The attitudes and behaviour of Spoornet Middle Management with regard to the implementation of Environmental Management Systems in their functional areas.

By

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ABSTRACT

The aim of this study was to determine the differences in attitudes of Spoornet Middle Management with regards to the implementation of Environmental Management Systems in ten different functional areas.

A questionnaire to measure the attitudes was developed in accordance with the International Chamber of Commerce' principles for Sustainable Development. The attitudes of 5 middle managers per Functional Division were recorded. The level of implementation and results were also measured with the aid of forty-nine structured questions in the Environmental Self Assessment Programme of Deloitte and Touch (Industrial Environmental Forum, 1994) which constitute behaviour.

Bell *et al* (1990) cited that a general attitude may not predict behaviour but that a multiple item scale measuring components of an attitude is more likely to predict a class of behaviour. It is for this reason that the multiple item questionnaire was developed and administered to measure attitudes. Differences exist between the attitudes of the different Functional Divisions. The differing attitudes will invariable lower the possibility in achieving the same level of participation in the implementation of an Environmental Management System, unless changed.

The correlation of attitudes and behaviour of the Functional Divisions were also measured and no correlation was found, except in one principle, which in general reinforced previous research (Louw & Edwards, 1993). Behaviour is likely to follow a specific trend where consequences that are certain, manifested almost immediately and are positively rewarded will determine the behaviour according to Krause (1997). The behaviour may then contradict the attitudes.

The origins of environmental problems are believed to lie in two aspects. Firstly, achieving business success on a year to year bottom line which does not promote longer term investment especially regarding sustainable business' tipple bottom line and specifically environmental accountability. Secondly, aligning the different Business Division's attitudes towards Sustainable Development may well increase possibility of achieving similar results with the implementation of the Environmental Management System.

PREFACE

This research depended on the co-operation and assistance of other people and I would like to express special thanks to the following individuals:

- Mr. Maitland Seaman, for his advice on the topic.
- Prof. Lazenby for his advice and supervision.
- Mr. Bill Garden, in his capacity as Spoornet Environmental Manager, for the encouragement to undertake the research.
- My husband, Peter, and our son, Zygmunt, for the encouragement to finish the research.

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CHAPTER 1

INTRODUCTION, PROBLEM STATEMENT, OBJECTIVES AND HYPOTHESIS

1.1 INTRODUCTION

Spoornet as a Business Unit in Transnet employs about 40 000 employees to provide Freight Logistic Solutions (FLS) to the South African market. The fleet consist of 3800 diesel and electrical locomotives and 130 000 rail wagons on their asset register. Therefore, numerous maintenance depots are functional countrywide. Spoornet is operationally divided into different functional areas of which roughly 10 functional areas, within line management, have a relative high risk of environmental impact. These functions are:

- Traction; responsible for the maintenance of locomotives.
- Wagons; responsible for the maintenance of all the different classes of wagons.
- Property Management does maintenance on buildings and also leases property to lessees.
- Business is responsible for marketing FLS and the signing of contracts. This discipline also enters into new business contracts and liase with clients.
- Service Delivery devises the train plan and executes the running of the trains.
- Terminal's function is to manage and operate the light, small freight in containers.
- Infrastructure Maintenance comprises of perway, signals, overhead electrical track equipment and deals with maintenance of these assets.
- Orex operate the iron ore railway line between Sishen and Saldanha.
- Coallink operate the coal export railway line to Richards Bay.
- Main Line Passenger Services (MLPS), which transport passengers to main cities in the country.

Spoornet (Risk and Environmental Management) is currently structured to fulfil an advisory capacity and therefore sets policy and standards pertaining to environmental management, which have to be implemented by line management. Spoornet is also aligning the Environmental Management System (EMS) to ISO 14001, not necessarily for certification at

this stage. For this reason Spoornet: Environmental Management embarked on assessment of the progress in EMS performance on a yearly basis by using the Environmental Self Assessment Programme (ESAP) developed by the Industrial Environmental Forum for South African circumstances. The results of the assessments for the financial year 1999 – 2000 are outlined in Chapter 4.

Line management is responsible for implementing sound environmental management policies, practices and managing activities in such a way as to minimise negative environmental impact. They are therefore responsible for the improvement of the processes with regards to environmental performance as per ESAP. The target for 1999 – 2000 was not reached nor did they reach targets in 2000 – 2001, indicating low compliance in terms of measured behaviour. Some of the underlying reasons identified are the lack of commitment amongst employees responsible for the implementation of EMS, which can possibly stem from attitudes not being consistent with global and / or national environmental practice. The identification of this cause was not based on scientific research and thus form an underlying impetus for this research.

There is also a marked difference between the ESAP scores between the functional units within Spoornet. The guidance from the Environmental Management Department is the same throughout the company as all correspondence is addressed to all General Managers. It therefore can be deduced that an 'internal factor' within the business unit can be ascribed to the differences in the behaviour measured in the ESAP audit. The question then arises: Is there a marked difference in attitude and therefore commitment towards environmental responsible behaviour between the functional units?

Since Environmental Management as a business principle was officially introduced only in 1997 in Spoornet it would be of interest to measure the individual's so-called belief system; whether it was brought about as part of the "collective thinking" within the organisation or from an internal *loci* of control. Therefore, in ascertaining where attitudes are not in accordance with required behaviour necessary changes can be brought about by intervention programmes specifically designed to alter the individual's ability to foresee environmental outcomes of the organisation.

The intension is to narrow the scope of the attitude and behaviour measurement firstly to address principles of Environmental Management, as was pointed out by Bell *et al* (1990).

Louw and Edwards (1993) states that the correlation between attitudes and behaviour is relatively weak, which can be the cause of the lack of implementation of the policy and standards by line management. Historically, attitudes have been found to be poorly related to behaviour and the Model of Reasoned Action indicating that behaviour is predictable from behaviour intentions is a simplistic view of the matter, as expressed by Regis (1996). Notwithstanding the latter, attitudes are highly complex as numerous beliefs, intentions, social influence and other factors forms the basis of the process of attitude formation. Also, a certain attitude will not exactly determine behaviour. Research on this topic would almost seem futile, considering the complex nature of attitudes and the lack of correlation between attitudes and behaviour. The creation of an area of focus, as mentioned previously, would provide a 'common purpose' of understanding the driving forces within the business divisions. It would enable one to identify areas where positive changes can be brought about rather than reliance on the 'normal' course of action, proven by previous research, to be highly ineffective insofar as predictability of behaviour.

1.2 PROBLEM STATEMENT

Attitudes regarding Environmental Management, as a learned intention: with the emphasis on intention, would not necessarily guarantee that business is conducted in a manner that is conducive to the principle. The statistical differences between the measured implicit attitudes and explicit behaviour related to the environmental performance of the each of the different business units would illustrate this.

The attitudes of Management as a separate set of parameters should reflect Environmental Management's principles in each of the business divisions and therefore the question is asked: Are Line Management's attitudes, in each of the business units, with regard to Environmental Management, aligned?

1.3 OBJECTIVES

The objectives of this study are to assess:

1.3.1 The differences in the attitudes-behaviour relationship between the different business units.

1.3.2 Whether the attitudes of the business divisions with regard to Principles of Environmental Management are aligned?

1.4 HYPOTHESIS

1.4.1 There are significant differences in attitudes-behaviour relations between the different functional divisions within Spoornet.

1.4.2 The attitudes of line management in the different business divisions differ substantially.

1.5 TERMINOLOGY

1.5.1 ATTITUDE

Attitudes are described by Plug *et al* (1991) as the relatively stable, primarily learned intention of the individual with regards to certain objects i.e. persons, groups, physical objects and abstract elements that can include environmental consciousness.

A measuring instrument developed by the researcher measures the attitudes towards environmental responsibility, in this research.

1.4.2 BEHAVIOUR

Plug et al (1991) defines behaviour as *"anything that a person does. It can refer to a specific response or action"*. In this study, behaviour is measured as explicit behaviour in an audit, executed by Environmental Management and administered as a pre-developed questionnaire – the Environmental Self Assessment Programme, adapted for South African circumstances by the Industrial Environmental Forum of Southern Africa (1994).

1.6 SUMMARY

In this chapter the problem statement, objectives and hypothesis were outlined.

Chapter 2 will outline the literature survey of the underlying principles of Environmental Management Systems (EMS), which will be discussed with special reference to the global and national context. The classical theory of attitudes and behaviour will also be discussed from a psychological perspective.

Chapter 3 will place emphasis on the methodology employed to design the questionnaire with special reference to the validity and reliability of the questionnaire.

The results, after application of the questionnaire, and interpretation thereof are highlighted in Chapter 4.

Conclusions and recommendations are included in the final chapter, Chapter 5.

CHAPTER 2

THE UNDERLYING PRINCIPLES OF ENVIRONMENTAL MANAGEMENT

2.1 INTRODUCTION

The need for managing human's intervention and / or actions on the environment, as cited by Fuggle and Rabie (1999) became not only apparent but also extremely necessary in order to safeguard against:

- Depletion of limited natural resources.
- Deterioration of natural processes, which sustain life on planet earth.

The United Nations conference on Environment and Development held in Rio de Janeiro, also called the Rio Conference on Sustainable Development in 1992 (Kidd, 1997) marked the global intention to save the environment from ultimate destruction by industry. Three non-binding instruments were adopted namely:

- The Rio declaration on Environment and Development, which comprises of a statement of twenty-seven principles.
- Agenda 21 (Robinson,1993).
- United Nations Conference on Environment and Development (UNCED) Forest Principles.

These instruments played a primary role in the encouragement to create global solidarity on environmental issues and are regarded by Kidd (1997) as 'soft law'. Furthermore, South Africa took a stance by issuing Agenda 21 through the Department of Environmental Affairs and Tourism in May 1998. As such, Agenda 21 is a blueprint for the international community in which development and environmental responsible behaviour are promulgated even when the direct contribution to international law is not certain, according to Kidd (1997).

Sustainable development was amongst the key principles in which industry was to conduct their activities and is defined in Fuggle and Rabie (1999) as the economic development in such

a manner as not to compromise the resource bases of future generations. This principle integrates social acceptance, economic viability and ecological stability as equally important aspects between the phenomenon of future human existence, ecological protection exalted in the ambits of capitalism. As such, Sustainable Development is the foundation of Environmental Management.

Environmental Management on the other hand can not realise Sustainable Development without a 'vehicle' than will ensure that the principles and concepts not merely stay a moral obligation of industry. As such, the management instrument took to form of the systems approach and an Environmental Management System was adopted as key principle of Integrated Environmental Management (IEM) by DEAT (1998).

2.2 ENVIRONMENTAL MANAGEMENT AS A PRINCIPLE IN INTEGRATED ENVIRONMENTAL MANAGEMENT

Sustainable Development (SD) as the ultimate in ensuring the continued existence of the biophysical environment is too vague to be realised in the business field. An organisation's financial objectives, on a year-to-year basis, are not necessarily conducive to the longer-term benefit of sustainable development.

The National Department of Environmental Affairs and Tourism published the policy on IEM and draws a clear distinction between management and decision support instruments, at least for new developments. New developments and the requirements before a project can commence are well defined and regulated in accordance with the Environment Conservation Act (1989), no 73 of 1989 and regulations promulgated to Section 21, 24 and 26.

Existing businesses, in most cases with historical pollution, shall comply with the National Environmental Management Act, (1998), Act 107 of 1998. This legislative framework however does not give clear guidance on how to achieve the desired results. When one consider the policy of IEM, management instruments in the form of Environmental Management Plans and Environmental Management Systems dictate the solution for planned development and existing businesses respectively.

The spheres of influence in the Integrated Environmental Management 'Toolbox' are illustrated in Figure 2 as depicted by the researcher.

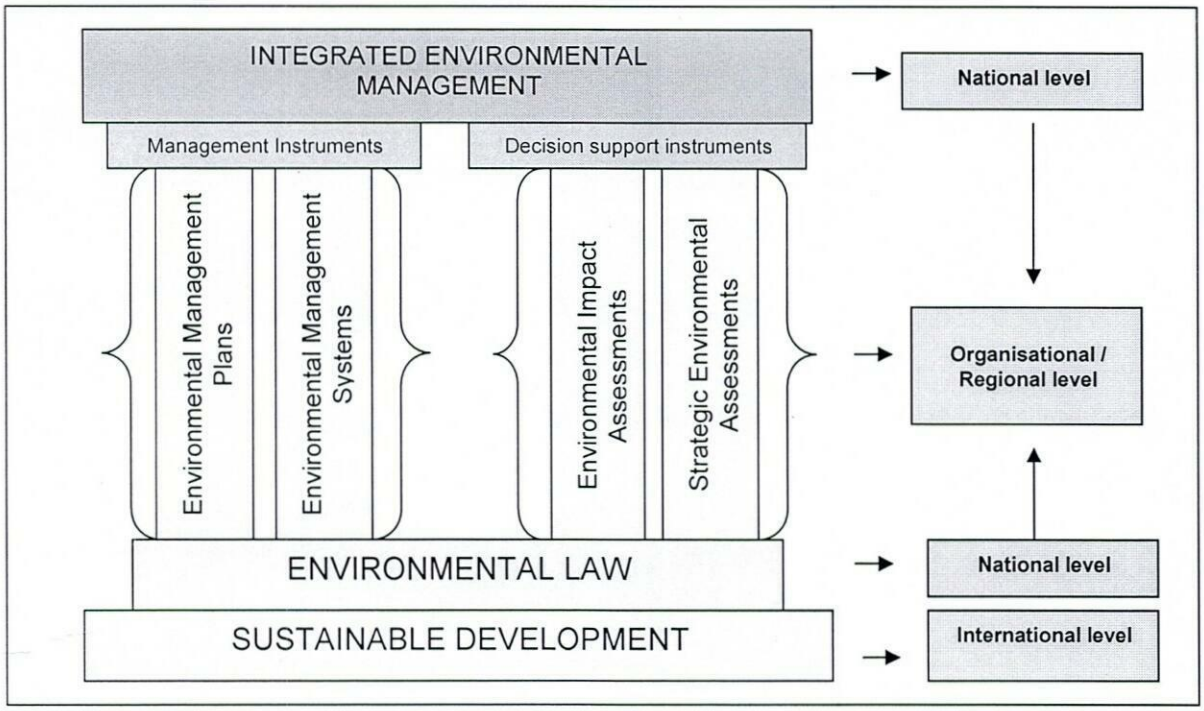

Figure 1: An illustration of the Environmental Management toolbox by the researcher

The collective contribution of well-managed negative environmental impacts from existing businesses, such as Spoornet, thus would vastly enhance the state of the environment in South Africa. Difficultly arises when businesses with historical pollution and a past low emphasis on proactive management of pollution and / or other negative environmental impacts have to shift management's decisions and actions to suit the 'new' paradigm. This new contextual framework would have a distinctive influence on moving from the emphasis on the 'bottom line' to anticipation of negative environmental impact and a premeditative decision in how to 'best practicable' manage the impact. All the abovementioned is then to be executed in the business perspective of increased financial performance with an already stretched budget and other resources.

