

# EFFECTIVE AND EFFICIENT PROJECT MANAGEMENT ON GOVERNMENT PROJECTS

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## ABSTRACT:

**Purpose of the paper-** One of the major challenges facing government today is the delivery of all construction and maintenance projects on time, within budget and in accordance with the desired scope. The purpose of the paper therefore is to critically assess the application of project management on government projects and to make recommendations in order to improve service delivery.

**Methodology/Scope-** In order to get to the root of the problems experienced in the delivery of government infrastructure, it is necessary to conduct research on projects, processes and operating behaviours of subjects. Case studies into the application of project scope, cost and time management on six projects that have failed have therefore been selected to illustrate challenges facing government. NB. The method used was for illustrative purposes as no comparison could be made against the total population since such information was unobtainable. In addition to this the various project failures identified in the study of the six projects were further analysed the all projects executed by the department of public works. This was easily obtainable through the project management business system and a study conducted by a management consulting company, Lesele.

**Findings-** The empirical research results reported in this paper are derived from an analytical study of various project failures and since many of the professionals and contractors are new players in the industry, it is concluded that basic project management principles/skills is lacking. The paper will therefore report on the findings regarding the application of project management on government construction projects and will make recommendations to redress inefficiencies.

**Research limitations-** The research and case study used in this paper is limited to the execution of infrastructure related projects under the control on the National Department of Public Works. It is recommended that future research covers the execution of projects across all three spheres of government.

**Practical implications-** The intended outcome of this paper is to ensure that best practice project management is implemented on all government construction projects.

**Value-** The value proposition made in this paper is that of improved service delivery, contribution to accelerated economic growth, as well as the eradication of poverty and unemployment.

**Keywords:** programme management, project management, improved service delivery, economic growth, job creation.

## 1. INTRODUCTION

Among the many challenges facing governments infrastructure service delivery programme, the most critical and hence the basis of the problem statement discussed herein are the following:

- Infrastructure backlog constrains economic growth.
- Under expenditure on infrastructure budgets.
- Poor application of project management.

South Africa's economy continues to exceed the expectations of economists and with this growth comes a bullish market and greater demands on the construction industry. Continued growth of any economy requires a well developed infrastructure that is capable of expanding in order to meet ever increasing demand across all sectors of a country's output. It is therefore crucial for Government and its private sector partners, namely, the built environment professionals and construction companies to address the challenges outlined in this paper. It should also be recognised that Government needs to apply a much broader form of project management. An interesting comment was made at a project management seminar held at the University of the Free State in 2005 where the presenter made a statement in favour of the much broader form of project management, namely, programme management. "A construction project should never be called a construction project since the term project is limited to that phase of a much bigger programme" (Gareis, 2005: Project Management seminar). Gareis further explained "that project managers should investigate the objective of the facility being constructed, e.g. a hotel where the project manager should in addition to completing the project successfully also be concerned about the sales and marketing of the rooms during the first six months of operation of the hotel".

## 2. ANALYSIS OF THIS PROBLEM

In order to get to the root of the problems experienced in the delivery of government infrastructure, it was necessary to do research on real life projects, processes and operating behaviours of subjects. The discussion that follows evaluates and analyses project failures and operational deficiencies.

### 2.1 Illustration of selected project failures (Source: van der Walt, 2006)

Project Location	Project Description	Failure	Causes
Polokwane Prison	Upgrading of Civil Infrastructure, Wet Services & Fencing	Contractor failed to complete project on time and within budget.	<ul style="list-style-type: none"> <li>•Non viability of tendered rates.</li> <li>•Poor project time management.</li> <li>•Poor project quality management.</li> </ul>
Baviaanspoort Prison	Repairs & waterproofing to roofing. R9 510 980, 10	Project completed 15 months late. Heavy penalties imposed.	<ul style="list-style-type: none"> <li>•Poor project time management.</li> </ul>
Makhado Air Force Base	Project Winchester: Construction of Taxiway.	<ul style="list-style-type: none"> <li>•Project completed 3 months late. Penalties imposed.</li> <li>•Cost overrun.</li> </ul>	<ul style="list-style-type: none"> <li>•Poor project cost management.</li> <li>•Poor project scope management.</li> <li>•Poor project time management.</li> </ul>
Sandton: Leeukop Prison	Repair of medium A	•Time overrun resulting from	•Poor project time

	kitchen, cells, civil infrastructure and wet works	insufficient resources. Heavy penalties imposed. •Site abandoned by contractor.	management.
Cape Town: Pollsmoor Prison.	General upgrading of buildings.	•Contractor over committed and eventually liquidated.	•Poor project cost management. •Poor project time management. •Poor project integration management.
Helderstroom Prison	Upgrading of water & sewerage works	•Contract documentation not aligned to scope definition. Work specified was not in accordance with clients brief and contract could therefore not be completed on time. Client also provided poor scope definition.	•Poor project scope management.

