

ASOCSA2009-30

Managing the risks associated with scope changes in Guaranteed Maximum Price (GMP) contracts

James Olabode Bamidele Rotimi
Lain Smith
Deji Rufus Ogunsemi

ABSTRACT

Purpose

This study's objective was to determine if prior definition of scope changes within contract clauses would be an effective form of risk management on GMP projects.

Design

The study evaluates a typical project executed under the GMP contract system in New Zealand. Information on the administration of the project was obtained from project documents; and consequently questionnaires administered to the key project participants. The questions produced both qualitative and quantitative data that formed the basis for suggested solution to managing risks on GMP projects.

Findings

Experiences gained on the case study project show that the performance of GMP contracts could be improved through clarity of the project scope prior to awards, and partly on the procedural arrangements that are in place for dealing with subsequent scope changes. However these are not panaceas to risk mitigation on GMP projects, but a commonality of objectives by project management and the supply chain to make it work.

Value

The study provides further insight into the applicability of GMP contracts and how scope changes during project design developments could be managed on construction projects.

Keywords: GMP; design development; scope change; risk management

1.1 INTRODUCTION

There has been considerable development in procurement systems as well as contractual arrangements in the construction industry. It will be correct to say that each developed system has its pros and cons and desired to meet specific circumstances. One which is gaining some measure of popularity is the Guaranteed Maximum Price (GMP) contract in New Zealand. Several notable sector projects that have been executed using this contract type include:

- The Auckland, Southland and Tauranga hospital projects in the health care sector;
- Auckland University of Technology's Business School project; and
- Stamford Plaza in Auckland and Northlands Mall in Christchurch in the commercial building sector.

Anecdotal evidence suggests that the implementation of these projects were without common controversies surrounding the administration of variations and scope changes. This leads one to the conclusion that it is improbable for a construction project to be completed without a review of its original contract price. The risks of cost over-run associated with traditional lump sum or design and build contract systems continue to exist in the GMP contract system and contract price changes are inevitable.

The current study therefore explores how the risks resulting from scope changes can be more effectively managed on GMP contracts. It reviews a typical project executed under the GMP contract system in New Zealand whilst also engaging the key project personnel on means by which problems that arose during the administration of the project could be better managed.

1.2 BRIEF LITERATURE REVIEW

The GMP contract system has generated interest in the construction industry. The idea that a project can deliver an end result that has not exceeded its original contract price (as suggested in the name GMP) has great appeal to most construction clients. GMP appears to be in contrast with traditional lump sum contracts where inevitably, the original price is exceeded after the first variation instruction.

GMP contracts are desired to provide a lump sum (or ceiling price) contract which cannot be exceeded, except the scope of the original intent is reviewed extensively (Gander & Hemsley, 1997; Haywood & Hall, 2002). Embedded in its agreed contract price are contingency provisions that take cognisance of the risks associated with design development. Thus the GMP contracts are a combination of both cost reimbursement and a call option on the fixed price contract (Boukendour & Bah, 2001). The cost component of a GMP contract includes:

- Guaranteed design and construction sum for all basic costs, overhead expenses and profits.

- Provisional sum which is a budget allowance to cover risks including those of design development. This sum may be priced as a risk item by the contractor or may be a declared sum which will be controlled by the client and contractor.

The extent and specificity of design development is crucial to the success of GMP contracts system (Daphne, 2001; Henriod & Le Masurier, 2002; Patterson, 1999). The rationale is for the GMP system to provide greater certainty that an original contract price will not be exceeded. This may be difficult to achieve because most bids are based on partially completed designs which may have to be reviewed in the future. If the designs are at basic development levels before the award, certain salient cost-centres may not have been included in the original scope; conversely if the designs are complete before award, works that were not specified may not have been included. The certainty of a guaranteed maximum price is therefore in question (Daphne, 2001; Lewis, 1999). If a GMP contract is enforced then it would be extremely onerous on the contractor and will present a very high risk. If that risk was priced into the contract then the GMP is defeated since clients intent is to share in the contingencies. It would therefore seem that GMP contracts are never all-inclusive and variation claims could eventually throw the GMP out.

Three types of variations have been identified on GMP contracts (Martin, 2000), these are:

- Variations that increase or decrease the GMP price. These are scope change variations that will require the client to provide additional funds if there is an increase in the GMP. Examples include significant variation in building size, function and quality (Daphne, 2001);
- Variations that do not affect the GMP but affect the project cost. These are project cost variations that have been provided for against the design development contingencies or budget, and
- Nil cost variations which are variation instructions that clarify designs, but without any cost implications such as colour scheme.