Environmental Management Systems (EMS), as a management instrument, is thus an important 'tool', on organisational level in realising the objectives of Sustainable Development. The audit phase of the EMS becomes a cumbersome process in a large organisation such as Spoornet especially when the different aspects and impacts are considered not only in the

operational phase but also in overall strategies. A different approach to audit is necessary, although it should not replace the EMS audit and review. The Environmental Self Assessment Programme (ESAP) of Deloitte and Touch (1994), based on the International Chamber of Commerce's (ICC's) principles for Sustainable Development listed the Principles for Environmental Management becomes the ideal instrument as it assess all the principles in Environmental Management within the framework of normal business activities i.e. Policy Setting, Systems and Procedure, Implementation and Education and Monitoring and Reporting. The assessment can be administered in a short period of time (3 – 6 hours) per functional division and would measure compliance in systematically without divorcing the practicalities from the overall principles.

The principles inherent in the ESAP will be discussed with the aim to prove the adequacy of the instrument for the assessment of environmental performance on a slightly, but not strictly, strategic level.

2.3 THE INTERNATIONAL CHAMBER OF COMMERCE'S PRINCIPLES FOR ENVIRONMENTAL MANAGEMENT

The Environmental Self Assessment Programme (ESAP) in its original format was prepared by Deloitte & Touch in the United States of America through sponsorship by the Global Environmental Management Initiative (GEMI). This programme was adapted by the Industrial Environmental Forum of South Africa (IEF) in accordance with the International Chamber of Commerce's Business Charter for Sustainable Development: Principles for Environmental Management (1994).

The ESAP addresses specific elements categorised by sixteen principles in broad but concise actions on 5 levels with a build-in weighting device that would express the importance of the element relative to the type of business division. The 5 levels are:

- Not applicable – This indicate that the specific element is not relevant to the operations of the organisation and thus removing it completely from the scoring system.
- Level 1: Compliance – Here the organisation has a policy of regulatory compliance. At this level of development of the system compliance to government laws, regulations, common practice and community expectations are measured. The efforts towards compliance and or management can be formally or informally.

- Level 2: Systems Development and Implementation – A formal Environmental Management System is developed and implemented and also identify environmental investment opportunities for the greatest environmental and / or financial returns whilst considering costs and benefits.
- Level 3: Integration into General Business Functions – A formal system integrates all the environmental concerns into normal management practices. The scope of integration encompasses corporate policies, capital budget, product or service design, development of marketing strategies, programme implementation and reporting. Indirect environmental impacts are also considered.
- Level 4: Total Quality Approach – The highest level integrate Total Quality Management principles with Environmental Management and improvements are implemented using leading technology and management practices where financially viable. The full life-cycle of the product, service and operations are evaluated, including secondary effects on the environment.

The Principles for Environmental Management as per ESAP (1994) are the following, in summary:

2.3.1 CORPORATE PRIORITY

The implementation of an effective EMS depends entirely on the ability to recognise Environmental Management as one of the highest corporate priorities and as a significant determinant of sustainable development. For this reason policies, programmes and practices must be established to facilitate functional activities to be carried out in an environmentally sound manner.

2.3.2 INTEGRATED MANAGEMENT

Policies, programmes and practices must be fully integrated in the business cycle. This implies that environmental issues will be considered throughout the business cycle from getting a new client or a new development to decommissioning a contract or facility.

2.3.3 PROCESS OF IMPROVEMENT

The EMS must be based on the principle of continual improvement of policies and programmes, including environmental performance, taking into account:

- Technical developments
- Scientific understanding
- Customer needs
- Community expectations
- Legislation.

The abovementioned environmental criteria should also take cognisance of international developments.

2.3.4 EMPLOYEE EDUCATION

The education, training and motivation of employees to conduct their activities in an environmentally responsible manner should be listed as one of the highest priorities as it is the employees' activities that will ultimately impact on the environment regardless of policies and programmes.

2.3.5 PRIOR ASSESSMENT

The assessment of environmental impacts before starting a new activity or before decommissioning will ensure that negative environmental impact be minimised.

2.3.6 PRODUCTS AND SERVICES

Products and services are to be developed that:

- Have no undue environmental impact,
- Are safe in intended use,
- Are efficient in energy and natural resource consumption,
- Can be recycled or disposed of safely.

2.3.7 CUSTOMER ADVICE

Customer advice entails not only advice but also the education of customers, distributors and the public in the safe use, transportation, storage and disposal of products provided; and to facilitate similar considerations to the provision of services.

2.3.8 FACILITIES AND OPERATIONS

Facilities are to be developed, designed and operated in such a way that the efficient use of energy and materials as well as the sustainable use of non-renewable resources and to minimise negative environmental impact including the generation of waste, safe and responsible disposal of such waste.

2.3.9 RESEARCH

Research are to be conducted and supported on the environmental impact of raw materials, products, processes, emissions and wastes associated with the business activities as well as on the means of minimising such negative impact.

2.3.10 PRECAUTIONARY APPROACH

The prevention of serious or irreversible environmental degradation in respect of manufacturing, marketing or end use of products and services should be consistent with scientific and technical understanding.

2.3.11 CONTRACTORS AND SUPPLIERS

Contractors and suppliers should adopt the principles required for improvements in their practices with regards to environmental management.

2.3.12 EMERGENCY PREPAREDNESS

The development and maintenance of emergency preparedness plans in conjunction with emergency services, relevant authorities and the local communities should take priority. The potential of transboundary impacts should also be taken into consideration.

2.3.13 TRANSFER OF TECHNOLOGY

The transfer of environmentally sound technology and management methods should be promoted nationally and internationally.

2.3.14 CONTRIBUTING TO THE COMMON EFFORT

Industry should contribute to the development of public policy, governmental and intergovernmental programmes as well as environmental awareness and protection.

2.3.15 OPENNESS TO CONCERNS

A business should foster openness and dialogue with employees and the public taking their concerns into consideration not only at site level but including transboundary or global significance.

2.3.16 COMPLIANCE AND REPORTING

Measuring environmental performance, conducting audits and assessments to measure compliance to legislation and standards is of utmost importance. The results of such actions should also be shared with the Board of Directors, employees and the public where necessary.

The crux of this research i.e. attitudes and behaviour is addressed hereunder, having stated the necessity and adequacy of the ESAP as an instrument for measuring environmental performance.

2.4 ATTITUDES

Plug *et al* (1988) describe attitude as the relatively stable, primarily learned intention of the individual with regards to certain objects i.e. persons, groups, physical objects and abstract elements that can include environmental consciousness. Attitudes refer, generally speaking, to the manner in which an individual appraise matters and that the appraisal coincides with knowledge about the matter as well as behaviour with regards to the matter at hand. Bechtel (1997) proposes that values, attitudes and belief systems are ways we have organised our knowledge of and responses to the environment around us. It is along this line that Louw and Edwards (1993) indicate that attitudes are the sum total of the:

- cognitive (ideas and perceptions),
- the affective (feelings and evaluations) and the
- conative (intentions and behavioural tendency).

Louw and Edwards (1993) also cites that attitudes can alternate between a positive and a negative evaluation about persons, objects or him / her and therefore are limited to an emotional component. All the abovementioned provide the person with a certain amount of predictability of reactions. Attitudes can also vary in accordance with certain dimensions according to Louw and Edwards (1993) i.e.:

- Direction: Generally pro or anti.
- Strength: A strong or weak feeling about a matter.
- Pertinence: The measure of importance in relation to other attitudes

The complexity of the nature of attitudes thus does not render the statement of Louw and Edwards (1993), that there is a weak correlation between attitudes and behaviour, surprising. This is possibly attributed to the Reasoned Action Model that indicates that behaviour is predictable from behaviour intentions, formed from a combination of attitudes and a social influence factor. The combination of attitudes and social influence should include numerous variables and thus render a simplistic deduction towards behaviour measurable but not highly predictable in normal scientific terms. Conversely, according to Louw and Edwards (1993), attitudes have to change before a change in behaviour can occur. The initial point of departure of Louw and Edwards (1993) where the low correlation between attitudes and behaviour exist and that of Regis (1996) that no one could get the attitude-behaviour correlation above 0.5, is seemingly contradicting the statement, that attitudes have to change

before change in behaviour can take place. There should not be confusion in the aforementioned when viewing this from a different perspective i.e. that there is no linear relationship between attitudes and behaviour but those attitudes would influence behaviour in the end through complex reasoning mainly.

Regis (1996), assumed the model of Reasoned Action to be sufficient conceptually to explain human action as it encompasses all elements of the basic conceptual scheme and appears to be successful in predicting human behaviour. This derivation comes essentially from the assumption that behaviour is predictable from behaviour intentions which are formed from a weighted combination of attitudes and social influence. This view is similar to the Extended Version of the The Theory of Planned Behaviour of Aberg *et al* (1997) illustrated in Figure 2. In this Theory attitude towards the behaviour, subjective norm, perceived behavioural control and behaviour of other persons forms an intention which leads to behaviour. The perceived behaviour control and behaviour of other persons may also lead directly to behaviour.

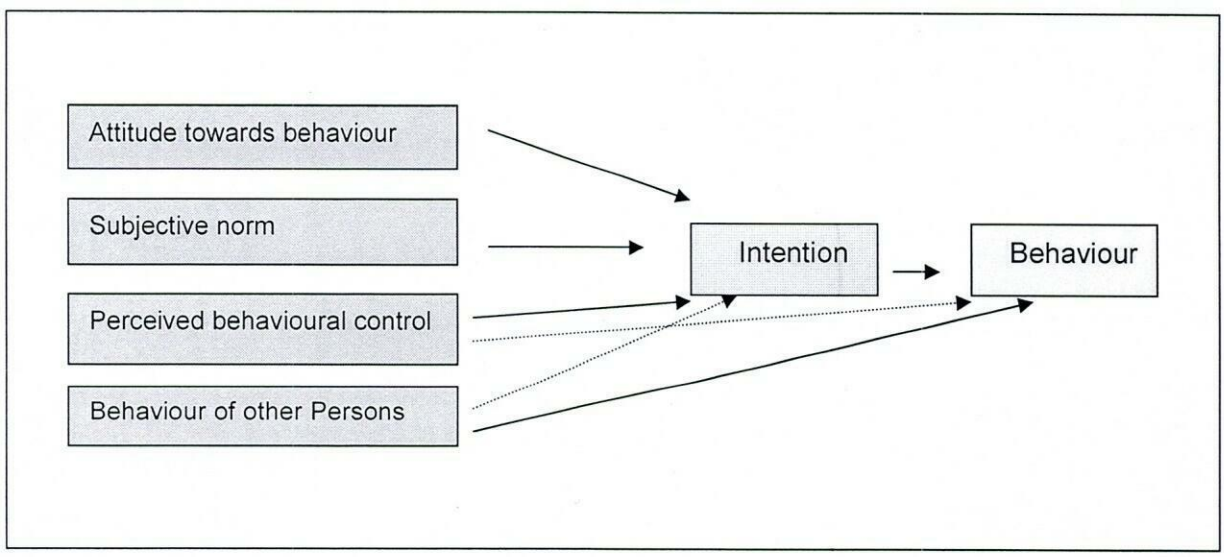

Figure 2: Extended version of the theory of planned behaviour (Aberg *et al*, 1997)

Regis (1996) furthermore said that there is a large amount of research that assumes that attitudes are quantifiable by the use of a simple algebraic expression, which may reflect the derivation of the individual's overall attitude. It is then clear that attitudes are only simplistically described as a resultant of beliefs and as a determinant of behaviour. Bell *et al* (1990) are also of the opinion that expressed attitudes are influenced by social norms and these norms together with the attitude determine behavioural intentions. It can then be

accepted that the attitudes as a variable could take on potentially numerous variations deducted from social norms. Furthermore, attitudes are formed through a complex process of social learning and conditioning mixed by the individual's cognitive processes that is also determined by a perception of a number of outcomes.

All research indicates that there is some form of a relationship between attitudes and behaviour, however weak. A common denominator would then simplify the task of finding a common thread on a specific topic. To this effect Manstead (1996) is of opinion that the relationship between attitudes and behaviours can be optimised by following the principle of compatibility that thus would measure attitudes and behaviour compatible with respect to action performed, object at which the actions is directed and context in which the action takes place as well when it takes place. The measurement of the attitude must be well defined and divided into manageable portions of potential scenarios. Edwards (1994) postulates that a well-constructed attitude scale consists of a number of items that have been carefully selected and edited in accordance with certain criteria, in the case of this research – the ICC's Charter for sustainable development. There should then be a specific focus in the measuring instrument to effectively decrease the enormity of subject in the perception of the individual participating in the research.

Consideration was given to the complexity of the nature of the cognitive processes of the individual and the social influence surrounding the individual but the situation itself will also have an influence on the individual. Bell *et al* (1990) postulates, to this effect, that the strength of the association between the attitude and the situation will determine the degree to which the attitude is activated and thus will result in behaviour. The strength will primarily be determined by the direct experience with the attitude object and the number of times the attitude has been expressed. The situation will invariable strengthen or weaken the attitude to some extend. This will be explored into further detail in 2.5.

Bell *et al* (1990) are of the opinion that expressed attitudes are influenced by social norms and these norms together with the attitude determine behavioural intentions. It should then be accepted that the attitudes as a variable could take on potentially numerous variations deducted from social norms. Furthermore, attitudes are formed through a complex process of social learning and conditioning mixed by the individual's cognitive processes that is also determined by a perception of a number of outcomes.

Having considered the internal processes of the individual in conjunction with the internalisation of the opinion and behaviour of others from the abovementioned model Louw and Edwards (1993) points to an important aspect in describing the Cognitive Dissonance Theory of Festinger, where change of behaviour when forced upon a person can result in the desired behaviour but the person will dissociate their attitudes and would reason that they were forced to comply. This ultimately will lead to the situation where line management will not take responsibility for their actions and adopt a "wait-and-see" attitude. Environmental Management as a department is then expected to set a policy or standard and enforce it before they will act to rectify any negative environmental impact that might occur from their activities and / or processes.

Attitudes are not the only shaper of behaviour; society; social norms, intentions and external limitations all contribute to the complex nature of attitudes and subsequent behaviour. It is however extremely difficult to measure the aforementioned shapers of behaviour as it would not be justified and measurable in one single measuring apparatus. Specific attitudes related to international accepted norms and standards for Environmental Management in Business would give more structure to the research of the attitudes and resulting behaviour. Therefore the importance, ascribe by business units, to Environmental Management will indicate its willingness towards commitment and allocation of resources to achieve the objectives. In this sense 'self- regulation' would be a determining factor in the success of the implementation, indicating behaviour, of the policies and standards rather than enforcement by a department external to the business unit. External enforcement can also indicate a low locus of control of the individual.