## 2.2 Analysis of project failure.

### 2.2.1 Poor project cost management.

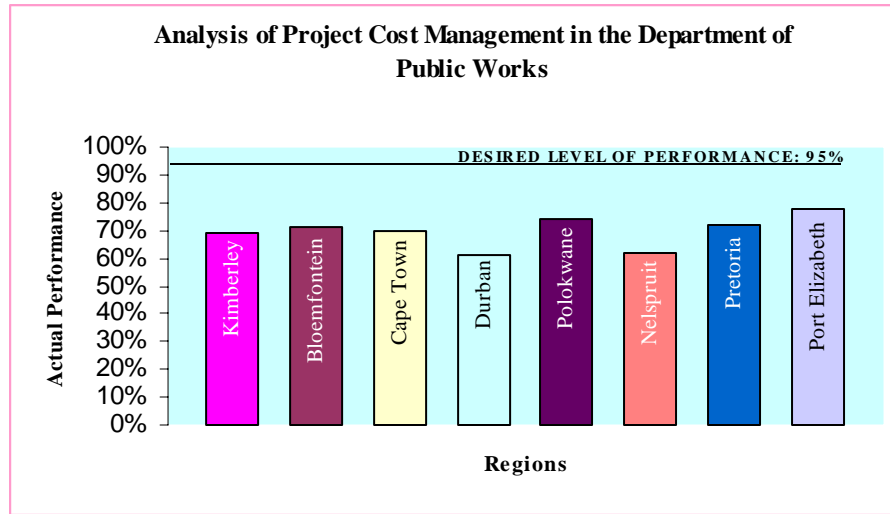
Contractors' failed to apply effective project cost management from the outset, that is, from the time the tender price was prepared and while the contract was executed. "Project cost management includes the process required to ensure that the project is completed within the approved budget, and includes the following:

- Resource planning-determining what resources (people, equipment, materials) and what quantities of each should be used to perform project activities.
- Cost estimating-developing and approximation (estimate) of the costs of the resources needed to complete project activities.
- Cost budgeting-allocating the overall costs estimate to individual work activities.
- Cost control-controlling changes to the project budget" (Project Management Institute, 2000: 83).

According to Clements and Gido (2003: 254-255), "Cost planning starts with the proposal for the project. It is during the development of the proposal by the contractor or project team that project costs are estimated. In some cases, the proposal will indicate only the total bottom-line cost for the proposed project. In other cases the customer may request a detailed breakdown of various costs". Cost management is not an event, it is a process that must be performed on a monthly basis. According to Clements and Gido (2003: 270) "The key to effective cost control is to analyze cost performance on a regular and timely basis and it is crucial that cost variances and inefficiencies be identified early so that corrective action can be taken before the situation gets worse. Once project costs get out of control, it may be very difficult to complete the project within budget".

Further research as illustrated in figure 1, indicates that the latter is not applied effectively since an average of only 60% of projects are completed within budget against the desired level of 95%. The main reason for this can be attributed to poor scope definition by the client as well as poor

project conceptualisation and design. This situation results in an extremely high percentage of variation orders which places tremendous strain on project budgets.



