.2 above and needed to be verified in the survey. If verified, this could be further motivation for a mandatory landscape maintenance contract after installation.</p>
<p>TERMINATION OF THE LANDSCAPE INSTALLATION & START OF THE SUBSEQUENT LANDSCAPE MAINTENANCE It is in both contracting parties' (employer and main contractor) interest to have a mandatory landscape maintenance contract (of say 3 to 12 months duration) as a separate, direct contract between the employer and the landscape (sub) contractor who installed the landscape for all the reasons given under Items 1 & 2 above.</p>			
Question 10 Item 8.1:	Question 7 Item 8.1:	Question 10 Item 8.1:	<p>This concern was expressed in meetings of the SALI/ILASA working group (refer to Vosloo, 2003) and needed to be verified from survey results.</p>
<p>GENERAL CONTRACTUAL ISSUES Landscaping is often a popular target when project budget cuts are considered because the landscape budget probably has not been expended at that point in time.</p>			
Question 10 Item 8.2:	Question 7 Item 8.2:	Question 10 Item 8.2:	<p>This statement ties in with Question 10 Items 3.2 and 3.3 above and needed to be verified from survey results.</p>
<p>GENERAL CONTRACTUAL ISSUES Landscaping is often a popular target when project budget cuts are considered because landscaping is often considered as non-essential.</p>			

<p>Question 10 Item 8.3:</p> <p>GENERAL CONTRACTUAL ISSUES If, for whatever reason, the long-term landscape maintenance contractor is different from the person who installed the landscape, it is often difficult for the landscape maintenance contractor to define/calculate the risks associated with the maintenance contract, such as the responsibility for live plant material and systems (e.g. irrigation installations) inherited from the landscape installation contractor.</p>	<p>Question 7 Item 8.3:</p>	<p>Question 10 Item 8.3:</p>	<p>This perceived problem statement ties in with Question 10 Items 1.1, 2.2 (indirectly) and 7.1 above and needed to be verified from survey results. If verified, this could be further motivation for a mandatory landscape maintenance contract ,after installation, between the employer and the landscape installation contractor.</p>
<p>Question 10 Item 8.4:</p> <p>GENERAL CONTRACTUAL ISSUES Plant material sourcing and availability is a common issue of concern. A landscape contractor/subcontractor often tenders for the specified plant material at a certain price at tender stage, but when the date arrives to deliver (and which date may have been extended due to delays not of his/her making), he/she might find that that the plant material is not available any more, or is only available at a higher price because of seasonal availability or otherwise, and he/she now wants to substitute the specified plants with other species.</p>	<p>Question 7 Item 8.4:</p>	<p>Question 10 Item 8.4:</p>	<p>This is a concern expressed by both SALI and ILASA members at the working group meetings (refer to Vosloo, 2003) and needed to be verified by all parties involved in the South African landscape industry. If verified from the survey results, this issue can then be addressed in the study's recommendations.</p>
<p>Question 10 Item 8.5:</p> <p>GENERAL CONTRACTUAL ISSUES The landscape architect cannot guarantee plant availability ahead of time unless a growing contract or other arrangement is made beforehand.</p>	<p>Question 7 Item 8.5:</p>	<p>Question 10 Item 8.5:</p>	<p>This statement ties in with Question 10 Item 8.4 above and if confirmed from the survey results, could be addressed in the study's recommendations.</p>
<p>Question 11: From dealing with a professional consultant, e.g. a Project Manager, Engineer, or Landscape Architect, on contracts that include landscaping or environment related construction works, please indicate to what extent you agree with the statements given (below).</p>	<p>Question 8: From dealing with a professional consultant, e.g. a Project Manager, Engineer, or Landscape Architect, on contracts that include landscaping or environment related construction works, please indicate to what extent you agree with the statements given (below).</p>	<p>-----</p>	<p>To determine from the two parties (employers and contractors) that normally deal with professional consultants on contracts or sub-contracts that include landscaping or environment related construction works if the responsible consultants are familiar with certain identified issues that are specific to landscape works and which could be problematic in the execution of such contracts (there are often projects such as civil engineering type works that include landscaping or landscape rehabilitation on which there are no professional landscape architects involved).</p>

-----	<p>Question 9: How often on landscape contracts/subcontracts do you experience problems in sourcing the specified plant material in the required numbers or on the required dates?</p>	-----	<p>To determine from the responses of specifically the contractors on landscape contracts/subcontracts, the validity of the perceived problem that the plant material specified by the consultants is often not available in the required numbers or on the required dates.</p>
-----	<p>Question 10: If you do sometimes experience problems in sourcing the specified plant material in the required numbers on specified dates, how often would you recommend the following (listed) solutions to the landscape architect/consultant?</p>	-----	<p>To determine, from the responses of specifically the contractors on landscape contracts/subcontracts, how often those contractors that do experience problems in sourcing the specified plant material in the required numbers or on the specified dates recommend the following (listed) solutions to the consultants.</p>
-----	-----	<p>Question 11: Please indicate how often do you recommend to the developer/owner that he/she enters into a landscape maintenance contract with the landscape contractor who constructed the landscape or undertook the environmental work</p>	<p>In assuming that the responses from consultants to their Question 10 Items 1.1, 1.2, 1.4, 2.1, 2.2, 4.1, 7.1 and 8.3 would confirm the need for a landscape maintenance contract between an employer/developer/owner and the landscape contractor who constructed the landscape or undertook the environmental work, the purpose of this question was then to determine how often, if at all, consultants recommend to developers/owners that they enter into such maintenance contracts.</p>

4.3 Specific treatment of the main problem and sub-problems by means of the data derived from the survey

In this section the main and sub-problems stated in Chapter 1 are reiterated for ease of reference and the manner in which they have been addressed by the data derived from the questionnaire survey.

4.3.1 Main problem

Problematic contractual issues in respect of pre-main contract, in-main contract and post-main contract landscape work arise when using the JBCC and other forms of contract documentation for landscaping and related environmental works in South Africa. There are important issues that are not sufficiently addressed in these forms of contract that may require modifications to such contracts.

The main problem statement assumes that the problematic contractual issues arise when using standard construction contracts for landscaping and environment related works and as a result of the inherent different nature of such works as opposed to the more traditional construction trades.

The responses to question numbers 2, 3, 4, 10 (to developers and consultants) and 7 (to contractors) were intended to provide confirmation of the forms of contract mostly used for landscaping and related environmental works as well as confirmation of those problematic contractual issues identified by the SALI/ILASA working group (refer to Vosloo, 2003). Other problematic contractual issues could also be identified from the comments made by respondents.

In Section 4.4 and Addenda A, B and C hereafter the responses to the above questions are given and discussed.

4.3.2 Sub-problem 1: Pre-main contract landscape work

What are the issues to be addressed in a contract between an employer and a landscape contractor for landscape or related environmental work to be undertaken on a project before the main construction contractor for that project has been appointed and where such landscape contractor may eventually be a subcontractor to the main contractor for the further execution of the landscape work, and how can they be resolved?

The question in Sub-problem 1 assumes that there are instances where a landscape contractor is required to do certain work such as the growing or procurement of plant material, and the removal, relocation or conservation of on-site flora and other natural features on a site before a main contractor is appointed to undertake the bulk of the construction works. The question further assumes that the landscape contractor may at a later stage be appointed as a landscape subcontractor to carry on and to complete the landscape and environment related works.

The responses to question numbers 4, 10 (to developers and consultants), 7 (to contractors), 9 and 10 (to contractors) were intended to provide confirmation of the forms of contract mostly used for such pre-main contract landscaping and related environmental works as well as to identify those contractual issues applicable to such works. The issues of plant availability and measures to ensure this are addressed as well.

Data on the contractual issues to be addressed in a pre-main contract between an employer and a landscape contractor were also obtained through the study of related literature; refer in this instance to Section 3.2: *Pre-main landscape contracts*.

4.3.3 Sub-problem 2: In-main contract landscape work

Are the most often used forms of construction contract or subcontract, such as the JBCC, suitable to be used for landscape work during the construction of the main works and do these contracts provide for practical termination of the landscape subcontract at the start of the defects liability period during and after which landscape maintenance may be required?

The question in Sub-problem 2 is intended to confirm the use of standard forms of contract and subcontract, such as the JBCC, for landscape works during a construction contract and to determine their suitability for that purpose. The question also addresses the issue of the termination of the landscape construction phase and the start of the landscape maintenance work, either as part of the landscape subcontract during its defects liability period, or as part of a newly commenced maintenance contract between the landscape contractor and the employer.

The responses to question numbers 2, 3, 4, 10 (to developers and consultants) and 7 (to contractors) were intended to provide answers to Sub-problem 2 and to identify those contractual issues applicable at the change-over from landscape construction to landscape maintenance.

4.3.4 Sub-problem 3: Post-main contract landscape work

What are the problems encountered when using standard forms of construction contract, such as the JBCC, for landscape maintenance work after the landscape installation subcontract of the main contract has reached final completion, and how can they be resolved?

The problem statement assumes that there will be instances where the employer requires landscape maintenance work to be done on his project after it has reached final completion, either by the landscape subcontractor who installed the landscape or by another party. The question then is intended to identify the contractual problems that result from using the standard forms of construction contract, such as the JBCC, for landscape maintenance after the landscape installation contract has been terminated, either at practical or works completion or at the end of the typical 90 day defects liability period of the subcontract.

The responses to question numbers 4 (to all), 6 and 7 (to contractors) and 7 and 10 (to developers/owners and consultants) were intended to provide answers to Sub-problem 3 by identifying those contractual issues applicable to a landscape maintenance contract. Question 11 which was put to consultants was intended to determine how often, if at all, consultants recommend to developers that they enter into such landscape maintenance contracts.

4.4 The data and their interpretation

After the display or presentation of the data, the next and *sine qua non* of research must deal with the interpretation of data.

....without inquiring into the intrinsic meaning of the data, no resolution of the research problem or its attendant sub problems is possible.

(Leedy, 1985:231)

In the following section the data gathered from the survey responses are presented and interpreted and preliminary findings are discussed with the view to come to conclusions and recommendations in Chapter 5.

The questions from the survey are reiterated hereafter for easier reference, but this section should be read with the survey results given in Addenda A, B and C.

Question 1 in all three survey categories was intended to determine to which sub-grouping each respondent belongs.

4.4.1 QUESTION 2 (Put to all categories): Percentage use of various forms of contract

In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed (below)?

The purpose of this question was to:

- Determine the respective actual usage of those forms of contract generally thought to be used in South Africa by the three parties and their constituents involved in contracts, i.e. developers, contractors and consultants.
- Discern any patterns in the usage of any of the contracts
- Confirm the general assumptions made in the study about the usage of standard forms of contract, specifically for landscape and environment related works.

From the average responses by all the sub-categories under the developers or owners category (Addendum A), it can be seen that the JBCC PBA is used the most often (37.88%) compared to the 29.57% of the GCC and the 11.49% of the FIDIC Main Contract Agreement. Some central and local government departments still use their own in-house developed forms of contract. Of all the listed subcontract agreements, the JBCC N/S Subcontract Agreement is, on average, used most often (0.66% compared to the 0.1% of the FIDIC Subcontract and the NEC Subcontract and to the 0.02% of the BIFSA [now the MBSA] domestic subcontract).

From the responses by all the sub-categories under the contractors category (Addendum B), it would also seem that the JBCC suite of contracts is used most often, followed by the GCC and the FIDIC Main Contract Agreement. Of all the listed subcontract agreements, the JBCC N/S Subcontract Agreement is, on average, used most often (17.31% compared to the 1.71% of the BIFSA [now the MBSA] domestic subcontract and to the 1.39% of the FIDIC Subcontract). From all the sub-categories of contractors, only the landscape and/or environment related works contractors use the SALI standard agreement for the landscape industry. These contractors also often use their own forms of contract.

From the responses by consultants (Addendum C) it would again seem if the JBCC suite of contracts is used most often, followed by the GCC and the FIDIC suite of contracts. Of all the listed subcontract agreements, the JBCC N/S Subcontract Agreement is, on average, used most often (16.61% compared to the 2.3% of the FIDIC Subcontract and to the 0.7% of the BIFSA [now the MBSA] domestic subcontract).

From all three data sets it is clear that the NEC suite of contracts is still not widely used.

The assumption made in Chapter 1 that the JBCC suite of contracts is the most widely used form of contract in South Africa is therefore confirmed.

Recommendations made in Chapter 5 will therefore be mainly aimed at users of the JBCC suite of contracts.

4.4.2 QUESTION 3 (Put to all categories): Preference for various forms of contract

To what extent would you prefer to use the forms of contract listed below for your projects that include landscaping and/or environment related construction works?

The purpose of this question was to discern any future preferences in the use of any of the contracts by the three parties involved in contracts, i.e. developers, contractors and consultants.

From the responses by all the sub-categories under the developers or owners category (Addendum A), it can be concluded that the JBCC PBA remains the preferred form of contract and only a small percentage of respondents are not familiar with the JBCC. The GCC and the FIDIC Main Contract Agreement are the second and third most preferred forms of contract. Most of the sub-categories of developers or owners indicate unfamiliarity with the NEC suite of contracts and the SALI standard agreement for the landscape industry.

From the responses by all the sub-categories under the contractors category (Addendum B), it can be concluded that the forms of

contract most preferred relate to the sector in which the contractors operate, i.e., the building construction contractors prefer the JBCC suite of contracts, the civil engineering works contractors prefer the GCC, COLTO and the FIDIC forms of contract, the landscape works contractors prefer the JBCC N/S Subcontract Agreement, followed by the FIDIC Subcontract Agreement. From all the sub-categories of contractors only the landscape and/or environment related works contractors prefer the SALI standard agreement for the landscape industry. A number of landscape and/or environment related works contractors also prefer their own forms of contract. A large percentage of landscape and/or environment related works contractors indicated their unfamiliarity with the NEC series of contracts.

From the responses by consultants (Addendum C) it would again seem if the preferred forms of contract relate to the specific field in which the consultants work. The project managers mainly prefer the JBCC suite of contracts, followed by the GCC and the FIDIC Main Contract form. Architects almost exclusively prefer the JBCC suite of contracts with some preference for the SALI contract. They are to a large extent not familiar with the FIDIC, GCC and the NEC forms of contract.

Landscape architects prefer the JBCC N/S Subcontract Agreement, followed by the GCC. The FIDIC and NEC suites of contracts are unfamiliar to them. The majority of landscape architects (64.29%) indicate that are unfamiliar with the SALI contract; this is difficult to explain since it could reasonably be expected of landscape architects to be aware of the form of contract prepared by the representative body of the contractors with whom they work on a regular basis.

As could be expected the civil engineers prefer using the GCC and COLTO forms of contract. The JBCC, FIDIC and NEC forms of contract

are for the most unfamiliar to these respondents. Quantity surveyors prefer using the JBCC principal and subcontract agreements with some support also for the FIDIC main contract. They are largely unfamiliar with the NEC and SALI forms of contract.

The three environmental consultant respondents indicated a preference for the GCC.

4.4.3 QUESTION 4 (Put to all categories): Suitability of various forms of contract for landscaping work

How suitable are the forms of contract listed below for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance?

The purpose of this question was to:

- Determine the suitability of the standard forms of construction contract specifically for landscape and environment related works. The question was extended to allow respondents to comment on whether the contracts that are deemed suitable needed any alterations to improve their suitability.
- Determine if some of the listed forms of contract were in fact considered totally unsuitable.
- Determine which categories of respondents were not familiar at all with any of the listed forms of contract.

From the responses by the private sector developers/owners (Addendum A), it can be concluded that the JBCC suite of contracts and the GCC are considered suitable as they are; however some

respondents suggested that they would be more suitable after some alterations. They are largely unfamiliar with FIDIC, NEC and the SALI forms of contract.

The two respondents from central government departments either consider the JBCC suite of contracts suitable only with some alterations or are not familiar with them. They consider the FIDIC and GCC contracts unsuitable or suitable only after some alterations. NEC and the SALI documents are unfamiliar to them. The three respondents from provincial government departments consider the JBCC PBA suitable as is or with some alterations. They consider both the FIDIC and GCC forms of contract suitable with some alterations. NEC and the SALI documents are unfamiliar to them. The three respondents from local government departments either consider the JBCC suite of contracts suitable only with some alterations or as unsuitable. They consider the GCC suitable with some alterations. FIDIC, NEC and the SALI documents are unfamiliar to them. The two respondents from parastatal organisations consider their own forms of contract to be suitable, secondly the FIDIC main contract and then the GCC; only suitable with some alterations.

From the responses by the sub-categories under the contractors category (Addendum B), it can be concluded that the forms of contract considered suitable relate to the sector in which the contractors operate. As a result it can be seen that building contractors consider the JBCC suite of contracts to be suitable with or without alterations, and are largely unfamiliar with all the other listed forms of contract. Civil engineering contractors consider the FIDIC, GCC and COLTO forms of contract suitable, with or without alterations, and are largely unfamiliar with the JBCC, NEC and SALI forms of contract.

Landscape and/or environment related works contractors mostly consider the JBCC and SALI forms of contract suitable with some alterations and are mostly unfamiliar with all the other forms of contract listed.

Mining works contractors mostly consider the JBCC and FIDIC forms of contract suitable with some alterations and are mostly unfamiliar with all the other listed forms of contract.

From the responses by consultants (Addendum C) it would again seem if the forms of contract considered suitable relate to the specific field in which the consultants work. The project managers mainly prefer the JBCC suite of contracts, followed by the GCC and the FIDIC Main Contract form. Architects almost exclusively consider the JBCC suite of contracts suitable whereas the rest of the listed forms of contract are either considered unsuitable or they are not familiar with. Landscape architects consider the JBCC suite of contracts and the GCC suitable with some alterations and are largely unfamiliar with the rest. Civil engineers consider the GCC as suitable, but for some unexplained reason are mostly not familiar with FIDIC and NEC. Quantity surveyors consider the JBCC and FIDIC suites of contract suitable with some alterations, but are mostly unfamiliar with GCC, COLTO and NEC. From the responses by environmental consultants, it would seem if the JBCC suite of contracts and the GCC are considered suitable with some alterations, whereas FIDIC, NEC and SALI are unfamiliar to them.

4.4.4 QUESTION 5 (Put to all categories): Extent and type of construction projects that include landscape work

What percentages, on average over a 5-year period, of your construction projects that include landscape or environment related works, fall under the categories listed (below)?

The purpose of this question was to determine the extent and type of projects of which landscaping and/or environment related works form a part.

From the responses by the private sector developers (Addendum A), it can be seen that high to medium density residential projects, followed by offices and institutional buildings and then by commercial/retail developments form the biggest part of their construction projects that include landscape or environment related works.

The central government department respondents are involved only in public sector offices or institutional buildings and in roads, bridges or other transport related facilities. Provincial government departments are mostly involved with low density housing, followed by infra-structural services, public sector offices or institutional buildings, and in roads, bridges or other transport related facilities. Local government departments seem to be mostly involved with parks, open space systems, environmental conservation and rehabilitation, followed by dams, canals and other hydraulic works, and then by recreational facilities. The two respondents from parastatal organisations are involved in electricity generating or transmission projects and in dams, canals and other hydraulic works.

From the responses by the building contractors (Addendum B), it can be seen that commercial/retail projects, followed by offices/institutional buildings and then by high to medium density residential projects, form the biggest part of their construction projects that include landscape or environment related works.

The civil engineering works contractor respondents are mostly involved in roads, bridges or other transport related projects followed

by infra-structural service installations, and then by dams, canals and other hydraulic works.

Landscape and/or environment related works contractors mostly undertake landscaping and/or environment related works at low density residential projects, followed by medium to high density residential and then by hotels, lodges, and recreational facilities.

As can be expected, mining works contractors are mostly involved with industrial projects, followed by infrastructure and services installations.

From the responses by consultants (Addendum C) it would again seem if the type of construction projects that include landscape or environment related works that they undertake, relate to the specific field in which they work. In this regard the project managers mainly undertake commercial/retail construction projects, followed by offices/institutional buildings and by high to medium density residential projects. Architects are involved with offices/institutional building projects, followed by high to medium density residential, then low density residential and then by commercial/retail construction projects. For landscape architects the order is: offices/institutional building projects, low density residential, high to medium density residential, and then hotels, lodges, and recreational facilities. For civil engineers the order is: roads, bridges or other transport related facilities, offices/institutional building projects, and then dams, canals and other hydraulic works. Quantity surveyors undertake mostly offices/institutional building projects, followed by commercial/retail projects, industrial projects and then by high to medium density residential projects. Environmental consultants are mostly involved in low density residential projects, followed by infrastructure/services installations, high to medium density residential and then by hotels, lodges, and recreational facilities.

4.4.5 QUESTION 6 (Put to contractors): Extent and type of maintenance projects that include landscape work

What percentages, on average over a 5-year period, of your maintenance projects, that include landscape and/or environment related maintenance work, fall under the categories listed (below)?

The purpose of this question, which was put only to contractors, was to determine the extent and type of maintenance projects which include landscaping and/or environment related works that they typically undertake.

From the responses (Addendum B) it can be seen that building contractors' maintenance projects mainly fall into the category of high to medium density residential, followed by offices/institutional buildings, hotels, lodges and recreational facilities and then by commercial and retail projects. For civil engineering contractors the ranking order is: roads, bridges or other transport related facilities, hotels/lodges/ recreational facilities, dams, canals and other hydraulic works and then infrastructure/services installations. For landscape and/or environment related works contractors the ranking order is: offices/institutional building projects, hotels/lodges/ recreational facilities, and then high to medium density residential projects.

4.4.6 QUESTION 6 (Put to developers/owners and consultants): Extent and relative value of landscape capital costs

What percentage, on average, of your capital cost budgets for each of the following types of construction projects, is allocated (developers) or do you recommend to be allocated (consultants) to a landscape and irrigation installation or to environment related work?

The purpose of this question was to determine the extent and relative value of landscape and irrigation installations or environment related works in relation to the total capital cost of development projects that developers and consultants usually budget for. This question was directed at developers and consultants and from the responses by developers (Addendum A) it would seem as if the average percentage of capital cost budgets allocated for landscaping by all the categories of developers varies from 10% to 12.78% for all of the types of construction projects, except for offices/institutional buildings and low density residential projects for which the percentages are 8.12% and 6.43% respectively. Private sector developers of hotels/lodges/recreational facilities projects budget some 26.25% of their capital cost budgets for landscape and irrigation installations or environment related works.

From the responses by consultants (Addendum C) it can be seen that the average percentage of capital cost budgets that all the categories of consultants recommend to be allocated for landscaping varies from 3.08% to 4.85% for all of the types of construction projects, except for hotels/lodges/recreational facilities projects for which the average percentage is 7.28%. Electricity generating and transmission projects attract an average of 2.23% of their budgets for landscape and irrigation installations or environment related works. From the responses by two landscape architects, it would seem that for golf course projects an average of 80% of the total construction costs go towards landscape and irrigation installations or environment related works.

4.4.7 QUESTION 7 (Put to developers/owners and consultants):
Extent and relative value of landscape maintenance costs

What percentage, on average, of your projects' annual budgeted running/operational costs for each of the following types of construction projects, is allocated (developers) or do you recommend to be allocated (consultants) to the maintenance of landscape and irrigation installations or the maintenance of environment related works?

The purpose of this question was to determine the extent and relative value of landscape and irrigation or environment related maintenance works in relation to the total running/operational costs of construction projects that developers and consultants usually budget for.

This question was directed at developers and consultants and from the responses by developers (Addendum A) it can be seen that the average percentage of running/operational cost budgets allocated to the maintenance of landscape and irrigation installations or the maintenance of environment related works of all types of construction projects and by all the sub-categories of developers varies from 7.5% to 12.5%; except for dams, canals and other hydraulic works for which the average landscape maintenance budget is 16.11% of the total budget, and hotels/lodges/ recreational facilities for which the average figure is 25.63%. From the responses by three local government departments, it can be seen that 78.33% of their annual budgeted running/operational costs is expended on the maintenance and environmental conservation of parks and other metropolitan open space systems.

From the responses by consultants (Addendum C) it can be seen that the average percentage of running/operational cost budgets that all

the categories of consultants recommend to be allocated for the maintenance of landscape and irrigation installations or the maintenance of environment related works, varies from 3.09% to 5.84% for all of the types of construction projects, except for hotels/lodges/ recreational facilities for which the average figure is 6.37% (landscape architects recommend 10.73%), and infrastructure/services installations for which the figure is 2.79%.

4.4.8 QUESTION 8 (Put to developers/owners and consultants): Considerations that may influence landscape capital costs

Listed (below) are some social, economic, and environmental considerations that might influence the capital cost budget for landscape and/or environment related works on your projects, in relation to the total project costs.

Please indicate your rating of the degree of influence of the listed considerations.

The purpose of this question was to:

- Determine the importance of certain identified social, economic and environmental considerations, which may influence the capital cost budgets for landscaping, and/or environment related works.
- From the above, determine the importance of 'triple bottom line' reporting, i.e. for companies to report not only on their financial performance, but also on their social and environmental performance.

Of the six listed considerations, the first four deal with social issues, the next addresses the financial consideration, and the last one deals with the issue of the environmental impact of their developments.

This question was directed at developers and consultants and from the responses by developers (Addendum A) it can be seen that the private sector developers rate all the considerations as 'influential', except for the financial consideration which is rated as 'largely influential'. The social issue of promoting skills transfer to Previously Disadvantaged Individuals (PDIs) is considered to have little influence.

The nine central, provincial, and local government department respondents and the two parastatal organisations rate all the social and environmental considerations as being either 'influential' or 'largely influential', and the financial consideration as having little or no influence. One central government department respondent stressed the need for low maintenance landscapes on their development projects.

From the responses by consultants (Addendum C) it can be concluded that all the categories of consultants rate the listed social, financial, and environmental considerations as 'influential' except for the landscape architect respondents who rate the environmental consideration as being 'largely influential'. One landscape architect respondent also stressed the following considerations:

- Reducing/mitigating potential negative environmental impacts through landscaping.
- Achieving ISO 14000 certification.
- Achieving triple bottom line reporting.

The quantity surveyor respondents rate the financial consideration as 'largely influential'.

**4.4.9 QUESTION 9 (Put to developers/owners and consultants):
Considerations that may influence landscape maintenance costs**

Listed (below) are some social, economic, and environmental considerations that might influence the maintenance/operational cost budget for the landscape and/or environment related works on your projects, in relation to the total project operational costs. Please indicate your rating of the degree of influence of the listed considerations.

The purpose of this question was to:

- Determine the importance of certain identified social, economic and environmental considerations which may influence the maintenance/operational cost budgets for landscaping and/or environment related works.
- Determine the importance of 'triple bottom line' reporting, i.e. for companies to report not only on their financial performance, but also on their social and environmental performance.

This question was directed at developers and consultants and from the responses by developers (Addendum A) it can be seen that the private sector developers rate all the considerations to be 'influential', except for the social issue of promoting skills transfer to Previously Disadvantaged Individuals (PDIs) which is considered to be of 'little influence'. The listed financial consideration is rated as 'largely influential'.

The nine central, provincial, and local government department respondents and the two parastatal organisations rate all the social and environmental considerations as being either 'influential' or 'largely influential', and the financial consideration as having little or no influence. One central government department respondent stated the need for low maintenance landscapes on their projects.