2.5 BEHAVIOUR

Simply articulated, behaviour entails anything that a person does. It implies that a person reacts to a specific response or it refers to activities carried out by a person. Plug *et al* (1988) indicate that some definitions refer to observable behaviour only and that subjective matters such as thought processes are excluded. The nature and strength of the interrelationship between environmental attitudes and environmental behaviour is complex according to Bell *et al* (1990). Attitudes are not accurate predictors of behaviour and can precede or follow behaviour, as discussed previously. The feedback mechanism of critique and the behaviour of

other persons thus form an important aspect in the relationship where the initial attitude can be adapted or changed in the process.

Extremely strict methods of behavioural change will not change the attitude of a person. Therefore, to penalise an employee for not reaching environmental targets would not significantly change the person's attitude, he will simply comply because he was forced to do so. Behaviour therefore is a function of attitudes, norms, habits and expectancies about reinforcement and it is only when all four the elements are consistent that there is a correlation between attitudes and behaviour.

Wicker (1988) explained an interesting concept. There is a tendency to blame persons rather than environments, which result in person-centred solutions focussing on variables such as thoughts, attitudes, motives and intelligence. It can be that the problem lies in the system, which determines behaviour as an external force.

Bell *et al* (1990) has it that although a general attitude may not predict behaviour but that a multiple item scale measuring components of an attitude is more likely to predict a class of behaviours. This is exactly what is being attempted in the research.

The consequential pattern of beliefs, attitude and alas behaviour, within the framework of cognitively assessing the most probable outcome, lead thinking in the parameters of the significance criteria for the 'most probable outcome'. This is described in the Antecedent-Behaviour-Consequence Analysis model proposed in Krause (1997). This model brings another dimension to the attitude behaviour pattern as it focus on triggers of behaviour (antecedents) and the consequence of exhibiting that behaviour. Consequences influence behaviour directly and antecedents primarily predict consequences and thus influence behaviour indirectly. There normally are a number of potential outcomes in any situation that requires specific behaviour; the intention of the individual is therefore influenced by these antecedents and consequences. This is still an internal cognitive process but does not only rely on the opinion or behaviour of other persons as described previously. A person would normally exhibit behaviour that favours the following 'soon- certain- positive' criteria according to Krause (1997):

- Timing – a consequence that follows soon after the behaviour was exhibit will be favoured.

- Consistency – a consequence that is certain to follow certain behaviour is more likely to influence the behaviour.
- Significance – positive outcomes influences behaviour more powerfully.

The aforementioned model should not be seen as not contradictory to the previous theory of planned behaviour but rather extends the scope of the internal cognitive processes of the individual if one consider the definition of an attitude by Eagly and Chaiken (1993) as *'tendencies to evaluate an entity with some degree of favour or disfavour, ordinarily expressed in cognitive, affective and behavioural responses'*.

Essentially, the number of potential variables cognitively assessed will result in specific behaviour. It can be said that the number of potential outcomes as variables is too complex within the ambit of an EMS are too many to be effectively cognitively considered simultaneously by the individual, however if the soon-certain-positive criteria of Krause (1997) is applied it will reduce the scope of the outcomes to a manageable portion. In this research the variables would not only cover the scope of management actions, from policy formulation to reporting on environmental issues but also from only compliance to legislation through to a total quality management approach, which may seem daunting and exhaustive but the outcomes certainly revolve around the basics of continual improvement of the environmental performance indicators and ultimately environmental responsible actions. In applying Krause's (1997) soon-certain-positive criteria one realise exactly why environmental responsible behaviour might be divorced from attitudes as:

- The results of sound environmental management decisions might not be seen immediately.
- The consequences of management's related decisions to environmental performance are not positively reinforced in e.g. performance appraisals the normal predisposition to the financial bottom-line will supersede.
- The certainty in which the decisions will be rewarded or punished can also be seen as clouded as reversal of historical pollution or correction of activities with negative environmental impact implicitly will be capital intensive thus placing constraints on the budget, being ultimate measurement of success of the business.

2.6 ATTITUDE AND BEHAVIOUR IN BUSINESS

The correlation, or lack thereof, of attitudes and behaviour will be the generally excepted term to describe the underlying beliefs of the individual. The individual also function within a framework of "collective thinking" within the organisation. This also might not be the belief system of the individual in his / her personal reality.

Many researchers noted the effect of an individual's belief system in the formation of attitudes and it is noteworthy that Bechtel (1997) offered a classification of two types of beliefs according to Gray's model, specifically to environmental concerns, as being:

- Primary beliefs and
- Derived beliefs.

He distinguishes between four different Primary Beliefs towards the environment as follows:

- GENERAL ENVIRONMENTAL CONCERN
  The pressing need for humanity to conserve the earth is the central theme.

- PRIMITIVE BELIEFS
  This is the belief that humans are the highest order and is above and apart from nature. The interdependency of life is rejected. Another belief is that progress and growth will solve all problems. Bechtel (1997) indicated that these mentioned beliefs may occur separately or together in a person.

- COSTS / BENEFITS
  The long and short-term aspects of the magnitude of any personal or societal threats will be evaluated.

- LOCUS OF RESPONSIBILITY AND CONTROL
  This primary belief holds the thought that one individual cannot make a difference.

Bechtel (1997) lists derived beliefs as conservation, pollution and population. Here the finite capacity of the earth is recognised. Bechtel (1997) also concludes that human abuse of the environment has been universal and that this stems from the view that humanity is above and

separate from nature. The environment can not be saved unless this view is replaced by the new environmental paradigm as behaviour follows the current belief system. Bell *et al* (1990) also state that attitude is formed through classical or instrumental conditioning and / or social learning. These processes are not independent from one another and play a part in not only the formation but also the maintenance of an attitude.

Considering social learning, the business environment, as much as the social system, can have an effect on the individual's attitude and behaviour. Research on this topic indicated that business leader's disagreed that the concern for environmental considerations in South Africa is more for public relations than actual commitment; Preston (1989) as 75% of the sample. But, ambivalence was proved in the same research where only 46% agreed that their company would not commit to an undertaking that promised high financial return, if they would be aware that would be severe and undetectable environmental degradation as a result.

Research by Preston (1989) posed that 76 % of ecologists think that business leaders regard conservation as a luxury to be considered only if more basic needs have been fulfilled. 43% of business leaders agreed, 9% were neutral and 48% disagreed. These basic beliefs amongst business leaders would then influence the behaviour as indicated in the above. Coupled to this, 2% of the business leaders thought themselves to be not knowledgeable about the impact of their activities on the environment, 25% thought that they are not very knowledgeable, 39% thought to be fairly knowledgeable, only 29% perceived themselves to be knowledgeable and 5% very knowledgeable. Professional ecologists did not have the same viewpoint and thought business leaders to be knowledgeable with regards to the impact of their activities on the environment of South Africa as follows:

- 1%; very knowledgeable,
- 4%; knowledgeable,
- 23%; fairly knowledgeable,
- 65%; not very knowledgeable;
- 7%; not al all knowledgeable.

The next question to answer would be: If one were knowledgeable about the impact of your activities on the environment, would you then be concerned about the quality of the environment? Preston (1989), once again, posed this question and the results about what business leaders believe were tabulated in Table 1:

Table 1: Summary of concerns about the quality the environment of professional ecologists and business leaders.

Concern about Quality of the Environment	Ecologists	Business Leaders
Strong	0%	12%
Fairly strong	32%	47%
Some	44%	32%
Fairly weak	18%	7%
Weak	6%	2%

Preston's (1989) summary of the basic beliefs on Environmental Management, underpinning attitude formation, are:

- The majority of business leaders think that they are fairly strongly concerned with the quality of the environment and also fairly knowledgeable about their impact on the environment.
- Professional ecologist thought that business leaders are not very knowledgeable about their impact on the environment but that they have some concern about the quality of the South African environment.

The attitude-behaviour interrelationship of Spoornet middle management in this regard would then demonstrate that it is possible to realise economic goals whilst the environment is being conserved should they hold the basic belief that they are both knowledgeable and concerned with the environment.

Environmental Management as a business principle was officially introduced only in 1997 in Spoornet and it would be of interest to measure the individual's so-called belief system; whether it was brought about as part of the "collective thinking" within the organisation or from an internal *loci* of control. Therefore, in ascertaining which attitudes are not aligned with the general direction of the business necessary changes can be brought about by intervention programmes specifically designed to alter the individual's ability to forecast environmental outcomes of the organisation and particularly the business unit under his configuration and control.

2.7 SUMMARY

The underlying principles of Environmental Management were introduced in this chapter. The necessity for an audit tool that is easy to administer was outlined and the application of the Environmental Self Assessment Programme proved to fulfil the purpose of an assessment tool for the development of an EMS on a slightly, but not exclusively, strategic level.

Theory has it that attitudes can not accurately predict behaviour in a linear fashion as there are a host of influences that eventually will result in specific behaviour. Hence the assumption that attitude is not a necessary cause for behaviour but certainly is a contributing force. The underlying beliefs of management regarding Environmental Management were briefly discussed.

CHAPTER 3

RESEACH PROCEDURE

3.1 INTRODUCTION

It was decided to use a questionnaire based on the following advantages also listed in Henerson *et al* (1987):

- It permits anonymity.
- Considerable time to think over responses before responding.
- The same questions can be given to many people considerably reducing costs.
- Greater uniformity is achieved, as each person will respond to exactly the same questions.
- Data will be more easily analysed and interpreted than data from oral responses.
- It can be mailed as well as directly administered.

The development of the questionnaire as well as the validity and reliability of the measuring instrument will be discussed in the following.

3.2 THE DEVELOPMENT OF THE QUESTIONNAIRE

Henerson *et al* (1987) suggests that the following steps be taken in order to develop the questionnaire.

- Identify the programme objectives stating specifically what the questionnaire should measure as well as the specific information that is anticipated to come from the questionnaire.
- Develop a response format.
- Identify the frame of reference of the respondents.
- Write out the questions.
- Prepare a sheet to summarise the data.
- Critically evaluate the questions and revise it if necessary.

- Design the questionnaire format and draw up the questionnaire.
- Send the instrument out for the measurement.

The abovementioned steps will be discussed in more detail below.

3.2.1 OBJECTIVES OF THE QUESTIONNAIRE

A list of the information required has been made. In order to protect the research against inadequate information or the wrong information gained an informal interview was conducted to assess the relevance of the objectives of the research. The objectives were, as listed in the above, to assess:

- The attitudes of line management with regard to environmental management systems is in line with the International Chamber of Commerce's Charter for Sustainable Development.
- The correlation between attitudes and environmentally pro-active responsible behaviour.
- The differences in attitudes between the different functional divisions of line management within Spoornet.

3.2.2 FRAME OF REFERENCE

The frame of reverence was considered for the respondents i.e.:

- What vocabulary would be relevant to Middle Management?
- How well will they be informed around Environmental Management?
- Do Middle Managers have a specific perspective that should be considered? E.g. are they more concerned with the financial objectives of the company than Environmental Management per se?

3.2.3 FORMULATION OF QUESTIONS

Edwards (1994) points out that the following must be considered in drawing up statements for the questionnaires:

- Does the instrument measure what it is suppose to measure?
- Do the programme objectives and the objective of the instrument correlate?

- Is there any information on the reliability of the measure?
- Is the instrument appropriate for the age and ability of the group to be measured?
- Are there any anticipated problems that might arise from the use of the instrument?

3.2.4 DESIGN OF THE DATA SUMMARY SHEET

A data summary sheet was designed in the MS Excell format to assist in calculations and scores taken on a tally sheet can be entered into the format. The tally sheet was chosen as it can calculate the number of persons who answered in a certain way and the average response to the specific question with standard deviations could also be measured.

3.2.5 EVALUATION OF THE QUESTIONS AND REVISION

The questions were evaluated according to the following criteria:

- Is the question specific to one idea?
- Is the questions formulated in twenty or less words?
- Is there any confusing vocabulary in the questions?
- Can the words or phrases used influence the respondents' response or give clues to the expected answer?
- No negative questions would be permissible.
- Would the question result in a appropriate answer or would it discourage another answer?
- A lack of knowledge of the respondent is not to be demeaning to the respondent.

3.2.6 DESIGN QUESTIONNAIRE LAYOUT

The questionnaire was designed in MS Word (forms) to allow an easy reply in electronic format by the respondent.

The sequence of the questions followed the sequence of the principles of the ICC's Charter of Sustainable development and no contingency questions that are depending on the previous answer were asked.

The introduction to the questionnaire is given in Appendix A, in the form of a cover letter, and explains the purpose of the questionnaire as well as provide guidelines for answering the questions.

3.2.7 ADMINISTERING THE QUESTIONNAIRE

The questionnaire was sent out by e-mail and respondents were prompted to answer by a reminder. Respondents who still did not respond within one week were called and reminded to respond.

The attitude scale construction will next be discussed.

3.3 ATTITUDE SCALE CONSTRUCTION

The fixed-format scaling was using the 5 point Likert scale (Strongly agree – Agree – Neutral – Disagree – Strongly disagree). This scale was also used by Preston (1989) and proved to be sufficient for the measurement. Numerical values were attached to scale for purposes of ease of measurement. The values are as follows:

- Strongly agree – 5
- Agree – 4
- Neutral – 3
- Disagree – 2
- Strongly disagree - 1

It was established that an option for those who does not know the answer to a question would not apply as all respondents must be well versed in Environmental Management from their continuous involvement in the field as part of their responsibilities.

3.4 VALIDITY

Validity and reliability are central to the success of the measuring instrument according to Albrecht and Thompson (1988).

The judgment of validity must answer the question: Is the instrument appropriate for measuring what needs to be measured? In other words, whether the instrument will tell you what you want to know and therefore ruling out interpretations of the instrument's results other than the one that is to be made.

The validity was tested in a pilot testing and it was established that the questionnaire measure what it is suppose to measure without any confusion to those who partook in the pilot testing.

3.5 RELIABILITY

The reliability answers: Does the measuring instrument yield the same results consistently? Care was taken, as mentioned by Preston (1989), to address principles in the questionnaire through company specific examples.

Problems were foreseen in the reliability of the relationship between attitudes and behaviour as literature revealed that there is a weak link between the two concepts as cited by Louw and Edwards (1993). Albrecht and Thompson (1988) however state that recent studies demonstrate correspondence between the two concepts when certain conditions are present. The conditions are:

- Attitudes are good predictors of behaviour when the attitudes to be measured are specific about the behaviour in question.
- Attitudes based on direct experience will be more reliable in predicting future behaviour.
- Well formed attitudes are better predictors of behaviour when determined by factors such as intensity, certainty, clarity and stability.

In lieu of the abovementioned care was taken to address these issues in the application of the questionnaire. Firstly, the attitudes to be measured were expressed in specific behaviour. Secondly, all the respondents were responsible for environmental management and thirdly, care was taken to make questions applicable to existing terminology in the Spoornet.

3.6 METHOD OF RESEARCH

3.6.1 RESEARCH DESIGN

A once off Ex-post facto cross reference design was employed in this study.