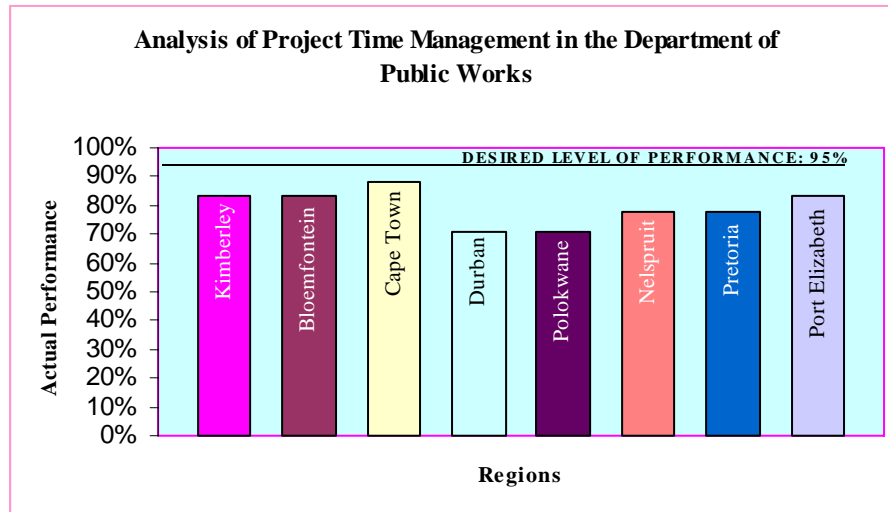
(Source: Lesele, 2006)

Figure 1

### 2.2.2 Poor project time management.

Poor planning, a lack of a consistently updated project plan and the failure to apply critical path analysis techniques, invariably affect the other project management knowledge areas as is evident from the above project failures. According to Steyn *et al* (2003: 91) “Project scheduling is necessary to determine when work must be done and to communicate the information to determine what resources (manpower, equipment, facilities and funds) should be available at any specific time. Unless scheduling is done properly, one could expect delays”. The most common and arguably the most effective way of designing a project plan is by using a Gantt chart which is developed from a precedence (network) diagram clearly indicating the critical path of the project. “Gantt charts are the simplest and most common way of presenting project plans” (Steyn *et al.*, 2003:93). “A project network diagram does not only show dependencies but also indicates the duration or time that it would take the specific person to perform the work. The longest path from the beginning of the project to the end gives the expected project duration. This is called the critical path” (Steyn *et al.*, 2003: 97 & 100). Knipe *et al* (2002: 155), agree with the latter and describes network/ precedence diagram’s or programme evaluation review technique (PERT) as “a flow chart that shows diagrammatically the relationship between the tasks that are necessary to complete a project and their order. PERT is described by (Burke, 2003: 131) as “a graphical presentation of the project’s activities showing the planned sequence of work”.

Notwithstanding the current performance of regions who according to figure 2 below, deliver between 78 – 85% of their projects on time, the desired level of 95% across the country has not been realised mainly due to poor project time management.



(Source: Lesele, 2006)

Figure 2

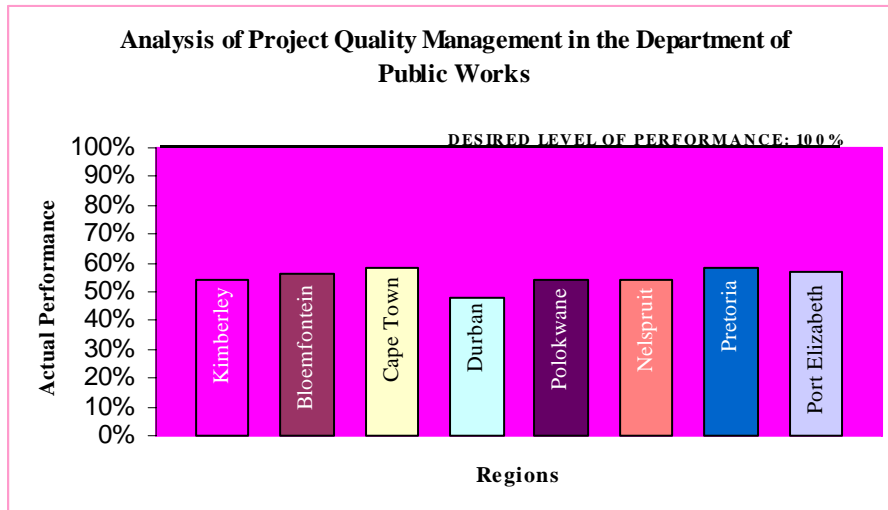
### 2.2.3 Poor project quality management.

