



## The Treasury



## Spring Hill and Otago Corrections Facilities



## Scope Review – Part A Value Management Activities

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## KEY MESSAGES

- A. Given the timing of this review and the advanced state of construction and purchase of materials, there is little or no value in conducting a new full-scale Value Management study at Spring Hill and Otago.

The projects are committed to the current design, construction is well underway, and the costs of changing to any alternate design will most likely outweigh any potential benefits.

Corrections' current processes for identifying and managing potential value-for-money variations are appropriate for this stage of the project life-cycle.

- B. The main area of opportunity still open to cost saving potential is a reappraisal of the value derived from the proposed "finish" at the site, particularly the completeness of any landscaping.
- C. Those value management activities conducted through the life of the projects were conducted in a professional manner, given the challenges of significant time constraints.
- D. For future projects, a more robust programme of value management activities could be achieved by adopting the total spirit and scope of the NZS Value Management standard. This would involve applying the methodology rigorously at key times during the project life cycle for each prison, without losing the linkages to other prisons of similar design or similar construction timetable.

Corrections could consider conducting these comprehensive Value Management studies with the following over-riding principles:

*Timing:* Conducting additional studies toward the end of the concept development phase, and also prior to approval to proceed to the detailed design specification phase for each prison, to enable more value to be extracted from the process.

*Scope:* Widening the net of elements to be considered, so that the Value Management studies for a particular prison are conducted with a departmental asset portfolio perspective, and operational practices and specifications are challenged.

*Participation:* Enhancing the use of professionals independent of the RPDP prison development process, in the roles of Value Management facilitator and content experts, so that innovation is properly encouraged.

## 1 FINDINGS AND SUGGESTIONS

### 1.1 SCOPE OF THIS REVIEW

- 1.1.1 This report reviews value management activities associated with the Regional Prisons Development Project (RPDP), focussing on opportunities for improvements to be captured at the currently under-construction Spring Hill and Otago facilities.
- 1.1.2 While the scope of this part of the review is limited to value management activities, we need to make some brief comments on the designs, to enable our comments on value management to be placed in their correct context.
- 1.1.3 The design and approval process for the regional corrections facilities, including RMA approvals, has clearly been arduous. We believe there is a large range of potential design solutions that would meet the functional, site, and approvals requirements of these facilities. In our judgment, the designs developed by the Department of Corrections (Corrections) for these facilities will meet or exceed the functional requirements, as we understand them.
- 1.1.4 Our comments in this report are based on the information we have received from Corrections. Our comments are focussed on the value management process at the Spring Hill and Otago regional corrections facilities, and how that process could be improved in the future. However, it is not possible to exclude all mention of the Northland regional corrections facility (NRCF), as it was the first in a series of facilities that comprised the RPDP, and many of the lessons learned there have been applied to the facilities that followed.



## **1.2 ARE THERE ANY ADDITIONAL AREAS THAT COULD BE CONSIDERED IN THE CURRENT ROUND OF VALUE MANAGEMENT STUDIES?**

- 1.2.1 Construction is proceeding rapidly at Spring Hill and Otago on all major structures. Further, many materials have been purchased in advance of requirements. Value Management Studies are most effective when conducted early in the design process; we believe this review is too late to substantially impact the final costs of these corrections facility projects.
- 1.2.2 The main area of opportunity still open for Corrections to find cost saving potential is a reappraisal of the value derived from the proposed “finish” at the site. This should include painting of cells, any sealing of walkways and driveways, and particularly the completeness of any landscaping. Corrections is presently looking at these issues at Spring Hill and Otago, and potential cost savings in scaling back the standard of landscaping are estimated at up to \$500,000 and \$100,000 respectively.

## **1.3 WAS VALUE MANAGEMENT CARRIED OUT IN A ROBUST MANNER THAT IS LIKELY TO HAVE IDENTIFIED THE MAJOR COST SAVINGS?**

- 1.3.1 The value management activities that were carried out appear to have been conducted in a robust manner, to the expected level of professional competency, given the challenges of significant time constraints.
- 1.3.2 A notable and substantive value-management workshop did occur early enough in the overall project lifecycle, “Value Management Study, NRCF, 10-11 May 2000”, so that value was initially captured at NRCF. The findings of this workshop were translated to the other prisons, especially the similarly designed Spring Hill facility. A similarly constructed comprehensive Value Management study at the key stages in the life cycle of the design and construction of each of the other prisons, we believe, would have captured further value improvements.
- 1.3.3 Corrections should be commended for carrying out further value-management activities throughout the design and construction life of the each of the facilities in the regional prisons programme. Nonetheless, these additional value management processes have the potential to be significantly strengthened in the future. It appears to us that the majority of these activities were more in the vein of cost minimization, rather than value maximization. As a result, many of the operational practices were not challenged, and became constraints on further value enhancement.
- 1.3.4 Value management activities subsequent to the May 10-11 2000 NCRF Value Management Study were not in accordance with the NZS Value Management standard. For example, from a practical stand-point, the activities subsequent to that study

