

A management plan to improve the productivity of the labour workforce:

Vaalharts Water User Association as case study

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ABSTRACT

The purpose of this study was to set up a management plan to improve the productivity of the labour workforce. Two concrete placement teams at Vaalharts Water were used as a case study.

In order to determine the factors impeding productivity, research was done, a time and motion study was conducted and surveys were completed in interviews with the Vaalharts Water management and teams.

Once the list of problems contributing to productivity impairment was compiled, the management plan was set up in an attempt to provide solutions to the identified problems and thus improve the productivity of the teams. The management plan was critically reviewed along with the Vaalharts management team and a probability of success matrix was set up along with proposed changes to the satisfaction of management.

Key words: Management plan, productivity, Vaalharts Water.

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LIST OF ABBREVIATIONS

B-BBEE	-	Broad-based black economic empowerment
ENTJ	-	Extrovert Intuitive Thinker Judger
ESTJ	-	Extrovert Sensor Thinker Judger
INFJ	-	Introvert Intuitive Feeler Judger
INTP	-	Introvert Intuitive Thinker Perceiver
ISFJ	-	Introvert Sensor Feeler Judger
ISTJ	-	Introvert Sensor Thinker Judger
ISTP	-	Introvert Sensor Thinker Perceiver
m ³	-	Cubic Meters
OIM	-	Operational Improvement Management
VHW	-	Vaalharts Water

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The first chapter of this study provides a background to the dissertation and substantiation of the stated problem. It also describes the research aims and objectives and provides a brief background to the organisation where the research for the case study originated from.

1.2 PROBLEM STATEMENT AND OBJECTIVES

At the time of conducting this study, the author had been working as a Mechanical Engineer-in-Training for Vaalharts Water (VHW) User Association, a semi-state organisation, for about 18 months. The company is responsible for the distribution of water from the Vaal- and Harts rivers to the farmers and municipalities in the area as well as maintenance on all associated dams and canals.

The vision of VHW is to deliver bulk raw water supply services in the Vaalharts area and to enable a full water value chain to be developed by the water users (Vaalharts Water, 2013).

The main objective of this study is to propose a management plan to improve the productivity of the labour workforce, in order to ensure that the mission of Vaalharts Water is executed, namely to render sustainable bulk water services to all the legally entitled water users in the area of operation of Vaalharts Water User Association by means of:

- efficient water management;
- affordable maintenance of infrastructure;
- effective administration; and
- leadership and strategic planning to the bulk water sector (Vaalharts Water, 2013).

During the author's employment at VHW, it was noted that the productivity and production results of the workforce were significantly lower than expected. A lack of motivation and a lack of productivity among the workforce was evident. Activities were not pre-planned or optimized and supervision appeared to be ineffective in addressing the observed problems.

A closer look into the composition, organisation, tools and management of the production teams revealed that there are six concrete laying teams, each with a team leader. These

teams work in the civil department and are responsible for all maintenance and improvements on the canal system.

It was observed that these six teams all consisted of people with different backgrounds, skills, cultures, aspirations, ages, etc. The teams' output also vary radically in terms of how much concrete they place each year, as can be seen in Table 1 summarising the numbers for two of these teams, taken from annual reports by the VHW Civil Manager (Van Wyk, 2015).

Table 1: Concrete teams concrete numbers (Van Wyk, 2015).

Team	2013/2014	2014/2015
Team 1	445 m ³	354 m ³
Team 2	314 m ³	556 m ³

Comparison with published private sector standards (see Chapter 2) will verify suspicions of the productivity issues that were observed. For the purpose of this study the two most productive teams according to the civil manager will be selected and subjected to a research process in order to understand and plan how the problems could be rectified.

The next objective is to identify the possible causes of the low productivity and to research which of them were contributing factors in the study on VHW.

The final objective is to set up a management plan to address the causes of low productivity. The management plan needs to identify specific management actions, responsibilities, target dates, budgets and success criteria. The proposed management plan has to be validated before implementation. Once implemented, the validated management plan would help solve problems and lead to better productivity for the concrete teams.

Setting up the management plan is undertaken as a separate exercise. The proposed management plan has to address a variety of issues including management approaches, the influence of cultural differences on management approaches, technology management, organizational management, quality management, project management and production optimization. The implementation of the management plan and analysis of results is therefore considered to be outside the scope of this study.

1.3 RESEARCH AIM AND METHODOLOGY

The aim of this research project is to set up a validated management plan to improve the productivity of the labour workforce at Vaalharts Water User Association.

To reach this aim the following steps will be taken in order to reach the objectives:

1) *Verification of the perceived problem.*

Initially it is important that the suspected problem, i.e. low productivity, is verified to ensure that the focus is not on the wrong problem. Only after a real problem is identified, the study can produce results that make sense and can be applied.

2) *Study of the underlying theory of productivity and the development of a framework of possible causes.*

The research has to define exactly what the term productivity means in this context. It is not only seen as finding ways to make the workers do more work per day, but rather productivity means eliminating obstacles that cause delays and cause more resources to be used than what is necessary.

In the literature survey different methods and views are described in order to create a productivity-orientated environment where all role players strive towards achieving better results.

3) *Verification of data collection techniques.*

Once the problem is fully identified, verified data needs to be collected on the problem. In order to collect data efficiently, the appropriate techniques need to be used. A literature study was done on data collection techniques relevant to the study environment and is reported on in the literature survey in Chapter 2.

4) *Data collection on identified possible factors causing the problem.*

The problem at Vaalharts Water was identified as a productivity issue, thus the factors causing the problem need to be identified.

Both the internal (within the company) and external (outside of the company, e.g. government, environment etc.) factors are included. Further data then needs to be collected on the factors themselves.

The management and the different sections of workers are to be interviewed separately in order to find information from different points of view. This ensures that an unbiased picture can be sketched eventually of the direct and influenced problem.

The employee can list what he perceives is keeping him from being as productive as he feels he could be, and the employer can state why he feels the employee is not as productive as he needs to be.

5) *Analyse data in order to identify and discuss factors.*

After all the necessary data is collected, a process of critically reviewing the data in order to shortlist the relevant factors and information on them is embarked upon. The process for critically reviewing data is, of course, first researched and laid out.

6) *Finding solutions to causes of the problem.*

It is the first step to identify and elaborate on the factors influencing productivity, but solutions for each constraining factor need to be found. In order to develop solutions, research is done and experience from people working in these conditions every day are included in developing these solutions.

7) *Setting up a feasible management plan.*

Once all the information have been gathered and elaborated on, the areas that need to be addressed are decided upon in order to set up the management plan that would have the correct effect on the labour workforce of Vaalharts Water.

8) *Validating the management plan.*

After the management plan is set up, a probability of success matrix is created for all the steps of the plan. Percentages are assigned to every step and this matrix along with the management plan is to be discussed with the VHW management.

The VHW management will be asked to provide their own probability of success percentages to each part of the management plan. The percentages are then compared and any input and suggested changes are noted and listed at the end of the study.

9) *Presenting the validated management plan to VHW Management Team.*

The final objective is to present the validated plan to the VHW management team. The implementation of the plan will be VHW's responsibility.

1.4 CHAPTER OUTLINE

Chapter 1: Introduction

In Chapter 1 the study is introduced by providing the purpose and problem statement as well as giving substantiation to the study. The research aim and objectives are also listed and background is given on the case study.

Chapter 2: Literature Survey

In Chapter 2 a literature survey is done on available articles and journals on the subject of productivity and all relevant issues addressed in the dissertation. A closer look is also taken at what is being done on the productivity issues by companies in practice.

Chapter 3: Method of Investigation

The method of investigation is described in Chapter 3. Descriptions of all steps taken are given and the intention of survey question are listed.

Chapter 4: Results and Discussion

The results of all surveys, monitoring and research are noted and discussed in Chapter 4.

Chapter 5: Development of the Management Plan

The development of the management plan is described in this chapter.

Chapter 6: Conclusions and Recommendations

In Chapter 6 the conclusions and recommendations of the study is discussed.

CHAPTER 2: LITERATURE SURVEY

2.1 INTRODUCTION

Chapter 2 reviews available literature on subjects used in the study and explains the relevance thereof.

The review covers the following subjects:

- Comparison of the production parameters of Vaalharts Water's concrete laying teams to the production rates currently achieved in similar industries
- Techniques for identifying problems in a company.
- Factors affecting productivity.
- Productivity in South Africa.
- Survey theory.
- Planning and conducting research interviews.
- Setting up a management plan.

2.2 COMPARISON OF PRODUCTION PARAMETERS

Some production problems were noticed at Vaalharts Water. In order to substantiate the observations, benchmarking numbers had to be researched. The average concrete placement of the teams selected for the case study for the previous two years was 417 m³ (Van Wyk, 2015). That translates to 35 m³ per month, and assuming a work month of 22 days it means that they only managed about 1.5 m³ per day. A concrete truck holds 6 m³ of concrete, which implies that the average placement of the VHW teams was one quarter of a truck per day. That in itself was worrying as the main function of these teams is placing concrete. It also meant that a concrete truck has to drive the same distance and spend a similar period of time on site as would be required for a full load, but only a quarter of the load was placed.

According to Suprenant and Malisch (1998) it is possible to place 4500 m³ of concrete per day with a 25 person team. It is therefore clear that private companies could achieve high production rates. If the 4500 m³ per day production rate of a company on one site with a 25 person team is compared to the situation at VHW, the following assumptions are needed:

- An average of 3 hours a day is spent on driving to and from the location by the team and the concrete trucks, thus reducing an eight hour day to a five hour productive day.

- The two VHW teams in question consists of six people each, thus we could divide the production rate of the private company by four.
- Another difference is the description of the specific work. For the private concrete placement company, all planning and preparation work would be done when they started measuring the volume of concrete placed, but for VHW all the planning and preparation work has to be done by the team themselves.

Table 2: Concrete Placement Activities

Activity Nr.	Private Lining Company such as Shirley Concrete Company (Gomaco, 2008)	Vaalharts Water (Kruger, 2015)
1	Get orders / Travel to the area.	Get orders / Travel to the area.
2	Start placing concrete as the other activities are performed by other teams.	Identify spot of damaged canal.
3	Drive back.	Decide on how to repair.
4		Open damaged spot.
5		Remove damaged material.
6		Compact base material.
7		Fill in gravel, red soil and compact.
8		Set up concrete templates.
9		Trim excess material.
10		Fix steel reinforcing.
11		Apply wet to dry chemicals.
12		Order concrete on volume estimate.
13		Place and compact.
14		Float concrete.
15		Clear area.
16		Apply joint sealers.
17		Drive back.

If for the sake of this study it is assumed that each of the above-mentioned activities takes the same time to complete, a VHW team performing maintenance would take 5.6 times longer to finish a job than the private concrete placement team. If is further assumed that, on average, a concrete liner can line 2 times as fast as a team could place concrete.

Taking the above-mentioned assumptions into account, the VHW teams should each have been placing about 60 m³ per day if a constant concrete supply was possible. This number is not an unlikely if compared to what a company like Shirley Concrete Company does in nine hours with less labour (Gomaco, 2008) with their Gomaco slip forming concrete paver (the same machine recently purchased by Vaalharts Water).

This raises the question of which factors have the largest influence on the productivity of the VHW teams, why the productivity varies so much between teams and why it is apparently more than 40 times lower than that of private companies, taking into consideration the difference in maintaining damaged canals and building new canals from scratch.

It is clear that certain problems with regard to productivity exist at VHW and specifically the concrete laying teams. In order to identify the productivity problem existing in Vaalharts Water it is necessary to look at some existing techniques for identifying problems within a company.

2.3 OVERVIEW OF TECHNIQUES FOR IDENTIFYING PROBLEMS IN A COMPANY

2.3.1 Interactive methods

An effective way to identify possible problems in a company is by conducting employee performance reviews (Torrez, 2015). This way the employee can give his personal reflections on why he has not reached the performance level that was expected. Normally performance reviews are also coupled with performance incentives so the employee will be more likely to provide factors that he feels are keeping him from performing better because he knows this review will influence his incentive.

Performance reviews can be done in various ways, ranging from questionnaires to oral interviews. It is important to listen to the problems identified by the employee, but to be wary of excuses aimed at covering up personal reasons for low performance. Performance reviews are incorporated in the experimental method of this dissertation.