From the responses by consultants (Addendum C) it can be seen that the project managers, architects, and landscape architects rate the social considerations as being 'influential' to having 'little influence', whereas the financial and environmental considerations are deemed to be 'influential'. The seven civil engineer respondents rate the environmental consideration and three out of the four social considerations having 'little influence'; the fourth, i.e. the need to create as many job opportunities for the local communities as possible, is rated 'influential', as is the financial consideration.

The quantity surveyor respondents rate the financial and environmental considerations as 'influential', as they do the need to create as many job opportunities for the local communities as possible. The three other social considerations are rated as having 'little influence'. The small number of respondents and the widely varying responses by structural and electrical/mechanical engineers and environmental consultants make any meaningful conclusion on their responses difficult.

4.4.10 QUESTION 10 (Put to developers/owners and consultants) and QUESTION 7 (Put to contractors): Issues that may be problematic in the successful completion of landscape contracts

The following contractual issues on landscape/environment related construction works might be problematic in the successful completion of such projects. Please indicate to what degree you are in agreement with the statements made (below).

The purpose of these questions was to:

- Determine the validity or relevance for developers, contractors, and consultants of certain contractual problematic issues that were identified by a working group

consisting mainly of landscape contractors and landscape architects that meet quarterly under the auspices of the trade magazine *Landscape SA* (Vosloo, 2003).

- Relate these contractual problematic issues, if after being confirmed in the survey, to specific clauses in the forms of contract that are most commonly used in order that the authors of such contracts may take note thereof.
- Compile a list of potential problematic contractual issues that may be brought to the attention of contracting parties as well as specifically to the consultants involved with such type of contracts.

4.4.10.1 Item 1.1: Liability for defects

If the landscape contractor or sub-contractor who installed the landscape is not the person/company who also undertakes the longer term landscape maintenance thereafter, it is normally very difficult to prove liability/responsibility should plants start dying or the landscape performs unsatisfactorily.

In Table 4.4.10.1 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents in all three data categories, ranging from 91.8% to 93.75%, agree with the given statement. The biggest disagreement with the statement (22.22%) comes from the professional project managers under the consultants' category.

TABLE 4.4.10.1
Comparative responses from all three data categories to Question
10/7 Item 1.1: Liability for defects

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	-	5.56	94.44
Public sector: Central Government Departments	2	-	0	100
Public sector: Provincial Government Departments	3	-	33.33	66.67
Public sector: Local Government Departments	3	-	0	100
Parastatal organisations	2	-	0	100
Total N for category/weighted average	28	-	7.14	92.86
CONTRACTORS				
Architectural (building) contractors	8	12.5	0	87.5
Civil engineering works contractors	12	0	8.33	91.67
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	4.17	2.08	93.75
CONSULTANTS				
Professional Project Managers	9	22.22	-	77.78
Professional Architects	15	6.67	-	93.33
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	8	12.5	-	87.5
Professional Structural Engineers	1	0	-	100
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	0	-	100
Environmental Consultants	3	0	-	100
Total N for category/weighted average	61	8.2	-	91.8
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	0	7.14	92.86
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	4.17	2.08	93.75
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	8.2	0	91.8
Total N/weighted average	137	5.11	2.19	92.7

4.4.10.2 Item 1.2: Liability for defects

When there is an extended (past any 'normal' defects liability period of typically 3 months) landscape maintenance contract,

the responsibility for plant defects can then be carried by the landscape contractor as he/she is still on site and cannot disclaim liability for patent, latent or maintenance defects.

In Table 4.4.10.2 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents (89.58% to 96.43%) in all three data categories agree with the given statement. The biggest disagreement with the statement (25%) comes from the civil engineering works contractors under the contractors' category.

TABLE 4.4.10.2
Comparative responses from all three data categories to Question 10/7 Item 1.2: Extended defects liability period

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	-	5.56	94.44
Public sector: Central Government Departments	2	-	0	100
Public sector: Provincial Government Departments	3	-	0	100
Public sector: Local Government Departments	3	-	0	100
Parastatal organisations	2	-	0	100
Total N for category/weighted average	28	-	3.57	96.43
CONTRACTORS				
Architectural (building) contractors	8	0	0	100
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	8.33	2.08	89.58
CONSULTANTS				
Professional Project Managers	9	0	0	100
Professional Architects	15	6.67	6.67	86.67
Professional Landscape Architects	17	11.76	0	88.24
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	0	0	100
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	6.56	1.64	91.8

COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	---	3.57	96.43
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	8.33	2.08	89.58
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	6.56	1.64	91.8
Total N/weighted average	137	5.84	2.19	91.97

4.4.10.3 Item 1.3: Liability for defects

Water features, often constructed at considerable costs, are notorious for falling into disrepair if not maintained with due care. A period of maintenance by the specialist installer is therefore necessary, also for training the employer's maintenance staff.

In Table 4.4.10.3 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents (93.75% and 91.67%) in two of the three data categories agree with the given statement. In the category of developers and/or owners, the private sector developers are in the main also in agreement with the statement (61.11%) whereas for the public sector and parastatal developers/owners the question is predominantly irrelevant since, as a rule, they do not develop projects that include water features.

TABLE 4.4.10.3
Comparative responses from all three data categories to Question 10/7 Item 1.3: Maintenance of water features

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	33.33	5.56	61.11
Public sector: Central Government Departments	2	0	50	50
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	21.43	25	53.57
CONTRACTORS				
Architectural (building) contractors	8	0	0	100
Civil engineering works contractors	12	0	8.33	91.67
Landscape and/or environment related works contractors	25	4	4	92
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	2.08	4.17	93.75
CONSULTANTS				
Professional Project Managers	9	0	11.11	88.89
Professional Architects	15	0	6.67	93.33
Professional Landscape Architects	17	11.76	0	88.24
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	4	0	0	100
Environmental Consultants	3	0	0	100
Total N for category/weighted average	60	5	3.33	91.67
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	21.43	25	53.57
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	2.08	4.17	93.75
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	5	3.33	91.67
Total N/weighted average	136	7.35	8.09	84.56

4.4.10.4 Item 1.4: Liability for defects

A landscape maintenance contract should ideally be 12 months in duration to ensure that plants are maintained for at least one growing season.

In Table 4.4.10.4 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents (60.71% to 88.52%) in all three data categories agree with the given statement. The biggest disagreement with the statement comes from the central government departments (50%, although the two only respondents may not be sufficiently representative), and the private sector developers/owners (44.44%).

TABLE 4.4.10.4
Comparative responses from all three data categories to Question 10/7 Item 1.4: Duration of a landscape maintenance contract

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	44.44	0	55.56
Public sector: Central Government Departments	2	50	0	50
Public sector: Provincial Government Departments	3	33.33	33.33	33.33
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	0	100
Total N for category/weighted average	28	35.71	3.57	60.71
CONTRACTORS				
Architectural (building) contractors	8	0	0	100
Civil engineering works contractors	12	16.67	8.33	75
Landscape and/or environment related works contractors	25	16	0	84
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	12.5	2.08	85.42

CONSULTANTS				
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	15	6.67	6.67	86.67
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	0	0	100
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	8.2	3.28	88.52
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners	28	35.71	3.57	60.71
Public sector: Central, Provincial and Local Gov. Departments, Parastatal organisations				
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	12.5	2.08	85.42
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	8.2	3.28	88.52
Total N/weighted average	137	15.33	2.92	81.75

4.4.10.5 Item 1.5: Liability for defects

Landscaping and irrigation equipment are often very vulnerable to vandalism and theft - if provision is not made in the maintenance contract specifications and schedules of quantities (or a schedule of rates) for such incidences, these items do not normally get repaired or replaced.

In Table 4.4.10.5 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents (82.14% to 87.5%) in all three data categories agree with the given statement. The biggest disagreement with the statement (44.44%) comes from the professional project managers under the consultants' category.

TABLE 4.4.10.5
Comparative responses from all three data categories to Question 10/7 Item 1.5: Provision for replacement of landscape and irrigation equipment

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	5.56	5.56	88.89
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	3.57	14.29	82.14
CONTRACTORS				
Architectural (building) contractors	8	12.5	12.5	75
Civil engineering works contractors	12	16.67	8.33	75
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	8.33	4.17	87.5
CONSULTANTS				
Professional Project Managers	9	44.44	0	55.56
Professional Architects	15	13.33	6.67	80
Professional Landscape Architects	16	12.5	0	87.5
Professional Civil Engineers	8	0	0	100
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	4	0	0	100
Environmental Consultants	3	0	0	100
Total N for category/weighted average	59	13.56	1.69	84.75
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial & Local Gov. Departments, Parastatal organisations	28	3.57	14.29	82.14
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	8.33	4.17	87.5
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	59	13.56	1.69	84.75
Total N/weighted average	135	9.63	5.19	85.19

4.4.10.6 Item 2.1: Guarantees

If no provision has been made in the landscape subcontract specification for landscape maintenance to be done by the landscape subcontractor during or after the defects liability

period, the landscape subcontractor's construction guarantee to the main contractor should be released in a reasonable time after practical completion for the whole project has been certified and not only after the defects liability period has ended.

In Table 4.4.10.6 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents (67.86% to 83.61%) in all three data categories agree with the given statement. The biggest disagreement with the statement comes from the civil engineering works contractors (41.67%) and the architectural (building) contractors (37.5%) in the contractors' category.

TABLE 4.4.10.6
Comparative responses from all three data categories to Question 10/7 Item 2.1: Release of subcontractor's guarantee

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	-	33.33	66.67
Public sector: Central Government Departments	2	-	0	100
Public sector: Provincial Government Departments	3	-	100	0
Public sector: Local Government Departments	3	-	0	100
Parastatal organisations	2	-	0	100
Total N for category/weighted average	28	-	32.14	67.86
CONTRACTORS				
Architectural (building) contractors	8	37.5	0	62.5
Civil engineering works contractors	12	41.67	8.33	50
Landscape and/or environment related works contractors	25	0	0	100
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	16.67	2.08	81.25
CONSULTANTS				
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	15	20	0	80
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	5	20	0	80
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	14.75	1.64	83.61
COMPARISON BETWEEN THE THREE DATA CATEGORIES				

DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	-	32.14	67.86
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	16.67	2.08	81.25
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	14.75	1.64	83.61
Total N/weighted average	137	12.41	8.03	79.56

4.4.10.7 Item 2.2: Guarantees

A landscape construction guarantee cannot realistically be given and liability for the landscape installation cannot be accepted if there is no further maintenance contract between the employer and the landscape contractor.

In Table 4.4.10.7 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents (60.42% to 78.57%) in all three data categories agree with the given statement. In the developers/owners category the biggest disagreement with the statement comes from the central government departments (100%), although the two only respondents may not be sufficiently representative. In the contractors category the majority of building and civil engineering works contractors also do not agree with the statement. Significantly, 29.41% of the landscape architects also do not agree with the statement. The reason may be that some landscape architects believe the statement may reflect negatively on the quality and thoroughness of their works inspection during the construction phase.

TABLE 4.4.10.7
Comparative responses from all three data categories to Question 10/7 Item 2.2: Landscape construction guarantee

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	22.22	-	77.78
Public sector: Central Government Departments	2	100	-	0
Public sector: Provincial Government Departments	3	0	-	100
Public sector: Local Government Departments	3	0	-	100
Parastatal organisations	2	0	-	100
Total N for category/weighted average	28	21.43	-	78.57
CONTRACTORS				
Architectural (building) contractors	8	75	0	25
Civil engineering works contractors	12	58.33	8.33	33.33
Landscape and/or environment related works contractors	25	16	0	84
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	48	37.5	2.08	60.42
CONSULTANTS				
Professional Project Managers	9	22.22	-	77.78
Professional Architects	15	26.67	-	73.33
Professional Landscape Architects	17	29.41	-	70.59
Professional Civil Engineers	8	12.5	-	87.5
Professional Structural Engineers	1	100	-	0
Professional Electrical/Mechanical Engineers	3	33.33	-	66.67
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	33.33	-	66.67
Total N for category/weighted average	61	27.87	-	72.13
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	21.43	-	78.57
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	37.5	2.08	60.42
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	27.87	-	72.13
Total N/weighted average	137	29.93	0.73	69.34

4.4.10.8 Item 3.1: Completion

Other trades (e.g. electrical work) often only finish their work on the day before practical completion must be reached, and since the landscape work is usually the last trade to be completed, it often leaves the landscape subcontractor insufficient time to finish his/her work.

In Table 4.4.10.8 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents (75% to 85.42%) in all three data categories agree with the given statement. The biggest disagreement with the statement (37.5%) comes from the building construction works contractors and the civil engineering works contractors (25%); the reason might be that the building and civil engineering construction trades are most often the cause of the delays. Significantly, 94.12% of the landscape architects agree with the statement.

TABLE 4.4.10.8
Comparative responses from all three data categories to Question 10/7 Item 3.1: Achieving practical completion

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	0	50	50
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	33.33	66.67
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	7.14	17.86	75
CONTRACTORS				
Architectural (building) contractors	8	37.5	0	62.5
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	0	0	100
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	12.5	2.08	85.42

CONSULTANTS				
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	15	26.67	6.67	66.67
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	0	100	0
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	5	20	0	80
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	18.03	4.92	77.05
Comments	From a Project Manager: 'Landscape Contractors do not see themselves as part of a project, they prefer a separate contract after practical completion occurs'			
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners	28	7.14	17.86	75
Public sector: Central, Provincial and Local Gov. Departments, Parastatal organisations				
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	12.5	2.08	85.42
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	18.03	4.92	77.05
Total N/weighted average	137	13.87	6.57	79.56

4.4.10.9 Item 3.2: Completion

The possible severe financial implications for a main contractor on a project where only the landscape work is incomplete and delays the practical completion and where the monetary value of outstanding landscape work is small in comparison to the total project value or the penalties that will be applicable, often result in undue pressure on the landscape architect to accept incomplete work.

In Table 4.4.10.9 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in two categories (consultants, 74.14% and contractors, 70.83%) agree with the given statement. As a group, developers/owners are equally split between 'Do not agree' and 'Agree'. For the majority

of public sector developers this issue is not relevant, but significantly, 55.56% of the private sector developers/owners are in agreement.

TABLE 4.4.10.9
Comparative responses from all three data categories to Question 10/7 Item 3.2: Landscape delays in achieving practical completion

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	44.44	0	55.56
Public sector: Central Government Departments	2	50	50	0
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	33.33	66.67	0
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	35.71	28.57	35.71
CONTRACTORS				
Architectural (building) contractors	8	50	0	50
Civil engineering works contractors	12	50	8.33	41.67
Landscape and/or environment related works contractors	25	12	0	88
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	27.08	2.08	70.83
CONSULTANTS				
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	14	14.29	7.14	78.57
Professional Landscape Architects	16	25	0	75
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	4	50	0	50
Environmental Consultants	3	33.33	0	66.67
Total N for category/weighted average	58	22.41	3.45	74.14
Comments	From a Project Manager: In such cases he 'suggests a separate contract'			
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	35.71	28.57	35.71
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	27.08	2.08	70.83
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	58	22.41	3.45	74.14
Total N/weighted average	134	26.87	8.21	64.93

4.4.10.10 Item 3.3: Completion

The definition of the term 'practical completion' for building and construction work (typically: 'fit for use') is not really applicable in the case of landscape work.

In Table 4.4.10.10 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents per category in all three categories agree with the given statement, except for the majority of private sector developers (61.11%), building contractors (75%), project managers (55.56) and quantity surveyors (80%) who are in disagreement.

In Table 4.4.10.10 some respondents' comments are given. In the author's opinion the following reasons may be given for the disagreements:

- The fact that the landscaping on a typical construction project is often not essential for that facility to be utilised for its purpose, is perhaps not always appreciated by private sector developers and project managers.
- Building contractors may fear that a delayed practical completion with regard to landscape subcontract work may negatively affect their performance in terms of the main contract.
- Quantity surveyors may feel that a delay in or extension of only the landscape subcontract's practical completion is not allowed for in the typical forms of contract currently in use and as such may prefer a single 'fit all' definition of practical completion.

This issue is further addressed in the conclusions and recommendations in Chapter 5.

TABLE 4.4.10.10
Comparative responses from all three data categories to Question 10/7 Item 3.3: Definition of practical completion

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	61.11	-	38.89
Public sector: Central Government Departments	2	50	-	50
Public sector: Provincial Government Departments	3	0	-	100
Public sector: Local Government Departments	3	0	-	100
Parastatal organisations	2	0	-	100
Total N for category/weighted average	28	42.86	-	57.14
CONTRACTORS				
Architectural (building) contractors	8	75	0	25
Civil engineering works contractors	12	16.67	25	58.33
Landscape and/or environment related works contractors	25	20	8	72
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	48	29.17	10.42	60.42
CONSULTANTS				
Professional Project Managers	9	55.56	0	44.44
Professional Architects	15	0	0	100
Professional Landscape Architects	17	23.53	11.76	64.71
Professional Civil Engineers	8	37.5	12.5	50
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	80	0	20
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	27.87	4.92	67.21
Comments	From an Environmental Consultant: Practical Completion could be defined as 'Acceptable cover'. From a Landscape Architect: 'A principle for Practical Completion: A percentage (e.g. 80%) could be used to define an acceptable stage for Practical Completion'			
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	42.86	-	57.14
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	29.17	10.42	60.42
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	27.87	4.92	67.21
Total N/weighted average	137	31.39	5.84	62.77

4.4.10.11 Item 3.4: Completion

Provision should be made for a non-penalty carrying and cost disbursing extension of a landscape (sub)contract in cases where delays to the completion of a project, for any reason not attributable to the landscape (sub)contractor, extend the completion date into a 'non-growing season' or a season where the specified plant material, e.g. green instant lawn, is not commercially available.

In Table 4.4.10.11 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in all three categories (developers: 57.14%. contractors: 81.25% and consultants: 91.67%) agree with the given statement. For the majority of public sector developers this issue is not relevant, but significantly 72.22% of the private sector developers/owners are in agreement

TABLE 4.4.10.11
Comparative responses from all three data categories to Question 10/7 Item 3.4: Extension of the landscape (sub)contract

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	16.67	11.11	72.22
Public sector: Central Government Departments	2	0	100	0
Public sector: Provincial Government Departments	3	33.33	66.67	0
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	14.29	28.57	57.14
CONTRACTORS				
Architectural (building) contractors	8	50	0	50
Civil engineering works contractors	12	0	8.33	91.67
Landscape and/or environment related works contractors	25	8	4	88
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	48	14.58	4.17	81.25

CONSULTANTS				
Professional Project Managers	9	0	-	100
Professional Architects	14	7.14	-	92.86
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	8	0	-	100
Professional Structural Engineers	1	100	-	0
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	0	-	100
Total N for category/weighted average	60	8.33	-	91.67
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners	28	14.29	28.57	57.14
Public sector: Central, Provincial and Local Government Departments, Parastatal organisations				
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	14.58	4.17	81.25
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	8.33	-	91.67
Total N/weighted average	136	11.76	7.35	80.88

4.4.10.12 Item 3.5: Completion

Delays to the finalisation of the contract's final account could occur in cases where a 3-month landscape maintenance period (to coincide with the 90-day defects liability period of the main contract), is included in the landscape subcontract and which will require additional monthly maintenance payment certificates through the main contractor.

In Table 4.4.10.12 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in all three categories (developers/owners: 50%, contractors: 72.92% and consultants: 81.67%) agree with the given statement. For the majority of public sector developers this issue is not relevant, but significantly 72.22% of the private sector

developers/owners are in agreement. 62.5% of building contractors disagree with the statement.

TABLE 4.4.10.12
Comparative responses from all three data categories to Question 10/7 Item 3.5: Landscape maintenance as part of the landscape subcontract

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	5.56	22.22	72.22
Public sector: Central Government Departments	2	0	100	0
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	66.67	33.33
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	3.57	46.43	50
CONTRACTORS				
Architectural (building) contractors	8	62.5	0	37.5
Civil engineering works contractors	12	33.33	8.33	58.33
Landscape and/or environment related works contractors	25	8	4	88
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	22.92	4.17	72.92
CONSULTANTS				
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	14	0	0	100
Professional Landscape Architects	17	11.76	5.88	82.35
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	5	20	0	80
Environmental Consultants	3	0	0	100
Total N for category/weighted average	60	15	3.33	81.67
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	3.57	46.43	50
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	22.92	4.17	72.92
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	15	3.33	81.67
Total N/weighted average	136	15.44	12.5	72.06

4.4.10.13 Item 4.1: Professional liability

The landscape architect cannot accept professional liability for the successful performance of the landscape if the employer decides not to appoint the landscape contractor for an extended landscape maintenance period as well as appointing the landscape architect to inspect such maintenance.

In Table 4.4.10.13 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents in all three categories (85% to 92.59%) agree with the given statement. Seen against these responses, the question could be asked why the landscape architects' standard conditions of appointment (the South African Council for the Landscape Architectural Profession's (SACLAP) Employer/Landscape Architect Agreement) do not make provision for the abrogation of these liabilities.

TABLE 4.4.10.13
Comparative responses from all three data categories to Question 10/7 Item 4.1: Professional liability of the landscape architect

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	17	5.88	5.88	88.24
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	0	100
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	0	100
Total N for category/weighted average	27	3.7	3.7	92.59
CONTRACTORS				
Architectural (building) contractors	8	25	0	75
Civil engineering works contractors	12	16.67	8.33	75
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total N for category/weighted average	48	10.42	2.08	87.5

CONSULTANTS				
Professional Project Managers	9	22.22	0	77.78
Professional Architects	14	14.29	7.14	78.57
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	0	12.5	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total N for category/weighted average	60	11.67	3.33	85
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	27	3.7	3.7	92.59
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	10.42	2.08	87.5
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	11.67	3.33	85
Total N/weighted average	135	9.63	2.96	87.41

4.4.10.14 Item 5.1: Delays

There is often very little or no programme float left for the landscape work since it is usually the last trade to be completed on a contract.

In Table 4.4.10.14 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in all three categories (developers/owners: 67.86%, contractors: 79.17% and consultants: 81.67%) agree with the given statement. For the majority of public sector developers this issue is not relevant but significantly 88.89% of the private sector developers/owners are in agreement. Also significant is the 55.56% agreement from professional project managers, despite the fact that they normally undertake the programming and

monitoring of the work in terms thereof and as such should be aware of this commonly occurring problem.

TABLE 4.4.10.14
Comparative responses from all three data categories to Question 10/7 Item 5.1: Programme float for landscape work

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	50	0	50
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	100	0
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	10.71	21.43	67.86
CONTRACTORS				
Architectural (building) contractors	8	50	-	50
Civil engineering works contractors	12	33.33	-	66.67
Landscape and/or environment related works contractors	25	4	-	96
Mining works contractors	3	33.33	-	66.67
Total N for category/weighted average	48	20.83	-	79.17
CONSULTANTS				
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	14	0	7.14	92.86
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	12.5	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total N for category/weighted average	60	13.33	5	81.67
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	10.71	21.43	67.86
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	20.83	-	79.17
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	13.33	5	81.67
Total N/weighted average	136	15.44	6.62	77.94

4.4.10.15 Item 5.2: Delays

The main contractor will often use the period allocated for landscape works to soak up delays caused by other works to the disadvantage of the landscape subcontractor, often forcing him to complete his work in unrealistic time and site circumstances.

In Table 4.4.10.15 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in all three categories (developers/owners: 67.86%, contractors: 81.25% and consultants: 81.67%) agree with the given statement. For the majority of public sector developers/owners this issue is not relevant. It is significant that 94.12% of the landscape architect respondents and 96% of landscape contractor respondents are in agreement. It is also interesting that the majority of contractors agree with statement; it may be construed as an acknowledgement by them of this unfortunate but common practice.

TABLE 4.4.10.15
Comparative responses from all three data categories to Question 10/7 Item 5.2: Impact on the landscape subcontractor of delays caused by other works

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	50	0	50
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	100	0
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	10.71	21.43	67.86
CONTRACTORS				
Architectural (building) contractors	8	50	-	50
Civil engineering works contractors	12	25	-	75
Landscape and/or environment related works contractors	25	4	-	96
Mining works contractors	3	33.33	-	66.67

Total N for category/weighted average		48	18.75	-	81.25
CONSULTANTS					
Professional Project Managers		9	22.22	11.11	66.67
Professional Architects		14	0	7.14	92.86
Professional Landscape Architects		17	5.88	0	94.12
Professional Civil Engineers		8	25	0	75
Professional Structural Engineers		1	100	0	0
Professional Electrical/Mechanical Engineers		3	0	0	100
Professional Quantity Surveyors		5	40	0	60
Environmental Consultants		3	33.33	0	66.67
Total N for category/weighted average		60	15	3.33	81.67
Comments	From a Project Manager: 'Whilst agreeing with statement, it often depends on the Project Manager's acceptance of the (main) contractor's programme'				
COMPARISON BETWEEN THE THREE DATA CATEGORIES					
DEVELOPERS/OWNERS					
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations		28	10.71	21.43	67.86
CONTRACTORS					
Building, Civil engineering, Landscape and Mining works contractors		48	18.75	-	81.25
CONSULTANTS					
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants		60	15	3.33	81.67
Total N/weighted average		136	15.44	5.88	78.68

4.4.10.16 Item 6.1: Access to works

Unrealistic landscape subcontract periods are often the result of inaccessibility of areas to be landscaped by the landscape subcontractor.

In Table 4.4.10.16 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen, on average the majority of respondents in all three categories agree with the given statement, although for the majority of public sector or parastatal developers/owners the issue is largely irrelevant. The parties directly involved with this issue, i.e. the landscape architects (94.12%) and the landscape contractors (100%) overwhelmingly agree with the statement. It is again interesting that the majority of contractors agree with statement; it may be

construed as an acknowledgement by them of this unfortunate but common contractual situation.

TABLE 4.4.10.16
Comparative responses from all three data categories to Question 10/7 Item 6.1: Accessibility of areas to be landscaped

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	5.56	0	94.44
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	100	0
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	3.57	21.43	75
CONTRACTORS				
Architectural (building) contractors	8	12.5	12.5	75
Civil engineering works contractors	12	8.33	0	91.67
Landscape and/or environment related works contractors	25	0	0	100
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	48	6.25	2.08	91.67
CONSULTANTS				
Professional Project Managers	9	0	11.11	88.89
Professional Architects	15	6.67	0	93.33
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	33.33	0	66.67
Total N for category/weighted average	61	13.11	1.64	85.25
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	3.57	21.43	75
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	6.25	2.08	91.67
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	13.11	1.64	85.25
Total N/weighted average	137	8.76	5.84	85.4

4.4.10.17 Item 6.2: Access to works

In cases where the landscape sub-contractor has to complete his/her work in areas already in use by the employer, issues such as works risk and public liability insurance become problematic.

In Table 4.4.10.17 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in all three categories agree with the given statement, although for some public sector or parastatal developers/owners the issue is largely irrelevant. Significantly, in the consultants category the majority of project managers and quantity surveyors disagree with the statement.