3.6.2 RESEARCH GROUP

The research group consisted of the identified ten (10) functional divisions within Spoornet considered to have a high environmental impact. Five respondents (line managers), responsible for environmental management, were randomly selected within each of the ten (10) functional divisions to participate in the research to ensure a sample size of 50.

3.7 SUMMARY

The development of the questionnaire used in this research was outlined in this chapter. Specific emphasis was placed on the objectives, frames of reference, formulation of the questions, design layout, validity and reliability of the questionnaire. The research design and research group was also discussed.

CHAPTER 4

RESULTS AND INTERPRETATION

4.1 INTRODUCTION

The results of the empirical investigation are described in this chapter. Firstly, the correlation between attitudes and environmentally responsible behaviour, as measured by the ESAP, will be discussed. Secondly, the differences of attitudes of line management, within the functional divisions, with regards to the ICC's Principles for Environmental Management will be interpreted.

4.2 RESULTS AND INTERPRETATION

4.2.1 ATTITUDES AND BEHAVIOUR OF THE TOTAL GROUP

The attitudes and behaviour of the total group of line managers in the 10 functional divisions in Spoornet with regards to the principles of Environmental Management, prescribed by the ICC's Charter for Environmental Management reflects in Table 1.

There are significant statistical differences between the attitudes and behaviour as measured in all the principles except Openness to Concerns. This echoes the research mentioned in Chapter 2.

Table 1: Mean, standard deviation, t-values and p-values of attitudes and behaviour of the total research group.

PRINCIPLES	ATTITUDES		BEHAVIOUR		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.14	1.63	0.27	3.91	0.00023*
Integrated Management	3.44	0.70	1.35	0.28	9.57	0.00000*
Prior Assessment	3.58	0.49	1.17	0.37	15.05	0.00000*
Products and Service	3.20	1.06	1.40	0.43	5.43	0.00000*
Facilities and Operations	3.16	0.73	1.31	0.26	8.13	0.00000*

PRINCIPLES	ATTITUDES		BEHAVIOUR		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Research	3.80	0.40	1.04	0.09	22.17	0.00000*
Precautionary Approach	3.20	0.73	0.99	0.47	9.47	0.00000*
Emergency Preparedness	3.58	0.53	1.46	0.53	11.79	0.00000*
Employee Education	3.63	0.60	1.17	0.33	13.06	0.00000*
Customer Advice	2.08	1.73	0.94	0.36	2.15	0.03558*
Contractors and Suppliers	3.34	0.56	0.81	0.63	13.24	0.00000*
Transfer of Technology	1.93	1.66	0.5	0.31	2.83	0.00623*
Contribution to Common Effort	3.28	0.45	0.58	0.45	17.74	0.00000*
Process of Improvement	3.16	0.51	1.18	0.28	12.30	0.00000*
Openness to Concerns	2.24	1.19	1.56	2.14	1.44	0.15358
Compliance and Reporting	2.93	0.66	0.91	0.37	9.67	0.00000*

4.2.2 DIFFERENCES BETWEEN THE ATTITUDES OF THE DIFFERENT FUNCTIONAL UNITS

The differences between attitudes of the functional divisions, measured against each other, will be discussed within the context of the principle in which the differences appeared.

This interpretation seeks to identify the differences between the functional units in relation to each principle in order to identify areas where the perceived differences in attitudes can potentially explain behaviour that is not in line with the ICC's Principles for Environmental Management. Please bear in mind that attitudes does not directly affect behaviour, as described by previous research mentioned in Chapter 2, but it can mutually exclusive be deducted that the attitudes should reflect the importance given in the mentioned principles. This interpretation also seeks to identify the relation of the differences of attitudes between the functional entities.

4.2.2.1 CORPORATE PRIORITY

Business differed in attitudes from Orex (Table 5), Service Execution (Table 7) and Terminals (Table 8). It is important to note that Business, the unit responsible for marketing and customer service has a different view related to the importance of environmental management as corporate priority. Business regard environmental management as a low priority it can imply only two fundamental aspects. Firstly, that within their ambit of functionality, the responsibility towards environmental management is relatively low as a result of mainly their office-bound function of work. Secondly, that the strategies within marketing and customer service does not entail environmental responsible attitudes, which in turn could be influenced by the relative low priority of environmental management of their clients. The importance of the Corporate Priority of Environmental Management can be a fundamental defect in the overall business strategy of Spoornet if it is regarded with a low priority in the onset of the business process.

It is also important to note that Business is the only function that differs in opinion regarding the Corporate Priority of Environmental Management.

4.2.2.2 PROCESS OF IMPROVEMENT

The following Business Units differs in attitude on the process of improvement:

- Business and Orex (Table 5)
- Business and Service Execution (Table 7)
- Coalink and Orex (Table 13)
- Coallink and Service Execution (Table 15)
- Infrastructure and Orex (Table 20)
- Infrastructure and Service Execution (Table 22)
- Orex and Traction (Table 30)
- Orex and MLPS (Table 32)
- Service Execution and Traction (Table 39)
- Service Execution and Main Line Passenger Services (Table 41)

From the abovementioned it is evident that the attitudes of the all the business units regarding continual improvement in policies, programmes and performance differs with the exception of Property, Terminals and Wagons. In Chapter 2 the highly complicated nature of attitude formation and resulting behaviour was illustrated. However, the fact that eight out of the ten business units differed in attitudes, in a subject that would highly involve the future performance of Spoornet as a whole, with specific reference to environmental performance could arise from perplexed views on the introduction of changes in response to incidents, legal requirements, common law and or accepted external standards i.e. SABS ISO 14001. Added to this, this principle was the only principle in which such varied attitudes were expressed.

Orex and Service Execution displayed higher values in attitudes toward this principle than Business, Coallink, Infrastructure, Traction and Main Line Passenger Services. Also noteworthy is the higher score of Terminals against Orex. Only Property and Wagons did not show any difference.

4.2.2.3 EMPLOYEE EDUCATION

Only Property measured against Terminals scored a higher attitude on employee education. See Table 34.

4.2.2.4 PRODUCTS AND SERVICES

Orex and Service Execution and Service Execution and Terminals differed in attitudes in this principle (Table 28 and Table 38 respectively). This should not have any influence on the overall interpretation as Orex manage their own arrivals and departures and would largely stand separate from the general freight.

In contexts, attitudes related to the environmental impact of their actions i.e. consumption of energy and waste management Orex seem to have a attitude towards environmentally responsible behaviour by regarding necessary a system for identifying and evaluation of impacts as well as potential impacts. Furthermore, management's attitudes reflect that these issues should be addressed in the design and planning phases.

4.2.2.4 CUSTOMER ADVICE

The attitudes on advice to the customers, and where relevant education of customers, distributors and the public on safe usage, transportation and disposal of products and services varied as follows:

- Business and Terminals (Table 8)
- Coallink and Terminals (Table 16)
- Infrastructure and Terminals (Table 23)
- Infrastructure and Traction (Table 24)
- Service Execution and Wagons (Table 40)
- Service Execution and Main Line Passenger Services (Table 41)
- Traction and Wagons (Table 45)
- Traction and Main Line Passenger Services (Table 46)

Orex and Property did not differ in their attitudes.

This illustrate that there are varied attitudes on whether the business unit responds to legal requirements or standards for informing all parties on the environmental risks, safe use, proper transportation as well as waste management principles.

Terminals, Service Execution and Traction had the highest measured attitudes whilst Business, Coallink, Infrastructure, Wagons and Main Line Passenger Services indicated a lower attitude on customer advice.

It is also the principles where there is the highest variation of attitudes amongst the business units, second to the principle of Process of Improvement.

4.2.2.5 FACILITIES AND OPERATIONS

The development, design and operation of facilities to conduct activities must take the efficient use of energy and materials, the sustainable use of renewable resources, the minimisation of adverse environmental impact and generation of waste as well as safe waste disposal into consideration when applying this principle. The following business units differed in attitudes:

- Business and Orex (Table 5)
- Coallink and Orex (Table 13)

Business can in this instance be exempted from the environmental impact of their actitivies as their facilities and operations are primarily offices. Electricity usage and use and disposal of general office supplies would not be regarded as one of the biggest environmental impact within the organisation.

Orex is the common denominator and it is of extreme interest that there is a difference in attitudes between Orex and Coallink, both of which have general high environmental impact. Orex scored their attitudes as the highest.

4.2.2.6 RESEARCH

The attitudes on research on the environmental impact of processes, services and wastes and in particular minimisation of negative impact differed between:

- Coallink and Orex (Table 13)
- Coallink and Terminals (Table 16)

Both Orex and Terminals has a higher regard for this principle than Coallink.

4.2.2.7 COMPLIANCE AND REPORTING

The attitudes towards measurement of environmental performance; to conduct regular compliance audits and assessments based on company standards and legal requirements and to provide information to top management and other relevant parties differed amongst:

- Business and Infrastructure (Table 4)
- Infrastructure and Property (Table 21)
- Infrastructure and Traction (Table 24)

Business, Property and Traction attached a higher regard to this principle than Infrastructure.

Table 2: Differences between attitudes of Business and Coallink

PRINCIPLES	BUSINESS		COALLINK		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.41	3.40	1.51	-0.43	0.67
Integrated Management	4.00	1.22	4.40	0.54	-0.66	0.52
Prior Assessment	4.40	0.54	4.20	0.44	0.63	0.54
Products and Service	4.40	0.89	3.80	1.64	0.71	0.49
Facilities and Operations	4.40	0.54	4.0	1.22	0.66	0.52
Research	4.80	0.44	4.75	0.500	0.15	0.87
Precautionary Approach	3.80	1.09	3.60	1.14	0.28	0.78
Emergency Preparedness	4.20	0.44	4.40	0.54	-0.63	0.54
Employee Education	4.60	0.54	3.80	1.09	1.46	0.18
Customer Advice	3.00	1.87	3.60	1.51	-0.55	0.59
Contractors and Suppliers	4.00	0.70	4.00	0.70	0.00	1.00
Transfer of Technology	2.40	1.94	3.20	1.09	-0.80	0.44
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.20	0.44	4.00	0.70	0.53	0.60
Openness to Concerns	3.60	0.54	2.60	1.51	1.38	0.20
Compliance and Reporting	4.20	0.44	3.60	0.54	1.89	0.09

Table 3: Differences between attitudes of Business and Infrastructure

PRINCIPLES	BUSINESS		INFRA-STRUCTURE		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.41	3.60	1.51	-0.64	0.53
Integrated Management	4.00	1.22	4.60	0.54	-1.00	0.34
Prior Assessment	4.40	0.54	4.20	0.44	0.63	0.54
Products and Service	4.40	0.89	4.20	0.83	0.36	0.72
Facilities and Operations	4.40	0.54	4.20	0.44	0.63	0.54
Research	4.80	0.44	4.60	0.54	0.63	0.54
Precautionary Approach	3.80	1.09	3.80	0.44	0.00	1.00
Emergency Preparedness	4.20	0.44	4.40	0.89	-0.44	0.66
Employee Education	4.60	0.54	4.60	0.54	0.00	1.00
Customer Advice	3.00	1.87	3.60	1.51	-0.55	0.59
Contractors and Suppliers	4.00	0.70	4.20	0.44	-0.53	0.60
Transfer of Technology	2.40	1.94	4.00	1.22	-1.55	0.15
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.20	0.44	3.80	0.44	1.41	0.19
Openness to Concerns	3.60	0.54	3.00	1.00	1.17	0.27
Compliance and Reporting	*4.20*	*0.44*	*3.40*	*0.54*	*2.52*	*0.03*

Table 4: Differences between attitudes of Business and Orex

PRINCIPLES	BUSINESS		OREX		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	*3.30*	*1.41*	*4.60*	*0.54*	*-2.35*	*0.04*
Integrated Management	4.00	1.22	4.80	0.44	-1.37	0.20
Prior Assessment	*4.40*	*0.54*	*5.00*	*0.00*	*-2.44*	*0.03*
Products and Service	4.40	0.89	4.20	0.83	0.36	0.72
Facilities and Operations	4.40	0.54	3.80	1.09	1.09	0.30
Research	4.80	0.44	5.00	0.00	-1.00	0.34
Precautionary Approach	3.80	1.09	4.40	0.54	-1.09	0.30
Emergency Preparedness	*4.20*	*0.44*	*5.00*	*0.00*	*-4.00*	*0.00*
Employee Education	4.60	0.54	5.00	0.00	-1.63	0.14
Customer Advice	3.00	1.87	3.20	1.64	-0.17	0.86
Contractors and Suppliers	4.00	0.70	4.60	0.54	-1.50	0.17
Transfer of Technology	2.40	1.94	2.80	2.04	-0.31	0.75
Contribution to Common Effort	4.40	0.54	4.40	0.54	0.00	1.00
Process of Improvement	4.20	0.44	4.40	0.54	-0.63	0.54
Openness to Concerns	3.60	0.54	3.80	1.09	-0.36	0.72
Compliance and Reporting	4.20	0.44	3.40	1.94	0.89	0.39

Table 5: Differences between attitudes of Business and Property

PRINCIPLES	BUSINESS		PROPERTY		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.41	4.40	1.41	-1.87	0.09
Integrated Management	4.00	1.22	4.60	1.22	-1.00	0.34
Prior Assessment	4.40	0.54	4.80	0.54	-1.26	0.24
Products and Service	4.40	0.89	3.40	0.89	1.27	0.23
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	4.80	0.44	0.00	1.00
Precautionary Approach	3.80	1.09	4.50	1.09	-1.14	0.28
Emergency Preparedness	4.20	0.44	4.60	0.44	-1.26	0.24
Employee Education	4.60	0.54	4.80	0.54	-0.63	0.54
Customer Advice	3.00	1.87	2.60	1.87	0.31	0.76
Contractors and Suppliers	4.00	0.70	4.60	0.70	-1.50	0.17
Transfer of Technology	2.40	1.94	2.40	1.94	0.00	1.00
Contribution to Common Effort	4.40	0.54	4.20	0.54	0.63	0.54
Process of Improvement	4.20	0.44	4.40	0.44	-0.63	0.54
Openness to Concerns	3.60	0.54	3.40	0.54	0.42	0.68
Compliance and Reporting	4.20	0.44	4.20	0.44	0.00	1.00

Table 6: Differences between attitudes of Business and Service Execution

PRINCIPLES	BUSINESS		SERVICE EXECUTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	*3.00*	*1.41*	*4.60*	*0.54*	*-2.35*	*0.04*
Integrated Management	4.00	1.22	4.40	0.54	-0.66	0.52
Prior Assessment	*4.40*	*0.54*	*5.00*	*0.00*	*-2.44*	*0.03*
Products and Service	4.40	0.89	4.60	0.54	-0.42	0.68
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	4.40	0.54	1.26	0.24
Precautionary Approach	3.80	1.09	4.60	0.54	-1.46	0.18
Emergency Preparedness	4.20	0.44	4.60	0.54	-1.26	0.24
Employee Education	4.60	0.54	4.60	0.54	0.00	1.00
Customer Advice	3.00	1.87	2.40	1.94	0.49	0.63
Contractors and Suppliers	4.00	0.70	4.40	0.54	-1.00	0.34
Transfer of Technology	2.40	1.94	2.40	1.94	0.00	1.00
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.20	0.44	4.20	0.44	0.00	1.00
Openness to Concerns	3.60	0.54	3.40	1.14	0.35	0.37
Compliance and Reporting	4.20	0.44	4.00	0.70	0.53	0.60