Group assessments conducted by a colleague well known to the employees is a way of encouraging problem identification by creating a neutral environment where employees feel comfortable enough to speak about problems they experience in their work environment.

While risk assessments are an important safety mechanism for any company, the assessment itself can identify problems in different departments that can cause low productivity. It is thus important to analyse the risk assessments and look for any constraint to productivity as well. An unsafe work environment is a common contributor to low productivity.

2.3.2 Idea sorting methods

The Ishikawa fishbone (also called the cause and effect diagram) is an effective way to represent problems and identify their causes (MindTools.com, 2015). The diagram resembles the backbones of a fish, with the problem listed in the "head" and all the causes listed along the "bones" of the diagram, as shown in Figure 1.

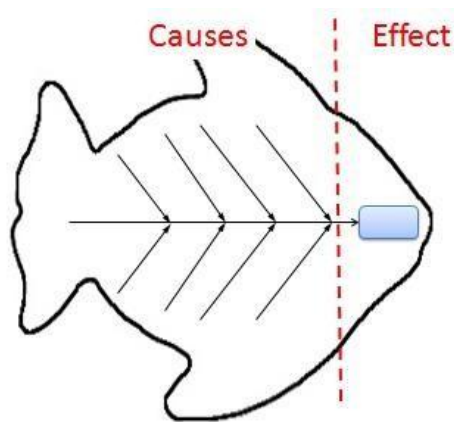


Figure 1: Fishbone diagram (Martinez, 2012).

The fishbone diagram will be used in brainstorming sessions with the management of Vaalharts Water.

2.3.3 Lean manufacturing

The lean manufacturing system for identifying and eliminating waste is a comprehensive tool that in this case can effectively be used to identify and eliminate company productivity problems. Lean is focused on customer value and Vaalharts Water's main aim is to provide a constant reliable source of water to its customers, therefore some of the lean principles come into play.

Looking at the basics of lean manufacturing, waste in a company can be divided into 8 categories (MindTools.com, 2015):

- Overproduction - Producing more than the demand.
- Waiting - The time wasted between activities.
- Inventory - Inventories too high.

- Transportation - Movement of materials.
- Over-processing - Work quality too low, needs to be repeated.
- Motion - Movement of people and equipment efficiency.
- Defects - Time spent fixing mistakes.
- Workforce - Workers used efficiently or not.

In order to show the relevance of the role of lean manufacturing in the eventual resolution of the subject of this dissertation, it is important to give a brief description of lean's three key stages (MindTools.com, 2015):

- **Identify waste:** Lean's philosophy is based on the view that there is always waste in a company, thus there is always the opportunity to dispose of waste and improve the company.
- **Analyse waste and find root cause:** Using a root cause analysis on the waste identified shows what the real reason behind the existing waste is.
- **Solve root cause, repeat cycle:** The solving of the causes and thus elimination of waste and a consequential improvement of productivity forms the base of the proposed management plan.

In order to arrive at a management plan for VHW, the above stages will be incorporated into the study methodology.

2.3.4 Six Sigma

Another process that helps a company to achieve near-perfect services is Six Sigma. The focus is on the elimination of defects, thus less waste and striving towards fully utilized resources. According to Sundaram (2013), although more difficult than applying the tool to the manufacturing industry, it can also be used in the service sector.

Six Sigma uses two methodologies called DMAIC and DMADV. DMAIC is used on existing processes while DMADV is used while designing a new process.

The acronym DMAIC represents the following (Sundaram, 2013):

- **Define:** The needs of the customer, the goals and what the end product should be, needs to be defined.
- **Measure:** All the parameters of the process need to be measured to collect data for analysis.
- **Analyse:** The data needs to be analysed.

- **Improve:** Next the process needs to be improved based on the findings of the analysis.
- **Control:** The process needs to be controlled in order to minimize variations.

For designing a new process, DMADV is used (similar to DMAIC) (Sundaram, 2013):

- **Define.**
- **Measure.**
- **Analyse.**
- **Design.**
- **Verify.**

Six Sigma changed the way in which quality improvement programs are normally implemented by assigning six different roles to the different levels of the company (ASQ, 2015). This ensures that the employees on ground level who have the hands-on experience of current processes, understand and form part of the changes.



Figure 2: Six different roles of Six Sigma (Sundaram 2013)

As seen in Figure 2, the six different roles as listed by the American Society for Quality (ASQ, 2015) and Sundaram (Sundaram 2013) are:

- **Leaders:** These are the executives of the company that need to provide the overall focus of a program.
- **Champions:** The champions break down the program into individual projects in order to translate the company's aspects into a deployment plan.
- **Master Black Belt:** The master black belt trains and coaches the black belts and green belts. They act as internal consultants and develop the strategic direction.
- **Black Belts:** These are the people who lead the defined projects for problem solving and they train and coach the project teams.

- **Green Belt:** The green belts assist with the collection of data for projects and they lead the green belt projects and teams.
- **Yellow Belt:** These are the team members that review the improvements suggested.

Incorporating Six Sigma into the methodology used to set up a management plan for VHW and develop solutions to the identified problems will increase the probability of successful implementation of the plan, because it takes all the different roles in the company into consideration.

2.3.5 Verification and validation

Once the management plan has been compiled, it must be verified and validated. It is important to understand the difference between verification and validation.

Collins (2015) defines verification as the "establishment of the correctness of a theory" while the American Heritage Dictionary of the English Language (2011) defines validation as "to establish the soundness, accuracy, or legitimacy of" something.

Although it may seem that these two terms are alike there is a significant difference in physical meaning that should not be confused.

A great description is (Debbabi, 2010):

- Verification: Are we building the system right? In other words are we addressing the right cause of the observed symptom?
- Validation: Are we building the right system? Thus are we proposing a valid solution to the cause of the observed symptom?

In other words, verification will prove that what has been defined is defined correctly, and the proposed solution for the problem of interest will be validated to ensure that it is actually suitable and effective.

2.4 OVERVIEW OF FACTORS WHICH CAN AFFECT PRODUCTIVITY

In reviewing the available literature on the topic, it would seem that many factors exist which can affect productivity. The list of factors affecting productivity compiled by Professor Mudit Katyani is deemed the most comprehensive list (Akrani, 2013).

Table 3: Factors affecting productivity (Akrani, 2013).

Factor	Description
Technical factors	Technical factors can include all technological issues, for example the equipment used or even the systems implemented.
Production factors	Control over production in terms of materials and processes is essential to the productivity of a company.
Organisational factors	Hierarchy, authority and responsibility in a company ensuring that conflicts between line and staff are avoided as far as possible.
Personnel factors	Suitable candidates, training, development, working conditions and environment, motivation, financials, job security etc. are all elements making up personnel factors.
Finance factors	Proper control of the finances of a company influences productivity greatly, directly and indirectly.
Management factors	Management factors are the backbone of any company's productivity. The management of a company has to be scientific, professional, sincere and competent as stated by Akrani (2013).
Government factors	All legislation and regulations enforced by the government can greatly influence productivity.
Location factors	The location of where work is being performed, coupled with infrastructure and accessibility fall under these factors.

In order to divide the factors into productivity sections, a derivative of OEE (overall equipment efficiency) can be used. Vorne Industries Inc. (2012) calculate OEE as:

$$\text{Availability} \times \text{Performance} \times \text{Quality}.$$

A common practice is to break it down into four elements of where production losses can occur:

- *Availability*

This element is a resource's availability at a specific time and place during operation including equipment, material and human resources, for example maintenance, breakdowns or absenteeism influencing the availability of equipment, teams and material.

- *Utilisation*

When a resource is available, its utilisation defines whether the resource is being used as it is intended. Interruptions, changing between tasks, shortages or any activity not adding value influences the utilisation.

- *Efficiency*

Efficiency measures the rate of utilisation of a resource, in other words inefficient methods, mismanaged tasks etc. would influence the efficiency.

- *Quality*

Quality not only refers to the quality of the output but the quality of the teamwork, equipment etc. that could influence the product during activities. Any rework required, waste or products not complying to required specifications, low quality equipment etc. influences the quality of a process.

2.4.1 Extrinsic and intrinsic motivation

An important part of driving productivity is having the right extent and type of motivation. According to an article by Kendra Cherry, a psychology expert, psychologists have proposed that one way of looking at motivation is by seeing if motivation comes from outside (extrinsic) or inside (intrinsic) a person (Cherry, 2015).

The main difference according to Cherry (2015) is that extrinsic motivation occurs due to a reward or punishment on offer for certain behaviour while intrinsic motivation is when a person does something because it is personally rewarding to them, independent from external rewards.

Extrinsic motivation is illustrated in the following examples:

- Studying to receive a good grade.
- Doing your chores to not get punished.
- Competing to win something.

Intrinsic motivation is illustrated in the following examples:

- Doing sports because you enjoy it.
- Playing a game because you find it fun and exciting.
- Participating in an activity because it makes you feel good.

According to Cherry (2015) some studies have shown that offering too much external reward can lessen the intrinsic motivation in subjects where a person had a personal motivation. On the other hand, external rewards can create interest in subjects where a person initially showed interest.

In other words, external rewards, if used effectively, can be used in helping a person attain new skills or knowledge. This could lead to a more natural motivation, in other words intrinsic motivation.

Motivation will also be looked at when analysing the perceived production problems at VHW.

2.5 PRODUCTIVITY IN SOUTH AFRICA

According to Alexander Field (2008) who at the time of writing this dissertation was a professor of economics at Santa Clara University, productivity is commonly expressed as the output per unit of input.

Field (2008) relates the growth in output per person in a country to the output achieved per worker and uses the computer industry as example where costs to own computers have plummeted due to the sharp increase in productivity, in other words the reduced cost involved in manufacturing a computer.

The article puts emphasis on how an increase in productivity in different sections of the industry could greatly influence our lives due to less resources being required for the same results or higher results with the same resources, depending on how you look at it.

In South Africa a few organisations exist whose sole purpose is research and improvement of productivity in South Africa. Two of these, Productivity SA and OIM, will be discussed in more detail below.

The Productivity SA (2015) descriptions and definitions for productivity are summarised as follows:

- Not equal to production.
- The relationship between inputs and outputs.
- Concerned with how effectively outputs are produced and the value created by the production process.
- Creating high-value products and services in terms of quality, cost, pricing and timelines.
- Concerned with productive capacity building of people.
- The answer to South Africa's challenge to rise to becoming a winner.
- Working smarter, not harder.

Labour issues is a hot topic in South Africa in 2015 and many factors influencing productivity can certainly be drawn from it. Unisa's Professor Edmund Ferreira did research in the public sector to determine, through employee surveys, why South Africa's

service delivery is so low. Various factors are deemed to be contributing to the situation (Naicker, 2014):

- Job satisfaction.
- Motivational factors.
- Work related knowledge.
- Practical computer literacy.
- Transformation.
- Job security (pertaining to balancing budget constraints versus dismissal of employees).
- Lack of leadership.

At the time of writing Professor Ferreira was a professor at Unisa in the Department of Business Management. He holds several Bachelors and Master's degrees in the business management field and also a D.Com degree at Unisa. His advice on remedying the situation was for the South African public sector to move with the change experienced in the workplace, for the sector to keep up with the use of technology and to ensure their workforce is equipped for their jobs.

According to Professor Ferreira, the output per worker per unit of capital in South Africa has decreased from R7 297 in 1967 to R4 924 per year by 2007 (the figures have been adjusted for inflation). That represents a decline of 32.5% in productivity (Naicker, 2014).

2.5.1 Productivity SA

Productivity SA is a public South African organisation whose primary goal is to enhance the productivity capacity of South Africa (Productivity SA, 2015). They focus on objectives such as promoting a culture of productivity in workplaces, facilitating productivity improvements in workplaces and they do productivity related research.

One of the services they offer is productivity training where the following values are focused on (these are very relevant to the current study):

- Continuously seeking better ways of doing things.
- Efficient and effective resource usage.
- Waste reduction and elimination.
- Time management.
- Completing tasks correctly the first time and all the time.