TABLE 4.4.10.17
Comparative responses from all three data categories to Question 10/7 Item 6.2: Risks involved in working in areas already occupied by the employer

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	27.78	0	72.22
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	33.33	0	66.67
Public sector: Local Government Departments	3	0	66.67	33.33
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	21.43	14.29	64.29
CONTRACTORS				
Architectural (building) contractors	8	50	0	50
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	0	4	96
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	48	16.67	4.17	79.17

CONSULTANTS				
Professional Project Managers	9	44.44	22.22	33.33
Professional Architects	14	21.43	0	78.57
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	12.5	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	60	0	40
Environmental Consultants	3	0	0	100
Total N for category/weighted average	60	21.67	5	73.33
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	21.43	14.29	64.29
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	48	16.67	4.17	79.17
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	21.67	5	73.33
Total N/weighted average	136	19.85	6.62	73.53

4.4.10.18 Item 6.3: Access to works

A comprehensive definition is needed of what constitutes an area to be 'suitable for handover to the landscape subcontractor to install the landscape work'.

In Table 4.4.10.18 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents in all three data categories (85.42% to 93.22%) agree with the given statement.

TABLE 4.4.10.18
Comparative responses from all three data categories to Question 10/7 Item 6.3: Definition of an area suitable for handover to a landscape subcontractor

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPER/OWNER				
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	0	100
Public sector: Local Government Departments	3	0	66.67	33.33
Parastatal organisations	2	0	0	100
Total N for category/weighted average	28	7.14	7.14	85.71
CONTRACTORS				
Architectural (building) contractors	8	12.5	12.5	75
Civil engineering works contractors	12	16.67	16.67	66.67
Landscape and/or environment related works contractors	25	0	0	100-
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	48	8.33	6.25	85.42
CONSULTANTS				
Professional Project Managers	9	0	-	100
Professional Architects	14	7.14	-	92.86
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	7	0	-	100
Professional Structural Engineers	1	0	-	100
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	0	-	100
Total N for category/weighted average	59	6.78	-	93.22
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	7.14	7.14	85.71
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	48	8.33	6.25	85.42
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	59	6.78	-	93.22
Total N/weighted average	135	7.41	3.7	88.89

4.4.10.19 Item 7.1: Termination of the landscape installation & start of the subsequent landscape maintenance

It is in both contracting parties' (employer and main contractor) interest to have a mandatory landscape maintenance contract (of say 3 to 12 months duration) as a separate, direct contract between the employer and the landscape (sub)contractor who installed the landscape for all the reasons given under Items 1 & 2 above.

In Table 4.4.10.19 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the overwhelming majority of respondents in all three data categories (developers/owners: 78.57%, contractors: 82.98% and consultants: 95%) agree with the given statement. For some public sector and parastatal developers/owners the issue is irrelevant, but very significantly, 94.44% of private sector developers and 92% of landscape contractors are in agreement. The question may well be asked why then is the practice of a mandatory landscape maintenance contract between an employer and the landscape contractor not more widespread or common?

This aspect is further addressed in the conclusions and recommendations in Chapter 5

TABLE 4.4.10.19
Comparative responses from all three data categories to Question 10/7 Item 7.1: Mandatory landscape maintenance contracts

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	5.56	0	94.44
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	66.67	33.33
Public sector: Local Government Departments	3	0	33.33	66.67
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	3.57	17.86	78.57
CONTRACTORS				
Architectural (building) contractors	7	28.57	0	71.43
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	8	0	92
Mining works contractors	3	0	0	100
Total N for category/weighted average	47	14.89	2.13	82.98
Comments	<p>From a landscape contractor: 'It is difficult to define landscape installation 'completion' and the start of maintenance; also the problems/snags are usually between the main contractor and the landscape sub-contractor. The employer will become encumbered with irreconcilable issues'. 'Not necessary to be the same landscaper, who is often not geared toward maintenance work'</p>			
CONSULTANTS				
Professional Project Managers	9	11.11	-	88.89
Professional Architects	15	0	-	100
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	8	12.5	-	87.5
Professional Structural Engineers	1	0	-	100
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	4	0	-	100
Environmental Consultants	3	0	-	100
Total N for category/weighted average	60	5	-	95
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	3.57	17.86	78.57
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	47	14.89	2.13	82.98
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	5	-	95
Total N/weighted average	135	8.15	4.44	87.41

4.4.10.20 Item 8.1: General contractual issues

Landscaping is often a popular target when project budget cuts are considered because the landscape budget probably has not been expended at that point in time.

In Table 4.4.10.20 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in two data categories (contractors: 95.74% and consultants: 78.69%) agree with the given statement. Private and public sector and parastatal developers/owners all disagree with the statement. The question may well be asked why this disparity between developers on the one side and contractors/consultants on the other when all are working together as the three parties on the same contracts? The difference in responses between developers (28.57% agreement) and contractors (95.74% agreement) also raises some interesting questions.

TABLE 4.4.10.20
Comparative responses from all three data categories to Question 10/7 Item 8.1: Reducing landscape construction budgets during construction

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	61.11	-	38.89
Public sector: Central Government Departments	2	100	-	0
Public sector: Provincial Government Departments	3	100	-	0
Public sector: Local Government Departments	3	66.67	-	33.33
Parastatal organisations	2	100	-	0
Total N for category/weighted average	28	71.43	-	28.57
CONTRACTORS				
Architectural (building) contractors	7	14.29	-	85.71
Civil engineering works contractors	12	0	-	100
Landscape and/or environment related works contractors	25	4	-	96
Mining works contractors	3	0	-	100

Total N for category/weighted average	47	4.26	-	95.74
CONSULTANTS				
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	15	20	0	80
Professional Landscape Architects	17	0	0	100
Professional Civil Engineers	8	25	12.5	62.5
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	18.03	3.28	78.69
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	71.43	-	28.57
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	47	4.26	-	95.74
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	18.03	3.28	78.69
Total N/weighted average	136	24.26	1.47	74.26

4.4.10.21 Item 8.2: General contractual issues

Landscaping is often a popular target when project budget cuts are considered because landscaping is often considered as non-essential.

In Table 4.4.10.21 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in two data categories (contractors: 76.6% and consultants, 78.69%) agree with the given statement. Private and public sector and parastatal developers/owners (79.31%) as well as building contractors (57.14%) disagree with the statement. The question may again well be asked why this disparity between developers on the one side and contractors/consultants on the other when all are working together as the three parties on the same

contracts? The difference in the 'agree' responses between developers (20.69%) and contractors (76.6%) again raises some interesting questions.

TABLE 4.4.10.21
Comparative responses from all three data categories to Question 10/7 Item 8.2: Reducing landscape construction budgets during the planning stage

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	72.22	-	27.78
Public sector: Central Government Departments	2	100	-	0
Public sector: Provincial Government Departments	3	100	-	0
Public sector: Local Government Departments	4	75	-	25
Parastatal organisations	2	100	-	0
Total N for category/weighted average	29	79.31	-	20.69
CONTRACTORS				
Architectural (building) contractors	7	57.14	-	42.86
Civil engineering works contractors	12	33.33	-	66.67
Landscape and/or environment related works contractors	25	12	-	88
Mining works contractors	3	0	-	100
Total N for category/weighted average	47	23.4	-	76.6
CONSULTANTS				
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	15	20	0	80
Professional Landscape Architects	17	11.76	0	88.24
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	19.67	1.64	78.69
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	29	79.31	-	20.69
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	47	23.4	-	76.6
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	19.67	1.64	78.69
Total N/weighted average	137	33.58	0.73	65.69

4.4.10.22 Item 8.3: General contractual issues

If, for whatever reason, the long-term landscape maintenance contractor is different from the person who installed the landscape, it is often difficult for the landscape maintenance contractor to define/calculate the risks associated with the maintenance contract, such as the responsibility for live plant material and systems (e.g. irrigation installations) inherited from the landscape installation contractor.

In Table 4.4.10.22 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in all three data categories (developers/owner: 53.57%, contractors: 65.96% and consultants: 78.33%) agree with the given statement. The majority of Central and Provincial Government Departments disagree with the statement, whereas the majority of private sector developers (66.67%) are in agreement. It is also significant that 72% of landscape contractors and 82.35% of landscape architects agree with the statement.

TABLE 4.4.10.22
Comparative responses from all three data categories to Question 10/7 Item 8.3: Risks to a landscape maintenance contractor if different from the landscape installation contractor

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	22.22	11.11	66.67
Public sector: Central Government Departments	2	100	0	0
Public sector: Provincial Government Departments	3	66.67	33.33	0
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	100	0
Total N for category/weighted average	28	28.57	17.86	53.57

CONTRACTORS				
Architectural (building) contractors	7	42.86	0	57.14
Civil engineering works contractors	12	25	16.67	58.33
Landscape and/or environment related works contractors	25	28	0	72
Mining works contractors	3	33.33	0	66.67
Total N for category/weighted average	47	29.79	4.26	65.96
CONSULTANTS				
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	15	0	0	100
Professional Landscape Architects	17	17.65	0	82.35
Professional Civil Engineers	8	37.5	0	62.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	4	25	0	75
Environmental Consultants	3	33.33	0	66.67
Total N for category/weighted average	60	20	1.67	78.33
Comments	From a landscape architect: 'I believe that if the contractor has a good background in horticulture training, s/he would be able to establish the health of the plants and therefore the 'risk' attached to the maintenance period'			
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners	28	28.57	17.86	53.57
Public sector: Central, Provincial and Local Government Depts., Parastatal organisations				
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	47	29.79	4.26	65.96
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	60	20	1.67	78.33
Total N/weighted average	135	25.19	5.93	68.89

4.4.10.23 Item 8.4: General contractual issues

Plant material sourcing and availability is a common issue of concern. A landscape contractor/subcontractor often tenders for the specified plant material at a certain price at tender stage, but when the date arrives to deliver (and which date may have been extended due to delays not of his/her making), he/she might find that that the plant material is not available any more, or is only available at a higher price because of seasonal availability or otherwise, and he/she now wants to substitute the specified plants with other species.

In Table 4.4.10.23 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in two data categories (contractors: 78.72% and consultants, 83.61%) agree with the given statement. For the majority of developers this issue is not applicable. The majority of building contractors (57.14%) disagree with the statement. It is significant that 92% of landscape contractors and 94.12% of landscape architects agree with the statement; this perhaps resulting in the final product, i.e. the completed landscape installation, often not being that which was envisaged during the design stage.

TABLE 4.4.10.23
Comparative responses from all three data categories to Question 10/7 Item 8.4: Plant material availability

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	5.56	55.56	38.89
Public sector: Central Government Departments	2	0	100	0
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	50	50
Total N for category/weighted average	28	3.57	57.14	39.29
CONTRACTORS				
Architectural (building) contractors	7	57.14	0	42.86
Civil engineering works contractors	12	0	33.33	66.67
Landscape and/or environment related works contractors	25	8	0	92
Mining works contractors	3	0	0	100
Total N for category/weighted average	47	12.77	8.51	78.72
CONSULTANTS				
Professional Project Managers	9	11.11	0	88.89
Professional Architects	15	13.33	13.33	73.34
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	0	0	100
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	60	0	40
Environmental Consultants	3	0	0	100
Total N for category/weighted average	61	13.11	3.28	83.61
Comments	From a project manager: 'Contractors often suggest plant changes to suit availability and budget constraints'. From an environmental consultant: 'Landscape architect should allow for availability and have an alternate species list, i.e. 'Plan B'			
COMPARISON BETWEEN THE THREE DATA CATEGORIES				

DEVELOPERS/OWNERS Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	3.57	57.14	39.29
CONTRACTORS Building, Civil engineering, Landscape and Mining works contractors	47	12.77	8.51	78.72
CONSULTANTS Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	61	13.11	3.28	83.61
Total N/weighted average	136	11.03	16.18	72.79

4.4.10.24 Item 8.5: General contractual issues

The landscape architect cannot guarantee plant availability ahead of time unless a growing contract or other arrangement is made beforehand.

In Table 4.4.10.24 hereafter, the responses from all three data categories as well as a comparison between the data categories are shown. As may be seen the majority of respondents in two data categories (contractors: 80.85% and consultants, 91.38%) agree with the given statement. For the majority of developers this issue is not applicable, although 44.44% of private sector developers/owners agree with the statement.

TABLE 4.4.10.24
Comparative responses from all three data categories to Question 10/7 Item 8.5: Plant material availability and growing contracts

CATEGORY	N	%		
		Do not agree	Not applicable or relevant	Agree
DEVELOPERS/OWNERS				
Private sector Developers/Owners	18	5.56	50	44.44
Public sector: Central Government Departments	2	0	50	50
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	0	100
Parastatal organisations	2	0	50	50
Total N for category/weighted average	28	3.57	50	46.43
CONTRACTORS				
Architectural (building) contractors	7	42.86	0	57.14
Civil engineering works contractors	12	16.67	25	58.33
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total N for category/weighted average	47	12.77	6.38	80.85
CONSULTANTS				
Professional Project Managers	9	0	-	100
Professional Architects	14	0	-	100
Professional Landscape Architects	15	13.33	-	86.67
Professional Civil Engineers	8	0	-	100
Professional Structural Engineers	1	100	-	0
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	0	-	100
Total N for category/weighted average	58	8.62	-	91.38
COMPARISON BETWEEN THE THREE DATA CATEGORIES				
DEVELOPERS/OWNERS				
Private sector Developers/Owners Public sector: Central, Provincial and Local Government Departments, Parastatal organisations	28	3.57	50	46.43
CONTRACTORS				
Building, Civil engineering, Landscape and Mining works contractors	47	12.77	6.38	80.85
CONSULTANTS				
Professional Project Managers, Architects, Landscape Architects, Civil, Structural, and Electrical/Mechanical Engineers, Quantity Surveyors and Environmental Consultants	58	8.62	-	91.38
Total N/weighted average	133	9.02	12.78	78.2

4.4.11 QUESTION 11 (Put to developers/owners) and QUESTION 8 (Put to contractors): Familiarity of consultants with landscape contract specific issues

From dealing with a professional consultant, e.g. a Project Manager, Engineer, or Landscape Architect, on contracts that include landscaping or environment related construction works, please indicate to what extent you agree with the statements given (below).

The purpose of this question was to determine from the two parties (developers and contractors) that normally deal with professional consultants on contracts or sub-contracts that include landscaping or environment related construction works if the responsible consultants are familiar with certain identified issues that are specific to the landscaping works and which could be problematic in the execution of such contracts. There are often projects such as civil engineering type works that include landscaping or landscape rehabilitation on which there are no professional landscape architects involved.

From the average responses by the respondents in the developers or owners category (Addendum A) to the statement: *the Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract*, it can be seen that all the respondents either often agree or agree for half the time. Only the two central government department respondents rarely agree. In the category of contractors (Addendum B), the majority of building contractors rarely agree with the statement whereas all the others on average agree on half the occasions.

From the average responses by the respondents in the developers or owners category (Addendum A) to the statement: *the Consultant is familiar with landscape/environment related work procedures, such*

as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods, it would seem that their average response is 'agree half the time'. Again only the two central government department respondents rarely agree. In the category of contractors (Addendum B), the majority of responses on average range evenly from 'rarely agree' to 'often agree', with only the majority of civil engineering works contractors agreeing half the time.

From the average responses by developers or owners (Addendum A) to the statement: *Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described* (in the paragraph) *above*, it can be seen that the majority of all the respondents, except the local government departments who 'often agree', 'agree half the time'. In the category of contractors (Addendum B), the majority of all the respondents 'agree half the time'.

From the average responses from the category of developers or owners (Addendum A) to the statement: *the Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material*, it can be seen that the majority of all the respondents, except the local government departments who 'often agree', 'agree half the time'. In the category of contractors (Addendum B), the majority of all the respondents 'agree half the time', except the mining works contractors who often agree.

From the average responses from developers or owners (Addendum A) to the statement: *the Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works*,

it can be concluded that the majority of all respondents 'agree half the time' with only the majority of private sector developers often agreeing. In the category of contractors (Addendum B), the majority of all the respondents 'agree half the time'.

4.4.12 QUESTION 9 (Put to contractors): The availability of specified plant material

How often on landscape contracts/subcontracts do you experience problems in sourcing the specified plant material in the required numbers or on the required dates?

The purpose of this question was to determine from the responses of specifically the landscape (sub)contractors, the validity of the perceived problem that the plant material specified by the consultants is often not available in the required numbers or on the required dates.

From the average responses from contractors (Addendum B), it can be seen that the majority of building contractors and civil engineering works contractors rarely encounter the stated problems with sourcing the plant material, whereas the decisive majority of landscape and mining works contractors often encounter this problem.

4.4.13 QUESTION 10 (Put to contractors): Alternative solutions to unavailable plant material

If you do sometimes experience problems in sourcing the specified plant material in the required numbers on specified dates, how often

would you recommend the following solutions to the landscape architect/consultant?

The purpose of this question was to determine, from the responses of specifically the landscape (sub)contractors, how often those contractors that do experience problems in sourcing the specified plant material in the required numbers or on the specified dates recommend the following solutions to the consultants:

- 1. Change the specified plant species to those that are available.*

From the responses from all the categories of contractors (Addendum B), it can be seen that the majority all often recommend this solution. 20% of the landscape and/or environment related works contractors however rarely recommend this solution.

- 2. Delay the implementation of the specific section of work until such time as the plant material becomes available, even if this means that the final completion date is extended.*

From the responses from all the categories of contractors (Addendum B), it can be seen that the majority in each category rarely recommend this solution. A significant portion of building contractors (50%) and landscape and/or environment related works contractors (40%) in fact never recommend this solution.

- 3. Exclude this specific section of the work from the contract if it is not considered essential, and perhaps have such work done during the maintenance period.*

From the responses from all the categories of contractors (Addendum B), it can be seen that the majority in each category rarely recommend this solution. A significant portion of building contractors (37.5%) and landscape and/or environment related works contractors (32%) in fact never recommend this solution.

4. *If time is not critical, enter into a growing / propagation contract.*

From the responses from all the categories of contractors (Addendum B), it can be seen that the majority in all categories, except building contractors, often recommend this solution. A significant portion of building works contractors (50%) rarely recommend this solution.

4.4.14 QUESTION 11 (Put to consultants): Recommendations to developers/owners to enter into landscape maintenance contracts

Please indicate how often you recommend to the Developer/Owner that he /she enter into a landscape maintenance contract with the landscape contractor who constructed the landscape or undertook the environmental work.

In assuming that the responses from consultants to their Question 10 Items 1.1, 1.2, 1.4, 2.1, 2.2, 4.1, 7.1 and 8.3 would confirm the need for a landscape maintenance contract between a developer and the landscape contractor who constructed the landscape or undertook the environmental work, the purpose of this question was then to determine how often, if at all, consultants recommend to developers that they enter into such maintenance contracts.

From the responses by consultants (Addendum C) it may be seen that the majority of project managers (66.67%) frequently make this

recommendation; most landscape architects (52.94%) always make this recommendation; civil engineers (50%) rarely make this recommendation; quantity surveyors are evenly split between 'rarely' and 'frequently', environmental consultants between 'rarely', 'frequently' and 'always', and architects between 'frequently' and 'always'.

4.5 Conclusions

From the responses to the survey and the resultant interpreted data, it is clear that most of the problematic landscape contractual issues identified in Chapters 2 and 3 have been confirmed.

This quantitative data can now be used in Chapter 5 to formulate recommendations and to draft a proposal for an addendum to the JBCC N/S Subcontract Agreement to cater for the specific requirements of landscape contracts.

Summary, conclusions and recommendations

5.1 Summary of the research

The research can be summarised as follows:

5.1.1 Chapter 1

Chapter 1 consists of the introduction to the study, the statement of the main and three sub-problems and the three hypotheses that were formulated in response to these sub-problems.

The delimitations of the study indicate the parameters within which it was conducted. Assumptions were made that still had to be supported by the research. Specific terms have been developed for use in this study and those were defined.

The goals and objectives of the study were stated, approaches to research methodology in general and specifically research methods appropriate to this study were investigated and lastly the importance of the study to the landscaping and broader construction industry in South Africa was explained.

5.1.2 Chapter 2

In Chapter 2 the landscape contractual environment and its history in South Africa were described. The CIDB's criteria for construction contracts were investigated and some of the problems resulting from the various numbers of "standard forms of construction contracts" in South Africa were identified.

The standard forms of contract used in South Africa and their suitability for landscape works were briefly discussed, but with emphasis on the JBCC's suite of contracts, as it was assumed that these are the most often used for landscape work.

The landscape contractual environment in selected countries was briefly analysed to identify relevant experience and potential indicators towards solutions or criteria for a South African context.

5.1.3 Chapter 3

In Chapter 3 the typical process of landscape contracting in South Africa was described in terms of landscaping and environment related works contracts that need to be undertaken before, during and after the main building or civil engineering contract.

Contractual criteria, requirements and pertinent issues for landscape contracts in respect of pre-main contract, in-main contract and post-main contract landscape and related environmental works were identified and extracted. In order to do so, construction contracts as such and landscape contract requirements in particular were analysed.

As in Chapter 2, the analysis focussed on the JBCC contract system.

5.1.4 Chapter 4

In Chapter 4 the process to obtain quantitative data by means of a survey questionnaire was described. The data that resulted from the analysis of standard forms of construction contract used in South Africa and internationally in respect of their suitability for landscape works in Chapter 2, with the contractual criteria identified in Chapter

3, and supported by the problematic contractual issues identified by the SALI/ILASA working group, enabled the development of a series of questions and statements that could be answered and verified by a survey amongst the various role players.

These questions and statements, as well as the assumptions that were made in Chapter 1, were then formalised in three survey questionnaires that were sent to developers/owners/employers, contractors and consultants with the view to validate such statements and assumptions and to generate information to base the recommendations on.

The responses from the surveys are presented in Addenda A, B and C. These responses were then collated and statistically analysed to provide data on their relative importance and relevance to landscape contracting. The data were also used to provide answers to the main and three sub-problems and to address the hypotheses in Chapter 5.

5.2 Findings and conclusions

The findings of the study, as stated hereafter, are presented in a format where they are related to the problem statements and resultant hypotheses, which are reiterated hereafter for easier reference.

The main problem statement, namely:

Problematic contractual issues in respect of pre-main contract, in-main contract and post-main contract landscape work arise when using the JBCC and other forms of contract documentation for landscaping and related environmental works in South Africa. There are important issues that are not sufficiently addressed in

these forms of contract that may require modifications to such contracts,

is addressed through each of the three sub-problems.

The results from the surveys conducted amongst the three parties involved in construction contracts (employers, contractors and professional consultants, refer in this instance to Item 4.4.1) indicate that the JBCC forms of contract are the most widely used forms of contract in South Africa for landscape and related works. The suitability of specifically the JBCC forms of contract and subcontract for landscaping and related environmental works are therefore discussed in more detail hereafter.

5.2.1 Pre-main contract landscape work

5.2.1.1 Sub-problem 1

What are the issues to be addressed in a contract between an employer and a landscape contractor for landscape or related environmental work to be undertaken on a project before the main construction contractor for that project has been appointed and where such landscape contractor may eventually be a subcontractor to the main contractor for the further execution of the landscape work, and how can they be resolved?

5.2.1.2 Hypothesis 1

From the above problem statement, Hypothesis 1 was formulated as follows:

It is hypothesized that an appropriate form of contract can be formulated to be used in conjunction with the JBCC contract system for situations where an employer requires landscape or related environmental work to be done by a landscape contractor,

who may eventually be a subcontractor to a building or civil works main contractor, before the latter has been appointed.

5.2.1.3 General findings

The following forms of contract can to some degree be considered suitable for landscape and related environmental work that have to be undertaken prior to a project requiring building and/or civil engineering construction works, on condition that the aspects identified in Section 3.2.2 and 3.2.3 are addressed in such forms of contract:

- The JBCC PBA.
- The JBCC MWA.
- The FIDIC Short Form of Contract.
- The NEC Engineering and Construction Short Contract.

5.2.1.4 Findings related specifically to the JBCC forms of contract

The JBCC MWA is considered to be the most suitable for pre-main contract landscape work, specifically for plant growing and conservation contracts, on condition that the following aspects are addressed in the contract (refer to Section 3.2):

- Transfer of ownership of the contract-grown or the rescued and relocated plant material at the termination of the pre-main contract to the in-main landscape contractor.
- Guarantees and/or defects liabilities for such plant material grown, relocated, conserved or replanted; which guarantees should cease on acceptance of the plant material by the in-main contract landscape (sub)contractor.
- Insurance of the plant material.

- Payment conditions (for the costs of procurement and plant growing/maintenance/handling costs).
- The exact description of the area (the “site”) over which the contractor is entitled to have freedom of operation, or any limitations on the use of the employer’s land.
- Responsibility for obtaining any permit that may be required from the relevant authorities for the removal, relocation, transport and possession of specified plant species, usually those that are threatened and have a Red Data classification.

Hypothesis 1 is therefore supported.

5.2.2 In-main contract landscape work

5.2.2.1 Sub-problem 2

Are the most often used forms of construction contract or subcontract, such as the JBCC, suitable to be used for landscape work during the construction of the main works and do these contracts provide for practical termination of the landscape subcontract at the start of the defects liability period during and after which landscape maintenance may be required?

5.2.2.2 Hypothesis 2

From the above problem statement, Hypothesis 2 was formulated as follows:

It is hypothesized that the extent of compatibility required between landscape subcontractual requirements and the JBCC N/S Subcontract Agreement provisions is sufficiently large to warrant a revision of or at least an appropriate addendum to the JBCC N/S Subcontract Agreement.

5.2.2.3 General findings

The following forms of contract and/or subcontract are to some degree suitable for landscape and related environmental work in cases where such works have to be undertaken during a building and/or civil engineering construction project, on condition that the aspects identified in Sections 3.1.7, 3.3.1 and 3.3.2 are addressed in such forms of contract:

- The JBCC N/S Subcontract Agreement.
- The JBCC MWA (for direct contracts between the employer and the landscape contractor).
- The GCC Agreement. (for direct contracts between the employer and the landscape contractor).
- The FIDIC Subcontract Agreement.
- The FIDIC Short Form of Contract (for direct contracts between the employer and the landscape contractor).
- The NEC Engineering and Construction Subcontract.
- The NEC Engineering and Construction Short Contract (for direct contracts between the employer and the landscape contractor).
- The JCLI Agreement for Landscape Works (February 2002 revision of the 1998 Edition).

The JCLI has developed forms of contract for landscape related works that are considered to be both comprehensive and equitable to all the parties to such contracts. Their system of contractually separating landscape construction from landscape maintenance is believed to reduce contractual risk to the employer and the contractor and many of this study's findings and recommendations are based on this point of departure.

5.2.2.4 Findings related specifically to the JBCC N/S Subcontract Agreement

The JBCC N/S Subcontract Agreement can be made suitable for use between the main contractor and the landscape subcontractor on condition that the following issues are addressed and agreed to beforehand:

- What constitutes practical and works completion in the case of the landscape subcontract?
- How can sections of the JBCC N/S Subcontract Agreement be terminated at such a stage and in such a manner that the landscape subcontractor can enter into and commence with a direct landscape maintenance contract (at least for the plants and irrigation system) with the employer as soon as works completion in terms of the JBCC PBA has been achieved?

The aspects to be considered in answering the latter question are the reduction or termination of sections of the subcontract construction guarantee, determining and settlement of the subcontract amount and transferring the landscape subcontractor's defects liability for planting and the irrigation system to a new landscape maintenance contract between the employer and landscape subcontractor.

Hypothesis 2 is therefore supported.