generally lacked an independent facilitator. By “independent” here, we mean *independent to the RPDP prison development process* (i.e. completely independent from any CWA, with no benefits to be gained from the outcome of the study).

Nonetheless, Corrections has generally made good use of independent experts in peer review functions.

1.3.5 A more robust programme of value management activities could be achieved by adopting the total spirit and scope of the NZS Value Management standard. This would involve applying the methodology rigorously at key times during the project life cycle for each prison, without losing the linkages to other prisons of similar design or similar construction timetable.

1.3.6 Corrections could achieve significant benefit in future if it considered conducting additional comprehensive Value Management studies with the following over-riding principles:

- **Timing:** Conducting additional studies toward the end of the concept development phase, and also prior to approval to proceed to the detailed design specification phase for each prison, to enable more value to be extracted from the process.
- **Scope:** Widening the net of elements to be considered, so that the Value Management studies for a particular prison are conducted with a departmental asset portfolio perspective, and operational practices and specifications are challenged.
- **Participation:** Like the workshop held on 10-11 May 2000, we suggest Corrections consider enhancing the use of professionals independent of the RPDP prison development process, in the roles of Value Management facilitator and content experts, so that innovation is properly encouraged, and assumptions questioned (e.g., those elements prescribed in Corrections’ internal facility standards, and other aspects of the built form, etc).

1.3.7 A further Value Management study could also be completed for each prison when and if an external approvals authority forces substantial design changes for aesthetic, environmental or operational reasons (e.g., following the RMA process).

## 2 INTRODUCTION

### 2.1 OVERALL SCOPE REVIEW

2.1.1 This report forms Part A of a two part review of the scope and design of Spring Hill and Otago regional corrections facilities. Part A focuses on value management practices and activities. Part B of the review will consider whether capital cost savings could be made by reducing the scope in future Corrections facility builds, making recommendations as to how principles of scope could be varied.

### 2.2 PART A OF SCOPE REVIEW

2.2.1 This part of the review will focus on value-for-money opportunities in the capital costs of the Spring Hill and Otago facilities. Corrections have undertaken “several Value Management Studies of the two projects” and are in the process of undertaking several more.

2.2.2 Part A will consist largely in providing quality assurance of these studies, and confirming whether they have to date been carried out in a robust manner that is likely to have identified the major cost savings.

2.2.3 In addition, this part of the review will identify any additional areas that could be considered in the current round of Value Management Studies.

2.2.4 This part of the review will, where applicable, consider whole-of-life implications in respect of maintenance and operations, as well as the direct capital investment.

2.2.5 Potential savings will be balanced against



any capital cost, operational performance, and/or public risk before implementation.

2.2.6 After our appointment, the terms of reference were altered to reflect that the prisons were more advanced in construction than originally anticipated; these changes are reflected in the outline given above.

## **2.3 OUR APPROACH**

2.3.1 The terms of reference for Part A of the Scope Review boils down to two key questions:

- Are there any additional areas that could be considered in the current round of Value Management Studies?
- Was value management carried out in a robust manner that is likely to have identified the major cost savings?

2.3.2 We have answered these questions in this report via observations from interviews, site visits and review of the reports and correspondence supplied to us by Corrections.

2.3.3 The majority of our observations and suggestions for Corrections consideration are against the second of the two key questions; as in our view the current “value management activities” are appropriate given how far construction of the projects has progressed.

2.3.4 We have made sure to tailor our considerations to whole-of-life implications. We acknowledge that any potential savings identified in value management processes should be balanced against any capital cost, operational efficiency and performance, and/or public risk before implementation.

2.3.5 Before we proceed to review the value management activities of the regional corrections facilities program, it will be useful for us to define the aims of a Value Management Study, and the typical make-up of a Value Management Study team.