For managers they have a specific productivity management programme that is designed for first line managers in all sectors. The outcomes of the programme equip the foremen with the following competencies:

- Understanding of the productivity concept and the factors that influence it.
- Measure current levels of productivity and identify factors that influence it.
- Formulate action plans to improve productivity.
- Optimise productivity by coordinating the implementation of the action plans and evaluating the outcomes.

2.5.2 OIM (Operational Improvement Management)

OIM (Operational Improvement Management) is a business consulting company that specialises in people management, organisational improvement and operations management (OIM, 2015).

They believe their integrated approach to business performance management focuses on the main elements for an organisation to be successful. Key areas include:

- Strategy definition.
- Business architecture and alignment.
- Effective leadership and talent management.
- Employee relations and stakeholder engagement.
- Operations management, optimisation and continuous improvement.
- Performance measurement and improvement.

OIM boasts an impressive client list including Barloworld, AllanGray, Anglo Platinum, Anglo American, Tiger Brands, BHP Billiton, Absa and many more.

OIM's ultimate aim is to ensure that all stakeholders benefit over time, an approach they call a Prosperity Partnership. The elements of the approach are visualised in Figure 3 below.

These elements of the prosperity partnership program will be applied in the process of developing solutions to the identified problem at VHW.

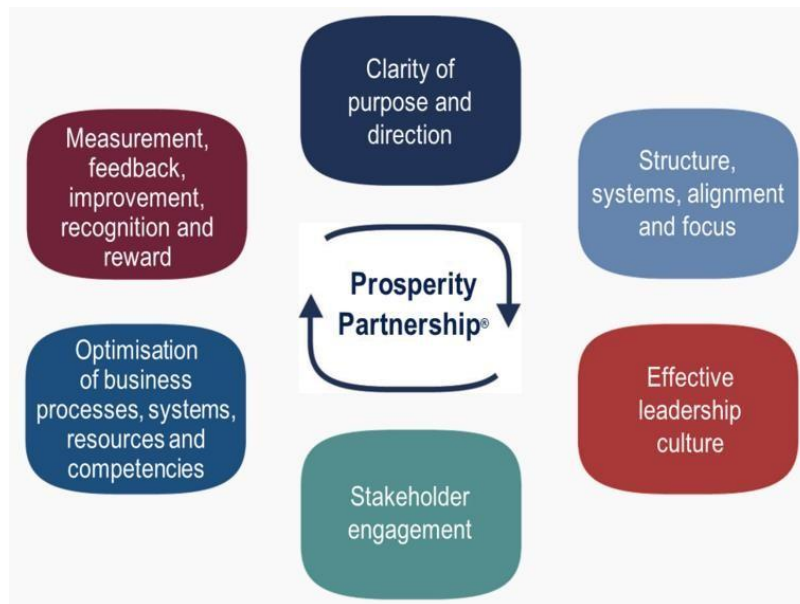


Figure 3: OIM Prosperity Partnership (OIM, 2015).

The outcomes of these elements illustrate the value of their approach:

- *Clarity of purpose and direction.*
Everyone knows where we are going as a company.
- *Structure, systems, alignment and focus.*
Everyone knows exactly what to focus their energy on daily, work is made easy.
- *Effective leadership culture.*
Leaders lead their teams with credibility.
- *Stakeholder engagement.*
Everyone is involved in goal setting, problem solving and planning on a daily basis.
- *Optimisation of business processes, systems, resources and competencies.*
Everyone contributes to quality, cost and service improvements.
- *Measurement, feedback, improvement, recognition and reward.*
Teams regularly review their performance, focus on accountability, recognition and reward.

For each of these elements OIM provides a specific service and product in order to create the culture and train the management and employees of companies to further the implementation and improvements.

2.6 OVERVIEW OF SURVEY THEORY

Surveys are used coupled with interviews and other research methods to gather the required information on case study subjects. In order to compile meaningful surveys, it is necessary to look at background to different surveys and survey techniques available.

According to the Research Methods Knowledge Base the advantages of group administered questionnaires are (Trochim, 2006):

- High response rate.
- Clarification on questions can be easily provided.
- Relatively easy to assemble the group.

A group administered questionnaire differs from a group interview in the manner that the questionnaire is a specific set of questions handed to each respondent individually to gather in private their opinion on set subjects while the group interview is an out in the open discussion of set subjects with members listening and openly discussing it under the guidance of an interviewer.

Generally two types of surveys are used: cross-sectional and longitudinal.

The difference between these two types is that cross-sectional surveys are conducted in a single period in time focusing on an issue or a few that information and opinions are needed on, while longitudinal surveys are conducted at intervals on a topic in order to gather a change in data or to establish a trend (Sincero, 2012).

Both types of surveys are used in the current study - the cross-sectional to gather information on issues that do not necessarily change as well as longitudinal surveys to see if the productivity actually changed after changes were made to processes.

Surveys are generally used for one of three types of research (FluidSurveys Team, 2014):

- *Exploratory Research*

Exploratory research is used at the start of research to define issues, problems and possible solutions. It is a way of generating ideas and getting deeper insights into people's opinions. In surveys with this approach, an understanding of the people being surveyed can be formed. Although this might not give statistical information it could lead to the discovery of problems.

- *Descriptive Research*

A further step would be to conduct descriptive research which differs in the way that it is of a quantitative nature. The survey could be in the form of

multiple choice questions. The responses to the uniquely structured questions will then better define an opinion, attitude or behaviour of a specific group of people.

- *Causal Research*

Causal research is the final step in the survey process and therefore it is often called conclusive research. With causal research, the cause and effect of discovered problems can be explained. There are two objectives namely to understand which of the variables collected are the cause and which are the effects of discovered problems and to gather information on the relationships of causes to effects. In causal research, physical experiments are usually conducted and data captured in order to see the actual variables in action. To incorporate this type of research in this study, observational surveys will be conducted on the case study in order to see the problems in action.

2.7 PLANNING AND CONDUCTING RESEARCH INTERVIEWS

Interviews and surveys can be used in conjunction to gather information on work force opinions and work environments. Enough background was gathered on how to set up the surveys to be conducted, thus this section will give background pertaining to the conducting of interviews.

The Open University (2013) distinguishes between three types of interviews:

- *Unstructured interview*

This type of interview is more like a conversation with the only guidelines for questions being notes at most. The interview is conducted with participants speaking freely.

- *Semi-structured interview*

The next type of interviewing is semi-structured where in a list of questions is worked through, although supplementary questions can be added for different interviewees. There is a lot of freedom on how questions can be answered.

- *Structured interview*

In the structured interview a fixed list of questions is asked with a fixed range of answers that can be chosen.

Guidelines for the interview process (The Open University, 2013):

- Introduce yourself clearly and make sure your interviewees are fully aware of the purpose of the research.
- Make sure the questions are relevant to answer the research questions.
- Sequence the questions so that the order makes sense.
- Be aware of topics your questions can lead to as it might naturally happen.
- Keep questions clear and easy to understand.
- Ensure people are free to give their own answers without being led.

The Open University (2013) also lists types of questions that are helpful to reach your goal in terms of interviewing.

Table 4: Interview questions (The Open University, 2013).

Introducing questions:	'Why did you...?'
	'Can you tell me about...?'
Follow up questions:	'What did you mean...?'
	'Can you give more detail...?'
Probing questions:	'Do you have any examples?'
	'Could you say more about...?'
Specifying questions:	'What happened when you said that?'
	'What did he say next?'
Direct questions:	Questions with a yes or no answer.
Indirect questions:	Questions about the interviewee's true opinion.
Structuring questions:	'Moving on to...'
Silence:	Using pauses for effect.
Interpreting questions:	'Do you mean that...?'
	'Is it correct that...?'

Since the research part of this study will use interviews as one of the methods to gather information, the above will be taken into consideration when setting up the interview arrangement and questions.

2.8 BACKGROUND TO TIME AND MOTION STUDIES

A time and motion study is the scientific study of the conservation of human resources in the search for the most efficient method of doing a task. That is how Harper and Mousa (2013) define a time and motion study in an article for Oxford Bibliographies. They divide it into three phases namely:

- Method determination.
- Time appraisal.
- Development of material for the application of these data.

Harper and Mousa state that a time and motion study could be used to help find preferential ways of doing work and eventually could assist in effectively managing an activity (Harper & Mousa, 2013).

The time and motion study methodology is most suitable for reaching the objectives of this study and will therefore be incorporated as such.

2.9 OVERVIEW OF PERSONALITY TESTS AND ITS RELEVANCE

One of the perceived problems at VHW was the different backgrounds, skills, cultures, aspirations and ages of the concrete laying team members. This may be contributing to the productivity problem. Personality tests to determine whether a certain group of individuals will complement each other may therefore prove to be useful.

According to Ogallo (2015) the reasons why companies do not more often use personality tests when recruiting are due to budget constraints, they are unaware of the benefits, some companies do not have internet access or some companies just do not use good hiring practices.

Ogallo (2015) deems the importance of personality testing to lie in the following aspects:

- *Job placement*
Personality tests ensures that the right type of person is hired for a specific job, ensuring that not only the company benefits but the employee gets satisfaction out of his work.
- *Group interaction*
If a person is going to work in a group then personality tests can ensure you do not compile a team out of personalities that could clash.

- *Self-reflection*

People could learn a lot about themselves that would also benefit them personally, not only at work.

Jung, MBTI, other personality type preference tests, DISC, etc, and why you chose to use MBTI...

This study used the Myers-Briggs Type Indicator (MBTI) for the personality tests not only due to the familiarity with the tests but also due to it being less complicated in some key areas compared to some other commonly used tests like DISC.

MBTI has 16 possibilities it can define someone as where DISC for instance has more than 384. Both tests were inspired by research done by Dr Carl Jung in the early 20th century with different approaches developed by Myers and Briggs and Dr. Marston respectively (Christiansen. 2013).

2.10 OVERVIEW OF WRITING A MANAGEMENT PLAN

Setting up the management plan is undertaken as a separate exercise but it is important to provide background on compiling such a plan. While writing a management plan it is important to keep it consistent with the mission and philosophy of the company (Community Toolbox, 2015).

It is further advised to (Community Toolbox, 2015):

- Choose a management model that will fit the organisation.
- Define relationships between the relevant parties of the management structure.
- Develop with input from the relevant parties the policies and procedures to cover the five management areas namely; people, money, supplies and equipment, activities and relations with the outside world.
- Design a system where regular scheduled evaluation and adjustments takes place in order to keep the management plan functioning.

The elements that should be included in a management plan are (Brown University, 2015):

- An outline of the project's objectives and goals.
- A list of actions to achieve the goals and objectives.

- Descriptions of the roles and time commitments of personnel involved in the project.
- Procedures to recruit and train participants.
- Procedures to acquire and maintain equipment.
- A timeline for various stages of the project.
- A process to handle possible project modifications.
- Considerations of the project's broader impacts.

Another additional part of a management plan is the evaluation thereof, that is tied closely to examining results and making adjustments accordingly (Brown University, 2015).

2.11 CONCLUSION

The points made about using performance reviews in order to identify problems are very relevant as the author views performance as the ultimate measuring tool. The warning by Torrez (2015) to be wary of excuses from an employee on low performance also puts emphasis on how important it is for the managers to know what is happening in their sections.

Group assessment by a colleague addresses the issue of an introvert vs. an extrovert in a working environment. While a person with an introvert type personality might be reluctant to speak and address issues with someone not familiar to him conducting the interview, the familiarity of a colleague could prove to relax him and make him feel comfortable to speak out.

The Ishikawa fishbone diagram in problem identification is deemed as effective although it has to be emphasized that more effort needs to be put into the actual problem identification process than merely listing the problems. The tool can be used effectively to see relevance and organise points to distinguish factors more clearly.

Including lean manufacturing in the survey as a tool for problem solving is highly relevant. Identifying waste and getting rid of it is basically a great definition of productivity. The lean way of continuously repeating the cycles can ensure constant improvements. Someone has to run it though, and therefore the effectiveness of using lean principles is coupled to the effectiveness of the implementer, for the purpose of this study. The same sentiment holds for Six Sigma. There has to be a total buy-in by the different company levels in order for it to work, and thus the projects need a strong-handed manager.

In terms of productivity, the two companies reviewed in the literature implement exactly the approach needed for this study. The one definition from Productivity SA sums it up well: working smarter, not harder.