Table 7: Differences between attitudes of Business and Terminals

PRINCIPLES	BUSINESS		TERMINALS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	*3.00*	*1.41*	*4.60*	*0.54*	*-2.35*	*0.04*
Integrated Management	4.00	1.22	4.60	0.54	-1.00	0.34
Prior Assessment	4.40	0.54	4.80	0.44	-1.26	0.24
Products and Service	4.40	0.89	5.00	0.00	-1.50	0.17
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	5.00	0.00	-1.00	0.34
Precautionary Approach	*3.80*	*1.09*	*5.00*	*0.00*	*-2.44*	*0.03*
Emergency Preparedness	4.20	0.44	4.80	0.44	-2.12	0.06
Employee Education	4.60	0.54	5.00	0.00	-1.63	0.14
Customer Advice	3.00	1.87	2.60	2.19	0.31	0.76
Contractors and Suppliers	4.00	0.70	4.40	0.54	-1.00	0.34
Transfer of Technology	2.40	1.94	2.80	2.04	-0.31	0.75
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.20	0.44	4.20	0.44	0.00	1.00
Openness to Concerns	3.60	0.54	2.80	1.48	1.13	0.29
Compliance and Reporting	4.20	0.44	4.00	0.70	0.53	0.60

Table 8: Differences between attitudes of Business and Traction

PRINCIPLES	BUSINESS		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.41	4.60	1.41	-2.35	0.04
Integrated Management	4.00	1.22	4.60	1.22	-1.00	0.34
Prior Assessment	4.40	0.54	4.80	0.54	-1.26	0.24
Products and Service	4.40	0.89	5.00	0.89	-1.50	0.17
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	5.00	0.44	-1.00	0.34
Precautionary Approach	3.80	1.09	5.00	1.09	-2.44	0.03
Emergency Preparedness	4.20	0.44	4.80	0.44	-2.12	0.06
Employee Education	4.60	0.54	5.00	0.54	-1.63	0.14
Customer Advice	3.00	1.87	2.60	1.87	0.31	0.76
Contractors and Suppliers	4.00	0.70	4.40	0.70	-1.00	0.34
Transfer of Technology	2.40	1.94	2.80	1.94	-0.31	0.75
Contribution to Common Effort	4.40	0.54	4.20	0.54	0.63	0.54
Process of Improvement	4.20	0.44	4.20	0.44	0.00	1.00
Openness to Concerns	3.60	0.54	2.80	0.54	1.13	0.29
Compliance and Reporting	4.20	0.44	4.00	0.44	0.53	0.60

Table 9: Differences between attitudes of Business and Wagons

PRINCIPLES	BUSINESS		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.41	4.00	1.22	-1.19	0.26
Integrated Management	4.00	1.22	4.60	0.54	-1.00	0.34
Prior Assessment	4.40	0.54	4.60	0.54	-0.57	0.57
Products and Service	4.40	0.89	4.40	0.89	0.00	1.00
Facilities and Operations	4.40	0.54	3.40	0.89	2.13	0.06
Research	4.80	0.44	4.80	0.44	0.00	1.00
Precautionary Approach	3.80	1.09	3.80	0.44	0.00	1.00
Emergency Preparedness	4.20	0.44	4.60	0.54	-1.26	0.24
Employee Education	4.60	0.54	4.50	0.57	0.26	0.79
Customer Advice	3.00	1.87	2.25	1.50	0.64	0.53
Contractors and Suppliers	4.00	0.70	4.25	0.50	-0.59	0.57
Transfer of Technology	2.40	1.94	3.50	1.00	-1.01	0.34
Contribution to Common Effort	4.40	0.54	4.50	0.57	-0.26	0.79
Process of Improvement	4.20	0.44	4.00	0.81	0.47	0.65
Openness to Concerns	3.60	0.54	3.25	1.70	0.43	0.67
Compliance and Reporting	4.20	0.44	3.75	0.95	0.94	0.37

Table 10: Differences between attitudes of Business and Main Line Passenger Services (MLPS)

PRINCIPLES	BUSINESS		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.00	1.41	3.60	0.89	-0.80	0.44
Integrated Management	4.00	1.22	3.80	1.09	0.27	0.79
Prior Assessment	4.40	0.54	4.40	0.54	0.00	1.00
Products and Service	4.40	0.89	3.80	1.30	0.84	0.42
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	4.80	0.44	0.00	1.00
Precautionary Approach	3.80	1.09	4.00	0.00	-0.40	0.69
Emergency Preparedness	4.20	0.44	4.60	0.54	-1.26	0.24
Employee Education	4.60	0.54	4.80	0.44	-0.63	0.54
Customer Advice	3.00	1.87	3.40	2.19	-0.31	0.76
Contractors and Suppliers	4.00	0.70	4.60	0.54	-1.50	0.17
Transfer of Technology	2.40	1.94	2.40	0.94	0.00	1.00
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.20	0.44	4.00	0.00	1.00	0.34
Openness to Concerns	3.60	0.54	3.00	1.58	0.80	0.44
Compliance and Reporting	4.20	0.44	3.80	1.09	0.75	0.47

Table 11: Differences between attitudes of Coallink and Infrastructure

PRINCIPLES	COALLINK		INFRASTRUCTURE		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	3.60	1.51	-0.20	0.84
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	4.20	0.44	4.20	0.44	0.00	1.00
Products and Service	3.80	1.64	4.20	1.64	-0.48	0.64
Facilities and Operations	4.00	1.22	4.20	1.22	-0.34	0.74
Research	4.75	0.50	4.60	0.50	0.42	0.68
Precautionary Approach	3.60	1.14	3.80	1.14	-0.36	0.72
Emergency Preparedness	4.40	0.54	4.40	0.54	0.00	1.00
Employee Education	3.80	1.09	4.60	1.09	-1.46	0.18
Customer Advice	3.60	1.51	3.60	1.51	0.00	1.00
Contractors and Suppliers	4.00	0.70	4.20	0.70	-0.53	0.60
Transfer of Technology	3.20	1.09	4.00	1.09	-1.08	0.30
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.00	0.70	3.80	0.70	0.53	0.60
Openness to Concerns	2.60	1.51	3.00	1.51	-0.49	0.63
Compliance and Reporting	3.60	0.54	3.40	0.54	0.57	0.57

Table 12: Differences between attitudes of Coallink and Orex

PRINCIPLES	COALLINK		OREX		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	4.60	0.54	-1.66	0.13
Integrated Management	4.40	0.54	4.80	0.44	-1.26	0.24
Prior Assessment	*4.20*	*0.44*	*5.00*	*0.00*	*-4.00*	*0.00*
Products and Service	3.80	1.64	4.20	0.83	-0.48	0.64
Facilities and Operations	4.00	1.22	3.80	1.09	0.27	0.79
Research	4.75	0.50	5.00	0.00	-1.13	0.29
Precautionary Approach	3.60	1.14	4.40	0.54	-1.41	0.19
Emergency Preparedness	*4.40*	*0.54*	*5.00*	*0.00*	*-2.44*	*0.03*
Employee Education	*3.80*	*1.09*	*5.00*	*0.00*	*-2.44*	*0.03*
Customer Advice	3.60	1.51	3.20	1.64	0.40	0.69
Contractors and Suppliers	4.00	0.70	4.60	0.54	-1.50	0.17
Transfer of Technology	3.20	1.09	2.80	2.04	0.38	0.71
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	4.00	0.70	4.40	0.54	-1.00	0.34
Openness to Concerns	2.60	1.51	3.80	1.09	-1.43	0.18
Compliance and Reporting	3.60	0.54	3.40	1.94	0.22	0.83

Table 13: Differences between attitudes of Coallink and Property

PRINCIPLES	COALLINK		PROPERTY		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	4.40	0.89	-1.27	0.23
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	4.20	0.44	4.80	0.44	-2.12	0.06
Products and Service	3.80	1.64	3.40	1.51	0.40	0.69
Facilities and Operations	4.00	1.22	4.40	0.54	-0.66	0.52
Research	4.75	0.50	4.80	0.44	-0.15	0.87
Precautionary Approach	3.60	1.14	4.50	0.57	-1.42	0.19
Emergency Preparedness	4.40	0.54	4.60	0.54	-0.57	0.57
Employee Education	3.80	1.09	4.80	0.44	-1.88	0.09
Customer Advice	3.60	1.51	2.60	2.19	0.83	0.42
Contractors and Suppliers	4.00	0.70	4.60	0.54	-1.50	0.17
Transfer of Technology	3.20	1.09	2.40	1.94	0.80	0.44
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.00	0.70	4.40	0.54	-1.00	0.34
Openness to Concerns	2.60	1.51	3.40	0.89	-1.01	0.33
Compliance and Reporting	3.60	0.54	4.20	0.44	-1.89	0.09

Table 14: Differences between attitudes of Coallink and Service Execution

PRINCIPLES	COALLINK		SERVICE EXECUTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	4.60	0.54	-1.66	0.13
Integrated Management	4.40	0.54	4.40	0.54	0.00	1.00
Prior Assessment	*4.20*	*0.44*	*5.00*	*0.00*	*-4.00*	*0.00*
Products and Service	3.80	1.64	4.60	0.54	-1.03	0.33
Facilities and Operations	4.00	1.22	4.40	0.54	-0.66	0.52
Research	4.75	0.50	4.40	0.54	0.98	0.35
Precautionary Approach	3.60	1.14	4.60	0.54	-1.76	0.11
Emergency Preparedness	4.40	0.54	4.60	0.54	-0.57	0.57
Employee Education	3.80	1.09	4.60	0.54	-1.46	0.18
Customer Advice	3.60	1.51	2.40	1.94	1.08	0.30
Contractors and Suppliers	4.00	0.70	4.40	0.54	-1.00	0.34
Transfer of Technology	3.20	1.09	2.40	1.94	0.80	0.44
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.00	0.70	4.20	0.44	-0.53	0.60
Openness to Concerns	2.60	1.51	3.40	1.14	-0.94	0.37
Compliance and Reporting	3.60	0.54	4.00	0.70	-1.00	0.34

Table 15: Differences between attitudes of Coallink and Terminals

PRINCIPLES	COALLINK		TERMINALS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	4.60	0.54	-1.66	0.13
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	4.20	0.44	4.80	0.44	-2.12	0.06
Products and Service	3.80	1.64	5.00	0.00	-1.63	0.14
Facilities and Operations	4.00	1.22	4.40	0.54	-0.66	0.52
Research	4.75	0.50	5.00	0.00	-1.13	0.29
Precautionary Approach	*3.60*	*1.14*	*5.00*	*0.00*	*-2.74*	*0.02*
Emergency Preparedness	4.40	0.54	4.80	0.44	-1.26	0.24
Employee Education	*3.80*	*1.09*	*5.00*	*0.00*	*-2.44*	*0.03*
Customer Advice	3.60	1.51	2.60	2.19	0.83	0.42
Contractors and Suppliers	4.00	0.70	4.40	0.54	-1.00	0.34
Transfer of Technology	3.20	1.09	2.80	2.04	0.38	0.71
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.00	0.70	4.20	0.44	-0.53	0.60
Openness to Concerns	2.60	1.51	2.80	1.48	-0.21	0.83
Compliance and Reporting	3.60	0.54	4.00	0.70	-1.00	0.34

Table 16: Differences between attitudes of Coallink and Traction

PRINCIPLES	COALLINK		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	4.20	1.30	-0.89	0.39
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	4.20	0.44	4.40	0.54	-0.63	0.54
Products and Service	3.80	1.64	4.20	1.30	-0.42	0.68
Facilities and Operations	4.00	1.22	4.20	0.44	-0.34	0.74
Research	4.75	0.50	5.00	0.00	-1.13	0.29
Precautionary Approach	3.60	1.14	4.60	0.54	-1.76	0.11
Emergency Preparedness	4.40	0.54	4.60	0.54	-0.57	0.57
Employee Education	3.80	1.09	4.60	0.54	-1.46	0.18
Customer Advice	3.60	1.51	4.00	1.22	-0.54	0.65
Contractors and Suppliers	4.00	0.70	4.40	0.54	-1.00	0.34
Transfer of Technology	3.20	1.09	3.60	1.51	-0.47	0.64
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	4.00	0.70	4.40	0.54	-1.00	0.34
Openness to Concerns	2.60	1.51	3.60	1.34	-1.10	0.30
Compliance and Reporting	3.60	0.54	4.20	0.44	-1.89	0.09

Table 17: Differences between attitudes of Coallink and Wagons

PRINCIPLES	COALLINK		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	4.00	1.22	-0.68	0.51
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	4.20	0.44	4.60	0.54	-1.26	0.24
Products and Service	3.80	1.64	4.40	0.89	-0.71	0.49
Facilities and Operations	4.00	1.22	3.40	0.89	0.88	0.40
Research	4.75	0.50	4.80	0.44	-0.15	0.87
Precautionary Approach	3.60	1.14	3.80	0.44	-0.36	0.72
Emergency Preparedness	4.40	0.54	4.60	0.54	-0.57	0.57
Employee Education	3.80	1.09	4.50	0.57	-1.14	0.28
Customer Advice	3.60	1.51	2.25	1.50	1.33	0.22
Contractors and Suppliers	4.00	0.70	4.25	0.50	-0.59	0.57
Transfer of Technology	3.20	1.09	3.50	1.00	-0.42	0.68
Contribution to Common Effort	4.20	0.44	4.50	0.57	-0.88	0.40
Process of Improvement	4.00	0.70	4.00	0.81	0.00	1.00
Openness to Concerns	2.60	1.51	3.25	1.70	-0.60	0.56
Compliance and Reporting	3.60	0.54	3.75	0.95	-0.29	0.77

Table 18: Differences between attitudes of Coallink and Main Line Passenger Services (MLPS)

PRINCIPLES	COALLINK		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.40	1.51	3.60	0.89	-0.25	0.80
Integrated Management	4.40	0.54	3.80	1.09	1.09	0.30
Prior Assessment	4.20	0.44	4.40	0.54	-0.63	0.54
Products and Service	3.80	1.64	3.80	1.30	0.00	1.00
Facilities and Operations	4.00	1.22	4.40	0.54	-0.66	0.52
Research	4.75	0.50	4.80	0.44	-0.15	0.87
Precautionary Approach	3.60	1.14	4.00	0.00	-0.78	0.45
Emergency Preparedness	4.40	0.54	4.60	0.54	-0.57	0.57
Employee Education	3.80	1.09	4.80	0.44	-1.88	0.09
Customer Advice	3.60	1.51	3.40	2.19	0.16	0.87
Contractors and Suppliers	4.00	0.70	4.60	0.54	-1.50	0.17
Transfer of Technology	3.20	1.09	2.40	1.94	0.80	0.44
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.00	0.70	4.00	0.00	0.00	1.00
Openness to Concerns	2.60	1.51	3.00	1.58	-0.40	0.69
Compliance and Reporting	3.60	0.54	3.80	1.09	-0.36	0.72