## **2.4 WHAT IS A “VALUE MANAGEMENT STUDY”?**

2.4.1 The aim of a Value Management Study is to confirm that the proposed design represents value for money and functional efficiency, with a time horizon of the useful life of the asset. Importantly, value management is typically conducted from the perspective of the long-term asset owner/operator and their system of assets; not from the perspective of the constructor, nor from the perspective of the controller of the construction budget.

2.4.2 The core principle underlying value management is that there is always more than one way to achieve project objectives, and that examination of the alternatives will produce the best value-for-money outcome. This requires that constraints that have developed over time are released or questioned during the study, to ensure the environment fosters innovation.

2.4.3 In a Value Management study, the design functions and detail are compared to the objectives. Assumptions including design criteria should be tested, and alternative ideas and potential innovations generated. The aim of this work is to improve value without jeopardizing the overall project objectives:

- Optimizing the basic design elements
- Simplification of construction methods
- Reduction of waste, duplication, and unnecessary expenditure
- Reduction of whole-of-life costs, including impact on operational efficiency

2.4.4 While activities aimed at maximizing value in design and construction occur throughout any given project, value management is most effectively executed via defined review events scheduled as early as practicable in the project lifecycle. This point is highlighted in the relevant Standards New Zealand standard (AS/NZS 4183): *“It has been demonstrated that the highest potential benefit from value management occurs at the earliest stages in the life of a scheme. In particular, benefit is gained where studies are held prior to financial commitments being made or at least prior to scheme implementation.”*

2.4.5 In our experience with projects of this type, there is a minimum of three key opportunities in a project lifecycle for effective value management events:

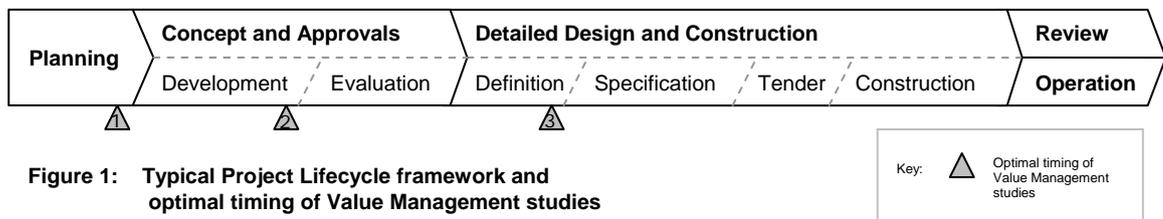
- *Toward the end of the planning phase.*  
The aim of a Value Management study at this point in time is to factor in value-for-money as early possible in the process, when the largest possible opportunity is still “up for grabs”. It is vital that operational practices and explicit and implicit design standards are challenged here. A study at this time enables wider elements to be considered, and all potential synergies to be captured; the study should be conducted from a departmental asset portfolio perspective (i.e. from the perspective of the owner and operator of all NZ prisons), rather than restricted to the individual project in question.
- *Toward the end of the Concept Development phase.*  
The aim of a Value Management study at this point in time is to confirm the concept design meets the previously defined and agreed government objectives and functional requirements. It is vital this value management activity is

undertaken prior to submission of any documentation to outside authorities for review and approval.

- *Prior to approval to proceed to Design Specification phase.*

The aim of a Value Management study at this point in time is to ensure the functional requirements are delivered and to specifically tackle any high cost/low value design elements. It is vital that this value management activity is undertaken prior to release of any construction tender documentation.

2.4.6 A typical project lifecycle is shown below. In this instance, each of the prisons can be considered to have its own lifecycle. While learnings from the design of one prison in the programme may influence other prisons' Value Management processes, each prison should nevertheless have its own Value Management studies. The optimal time for a Value Management studies, is shown below.



2.4.7 Further opportunities for effective Value Management studies occur where external factors force substantial changes to the design (e.g., when an approvals body stipulates design changes for aesthetic, environmental, or operational reasons). Additional day-to-day management of cost and value, without need for a workshop, should also be undertaken as part of normal project management activities.