Eliminating waste along with proper workplace relationships and training is not only the focus of both Productivity and OIM but it also makes sense that an informed, involved, skilled and organised work force would produce better results. Learning from what is expressed in the literature can already make a difference and while involving these types of organisations could in the long run produce even greater results. This study provides a management plan implementable without too much capital investment.

The list of Professor Mudit Katyani (Akrani, 2013) includes all the different factors influencing productivity that also arose from this study, thus the list was deemed relevant and comprehensive.

The usage of extrinsic motivation to induce intrinsic motivation sounds very interesting and it makes sense. In VHW it has also become evident that the merit bonuses offered annually have not created intrinsic motivation - the employees have rather become used to it. The theory of using surprise external motivation is something that needs to be tested here.

The information the Open University (2013) expressed on interviews is very helpful in the process. Constant relevance to the lower levels of employees had to be taken into account in order to make it relatable to them and not have questions go over their heads.

CHAPTER 3: METHOD OF INVESTIGATION

3.1 INTRODUCTION

Chapter 3 discusses the method of investigation used to obtain information on the productivity issues, personality traits and equipment used, from management, employees and through monitoring.

The investigation part of the study was broken down into three steps. The different steps and the intention of each are discussed in this section.

3.2 TIME AND MOTION STUDY

To start off the investigation process of this study the operations of the two concrete teams were observed for a week by the researcher and detail notes were taken in order to identify some issues keeping them from achieving the expected results.

A time and motion study was conducted in order to fully understand what it takes to place concrete at VHW and to identify some bottlenecks in the process.

The relevant information that resulted from the time and motion study will be discussed in the next chapter.

3.3 PEOPLE SURVEYS & INTERVIEWS

3.3.1 Civil Management

Interviews were conducted with the Civil Manager and Scheme Manager to gather their insights and information on the concrete teams and their performance as well as to get a deeper knowledge of how the teams are managed. The surveys as they were set up and the specific questions can be viewed in Appendix 1.

Questions were divided into different sections in terms of the intention of each:

- *Question 1 - 4 (Information and background)*

The questions in this section give a good breakdown of who the manager is as well as what his approach is in terms of leadership.

- *Questions 5 - 9 (Productivity)*

These questions are set up to specifically show how the manager experiences the productivity of his teams as well as how he has thought about solving the issues from his side.

- *Questions 10 – 14 (Personal influences on productivity)*
Personal aspects like background, religion, culture, language, race and age could possibly influence the productivity of workers and these questions are designed to show the manager's opinion thereof.
- *Questions 15 – 20 (Training and appointment)*
These questions focus on what training the workers receive and how they are appointed and divided into teams.
- *Questions 21 – 24 (Progress and conflict)*
The idea here is to see if the manager uses any way of setting goals for a time span and how he handles insubordination.
- *Questions 25 – 29 (Incentives, unions & legislation, motivation and ranking)*
In this section the focus was to see if the manager uses any incentive programs for motivation, what the level of motivation is according to the manager and what he perceives the influence of the labour unions and labour legislation to be on his team/s.

3.3.2 Civil Supervisors and Team Leaders

The survey done with the supervisors and team leaders was very similar to that of civil management, differing only in that some overhead questions were left out due to it being irrelevant to middle and lower management.

3.3.3 Team Members

Each member of both teams was guided through the survey individually and away from the other team members with the assurance that any comments or feelings will stay strictly anonymous and will not be used to target them at any stage.

The surveys were set up to specifically target the relevant areas of the concrete worker's work and personal lives in order to understand them better in terms of what holds them back, and what can be derived from answers as to how suitable they are for the specific work.

Questions were divided into different sections in terms of the intention of each:

- *Question 1 (Information)*
This part of the survey provides information about the team in terms of an average age, language differences and education.
- *Questions 2 – 4 (In what town they grew up, occupations of parents and their previous three jobs)*
These questions created a background picture of the individual, enabling the researcher to see if any correlation between different backgrounds and productivity could be drawn.
- *Questions 5 to 9 (Pertaining to their current work environment, remuneration and motivation)*
These questions were the most important: getting an insight into the workers themselves, how they feel about their work and salaries and what they feel keeps them from doing a better job.
- *Questions 10 to 13 (Concerning their managers and what they would change)*
These questions answered how the workers felt about their managers and also give insight as to how they would manage differently if they were in charge.
- *Questions 14 – 16 (Equipment)*
The last part of the survey gives the workers a chance to say how they feel about the equipment being used at VHW.

3.4 PERSONALITY TESTS

Personality tests were performed on the team members. The chosen test was the Short Personality Test of Personality Club (2015) that uses the Myers Briggs 16 types system and classifies personalities according to the following four dimensions:

- Extrovert or Introvert.
- Sensor or Intuitive.
- Feeler or Thinker.
- Judger or Perceiver.

Depending on the dimensions measured, a person is classified as having a specific personality type. The description of the different types gives a great insight into what energizes and interests a person as well as where their faults or weak points are (Truity Psychometrics, 2015).

There are certain guidelines as to which personality type works better with which other types, so the setup of the teams in terms of this classification turned out to be very interesting.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter lists and discusses results of this study. For the full results of the surveys please refer to Appendix 1.

4.2 TIME AND MOTION STUDY

After spending a week with the two teams on site the following notable observations were made:

- While work hours start at 07:00, teams only arrive on site at 08:30 on average. The site is within 20 km from the depot, as can be seen from the Cartrack data below. Teams then eat breakfast on site for another 15 to 20 minutes.

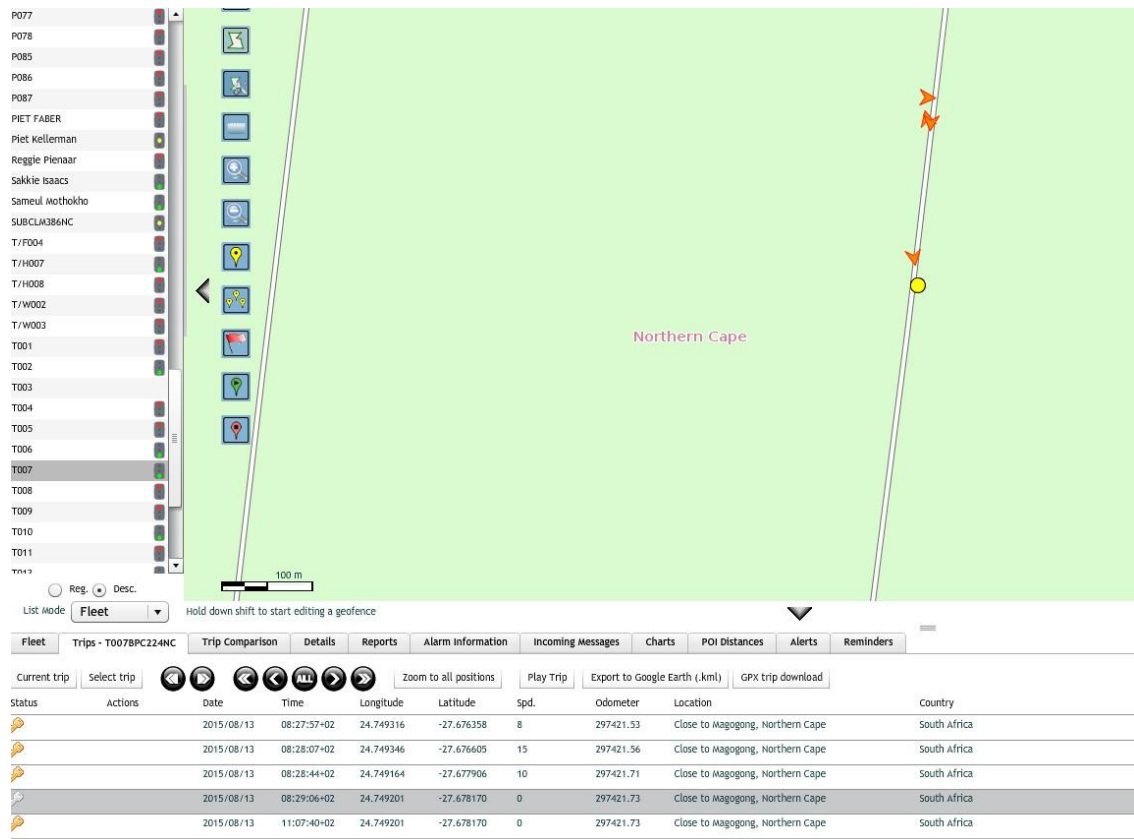


Figure 4: Cartrack excerpt 1 from the fleet management system used by VHW.

- Goals are not set and monitored each day or week.
- Teams often forget some equipment or material at the depot and drive back and forth to retrieve it, as can be seen from the Cartrack data below where one of the teams drove around from 14:00 till 15:00.

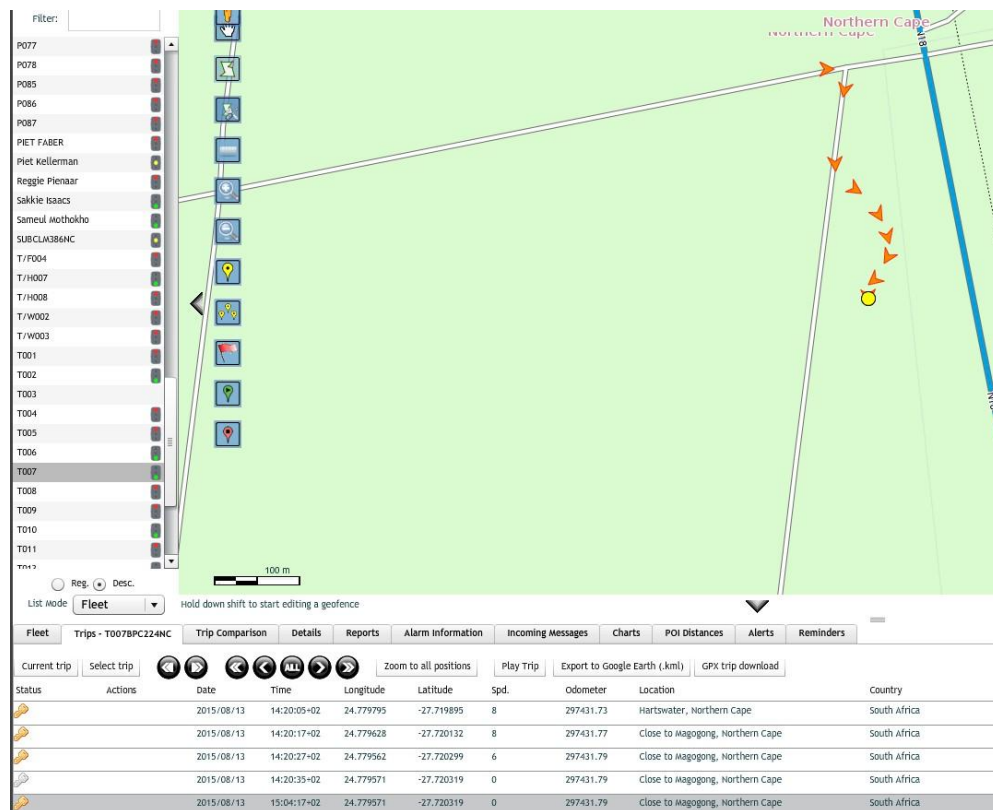


Figure 5: Cartrack excerpt 2 from the fleet management system used by VHW.

- Team trucks are often used for personal runs to town.
- Time planning on when concrete needs to be ordered is not according to set plans, thus concrete is ordered only when the preparations are completed and teams then sit around for an hour on average waiting for concrete.
- Only one mixing station services the whole Vaalharts Water scheme.
- Compaction tests are not done on the back soil.
- Teams tend to work harder when someone from management is present.
- Refuelling of trucks and material preparation is done in the morning before going to site, while mostly the team is already back at the depot 30 minutes before the end of the workday (and such preparation could have been done then).
- It is unclear if the team leader explains their job and goal to each member each day.
- It is unclear if the teams ever have scheduled meetings with supervisors and management.
- Supervisors spend a large part of the day sitting at the depot.
- Teams do not have specific goals to achieve in order to qualify for bonuses.

- Activities have never been timed. The types of canals are mostly uniform so timing of certain activities could help with production planning.