Too often, contractors take on too much work, become over extended, and become constrained due to a lack of resources resulting in poor project quality management. This is exactly what has happened on the Polokwane prison project referred to above. According to Orwig and Brennan (2000: 354), “Quality is an important outcome of a project. It is a widely accepted view that, at a minimum, performance measures of a project are based on time, cost and quality. Implicit in this view is the idea that if the project delivered a quality product on time and in budget, then the process of managing the project must be good enough”.

The quality of construction projects has been on the decline over the past five years. The main reasons for this are:

- The lack of good contractors vis-à-vis the demands of a booming construction industry.
- Increased emergence of new contractors’ with no or little mentoring and support.
- Dilution of core skills (artisans) over the past 10 years.
- Lack of proper supervision.

Figure 3 below illustrates that on average, approximately 50% of projects are completed within the quality standards required by the department and its clients’. It is not surprising that clients’ expect value for money on all projects delivered to them, hence the desired level has been set at 100%. It is all about satisfying the customers’ needs and according to Goetsch & Davis (1997: 293) “Customer focus means basing decisions and actions on the needs of customers. “The Project manager has the ultimate responsibility for quality management on the project. Quality management has equal priority with cost and schedule management” (Kerzner, 2001: 1055-1058). To achieve this, two key imperatives will have to be addressed, namely the compliance with Construction Industry Development Board (CIDB), in particular the appointment of contractors relative to their grading, and compliance with the South African Council for Project and Construction Management Professions (SACPCMP) with respect to the appointment of departmental project managers’.



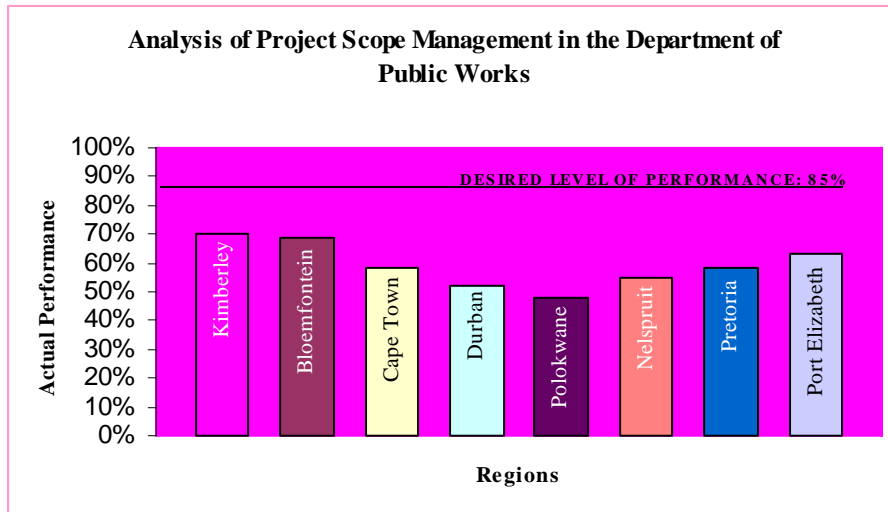
(Source: Lesele, 2006)

Figure 3

#### 2.2.4 Poor project scope management.

The Makhado air force base and Baviaanspoort prison projects were clearly constrained by poor scope direction given by the client which resulted in poor scope development by the consultant and ultimately in project failure. According to Flemming and Koppleman (1996:31) “it always helps to know what makes up the project, the whole project, and particularly the outer limits of the project. Secondly, you need to know the difference between agreed to work and new work requests”. The client must have a well documented concept (scope statement) of what he wants, which must be articulated to the professional team in very clear terms and late variations to the scope should be avoided. The latter forms the basis for good project scope management. “The scope statement forms the basis for an agreement between the project team and the customer by identifying the project objectives and the major project deliverables. It entails the identification and definition (with appropriate documentation) of the project objectives and goals provided by the project sponsor or the client requiring the end product of the project” (Oosthuizen, Köster & De La Rey, 1998:47).

Research on the application of project scope management by the department of public works have revealed that current performance is at a level (average across all regions) of 60% compared to the desired performance of 85%. Similarly to the discussion on poor cost management, poor scope management has an adverse effect on the clients’ budget due to the issuing of variation orders. The result of this research is illustrated in figure 4 below.