Table 19: Differences between attitudes of Infrastructure and Orex

PRINCIPLES	INFRASTRUCTURE		OREX		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	4.60	0.54	-1.38	0.20
Integrated Management	4.60	0.54	4.80	0.44	-0.63	0.54
Prior Assessment	*4.20*	*0.44*	*5.00*	*0.00*	*-4.00*	*0.00*
Products and Service	4.20	0.83	4.20	0.83	0.00	1.00
Facilities and Operations	4.20	0.44	3.80	1.09	0.75	0.47
Research	4.60	0.54	5.00	0.00	-1.63	0.14
Precautionary Approach	3.80	0.44	4.40	0.54	-1.89	0.09
Emergency Preparedness	4.40	0.89	5.00	0.00	-1.50	0.17
Employee Education	4.60	0.54	5.00	0.00	-1.63	0.14
Customer Advice	3.60	1.51	3.20	1.64	0.40	0.69
Contractors and Suppliers	4.20	0.44	4.60	0.54	-1.26	0.24
Transfer of Technology	4.00	1.22	2.80	2.04	1.12	0.29
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	3.80	0.44	4.40	0.54	-1.89	0.09
Openness to Concerns	3.00	1.00	3.80	1.09	-1.20	0.26
Compliance and Reporting	3.40	0.54	3.40	1.94	0.00	1.00

Table 20: Differences between attitudes of Infrastructure and Property

PRINCIPLES	INFRASTRUCTURE		PROPERTY		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	4.40	0.89	-1.01	0.33
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.20	0.44	4.80	0.44	-2.12	0.06
Products and Service	4.20	0.83	3.40	1.51	1.03	0.33
Facilities and Operations	4.20	0.44	4.40	0.54	-0.63	0.54
Research	4.60	0.54	4.80	0.44	-0.63	0.54
Precautionary Approach	3.80	0.44	4.50	0.57	-2.05	0.07
Emergency Preparedness	4.40	0.89	4.60	0.54	-0.42	0.68
Employee Education	4.60	0.54	4.80	0.44	-0.63	0.54
Customer Advice	3.60	1.51	2.60	2.19	0.83	0.42
Contractors and Suppliers	4.20	0.44	4.60	0.54	-1.26	0.24
Transfer of Technology	4.00	1.22	2.40	1.94	1.55	0.15
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	3.80	0.44	4.40	0.54	-1.89	0.09
Openness to Concerns	3.00	1.00	3.40	0.89	-0.66	0.52
Compliance and Reporting	*3.40*	*0.54*	*4.20*	*0.44*	*-2.52*	*0.03*

Table 21: Differences between attitudes of Infrastructure and Service Execution

PRINCIPLES	INFRASTRUCTURE		SERVICE EXECUTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	4.60	0.54	-1.38	0.20
Integrated Management	4.60	0.54	4.40	0.54	0.57	0.57
Prior Assessment	*4.20*	*0.44*	*5.00*	*0.00*	*-4.00*	*0.00*
Products and Service	4.20	0.83	4.60	0.54	-0.89	0.39
Facilities and Operations	4.20	0.44	4.40	0.54	-0.63	0.54
Research	4.60	0.54	4.40	0.54	0.57	0.57
Precautionary Approach	3.80	0.44	4.60	0.54	-2.52	0.03
Emergency Preparedness	4.40	0.89	4.60	0.54	-0.42	0.68
Employee Education	4.60	0.54	4.60	0.54	0.00	1.00
Customer Advice	3.60	1.51	2.40	1.94	1.08	0.30
Contractors and Suppliers	4.20	0.44	4.40	0.54	-0.63	0.54
Transfer of Technology	4.00	1.22	2.40	1.94	1.55	0.15
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	3.80	0.44	4.20	0.44	-1.41	0.19
Openness to Concerns	3.00	1.00	3.40	1.14	-0.58	0.57
Compliance and Reporting	3.40	0.54	4.00	0.70	-1.50	0.17

Table 22: Differences between attitudes of Infrastructure and Terminals

PRINCIPLES	INFRASTRUCTURE		TERMINALS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	4.60	0.54	-1.38	0.20
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.20	0.44	4.80	0.44	-2.12	0.06
Products and Service	4.20	0.83	5.00	0.00	-2.13	0.06
Facilities and Operations	4.20	0.44	4.40	0.54	-0.63	0.54
Research	4.60	0.54	5.00	0.00	-1.63	0.14
Precautionary Approach	*3.80*	*0.44*	*5.00*	*0.00*	*-6.00*	*0.00*
Emergency Preparedness	4.40	0.89	4.80	0.44	-0.89	0.39
Employee Education	4.60	0.54	5.00	0.00	-1.63	0.14
Customer Advice	3.60	1.51	2.60	2.109	-.83	0.42
Contractors and Suppliers	4.20	0.44	4.40	0.54	-0.63	0.54
Transfer of Technology	4.00	1.22	2.80	2.04	1.12	0.29
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	3.80	0.44	4.20	0.44	-1.41	0.19
Openness to Concerns	3.00	1.00	2.80	1.48	0.25	0.80
Compliance and Reporting	3.40	0.54	4.00	0.70	-1.50	0.17

Table 23 : Differences between attitudes of Infrastructure and Traction

PRINCIPLES	INFRASTRUCTURE		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	4.20	1.30	-0.67	0.52
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.20	0.44	4.40	0.54	-0.63	0.54
Products and Service	4.20	0.83	4.20	1.30	0.00	1.00
Facilities and Operations	4.20	0.44	4.20	0.44	0.00	1.00
Research	4.60	0.54	5.00	0.00	-1.63	0.14
Precautionary Approach	*3.80*	*0.44*	*4.60*	*0.54*	*-2.52*	*0.03*
Emergency Preparedness	4.40	0.89	4.60	0.54	-0.42	0.68
Employee Education	4.60	0.54	4.60	0.54	0.00	1.00
Customer Advice	3.60	1.51	4.00	1.22	-0.45	0.65
Contractors and Suppliers	4.20	0.44	4.40	0.54	-0.63	0.54
Transfer of Technology	4.00	1.22	3.60	1.51	0.54	0.65
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	3.80	0.44	4.40	0.54	-1.89	0.09
Openness to Concerns	3.00	1.00	3.60	1.34	-0.80	0.44
Compliance and Reporting	*3.40*	*0.54*	*4.20*	*0.44*	*-2.52*	*0.03*

Table 24: Differences between attitudes of Infrastructure and Wagons

PRINCIPLES	INFRASTRUCTURE		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	4.00	1.22	-0.45	0.65
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.20	0.44	4.60	0.54	-1.26	0.24
Products and Service	4.20	0.83	4.40	0.89	-0.36	0.72
Facilities and Operations	4.20	0.44	3.40	0.89	1.78	0.11
Research	4.60	0.54	4.80	0.44	-0.63	0.54
Precautionary Approach	3.80	0.44	3.80	0.44	0.00	1.00
Emergency Preparedness	4.40	0.89	4.60	0.54	-0.42	0.68
Employee Education	4.60	0.54	4.50	0.57	0.26	0.79
Customer Advice	3.60	1.51	2.25	1.50	1.33	0.22
Contractors and Suppliers	4.20	0.44	4.25	0.50	-0.15	0.87
Transfer of Technology	4.00	1.22	3.50	1.00	0.65	0.53
Contribution to Common Effort	4.20	0.44	4.50	0.57	-0.88	0.40
Process of Improvement	3.80	0.44	4.00	0.81	-0.47	0.65
Openness to Concerns	3.00	1.00	3.25	1.70	-0.27	0.79
Compliance and Reporting	3.40	0.54	3.75	0.95	-0.69	0.50

Table 25: Differences between attitudes of Infrastructure and Main Line Passenger Services (MLPS)

PRINCIPLES	INFRASTRUCTURE		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	3.60	1.51	3.60	0.89	0.00	1.00
Integrated Management	4.60	0.54	3.80	1.09	1.46	0.18
Prior Assessment	4.20	0.44	4.40	0.54	-0.63	0.54
Products and Service	4.20	0.83	3.80	1.30	0.57	0.57
Facilities and Operations	4.20	0.44	4.40	0.54	-0.63	0.54
Research	4.60	0.54	4.80	0.44	-0.63	0.54
Precautionary Approach	3.80	0.44	4.00	0.00	-1.00	0.34
Emergency Preparedness	4.40	0.89	4.60	0.54	-0.42	0.68
Employee Education	4.60	0.54	4.80	0.44	-0.63	0.54
Customer Advice	3.60	1.51	3.40	2.19	0.16	0.87
Contractors and Suppliers	4.20	0.44	4.60	0.54	-0.26	0.24
Transfer of Technology	4.00	1.22	2.40	1.94	1.55	0.15
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	3.80	0.44	4.00	0.00	-1.00	0.34
Openness to Concerns	3.00	1.00	3.00	1.58	0.00	1.00
Compliance and Reporting	3.40	0.54	3.80	1.09	-0.73	0.48

Table 26: Differences between attitudes of Orex and Property

PRINCIPLES	OREX		PROPERTY		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.40	0.89	0.42	0.68
Integrated Management	4.80	0.44	4.60	0.54	0.63	0.54
Prior Assessment	5.00	0.00	4.80	0.44	1.00	0.34
Products and Service	4.20	0.83	3.40	1.51	1.03	0.33
Facilities and Operations	3.80	1.09	4.40	0.54	-1.09	0.30
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	4.40	0.54	4.50	0.57	-0.26	0.79
Emergency Preparedness	5.00	0.00	4.60	0.54	1.63	0.14
Employee Education	5.00	0.00	4.80	0.44	1.00	0.34
Customer Advice	3.20	1.64	2.60	2.19	0.48	0.63
Contractors and Suppliers	4.60	0.54	4.60	0.54	0.00	1.00
Transfer of Technology	2.80	2.04	2.40	1.94	0.31	0.75
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.40	0.54	4.40	0.54	0.00	1.00
Openness to Concerns	3.80	1.09	3.40	0.89	0.63	0.54
Compliance and Reporting	3.40	1.94	4.20	0.44	-0.89	0.39

Table 27: Differences between attitudes of Orex and Service Execution

PRINCIPLES	OREX		SERVICE EXECUTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.60	0.54	0.00	1.00
Integrated Management	4.80	0.44	4.40	0.54	1.26	0.24
Prior Assessment	5.00	0.00	5.00	0.00		
Products and Service	4.20	0.83	4.60	0.54	-0.89	0.39
Facilities and Operations	3.80	1.09	4.40	0.54	-1.09	0.30
Research	*4.00*	*0.00*	*4.40*	*0.54*	*2.44*	*0.03*
Precautionary Approach	4.40	0.54	4.60	0.54	-0.57	0.57
Emergency Preparedness	5.00	0.00	4.60	0.54	1.63	0.14
Employee Education	5.00	0.00	4.60	0.54	1.63	0.14
Customer Advice	3.20	1.60	2.40	1.94	0.70	0.50
Contractors and Suppliers	4.60	0.54	4.40	0.54	0.57	0.57
Transfer of Technology	2.80	2.04	2.40	1.94	0.31	0.75
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.40	0.54	4.20	0.44	0.63	0.54
Openness to Concerns	3.80	1.09	3.40	1.14	0.56	0.58
Compliance and Reporting	3.40	1.94	4.00	0.70	-0.64	0.53

Table 28: Differences between attitudes of Orex and Terminals

PRINCIPLES	OREX		TERMINALS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.60	0.54	0.00	1.00
Integrated Management	4.80	0.44	4.60	0.54	0.63	0.54
Prior Assessment	5.00	0.00	4.80	0.44	1.00	0.34
Products and Service	4.20	0.83	5.00	0.00	-2.13	0.06
Facilities and Operations	3.80	1.09	4.40	0.54	-1.09	0.30
Research	5.00	0.00	5.00	0.00		
Precautionary Approach	*4.40*	*0.54*	*5.00*	*0.00*	*-2.44*	*0.03*
Emergency Preparedness	5.00	0.00	4.80	0.44	1.00	0.34
Employee Education	5.00	0.00	5.00	0.00		
Customer Advice	3.20	1.64	2.60	2.19	0.48	0.63
Contractors and Suppliers	4.60	0.54	4.40	0.54	0.57	0.57
Transfer of Technology	2.80	2.04	2.80	2.04	0.00	1.00
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.40	0.54	4.20	0.44	0.63	0.54
Openness to Concerns	3.80	1.09	2.80	1.48	1.21	0.25
Compliance and Reporting	3.40	1.94	4.00	0.70	-0.64	0.53

Table 29: Differences between attitudes of Orex and Traction

PRINCIPLES	OREX		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.20	1.30	0.63	0.54
Integrated Management	4.80	0.44	4.60	0.54	0.63	0.54
Prior Assessment	*5.00*	*0.00*	*4.40*	*0.54*	*2.44*	*0.03*
Products and Service	4.20	0.83	4.20	1.30	0.00	1.00
Facilities and Operations	3.80	1.09	4.20	0.44	-0.75	0.47
Research	5.00	0.00	5.00	0.00		
Precautionary Approach	4.40	0.54	4.60	0.54	-0.57	0.57
Emergency Preparedness	5.00	0.00	4.60	0.54	1.63	0.14
Employee Education	5.00	0.00	4.60	0.54	1.63	0.14
Customer Advice	3.20	1.64	4.00	1.22	-0.87	0.40
Contractors and Suppliers	4.60	0.54	4.40	0.54	0.57	0.57
Transfer of Technology	2.80	2.04	3.60	1.51	-0.70	0.50
Contribution to Common Effort	4.40	0.54	4.40	0.54	0.00	1.00
Process of Improvement	4.40	0.54	4.40	0.54	0.00	1.00
Openness to Concerns	3.80	1.09	3.60	1.34	0.25	0.80
Compliance and Reporting	3.40	1.94	4.20	0.44	-0.89	0.39

Table 30: Differences between attitudes of Orex and Wagons

PRINCIPLES	OREX		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.00	1.22	1.00	0.34
Integrated Management	4.80	0.44	4.60	0.54	0.63	0.54
Prior Assessment	5.00	0.00	4.60	0.54	1.63	0.14
Products and Service	4.20	0.83	4.40	0.89	-0.36	0.72
Facilities and Operations	3.80	1.09	3.40	0.89	0.63	0.54
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	4.40	0.54	3.80	0.44	1.89	0.09
Emergency Preparedness	5.00	0.00	4.60	0.54	1.63	0.14
Employee Education	5.00	0.00	.50	0.57	1.97	0.08
Customer Advice	3.20	1.64	2.25	1.50	0.89	0.40
Contractors and Suppliers	4.60	0.54	4.25	0.50	0.98	0.35
Transfer of Technology	2.80	2.04	3.50	1.00	-0.62	0.55
Contribution to Common Effort	4.40	0.54	4.50	0.57	-0.26	0.79
Process of Improvement	4.40	0.54	4.00	0.81	0.88	0.40
Openness to Concerns	3.80	1.09	3.25	1.70	0.58	0.57
Compliance and Reporting	3.40	1.94	3.75	0.95	-0.32	0.75