4.3 CIVIL MANAGEMENT

The Civil Department Manager and Scheme Manager were interviewed and they completed the survey as discussed in the previous chapter. Anything that stood out or was deemed important to this study was listed and discussed.

It is important to note that both managers have a National Diploma in Civil Engineering. This is also the highest education of any person interviewed during this study. Now while it is expected of the managers to have a higher education than their employees, the reason it is worth mentioning here is the fact that none of the supervisors or team leaders have an education level even remotely close to that of the managers.

4.3.1 Average productivity ratings given to the concrete teams

The managers gave a 5 and 6 out of 10 rating respectively for the productivity of the concrete teams. This is further proof that the low productivity of VHW's concrete teams is known to the management and they both indicated they would like to improve it.

4.3.2 What the managers think keeps the workers from being productive

The reasons for a lack of productivity from the managers' point of view summarises a lot of the eventually listed reasons from the study:

- Better supervision.
- Improved planning.
- Better logistic planning.
- Stricter discipline.
- Monetary reward for outstanding productivity.
- Better ways to measure work.
- Productivity training.
- Elimination of time wasted.

A fishbone diagram was used in Figure 6 to present some of the factors the managers felt influenced the productivity problem:

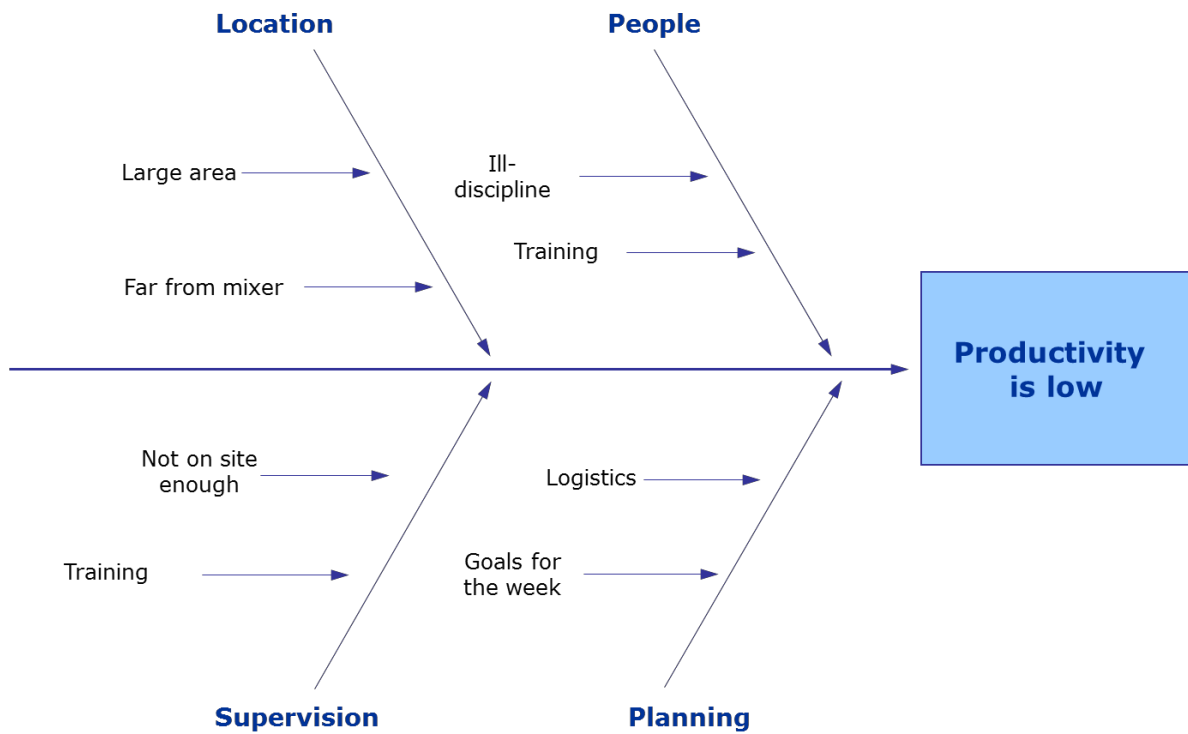


Figure 6: Fishbone Diagram

4.3.3 How managers could change the productivity

A few interesting ways of improving productivity was listed by die managers:

- Sending supervisors on productivity courses.
- Setting up a tuck shop to stop the shopping in the morning.
- Change work hours to stop the wasting of hours due to eating breaks.
- Fill vacant positions.
- Make sure all teams have the necessary tools to do their work.
- Act more strictly against ill-discipline.
- Have clear management policies in place and ensure they are well communicated.

4.3.4 Personal influences on productivity

Both managers indicated that the background, religion and culture, home language, race and age of the team members influenced their productivity either negatively or positively.

Very few of the team leaders and supervisors indicated that these personal things had any influence on productivity at all.

4.3.5 Training and Appointment

According to the managers the concrete team members receive concrete mixing and placing training, a basic concrete course. The training covers:

- Characteristics of concrete.
- Reinforcement.
- Preparation.
- Material.
- Finishing.

It is important to note that currently no management training is given to team leaders and supervisors.

The focus at VHW is clearly also more on “on the job” training than formal training at the start of employment, or refresher courses later on. This applies to the teams and the operators of the machines.

When appointing team members there are no requirements as to what prior experience the person has and no background checks are performed. The only measurement in place is the word of the shop stewards vouching for the person appointed.

4.3.6 Team compilation and leaders

According to management they try to keep teams balanced in terms of age, experience and skills. In a later section the two teams used for this study are analysed and the balance of the before-mentioned aspects are shown.

Leaders are identified by looking at whose leadership properties show and who leads naturally and executes instructions the best. Management stated that they assess elected leaders by looking at productivity, quality of administration and self-discipline. However, there does not seem to be set criteria to measure against and neither are any records kept.

4.3.7 Progress measurement

Progress is not physically measured on any job. Management rely on concrete quantity listed after a job is completed. Obviously, with no benchmarking or comparing current work to time or expected progress, this area of supervision and management holds great potential for improvements if it can be implemented.

Management also only visit their teams on average twice a week, but supervisors are supposed to spend the bulk of the day with the teams on site.

4.3.8 Incentives

Currently VHW uses merit and production bonuses as their incentive program.

Twice a year employees are evaluated on their work for the year, achievements, problems, discipline etc. and a bonus is then awarded accordingly. However, the volume of concrete placed plays no part in these merit or production bonus determinations.

The problem with this system is that the evaluation is done every six months and the bonus paid annually, thus it is not a regular motivator. Another problem is if the supervisor do not keep records on his employees, it is almost impossible to remember all the good and/or bad things of the previous six months.

As very little written records are used when evaluating, employees are rarely positive and in agreement with the eventual evaluations.

On some projects there have been production bonuses but the implementation was sporadic and it created more problems instead of motivating people to work better.

4.3.9 Labour legislation & unions

Both managers indicated that the current labour legislation makes disciplining people clumsy and intricate. One of the managers also said that due to the B-BBEE regulations better candidates are sometimes overlooked for appointment. For example, the company recently had to appoint a new Code 14 driver and they were pressured by the unions to focus on appointing a female applicant even though some of the male applicants were better suited for the job. The female applicant was appointed, but now often complains about the tough job and it is a constant struggle.

On the unions no positive feedback could be gathered from the management and according to them, the unions cause unrest and protect guilty parties rather than to help discipline them. For example, when recently a driver was caught using a machine for personal gain and the machine was damaged, i.e. a clear misuse of company property, the union aggressively protected the employee even though his dishonesty was clear. This led to explosive meetings and damaged relations between management and the workers.

4.3.10 Motivation of teams

Both managers gave a 5 out of 10 rating for the level of motivation of the teams.

4.4 CIVIL SUPERVISORS AND TEAM LEADERS

The two concrete supervisors were interviewed as well as the two relevant team leaders of the study target group. The information gathered relevant to this study is listed and discussed below.

Out of the 5 people interviewed in this section the following were deemed important:

- All the concrete supervisors are male.
- 3 of the five leaders are Xhosa even though the area is predominantly Setswana.
- Between the two supervisors the highest education is Grade 8.
- One of the three team leaders has matric (interestingly it is the team leader of the more productive team).
- Both supervisors have a democratic leadership approach.
- A big worrying factor is that both supervisors feel that their teams are 100% productive while the team leaders feel their teams are either 90% or 100% as productive as they can be. All the leaders are happy with the productivity.
- While they are happy with the productivity, all the leaders indicated they would like to improve it as well.

The three factors mentioned most by the team leaders which are deemed as counter-productive are:

- Not enough people in their teams.
- Logistics.
- Salaries.

When they were asked how they schedule and prioritise the required work for each week, all of them answered that they use experience to determine which work is the most important and then they prioritise accordingly. They are not aware of any clear guideline to guide them in prioritising the work.

None of the team leaders have clear progress measurement metrics in place. One team leader indicated that they used to record the number of loads of sand etc. delivered by truck but that it was not done any longer.

While the team leaders spend the whole day with their teams, the supervisors visit every team each day and normally spend a few hours with each.

In reaction to the same question posed to management on the influence of the current labour legislation on productivity, the supervisors and team leaders indicated that they did not observe any influence.

The team leaders who work closest to the workers denoted that the influence of the unions were positive while the supervisors (who work closer to management) had the same negative comments as management, stating that the workers do not deliver on their promises and do not work as they are expected to anymore.

On the level of motivation, all three supervisors scored the teams six out of ten while the team leaders gave them an eight and nine, respectively. Once again the team leaders expressed the interesting view that everything on the part of the team was running smoothly and as good as possible.

4.5 TEAM MEMBERS

The information gathered from the team members can be better used for displaying trends than the information from management, supervisor and team leader surveys since eleven team members (from two teams) were interviewed. Note that all percentages given are calculated from eleven responses. At the end of this section the personal information is also used to look at the setup of the two teams and compared to the volume of concrete placed per year by each team.

It was interesting to note that the workers were all very positive about being interviewed and a lot of comments were received about how this makes them feel like their inputs are valued somewhere and that they would like to be asked these sort of questions more often.

4.5.1 Happiness with current job and work environment

82% of team members are happy with their current job and work environment.

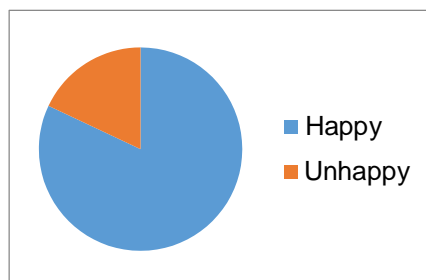


Figure 7: Job and Work Environment

4.5.2 Happiness with current remuneration package

Only 45% of team members are happy with their current remuneration package.

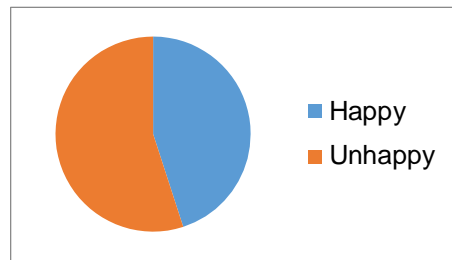


Figure 8: Remuneration

4.5.3 Doing their best in their jobs

100% of team members feel that they do their best and achieve the best results possible.

4.5.4 What keeps them from doing better

45% felt that nothing is holding them back while 55% listed training, salary and people issues as things that keeps them from doing better.

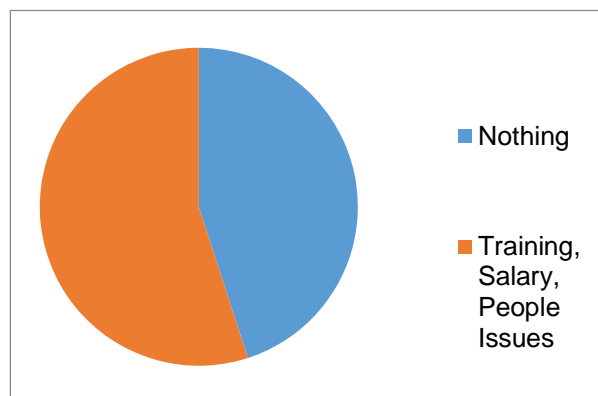


Figure 9: Obstacles

4.5.5 What motivates them to do a better job

36% indicated that the teamwork motivates them and another 36% said that more money will motivate them. This result shows that only 36% of the team members are intrinsically motivated in their jobs currently.