(Source: Lesele, 2006)

Figure 4

### 2.2.5 Project human resources management

As stated in the abstract of this paper the department of public works has redefined its relationship with the private sector to be one of partnership as opposed to a competitive one. To this end the department performs a programme management role on all construction projects and outsources design, documentation and execution to the private sector. Research has shown that the department of public works is not in full compliance with the SACPCMP regulations since many officials who are appointed as project managers' are not professionally registered and/or are struggling to graduate from being candidate level of project manager. In addition to this, the appointment of the professional team together with their supervisory site staff by the department takes too long. A third shortcoming is that the human resources required by the contractor to execute the work is not adequately managed and that little or no resource planning is done. According to the Project Management Institute (1996: 93) "the three important processes are organisational planning, staff acquisition and team development", however many contractors ignore these important aspects and prefer to chase their short-term goals of maximising profit as opposed to the long term goals of industry development.

With respect to managing client specific issues it was discovered that Key Account Manager (KAM), who is the person accountable to the client spends most of his day supervising staff and doing administrative work, instead of been involved in strategic planning, project conceptualisation and project evaluation.

Figure 5 below illustrates the results of day in the life studies undertaken for key account managers' which indicates that these officials spend more time on administration and travelling than on servicing clients'

## Day in the Life of KAM How they are spending their day

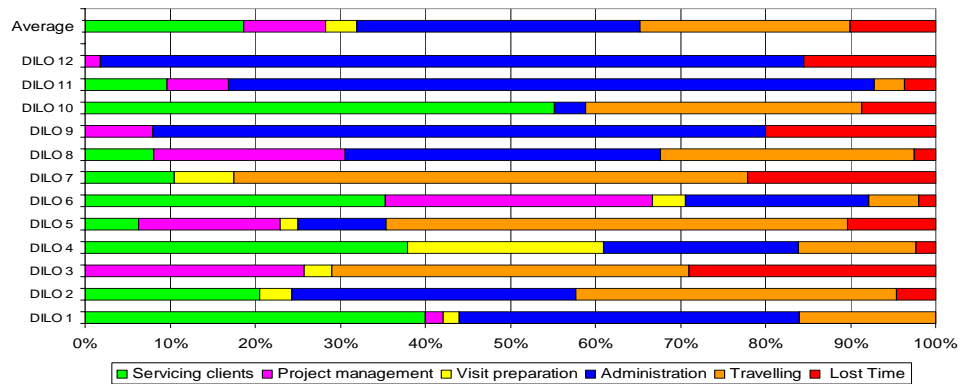


Figure 5

Another significant challenge as illustrated in figure 6 below is that departmental project managers' spend a lot of time on administration duties and travelling which may indicate either that they are based too far away from their projects, or that they are over committed in terms of projects assigned to them.

## Day in the Life of Project Managers How they are spending their day

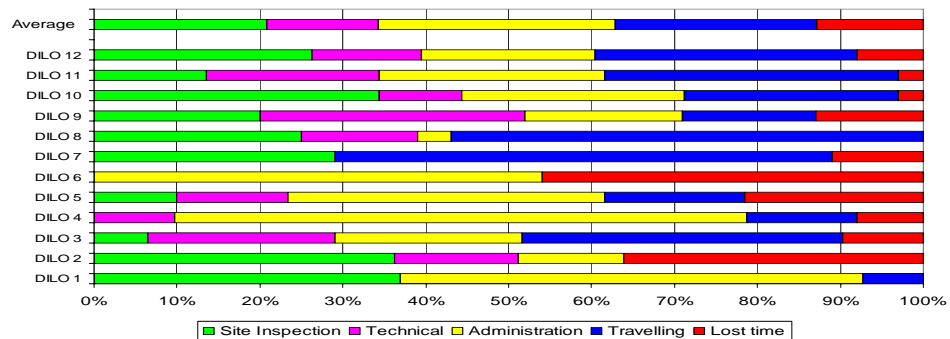
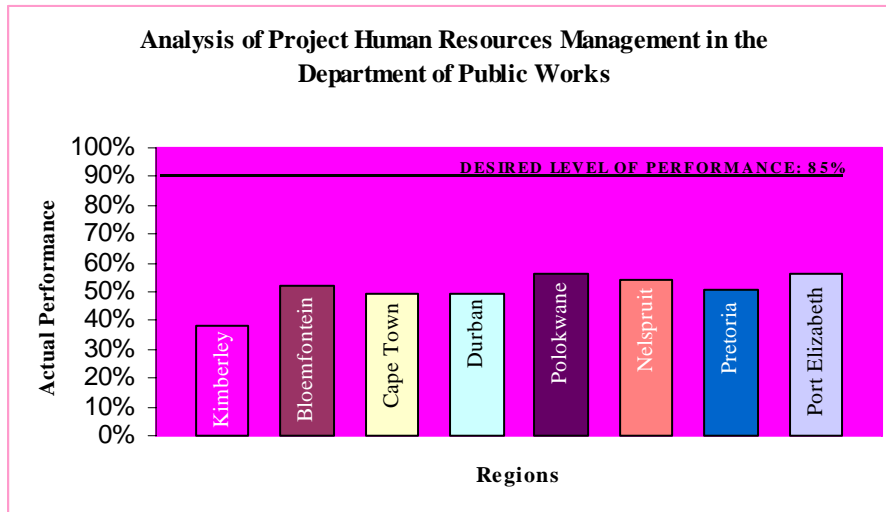