5.2.3 Post-main contract landscape work

5.2.3.1 Sub-problem 3

What are the problems encountered when using standard forms of construction contract, such as the JBCC, for landscape

maintenance work after the landscape installation subcontract of the main contract has reached final completion, and how can they be resolved?

5.2.3.2 Hypothesis 3

From the above problem statement, Hypothesis 3 was formulated as follows:

It is hypothesized that the requirements of a landscape maintenance contract, for use after the termination of the landscape installation (sub)contract, are sufficiently different from the standard forms of construction contract, such as the JBCC, to warrant either changes or addenda to those forms of contract.

5.2.3.3 General findings

The following forms of contract and/or subcontract are to some degree suitable for landscape and related environmental maintenance work to be undertaken after the building or civil engineering construction contracts have reached works or final completion:

- The JBCC MWA.
- The FIDIC Subcontract Agreement (on condition that the continued obligation by the principal contractor to the employer for such maintenance work has been duly assigned and ceded to the employer).
- The FIDIC Short Form of Contract.
- The NEC Engineering and Construction Short Contract.
- The NEC Term Services Contract, which was written specifically for the continued maintenance of mostly mechanical, electrical and hydraulic works but which could probably be adapted for landscape maintenance without affecting the essence and intent of the contract.

- The JCLI Agreement for Landscape Maintenance Works (February 2002 revision of the 1998 Edition).

As stated in Item 5.2.2.3 above, it is believed that the JCLI's system of contractually separating landscape construction from landscape maintenance (at least for the maintenance of the plants) to a large extent addresses Sub-problem 3 and as a result some of this study's findings and recommendations are based on this point of departure.

5.2.3.4 Findings related specifically to the JBCC forms of contract

The JBCC PBA or JBCC MWA can be made suitable for use as a landscape maintenance contract between the employer and the landscape contractor who installed the landscape as a subcontractor during the construction phase on condition that the following issues are addressed:

- Works risk (damages to the works) and the liability for works insurance; either carried by the employer or the landscape maintenance contractor.
- The provision of a performance guarantee by the contractor as opposed to the construction guarantee applicable during the construction phase.
- Penalties for unsatisfactory work; since the objective of landscape maintenance is to have a certain specified minimum standard of maintenance resulting in an acceptable or required appearance over a specified period. Maintenance work not achieving this appearance or performance level has to be penalised with a non-refundable deduction in the contract amount (refer also to Item 3.4.2 in this regard).
- The contract completion process as described in the JBCC documentation (refer to Figure 3.1) will need to be

modified since the practical, works and final completion stages as well as the 90 day defects liability period for the planting and irrigation system will not be applicable.

From the above it can be concluded that the requirements for a landscape maintenance contract differ sufficiently from that of standard forms of construction contracts to justify either changes or addenda to those forms of contract. Hypothesis 3 is therefore supported.

5.3 Recommendations based on the conclusions

From the findings and conclusions stated above, certain recommendations can be made. In the first instance these recommendations are made to authors of the various forms of contract used for landscape and related environmental works in South Africa.

Whereas the author does not presume to have sufficient knowledge of the various forms of contract to make recommendations in a format to be used directly in future revisions of or additions to these contracts, the intention is rather to make these authors aware of the identified aspects which should be addressed in order to make these forms of contract more suitable for landscape and environment related works. In some cases the recommendations could be accommodated by the rewording of existing contract clauses and in other cases new clauses or addenda could be added.

Since the study has proven that the JBCC forms of contract are the most widely used for landscape and environment related works in South Africa, the more specific recommendations are focussed thereon.

Where appropriate, possible practical implications of the conclusions have been identified and recommendations made accordingly.

Recommendations are also made for additional investigation of those aspects indirectly related to the problem and which were recognized during the study as worthy of further research.

5.3.1 An addendum to the JBCC N/S Subcontract Agreement titled: *“Specific conditions of subcontract for landscape and related works (SCSLW)”*

Instead of attempting to write a new contract format specifically aimed at landscaping and related environmental type works, which will be contrary to the recommendation of the CIDB to limit the number of contract formats for the construction industry in South Africa and which will most probably not be supported by the JBCC (Bold, 2006), it is rather recommended that an addendum to the JBCC N/S Subcontract Agreement be compiled that could be titled “Specific conditions of subcontract for landscape and related works ” (SCSLW). This approach is in line with the JBCC’s policy of compiling addenda to its standard forms of contract, such as the State Addendum to the JBCC PBA, to cover specific contractual aspects not dealt with in the “standard” contracts.

In Addendum E a draft proposal for the SCSLW is presented as a working document in any future discussions with the JBCC with the view to its further development for use as part of the JBCC suite of contract documents. The purpose of this addendum is to note the specific and unique issues pertinent in landscape and related works subcontracts that affect the roles, responsibilities and risks of the contracting parties and the employer’s agent(s).

These issues include:

5.3.1.1 Simultaneous landscape construction and maintenance tenders

Any in-main landscape subcontract should recognise in its intent and clauses that the installation of the landscape is the first of a two-part process and should allow for a smooth and practical transition from the landscape installation subcontract to the landscape maintenance of the planting and irrigation system.

It is recommended that the example of the UK's JCLI Standard Form of Agreement for Landscape Works be followed where it requires of the employer and his principal agent to take a decision at the time of preparing the tender documents whether the employer or the landscape subcontractor will be responsible for the maintenance of the landscape works, specifically the planting and associated irrigation system, after works completion or after the employer has taken possession of the works.

- **Option 1: Landscape maintenance by the employer**

In the first option the landscape subcontractor's responsibility for the planting and the associated irrigation system is terminated when the main contract reaches works completion and the subsequent landscape maintenance work is then undertaken by the employer.

In this instance the landscape subcontractor's responsibilities and obligations in terms of the subcontract will be limited to the remaining landscape subcontract works excluding planting and the associated irrigation system.

It is recommended that the landscape subcontractor should timeously advise the main contractor that he will be unable to guarantee the planting and associated irrigation system sections of the landscape subcontract works and to be responsible for defects in such sections of the works if no provisions have been made for landscape maintenance after works completion. At most the landscape subcontractor can give a guarantee or warranty on inanimate items such as electrical pumps, electronic irrigation controllers and accept defects liability for the “hard landscaping” items. Even in these cases there exists the possibility that breakages and failure could be ascribed to insufficient and unqualified maintenance by another party.

- **Option 2: Landscape maintenance by the landscape subcontractor**

In this instance a distinction is made between the inanimate (or “hard landscaping”) works items, such as pavings, masonry, timber and concrete structures, street furniture, water features, etc. on the one side and live components such as plant material and their associated irrigation systems on the other side at the works completion stage of the main contract. The maintenance of the latter could then be dealt with in a separate agreement between the employer and the landscape subcontractor (who now becomes a direct contractor), whereas the inanimate work items in the landscape subcontract are dealt with in the normal way in accordance with the JBCC N/S Subcontract Agreement conditions and procedures.

It will also be required of the landscape construction subcontract tenderer, at the time of tender, to provide a separate landscape maintenance tender to come into effect directly after works completion of the construction works for a period of at least twelve months to cover one complete growing and establishment cycle.

The tenderers should be made aware of the fact that although they will be tendering for two separate contracts, in evaluating the tenders the combined tender prices will be considered and that the successful tenderer will be appointed for both contracts.

5.3.1.2 Contractual issues to be addressed during and at the completion of the landscape construction stage in cases where *Option 1: Landscape maintenance by the employer* is followed

In cases where *Option 1: Landscape maintenance by the employer* is used, the following contractual issues become pertinent and should be addressed during the writing of the landscape subcontract:

- Termination of a section of the landscape subcontract:
It is recommended that the current JBCC works completion process (refer to Figure 3.1) be reconsidered in the case of a landscape subcontract to allow for a logical and practical process by which sections of it can be terminated on reaching works completion of the principal contract in order that the landscape subcontractor can enter into a landscape maintenance contract directly with the employer and which contract could extend past the defects liability period of the main and other subcontracts. Refer in this

instance to Figure 5.3 in which the proposed landscape contracting process is shown schematically.

- Cancellation of a part of the subcontract construction guarantee and adjusting the final account:
The cancellation of a part of the landscape subcontract construction guarantee and adjustment of the final account between the main contractor and the landscape subcontractor once works completion has been certified should be agreed on beforehand and described as such in the SCSLW. It serves little purpose for a main contractor to hold a construction guarantee or any form of retention for planting and the operation of the irrigation system on the landscape subcontractor if the latter has no obligation in terms of the landscape subcontract to maintain the landscape during the main contract's defects liability period.

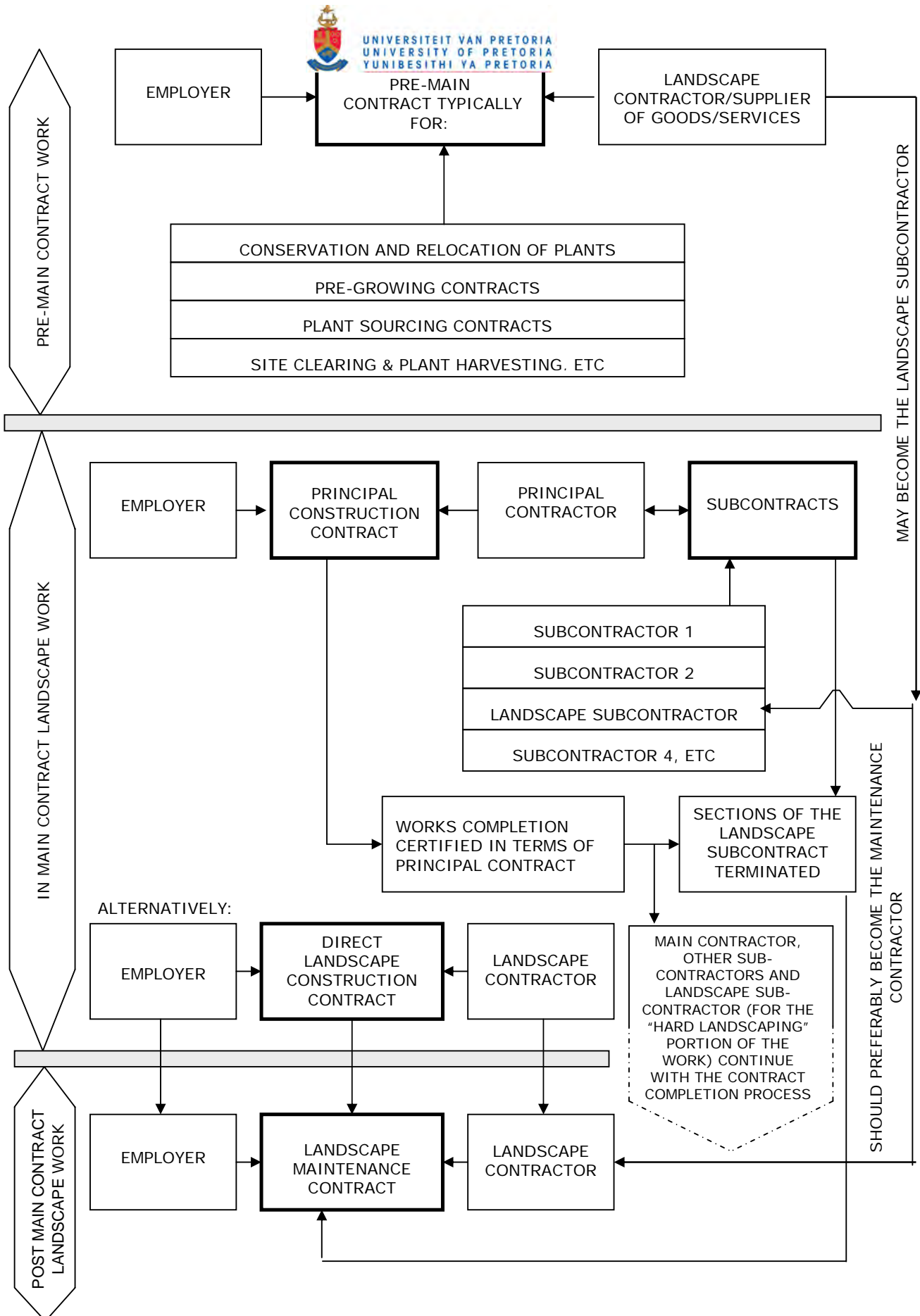


FIGURE 5.3 Proposed landscape contracting process

5.3.1.3 Contractual issues to be addressed during and at the completion of the landscape construction stage in cases where *Option 2: Landscape maintenance by the landscape subcontractor* is followed

In cases where *Option 2: Landscape maintenance by the landscape subcontractor* is used, the following contractual issues become pertinent and should be addressed during the writing of the landscape subcontract:

- The defects liability period:
The 90-day defects liability period in terms of the subcontract agreement will only be applicable to the landscape works not requiring maintenance, such as the “hard landscaping” works and should exclude planting and the associated irrigation system.
- Landscape maintenance during the defects liability period and thereafter:
Collens (1979:244) recommends that at the time of practical completion (author’s note: or works completion in the case of the JBCC N/S Subcontract Agreement), the site should be offered for inspection to the employer or his representative; so that a clear understanding is reached on the subcontractor’s responsibility for maintaining the landscape works.

If his contract calls for continued maintenance after works completion has been reached, then the start date is to be agreed at such inspection.

5.3.1.4 Watering

The JCLI (2002b: 4) confirms that the watering of plants prior to practical completion is the responsibility of the landscape (sub)contractor and recommends that in the works specification or the preliminaries, issues such as watering points, any temporary irrigation system, who pays for water, and liability for losses due to a lack of water availability should be clarified.

5.3.1.5 Frost damage

Severely cold winter weather conditions can cause considerable damage to plant material. The JCLI (2002b: 4) states that the (sub)contractor remains responsible for the replacement of plants that fail before practical completion due to weather conditions. If the (sub)contractor however feels that the plant losses are the result of incorrectly specified plants, i.e. species not frost resistant, he can probably successfully transfer the liability to the specifier/designer.

In cases where no provision has been made for landscape maintenance after works completion, it is suggested that the landscape subcontractor cannot be held responsible for the protection of plants from frost and be liable for losses due to frost. The only instance where the employer can claim compensation for frost damage is when it can be proven that the specified plants were inappropriate due to their known and accepted frost-tenderness. In such cases the employer will probably have a claim against the specifier/designer of the plant material.

5.3.1.6 Replacement plants

Carson (1992:52-53) finds that in cases where a twelve month landscape maintenance contract had been in place, that:

By the final completion of the contract plants which have failed to establish will normally have been replaced by ones equal to the original specification. In this situation the replacements will be a year behind the successful plants in terms of growth and they will still be vulnerable to the rigours of the establishment process. The client therefore takes over something less than should have been expected from the contract probably without any way of being compensated for that deficiency.

It is therefore recommended that provision be made in any landscape maintenance contract between the employer and the landscape contractor (refer to Option 2 above) for replacement plants, where practical, to be of current similar size to the others.

5.3.1.7 Landscape subcontractor claims

Loots (1995:586) defines a claim as the preparation and submission of a formal request under the provisions of the contract or under common law for additional time or money arising out of circumstances or events concerning the execution of the contract.

The survey conducted amongst landscape contractors has shown that all the respondents agree that inaccessibility to areas in which they have to perform their work, often caused by other trades not timeously completing their work in those areas, results in unrealistic landscape subcontract periods forced on the landscape subcontractor (refer to Addendum B Question 7 Item 6.1). Since the main contractor remains liable for the due

performance of his subcontractors and since he often cannot make a motivated claim for additional time or money where his own negligence has led to the delay now affecting the landscape subcontractor, it is a moot point if any such claim by the landscape subcontractor to the main contractor will ever be submitted for consideration by the principal or another agent such as the landscape architect.

In cases like this the landscape subcontractor will be well advised to keep a detailed site diary illustrated with photographic evidence of the areas due for handover to him on the specified date as motivation for any later claim.

Loots (1995:587) suggests that where claims are based upon time and entitlement to additional time, delay statements are extremely important documents.

They should be chronologically numbered, should state the cause of the delay, evaluate the delay, and record the effect on resources and the planned programme of completion;...

5.3.2 A redefinition of the term “practical completion” for landscaping works

The different forms of contract investigated in this study each have their own definition of and process required for reaching practical, works and final completion. It is not the author’s intention to compare these forms of contract in order to find a common definition and process, but rather to identify the stage where the works are handed over to the employer for his beneficial use, when the works risk is transferred back to the employer and when the contractor’s and subcontractors’ defects liability period commences.

It is therefore recommended that a more exact description of the term “practical completion” is needed in the case of landscape works. Collier (2001: 340) points out that a contract’s substantial or practical completion depends on completion to such a degree that the works, in whole or in part, can be occupied or otherwise utilised by the employer, despite the fact that there may remain certain items of work still to be completed. Landscape works, and specifically planting, are in very few instances critical to the use and occupancy of the facility, at most the later completion of the landscape work may result in some inconvenience for users of the facility and this can probably be properly managed by the main contractor.

The generally accepted definitions of practical completion, i.e. “fit for intended use” or as the JBCC (2005b:2) defines it as:

...the state of completion where, in the opinion of the principal agent, completion of the works has substantially been reached and can effectively be used for the purposes intended...

may thus not be totally applicable to landscape works and the following criteria and considerations may be applied by those responsible for deciding on practical or works completion:

- Does the works under consideration consist of animate (live plants) and inanimate components? If so, consider distinguishing between these; the completion of the inanimate components, i.e. the more traditional building trades such as concrete and masonry work, paving work, plumbing and electrical work may be considered essential for the beneficial occupation and use by the employer, whereas the completion of the planting installation (the animate components) may not be considered essential.
- Discretion in these matters should always lie with the principal or other agent (preferably the landscape architect) on condition that they understand the inherent differences between landscape work and the more traditional building

trades and are therefore also aware of the resultant implications on the contractual relationships between employer, main contractor and landscape subcontractor.

5.3.3 Comprehensive plant stock lists

From Chapter 4 Items 4.4.11, 4.4.12 and 4.4.13 which address issues dealing with plant specifications, plant availability (general or seasonal availability), it is recommended that a comprehensive national plant stock list be compiled and maintained by the organised nurseryman's trade (perhaps the South African Nurseryman's Association (SANA)) from which landscape architects and all other plant specifiers can confidently select plants in the knowledge that these plants are likely to be generally available in sufficient numbers from reputable nurserymen throughout the country.

Plants on such a national plant stock list will need to be described with regard to their size, container size and type, species conformation and conservation/invasive status in terms of the applicable legislation and accepted horticultural practice.

Landscape architects and other plant specifiers need to give guidance to nurserymen on the plant species and quantities that will be required well in advance, based on their own projected work load and trends in plant use, such as the increasing awareness and use of indigenous species.

5.3.4 The establishment of a South African Joint Council for Landscape Industries

It is recommended that a joint forum of role players in the landscape industry in South Africa be established, similar to the JCLI in the UK. In South Africa organisations such as ILASA, SALI, SANA, the Turf Irrigation Association, the Interior Plantscapers of South Africa and similar organisations could conceivably form such a “joint council”. Singleton (1988:13) suggests that such a neutral organisation that does not prejudice the independence of constituent members would be the most appropriate forum to discuss and agree to landscape contractual issues and to assist in the drafting of appropriate conditions of landscape contract.

An organisation called the South African Green Industries Council (SAGIC) representing the retail trade, nurseries, contractors and related manufacturers has been in existence for a number of years but their focus has to date not been on the drafting of appropriate conditions of contract for landscape works.

5.3.5 Representation on the JBCC

It is recommended that ILASA (through their Practice Committee) be granted representation on the JBCC and that SALI becomes a constituent member of an expanded “Specialist Contractors Committee” as an alternative to the current SECC (refer to Item 2.2.3.1).

5.4 Recommendations for further studies

As is stated in the title of the study: *The determination of pertinent contract document requirements for landscape projects in South Africa*, its focus was on those issues that relate directly to the agreements used in South Africa for landscape and related environmental work. In the survey questionnaires (refer to Chapter 4 and Addenda A, B and C), other related questions were put and issues raised that, whilst not having a direct bearing on the study's focus areas, nonetheless provided valuable data that put the landscape contracting industry in perspective and warrant further study.

The objectives of these questions are summarised in Table 4.2. The responses to the questions provided data on:

- The type of projects that contain landscape and related environmental works and the extent of such works.
- The extent of project capital costs that is used for landscaping and related environmental works for different project types.
- The extent of project operational costs that is used for landscape maintenance for different project types.
- Factors that may influence capital cost budgets for landscape and related environmental works.
- Factors that may influence operational cost budgets for landscape maintenance.
- The confirmation of various identified problematic issues that may affect the successful completion of landscape contracts.
- Problems experienced by mainly landscape contractors and landscape architects with the availability of plant material.
- The consultants' familiarity (or lack thereof) with pertinent issues of a typical landscape contract and the need for a landscape maintenance contract.

The markedly different responses to some of the questions by Developers, when compared to Contractors and Consultants, are interesting anomalies that warrant further studies. These include:

- The reasons why the majority of landscape architects are unfamiliar with the SALI contract (refer to Item 4.4.2).
- The reasons why the SACLAP Client/Landscape Architect Agreement does not make provision for the abrogation of the landscape architect's professional liability in cases where the client does not enter into an extended landscape maintenance agreement with the landscape installation contractor or does not appoint the landscape architect to inspect such maintenance (refer to Item 4.4.10.13).
- The reasons why the practice of a mandatory landscape maintenance contract between the employer and the landscape contractor is not more widespread, since the survey results indicate that the large majority of private sector developers, contractors and consultants agree that it should (refer to Item 4 4 10.19).
- The reasons why developers on the one hand and contractors and consultants on the other differ so markedly on the statement that landscaping is often a popular target when project budget cuts are considered (refer to Items 4.4.10.20 and 4 4 10.21).

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ADDENDUM A

Responses to the questionnaire sent to developers or owners of private and public sector building and engineering projects that include landscape and environment related works.

ADDENDUM B

Responses to the questionnaire sent to contractors of private and public sector building and engineering projects that include landscape and environment related works.

ADDENDUM C

Responses to the questionnaire sent to professional planning and design consultants responsible for building and engineering projects that include landscape and environment related works.

ADDENDUM D

List of Governmental and parastatal organisations to whom questionnaires were sent.

ADDENDUM E

Specific conditions of subcontract for landscape and related works (SCSLW) – An Addendum to the JBCC Nominated/Selected Subcontract Agreement ©.

ADDENDUM F

Covering letter accompanying the questionnaires.



ADDENDUM A

RESPONSES TO THE QUESTIONNAIRE SENT TO DEVELOPERS OR OWNERS OF PRIVATE AND PUBLIC SECTOR BUILDING AND ENGINEERING PROJECTS THAT INCLUDE LANDSCAPE AND ENVIRONMENT RELATED WORKS

QUESTION 1

Please indicate in which one of the categories listed below would you consider yourself.

Categories of Developers and/or owners		No. of respondents	%
1	Private sector Developers/Owners	18	62.06
2	Public sector: Central Government Departments	2	6.9
3	Public sector: Provincial Government Departments	3	10.35
4	Public sector: Local Government Departments	4	13.79
5	Para-statal organisations (e.g. Eskom, Iscor, ACSA, etc.)	2	6.9
Total		29	100%

QUESTION 2

In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed below?

Forms of contract	Mean % used (Standard deviation in brackets)					Average
	N=18	N=2	N=3	N=4	N=2	
	Private sector Developers/ Owners	Public sector: Central Government Departments	Public sector: Provincial Government Departments	Public sector: Local Government Departments	Para-statal organisations	
JBCC Principal Building Agreement	74.83 (23.48)	15 (21.21)	53.33 (15.28)	46.25 (32.5)	0 (0)	37.88
JBCC Nominated / Selected Subcontract Agreement	3.28 (11.85)	0 (0)	0 (0)	0 (0)	0 (0)	0.66
JBCC Minor Works Agreement	1.22 (4.71)	0 (0)	0 (0)	0 (0)	0 (0)	0.24
BIFSA Non-nominated (or "domestic") Subcontract Agreement	0.11 (0.47)	0 (0)	0 (0)	0 (0)	0 (0)	0.02
FIDIC "main contract" ("Red Book")	2.44 (5.88)	25 (35.36)	0 (0)	0 (0)	30 (14.14)	11.49
FIDIC Subcontract	0.5 (2.12)	0 (0)	0 (0)	0 (0)	0 (0)	0.1
FIDIC Short form of contract	0.11 (0.47)	0 (0)	0 (0)	0 (0)	0 (0)	0.02
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	14.94 (16.63)	25 (35.36)	36.67 (11.55)	21.25 (17.5)	50 (42.43)	29.57
COLTO (for Governmental Roads Agencies)	0.5 (2.12)	0 (0)	0 (0)	0 (0)	0 (0)	0.1
NEC (New Engineering Contract) ("Black Book")	1.06 (3.08)	0 (0)	0 (0)	0 (0)	20 (28.28)	4.21
NEC Engineering and construction subcontract	0.5 (2.12)	0 (0)	0 (0)	0 (0)	0 (0)	0.1
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	0.5 (2.12)	0 (0)	0 (0)	7.5 (9.57)	0 (0)	1.6
Other forms of contract listed vary from the PWD 677 standard contract, their own contract, or forms of contract used by Local Councils	- (-) N=0	70 (-) N=1	- (-) N=0	100 (-) N=1	- (-) N=0	-

QUESTION 3

To what extent would you prefer to use the forms of contract listed below for your projects that include landscaping and/or environment related construction works?