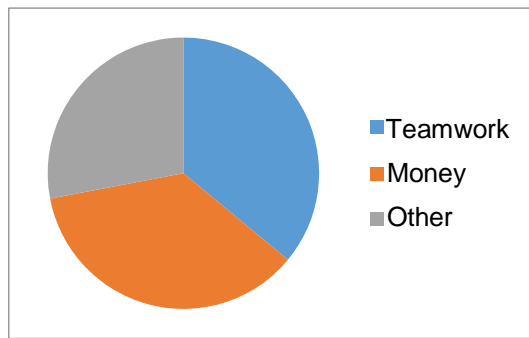


Figure 10: Motivation

4.5.6 Are their managers doing a good job?

91% agreed that their managers are doing a good job, although they still listed areas where the managers can improve. The other 9% felt that only their team leaders are doing a good job while the supervisors and management are not.

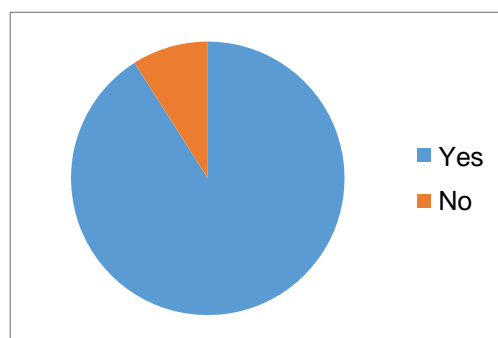


Figure 11: Managers' Efficiency

Improvements for management listed were:

- More respect for the people.
- Arrange for training.
- Adjust the people's salaries.
- Spend more time with the teams to know what they go through.

4.5.7 What would they change if they were in charge?

This question did not yield many responses. Some answers include that they would purchase more machines to make the work lighter, or that they would do more training or spend more time to hear what people want.

4.5.8 Comparison of teams

Comparing the two teams in terms of personal information the following table was set up:

Table 5: Team information comparison

	Team 1	Team 2
Average age	37	36
Average highest education	Grade 8	Grade 8
Average concrete placed in the last 2 years	435 m ³	400 m ³

Clearly there is not a lot of difference between the two teams when compared in age, education, productivity or concrete placement.

4.6 PERSONALITY TESTS

Below are the personality types of the team members as gathered from their short personality tests.

4.6.1 Team 1

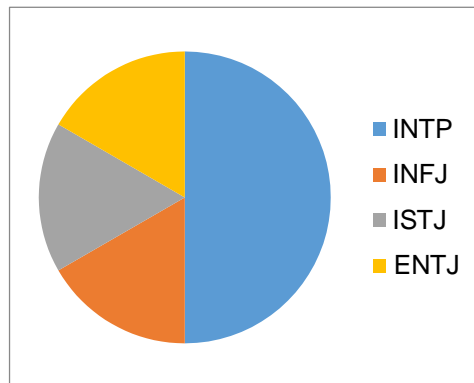


Figure 12: Team 1

Team 1 has three INTJ (Introvert Intuitive Thinker Perceiver) type personalities, also known as “The Scientist”. These people tend to be curious about how things work. They do not like change and are impatient with hierarchies. INTJ types have little regard for titles - they often feel the titles are unjustified and thus they usually do not trust authority.

Interestingly they normally do not get along well with SJ (Sensor Judger) people, and in this group there is only one SJ type person. SJ people tend to follow the group and authority where INTJ people prefer to work with others as equals or work alone.

INTJ's may come across as people who like to debate and respond with sudden cutting criticism.

Team 1 also has an INFJ (Introvert Intuitive Feeler Judger) type person known as “The Counsellor”. They are focused more on bettering the lives of others. The team also has an ISTJ (Introvert Sensor Thinker Judger) or “The Inspector” who will naturally try to organize

everything, and an ENTJ (Extrovert Intuitive Thinker Judger) or “The CEO” who will be the natural leader.

Overall it seems that Team 1 is very balanced although they will be more dominant in the INTP type personality traits that could lead to the team being rebellious, albeit results driven (Personality Club, 2015).

4.6.2 Team 2

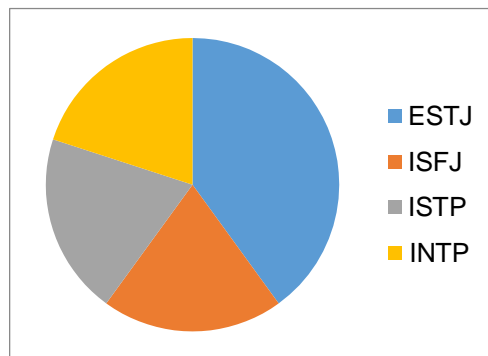


Figure 13: Team 2

Team 2 has two ESTJ (Extrovert Sensor Thinker Judger) type personalities known as “The Supervisor”. These people like to organize and run activities. They will naturally take the lead but can be inflexible when it comes to changing their views. This personality is often described as charismatic, focused and driven.

The team also includes an ISFJ (Introvert Sensor Feeler Judger) or “The Nurturer” who will naturally want to maintain order and harmony. They do have a tendency to procrastinate and leave things until the last minute.

Team 2 has an ISTP (Introvert Sensor Thinker Perceiver) or “The Craftsman” as well who will be looking to fix problems with his hands and by keeping to the facts. This personality type is prone to act without a regard to safety or rules (Personality Club, 2015). The team also includes an INTP (Introvert Intuitive Thinker Perceiver) or “The Scientist” as described above.

Judging on the combination of personality types Team 1 should be the less lazy or more hands-on team between the two, but overall the teams are balanced in terms of different personality type preferences.

4.7 IDENTIFIED PRODUCTIVITY PROBLEM FACTORS

After the interviews, the following factors were identified as causing productivity problems.

- Personnel
 - Workers are forgetful, maybe on purpose, thus too much driving is done to retrieve forgotten items.
 - Too much personal issues are handled within working hours.
 - No productivity training has been given to any employee and no management training has been given to team leaders and supervisors. The supervisors, who are under the impression that their teams are perfectly productive, specifically needs the training.
 - Background checks are not performed on new employees and no experience is required to become a concrete laying team member.
 - The level of motivation is perceived as low under the employees.
 - The team members are mostly unhappy with their remuneration packages.
 - The intrinsic motivation levels under the team members are very low.
 - Personality tests are not conducted for new team members in order to determine their suitability to a specific team.

- Management
 - Workers are not using the working hours to full potential and no one is regulating it.
 - No goals are set for work to be completed.
 - Supervisors are not on site enough, resulting in a lack of efficiency.
 - Team members are not clearly informed of their duty for the day.
 - Not enough relevant meetings are held.
 - The merit bonus system is flawed and qualification for incentives are not clearly set.
 - Ill-discipline is not dealt with strictly enough.
 - Policies are not always in place and the people are not always informed well.

- Production
 - Activities are not timed or benchmarked in order to project progress.
 - Compaction tests are not done, resulting in early breaks in new construction.

- Records are not kept daily or tracked on progress and achievements.
- Organizational
 - Only one mixing station is servicing the 150 km long water scheme.
 - Preparation is done at the wrong time of day.
 - Scheduling of work ahead is not well planned or communicated.
- Location
 - Due to the large area of the water scheme the logistics of the teams, machines and concrete trucks are not operated efficiently.
- Governance
 - B-BBEE regulations make it hard to appoint appropriate candidates.
 - The unions stand in the way of proper discipline.

4.8 WASTE

In terms of the lean manufacturing system tool for identifying and eliminating waste, some of the factors identified as productivity problems cause waste:

- Unnecessary trips during work hours - (Motion waste in Lean)
- Personal issues handled during work hours - (Workforce waste in Lean)
- Working hours not used effectively - (Waiting and Workforce waste in Lean)
- Ill-discipline - (Workforce waste in Lean)
- Policies not upheld - (Defects waste in Lean)
- Long distances are travelled with concrete trucks even for small loads - (Transportation waste in Lean)

CHAPTER 5: DEVELOPMENT OF THE MANAGEMENT PLAN

5.1 BACKGROUND

With the study concluded, the management plan needed to be developed to address the issues currently impeding higher productivity at Vaalharts Water. This chapter shows how the factors were organised and how the management plan was developed.

Production optimisation management principles dictate that to move closer to designed capacity (the maximum output that can be achieved with a process) from the operational capacity (realistic capacity) the losses needs to be eliminated.

The problem factors listed in the previous chapter will now be divided into the four elements for production losses.

5.2 PRODUCTION LOSSES

- Availability
 - Too much personal issues are handled within work hours.
 - The level of motivation is perceived as low under the employees.
 - Workers are not using the work hours to full potential and no one is regulating it.
 - Supervisors are not on site enough, resulting in a lack of efficiency.
- Utilisation
 - Workers are forgetful, maybe on purpose, thus too much driving is done to retrieve forgotten items.
 - Only one mixing station is servicing the 150 km long water scheme.
 - Preparation is done at the wrong time of day.
 - Due to the large area of the water scheme the logistics of the teams, machines and concrete trucks is not operated efficiently.
- Efficiency
 - No productivity training has been given to any employee and no management training has been given to team leaders and supervisors. The supervisors, who are under the impression that their teams are perfectly productive, specifically needs the training.

- Background checks are not performed on new employees and no experience is required to become a concrete laying team member.
- The team members are mostly unhappy with their remuneration packages.
- The intrinsic motivation levels under the team members are very low.
- Personality tests are not conducted for new team members in order to determine their suitability to a specific team.
- No goals are set for work to be completed.
- Team members are not clearly informed of their duty for the day.
- Not enough relevant meetings are held.
- The merit bonus system is flawed and qualification for incentives are not clearly set.
- Ill-discipline is not dealt with strictly enough.
- Policies are not always in place and the people are not always informed well.
- Activities are not timed or benchmarked in order to project progress.
- Records are not kept daily or and tracked on progress and achievements.
- Scheduling of work ahead is not well planned or communicated.
- B-BBEE regulations make it hard to appoint worthy candidates.
- The unions stand in the way of proper discipline.
- Quality
 - Compaction tests are not done, resulting in early breaks in new construction.

5.3 MANAGEMENT PLAN STRUCTURE

The management plan proposes to solve the productivity problems in three ways:

- **Repair:** Policies, action plans and processes to solve the problems exist but need to be amended as they are not used or not effectively used currently.
- **Improve:** Policies, action plans and processes are used but it needs to be improved.
- **Design:** New policies, action plans and processes need to be designed to solve problems.

5.4 VALIDATION OF THE MANAGEMENT PLAN

A meeting was held with the Vaalharts Water management where each proposed solution, with its implementation actions, timeline and budget was presented to them for review. The following matrix was used to evaluate each proposed solution:

Table 6: Evaluation matrix.

1	2	3	4
Will not work	Will maybe not work	Will maybe work	Will definitely work

The feedback from VHW is best reviewed by reading through the management plan, which is therefore included in Appendix 2 but for ease of reference, the proposed solutions to problems and the remedies for ensuring the success of those assigned a lower rating by VHW are listed below in Table 7.

Table 7: Action evaluation and remedy matrix.

Action	Problem	Proposed Solution	Probability of Success	Reason for low Score	Remedy
1	Too many personal issues are attended to within working hours.	<ul style="list-style-type: none"> As Vaalharts Water's work hours are 07:00 – 16:00 no personal activities should be allowed unless there is a real emergency. Employees should use their annual leave. 	4	-	
2	Ill-discipline is not dealt with strictly enough.	<ul style="list-style-type: none"> As Vaalharts Water uses the disciplinary code of SEESA, all managers, supervisors and team leaders should receive training on the code as well as the VHW conditions of service. All incidents need to be reported along with the actions taken. 	4	All parties will have to buy in	The reporting of any ill-discipline issues dealt with will have to be coupled with a general listing process that all managers have access to. Thus any issues a manager is aware of that do not appear on the list can be addressed, forcing all parties to buy in.
3	Supervisors are not on site enough, resulting in a lack of efficiency.	<ul style="list-style-type: none"> Supervisors should not be permitted to be at the depot during the day unless for a specific reason, forcing them to spend the entire day with their teams, planning their day to get to each team. 	4	-	
4	The team members are mostly unhappy with their remuneration packages.	<ul style="list-style-type: none"> Salaries at different companies need to be researched and shown to the VHW staff, showing them how they compare money wise to employees at other leading companies. Employees who receive a promotion needs to receive it in front of the other with reasons given, thus inspiring other to also achieve such feats. 	3	Might result in unhappiness among other staff. Monetary value does not have to be disclosed.	Promotions will be given in public but without disclosing any salary amounts.