Scope change variations are difficult to administer because of conflicts that may result from its interpretation (Cairns, 2002). The tendency is for contractors to regard a variation instruction to be a scope change (Daphne, 2001) rather than those that can be expended from the design development contingency. The client on the other hand, wishes the opposite i.e. that all variations be project cost variations. Considerable amount of flexibility and willingness is required from both parties to the GMP contract for a negotiated agreement on how variations should be treated.

Several studies (Davis & Stevenson, 2004; Gander & Hemsley, 1997; Martin, 2000) have indicated that proper scope documents need to be carefully developed so that parties are aware of the project requirements. Clarity of the project scope and what issues will constitute a scope change or project cost variation should be defined from the outset to minimise differences concerning their administration. There has to be an agreement by parties to the GMP contract on the circumstances by which price will increase (Lucas, 1998).

1.3 THE RESEARCH

1.3.1 Research Objective

The objective of the current study is to determine if prior definition of scope changes within construction contract clauses would be an effective means of managing the risks of contract price changes on GMP projects. A hospital project that was executed using the GMP contract system in New Zealand was selected as a case study. Project information was obtained from project documents; and consequent interviews held with the main project participants. The interview was based on a semi-structured questionnaire with questions referring to GMP definition; benefits and dis-benefits; and suggested solutions that could make GMP contracts achieve more relevance.

1.3.2 Description of the Case Study Project

The case study is a 29 month hospital project built in Invercargill, New Zealand between 2002 and 2004. It had an approximate contract value of NZ\$60m. The project was executed under a partnership agreement with three main objectives: to ensure that the client derives the maximum benefit from a team approach; to ensure smooth operation of the contract; and facilitate prompt and constructive resolution of disputes.

The contract conditions did not define design development and its make up. However it defined scope change or scope amendment which would have to be directed by the Technical Project Manager (TPM) thus:

- Increase, decrease, addition to or omission of any project requirements;
- Change in character or quality of any material or work or change in level, line position or dimensions of any part of the project requirements, and
- Change in sequence or duration of any part of the works that can be shown by the contractor to have materially impacted the time/or cost of completing the works.

The partnership arrangement permitted the main contractor to review all consultants' instructions and then advise the TPM as to whether they are a scope change or project cost variation. There were two levels of redress where parties are in disagreement: at the level of the GMP contract issues meeting that is held regularly amongst project team members; and at the Governance level involving project stakeholders (financiers).

1.3.3 Analysis and Presentation of Research Result

A semi-structured questionnaire was administered to the key project participants that make up the project management team. There were eight participants in the survey and they include the Technical Project Manager and Professional Quantity Surveyor on the client's side; and from the contractor's side the Project Manager, Construction Manager, Site Manager, Financial Controller, Quantity Surveyor and the GMP Estimator.

The questionnaire had three main parts: respondents' demographic details, general questions on GMP, and specific questions relating to the project. Specific questions that were asked about the case study project originated from project information e.g. minutes, correspondences etc. that had been obtained previously. Details are not included in this paper.

The questions produced both qualitative and quantitative data. The qualitative data consists of respondents' opinions to open-ended questions while the quantitative data is principally opinions that were analysed in this case using mean item score method to rank some of the responses.

Question 1 - Describe GMP contracts in simple terms.

All the respondents (n=8) agreed that GMP was a maximum price, which could not be exceeded. Three of them (40%) referred to the maximum price as being based on a determined 'scope of works' with one explaining that the GMP price could increase if there was a change in scope. Half of the respondents (n=4) are of the opinion that GMP prices are based on partially completed documentation and unresolved details.

A respondent offered that GMP prices are agreed between two parties with the project based on an 'open book' arrangement with a savings scheme included to motivate the contractor to achieve an increase in margin if there was a saving on the agreed GMP. The same respondent felt that the GMP contract process included 'partnering' as an essential part of the contract.

Question 2 – Definition of design development

Respondents ranked the definition of design development provided to them in the questionnaire in the following order.

Table 30.1 Respondents definition of design development

No	Definition	Rank
(a)	It is the budget to forecast the incomplete design of a project	1
(b)	It is the contractors estimating contingency to cover the lack of detail when pricing the original GMP documentation	2
(c)	It is the change that is imperative for the component system to meet its functional purpose	3

Question 3 – Definition of scope change

Respondents ranked the definition of scope change/amendment provided to them in the questionnaire in the following order.

Table 30.2 Respondents definition of scope change

No	Definition	Rank
(a)	Increase, decrease, addition to, or omission of any project requirement	1
(b)	Change in character or quality of any material or work or change in level, line position or dimensions of any part of the project requirements	2
(c)	Change in sequence or duration of the works that can be shown by the contractor to have materially impacted the time / cost of completing works	3

One respondent opined that the changes in scope could be as those defined by the contract, but may be subject to an agreement on what constitutes a change in scope. The respondent also added that the intent of the scope of works was vital and would influence future discussions on scope changes.

