

### 3 SELECTION OF MANAGEMENT PHILOSOPHIES

Key elements from current management philosophies will be used as building blocks for the development of the mining unit operational management model. To decide which management philosophies to consider it is necessary to define a set of criteria against which the philosophies can be measured.

The key criteria that the management philosophy has to comply to are that the management philosophy will:

- provide a solution that will facilitate continuous improvement and not necessarily quantum leap improvements
- be an original philosophy, not just a slight modification of an existing philosophy, or a combination of other philosophies
- be well documented in academic and business literature
- be well established (in other words no brand-new or non-proven philosophies)
- cover a wide application of the management of a company – therefore not only refer to one aspect such as for example maintenance management

The list of available management philosophies that could be included in this research are presented in table 1:

**Table 1: List of available management philosophies**

Lean manufacturing	The essence of lean thinking is the elimination of <i>muda</i> (waste) wherever it exists, within the individual firm but also along the whole supply chain.	The Antidote Issue (1997:11)
Total quality management	Total Quality Management is an interlocking arrangement of procedures and practices that ensures that all employees in every department are adequately trained and directed to continuously implement aligned improvements in quality, service and total cost such that customer expectations are met or exceeded	Bellefeuille (1993:47)

Just-in-Time	Just-in-Time is a philosophy that re-examines every production step with the aim to eliminate every step that is not absolutely necessary and does not directly add value	Walter (1986:28)
20 keys	20 Keys is the methodology for implementing PPORF (practical program of revolution in factories). PPORF is a simple improvement method with concrete and systematic steps for drastically reforming and strengthening every facet of the manufacturing organisation	Kobayashi (1995: i)
Business process re-engineering	BPR is the fundamental rethinking and radical design of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service and speed	Zhang & Cao (2002: 146)
Management by Objectives	A system of management based on goal congruence as a means of improving performance	Dinesh & Palmer (1998: 363)
Total productive maintenance	TPM is a scientific company-wide approach in which every employee is concerned about the maintenance and the quality and efficiency of his or her equipment.	Cooke (2000: 1004)
Theory of Constraints	The Theory of Constraints is an overall management approach which enables management to focus on the identification and elimination of the organisation's constraints and to implement a process of ongoing improvement in order to achieve the organisation's goal	Geyser (1995:1)

Each management philosophy listed above is matched against the criteria and evaluated on a scale of one (no alignment with criteria), two (average alignment with criteria) or three (full alignment with criteria). The score given is based on the current knowledge of the researcher regarding the manufacturing philosophies. The result of the evaluation is shown in table 2.

**Table 2: Result of evaluation of management philosophies**

MANAGEMENT PHILOSOPHY	CRITERIA					TOTAL
	1	2	3	4	5	
Lean manufacturing	3	3	3	3	2	14
Total quality management	3	3	3	3	3	15
Just-in-time	3	3	3	3	3	15
20 keys	3	2	1	2	1	9
Business Process Re-engineering	1	3	3	3	3	13
Management by Objectives	2	2	1	2	1	8
Total Productive Maintenance	2	2	3	3	1	11
Theory of Constraints	3	3	3	3	3	15

### *Discussion*

The management philosophies that are the most applicable to evaluate are in order of highest scores Total Quality Management, Just-in-Time, Theory of Constraints, Lean Manufacturing and Business Process Re-engineering. The concepts of Lean Manufacturing are included in Just-in-Time, therefore it will not be evaluated as a separate management philosophy. Business Process Re-engineering is more used when a radical change in the way business is done is needed – leading to a quantum leap improvement step. The main reasons for the lower scores of the remaining management philosophies are:

- Total Productive Maintenance: this philosophy focuses on the physical asset management side. Its principles are included in Total Quality Management and Just in Time.
- 20 Keys is not very well documented in the academic literature. It is a combination of best practices of other management philosophies presented visually and an organised method of achieving continuous improvement.
- Management by Objectives: This method focuses on the goals set and the evaluation of the results. It utilizes the concept of a balanced scorecard to continuously track performance. This method can be used in conjunction with any of the other mentioned management philosophies as a method of tracking progress.

The management philosophies Just-in-Time, Total Quality Management and Theory of Constraints are therefore used as a basis for developing the operational management model.