Action	Problem	Proposed Solution	Probability of Success	Reason for low Score	Remedy
5	Team members are not clearly informed of their duty for the day.	<ul style="list-style-type: none"> Here scorecards need to be implemented. A meeting should be held each Monday with the supervisor, his teams and management if possible. In the meeting, the projects for the week is discussed, progress targets are set for each day (half day if needed) and indicated on poster scorecards. Then each morning the progress is reviewed and filled in. This will also help with evaluating teams on the amount and quality of work done. 	4	-	
6	Scheduling of work ahead is not well planned or communicated.		3	Problem will remain with unexpected maintenance.	A change management procedure document needs to be developed in order to cope productively with unexpected changes.
7	Staff do not receive enough relevant communication.		4	-	
8	Policies are not always in place and the people are not always informed well.	<ul style="list-style-type: none"> The conditions of employment document needs to be augmented with new policies. The document needs to be discussed with all employees. Each supervisor needs a copy. New employees need induction urgently. 	4	-	
9	The level of motivation is perceived as low.	<ul style="list-style-type: none"> Implement weekly incentives for a team that reaches all their targets or surpasses their targets. Some of the above-mentioned changes will already change motivation. Make sure people are utilised correctly. There may be people more suited for other jobs in the company that could also benefit the company. 	3	The planning of the incentives should be flawless and with union involvement.	The incentive program needs to be implemented in all sections in order to avoid unhappiness. Thus each section needs clear qualifying criteria. An amount needs to be agreed upon by the financial department.
10	The merit bonus system is flawed and qualification for incentives is not clearly set.	<ul style="list-style-type: none"> Couple the amount of work and targets reached directly to merit bonuses. Be stricter on what automatically disqualifies someone from a merit bonus. 	4	-	

Action	Problem	Proposed Solution	Probability of Success	Reason for low Score	Remedy
		<ul style="list-style-type: none"> Expand the criteria so the questions are less general. More frequent reviews. 			
11	The intrinsic motivation levels under the team members are very low.	<ul style="list-style-type: none"> With the introduction of incentives coupled with ensuring the right person is doing the right job, the intrinsic motivation levels will increase. 	3	This will be difficult to change.	Intrinsic motivation cannot be forced, but with this management plan the focus will be joint between the happiness of the employees and stricter discipline.
12	B-BEE regulations make it hard to appoint appropriate candidates.	<ul style="list-style-type: none"> Be clear on what the BEE targets are for the company and make it well known. Then appoint the best person for the job as far as possible. If the company is deemed well on BEE statistics, continue with appointment on merit. 	4	-	
13	The unions stand in the way of proper discipline.	<ul style="list-style-type: none"> Ensure that everyone is clear on what the responsibility of the unions are and how much power they have. Do not budge on keeping them within their limits. 	4	-	
14	Due to the large area of the water scheme, the logistics of the teams, machines and concrete trucks is not operated efficiently.	<ul style="list-style-type: none"> With the proposed planning of work on a Monday the schedule needs to be communicated to the fleet department so planning for the week can be done. Bunch more work together in one area and move on from there. Force supervisors to fill in the planned movement of machines into a shared file on the computer network so all relevant parties know where a machine is operating and where to find it. 	4	-	
15	Workers are not using the	<ul style="list-style-type: none"> Change the morning breakfast time so 	3	Close monitoring will	Employees will have to be

Action	Problem	Proposed Solution	Probability of Success	Reason for low Score	Remedy
	work hours as they are supposed to and no one is regulating it.	<p>there isn't a delay in starting on site.</p> <ul style="list-style-type: none"> • Cheap cameras sending a photo every now and then situated in the team truck could help monitoring of operations. • A clocking system and job costing system would benefit the company greatly as hours on and off the job can be tracked. 		receive negative feedback.	convinced that with closer monitoring they have the opportunity to prove they work as hard as they feel they do, and thus easier motivate a change in salary. It will only negatively influence employees who slack.
16	Workers are forgetful, maybe on purpose, thus too much driving is done to retrieve forgotten items.	<ul style="list-style-type: none"> • For each specific type of job an itinerary card needs to be set up so the team leader knows exactly what equipment and material he will need. • Preparation for the morning's work needs to be done the previous afternoon. • Any team truck that drives to and from site more than once needs to be penalised. 	4	-	
17	Only one mixing station is servicing the 150 km long water scheme.	<ul style="list-style-type: none"> • Consider purchasing a mobile mixing station in the near future. • Set up a small mixing station at the Jan Kempdorp depot and in Barkley West with a traveling staff. 	3	Is implementable but money could be a problem.	A calculation will be have to be made to measure the number of kilometres and hours saved in the next few years against the capital investment for a mobile unit or more stations.
18	No productivity training has been given to any employee and no management training has been given to team leaders and supervisors - especially the supervisors	<ul style="list-style-type: none"> • Arrange management training for all leaders of Vaalharts Water as well as productivity training. • Tutor the employees to understand and chase productivity. 	4	-	

Action	Problem	Proposed Solution	Probability of Success	Reason for low Score	Remedy
	who are under the impression that their teams are perfectly productive needs the training.				
19	Background checks are not performed on new employees and no experience is required to become a team member.	<ul style="list-style-type: none"> Shortlisted candidates need to be subjected to criminal record checks and their references needs to be followed up. 	4	-	
20	New team members are not put through personality tests in order to determine their suitability to a specific team.	<ul style="list-style-type: none"> Personality tests need to be performed during the interview phase especially if for a team position. 	3	Something to investigate.	The usage of the tests will balance teams.
21	Compaction tests are not done, resulting in early breaks in new construction.	<ul style="list-style-type: none"> Compaction tests need to be performed on the soil in order to ensure the earth beneath is stable. More quality tests on concrete loads are also needed. 	4	-	

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The aim of this dissertation was to set up a validated management plan to improve the productivity of the labour workforce specifically at Vaalharts Water User Association. This was achieved through research and meeting the following objectives:

- The perceived problem was verified by comparing the production parameters of Vaalharts Water's concrete laying teams to the production rates currently achieved in similar industries.
- In the literature study the different data collection techniques were researched and verified before they were used during the study.
- Through a time and motion study, interviews and surveys, data was collected on all possible factors causing the productivity problem.
- The collected data was then analysed in order to identify contributing factors and to discuss all the relevant factors impacting on productivity. A list of factors was compiled and organised into elements influencing production losses.
- Methods derived from Six Sigma and OIM's prosperity partnership process were used in the process of developing the solutions to causes of the problems.
- With all the information and the specific work environment of Vaalharts Water in mind, a feasible management plan was set up addressing all the issues at hand.
- The management plan was validated by reviewing it together with the management of VHW and setting up a probability of success matrix. Solutions with a low probability of success were modified and reviewed again.
- After concluding the validation process the management plan was presented to the VHW Management Team.

6.2 RECOMMENDATIONS

The recommendations to VHW that arose from this study were the following:

- Urgent attention should be given to the development of a trust partnership between VHW management and the other employees.
- The solutions to various problems proposed by the management plan has to be taken seriously. The probability of the proposed solutions making a difference is high , due to it being validated with the Vaalharts Water management team.
- Any policy or process changes implemented has to be reviewed often in order to prevent another lapse of usage.

BIBLIOGRAPHY

- Acemoglu, D., Gelb, S. & Robinson, J.A. 2007. Black economic empowerment and economic performance in South Africa.
[http://www.treasury.gov.za/publications/other/growth/06- Procurement%20and%20BEE/02-BLACK%20ECONOMIC%20EMPOWERMENT%20AND%20ECONOMIC%20PERFORMANCE%20IN%20SO.pdf](http://www.treasury.gov.za/publications/other/growth/06-Procurement%20and%20BEE/02-BLACK%20ECONOMIC%20EMPOWERMENT%20AND%20ECONOMIC%20PERFORMANCE%20IN%20SO.pdf)
- Akrani, G. 2013. Eight important factors that affect productivity. Kalyan City Life Blog. <http://kalyan-city.blogspot.co.za/2013/03/factors-that-affect-productivity.html>
- American Heritage Dictionary of the English Language. 2011. Houghton Mifflin Harcourt Publishing Company.
- ASQ (American Society for Quality). 2015. Six Sigma belts, executives and champions: what does it all mean? <http://asq.org/learn-about-quality/six-sigma/overview/belts-executives-champions.html>
- Brown University. 2015. Writing a management plan.
<https://www.brown.edu/research/writing-management-plan>.
- Cherry, K. 2015. What is the difference between extrinsic and intrinsic motivation? 2015. <http://psychology.about.com/od/motivation/f/difference-between-extrinsic-and-intrinsic-motivation.htm>
- Christiansen, B. 2013. Personality Assessments: What's the Difference Between Myers-Briggs and DISC? 2015. <http://mycareertopia.com/personality-assessments-whats-the-difference-between-myers-briggs-and-disc/>
- Collins. 2015. Collins English dictionary.
<http://www.collinsdictionary.com/dictionary/english/verification> (accessed 2015).
- Community Toolbox. 2015. Developing a management plan. <http://ctb.ku.edu/en/table-of-contents/leadership/effective-manager/management-plan/main>.
- Debbabi, M., Hassaine, F., Jarraya, Y., Soeanu, A. & Alawneh, L. 2010. Verification and Validation in Systems Engineering. <https://books.google.co.za/books?id=1IAJ6O3n->

SYC&dq=Verification:+Are+we+building+the+system+right%3F+Validation:+Are+we+building+t
he
+right+system%3F&source=gbs_navlinks_s

Field, A.J. 2008. Productivity. The Concise encyclopedia of economics. <http://www.econlib.org/library/Enc/Productivity.html>

FluidSurveys Team. 2014. 3 types of survey research, when to use them, and how they can benefit your organization
<http://fluidsurveys.com/university/3-types-survey-research-use-can-benefit-organization/>

Gomaco. 2008. Another high-production day for Shirley Concrete... *Gomaco world*, 36(1).

Harper, S. & Mousa, F. 2013. Time and motion studies.
<http://www.oxfordbibliographies.com/view/document/obo-9780199846740/obo-9780199846740-0027.xml>.

Kruger, G. 2015. Vaalharts Water Activities [personal interview]. 2 Sept., Jan Kempdorp.

Martinez, M. 2015. Fishbone diagram cause and effect analysis. Project management skills.
<http://www.project-management-skills.com/fishbone-diagram.html>

MindTools.com. 2015. Lean manufacturing: working more efficiently. http://www.mindtools.com/pages/article/newSTR_44.htm.

Naicker, K. 2014. SA labour productivity at its lowest in 46 years. *Unisa news & media*, January.

Ogallo, G. 2015. Importance of personality testing. <http://www.virtualhr.co.ke/importance-of-personality-testing/>

OIM (Operational Improvement Management) . 2015. Operational Improvement Management: business improvement specialists. <http://www.oimgroup.com/>

Personality Club. 2015. Short personality test. [http://personalityclub.com/short-personality-](http://personalityclub.com/short-personality-test/)

test/ ProductivitySA. 2015. About Productivity SA. <http://www.productivitysa.co.za/>

Sincero, S.M. 2012. Types of survey. <https://explorable.com/types-of-survey>

Sundaram, K. Explaining Six Sigma in plain English. 2013.

<http://www.brighthubpm.com/six-sigma/69146-explaining-six-sigma-in-plain-english/>

Suprenant, B.A. & Malisch, W.A. 1998. Placing 50,000 square feet of flatwork a day. The Aberdeen Group, 1998.

http://www.concreteconstruction.net/Images/Placing%2050%2C000%20Square%20Feet%20of%20Flatwork%20a%20Day_tcm45-343426.pdf

The Open University. 2013. Conducting an interview.