3.1 Private sector Developers/Owners

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	18	0	-	94.44	5.56
JBCC Nominated / Selected Subcontract Agreement	18	33.33	22.22	22.22	22.22
JBCC Minor Works Agreement	18	22.22	38.89	16.67	22.22
BIFSA Non-nominated (or "domestic") Subcontract Agreement	17	47.06	11.76	5.88	35.29
FIDIC "Main contract" ("Red Book")	17	11.76	11.76	17.65	58.82
FIDIC Subcontract	17	29.41	5.88	-	64.71
FIDIC Short form of contract	17	17.65	17.65	-	64.71
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	17	5.88	5.88	58.82	29.41
COLTO (for Governmental Roads Agencies)	17	11.76	0	5.88	82.35
NEC (New Engineering Contract)("Black Book")	17	11.76	-	11.76	76.47
NEC Engineering and construction subcontract	17	11.76	5.88	5.88	76.47
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	17	5.88	0	-	94.12
Other, please describe briefly:	0			-	

3.2 Public sector: Central Government Departments

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	2	0	-	50	50
JBCC Nominated / Selected Subcontract Agreement	2	50	0	0	50
JBCC Minor Works Agreement	2	0	50	0	50
BIFSA Non-nominated (or "domestic") Subcontract Agreement	2	50	0	0	50
FIDIC "Main contract" ("Red Book")	2	0	0	50	50
FIDIC Subcontract	2	50	0	-	50
FIDIC Short form of contract	2	0	50	-	50
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	2	0	0	50	50
COLTO (for Governmental Roads Agencies)	2	0	50	0	50
NEC (New Engineering Contract)("Black Book")	2	0	-	0	100
NEC Engineering and construction subcontract	2	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	2	0	0	-	100
Other, please describe briefly: PWD 677 Conditions of Contract	1			100	

3.3 Public sector: Provincial Government Departments

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	3	0	-	100	0
JBCC Nominated / Selected Subcontract Agreement	3	66.67	33.33	0	0
JBCC Minor Works Agreement	3	33.33	66.67	0	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	3	33.33	0	0	66.67
FIDIC "Main contract" ("Red Book")	3	0	33.33	33.33	33.33
FIDIC Subcontract	3	33.33	33.33	-	33.33
FIDIC Short form of contract	3	0	66.67	-	33.33
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	0	100	0
COLTO (for Governmental Roads Agencies)	3	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	3	0	-	0	100
NEC Engineering and construction subcontract	3	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	0	0	-	100
Other, please describe briefly:	0			-	

3.4 Public sector: Local Government Departments

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	3	0	-	100	0
JBCC Nominated / Selected Subcontract Agreement	3	66.67	33.33	0	0
JBCC Minor Works Agreement	3	0	100	0	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	3	66.67	0	0	33.33
FIDIC "Main contract" ("Red Book")	3	0	0	0	100
FIDIC Subcontract	3	0	0	-	100
FIDIC Short form of contract	3	0	0	-	100
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	0	100	0
COLTO (for Governmental Roads Agencies)	3	0	0	0	100
NEC (New Engineering Contract)("Black Book")	3	0	-	0	100
NEC Engineering and construction subcontract	3	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	0	66.67	-	33.33
Other forms of contract listed are Local Council Park Departments' own standard contract.	3			100	

3.5 Para-statal organisations

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	2	100	-	0	0
JBCC Nominated / Selected Subcontract Agreement	2	100	0	0	0
JBCC Minor Works Agreement	2	100	0	0	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	2	100	0	0	0
FIDIC "Main contract" ("Red Book")	2	0	0	100	0
FIDIC Subcontract	2	100	0	-	0
FIDIC Short form of contract	2	50	50	-	0
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	2	0	0	100	0
COLTO (for Governmental Roads Agencies)	2	0	0	0	100
NEC (New Engineering Contract)("Black Book")	2	0	-	50	50
NEC Engineering and construction subcontract	2	50	0	0	50
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	2	0	0	-	100
Other, please describe briefly: Organisation's own forms of contract	1			100	

QUESTION 4

Please indicate how suitable the forms of contract listed below are for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance.

4.1 Private sector Developers/Owners

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	18	5.56	33.33	61.11	0
JBCC Nominated / Selected Subcontract Agreement	17	23.53	29.41	29.41	17.65
JBCC Minor Works Agreement	17	17.65	41.18	29.41	11.76
BIFSA Non-nominated ("domestic") Subcontract Agreement	16	37.5	6.25	-	56.25
FIDIC "main contract" ("Red Book")	16	12.5	25	-	62.5
FIDIC Subcontract	16	18.75	12.5	-	68.75
FIDIC Short form of contract	16	6.25	25	-	68.75
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	17	5.88	23.53	35.29	35.29
COLTO (for Governmental Roads Agencies)	17	5.88	0	-	94.12
NEC (New Engineering Contract) ("Black Book")	17	5.88	5.88	-	88.24
NEC Engineering and construction subcontract	17	5.88	5.88	-	88.24
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	17	-	5.88	-	94.12
Other, please describe briefly:	0		-	-	

4.2 Public sector: Central Government Departments

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	2	0	50	0	50
JBCC Nominated / Selected Subcontract Agreement	2	50	0	0	50
JBCC Minor Works Agreement	2	0	50	0	50
BIFSA Non-nominated (or "domestic") Subcontract Agreement	2	50	0	-	50
FIDIC "main contract" ("Red Book")	2	50	50	-	0
FIDIC Subcontract	2	50	50	-	0
FIDIC Short form of contract	2	50	50	-	0
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	2	50	50	0	0
COLTO (for Governmental Roads Agencies)	2	0	50	-	50
NEC (New Engineering Contract) ("Black Book")	2	0	0	-	100
NEC Engineering and construction subcontract	2	0	0	-	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	2	-	0	-	100
Other, please describe briefly: PWD 677 Conditions of Contract	1		100	0	

4.3 Public sector: Provincial Government Departments

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	3	0	66.67	33.33	0
JBCC Nominated / Selected Subcontract Agreement	3	66.67	33.33	0	0
JBCC Minor Works Agreement	3	0	100	0	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	3	66.67	0	-	33.33
FIDIC "main contract" ("Red Book")	3	0	66.67	-	33.33
FIDIC Subcontract	3	33.33	33.33	-	33.33
FIDIC Short form of contract	3	0	66.67	-	33.33
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	66.67	33.33	0
COLTO (for Governmental Roads Agencies)	3	0	0	-	100
NEC (New Engineering Contract) ("Black Book")	3	0	0	-	100
NEC Engineering and construction subcontract	3	0	0	-	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	-	0	-	100
Other, please describe briefly:	0		-	-	

4.4 Public sector: Local Government Departments

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	3	0	100	0	0
JBCC Nominated / Selected Subcontract Agreement	3	66.67	33.33	0	0
JBCC Minor Works Agreement	3	0	100	0	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	3	100	0	-	0
FIDIC "main contract" ("Red Book")	3	0	0	-	100
FIDIC Subcontract	3	0	0	-	100
FIDIC Short form of contract	3	0	0	-	100
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	100	0	0
COLTO (for Governmental Roads Agencies)	3	0	0	-	100
NEC (New Engineering Contract) ("Black Book")	3	0	0	-	100
NEC Engineering and construction subcontract	3	0	0	-	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	-	33.33	-	66.67
Other forms of contract listed are Local Council Park Departments' own standard contract	3		33.33	66.67	

4.5 Para-statal organisations

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	2	100	0	0	0
JBCC Nominated / Selected Subcontract Agreement	2	100	0	0	0
JBCC Minor Works Agreement	2	100	0	0	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	2	100	0	-	0
FIDIC "main contract" ("Red Book")	2	0	100	-	0
FIDIC Subcontract	2	100	0	-	0
FIDIC Short form of contract	2	100	0	-	0
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	2	0	50	50	0
COLTO (for Governmental Roads Agencies)	2	50	0	-	50
NEC (New Engineering Contract) ("Black Book")	2	0	50	-	50
NEC Engineering and construction subcontract	2	50	0	-	50
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	2	-	0	-	100
Other, please describe briefly: Organisation's own forms of contract	1		100	0	

QUESTION 5

What percentages, on average over a 5-year period, of your construction projects that include landscaping and/or environment related construction works, fall under the categories listed below?

Type of construction project	Mean % of the projects undertaken over an average 5 year period (Standard deviation in brackets)				
	N=18	N=2	N=3	N=4	N=2
	Private sector Developers/Owners	Public sector: Central Government Departments	Public sector: Provincial Government Departments	Public sector: Local Government Departments	Para-statal organisations
Commercial / retail, e.g. shopping centres	22.61 (22.99)	0 (0)	0 (0)	0 (0)	0 (0)
Commercial or public sector offices or institutional buildings	27.06 (22.51)	50 (70.71)	13.33 (11.55)	0 (0)	0 (0)
Commercial or public sector industrial	6.33 (10.24)	0 (0)	0 (0)	0 (0)	0 (0)
Residential: High to medium density (down to cluster house developments)	31.61 (35.68)	0 (0)	0 (0)	0 (0)	0 (0)
Residential: Low density (e.g. loose standing / single units each on own stand)	8 (10.99)	0 (0)	60 (20)	0 (0)	0 (0)
Hotels / lodges / recreational facilities	3.17 (6.46)	0 (0)	0 (0)	5 (10)	0 (0)
Infrastructure/services installations	0.5 (2.12)	0 (0)	20 (20)	2.5 (5)	10 (14.14)
Roads, bridges or other transport related projects	0.5 (2.12)	50 (70.71)	6.67 (11.55)	2.5 (5)	0 (0)
Dams, canals, and other hydraulic works	0.11 (0.47)	0 (0)	0 (0)	10 (8.17)	40 (56.57)
Electricity generating and/or transmission facilities	0.11 (0.47)	0 (0)	0 (0)	0 (0)	50 (70.71)
Other projects listed vary from parks and open spaces, environmental conservation and rehabilitation, and Metropolitan Open Space Systems (MOSS)	- (-) N=0	- (-) N=0	- (-) N=0	80 (21.6) N=4	- (-) N=0

QUESTION 6

What percentage, on average, of your capital cost budgets for each of the following types of construction projects is allocated to a landscape and irrigation installation or to environment related work?

Type of construction project	Mean % of budget allocated to the construction of landscape or environment related work (Standard deviation in brackets)				
	Private sector Developers/ Owners	Public sector: Central Government Departments	Public sector: Provincial Government Departments	Public sector: Local Government Departments	Para-statal organisations
Commercial / retail, e.g. shopping centres	11.54 (16.3) N=11	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0
Commercial or public sector offices or institutional buildings	12.08 (14.81) N=13	5 (-) N=1	7.5 3.54 N=2	- (-) N=0	- (-) N=0
Commercial or public sector industrial	11.57 (21.42) N=7	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0
Residential: High to medium density (down to cluster house developments)	10.91 (7.19) N=11	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0
Residential: Low density (e.g. loose standing / single units each on own stand)	8.86 (9.62) N=7	- (-) N=0	4 (1.73) N=3	- (-) N=0	- (-) N=0
Hotels / lodges / recreational facilities	26.25 (22.87) N=4	- (-) N=0	- (-) N=0	10 (-) N=1	- (-) N=0
Infrastructure/services installations	30 (-) N=1	- (-) N=0	5 (-) N=1	10 (-) N=1	5 (-) N=1
Roads, bridges or other transport related projects	30 (-) N=1	10 (-) N=1	5 (-) N=1	5 (-) N=1	- (-) N=0
Dams, canals, and other hydraulic works	10 (-) N=1	- (-) N=0	- (-) N=0	18.33 (7.64) N=3	10 (-) N=1
Electricity generating and/or transmission facilities	10 (-) N=1	- (-) N=0	- (-) N=0	- (-) N=0	10 (-) N=1
Other projects listed vary from parks and open spaces, environmental conservation and rehabilitation, and Metropolitan Open Space Systems (MOSS)	- (-) N=0	- (-) N=0	- (-) N=0	76.67 (2.89) N=3	- (-) N=0

QUESTION 7

What percentage, on average, of your construction project's annual budgeted running/operational costs for each of the following types of construction projects, is allocated to the maintenance of a landscape and irrigation installation or the maintenance of environment related works?

Type of construction project	Mean % of budget allocated to the maintenance of landscape or environment related works (Standard deviation in brackets)				
	Private sector Developers/ Owners	Public sector: Central Government Departments	Public sector: Provincial Government Departments	Public sector: Local Government Departments	Para-statal organisations
Commercial / retail, e.g. shopping centres	10.64 (13.36) N=11	0 (-) N=1	- (-) N=0	- (-) N=0	- (-) N=0
Commercial or public sector offices or institutional buildings	11.69 (12) N=13	5 (-) N=1	7.5 (3.54) N=2	- (-) N=0	- (-) N=0
Commercial or public sector industrial	12.5 (18.58) N=6	0 (-) N=1	- (-) N=0	- (-) N=0	- (-) N=0
Residential: High to medium density (down to cluster house developments)	10 (12.82) N=8	0 (-) N=1	- (-) N=0	- (-) N=0	- (-) N=0
Residential: Low density (e.g. loose standing / single units each on own stand)	7.5 (9.57) N=4	0 (-) N=1	- (-) N=0	- (-) N=0	- (-) N=0
Hotels / lodges / recreational facilities	21.25 (19.31) N=4	0 (-) N=1	- (-) N=0	30 (-) N=1	- (-) N=0
Infrastructure/services installations	20 (-) N=1	0 (-) N=1	5 (-) N=1	0 (-) N=1	- (-) N=0
Roads, bridges or other transport related projects	20 (-) N=1	7.5 (10.61) N=2	5 (-) N=1	10 (-) N=1	- (-) N=0
Dams, canals, and other hydraulic works	20 (-) N=1	0 (-) N=1	- (-) N=0	23.33 (11.55) N=3	5 (-) N=1
Electricity generating and/or transmission facilities	10 (-) N=1	0 (-) N=1	- (-) N=0	- (-) N=0	10 (-) N=1
Other projects listed vary from parks and open spaces, environmental conservation and rehabilitation, and Metropolitan Open Space Systems (MOSS)	- (-) N=0	- (-) N=0	- (-) N=0	78.33 (10.41) N=3	- (-) N=0

QUESTION 8

Listed below are some social, economic, and environmental considerations that might influence the capital cost budget for landscape and/or environment related construction works on your projects, in relation to the total project costs.

Please indicate your rating of the degree of influence of the listed considerations

8.1 Private sector Developers/Owners

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environmental work has for the users of the project	18	-	38.89	55.56	5.56
The social value that the landscape /environmental work has for the surrounding community	18	-	38.89	50	11.11
The need to create as many job opportunities as possible aimed at the local community	18	5.56	33.33	61.11	0
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	18	5.56	61.11	33.33	0
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	18	0	0	38.89	61.11
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	18	-	5.56	88.89	5.56
Any other considerations you may wish to add:	0			-	-

8.2 Public sector: Central Government Departments

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environmental work has for the users of the project	2	-	50	50	0
The social value that the landscape /environmental work has for the surrounding community	2	-	0	100	0
The need to create as many job opportunities as possible aimed at the local community	2	0	0	100	0
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	2	0	0	100	0
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	2	50	0	50	0
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	2	-	0	100	0
Any other considerations you may wish to add: The need for low maintenance landscape projects	1	-	-	100	-

8.3 Public sector: Provincial Government Departments

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environmental work has for the users of the project	3	-	0	100	0
The social value that the landscape /environmental work has for the surrounding community	3	-	0	100	0
The need to create as many job opportunities as possible aimed at the local community	3	0	0	33.33	66.67
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	3	0	0	66.67	33.33
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	3	0	100	0	0
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	3	-	0	100	0
Any other considerations you may wish to add:	0			-	

8.4 Public sector: Local Government Departments

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environmental work has for the users of the project	4	-	0	50	50
The social value that the landscape /environmental work has for the surrounding community	4	-	0	50	50
The need to create as many job opportunities as possible aimed at the local community	4	0	0	0	100
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	4	0	0	25	75
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	4	75	25	0	0
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	4	-	0	25	75
Any other considerations you may wish to add:	0			-	-

8.5 Para-statal organisations

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environmental work has for the users of the project	2	-	0	100	0
The social value that the landscape /environmental work has for the surrounding community	2	-	0	100	0
The need to create as many job opportunities as possible aimed at the local community	2	0	0	100	0
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	2	0	0	100	0
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	2	100	0	0	0
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	2	-	0	100	0
Any other considerations you may wish to add:	0			-	-

QUESTION 9

Listed below are some social, economic, and environmental considerations that might influence the annual maintenance/operational cost budget for the landscape and/or environment related works on your projects, in relation to the total project operational costs. Please indicate your rating of the degree of influence of the listed considerations

9.1 Private sector Developers/Owners

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environment has for the users of the project	18	-	44.44	50	5.56
The social value that the landscape /environment has for the surrounding community	18	-	44.44	44.44	11.11
The need to create as many job opportunities as possible aimed at the local community	18	5.56	33.33	61.11	0
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs	18	5.56	61.11	27.78	5.56
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	18	5.56	5.56	27.78	61.11
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	18	-	5.56	88.89	5.56
Any other considerations you may wish to add:	0			-	-

9.2 Public sector: Central Government Departments

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Inflential	Largely influential
The social value that the landscape/environment has for the users of the project	2	-	50	50	0
The social value that the landscape /environment has for the surrounding community	2	-	0	100	0
The need to create as many job opportunities as possible aimed at the local community	2	0	0	100	0
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs	2	0	0	100	0
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	2	50	0	50	0
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	2	-	0	100	0
Any other considerations you may wish to add: The need for low maintenance landscape projects	1			100	

9.3 Public sector: Provincial Government Departments

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Inflential	Largely influential
The social value that the landscape/environment has for the users of the project	3	-	0	100	0
The social value that the landscape /environment has for the surrounding community	3	-	0	100	0
The need to create as many job opportunities as possible aimed at the local community	3	0	0	33.33	66.67
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs	3	0	0	66.67	33.33
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	3	0	100	0	0
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	3	-	0	100	0
Any other considerations you may wish to add:	0			-	

9.4 Public sector: Local Government Departments

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environment has for the users of the project	3	-	0	33.33	66.67
The social value that the landscape /environment has for the surrounding community	3	-	0	33.33	66.67
The need to create as many job opportunities as possible aimed at the local community	3	0	0	0	100
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs	3	0	0	33.33	66.67
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	3	100	0	0	0
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	3	-	0	0	100
Any other considerations you may wish to add:	0			-	

9.5 Para-statal organisations

CONSIDERATIONS	N	Degree of influence as %			
		No influence	Little influence	Influential	Largely influential
The social value that the landscape/environment has for the users of the project	2	-	0	100	0
The social value that the landscape /environment has for the surrounding community	2	-	0	100	0
The need to create as many job opportunities as possible aimed at the local community	2	0	0	100	0
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs	2	0	0	100	0
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	2	100	0	0	0
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	2	-	0	100	0
Any other considerations you may wish to add:	0			-	

QUESTION 10

The following contractual issues on landscape/environment related construction works might be problematic in the successful completion of such projects. Please indicate to what degree you are in agreement with the statements made below.

ITEM 1.1 LIABILITY FOR DEFECTS

If the landscape contractor or sub-contractor who installed the landscape is not the person/company who also undertakes the longer term landscape maintenance thereafter, it is normally very difficult to prove liability/responsibility should plants start dying or the landscape performs unsatisfactorily.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	-	5.56	94.44
Public sector: Central Government Departments	2	-	0	100
Public sector: Provincial Government Departments	3	-	33.33	66.67
Public sector: Local Government Departments	3	-	0	100
Para-statal organisations	2	-	0	100
Total for category	28	-	7.14	92.86

QUESTION 10

ITEM 1.2 LIABILITY FOR DEFECTS

When there is an extended (past any "normal" defects liability period of typically 3 months) landscape maintenance contract, the responsibility for plant defects can then be carried by the landscape contractor as he/she is still on site and cannot disclaim liability for patent, latent or maintenance defects.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	-	5.56	94.44
Public sector: Central Government Departments	2	-	0	100
Public sector: Provincial Government Departments	3	-	0	100
Public sector: Local Government Departments	3	-	0	100
Para-statal organisations	2	-	0	100
Total for category	28	-	3.57	96.43

QUESTION 10

ITEM 1.3 LIABILITY FOR DEFECTS

Water features, often constructed at considerable costs, are notorious for falling into disrepair if not maintained with due care. A period of maintenance by the specialist installer is therefore necessary, also for training the employer's maintenance staff.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	33.33	5.56	61.11
Public sector: Central Government Departments	2	0	50	50
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	100	0
Total for category	28	21.43	25	53.57

QUESTION 10

ITEM 1.4 LIABILITY FOR DEFECTS

A landscape maintenance contract should ideally be 12 months in duration to ensure that plants are maintained for at least one growing season.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	44.44	0	55.56
Public sector: Central Government Departments	2	50	0	50
Public sector: Provincial Government Departments	3	33.33	33.33	33.33
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	0	100
Total for category	28	35.71	3.57	60.71

QUESTION 10

ITEM 1.5 LIABILITY FOR DEFECTS

Landscaping and irrigation equipment are often very vulnerable to vandalism and theft - if provision is not made in the maintenance contract specifications and schedules of quantities (or a schedule of rates) for such incidences, these items do not normally get repaired or replaced.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	5.56	5.56	88.89
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	100	0
Total for category	28	3.57	14.29	82.14

QUESTION 10

ITEM 2.1 GUARANTEES

If no provision has been made in the landscape subcontract specification for landscape maintenance to be done by the landscape subcontractor during or after the defects liability period, the landscape subcontractor's construction guarantee to the main contractor should be released in a reasonable time after practical completion for the whole project has been certified and not only after the defects liability period has ended.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	-	33.33	66.67
Public sector: Central Government Departments	2	-	0	100
Public sector: Provincial Government Departments	3	-	100	0
Public sector: Local Government Departments	3	-	0	100
Para-statal organisations	2	-	0	100
Total for category	28	-	32.14	67.86

QUESTION 10

ITEM 2.2 GUARANTEES

A landscape construction guarantee cannot realistically be given and liability for the landscape installation cannot be accepted if there is no further maintenance contract between the employer and the landscape contractor.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	22.22	-	77.78
Public sector: Central Government Departments	2	100	-	0
Public sector: Provincial Government Departments	3	0	-	100
Public sector: Local Government Departments	3	0	-	100
Para-statal organisations	2	0	-	100
Total for category	28	21.43	-	78.57

QUESTION 10

ITEM 3.1 COMPLETION

Other trades (e.g. electrical work) often only finish their work on the day before practical completion must be reached, and since the landscape work is usually the last trade to be completed, it often leaves the landscape subcontractor insufficient time to finish his/her work.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	0	50	50
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	33.33	66.67
Para-statal organisations	2	0	100	0
Total for category	28	7.14	17.86	75

QUESTION 10

ITEM 3.2 COMPLETION

The possible severe financial implications for a main contractor on a project where only the landscape work is incomplete and delays the practical completion and where the monetary value of outstanding landscape work is small in comparison to the total project value or the penalties that will be applicable, often result in undue pressure on the landscape architect to accept incomplete work.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	44.44	0	55.56
Public sector: Central Government Departments	2	50	50	0
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	33.33	66.67	0
Para-statal organisations	2	0	100	0
Total for category	28	35.71	28.57	35.71

QUESTION 10

ITEM 3.3 COMPLETION

The definition of the term “Practical completion” for building and construction work (typically: “fit for use”) is not really applicable in the case of landscape work.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	61.11	-	38.89
Public sector: Central Government Departments	2	50	-	50
Public sector: Provincial Government Departments	3	0	-	100
Public sector: Local Government Departments	3	0	-	100
Para-statal organisations	2	0	-	100
Total for category	28	42.86	-	57.14

QUESTION 10

ITEM 3.4 COMPLETION

Provision should be made for a non-penalty carrying and cost disbursing extension of a landscape (sub) contract in cases where delays to the completion of a project, for any reason not attributable to the landscape (sub) contractor, extend the completion date into a “non-growing season” or a season where the specified plant material, e.g. green instant lawn, is not commercially available.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	16.67	11.11	72.22
Public sector: Central Government Departments	2	0	100	0
Public sector: Provincial Government Departments	3	33.33	66.67	0
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	100	0
Total for category	28	14.29	28.57	57.14

QUESTION 10

ITEM 3.5 COMPLETION

Delays to the finalisation of the contract’s final account could occur in cases where a 3-month landscape maintenance period (to coincide with the 90-day defects liability period of the main contract), is included in the landscape subcontract and which will require additional monthly maintenance payment certificates through the main contractor.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	5.56	22.22	72.22
Public sector: Central Government Departments	2	0	100	0
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	66.67	33.33
Para-statal organisations	2	0	100	0
Total for category	28	3.57	46.43	50

QUESTION 10

ITEM 4.1 PROFESSIONAL LIABILITY

The landscape architect cannot accept professional liability for the successful performance of the landscape if the employer decides not to appoint the landscape contractor for an extended landscape maintenance period as well as appointing the landscape architect to inspect such maintenance.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	17	5.88	5.88	88.24
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	0	100
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	0	100
Total for category	27	3.7	3.7	92.59

QUESTION 10

ITEM 5.1 DELAYS

There is often very little or no programme float left for the landscape work since it is usually the last trade to be completed on a contract.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	50	0	50
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	100	0
Para-statal organisations	2	0	100	0
Total for category	28	10.71	21.43	67.86

QUESTION 10

ITEM 5.2 DELAYS

The main contractor will often use the period allocated for landscape works to soak up delays caused by other works to the disadvantage of the landscape subcontractor, often forcing him to complete his work in unrealistic time and site circumstances.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	50	0	50
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	100	0
Para-statal organisations	2	0	100	0
Total for category	28	10.71	21.43	67.86

QUESTION 10 ITEM 6.1 ACCESS TO WORKS

Unrealistic landscape sub-contract periods are often the result of inaccessibility of areas to be landscaped by the landscape subcontractor.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	5.56	0	94.44
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	33.33	66.67
Public sector: Local Government Departments	3	0	100	0
Para-statal organisations	2	0	100	0
Total for category	28	3.57	21.43	75

QUESTION 10 ITEM 6.2 ACCESS TO WORKS

In cases where the landscape sub-contractor has to complete his/her work in areas already in use by the Employer, issues such as Works Risk, and Public liability insurance become problematic.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	27.78	0	72.22
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	33.33	0	66.67
Public sector: Local Government Departments	3	0	66.67	33.33
Para-statal organisations	2	0	100	0
Total for category	28	21.43	14.29	64.29

QUESTION 10 ITEM 6.3 ACCESS TO WORKS

A comprehensive definition is needed of what constitutes an area to be "suitable for handover to the landscape sub-contractor to install the landscape work".

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	11.11	0	88.89
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	0	100
Public sector: Local Government Departments	3	0	66.67	33.33
Para-statal organisations	2	0	0	100
Total for category	28	7.14	7.14	85.71

QUESTION 10 ITEM 7.1 TERMINATION OF THE LANDSCAPE INSTALLATION & START OF THE SUBSEQUENT LANDSCAPE MAINTENANCE

It is in both contracting parties' (Employer and Main Contractor) interest to have a mandatory landscape maintenance contract (of say 3 to 12 months duration) as a separate, direct contract between the Employer and the landscape (sub) contractor who installed the landscape for all the reasons given under Items 1 & 2 above.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	5.56	0	94.44
Public sector: Central Government Departments	2	0	0	100
Public sector: Provincial Government Departments	3	0	66.67	33.33
Public sector: Local Government Departments	3	0	33.33	66.67
Para-statal organisations	2	0	100	0
Total for category	28	3.57	17.86	78.57

QUESTION 10

ITEM 8.1 GENERAL CONTRACTUAL ISSUES

Landscaping is often a popular target when project budget cuts are considered because the landscape budget probably has not been expended at that point in time.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	61.11	-	38.89
Public sector: Central Government Departments	2	100	-	0
Public sector: Provincial Government Departments	3	100	-	0
Public sector: Local Government Departments	3	66.67	-	33.33
Para-statal organisations	2	100	-	0
Total for category	28	71.43	-	28.57

QUESTION 10

ITEM 8.2 GENERAL CONTRACTUAL ISSUES

Landscaping is often a popular target when project budget cuts are considered because landscaping is often considered as non-essential.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	72.22	-	27.78
Public sector: Central Government Departments	2	100	-	0
Public sector: Provincial Government Departments	3	100	-	0
Public sector: Local Government Departments	4	75	-	25
Para-statal organisations	2	100	-	0
Total for category	29	79.31	-	20.69

QUESTION 10

ITEM 8.3. GENERAL CONTRACTUAL ISSUES

If, for whatever reason, the long-term landscape maintenance contractor is different from the person who installed the landscape, it is often difficult for the landscape maintenance contractor to define/calculate the risks associated with the maintenance contract, such as the responsibility for live plant material and systems (e.g. irrigation installations) inherited from the landscape installation contractor.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	22.22	11.11	66.67
Public sector: Central Government Departments	2	100	0	0
Public sector: Provincial Government Departments	3	66.67	33.33	0
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	100	0
Total for category	28	28.57	17.86	53.57

QUESTION 10

ITEM 8.4 GENERAL CONTRACTUAL ISSUES

Plant material sourcing and availability is a common issue of concern. A landscape contractor/subcontractor often tenders for the specified plant material at a certain price at tender stage, but when the date arrives to deliver (and which date may have been extended due to delays not of his/her making), he/she might find that that the plant material is not available any more, or is only available at a higher price because of seasonal availability or otherwise, and he/she now wants to substitute the specified plants with other species.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	5.56	55.56	38.89
Public sector: Central Government Departments	2	0	100	0
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	50	50
Total for category	28	3.57	57.14	39.29

QUESTION 10

ITEM 8.5 GENERAL CONTRACTUAL ISSUES

The landscape architect cannot guarantee plant availability ahead of time unless a growing contract or other arrangement is made beforehand.