## 2.5 WHO SHOULD BE ON THE “VALUE MANAGEMENT STUDY” TEAM?

2.5.1 The Value Management Study team's composition is of fundamental importance to the success of the process. The team should comprise a group representing all key stakeholders, including design, construction, operations, finance, and maintenance representatives, and independent experts; or as the NZS standard says *“the client task personnel, independents, and stakeholders.”*

2.5.2 An independent facilitator is key to the success of a Value Management study. By independent, we mean *independent to the RPDP prison development process* (i.e. completely independent from any CWA, with no benefits to be gained from the outcome of the study). As the NZS standard says: *“The facilitator should be independent of the group/team with whom the study is being conducted ...”*

- 2.5.3 For major projects, such as the regional corrections facilities, the team should be augmented with independent technical specialists. The NZS standard defines independents as *“people with specialist skills in the topic under consideration who are introduced to the workshop, but specifically independent of the task personnel.”*
- 2.5.4 Introduction of *independents* will increase the level of innovation, through challenging the assumptions and limitations of any given design, design standard, construction material or technique. Use of experts *independent to the RPDP prison development process* is the key to achieving the relevant aim of the NZS standard: *“The development of many alternative ways to meet the functional requirements of any element of a project or process; that is, free exchange of new ideas or new ways to solve problems”* and *“Overcoming resistance to change”*.
- 2.5.5 A typical Value Management Study team is engaged in determining the value management brief (a statement, endorsed by the client, that identifies what the Value Management Study is meant to achieve), identifying stakeholders, conducting the workshop, developing the action plan, in follow-up sessions, and in monitoring and reporting of outcomes.



*Landscaping at Otago*

### 3 CORRECTIONS' VALUE MANAGEMENT APPROACH

#### 3.1 CAN ANY FURTHER VALUE-FOR-MONEY SAVINGS BE FOUND AT SPRING HILL AND OTAGO AT THIS LATE STAGE?

- 3.1.1 We cannot presume to estimate the potential impact a better timed, better structured value management exercise would have had on these projects; to do so, we would need to conduct a formal audit of all value management activities to date, with all the necessary partners present, and all the documentation of that time would need to be made available today. We believe there would be no benefit to the Treasury or Corrections in undertaking such a process.
- 3.1.2 At Spring Hill and Otago, it is currently too late to address or re-address key value management issues, and recast value-for-money outcomes in a more positive budgetary light. The projects are committed to the current design, in most cases construction is well underway, and the costs of changing to any alternate design will most likely outweigh any potential benefits.
- 3.1.3 Of note is the amount of pre-purchase at these sites. During our site visit, we were informed that most of the significant materials required (copper wiring, various piping, building materials for walls etc) had been pre-purchased to guard against potential shifts in materials prices, and that the amount of material pre-purchased was greater than for projects of similar scale. Hence Corrections has already committed not only capital, but also to the design and construction strategies – the cost of changing these strategies at this stage would be prohibitively high, despite the potential opportunity for better value-for-money. It is not clear to us whether or not there were any gains from pre-purchasing, and if there were, whether such gains balanced-out the lost opportunities for Value Management.



- 3.1.4 The main area of opportunity, still open to cost saving potential, is a reappraisal of the value derived from the proposed “finish” to the site, particularly the completeness of any landscaping. We understand that Corrections is presently looking at this issue at Spring Hill and Otago, and potential cost savings in scaling back the standard of landscaping are estimated at up to \$500,000 and \$100,000 respectively.
- 3.1.5 We have reviewed Corrections’ work-in-progress documentation on the potential to better manage the value in the landscaping for a better cost outcome. In our view, this work shows the appropriate level of independence and due diligence.
- 3.1.6 We believe that further opportunity in the area of “finish” may include the degree and quality of internal painting, and the quality of sealing of walkways and driveways. In other jurisdictions, cells are partially or completely unpainted, and walkways and driveways are sealed with low-cost bitumen – these solutions may be inappropriate for New Zealand, but could be investigated by Corrections.

### 3.2 WHAT RELEVANT VALUE MANAGEMENT ACTIVITIES HAVE BEEN UNDERTAKEN?

- 3.2.1 The key contextual issue around the regional prisons projects, particularly the Spring Hill and Otago facilities, has been the criticality of delivering the new facilities on time. We understand the drastic nature of predictions of over-crowding that drove the need to have the new facilities on line by specific dates, and provided the momentum behind the overall RPDP. Our comments on the value management activities, below, should be read with this key constraint in mind.
- 3.2.2 Corrections have informed us that they have taken an “organic approach” to value management for the regional prisons, “involving close contact between all representatives of the client and architect.” A key feature of this approach has been that value management has been never-ending rather than event-focussed, with Corrections aim being to ensure the lessons learned in the design and construction of one facility are applied to the other facilities in the programme.