Table 31: Differences between attitudes of Orex and Main Line Passenger Services (MLPS)

PRINCIPLES	OREX		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	3.60	0.89	2.13	0.06
Integrated Management	4.80	0.40	3.80	1.09	1.88	0.95
Prior Assessment	*5.00*	*0.00*	*4.40*	*0.54*	*2.44*	*0.03*
Products and Service	4.20	0.83	3.80	1.30	0.57	0.57
Facilities and Operations	3.80	1.09	4.40	0.54	-1.09	0.30
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	4.40	0.54	4.00	0.00	1.63	0.14
Emergency Preparedness	5.00	0.00	4.60	0.54	1.63	0.14
Employee Education	5.00	0.00	4.80	0.44	1.00	0.34
Customer Advice	3.20	1.64	3.40	2.19	-0.16	0.87
Contractors and Suppliers	4.60	0.54	4.60	0.54	0.00	1.00
Transfer of Technology	2.80	2.04	2.40	1.94	0.31	0.75
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.54
Process of Improvement	4.40	0.54	4.00	0.00	1.63	0.14
Openness to Concerns	3.80	1.09	3.00	1.58	0.92	0.37
Compliance and Reporting	3.40	1.94	3.80	1.09	-0.40	0.69

Table 32: Differences between attitudes of Property and Service Execution

PRINCIPLES	PROPERTY		SERVICE EXECUTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.40	0.89	4.60	0.89	-0.42	0.68
Integrated Management	4.60	0.54	4.40	0.54	0.57	0.57
Prior Assessment	4.80	0.44	5.00	0.00	-1.00	0.34
Products and Service	3.40	1.51	4.60	0.54	-1.66	0.13
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	4.40	0.54	1.26	0.24
Precautionary Approach	4.50	0.57	4.60	0.54	-0.26	0.79
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.80	0.44	4.60	0.54	0.63	0.54
Customer Advice	2.60	2.19	2.40	1.94	0.15	0.88
Contractors and Suppliers	4.60	0.54	4.40	0.54	0.57	0.57
Transfer of Technology	2.40	1.94	2.40	1.94	0.00	1.00
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.40	0.54	4.20	0.44	0.63	0.54
Openness to Concerns	3.40	0.89	3.40	1.14	0.00	1.00
Compliance and Reporting	4.20	0.44	4.00	0.70	0.53	0.60

Tabel 33: Differences between attitudes of Property and Terminals

PRINCIPLES	PROPERTY		TERMINALS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.40	0.89	4.60	0.54	-0.42	0.68
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.80	0.44	4.80	0.44	0.00	1.00
Products and Service	*3.40*	*1.51*	*5.00*	*0.00*	*-2.35*	*0.04*
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	5.00	0.00	-1.00	0.34
Precautionary Approach	4.50	0.57	5.00	0.00	-1.97	0.08
Emergency Preparedness	4.60	0.54	4.80	0.44	-0.63	0.54
Employee Education	4.80	0.44	5.00	0.00	-1.00	0.34
Customer Advice	2.60	2.19	2.60	2.19	0.00	1.00
Contractors and Suppliers	4.60	0.54	4.40	0.54	0.57	0.57
Transfer of Technology	2.40	1.94	2.80	2.04	-0.31	0.75
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.40	0.54	4.20	0.44	0.63	0.54
Openness to Concerns	3.40	0.89	2.80	1.48	0.77	0.46
Compliance and Reporting	4.20	0.44	4.00	0.70	0.53	0.60

Tabel 34: Differences between attitudes of Property and Traction

PRINCIPLES	PROPERTY		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.40	0.89	4.20	1.30	0.28	0.78
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.80	0.44	4.40	0.54	1.26	0.24
Products and Service	3.40	1.51	4.20	1.30	-0.89	0.39
Facilities and Operations	4.40	0.54	4.20	0.44	0.63	0.54
Research	4.80	0.44	5.00	0.00	-1.00	0.34
Precautionary Approach	4.50	0.57	4.60	0.54	-0.26	0.79
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.80	0.44	4.60	0.54	0.63	0.54
Customer Advice	2.60	2.19	4.00	1.22	-1.24	0.24
Contractors and Suppliers	4.60	0.54	4.40	0.54	0.57	0.57
Transfer of Technology	2.40	1.94	3.60	1.51	-1.08	0.30
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	4.40	0.54	4.40	0.54	0.00	1.00
Openness to Concerns	3.40	0.89	3.60	1.34	-0.27	0.08
Compliance and Reporting	4.20	0.44	4.20	0.44	0.00	1.00

Tabel 35: Differences between attitudes of Property and Wagons

PRINCIPLES	PROPERTY		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.40	0.89	4.00	1.22	0.58	0.57
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.80	0.44	4.60	0.54	0.63	0.54
Products and Service	3.40	1.51	4.40	0.89	-1.27	0.23
Facilities and Operations	4.40	0.54	3.40	0.89	2.13	0.06
Research	4.80	0.44	4.80	0.44	0.00	1.00
Precautionary Approach	4.50	0.57	3.80	0.44	2.05	0.07
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.80	0.44	4.50	0.57	0.88	0.40
Customer Advice	2.60	2.19	2.25	1.80	0.27	0.79
Contractors and Suppliers	4.60	0.54	4.25	0.50	0.98	0.35
Transfer of Technology	2.40	1.94	3.50	1.00	-1.01	0.34
Contribution to Common Effort	4.20	0.44	4.50	0.57	-0.88	0.40
Process of Improvement	4.40	0.54	4.00	0.81	0.00	0.40
Openness to Concerns	3.40	0.89	3.25	1.70	0.17	0.86
Compliance and Reporting	4.20	0.44	3.75	0.95	0.94	0.37

Tabel 36: Differences between attitudes of Property and Main Line Passenger Service (MLPS)

PRINCIPLES	PROPERTY		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.40	0.89	3.60	0.89	1.41	0.19
Integrated Management	4.60	0.54	3.80	1.09	1.46	0.18
Prior Assessment	4.80	0.44	4.40	0.54	1.26	0.24
Products and Service	3.40	1.51	3.80	1.30	-0.44	0.66
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	4.80	0.44	4.80	0.44	0.00	1.00
Precautionary Approach	4.50	0.57	4.00	0.00	1.97	0.08
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.80	0.44	4.80	0.44	0.00	1.00
Customer Advice	2.60	2.19	3.40	2.19	-0.57	0.57
Contractors and Suppliers	4.60	0.54	4.60	0.54	0.00	1.00
Transfer of Technology	2.40	1.94	2.40	1.94	0.00	1.00
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.40	0.54	4.00	0.00	1.63	0.14
Openness to Concerns	3.40	0.89	3.00	1.58	0.49	0.63
Compliance and Reporting	4.20	0.44	3.80	1.09	0.75	0.47

Tabel 37: Differences between attitudes of Service Execution and Terminals

PRINCIPLES	SERVICE EXECUTION		TERMINALS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.60	0.54	0.00	1.00
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	5.00	0.00	4.80	0.44	1.00	0.34
Products and Service	4.60	0.54	5.00	0.00	-1.63	0.14
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	*4.40*	*0.54*	*5.00*	*0.00*	*-2.49*	*0.03*
Precautionary Approach	4.60	0.54	5.00	0.00	-1.63	0.14
Emergency Preparedness	4.60	0.54	4.80	0.44	-0.63	0.54
Employee Education	4.60	0.54	5.00	0.00	-1.63	0.14
Customer Advice	2.40	1.94	2.60	2.19	-0.15	0.88
Contractors and Suppliers	4.40	0.54	4.40	0.54	0.00	1.00
Transfer of Technology	2.40	1.94	2.80	2.04	-0.31	0.75
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.20	0.44	4.20	0.44	0.00	1.00
Openness to Concerns	3.40	1.14	2.80	1.48	0.71	0.49
Compliance and Reporting	4.00	0.70	4.00	0.70	0.00	1.00

Tabel 38: Differences between attitudes of Service Execution and Traction

PRINCIPLES	SERVICE EXECUTION		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.20	1.30	0.63	0.54
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	*5.00*	*0.00*	*4.40*	*0.54*	*2.44*	*0.03*
Products and Service	4.60	0.54	4.20	1.30	0.63	0.54
Facilities and Operations	4.40	0.54	4.20	0.44	0.63	0.54
Research	4.40	0.54	5.00	0.00	-2.44	0.03
Precautionary Approach	*4.60*	*0.54*	*4.60*	*0.54*	*0.00*	*1.00*
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.60	0.54	4.60	0.54	0.00	1.00
Customer Advice	2.40	1.94	4.00	1.22	-1.55	0.15
Contractors and Suppliers	4.40	0.54	4.40	0.54	0.00	1.00
Transfer of Technology	2.40	1.94	3.60	1.51	-1.08	0.30
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	4.20	0.44	4.40	0.54	-0.63	0.54
Openness to Concerns	3.40	1.14	3.60	1.34	-0.25	0.80
Compliance and Reporting	4.00	0.70	4.20	0.44	-0.53	0.60

Tabel 39: Differences between attitudes of Service Execution and Wagons

PRINCIPLES	SERVICE EXECUTION		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.00	1.22	1.00	0.34
Integrated Management	4.40	0.54	4.60	0.54	-0.57	0.57
Prior Assessment	5.00	0.00	4.60	0.54	1.63	0.14
Products and Service	4.60	0.54	4.40	0.89	0.42	0.68
Facilities and Operations	4.40	0.54	3.40	0.89	2.13	0.06
Research	4.40	0.54	4.80	0.44	-1.26	0.24
Precautionary Approach	*4.60*	*0.54*	*3.80*	*0.44*	*2.52*	*0.03*
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.60	0.54	4.50	0.57	0.26	0.79
Customer Advice	2.40	1.94	2.25	1.50	0.12	0.90
Contractors and Suppliers	4.40	0.54	4.25	0.50	0.42	0.68
Transfer of Technology	2.40	1.94	3.50	1.00	-1.01	0.34
Contribution to Common Effort	4.20	0.44	4.50	0.57	-0.88	0.40
Process of Improvement	4.20	0.44	4.00	0.81	0.47	0.65
Openness to Concerns	3.40	1.14	3.25	1.70	1.57	0.89
Compliance and Reporting	4.00	0.70	3.75	0.95	0.45	0.66

Tabel 40: Differences between attitudes of Service Execution and Main Line Passenger Service (MLPS)

PRINCIPLES	SERVICE EXECUTION		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	3.60	0.89	2.13	0.06
Integrated Management	4.40	0.54	3.80	1.09	1.09	0.30
Prior Assessment	*5.00*	*0.00*	*4.40*	*0.54*	*2.44*	*0.03*
Products and Service	4.60	0.54	3.80	1.30	1.26	0.24
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	*4.40*	*0.54*	*4.80*	*0.44*	*-1.26*	*0.24*
Precautionary Approach	4.60	0.54	4.00	0.00	2.44	0.03
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.60	0.54	4.80	0.44	-0.63	0.54
Customer Advice	2.40	1.94	3.40	2.19	-0.76	0.46
Contractors and Suppliers	4.40	0.54	4.60	0.54	-0.57	0.57
Transfer of Technology	2.40	1.94	2.40	1.94	0.00	1.00
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.20	0.44	4.00	0.00	1.00	0.34
Openness to Concerns	3.40	1.14	3.00	1.58	0.45	0.65
Compliance and Reporting	4.00	0.70	3.80	1.09	0.34	0.74

Tabel 41: Differences between attitudes of Terminals and Traction

PRINCIPLES	TERMINALS		TRACTION		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.20	1.30	0.63	0.54
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.80	0.44	4.40	0.54	1.26	0.24
Products and Service	5.00	0.00	4.20	1.30	1.37	0.20
Facilities and Operations	4.40	0.54	4.20	0.44	0.63	0.54
Research	5.00	0.00	5.00	0.00		
Precautionary Approach	5.00	0.00	4.60	0.54	1.63	0.14
Emergency Preparedness	4.80	0.44	4.60	0.54	0.63	0.54
Employee Education	5.00	0.00	4.60	0.54	1.63	0.14
Customer Advice	2.60	2.19	4.00	1.22	-1.24	0.24
Contractors and Suppliers	4.40	0.54	4.40	0.54	0.00	1.00
Transfer of Technology	2.80	2.04	3.60	1.51	-0.70	0.50
Contribution to Common Effort	4.20	0.44	4.40	0.54	-0.63	0.54
Process of Improvement	4.20	0.44	4.40	0.54	-0.63	0.54
Openness to Concerns	2.80	1.48	3.60	1.34	-0.89	0.39
Compliance and Reporting	4.00	0.70	4.20	0.44	-0.53	0.60

Tabel 42: Differences between attitudes of Terminals and Wagons

PRINCIPLES	TERMINALS		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	4.00	1.22	1.00	0.34
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.80	0.44	4.60	0.54	0.63	0.54
Products and Service	5.00	0.00	4.40	0.89	1.50	0.17
Facilities and Operations	4.40	0.54	3.40	0.89	2.13	0.06
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	*5.00*	*0.00*	*3.80*	*0.44*	*6.00*	*0.00*
Emergency Preparedness	4.80	0.44	4.60	0.54	0.63	0.54
Employee Education	5.00	0.00	4.50	0.57	1.97	0.08
Customer Advice	2.60	2.19	2.25	1.50	0.27	0.79
Contractors and Suppliers	4.40	0.54	4.25	0.50	0.42	0.68
Transfer of Technology	2.80	2.04	3.50	1.00	-0.62	0.55
Contribution to Common Effort	4.20	0.44	4.50	0.57	-0.88	0.40
Process of Improvement	4.20	0.44	4.00	0.81	0.47	0.65
Openness to Concerns	2.80	1.48	3.25	1.70	-0.42	0.68
Compliance and Reporting	4.00	0.70	3.75	0.95	0.45	0.66

Tabel 43: Differences between attitudes of Terminals and Main Line Passenger Service (MLPS)

PRINCIPLES	TERMINALS		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.60	0.54	3.60	0.89	2.13	0.06
Integrated Management	4.60	0.54	3.80	1.09	1.46	0.18
Prior Assessment	4.80	0.44	4.40	0.54	1.26	0.24
Products and Service	5.00	0.00	3.80	1.30	2.05	0.07
Facilities and Operations	4.40	0.54	4.40	0.54	0.00	1.00
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	5.00	0.00	4.00	0.00		
Emergency Preparedness	4.80	0.44	4.60	0.54	0.63	0.54
Employee Education	5.00	0.00	4.80	0.44	1.00	0.34
Customer Advice	2.60	2.19	3.40	2.19	-0.57	0.57
Contractors and Suppliers	4.40	0.54	4.60	0.54	-0.57	0.57
Transfer of Technology	2.80	2.04	2.40	1.94	0.31	0.75
Contribution to Common Effort	4.20	0.44	4.20	0.44	0.00	1.00
Process of Improvement	4.20	0.44	4.00	0.00	1.00	0.34
Openness to Concerns	2.80	1.48	3.00	1.58	-0.20	0.84
Compliance and Reporting	4.00	0.70	3.80	1.09	0.34	0.74