Figure 6

The overall performance across all regions for areas related to project human resource management is well below the desired level of 85%. The results of the research are illustrated in figure 7 below.



(Source: Lesele, 2006)

Figure 7

### 3. CONCLUSIONS AND RECOMMENDATION

- 3.1 The construction industry is extremely complex which is exacerbated by continued price increases in building material and labour problems. Even the slightest mistake in a tender estimate may cause a project to fail which may in turn have extreme consequences for the contractor. This aspect is taken so seriously by the large construction companies that they employ highly paid estimators and quantity surveyors to prepare their tenders. Smaller contractors however, can not afford the same resources employed by the captains of industry. It should be noted that project failure resulting from a low contract price is not only the fault of the contractor. The client, in this case government should be careful not to make tender awards where the price of the recommended tender is below the professional quantity surveyors pre tender estimate. This pre tender estimate must be accurately prepared so as to serve as a baseline on which to evaluate and adjudicate tenders. It is further recommended that the grading system as prescribed by the Construction Industry Development Board (CIDB) be strictly adhered to.
- 3.2 It is evident from the failures of the subject projects, that project time management was not a key priority for the contractors concerned. These contractors appear to be ignorant of the methodology of using precedence diagrams and Gantt charts as well as the calculation of the critical path in the project planning process. In addition contractors generally ignore the legal requirement to employ project managers' who are registered with the South African Council for Project and Construction Management Professions (SACPCMP).

It is recommended that the appointment of a registered project manager (with the SACPCMP) be made a condition of tender, and should the contractor fail to meet this condition, his tender would be automatically disqualified. The CIDB should review its regulations to enforce construction companies to have registered project managers in their employment regardless of the project category.

- 3.3 With respect to the subject projects that have failed as a result of poor project quality management it should be noted that clients and the general public deserve to get value for money and each project which fails as a result of poor workmanship and materials represents fruitless expenditure

and ultimately unnecessary costs to the tax payer. It is crucial for government to take a strategic view on quality management and minimum standards based on a 'zero tolerance policy'. This can only be achieved through the collective effort of all role players, programme managers, project managers, professional consultants, contractors and suppliers. According to Vinzant and Vinzant, cited in Price (2003: 285) "the two approaches of quality management and strategic management are highly complementary. Quality management should not be practiced in isolation from other initiatives but form an integrated part of an organization's strategy".

- 3.4 Project failures caused by poor project scope management can be attributed firstly to poor scope definition by government, and secondly to the poor translation of the scope into design and documentation by the professional team. The Department of Public Works and its clients must improve on the quality of scope statements and must ensure that it is complete before issuing same to the professional team. Consultants must play their role as professionals and in accordance with the standards laid down by their councils by translating the scope statement issued by the client into quality design and tender documents.
- 3.5 It is clear from the aforementioned that the programme manager is the person appointed by government who takes the single point responsibility of a cluster of projects assigned to him. The project manager is the consultant's/contractor's representative who takes on the single point responsibility for an individual project. During the evaluation of the subject projects, it was discovered that the roles and responsibilities of the programme manager and of the project manager have become confused. This confusion has resulted in a conflict of accountability which ultimately ends in project failure. The roles, responsibilities and accountability of the Professional team vis-à-vis that of the contractor should therefore be clarified up front and recorded in conditions of contract with the departmental project manager assuming overall accountability for successful project delivery.

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