Question 4 – Respondents' preferences for GMP contracts.

There was general preference (n=6) for GMP contracts above other traditional forms of contract provided there was sufficient time for full design documents to have been produced prior to the pricing stage. GMP was noted by one respondent to be more suited to large and complex projects.

Some respondents believe that the GMP contracts could result in a 'win win' situation especially where there is an established relationship between the parties to the contract.

Question 5 – Could the inclusion of specific clauses on scope change and development have resolved contractual issues experienced on the case study project?

Response to this question was inconclusive because 40% (n=3) believe that the inclusion of special clauses in the contract could not have prevented the contentious issues surrounding scope changes and variations. The argument put forward is that scope changes would always be contentious no matter the type of contract involved. In fact it was suggested that the extent or value of the scope change claims determines the level of dispute that could result from any contract type.

Two respondents (25%) suggest that the absence of these clauses contributed to the problems encountered during the administration of scope changes and variations on the project. The remaining participants abstained from answering this question.

Question 6 – How could scope change issues be mitigated on this or future GMP projects?

There was general agreement that scope change and design development need to be well defined in GMP contracts. The provision of examples of what might constitute scope change that could affect the GMP were also suggested. Some of the respondents (n=3) however, were sceptical about giving such examples as disputes could arise from the interpretation of other issues outside those provided for in the contract. Along similar lines a respondent suggested the drawing up of 'risk schedules' that unambiguously state the risk responsibilities of the parties to the GMP contract. Similar risk schedules were prepared for the case study project as a means of improving GMP contract performance.

Generally respondents (n=5) are of the opinion that partnering was key to the resolution of issues arising from scope changes and variations on the case study project; and was the reason for the effectiveness of the project team. Others (n=3) believed it was the personality of the project participants (in terms of their ability to reach amicable settlements) rather than the contractual terms or conditions that could mitigate scope change issues.

Five of the respondents are of the opinion that the novation of the design team could positively influence the administration of scope changes as the contractors would have more certainty and control over potential risks from incomplete designs. In novation, contractors have more influence on the designs than in traditional forms of contracts. The alternative viewpoint (n=3) is that contractors' could negatively influence the outcome of designs to suit their own interests thus negating the benefits of a GMP or of novation for that matter.

Question 7 – How scope change issues were resolved on the case study project?

There were four main steps taken to resolve scope change issues on the case study project. It was noted that none of the scope change issues went beyond the project management committee to the governance committee. The reason given for this was the partnering agreement between project teams.

The scope change resolution steps taken are outlined as follows:

- Notification of scope change by the Financial Controller;
- Discussion at two-weekly scope review meeting, reasons for scope changes tabled;
- Review by riders and discussed at the next scope review meeting, and
- If there is no agreement, the Financial Controller is to submit written submission with break up information which was reviewed and commented on by the riders.

Question 8 – General comments on suitability of GMP contracts.

Respondents were required to comment freely on the suitability of GMP contracts. The general opinion was that GMP contracts could be successful. One respondent opined that the GMP contracts were suitable considering that the case study project was completed on time and under budget. The client was satisfied with the final outcome and the contractor's margin was assured. The respondents believed that the GMP permitted better management of risks on both parties to the contract through a negotiation process that would decide which aspects should be expended using the design development budget and other aspects that the client will have to raise funds to cover above the original GMP.

1.4 CONCLUSION

The paper has reviewed some of the challenges associated with the administration of GMP contracts and especially how risks from scope changes can be effectively managed to facilitate construction project execution. Participants on a case study project were confronted with general and specific questions relating to scope change administration on that project. While there were general agreements on the benefits that could be derived from a firm price offered by the GMP, it is yet unclear how this firm price can be guaranteed.

Scope changes and variations are inevitable inasmuch as designs are never completed before project pricing. A first step maybe to progress the design as far as possible before final decisions on GMPs are reached. In this way the magnitude of design development risks are reduced and parties to a contract can price with more certainty. Novation of design consultants may be beneficial in this regard only when there is an agreement between parties to the contract.

The development and inclusion of standard clauses within contract conditions that will clarify the threshold of scope changes is another means of reducing disagreements on the administration of scope changes on GMP contracts. Such clauses will give more clarity on the scope changes that could affect the GMP and those that would be taken up by the design development budget. The clauses could also specify the procedure for its administration under these circumstances.

There seems not to be a panacea to contentious problems associated with the administration of scope changes on GMP contracts or any contract type. What is needed is a sincerity of purpose, commonality of objectives by project management and the supply chain to ensure that whatever approach is decided results in a 'win win' for all.

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