DEVELOPER/OWNER	N	%		
		Do not agree	Not applicable or relevant	Agree
Private sector Developers/Owners	18	5.56	50	44.44
Public sector: Central Government Departments	2	0	50	50
Public sector: Provincial Government Departments	3	0	100	0
Public sector: Local Government Departments	3	0	0	100
Para-statal organisations	2	0	50	50
Total for category	28	3.57	50	46.43

QUESTION 11

From dealing with a professional consultant, e.g. a Project Manager, Engineer, or Landscape Architect, on contracts that include landscaping or environment related construction works, please indicate to what extent you agree with the statements given below.

11.1 Private sector Developers/Owners

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	18	5.56	5.56	44.44	38.89	5.56
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	18	5.56	11.11	44.44	33.33	5.56
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	18	-	5.56	66.67	27.78	-
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material	18	-	-	61.11	38.89	-
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	18	-	0	38.89	55.56	5.56

11.2 Public sector: Central Government Departments

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	2	0	100	0	0	0
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	2	0	100	0	0	0
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	2	-	0	100	0	-
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material	2	-	-	100	0	-
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	2	-	50	50	0	0

11.3 Public sector: Provincial Government Departments

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	3	0	0	66.67	33.33	0
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	3	0	0	66.67	33.33	0
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	3	-	0	100	0	-
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material	3	-	-	66.67	33.33	-
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	3	-	33.33	66.67	0	0

11.4 Public sector: Local Government Departments

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	3	0	33.33	33.33	33.33	0
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	3	0	0	66.67	33.33	0
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	3	-	0	66.67	33.33	-
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material	3	-	-	33.33	66.67	-
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	3	-	0	66.67	33.33	0

11.5 Para-statal organisations

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	2	0	0	100	0	0
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	2	0	0	50	50	0
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	2	-	0	100	0	-
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material	2	-	-	50	50	-
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	2	-	0	100	0	0

ADDENDUM B

RESPONSES TO THE QUESTIONNAIRE SENT TO CONTRACTORS OF PRIVATE AND PUBLIC SECTOR BUILDING AND ENGINEERING PROJECTS THAT INCLUDE LANDSCAPE AND ENVIRONMENT RELATED WORKS

QUESTION 1

Please indicate which one of the following contract works categories represents your main activity.

Categories of contract works	No. of respondents	%
1 Architectural (building) construction works	8	16.33
2 Civil engineering works	13	26.53
3 Electrical/Mechanical engineering works	0	0
4 Landscape and/or environment related works	25	51.02
5 Mining works	3	6.12
6 Other	0	0
Total	49	100

QUESTION 2

In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed below?

Forms of contract	Mean % used (Standard deviation in brackets)				Average
	N=8	N=13	N=25	N=3	
	Architectural (building) construction works	Civil engineering works contractors	Landscape and/or environment related works contractors	Mining works contractors	
JBCC Principal Building Agreement	67.38 (40.86)	0 (0)	5.2 (14.75)	43.33 (5.77)	28.98
JBCC Nominated / Selected subcontract Agreement	29.38 (41.79)	0 (0)	23.2 (25.82)	16.67 (28.87)	17.31
JBCC Minor Works Agreement	3.25 (4.5)	0 (0)	1 (5)	0 (0)	1.06
BIFSA non-nominated (or "domestic") subcontract	0 (0)	0 (0)	6.84 (15.45)	0 (0)	1.71
FIDIC "main contract" ("Red Book")	0 (0)	11.92 (18.43)	1.2 (6)	33.33 (28.87)	11.61
FIDIC Subcontract	0 (0)	0.77 (2.77)	4.8 (10.46)	0 (0)	1.39
FIDIC Short form of contract	0 (0)	0.77 (2.77)	0 (0)	3.33 (5.77)	1.03
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	0 (0)	56.15 (25.26)	0.6 (3)	3.33 (5.77)	15.02
COLTO (for Governmental Roads Agencies)	0 (0)	28.85 (25.1)	0 (0)	0 (0)	7.21
NEC (New Engineering Contract) ("Black Book")	0 (0)	0 (0)	0 (0)	0 (0)	0
NEC Engineering and construction subcontract	0 (0)	0 (0)	0 (0)	0 (0)	0
SALI (South African Landscapers (Contractors))	0	0	45.16	0	11.29

Institute) (Standard agreement for the landscape industry)	(0)	(0)	(39.1)	(0)	
Other forms of contract listed vary from the contractor's own contract, Local Councils' contracts, no formal contract whatsoever, or the private sector's/para-statal's own form of contract.	0 (-) N=0	20 (-) N=1	57.8 (27.46) N=5	- (-) N=0	-

QUESTION 3

To what extent would you **prefer** to use the forms of contract listed below for your projects that include landscaping and/or environment related construction works?

3.1 Architectural (building) construction works contractors

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	8	12.5	0	87.5	0
JBCC Nominated/Selected Subcontract Agreement	8	12.5	25	62.5	0
JBCC Minor Works Agreement	8	25	25	37.5	12.5
BIFSA Non-nominated (or "domestic") Subcontract Agreement	8	12.5	25	12.5	50
FIDIC "Main contract" ("Red Book")	8	37.5	0	12.5	50
FIDIC Subcontract	8	37.5	0	12.5	50
FIDIC Short form of contract	8	25	0	12.5	62.5
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	8	37.5	0	0	62.5
COLTO (for Governmental Roads Agencies)	8	37.5	0	0	62.5
NEC (New Engineering Contract)("Black Book")	8	37.5	0	0	62.5
NEC Engineering and construction subcontract	8	37.5	0	0	62.5
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	8	25	12.5	0	62.5
Other, please describe briefly:	0			-	

3.2 Civil engineering works contractors

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	10	10	0	0	90
JBCC Nominated/Selected Subcontract Agreement	10	10	0	0	90
JBCC Minor Works Agreement	10	10	0	0	90
BIFSA Non-nominated (or "domestic") Subcontract Agreement	10	10	0	0	90
FIDIC "Main contract" ("Red Book")	10	10	20	50	20
FIDIC Subcontract	10	10	40	30	20
FIDIC Short form of contract	10	10	30	40	20
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	13	0	7.69	92.31	0
COLTO (for Governmental Roads Agencies)	13	0	30.77	69.23	0
NEC (New Engineering Contract)("Black Book")	10	10	30	10	50
NEC Engineering and construction subcontract	10	10	30	0	60
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	9	22.22	0	0	77.78
Other, please describe briefly:	0			-	

3.3 Landscape and/or environment related works contractors

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	18	27.78	33.33	5.56	33.33
JBCC Nominated/Selected Subcontract Agreement	20	0	15	60	25
JBCC Minor Works Agreement	20	5	30	20	45
BIFSA Non-nominated (or "domestic") Subcontract Agreement	19	21.05	21.05	10.53	47.37
FIDIC "Main contract" ("Red Book")	19	15.79	10.53	10.53	63.16
FIDIC Subcontract	19	0	15.79	31.58	52.63
FIDIC Short form of contract	18	5.56	22.22	5.56	66.67
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	18	11.11	11.11	0	77.78
COLTO (for Governmental Roads Agencies)	18	11.11	5.56	0	83.33
NEC (New Engineering Contract)("Black Book")	18	11.11	5.56	0	83.33
NEC Engineering and construction subcontract	19	21.05	5.26	5.26	68.42
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	24	0	16.67	79.17	4.17
Other forms of contract listed are the organisation's own contracts.	3			100	

3.4 Mining works contractors

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	3	0	33.33	66.67	0
JBCC Nominated/Selected Subcontract Agreement	3	0	66.67	33.33	0
JBCC Minor Works Agreement	3	0	66.67	33.33	0
BIFSA Non-nominated (or "domestic") Subcontract Agreement	3	33.33	33.33	0	33.33
FIDIC "Main contract" ("Red Book")	3	33.33	0	66.67	0
FIDIC Subcontract	3	33.33	66.67	0	0
FIDIC Short form of contract	3	33.33	66.67	0	0
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	33.33	0	33.33	33.33
COLTO (for Governmental Roads Agencies)	3	33.33	0	0	66.67
NEC (New Engineering Contract)("Black Book")	3	33.33	0	0	66.67
NEC Engineering and construction subcontract	3	33.33	0	0	66.67
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	0	0	33.33	66.67
Other, please describe briefly:	0			-	

QUESTION 4

How suitable are the forms of contract listed below for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance.

4.1 Architectural (building) construction works contractors

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	8	12.5	50	37.5	0
JBCC Nominated / Selected subcontract Agreement	8	0	62.5	25	12.5
JBCC Minor Works Agreement	8	12.5	62.5	12.5	12.5
BIFSA Non-nominated (or "domestic") Subcontract Agreement	8	0	25	0	75
FIDIC "Main contract" ("Red Book")	8	12.5	12.5	0	75
FIDIC Subcontract	8	12.5	12.5	0	75
FIDIC Short form of contract	8	0	12.5	0	87.5
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	8	0	0	0	100
COLTO (for Governmental Roads Agencies)	8	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	8	0	0	0	100
NEC Engineering and construction subcontract	8	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	8	0	12.5	0	87.5
Other, please describe briefly:	0		-	-	

4.2 Civil engineering works contractors

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	11	9.09	0	0	90.91
JBCC Nominated / Selected subcontract Agreement	11	9.09	9.09	0	81.82
JBCC Minor Works Agreement	11	9.09	0	0	90.91
BIFSA Non-nominated (or "domestic") Subcontract Agreement	11	9.09	0	9.09	81.82
FIDIC "Main contract" ("Red Book")	11	0	54.55	27.27	18.18
FIDIC Subcontract	11	9.09	45.45	9.09	36.36
FIDIC Short form of contract	11	9.09	45.45	9.09	36.36
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	13	0	30.77	69.23	0
COLTO (for Governmental Roads Agencies)	13	0	38.46	61.54	0
NEC (New Engineering Contract) ("Black Book")	10	10	20	10	60
NEC Engineering and construction subcontract	10	0	20	10	70
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	10	10	0	0	90
Other, please describe briefly:	0		-	-	

4.3 Landscape and/or environment related works contractors

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	21	23.81	38.10	4.76	33.33
JBCC Nominated / Selected subcontract Agreement	23	0	47.83	26.09	26.09
JBCC Minor Works Agreement	22	0	59.09	0	40.91
BIFSA Non-nominated (or "domestic") Subcontract Agreement	21	14.29	33.33	0	52.38
FIDIC "Main contract" ("Red Book")	21	4.76	28.57	0	66.67
FIDIC Subcontract	21	0	28.57	9.52	61.9
FIDIC Short form of contract	20	5	30	0	65
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	20	5	10	0	85
COLTO (for Governmental Roads Agencies)	20	5	5	0	90
NEC (New Engineering Contract) ("Black Book")	20	5	5	0	90
NEC Engineering and construction subcontract	21	4.76	14.29	0	80.95
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	25	0	68	28	4
Other forms of contract listed are the organisation's own contracts.	2	-	50	50	

4.4 Mining works contractors

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	3	0	33.33	66.67	0
JBCC Nominated / Selected subcontract Agreement	3	0	100	0	0
JBCC Minor Works Agreement	3	0	66.67	0	33.33
BIFSA Non-nominated (or "domestic") Subcontract Agreement	3	33.33	0	0	66.67
FIDIC "Main contract" ("Red Book")	3	0	0	66.67	33.33
FIDIC Subcontract	3	0	66.67	0	33.33
FIDIC Short form of contract	3	0	33.33	0	66.67
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	33.33	0	66.67
COLTO (for Governmental Roads Agencies)	3	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	3	0	0	0	100
NEC Engineering and construction subcontract	3	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	0	33.33	0	66.67
Other, please describe briefly:	0	-	-	-	

QUESTION 5

What percentages, on average over a 5-year period, of your construction projects that include landscaping and/or environment related works, fall under the categories listed below?

Type of construction project	Mean % of the projects undertaken over an average 5 year period (Standard deviation in brackets)			
	N=8	N=13	N=24	N=3
	Architectural (building) construction works contractors	Civil engineering works contractors	Landscape and/or environment related works contractors	Mining works contractors
Commercial / retail, e.g. shopping centres	35 (31.17)	5 (13.84)	11.88 (10.61)	10 (17.32)
Commercial or public sector offices or institutional buildings	25 (26.73)	1.53 (3.15)	13.45 (10.75)	3.33 (5.77)
Commercial or public sector industrial	5.87 (7.1)	3.07 (11.09)	6.04 (9.36)	50 (26.46)
Residential: High to medium density (down to cluster house developments)	22.5 (27.12)	1.15 (2.99)	18.63 (12.19)	1.67 (2.89)
Residential: Low density (e.g. loose standing / single units each on own stand)	7.5 (8.86)	5.38 (10.5)	23.13 (24.28)	2.5 (3.54) N=2
Hotels / lodges / recreational facilities	3.13 (7.04)	0.15 (0.55)	15.21 (16.71)	10 (14.14) N=2
Infrastructure/services installations	1.25 (3.54)	24.07 (18.31)	2.71 (6.91)	20 (20)
Roads, bridges or other transport related projects	0 (0)	32.31 (30.59)	5.21 (10.68)	0 (0)
Dams, canals, and other hydraulic works	0 (0)	16.15 (15.56)	2.08 (5.08)	6.67 (11.55)
Electricity generating and/or transmission facilities	0 (0)	0 (0)	0 (0)	0 (0)
Other projects listed are: <ul style="list-style-type: none"> • "civil structures", concrete slabs, concrete roads. • Community parks • Environmental management work at mines, such as runoff control, containment of pollutants. 	- (-) N=0	48.33 (33.29) N=3	40 (-) N=1	- (-) N=0

QUESTION 6

What percentages, on average over a 5-year period, of your maintenance projects, that include landscape and/or environment related maintenance work, fall under the categories listed below?

Type of maintenance project	Mean % of the landscape maintenance projects undertaken over an average 5 year period (Standard deviation in brackets)			
	N=6	N=6	N=23	N=2
	Architectural (building) construction works contractors	Civil engineering works contractors	Landscape and/or environment related works contractors	Mining works contractors
Commercial / retail, e.g. shopping centres	15 (15.17)	0 (0)	13.3 (13.58)	7.5 (10.61)
Commercial or public sector offices or institutional buildings	21.67 (31.25)	5 (12.25)	26.09 (27.91)	7.5 (10.61)
Commercial or public sector industrial	0 (0)	0 (0)	5.22 (6.3)	55 (7.07)
Residential: High to medium density (down to cluster house developments)	35 (38.86)	5 (12.25)	18.83 (17.54)	0 (0)
Residential: Low density (e.g. loose standing / single units each on own stand)	8.33 (16.02)	0 (0)	12.87 (20.31)	0 (0)
Hotels / lodges / recreational activities	16.67 (32.04)	16.67 (40.82)	19.57 (20.88)	5 (7.07)
Engineering infrastructure/services installations	0 (0)	14.16 (19.08)	0.87 (2.88)	15 (21.21)
Roads, bridges or other transport related projects	0 (0)	30.83 (34.12)	0.87 (2.88)	0 (0)
Dams, canals, and other hydraulic works	0 (0)	15 (13.78)	1.52 (4.63)	10 (14.14)
Electricity generating and/or transmission facilities	0 (0)	0 (0)	0.87 (4.17)	0 (0)
Other, please describe briefly:	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0

QUESTION 7

The following contractual issues on landscape/environment related construction works might be problematic in the successful completion of such projects. Please indicate to what degree you are in agreement with the statements made below.

ITEM 1.1 LIABILITY FOR DEFECTS

If the landscape contractor or subcontractor who installed the landscape is not the person/company who also undertakes the longer term landscape maintenance thereafter, it is normally very difficult to prove liability/responsibility should plants start dying or the landscape performs unsatisfactorily.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	12.5	0	87.5
Civil engineering works contractors	12	0	8.33	91.67
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total for category	48	4.17	2.08	93.75

QUESTION 7

ITEM 1.2 LIABILITY FOR DEFECTS

When there is an extended (past any “normal” defects liability period of typically 3 months) landscape maintenance contract, the responsibility for plant defects can then be carried by the landscape contractor as he/she is still on site and cannot disclaim liability for patent, latent or maintenance defects.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	0	0	100
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total for category	48	8.33	2.08	89.58

QUESTION 7

ITEM 1.3 LIABILITY FOR DEFECTS

Water features, often constructed at considerable costs, are notorious for falling into disrepair if not maintained with due care. A period of maintenance by the specialist installer is therefore necessary, also for training the employer’s maintenance staff.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	0	0	100
Civil engineering works contractors	12	0	8.33	91.67
Landscape and/or environment related works contractors	25	4	4	92
Mining works contractors	3	0	0	100
Total for category	48	2.08	4.17	93.75

QUESTION 7

ITEM 1.4 LIABILITY FOR DEFECTS

A landscape maintenance contract should ideally be 12 months in duration to ensure that plants are maintained for at least one growing season.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	0	0	100
Civil engineering works contractors	12	16.67	8.33	75
Landscape and/or environment related works contractors	25	16	0	84
Mining works contractors	3	0	0	100
Total for category	48	12.5	2.08	85.42

QUESTION 7

ITEM 1.5 LIABILITY FOR DEFECTS

Landscaping and irrigation equipment are often very vulnerable to vandalism and theft – if provision is not made in the maintenance contract specifications and schedules of quantities (or a schedule of rates) for such incidences, these items do not normally get repaired or replaced.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	12.5	12.5	75
Civil engineering works contractors	12	16.67	8.33	75
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total for category	48	8.33	4.17	87.5

QUESTION 7

ITEM 2.1 GUARANTEES

If no provision has been made in the landscape subcontract specification for landscape maintenance to be done by the landscape subcontractor during or after the defects liability period, the landscape sub-contractor's construction guarantee to the main contractor should be released in a reasonable time after practical completion for the whole project has been certified and not only after the defects liability period has ended.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	37.5	0	62.5
Civil engineering works contractors	12	41.67	8.33	50
Landscape and/or environment related works contractors	25	0	0	100
Mining works contractors	3	0	0	100
Total for category	48	16.67	2.08	81.25

QUESTION 7

ITEM 2.2 GUARANTEES

A landscape construction guarantee cannot realistically be given and liability for the landscape installation cannot be accepted if there is no further maintenance contract between the employer and the landscape contractor.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	75	0	25
Civil engineering works contractors	12	58.33	8.33	33.33
Landscape and/or environment related works contractors	25	16	0	84
Mining works contractors	3	33.33	0	66.67
Total for category	48	37.5	2.08	60.42

QUESTION 7

ITEM 3.1 COMPLETION

Other trades (e.g. electrical work) often only finish their work on the day before practical completion must be reached, and since the landscape work is usually the last trade to be completed, it often leaves the landscape sub-contractor insufficient time to finish his/her work.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	37.5	0	62.5
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	0	0	100
Mining works contractors	3	0	0	100
Total for category	48	12.5	2.08	85.42

QUESTION 7

ITEM 3.2 COMPLETION

The possible severe financial implications for a main contractor on a project where only the landscape work is incomplete and delays the practical completion and where the monetary value of outstanding landscape work is small in comparison to the total project value or the penalties that will be applicable, often result in undue pressure on the landscape architect to accept incomplete work.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	50	0	50
Civil engineering works contractors	12	50	8.33	41.67
Landscape and/or environment related works contractors	25	12	0	88
Mining works contractors	3	0	0	100
Total for category	48	27.08	2.08	70.83

QUESTION 7

ITEM 3.3 COMPLETION

The definition of the term "Practical completion" for building and construction work (typically: "fit for use") is not really applicable in the case of landscape work.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	75	0	25
Civil engineering works contractors	12	16.67	25	58.33
Landscape and/or environment related works contractors	25	20	8	72
Mining works contractors	3	33.33	0	66.67
Total for category	48	29.17	10.42	60.42

QUESTION 7

ITEM 3.4 COMPLETION

Provision should be made for a non-penalty carrying and cost disbursing extension of a landscape (sub) contract in cases where delays to the completion of a project, for any reason not attributable to the landscape (sub) contractor, extend the completion date into a "non-growing season" or a season where the specified plant material, e.g. green instant lawn, is not commercially available.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	50	0	50
Civil engineering works contractors	12	0	8.33	91.67
Landscape and/or environment related works contractors	25	8	4	88
Mining works contractors	3	33.33	0	66.67
Total for category	48	14.58	4.17	81.25

QUESTION 7

ITEM 3.5 COMPLETION

Delays to the finalisation of the contract's final account could occur in cases where a 3-month landscape maintenance agreement is included in the landscape subcontract (to coincide with the 90-day defects liability period of the main contract), and which will require additional monthly maintenance payment certificates through the main contractor.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	62.5	0	37.5
Civil engineering works contractors	12	33.33	8.33	58.33
Landscape and/or environment related works contractors	25	8	4	88
Mining works contractors	3	0	0	100
Total for category	48	22.92	4.17	72.92

QUESTION 7

ITEM 4.1 PROFESSIONAL LIABILITY

The landscape architect cannot accept professional liability for the successful performance of the landscape if the Employer decides not to appoint the landscape contractor for an extended landscape maintenance period as well as appointing the landscape architect to inspect such maintenance.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	25	0	75
Civil engineering works contractors	12	16.67	8.33	75
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total for category	48	10.42	2.08	87.5

QUESTION 7

ITEM 5.1 DELAYS

There is often very little or no programme float left for the landscape work since it is usually the last trade to be completed on a contract.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	50	-	50
Civil engineering works contractors	12	33.33	-	66.67
Landscape and/or environment related works contractors	25	4	-	96
Mining works contractors	3	33.33	-	66.67
Total for category	48	20.83	-	79.17

QUESTION 7

ITEM 5.2 DELAYS

The main contractor will often use the period allocated for landscape works to soak up delays caused by other works to the disadvantage of the landscape subcontractor, often forcing him to complete his work in unrealistic time and site circumstances.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	50	-	50
Civil engineering works contractors	12	25	-	75
Landscape and/or environment related works contractors	25	4	-	96
Mining works contractors	3	33.33	-	66.67
Total for category	48	18.75	-	81.25

QUESTION 7

ITEM 6.1 ACCESS TO WORKS

Unrealistic landscape subcontract periods are often the result of inaccessibility of areas to be landscaped by the landscape subcontractor.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	12.5	12.5	75
Civil engineering works contractors	12	8.33	0	91.67
Landscape and/or environment related works contractors	25	0	0	100
Mining works contractors	3	33.33	0	66.67
Total for category	48	6.25	2.08	91.67

QUESTION 7

ITEM 6.2 ACCESS TO WORKS

In cases where the landscape subcontractor has to complete his/her work in areas already in use by the Employer, issues such as Works Risk, and Public liability insurance become problematic.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	50	0	50
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	0	4	96
Mining works contractors	3	33.33	0	66.67
Total for category	48	16.67	4.17	79.17

QUESTION 7

ITEM 6.3 ACCESS TO WORKS

A comprehensive definition is needed of what constitutes an area to be "suitable for handover to the landscape subcontractor to install the landscape work".

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	8	12.5	12.5	75
Civil engineering works contractors	12	16.67	16.67	66.67
Landscape and/or environment related works contractors	25	0	0	100-
Mining works contractors	3	33.33	0	66.67
Total for category	48	8.33	6.25	85.42

QUESTION 7

ITEM 7.1 TERMINATION OF THE LANDSCAPE INSTALLATION & START OF THE SUBSEQUENT LANDSCAPE MAINTENANCE

It is in both contracting parties' (Employer and Main Contractor) interest to have a mandatory landscape maintenance contract (of say 3 to 12 months duration) as a separate, direct contract between the Employer and the landscape (sub) contractor who installed the landscape for all the reasons given above.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	7	28.57	0	71.43
Civil engineering works contractors	12	25	8.33	66.67
Landscape and/or environment related works contractors	25	8	0	92
Mining works contractors	3	0	0	100
Total for category	47	14.89	2.13	82.98
Comments	From a Landscape Contractor: "It is difficult to define landscape installation 'completion' and the start of maintenance; also the problems/snags are usually between the main contractor and the landscape sub-contractor. The employer will become encumbered with irreconcilable issues". "Not necessary to be the same landscaper, who is often not geared toward maintenance work"			

QUESTION 7

ITEM 8.1 GENERAL CONTRACTUAL ISSUES

Landscaping is often a popular target when project budget cuts are considered because the landscaping budget probably has not been expended at that point in time.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	7	14.29	-	85.71
Civil engineering works contractors	12	0	-	100
Landscape and/or environment related works contractors	25	4	-	96
Mining works contractors	3	0	-	100
Total for category	47	4.26	-	95.74

QUESTION 7

ITEM 8.2 GENERAL CONTRACTUAL ISSUES

Landscaping is often a popular target when project budget cuts are considered because landscaping is often considered as non-essential

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	7	57.14	-	42.86
Civil engineering works contractors	12	33.33	-	66.67
Landscape and/or environment related works contractors	25	12	-	88
Mining works contractors	3	0	-	100
Total for category	47	23.4	-	76.6

QUESTION 7

ITEM 8.3 GENERAL CONTRACTUAL ISSUES

If, for whatever reason, the long-term landscape maintenance contractor is different from the person who installed the landscape, it is often difficult for the landscape maintenance contractor to define/calculate the risks associated with the maintenance contract, such as the responsibility for live plant material and systems (e.g. irrigation installations) inherited from the landscape installation contractor.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	7	42.86	0	57.14
Civil engineering works contractors	12	25	16.67	58.33
Landscape and/or environment related works contractors	25	28	0	72
Mining works contractors	3	33.33	0	66.67
Total for category	47	29.79	4.26	65.96

QUESTION 7

ITEM 8.4 GENERAL CONTRACTUAL ISSUES

Plant material sourcing and availability is a common issue of concern. A landscape contractor/subcontractor often tenders for the specified plant material at a certain price at tender stage, but when the date arrives to deliver (and which date may have been extended due to delays not of his/her making), he/she might find that the plant material is not available any more, or is only available at a higher price because of seasonal availability or otherwise, and he/she now wants to substitute the specified plants with other species.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	7	57.14	0	42.86
Civil engineering works contractors	12	0	33.33	66.67
Landscape and/or environment related works contractors	25	8	0	92
Mining works contractors	3	0	0	100
Total for category	47	12.77	8.51	78.72

QUESTION 7

ITEM 8.5 GENERAL CONTRACTUAL ISSUES

The landscape architect cannot guarantee plant availability ahead of time unless a growing contract or other arrangement is made beforehand.