- 3.2.3 A key part of this approach has been the development of “comprehensive facility standards”. Each RPDP design has been reviewed against the facility standards by Corrections, and from this process, where differences were found, changes were made either to the facility standard or the design.
- 3.2.4 Corrections states that “The parallel processing of designs and lessons learnt from previous VM studies has made other forms of VM review redundant. The parallel process overcomes the silo effect of staged VM studies at specific points in the design process.”
- 3.2.5 Indeed there was a significant overlay of the design development process at Spring Hill and Otago. The Spring Hill design evolved from the NRCF design, and the Otago design evolved from the Auckland Regional Women’s Correctional Facility (ARWCF), although there are notable differences related to custodial mix and location. Each pair of facilities deployed the same team of architects.
- 3.2.6 Nonetheless, Corrections has supplied a significant amount of material on the history of value management at Spring Hill and Otago, including substantive prison project events, such as workshops and design reviews. These are:
- 3.2.6A A two-day workshop was held on 10-11 May 2000 to value manage designs to meet operational functionality and whole of life requirements at NRCF. The structure and workings of this workshop fully complied with the guidance of the relevant NZS standard: a workshop brief was developed, independent experts and facilitators were deployed, and a wide range of potential value-enhancing options were considered.
- 3.2.6B In March 2001, a review was conducted on mock-up minimum security and medium/high security cells. This review appears to be professionally conducted, and to have adequately addressed design and constructability issues for the cells.
- 3.2.6C All the while, through the period 2000-2002, Corrections dedicated resources to formalizing standard designs. Also, client design reviews at 60% and 90% design review points were conducted on both projects. Again, these design reviews appear to have been professionally conducted.
- 3.2.6D A substantive review of Spring Hill design was undertaken in March 2002, prior to consent application. This review picked up Iwi, community, and Corrections’ inputs, and used independent external specialists.
- Options arising from this workshop and further work was presented and accepted in the consenting application process. This work included substantial relocation and shrinking of the building platform, site retention considerations, height compliance, other visual and lighting mitigation, and a security review.

3.2.6E Design options in respect of ARWCF were considered in May 2002. ARWCF was the design leader for Otago, incorporating lessons learned from NRCF and the development of facility standards.

3.2.6F In order to avoid delays, Corrections' approach to the consent process has been to promote design options that best meet the majority of environmental and community concerns at the consent application stage, rather than reactively challenge each proposal made by third parties. We note here that the consent application process is particularly onerous, and as such may be a significant impediment to Corrections extracting the most value from its capital deployed in the RPDP.

Following the RMA approvals process at NRCF in 2002, a number of further amendments were made to the design. Similarly, the RMA process played a major role in redefining the Spring Hill and Otago facilities. These amendments added further cost to the prisons. No specific Value Management studies were undertaken in response to these RMA-driven design amendments.

3.2.6G A detailed cost reduction review of NRCF was conducted prior to final approval to proceed with construction, in mid-2003. The initial aim of this review was to find \$12 million in savings; the target amount was later reduced to \$5.5 million. These savings were found, and approval given to proceed with the amended design. The design changes, where applicable, were translated to the Spring Hill and Otago corrections facilities. The decisions taken at this time resulted in significant redesign and delay impacts.

Subsequent design workshops (e.g., for Otago on 31 July and 20 November 2003) were conducted, where further changes were identified and implemented. These appear to be traditional design reviews conducted professionally by the RPDP client and design team members.

3.2.6H Once construction had commenced and an umbrella management group (the Project Executive Group, comprising members from Corrections project management and design management teams, and the various contracted constructors) had convened, potential construction amendments, labelled "value management items" were proposed and managed, with savings realized shared among the members of the PEG. These "value management items" were submitted to the Steering Group if scope was affected or form and function impacted.

To gain better insight into this process, we have reviewed a randomly chosen selection of "value management items" from Spring Hill and Otago. The logic of the decisions presented to us appears sound, and appropriate for identifying and managing potential cost-driven construction variations at Spring Hill and Otago prisons within the confines of a commenced construction.

#### **4 REFERENCES**

1. Corrections and Treasury interviews, 29-31 May 2006
2. Various documents received from Corrections, 29-31 May 2006 and 15 June 2006, and extensive follow-up documents and communication received July 2006
3. Value Management, Australia/New Zealand Standard (1994), AS/NZS 4183:1994, Standards New Zealand
4. Total Asset Management Guidelines (2004), Treasury, Government of NSW
5. Construction Process Guidelines (2006), Building Commission, Government of Victoria