Tabel 44: Differences between attitudes of Traction and Wagons

PRINCIPLES	TRACTION		WAGONS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.20	1.30	4.00	1.22	0.25	0.80
Integrated Management	4.60	0.54	4.60	0.54	0.00	1.00
Prior Assessment	4.40	0.54	4.60	0.54	-0.57	0.57
Products and Service	4.20	1.30	4.40	0.89	-0.28	0.78
Facilities and Operations	4.20	0.44	3.40	0.89	1.78	0.11
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	*4.60*	*0.54*	*3.80*	*0.44*	*2.52*	*0.03*
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.60	0.54	4.50	0.57	0.26	0.79
Customer Advice	4.00	1.22	2.25	1.50	1.93	0.09
Contractors and Suppliers	4.40	0.54	4.25	0.50	0.42	0.68
Transfer of Technology	3.60	1.51	3.50	1.00	0.11	0.91
Contribution to Common Effort	4.40	0.54	4.50	0.57	-0.26	0.79
Process of Improvement	4.40	0.54	4.00	0.81	0.88	0.40
Openness to Concerns	3.60	1.34	3.25	1.70	0.34	0.73
Compliance and Reporting	4.20	0.44	3.75	0.95	0.94	0.37

Tabel 45: Differences between attitudes of Traction and Main Line Passenger Service (MLPS)

PRINCIPLES	TRACTION		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.20	1.30	3.60	0.89	0.84	0.42
Integrated Management	4.60	0.54	3.80	1.09	1.46	0.18
Prior Assessment	4.40	0.54	4.40	0.54	0.00	1.00
Products and Service	4.20	1.30	3.80	1.30	0.48	0.64
Facilities and Operations	4.20	0.44	4.40	0.54	-0.63	0.54
Research	5.00	0.00	4.80	0.44	1.00	0.34
Precautionary Approach	*4.60*	*0.54*	*4.00*	*0.00*	*2.44*	*0.03*
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.60	0.54	4.80	0.44	-0.63	0.54
Customer Advice	4.00	1.22	3.40	2.19	0.53	0.60
Contractors and Suppliers	4.40	0.54	4.60	0.54	-0.57	0.57
Transfer of Technology	3.60	1.51	2.40	1.94	1.08	0.30
Contribution to Common Effort	4.40	0.54	4.20	0.44	0.63	0.14
Process of Improvement	4.40	0.54	4.00	0.00	1.63	0.53
Openness to Concerns	3.60	1.34	3.00	1.58	0.64	0.47
Compliance and Reporting	4.20	0.44	3.80	1.09	0.75	0.03

Tabel 46: Differences between attitudes of Wagons and Main Line Passenger Service (MLPS)

PRINCIPLES	WAGONS		MLPS		T – VALUE	P - VALUE
	MEAN	SD	MEAN	SD		
Corporate Priority	4.00	1.22	3.60	0.89	0.58	0.57
Integrated Management	4.60	0.54	3.80	1.09	1.46	0.18
Prior Assessment	4.60	0.54	4.40	0.54	0.57	0.57
Products and Service	4.40	0.89	3.80	1.30	0.84	0.42
Facilities and Operations	3.40	0.89	4.40	0.54	-2.13	0.06
Research	4.80	0.44	4.80	0.44	0.00	1.00
Precautionary Approach	3.80	0.44	4.00	0.00	-1.00	0.34
Emergency Preparedness	4.60	0.54	4.60	0.54	0.00	1.00
Employee Education	4.50	0.57	4.80	0.44	-0.88	0.40
Customer Advice	2.25	1.50	3.40	2.19	-0.89	0.40
Contractors and Suppliers	4.25	0.50	4.60	0.54	-0.98	0.35
Transfer of Technology	3.50	1.00	2.40	1.94	1.01	0.34
Contribution to Common Effort	4.50	0.57	4.20	0.44	0.88	0.40
Process of Improvement	4.00	0.81	4.00	0.00	0.00	1.00
Openness to Concerns	3.25	1.70	3.00	1.58	0.22	0.82
Compliance and Reporting	3.75	0.95	3.80	1.09	-0.07	0.94

5.1 SUMMARY

The results of this empirical investigation were described in this chapter. Firstly significant statistical differences were found in all the principles between the attitudes and behaviours except in the principles Openness to Concerns. Differences in attitudes between the functional divisions were also found in mainly the principles of Corporate Priority, Process of Improvement, Employee Education, Products and Services, Customer Advice, Facilities and Operations, Research and Compliance and Reporting.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter conclusions on the objectives and hypothesis will be given. Recommendations regarding further research and the practice will also be given.

5.2 SUMMARY AND CONCLUSIONS

5.2.1 OBJECTIVE 1 – THE CORRELATION OF ATTITUDES AND BEHAVIOUR

The first objective of this study was to assess whether the attitudes of line management is in line with the expressed behaviour measured with the ESAP's principles for Environmental Management. The hypothesis was that there are differences in the attitudes and behaviour.

The results showed that there are significant statistical differences between the attitudes and behaviour as measured in the principles; Corporate Priority, Integrated Management, Prior Assessment, Products and Services, Facilities and Operations, Research, Precautionary Approach, Emergency Preparedness, Employee Education, Customer Advice, Contractors and Suppliers, Transfer of Technology, Contribution to Common Effort, Process of Improvement and Compliance and Reporting. In the Principle Openness to Concerns, no significant statistical differences could be found between attitudes and behaviour.

As a result of the differences found in the above differences between attitudes and behaviour hypothesis 1 can be accepted. The implication hereof is that management must take cognisance of the fact that the respondent's attitudes are not in line with their behaviour regarding the principles in the ICC's Principles for Environmental Management. The attitudes was measured as significantly higher then the behaviour. The higher measurement of their attitudes towards the abovementioned principles reflects however a willingness to earn higher scores.

5.2.2 OBJECTIVE 2: DIFFERENCES OF ATTITUDES OF THE FUNCTIONAL DIVISIONS

The second objective was to assess if differences in attitudes exist between the different functional divisions of line management within Spoornet. The hypothesis was that there are significant differences in attitudes between the different functional divisions within Spoornet.

The results of this study have shown differences in attitudes between the different functional divisions in Spoornet and the highest and lowest scores are listed hereunder.

5.2.2.1 CORPORATE PRIORITY

Business differed in attitudes from Orex (Table 5), Service Execution (Table 7) and Terminals (Table 8).

The functional unit of Business should regard this element with the highest priority as this is the level of entry of clients and subsequent contracts. It is also important to note that Business is the only function that differs in opinion regarding the Corporate Priority of Environmental Management.

The importance of the Corporate Priority of Environmental Management is of critical importance to the strategy of Spoornet.

5.2.2.2 INTEGRATED MANAGEMENT

The Business Divisions did not differ in attitudes within the scope of this principle. This a positive alignment of attitudes as every Business Divisions view the integration of Environmental Management Principles into normal business practice with equal importance.\

5.2.2.3 PRIOR ASSESSMENT

All Business Units had the same attitude towards Environmental Impact Assessment and attaching priority to those impacts with a negative effect.

5.2.2.4 PRODUCTS AND SERVICES

The attitudes on advice to the customers, and where relevant education of customers, distributors and the public on safe usage, transportation and disposal of products and services varied as follows between Business and Terminals (Table 8), Coallink and Terminals (Table 16), Infrastructure and Terminals (Table 23), Infrastructure and Traction (Table 24), Service Execution and Wagons (Table 40), Service Execution and Main Line Passenger Services (Table 41), Traction and Wagons (Table 45), Traction and Main Line Passenger Services (Table 46).

Orex and Property did not differ in their attitudes.

There are thus varied attitudes on the response to legal requirements or standards for informing all parties on the environmental risks, safe use, proper transportation as well as waste management principles.

It is also the principle with the highest variation of attitudes amongst the business units, second to the principle of Process of Improvement.

5.2.2.5 FACILITIES AND OPERATIONS

The attitudes of Business and Orex (Table 5) and Coallink and Orex (Table 13) differed on this principles. Business' environmental impact can be regarded with a lower significance than Coallink's as their activities are mainly focussed on administrative.

5.2.2.6 RESEARCH

The attitudes on research on the environmental impact of processes, services and wastes and in particular minimisation of negative impact differed between Coallink and Orex (Table 13) and Coallink and Terminals (Table 16).

5.2.2.7 PRECAUTIONARY APPROACH

The Business Units shared the same attitude towards the Precautionary Approach.

5.2.2.8 EMERGENCY PREPAREDNESS

The attitudes towards Emergency Preparedness were similar between all the Business Divisions.

5.2.2.9 EMPLOYEE EDUCATION

Employee education is regarded with the same importance by all the Business Divisions.

5.2.2.10 CUSTOMER ADVICE

All the Business Divisions expressed the same attitudes towards Customer Advice.

5.2.2.11 CONTRACTORS AND SUPPLIERS

No significant differences in the attitudes were found between the other functional divisions.

5.2.2.12 TRANSFER OF TECHNOLOGY

The attitudes regarding this principle were similar between all Business Divisions. It should be mentioned that the technology utilised in Business, Property, Service Delivery and MLPS is in a relative niche market and would not contribute significantly to the South African marketplace.

The assessment of and development of standards for managing i.e. minimising the effects of PCB's is of cardinal importance.

5.2.2.13 CONTRIBUTION TO COMMON EFFORT

There were no significant differences between the Business Divisions and the influence of e.g. participation in national policy is mainly the function of the Chief Executive.

5.2.2.14 PROCESS OF IMPROVEMENT

Business and Orex (Table 5), Business and Service Execution (Table 7), Coalink and Orex (Table 13), Coallink and Service Execution (Table 15), Infrastructure and Orex (Table 20), Infrastructure and Service Execution (Table 22), Orex and Traction (Table 30),Orex and MLPS (Table 32), Service Execution and Traction (Table 39), Service Execution and Main Line Passenger Services (Table 41) differed in attitude on the process of improvement:

The exceptions are Property, Terminals and Wagons. Eight out of the ten business units differed in attitudes, in a subject that would highly involve the future performance of Spoornet as a whole. This could arise from perplexed views on the introduction of changes in response to incidents, legal requirements, common law and or accepted external standards i.e. SABS ISO 14001. This principle was the only principle in which such varied attitudes were expressed.

5.2.2.15 OPENESS TO CONCERNS

It is important to note that this is the only principle where the attitudes and behaviour of all the functional divisions correlated. There also were no significant differences in attitudes.

5.2.2.16 COMPLIANCE AND REPORTING

The attitudes towards measurement of environmental performance differed amongst Business and Infrastructure (Table 4), Infrastructure and Property (Table 21) and Infrastructure and Traction (Table 24)

All business divisions should regard compliance and reporting as important as Corporate Priority as this is an important activity in the cycles of both the activities of management and Environmental Management.

In the light of the above mentioned differences in attitude between the different functional divisions in Spoornet hypothesis 2 can also be accepted. The implications hereof are that management must take into account that attitudes of personnel differ towards the different Principles of Environmental Management. Management must however strive to change the attitude of personnel to reached maximum score and compliance towards each principle.

5.3 RECOMMENDED FURTHER RESEARCH

It is recommended that:

- Studies to be conducted to evaluate the differences between future attitudes, especially after interventions to change the attitudes have been introduced. It would also be worthwhile to assess the correlation between attitude assessments and target scores of the business divisions.

- A study on the differences in behaviour between the business divisions brought in relation with the significance of potential environmental impact.

- Further studies can be done to evaluate the attitudes and behaviours against international rail transporters especially for benchmarking purposes.

5.4 RECOMMENDATIONS TOWARD THE PRACTICE IN SPOORNET

The recommendations towards the practice of Environmental Management must address issues that Environmental Management as a department can influence as well as issues in the general management strategies.

Firstly a programme must be implemented, by Environmental Management, focussing on the outcome of this study and this programme is to address the following changing attitudes

and subsequent behaviour towards principles of sustainable development by reviewing the current Environmental Awareness Training Programme.

Secondly, the current system of Performance Appraisal should be reviewed to effectively reward or punish environmental behaviour in order to place an emphasis on the soon-certain-positive criteria of the Antecedent-Behaviour-Consequence Model of Krause (1997).

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Annexure A

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TO: **To whom it may concern**

From: Dr. J.G.L. Booysen
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Risk and Environmental Management
Room 700
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SURVEY OF ATTITUDES TOWARDS ENVIRONMENTAL MANAGEMENT SYSTEMS

I am endorsing the research being undertaken by Mrs. Adri Pekalski, Assistant Manager (Environmental Management Systems), together with the University of the Orange Free State for the Degree: Masters (Environmental Management).

The research will assess the attitudes and underlying perceptions of the Spoornet middel management cadre towards Environmental Management Systems.

All answers on questionnaires will be regarded as strictly confidential.

With kind regards

DR. J.G.L. BOOYSEN
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2017

ANNEXURE B

QUESTIONNAIRE

1. I regard Environmental Management as one of the highest priorities in Spoornet.	1	2	3	4	5
2. I believe that policy, programmes and practices must integrate Environmental Management into each element of the management process?	1	2	3	4	5
3. I think that education and training provided by Environmental Management take cognisance of the importance of environmental issues.	1	2	3	4	5
4. I regard Environmental Legislation as one of the highest priorities in continual improvement of normal business practice towards sound environmental management	1	2	3	4	5
5. I think that it is important to assess environmental impacts before starting a new activity or process.	1	2	3	4	5
6. I take environmental issues and environmental impact into consideration in normal activities i.e. Freight logistic solutions.	1	2	3	4	5
7. I believe it would be necessary to advise customers and suppliers of potential environmental impacts.	1	2	3	4	5
8. I regard the development, design and operation of any facility in accordance with the principles of conservation of energy, water and the minimisation of negative environmental impact as important.	1	2	3	4	5
9. I do NOT consider research on environmental impacts as necessary for Spoornet?	1	2	3	4	5

10. I do regard caution in any practice pertaining to potential environmental degradation as important in my discipline?	1	2	3	4	5
11. Environmental Management is an add-on process that hampers efficiency in production.	1	2	3	4	5
12. I believe we should maintain emergency preparedness and response in my function and where applicable, in conjunction with local communities?	1	2	3	4	5
13. I think that the transfer to environmentally sound technology to business partners and clients would be applicable.	1	2	3	4	5
14. Can you influence public policy in any way?	1	2	3	4	5
15. I foster transparency between my function, employees and the public?	1	2	3	4	5
16. I believe the environmental performance of my function should be measured and reported on.	1	2	3	4	5