CONTRACTOR	N	%		
		Do not agree	Not applicable or relevant	Agree
Architectural (building) construction works contractors	7	42.86	0	57.14
Civil engineering works contractors	12	16.67	25	58.33
Landscape and/or environment related works contractors	25	4	0	96
Mining works contractors	3	0	0	100
Total for category	47	12.77	6.38	80.85

QUESTION 8

From dealing with a professional consultant, e.g. a Project Manager, Engineer, or Landscape Architect, on contracts that include landscaping or environment related construction works, please indicate to what extent you agree with the statements given below.

8.1 Architectural (building) construction works contractors

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	7	0	42.86	28.57	28.57	-
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	7	0	28.57	28.57	28.57	14.29
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	7	0	28.57	71.43	0	0
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material.	7	0	14.29	57.14	28.57	0
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	8	0	12.5	50	25	12.5

8.2 Civil engineering works contractors

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	11	9.09	27.27	36.36	27.27	-
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	11	9.09	27.27	54.55	9.09	0
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	11	0	45.45	45.45	0	9.09
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material.	11	9.09	9.09	54.55	18.18	9.09
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	11	0	18.18	54.55	18.18	9.09

8.3 Landscape and/or environment related works contractors

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	24	25	25	33.33	16.67	-
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	24	12.5	33.33	33.33	16.67	4.17
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	24	16.67	16.67	45.83	12.5	8.33
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material.	24	8.33	20.83	45.83	16.67	8.33
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	24	8.33	16.67	45.83	16.67	12.5

8.4 Mining works contractors

Statement	N	%				
		Do not agree	Rarely agree	Agree half the time	Often agree	Always agree
Consultant is familiar with the contract clauses (and their implications) that deal with the landscape contract or subcontract.	3	0	33.33	33.33	33.33	-
Consultant is familiar with landscape/environment related work procedures, such as logical flow of activities, dealing with plants' seasonal availability, flowering, and growth/dormant periods.	3	0	33.33	33.33	33.33	0
Consultant is inclined to grant fair extensions of the contract period as a result of his/her understanding of the specific nature of landscaping/environment related works as described above.	3	0	33.33	66.67	0	0
Consultant (specifically the Landscape Architect) is familiar with the market availability of his/her specified plant material.	3	0	33.33	0	66.67	0
Consultant is inclined to advise the Developer/Employer of the benefits of entering into a longer term landscape maintenance contract with the landscape contractor who installed the landscape or undertook the environment related works.	3	0	0	66.67	33.33	0

QUESTION 9

How often on landscape contracts/subcontracts do you experience problems in sourcing the specified plant material in the required numbers or on the required dates?

Contractor	N	%			
		Never	Rarely	Often	Always
Architectural (building) construction works contractors	8	0	75	25	-
Civil engineering works contractors	11	9.09	63.64	27.27	-
Landscape and/or environment related works contractors	24	0	37.5	62.5	-
Mining works contractors	3	0	33.33	66.67	-
Average	-	2.27	52.37	45.36	-

QUESTION 10

If you do sometimes experience problems in sourcing the specified plant material in the required numbers on specified dates, how often would you recommend the following solutions to the landscape architect/consultant?

10.1 Architectural (building) construction works contractors

RECOMMENDED SOLUTION	N	%			
		Never	Rarely	Often	Always
Change the specified plant species to those that are available.	8	-	0	62.5	37.5
Delay the implementation of the specific section of work until such time as the plant material becomes available, even if this means that the final completion date is extended.	8	50	50	0	-
Exclude this specific section of the work from the contract if it is not considered essential, and perhaps have such work done during the maintenance period.	8	37.5	50	0	12.5
If time is not critical, enter into a growing / propagation contract.	8	12.5	50	25	12.5

10.2 Civil engineering works contractors

RECOMMENDED SOLUTION	N	%			
		Never	Rarely	Often	Always
Change the specified plant species to those that are available.	10	-	10	50	40
Delay the implementation of the specific section of work until such time as the plant material becomes available, even if this means that the final completion date is extended.	10	10	80	10	-
Exclude this specific section of the work from the contract if it is not considered essential, and perhaps have such work done during the maintenance period.	10	0	40	30	30
If time is not critical, enter into a growing / propagation contract.	10	0	10	70	20

10.3 Landscape and/or environment related works contractors

RECOMMENDED SOLUTION	N	%			
		Never	Rarely	Often	Always
Change the specified plant species to those that are available.	25	-	20	72	8
Delay the implementation of the specific section of work until such time as the plant material becomes available, even if this means that the final completion date is extended.	25	40	56	4	-
Exclude this specific section of the work from the contract if it is not considered essential, and perhaps have such work done during the maintenance period.	25	32	56	12	0
If time is not critical, enter into a growing / propagation contract.	25	4	40	44	12

10.4 Mining works contractors

RECOMMENDED SOLUTION	N	%			
		Never	Rarely	Often	Always
Change the specified plant species to those that are available.	3	-	0	100	0
Delay the implementation of the specific section of work until such time as the plant material becomes available, even if this means that the final completion date is extended.	3	0	100	0	-
Exclude this specific section of the work from the contract if it is not considered essential, and perhaps have such work done during the maintenance period.	3	0	100	0	0
If time is not critical, enter into a growing / propagation contract.	3	0	33.33	66.67	0

ADDENDUM C

RESPONSES TO THE QUESTIONNAIRE SENT TO PROFESSIONAL PLANNING AND DESIGN CONSULTANTS RESPONSIBLE FOR BUILDING AND ENGINEERING PROJECTS THAT INCLUDE LANDSCAPE AND ENVIRONMENT RELATED WORKS

QUESTION 1

Please indicate what kind of professional planning consultant you are.

Type of professional planning consultant	No. of respondents	%
Professional Project Manager	9	14.75
Professional Architect	15	24.59
Professional Landscape Architect	17	27.87
Professional Civil Engineer	8	13.11
Professional Structural Engineer	1	1.64
Professional Electrical/Mechanical Engineer	3	4.92
Professional Mining Engineer	0	0
Professional Quantity Surveyor	5	8.2
Environmental Consultant	3	4.92
Total	61	100

QUESTION 2

In what percentage of your projects that include landscaping and/or environment related construction works, do you use the forms of contract listed below?

Forms of Contract	Mean % used (Standard deviation in brackets)								Average
	N=9	N=15	N=17	N=8	N=1	N=3	N=5	N=3	
	Professional Project Managers	Professional Architects	Professional Landscape Architects	Professional Civil Engineers	Professional Structural Engineers	Professional Electrical/Mechanical Engineers	Professional Quantity Surveyors	Environmental Consultants	
JBCC Principal Building Agreement	66.11 (39.03)	51.13 (39.21)	9.12 (19.54)	8.13 (17.31)	95 (-)	16.67 (28.77)	68 (41.47)	6.67 (11.55)	40.1
JBCC Nominated / Selected subcontract Agreement	0.56 (1.67)	13.67 (30.62)	45 (34.51)	0 (0)	5 (-)	33.33 (41.63)	22 (43.82)	13.33 (23.09)	16.61
JBCC Minor Works Agreement	0.56 (1.67)	19.53 (33.64)	10.88 (20.33)	0 (0)	0 (-)	3.33 (5.77)	0 (0)	0 (0)	4.29
BIFSA Non-nominated (or "domestic") Subcontract Agreement	0 (0)	0 (0)	5.59 (18.53)	0 (0)	0 (-)	0 (0)	0 (0)	0 (0)	0.7
FIDIC "main contract" ("Red Book")	2.22 (6.67)	0 (0)	0 (0)	11.25 (31.82)	0 (-)	13.33 (23.09)	6 (8.94)	0.33 (0.58)	4.14
FIDIC Subcontract	11.11 (33.33)	0 (0)	0.59 (2.43)	0 (0)	0 (-)	6.67 (11.55)	0 (0)	0 (0)	2.3
FIDIC Short form of contract	0 (0)	0 (0)	0 (0)	0 (0)	0 (-)	0 (0)	0 (0)	3.33 (5.77)	0.42
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	7.22 (12.53)	0 (0)	12.06 (23.19)	58.75 (32.27)	0 (-)	0 (0)	4 (8.94)	56 (36.72)	17.25
COLTO (for Governmental Roads Agencies)	0 (0)	0 (0)	0 (0)	19.38 (25.42)	0 (-)	0 (0)	0 (0)	0.33 (0.58)	2.46
NEC (New Engineering Contract) ("Black Book")	0 (0)	0 (0)	0 (0)	0 (0)	0 (-)	0 (0)	0 (0)	0 (0)	0
NEC Engineering and construction subcontract	0 (0)	0 (0)	0 (0)	0 (0)	0 (-)	0 (0)	0 (0)	0 (0)	0
SALI (South African Landscapers (Contractors Institute) Standard agreement for the landscape industry)	8.89 (26.67)	0 (0)	4.71 (12.81)	0 (0)	0 (-)	0 (0)	0 (0)	0 (0)	1.7
Other forms of contract listed vary from the PWD standard contract, their own contract, or forms of contract used by Local Councils	30 (-) N=1	47 (34.21) N=5	51.25 (37.05) N=4	20 (-) N=1	- (-) N=0	80 (-) N=1	- (-) N=0	60 (-) N=1	-

QUESTION 3

To what extent would you prefer to use the forms of contract listed below for your projects that include landscaping and/or environment related construction works?

3.1 Professional Project Managers

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	9	11.11	22.22	66.67	0
JBCC Nominated / Selected subcontract Agreement	8	0	25	62.5	12.5
JBCC Minor Works Agreement	8	0	50	25	25
FIDIC "main contract" ("Red Book")	7	0	14.29	14.29	71.43
FIDIC Short form of contract	7	0	28.57	0	71.43
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	8	12.5	12.5	37.5	37.5
COLTO (for Governmental Roads Agencies)	7	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	7	14.29	0	0	85.71
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	8	12.5	0	12.5	75
Other forms of contract listed:	0			-	

3.2 Professional Architects

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	14	7.14	0	92.86	0
JBCC Nominated / Selected subcontract Agreement	13	7.69	38.46	38.46	15.38
JBCC Minor Works Agreement	12	8.33	16.67	66.67	8.33
FIDIC "main contract" ("Red Book")	11	9.09	0	0	90.91
FIDIC Short form of contract	11	9.09	0	0	90.91
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	11	9.09	0	0	90.91
COLTO (for Governmental Roads Agencies)	11	9.09	0	0	90.91
NEC (New Engineering Contract) ("Black Book")	11	9.09	0	0	90.91
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	12	8.33	8.33	8.33	75
Other forms of contract listed vary from the PWD standard contract, their own contract, or forms of contract used by Local Councils	2			100	

3.3 Professional Landscape Architects

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	16	25	37.5	31.25	6.25
JBCC Nominated / Selected subcontract Agreement	17	0	17.65	76.47	5.88
JBCC Minor Works Agreement	16	0	43.75	31.25	25
FIDIC "main contract" ("Red Book")	15	0	6.67	0	93.33
FIDIC Short form of contract	15	0	6.67	0	93.33
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	15	0	33.33	33.33	33.33
COLTO (for Governmental Roads Agencies)	15	6.67	0	0	93.33
NEC (New Engineering Contract) ("Black Book")	15	6.67	0	0	93.33
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	14	0	14.29	21.43	64.29
Other forms of contract listed vary from the PWD standard contract, their own contract, or forms of contract used by Local Councils	2			100	

3.4 Professional Civil Engineers

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	7	0	28.57	14.29	57.14
JBCC Nominated / Selected subcontract Agreement	7	14.29	28.57	0	57.14
JBCC Minor Works Agreement	7	14.29	28.57	0	57.14
FIDIC "main contract" ("Red Book")	7	0	14.29	14.29	71.43
FIDIC Short form of contract	7	0	14.29	0	85.71
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	8	0	12.5	87.5	0
COLTO (for Governmental Roads Agencies)	7	0	0	71.43	28.57
NEC (New Engineering Contract) ("Black Book")	7	0	0	14.29	85.71
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	7	0	0	0	100
Other forms of contract listed:	0			-	

3.5 Professional Structural Engineers

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	1	0	100	0	0
JBCC Nominated / Selected subcontract Agreement	1	0	0	100	0
JBCC Minor Works Agreement	0	-	-	-	-
FIDIC "main contract" ("Red Book")	0	-	-	-	-
FIDIC Short form of contract	0	-	-	-	-
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	0	-	-	-	-
COLTO (for Governmental Roads Agencies)	0	-	-	-	-
NEC (New Engineering Contract) ("Black Book")	0	-	-	-	-
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	0	-	-	-	-
Other forms of contract listed:	0			-	

3.6 Professional Electrical/Mechanical Engineers

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	2	50	0	50	0
JBCC Nominated / Selected subcontract Agreement	3	0	33.33	66.67	0
JBCC Minor Works Agreement	2	50	50	0	0
FIDIC "main contract" ("Red Book")	2	50	0	50	0
FIDIC Short form of contract	2	0	50	50	0
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	2	0	0	0	100
COLTO (for Governmental Roads Agencies)	2	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	2	0	50	0	50
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	2	0	0	0	100
Other forms of contract listed:	0			-	

3.7 Professional Quantity Surveyors

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	5	20	20	60	0
JBCC Nominated / Selected subcontract Agreement	5	0	40	60	0
JBCC Minor Works Agreement	5	40	40	20	0
FIDIC "main contract" ("Red Book")	5	40	0	40	20
FIDIC Short form of contract	5	20	40	20	20
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	5	40	0	20	40
COLTO (for Governmental Roads Agencies)	5	20	20	0	60
NEC (New Engineering Contract) ("Black Book")	5	20	0	0	80
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	5	0	0	0	100
Other forms of contract listed:	0			-	

3.8 Environmental Consultants

Forms of contract	N	% Preferred			
		Not at all	Makes little difference	Preferred	Not familiar with
JBCC Principal Building Agreement	2	0	50	0	50
JBCC Nominated / Selected subcontract Agreement	2	0	0	50	50
JBCC Minor Works Agreement	2	0	0	0	100
FIDIC "main contract" ("Red Book")	3	0	0	33.33	66.67
FIDIC Short form of contract	3	0	66.67	0	33.33
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	33.33	66.67	0
COLTO (for Governmental Roads Agencies)	3	0	0	33.33	66.67
NEC (New Engineering Contract) ("Black Book")	2	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	0	0	0	100
Other form of contract listed is their own contract	1			100	

QUESTION 4

How suitable are the forms of contract listed below for projects that include landscaping and/or environment related construction works, bearing in mind the specific nature of landscape works, such as working with live components (plants), and the need for interim (before practical completion) and longer term landscape maintenance?

4.1 Professional Project Managers

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	9	11.11	55.56	33.33	0
JBCC Nominated / Selected subcontract Agreement	8	0	75	12.5	12.5
JBCC Minor Works Agreement	8	0	50	12.5	37.5
BIFSA Non-nominated (domestic) Subcontr. Agreement	7	28.57	14.29	0	57.14
FIDIC "main contract" ("Red Book")	7	0	14.29	14.29	71.43
FIDIC Subcontract	7	0	28.57	0	71.43
FIDIC Short form of contract	7	0	28.57	0	71.43
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	8	12.5	37.5	25	25
COLTO (for Governmental Roads Agencies)	7	0	14.29	0	85.71
NEC (New Engineering Contract) ("Black Book")	7	14.29	14.29	0	71.43
NEC Engineering and construction subcontract	7	14.29	14.29	0	71.43
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	8	0	25	12.5	62.5
Other listed:	0		-	-	

4.2 Professional Architects

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	12	8.33	50	41.67	0
JBCC Nominated / Selected subcontract Agreement	12	8.33	83.33	0	8.33
JBCC Minor Works Agreement	11	9.09	81.82	9.09	0
BIFSA Non-nominated (domestic) Subcontr. Agreement	10	20	0	0	80
FIDIC "main contract" ("Red Book")	10	10	0	0	90
FIDIC Subcontract	10	10	0	0	90
FIDIC Short form of contract	10	10	0	0	90
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	10	10	0	0	90
COLTO (for Governmental Roads Agencies)	10	10	0	0	90
NEC (New Engineering Contract) ("Black Book")	10	10	0	0	90
NEC Engineering and construction subcontract	10	10	0	0	90
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	11	9.09	9.09	9.09	72.73
Other listed is the PWD standard contract.	1		100	0	

4.3 Professional Landscape Architects

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	17	11.76	82.35	0	5.88
JBCC Nominated / Selected subcontract Agreement	17	0	76.47	17.65	5.88
JBCC Minor Works Agreement	17	0	76.47	5.88	17.65
BIFSA Non-nominated (domestic) Subcontr. Agreement	16	18.75	18.75	6.25	56.25
FIDIC "main contract" ("Red Book")	16	6.25	6.25	0	87.5
FIDIC Subcontract	16	6.25	6.25	0	87.5
FIDIC Short form of contract	16	6.25	6.25	0	87.5
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	16	6.25	56.25	6.25	31.25
COLTO (for Governmental Roads Agencies)	16	6.25	0	0	93.75
NEC (New Engineering Contract) ("Black Book")	16	0	6.25	0	93.75
NEC Engineering and construction subcontract	16	0	6.25	0	93.75
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	15	0	20	13.33	66.67
Other form of contract listed is their own contract.	1		0	100	

4.4 Professional Civil Engineers

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	7	0	14.29	14.29	71.43
JBCC Nominated / Selected subcontract Agreement	7	0	14.29	14.29	71.43
JBCC Minor Works Agreement	7	0	14.29	14.29	71.43
BIFSA Non-nominated (domestic) Subcontr. Agreement	7	0	0	14.29	85.71
FIDIC "main contract" ("Red Book")	7	0	28.57	0	71.43
FIDIC Subcontract	7	0	28.57	0	71.43
FIDIC Short form of contract	7	0	28.57	0	71.43
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	8	12.5	62.5	25	0
COLTO (for Governmental Roads Agencies)	7	14.29	28.57	28.57	28.57
NEC (New Engineering Contract) ("Black Book")	7	14.29	0	0	85.71
NEC Engineering and construction subcontract	7	14.29	0	0	85.71
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	7	0	0	0	100
Other form of contract listed is PWD standard contract.	1		100	0	

4.5 Professional Structural Engineers

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	1	0	100	0	0
JBCC Nominated / Selected subcontract Agreement	1	0	100	0	0
JBCC Minor Works Agreement	0	-	-	-	-
BIFSA Non-nominated (domestic) Subcontr. Agreement	0	-	-	-	-
FIDIC "main contract" ("Red Book")	0	-	-	-	-
FIDIC Subcontract	0	-	-	-	-
FIDIC Short form of contract	0	-	-	-	-
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	0	-	-	-	-
COLTO (for Governmental Roads Agencies)	0	-	-	-	-
NEC (New Engineering Contract) ("Black Book")	0	-	-	-	-
NEC Engineering and construction subcontract	0	-	-	-	-
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	0	-	-	-	-
Other forms of contract listed:	0	-	-	-	-

4.6 Professional Electrical/Mechanical Engineers

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	2	50	50	0	0
JBCC Nominated / Selected subcontract Agreement	2	0	50	50	0
JBCC Minor Works Agreement	2	0	50	50	0
BIFSA Non-nominated (domestic) Subcontr. Agreement	2	0	50	0	50
FIDIC "main contract" ("Red Book")	2	50	50	0	0
FIDIC Subcontract	2	0	50	50	0
FIDIC Short form of contract	2	0	50	50	0
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	2	0	0	0	100
COLTO (for Governmental Roads Agencies)	2	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	2	0	0	50	50
NEC Engineering and construction subcontract	2	0	0	50	50
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	2	0	0	0	100
Other forms of contract listed:	0	-	-	-	-

4.7 Professional Quantity Surveyors

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	5	20	40	40	0
JBCC Nominated / Selected subcontract Agreement	5	20	60	20	0
JBCC Minor Works Agreement	5	40	40	20	0
BIFSA Non-nominated (domestic) Subcontr. Agreement	5	0	20	20	60
FIDIC "main contract" ("Red Book")	5	20	60	0	20
FIDIC Subcontract	5	20	40	0	40
FIDIC Short form of contract	5	20	60	0	20
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	5	40	20	0	40
COLTO (for Governmental Roads Agencies)	5	20	20	0	60
NEC (New Engineering Contract) ("Black Book")	5	20	0	0	80
NEC Engineering and construction subcontract	5	20	0	0	80
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	5	0	0	0	100
Other forms of contract listed:	0	-	-	-	-

4.8 Environmental Consultants

Forms of contract	N	% Suitability			
		Unsuitable	Suitable with some alterations	Suitable without any alterations	Not familiar with
JBCC Principal Building Agreement	2	0	50	0	50
JBCC Nominated / Selected subcontract Agreement	2	0	50	0	50
JBCC Minor Works Agreement	2	0	50	0	50
BIFSA Non-nominated (domestic) Subcontr. Agreement	2	0	0	0	100
FIDIC "main contract" ("Red Book")	2	0	0	0	100
FIDIC Subcontract	2	0	0	0	100
FIDIC Short form of contract	2	50	0	0	50
SAFCEC's GCC (General Conditions of Contract for Civil Engineering Construction) ("Blue Book")	3	0	100	0	0
COLTO (for Governmental Roads Agencies)	2	0	0	0	100
NEC (New Engineering Contract) ("Black Book")	2	0	0	0	100
NEC Engineering and construction subcontract	2	0	0	0	100
SALI (South African Landscapers (Contractors) Institute) (Standard agreement for the landscape industry)	3	0	0	0	100
Other form of contract listed refers to the Environment Management Plan (EMP) as a Special Conditions of Contract document appended to a standard contract	1		0	100	

QUESTION 5

What percentages, on average over a 5-year period, of your construction projects that include landscape or environment related works, fall under the categories listed below?

Type of construction project	Mean % of the projects undertaken over an average 5 year period (Standard deviation in brackets)							
	Professional Project Managers	Professional Architects	Professional Landscape Architects	Professional Civil Engineers	Professional Structural Engineers	Professional Electrical/Mechanical Engineers	Professional Quantity Surveyors	Environmental Consultants
Commercial / retail, e.g. shopping centres	32.78 (28.3) N=9	17.34 (14) N=15	10.59 (6.82) N=17	6.88 (10.33) N=8	50 (-) N=1	16.67 (15.28) N=3	28 (30.94) N=5	1.67 (2.89) N=3
Commercial or public sector offices or institutional buildings	17.78 (13.02) N=9	33 (29.26) N=15	18.94 (18.8) N=17	18.13 (26.58) N=8	0 (-) N=1	13.33 (15.28) N=3	48 (39.15) N=5	6.67 (11.55) N=3
Commercial or public sector industrial	11.67 (29.79) N=9	3.33 (6.46) N=15	2.71 (4.04) N=17	5 (7.56) N=8	0 (-) N=1	10 (10) N=3	26 (43.36) N=5	1.67 (2.89) N=3
Residential: High to medium density (down to cluster house developments)	14.44 (21.28) N=9	21.33 (15.98) N=15	16.88 (11.19) N=17	3.75 (7.44) N=8	0 (-) N=1	0 (0) N=3	24 (42.63) N=5	15 (5) N=3
Residential: Low density (e.g. loose standing / single units each on own stand)	10 (20) N=9	19.33 (32.89) N=15	18.06 (16.54) N=17	11.25 (12.75) N=8	0 (-) N=1	0 (0) N=3	3 (2.74) N=5	30 (36.06) N=3
Hotels / lodges / recreational facilities	5.56 (13.33) N=9	5 (7.32) N=15	15.29 (15.56) N=17	4.17 (6.65) N=6	50 (-) N=1	23.33 (32.15) N=3	4 (5.48) N=5	15 (0) N=2
Infrastructure/services installations	5.56 (11.3) N=9	0.67 (2.58) N=15	4.41 (14.78) N=17	11.88 (11.93) N=8	0 (-) N=1	3.33 (5.77) N=3	2 (4.47) N=5	28.33 (36.17) N=3
Roads, bridges or other transport related projects	2.23 (5.07) N=9	0 (0) N=15	4.12 (6.43) N=17	28.13 (25.9) N=8	0 (-) N=1	0 (0) N=3	0 (0) N=5	5 (5) N=3
Dams, canals, and other hydraulic works	0 (0) N=9	0 (0) N=15	0.88 (1.96) N=17	13.57 (25.93) N=7	0 (-) N=1	0 (0) N=3	0 (0) N=5	1.67 (2.89) N=3
Electricity generating and/or transmission facilities	0 (0) N=9	0 (0) N=15	0 (0) N=17	0 (0) N=6	0 (-) N=1	26.67 (46.19) N=3	1 (2.24) N=5	0 (0) N=3
Other types of projects listed are CCTV installations, golf courses, and Visual Impact Assessments (VIAs)	- (-) N=0	0 (0) N=2	25 (18.03) N=3	- (-) N=0	- (-) N=0	20 (-) N=1	- (-) N=0	- (-) N=0

QUESTION 6

What percentage, on average, of your capital cost budgets for each of the following types of construction projects, do you recommend to be allocated to a landscape and irrigation installation or to environment related work?

Type of construction project	Mean % of capital cost budget allocated to the construction of landscape or environment related works (Standard deviation in brackets)							
	Professional Project Managers	Professional Architects	Professional Landscape Architects	Professional Civil Engineers	Professional Structural Engineers	Professional Electrical/Mechanical Engineers	Professional Quantity Surveyors	Environmental Consultants
Commercial / retail, e.g. shopping centres	2.25 (2.38) N=8	3.91 (2.63) N=11	5 (3.01) N=16	5 (0) N=3	5 (-) N=1	10 (-) N=1	2.5 (1.73) N=4	3 (0) N=2
Commercial or public sector offices or institutional buildings	1.86 (0.9) N=7	3.5 (2.35) N=12	5.5 (4.31) N=16	5.17 (0.98) N=6	5 (-) N=1	10 (-) N=1	3.8 (1.79) N=5	4 (1.41) N=2
Commercial or public sector industrial	2.2 (1.79) N=5	1 (0.5) N=9	4.3 (4.64) N=10	4.6 (3.51) N=5	5 (-) N=1	7 (4.24) N=2	1.33 (0.58) N=3	6.5 (4.95) N=2
Residential: High to medium density (down to cluster house developments)	2.6 (1.52) N=5	6.58 (4.96) N=12	6.56 (3.08) N=16	2.6 (1.82) N=5	5 (-) N=1	- (-) N=0	4.2 (1.79) N=5	3 (2) N=3
Residential: Low density (e.g. loose standing / single units each on own stand)	2.6 (1.52) N=5	6.11 (6.05) N=9	6.6 (3.98) N=10	2.71 (1.8) N=7	5 (-) N=1	- (-) N=0	1.67 (0.58) N=3	2 (1.41) N=2
Hotels / lodges / recreational facilities	5 (4.36) N=3	7.44 (3.64) N=9	13.69 (18.42) N=16	2.8 (2.17) N=5	5 (-) N=1	15 (-) N=1	4 (1.73) N=3	5.33 (4.51) N=3
Infrastructure/services installations	1.5 (0.71) N=2	2.33 (2.52) N=3	2.86 (3.72) N=7	3.4 (1.67) N=5	5 (-) N=1	- (-) N=0	1.5 (0.71) N=2	4.67 (4.73) N=3
Roads, bridges or other transport related projects	1.5 (0.71) N=2	2.33 (2.52) N=3	2.91 (3.02) N=11	3.17 (3.76) N=6	5 (-) N=1	- (-) N=0	2 (-) N=1	4.67 (3.51) N=3
Dams, canals, and other hydraulic works	2 (1.41) N=2	2.67 (2.52) N=3	4.86 (5.22) N=8	8.5 (11.11) N=6	5 (-) N=1	- (-) N=0	2 (-) N=1	6 (4.58) N=3
Electricity generating and/or transmission facilities	1 (0) N=2	0.5 (0) N=2	1.6 (1.95) N=5	3 (2.83) N=2	- (-) N=1	3 (-) N=1	1 (-) N=1	5.5 (3.54) N=2
Other type of project listed is golf courses.	- (-) N=0	- (-) N=0	80 (14.14) N=2	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0

QUESTION 7

What percentage, on average, of your projects' annual budgeted running/operational costs for each of the following types of construction projects, do you recommend to be allocated to the maintenance of landscape and irrigation installations or the maintenance of environment related works?

Type of maintenance project	Mean% of running/operational cost budgets to be allocated to the maintenance of landscape or environment related works (Standard deviation in brackets)							
	Professional Project Managers	Professional Architects	Professional Landscape Architects	Professional Civil Engineers	Professional Structural Engineers	Professional Electrical/Mechanical Engineers	Professional Quantity Surveyors	Environmental Consultants
Commercial / retail, e.g. shopping centres	4.67 (5.43) N=6	4.17 (7.78) N=6	6.64 (4.57) N=11	3 (1.41) N=2	10 (-) N=1	- (-) N=0	3 (1.73) N=3	3 (1.41) N=2
Commercial or public sector offices or institutional buildings	3 (1.67) N=6	3.57 (3.41) N=7	5.55 (4.37) N=11	3.67 (1.53) N=3	10 (-) N=1	- (-) N=0	6 (3.61) N=3	4 (1.41) N=2
Commercial or public sector industrial	2.33 (2.31) N=3	3.41 (4.16) N=5	3.13 (3.09) N=8	3.67 (1.53) N=3	10 (-) N=1	2 (-) N=1	2.67 (2.08) N=3	7 (4.24) N=2
Residential: High to medium density (down to cluster house developments)	3.25 (2.36) N=4	5.17 (5.98) N=6	7.27 (3.95) N=11	1 (1) N=3	10 (-) N=1	- (-) N=0	7.67 (4.04) N=3	6.5 (4.95) N=2
Residential: Low density (e.g. loose standing / single units each on own stand)	5 (4.36) N=3	4.8 (6.02) N=5	5.78 (3.67) N=9	1 (1) N=3	10 (-) N=1	- (-) N=0	2.67 (2.52) N=3	1 (1.41) N=2
Hotels / lodges / recreational facilities	3.67 (2.31) N=3	6.2 (6.3) N=5	10.73 (5.64) N=11	2 (0) N=2	10 (-) N=1	- (-) N=0	8 (3.46) N=3	4 (2.65) N=3
Infrastructure/services installations	1 (0) N=2	1.25 (1.26) N=4	1.6 (1.95) N=5	2 (1.63) N=4	10 (-) N=1	- (-) N=0	1.33 (1.15) N=3	2.33 (0.58) N=3
Roads, bridges or other transport related projects	1 (0) N=2	1.75 (2.22) N=4	3.29 (3.59) N=7	1.6 (2.07) N=5	10 (-) N=1	- (-) N=0	2 (0) N=2	2.67 (2.08) N=3
Dams, canals, and other hydraulic works	2 (0) N=2	3.25 (4.57) N=4	3 (3.85) N=6	0.67 (1.15) N=3	10 (-) N=1	- (-) N=0	2 (0) N=2	2 (1) N=3
Electricity generating and/or transmission facilities	1 (0) N=2	3 (4.69) N=4	1.6 (1.95) N=5	1 (1.41) N=2	10 (-) N=1	2 (-) N=1	0 (0) N=2	3 (2.83) N=2
Other type of project listed is golf courses.	- (-) N=0	- (-) N=0	25 (21.21) N=2	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0	- (-) N=0

8. Listed below are some social, economic, and environmental considerations that might influence the capital cost budget for landscape and/or environment related works on your projects, in relation to the total project costs. Please indicate your rating of the degree of influence of the listed considerations.

8.1 Professional Project Managers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	9	0	33.33	66.67	0
The social value that the landscape /environmental work has for the surrounding community	9	11.11	44.44	22.22	22.22
The need to create as many job opportunities as possible aimed at the local community	9	33.33	22.22	33.33	11.11
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	9	11.11	33.33	44.44	11.11
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	9	-	0	55.56	44.44
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	9	-	11.11	55.56	33.33
Any other considerations:	0			-	

8.2 Professional Architects

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	15	0	26.67	53.33	20
The social value that the landscape /environmental work has for the surrounding community	15	0	26.67	53.33	20
The need to create as many job opportunities as possible aimed at the local community	14	14.29	21.43	64.29	0
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	14	7.14	7.14	78.57	7.14
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	15	-	0	60	40
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	15	-	0	60	40
Any other considerations:	0			-	

8.3 Professional Landscape Architects

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	17	0	23.53	58.82	17.65
The social value that the landscape /environmental work has for the surrounding community	17	0	35.29	41.18	23.53
The need to create as many job opportunities as possible aimed at the local community	17	5.88	17.65	58.82	17.65
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	17	5.88	11.76	70.59	11.76
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	17	-	0	52.94	47.06
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	17	-	23.53	35.29	41.18
Any other considerations you may wish to add: <ul style="list-style-type: none"> Reducing/mitigating potential negative environmental impacts through landscaping. Achieving ISO 14000 certification Achieving Triple Bottom Line reporting 	1			100	

8.4 Professional Civil Engineers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	8	0	12.5	62.5	25
The social value that the landscape /environmental work has for the surrounding community	8	0	25	50	25
The need to create as many job opportunities as possible aimed at the local community	8	0	37.5	50	12.5
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	8	0	50	50	0
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	8	-	0	50	50
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	8	-	12.5	37.5	50
Any other considerations:	0			-	

8.5 Professional Structural Engineers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	1	0	0	0	100
The social value that the landscape /environmental work has for the surrounding community	1	0	0	100	0
The need to create as many job opportunities as possible aimed at the local community	1	100	0	0	0
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	1	0	0	100	0
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	1	-	0	0	100
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	1	-	0	100	0
Any other considerations:	0			-	

8.6 Professional Electrical/Mechanical Engineers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	3	0	33.33	66.67	0
The social value that the landscape /environmental work has for the surrounding community	3	0	33.33	0	66.67
The need to create as many job opportunities as possible aimed at the local community	3	0	0	66.67	33.33
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	3	0	0	66.67	33.33
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	3	-	0	66.67	33.33
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	3	-	0	66.67	33.33
Any other considerations:	0			-	

8.7 Professional Quantity Surveyors

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	5	20	20	40	20
The social value that the landscape /environmental work has for the surrounding community	5	20	20	40	20
The need to create as many job opportunities as possible aimed at the local community	5	20	0	80	0
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	5	20	0	80	0
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	5	-	0	40	60
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	5	-	0	60	40
Any other considerations:	0			-	

8.8 Environmental Consultants

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environmental work has for the users of the project	3	0	33.33	66.67	0
The social value that the landscape /environmental work has for the surrounding community	3	0	33.33	33.33	33.33
The need to create as many job opportunities as possible aimed at the local community	3	0	0	66.67	33.33
The need to structure the proposed project in such a manner as to ensure or promote the concept of skills transfer to Previously Disadvantaged Individuals (PDIs)	3	0	33.33	33.33	33.33
The need to add value to the saleability/rentability of a proposed development through a well designed and constructed landscape or beautified environment.	3	-	33.33	33.33	33.33
The responsibility of the developer to ensure that no or only limited adverse environmental impact occurs as a result of the proposed development	3	-	0	66.67	33.33
Any other considerations you may wish to add:	0			-	

9. Listed below are some social, economic, and environmental considerations that might influence the maintenance/operational cost budget for the landscape and/or environment related works on your projects, in relation to the total project operational costs.
Please indicate your rating of the degree of influence of the listed considerations

9.1 Professional Project Managers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	9	-	33.33	55.56	11.11
The social value that the landscape /environment has for the surrounding community.	9	22.22	55.56	22.22	0
The need to create as many job opportunities as possible aimed at the local community.	9	22.22	33.33	33.33	11.11
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	9	11.11	44.44	22.22	22.22
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	9	0	0	55.56	44.44
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	9	0	22.22	44.44	33.33

9.2 Professional Architects

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	13	-	46.15	46.15	7.69
The social value that the landscape /environment has for the surrounding community.	13	0	53.85	46.15	0
The need to create as many job opportunities as possible aimed at the local community.	13	15.38	23.08	61.54	0
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	13	15.38	23.08	53.85	7.69
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	13	0	0	61.54	38.46
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	13	0	0	84.62	15.38

9.3 Professional Landscape Architects

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	17	-	35.29	47.06	17.65
The social value that the landscape /environment has for the surrounding community.	17	5.88	41.18	35.29	17.65
The need to create as many job opportunities as possible aimed at the local community.	17	17.65	23.53	52.94	5.88
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	17	5.88	23.53	64.71	5.88
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	17	0	0	52.94	47.06
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	17	11.76	11.76	41.18	35.29

9.4 Professional Civil Engineers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	7	-	57.14	28.57	14.29
The social value that the landscape /environment has for the surrounding community.	7	0	71.43	14.29	14.29
The need to create as many job opportunities as possible aimed at the local community.	7	0	42.86	57.14	0
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	7	0	85.71	14.29	0
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	7	0	42.86	57.14	0
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	7	0	42.86	28.57	28.57

9.5 Professional Structural Engineers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	1	-	0	0	100
The social value that the landscape /environment has for the surrounding community.	1	0	0	100	0
The need to create as many job opportunities as possible aimed at the local community.	1	100	0	0	0
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	1	0	100	0	0
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	1	0	0	0	100
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	1	0	0	100	0

9.6 Professional Electrical/Mechanical Engineers

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	3	-	0	100	0
The social value that the landscape /environment has for the surrounding community.	3	0	0	66.67	33.33
The need to create as many job opportunities as possible aimed at the local community.	3	0	0	66.67	33.33
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	3	0	0	66.67	33.33
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	3	0	0	66.67	33.33
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	3	0	0	66.67	33.33

9.7 Professional Quantity Surveyors

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	4	-	50	25	25
The social value that the landscape /environment has for the surrounding community.	4	0	50	25	25
The need to create as many job opportunities as possible aimed at the local community.	4	0	25	50	25
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	4	0	50	25	25
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	4	0	0	75	25
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	4	0	25	50	25

9.8 Environmental Consultants

CONSIDERATIONS	N	Degree of influence as %			
		no influence	little influence	influential	largely influential
The social value that the landscape/environment has for the users of the project.	3	-	33.33	66.67	0
The social value that the landscape /environment has for the surrounding community.	3	0	66.67	0	33.33
The need to create as many job opportunities as possible aimed at the local community.	3	0	66.67	0	33.33
The need to structure the maintenance of the landscape/environment in such a manner as to ensure or promote the concept of skills transfer to PDIs.	3	0	66.67	0	33.33
The need to maintain or enhance the saleability/rentability of a development through a well maintained landscape or beautified environment.	3	33.33	0	33.33	33.33
The responsibility of the developer/owner to ensure that no or only limited adverse environmental impact occurs as a result of the long term operation of the development.	3	0	33.33	33.33	33.33

QUESTION 10

The following contractual issues on landscape/environment related construction works might be problematic in the successful completion of such projects. Please indicate to what degree you are in agreement with the statements made below.

ITEM 1.1 LIABILITY FOR DEFECTS

If the landscape contractor or sub-contractor who installed the landscape is not the person/company who also undertakes the longer term landscape maintenance thereafter, it is normally very difficult to prove liability/responsibility should plants start dying or the landscape performs unsatisfactorily

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	-	77.78
Professional Architects	15	6.67	-	93.33
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	8	12.5	-	87.5
Professional Structural Engineers	1	0	-	100
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	0	-	100
Environmental Consultants	3	0	-	100
Total for category	61	8.2	-	91.8

QUESTION 10

ITEM 1.2 LIABILITY FOR DEFECTS

When there is an extended (past any "normal" defects liability period of typically 3 months) landscape maintenance contract, the responsibility for plant defects can then be carried by the landscape contractor as he/she is still on site and cannot disclaim liability for patent, latent or maintenance defects.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	0	0	100
Professional Architects	15	6.67	6.67	86.67
Professional Landscape Architects	17	11.76	0	88.24
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	0	0	100
Environmental Consultants	3	0	0	100
Total for category	61	6.56	1.64	91.8

QUESTION 10

ITEM 1.3 LIABILITY FOR DEFECTS

Water features, often constructed at considerable costs, are notorious for falling into disrepair if not maintained with due care. A period of maintenance by the specialist installer is therefore necessary, also for training the employer's maintenance staff.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	0	11.11	88.89
Professional Architects	15	0	6.67	93.33
Professional Landscape Architects	17	11.76	0	88.24
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	4	0	0	100
Environmental Consultants	3	0	0	100
Total for category	60	5	3.33	91.67

QUESTION 10

ITEM 1.4 LIABILITY FOR DEFECTS

A landscape maintenance contract should ideally be 12 months in duration to ensure that plants are maintained for at least one growing season.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	15	6.67	6.67	86.67
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	0	0	100
Environmental Consultants	3	0	0	100
Total for category	61	8.2	3.28	88.52

QUESTION 10

ITEM 1.5 LIABILITY FOR DEFECTS

Landscaping and irrigation equipment are often very vulnerable to vandalism and theft - if provision is not made in the maintenance contract specifications and schedules of quantities (or a schedule of rates) for such incidences, these items do not normally get repaired or replaced.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	44.44	0	55.56
Professional Architects	15	13.33	6.67	80
Professional Landscape Architects	16	12.5	0	87.5
Professional Civil Engineers	8	0	0	100
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	4	0	0	100
Environmental Consultants	3	0	0	100
Total for category	59	13.56	1.69	84.75

QUESTION 10

ITEM 2.1 GUARANTEES

If no provision has been made in the landscape subcontract specification for landscape maintenance to be done by the landscape subcontractor during or after the defects liability period, the landscape subcontractor's construction guarantee to the main contractor should be released in a reasonable time after practical completion for the whole project has been certified and not only after the defects liability period has ended.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	15	20	0	80
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	5	20	0	80
Environmental Consultants	3	0	0	100
Total for category	61	14.75	1.64	83.61

QUESTION 10

ITEM 2.2 GUARANTEES

A landscape construction guarantee cannot realistically be given and liability for the landscape installation cannot be accepted if there is no further maintenance contract between the employer and the landscape contractor.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	-	77.78
Professional Architects	15	26.67	-	73.33
Professional Landscape Architects	17	29.41	-	70.59
Professional Civil Engineers	8	12.5	-	87.5
Professional Structural Engineers	1	100	-	0
Professional Electrical/Mechanical Engineers	3	33.33	-	66.67
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	33.33	-	66.67
Total for category	61	27.87	-	72.13

QUESTION 10

ITEM 3.1 COMPLETION

Other trades (e.g. electrical work) often only finish their work on the day before practical completion must be reached, and since the landscape work is usually the last trade to be completed, it often leaves the landscape subcontractor insufficient time to finish his/her work.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	15	26.67	6.67	66.67
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	0	100	0
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	5	20	0	80
Environmental Consultants	3	0	0	100
Total for category	61	18.03	4.92	77.05
Comments	From a Project Manager: "Landscape Contractors do not see themselves as part of a project, they prefer a separate contract after practical completion occurs"			

QUESTION 10

ITEM 3.2 COMPLETION

The possible severe financial implications for a main contractor on a project where only the landscape work is incomplete and delays the practical completion and where the monetary value of outstanding landscape work is small in comparison to the total project value or the penalties that will be applicable, often result in undue pressure on the landscape architect to accept incomplete work

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	14	14.29	7.14	78.57
Professional Landscape Architects	16	25	0	75
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	4	50	0	50
Environmental Consultants	3	33.33	0	66.67
Total for category	58	22.41	3.45	74.14
Comments	From a Project Manager: In such cases he "suggests a separate contract"			

QUESTION 10

ITEM 3.3 COMPLETION

The definition of the term “Practical completion” for building and construction work (typically: “fit for use”) is not really applicable in the case of landscape work

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	55.56	0	44.44
Professional Architects	15	0	0	100
Professional Landscape Architects	17	23.53	11.76	64.71
Professional Civil Engineers	8	37.5	12.5	50
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	80	0	20
Environmental Consultants	3	0	0	100
Total for category	61	27.87	4.92	67.21
Comments	From an Environmental Consultant: “Acceptable cover” could define Practical Completion. From a Landscape Architect: “A principle for Practical Completion: Percentage (e.g. 80%) could be used to define an acceptable stage for Practical Completion”			

QUESTION 10

ITEM 3.4 COMPLETION

Provision should be made for a non-penalty carrying and cost disbursing extension of a landscape (sub) contract in cases where delays to the completion of a project, for any reason not attributable to the landscape (sub) contractor, extend the completion date into a “non-growing season” or a season where the specified plant material, e.g. green instant lawn, is not commercially available.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	0	-	100
Professional Architects	14	7.14	-	92.86
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	8	0	-	100
Professional Structural Engineers	1	100	-	0
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	0	-	100
Total for category	60	8.33	-	91.67

QUESTION 10

ITEM 3.5 COMPLETION

Delays to the finalisation of the contract's final account could occur in cases where a 3-month landscape maintenance period (to coincide with the 90-day defects liability period of the main contract), is included in the landscape subcontract and which will require additional monthly maintenance payment certificates through the main contractor.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	14	0	0	100
Professional Landscape Architects	17	11.76	5.88	82.35
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	5	20	0	80
Environmental Consultants	3	0	0	100
Total for category	60	15	3.33	81.67

QUESTION 10

ITEM 4.1 PROFESSIONAL LIABILITY

The landscape architect cannot accept professional liability for the successful performance of the landscape if the employer decides not to appoint the landscape contractor for an extended landscape maintenance period as well as appointing the landscape architect to inspect such maintenance.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	0	77.78
Professional Architects	14	14.29	7.14	78.57
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	0	12.5	87.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total for category	60	11.67	3.33	85

QUESTION 10

ITEM 5.1 DELAYS

There is often very little or no programme float left for the landscape work since it is usually the last trade to be completed on a contract.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	14	0	7.14	92.86
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	12.5	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total for category	60	13.33	5	81.67

QUESTION 10
ITEM 5.2 DELAYS

The main contractor will often use the period allocated for landscape works to soak up delays caused by other works to the disadvantage of the landscape subcontractor, often forcing him to complete his work in unrealistic time and site circumstances.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	22.22	11.11	66.67
Professional Architects	14	0	7.14	92.86
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	33.33	0	66.67
Total for category	60	15	3.33	81.67
Comments	From a Project Manager: Whilst agreeing with statement, it often depends on the Project Manager's acceptance of the (main) contractor's programme.			

QUESTION 10
ITEM 6.1 ACCESS TO WORKS

Unrealistic landscape sub-contract periods are often the result of inaccessibility of areas to be landscaped by the landscape subcontractor.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	0	11.11	88.89
Professional Architects	15	6.67	0	93.33
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	25	0	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	33.33	0	66.67
Total for category	61	13.11	1.64	85.25

QUESTION 10

ITEM 6.2 ACCESS TO WORKS

In cases where the landscape sub-contractor has to complete his/her work in areas already in use by the Employer, issues such as Works Risk, and Public liability insurance become problematic.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	44.44	22.22	33.33
Professional Architects	14	21.43	0	78.57
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	12.5	12.5	75
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	60	0	40
Environmental Consultants	3	0	0	100
Total for category	60	21.67	5	73.33

QUESTION 10

ITEM 6.3 ACCESS TO WORKS

A comprehensive definition is needed of what constitutes an area to be "suitable for handover to the landscape sub-contractor to install the landscape work".

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	0	-	100
Professional Architects	14	7.14	-	92.86
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	7	0	-	100
Professional Structural Engineers	1	0	-	100
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	0	-	100
Total for category	59	6.78	-	93.22

QUESTION 10

ITEM 7.1 TERMINATION OF THE LANDSCAPE INSTALLATION & START OF THE SUBSEQUENT LANDSCAPE MAINTENANCE

It is in both contracting parties' (Employer and Main Contractor) interest to have a mandatory landscape maintenance contract (of say 3 to 12 months duration) as a separate, direct contract between the Employer and the landscape (sub) contractor who installed the landscape for all the reasons given under Items 1 & 2 above.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	11.11	-	88.89
Professional Architects	15	0	-	100
Professional Landscape Architects	17	5.88	-	94.12
Professional Civil Engineers	8	12.5	-	87.5
Professional Structural Engineers	1	0	-	100
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	4	0	-	100
Environmental Consultants	3	0	-	100
Total for category	60	5	-	95

QUESTION 10

ITEM 8.1 GENERAL CONTRACTUAL ISSUES

Landscaping is often a popular target when project budget cuts are considered because the landscape budget probably has not been expended at that point in time.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	15	20	0	80
Professional Landscape Architects	17	0	0	100
Professional Civil Engineers	8	25	12.5	62.5
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total for category	61	18.03	3.28	78.69

QUESTION 10

ITEM 8.2 GENERAL CONTRACTUAL ISSUES

Landscaping is often a popular target when project budget cuts are considered because landscaping is often considered as non-essential.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	15	20	0	80
Professional Landscape Architects	17	11.76	0	88.24
Professional Civil Engineers	8	12.5	0	87.5
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	40	0	60
Environmental Consultants	3	0	0	100
Total for category	61	19.67	1.64	78.69

QUESTION 10

ITEM 8.3. GENERAL CONTRACTUAL ISSUES

If, for whatever reason, the long-term landscape maintenance contractor is different from the person who installed the landscape, it is often difficult for the landscape maintenance contractor to define/calculate the risks associated with the maintenance contract, such as the responsibility for live plant material and systems (e.g. irrigation installations) inherited from the landscape installation contractor.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	33.33	11.11	55.56
Professional Architects	15	0	0	100
Professional Landscape Architects	17	17.65	0	82.35
Professional Civil Engineers	8	37.5	0	62.5
Professional Structural Engineers	1	0	0	100
Professional Electrical/Mechanical Engineers	3	33.33	0	66.67
Professional Quantity Surveyors	4	25	0	75
Environmental Consultants	3	33.33	0	66.67
Total for category	60	20	1.67	78.33
Comments	From a Landscape Architect: "I believe that if the contractor has a good background in horticulture training, s/he would be able to establish the health of the plants and therefore the "risk" attached to the maintenance period"			

QUESTION 10

ITEM 8.4 GENERAL CONTRACTUAL ISSUES

Plant material sourcing and availability is a common issue of concern. A landscape contractor/sub-contractor often tenders for the specified plant material at a certain price at tender stage, but when the date arrives to deliver (and which date may have been extended due to delays not of his/her making), he/she might find that that the plant material is not available any more, or is only available at a higher price because of seasonal availability or otherwise, and he/she now wants to substitute the specified plants with other species.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	11.11	0	88.89
Professional Architects	15	13.33	13.33	73.34
Professional Landscape Architects	17	5.88	0	94.12
Professional Civil Engineers	8	0	0	100
Professional Structural Engineers	1	100	0	0
Professional Electrical/Mechanical Engineers	3	0	0	100
Professional Quantity Surveyors	5	60	0	40
Environmental Consultants	3	0	0	100
Total for category	61	13.11	3.28	83.61
Comments	From a Project Manager: "Contractors often suggest plant changes to suit availability and budget constraints". From an Environmental Consultant: "Landscape Architect should allow for availability and have an alternate species list, i.e. "Plan B"			

QUESTION 10

ITEM 8.5 GENERAL CONTRACTUAL ISSUES

The landscape architect cannot guarantee plant availability ahead of time unless a growing contract or other arrangement is made beforehand.

CONSULTANT	N	%		
		Do not agree	Not applicable or relevant	Agree
Professional Project Managers	9	0	-	100
Professional Architects	14	0	-	100
Professional Landscape Architects	15	13.33	-	86.67
Professional Civil Engineers	8	0	-	100
Professional Structural Engineers	1	100	-	0
Professional Electrical/Mechanical Engineers	3	0	-	100
Professional Quantity Surveyors	5	40	-	60
Environmental Consultants	3	0	-	100
Total for category	58	8.62	-	91.38

QUESTION 11

Please indicate how often do you recommend to the Developer/Owner that he/she enter into a landscape maintenance contract with the landscape contractor who constructed the landscape or undertook the environmental work.

CONSULTANT	N	%			
		Never	Rarely	Frequently	Always
Professional Project Managers	9	0	22.22	66.67	11.11
Professional Architects	14	0	28.57	35.71	35.71
Professional Landscape Architects	17	0	0	47.06	52.94
Professional Civil Engineers	8	25	50	12.5	12.5
Professional Structural Engineers	1	0	100	0	0
Professional Electrical/Mechanical Engineers	2	50	50	0	0
Professional Quantity Surveyors	4	0	50	50	0
Environmental Consultants	3	0	33.33	33.33	33.33
Average	-	9.38	41.77	30.66	14.03

LIST OF GOVERNMENTAL AND PARA-STATAL ORGANISATIONS TO WHOM QUESTIONNAIRES WERE SENT

NO. SENT	ORGANISATION	LEVEL
Central Government Departments		
1	Department of Public Works	National
3	Department of Environment Affairs & Tourism	National
1	Department of Transport (Roads Agencies)	National
1	Department of Minerals & Energy Affairs	National
1	Department of Water Affairs and Forestry	National
Provincial Government Departments		
Gauteng		
1	Dept Development Planning & Local Government	Provincial
Western Cape		
1	Dept Public Works, Roads & Transport	Provincial
1	Dept Housing	
2	Dept Environment Affairs	
Eastern Cape		
1	Dept Public Works, Roads & Transport	Provincial
1	Dept Housing & Development	
Kwa-Zulu Natal		
1	Dept Housing & Development	Provincial
1	Dept Land Affairs & Spatial Planning	
1	Dept Public Works, Roads & Transport	
1	Dept Environment Affairs	
Northern Cape		
1	Dept Development & Housing	Provincial
1	Dept Public Works, Roads & Transport	
1	Dept Environment Affairs	
Free State		
1	Dept Land Affairs & Spatial Planning	Provincial
1	Dept Land Development	
3	Dept Development & Housing	
Mpumalanga		
2	Dept Public Works, Roads & Transport	Provincial
2	Dept Development & Housing	
1	Dept Environment Affairs	
1	Dept Education	
Limpopo		
1	Dept Development & Housing	Provincial
1	Dept Public Works, Roads & Transport	
North West		
1	Dept Development & Housing	Provincial
Major Metro Councils		
1	Tshwane	Local
2	Johannesburg	Local
2	Cape Town	Local
2	Port Elizabeth	Local
4	East London	Local
2	Bloemfontein	Local
3	Durban	Local
2	Pietermaritzburg	Local
3	Kimberley	Local
3	Nelspruit (now Mbombela)	Local
1	Polokwane	Local
Para-statal organisations (or organisations in the process of privatisation)		
1	Eskom	National
1	Rand Water	Regional
1	ACSA	National (Head office)
1	Kumba Resources	National (Head office)
1	SASOL	National (Head office)
65	TOTAL NO. OF QUESTIONNAIRES SENT	