<http://www2.open.ac.uk/students/skillsforstudy/conducting-an-interview.php>

Torrez, L. 2015. Tools & techniques to identify problems in the workplace. *Houston chronicle*,

<http://work.chron.com/tools-techniques-identify-problems-workplace-23330.html>

Trochim, W.M.K. 2006. Types of surveys. Research methods knowledge base.

<http://www.socialresearchmethods.net/kb/survtype.php>

Truity Psychometrics. 2015. Personality types: the typefinder. <http://www.truity.com/test/typefinder-research-edition>

Vaalharts Water. 2013. Vision and mission. <http://vaalhartswater.co.za/VandM.html>

Van Wyk, H. VHW construction report 2012-2014. Vaalharts Water User Association.

Vorne Industries. 2012. Calculating OEE. <http://www.oeec.com/calculating-oeec.html>

APPENDIX 1: SURVEYS

This appendix contains the questions and results of all the surveys handled during the interviews.

- The Civil Department Manager and the Scheme Manager was called into interviews and requested to respond to the following questions:

Please rate the productivity of your concrete teams from 1 to 10.
Are you happy with their productivity?
Would you like to improve the productivity?
What do you feel keeps them from being more productive?
What do you feel you could do to change the productivity?
Do you feel the background of your teams influence their productivity?
Do you feel the religion and culture of your teams influence their productivity?
Do you feel the home language of your teams influence their productivity?
Do you feel the age of your teams influence their productivity?
What type of training do your concrete teams receive?
What training is needed before they are appointed?
Are background checks performed on applicants?
How are teams put together?
How do you decide who to appoint as leaders?
How do you assess leaders?
How do you schedule the work needed each week?
How is progress measured?
How often do you visit teams?
How do you handle insubordination?
Is there an incentive program in place? Elaborate?
What do you feel is the influence current labour legislation has on the productivity of your teams? Elaborate?
What do you feel is the influence of labour unions on the productivity of your teams? Elaborate?
What do you feel is the level of motivation in the teams from 1 to 10.
Please list your teams from best to worst on an overall assessment.

- The following personal information was requested of the Civil Manager:

Sex
Age
Home Language
Race
Highest Education
Marital Status
Background on Upbringing
Work Experience
Leadership Approach

- The Civil Supervisors and Team Leaders were called into an interview and requested to respond to the following questions:

Please rate the productivity of your concrete teams from 1 to 10.
Are you happy with their productivity?
Would you like to improve the productivity?
What do you feel keeps them from being more productive?
What do you feel you could do to change the productivity?
Do you feel the equipment used by the concrete teams is up to standard?
Do you feel the background of your teams influence their productivity?
Do you feel the religion and culture of your teams influence their productivity?
Do you feel the home language of your teams influence their productivity?
Do you feel the race of your teams influence their productivity?
Do you feel the age of your teams influence their productivity?
How do you schedule the work needed each week?
How is progress measured?
How often do you visit teams?
How do you handle insubordination?
What do you feel is the influence current labour legislation has on the productivity of your teams? Elaborate?
What do you feel is the influence of labour unions on the productivity of your teams? Elaborate?
What do you feel is the level of motivation in the teams from 1 to 10.

- The following personal information was requested of the Civil Supervisors and Team Leaders:

Sex
Age
Home Language
Race
Highest Education
Marital Status
Background on Upbringing
Work Experience
Leadership Approach

- Team Members Surveys & Interviews: Two randomly selected team members of each team were interviewed and asked to answer the following questions after which the whole team was invited into a group interview and asked to respond to the same questions:

Are you happy with your current job and work environment? Elaborate?
Are you happy with your current remuneration package?
Do you feel you do your best in your job and achieve the best results possible?
What keeps you from doing better?
What motivates you to do a better job?
Are your managers doing a good job? Elaborate?
How often do your managers visit you?
What changes would you make if you were in charge?
Do your managers handle your culture correctly?
Do you feel the equipment used is up to standard?
What equipment would improve your productivity?
What should happen if a colleague acts inappropriately?

- The following personal information was requested of the civil team members:

Sex
Age
Home Language
Race
Highest Education
Marital Status
Background on Upbringing
Work Experience

**COMPLETE**

Collector: Email Invitation 1 (Email)
Started: Tuesday, August 11, 2015 3:39:05 PM
Last Modified: Tuesday, August 11, 2015 4:18:10 PM
Time Spent: 00:39:05
Email
Custom Data: None
IP Address:

PAGE 1

Q1: Information

Sex	Male
Age	38
Home Language	Afrikaans
Race	White
Highest Education	NDip Civil Engineering
Marital Status	Married

Q2: Background on Upbringing

Respondent skipped this question

Q3: Work Experience

Respondent skipped this question

Q4: Leadership Approach

Respondent skipped this question

Q5: Please rate the productivity of your concrete teams.

(no label)	5
------------	---

Q6: Are you happy with their productivity?

No

Q7: Would you like to improve the productivity?

Yes

Q8: What keeps them from being more productive?

Beter toesighouding.
 Beter beplanning.
 Beter logistieke beplanning.
 Strenger dissipline bestuur.
 Vergoeding vir bo gemiddelde produktiwiteit.
 Metodes om werk beter te meet.

Q9: What could you do to change the productivity?

Vakante poste moet gevul word.
 Sorg dat alle spanne die nodige gereedskap het om werk te doen.
 Tree strenger op teen swak dissipline.
 Kry die nodige beleidstukke in plek sodat alles vir almal duidelik is.

PAGE 2

Q10: Do you feel the background of your teams influence their productivity?

Yes

Q11: Do you feel the religion and culture of your teams influence their productivity? Yes

Q12: Do you feel the home language of your teams influence their productivity? Yes

Q13: Do you feel the race of your teams influence their productivity? Yes

Q14: Do you feel the age of your teams influence their productivity? Yes

PAGE 3

Q15: What type of training do your concrete teams receive?

Basic concrete course.
Future (Advance concrete)

Q16: What training is needed before they are appointed?

None.

Q17: Are background checks performed on applicants?

No.

Q18: How are teams put together?

Probeer om spanne geballenseerd te hou i.t.v. ouderdom, ondervinding, tipe vaardigheid.

Q19: How do you decide who to appoint as leaders?

Dit is gewoonlik baie duidelik wie staan uit in die span as iemand wat kan lei en instruksies verstaan en uitvoer.

Q20: How do you assess leaders?

Produktiwiteit. Admin. Self dissipline.

PAGE 4

Q21: How do you schedule the work needed each week?

Volgens klagstate.
Volgens moeilikheidsgraad van werk.
Volgens tegniese vlak van werk.

Q22: How is progress measured?

Word nie fisies gemeet nie.
Kan deur betonhoeveelhede gesien word.

Q23: How often do you visit teams?

Te minste 2x per week per span.

Q24: How do you handle insubordination?

Dissiplinere kode word gevolg.
Kleiner probleme word mondelings aangespreek.

PAGE 5

Q25: Is there an incentive program in place? Elaborate?

Ja, evaluerings 2x per jaar. Meriete bonus 1x per jaar.

Q26: What do you feel is the influence current labour legislation has on the productivity of your teams?

BEE. Soms word beter kandidate oor die hoof gesien.
Noodgedwonge aanstelling van vroue het probleme veroorsaak.
Verlof word misbruik.
Disiplinere kode is lomp en ingewikkeld.

Q27: What do you feel is the influence of labour unions on the productivity of your teams?

Veroorsaak aanhutsing.
Hou te veel vergaderings in werkstye.
Beskerm skuldiges ipv om te help dissipleneer.

Q28: What do you feel is the level of motivation in the teams?

(no label)	5
------------	---

Q29: Please list your teams from best to worst on an overall assessment.

1st	B. Tom
2nd	S.P. Vuma
3rd	K.J. Pitso
4th	L. Frances

#2

**COMPLETE**

Collector: Email Invitation 1 (Email)
Started: Tuesday, August 11, 2015 4:21:13 PM
Last Modified: Friday, August 14, 2015 7:23:11 PM
Time Spent: Over a day
Email:
Custom Data: None
IP Address:

PAGE 1

Q1: Information

Sex	Male
Age	62
Home Language	Afrikaans
Race	White
Highest Education	National Diploma for
Marital Status	Married

Q2: Background on Upbringing

Went to school in Nababeep high school up to std 8, made std 9 and 10 in Bergsig high, Rustenburg. Attended Pretoria College

Q3: Work Experience

Started work in DWA head office, design office, worked in Upington (Lower Orange River) office, where I learnt to do Scheme Management and also designed, evaluated and overseer building of subsidy projects for irrigation farmers. Later transferred to the Gamtoos Irrigation scheme as second in charge of the scheme, where I had to do Scheme Management, Water use administration, Subsidy projects for farmers etc. Finally transferred to Vaalharts Government Water Scheme where I was first responsible for Abstraction Control on the Vaal and Harts Rivers, in charge of the Dam safety of Bloemhofdam, Vaalharts Weir, Spitskopdam and Taung dam and later Civil Manager, then Scheme Manager of Vaalharts and KB canals. Eventually I was appointed as Snr. Manager, Vaalharts Water. In the course of my career I had to do multiple designs of buildings, canals and canal structures, measuring structures, reinforced concrete structures, pipelines, etc. I also was involved in every facet of maintenance on the scheme as well as large maintenance contracts on the dams and had to act as Area Manager / CEO at quite long intervals when the above were on secondment, oversea study visits etc.

Q4: Leadership Approach

My leadership approach is a democratic one and I will always ask the opinion of the subordinates in order to come to the best decision in the circumstances, while making use of my own experience and knowledge to enhance the outcome.

I

Q5: Please rate the productivity of your concrete teams.

(no label)	6
------------	---

Q6: Are you happy with their productivity?	No
---	----

Q7: Would you like to improve the productivity?	Yes
--	-----

Q8: What keeps them from being more productive?

Sometimes it could be a lack of motivation and even a lack of the correct supervision due to senior supervisors which are not adequately trained.

Q9: What could you do to change the productivity?

I would send the supervisors on productivity courses and also have a Tuck shop implemented at the civil depot in order to stop the driving of vehicles to town in the morning. The hours can also be adapted to enable the workers to finish eating before starting of to work.

PAGE 2

Q10: Do you feel the background of your teams influence their productivity? Yes

Q11: Do you feel the religion and culture of your teams influence their productivity? Yes

Q12: Do you feel the home language of your teams influence their productivity? Yes

Q13: Do you feel the race of your teams influence their productivity? Yes

Q14: Do you feel the age of your teams influence their productivity? Yes

PAGE 3

Q15: What type of training do your concrete teams receive?

Concrete mixing and placing

Q16: What training is needed before they are appointed?

In house training before permanent employment

Q17: Are background checks performed on applicants?

Only by means of shopstewards.

Q18: How are teams put together?

They are recruited and placed to work with experienced workers.

Q19: How do you decide who to appoint as leaders?

The ones with leader properties will soon stand out.

Q20: How do you assess leaders?

A person who thinks ahead, learn quickly and motivates the rest.

PAGE 4

Q21: How do you schedule the work needed each week?

By office' drawing up a schedule out of work requests obtained from the Water Control office.

Q22: How is progress measured?

By plotting the actual work against the planned work.

Q23: How often do you visit teams?

As often as my own schedule allows me, which at this stage with all the meetings is probably only twice a week.

Q24: How do you handle insubordination?

If it intervenes with the work, I will take disciplinary steps.

PAGE 5**Q25: Is there an incentive program in place? Elaborate?**

Merit bonuses and in some instances production bonuses are paid. People are also rewarded for constant performance by promoting them when posts are available

Q26: What do you feel is the influence current labour legislation has on the productivity of your teams?

It is a laborious process to discipline people, so it is a negative influence

Q27: What do you feel is the influence of labour unions on the productivity of your teams?

The labour unions do not fulfill their roles correctly and sometimes do more damage than good.

Q28: What do you feel is the level of motivation in the teams?

(no label)	5
------------	---

Q29: Please list your teams from best to worst on an overall assessment.

1st	P.Vuma
2nd	S.Selemogo
3rd	B.Thom.
4th	L.Francis

#1

**COMPLETE****Collector:** Web Link 1 (Web Link)**Started:** Wednesday, August 12, 2015 9:04:52 AM**Last Modified:** Wednesday, August 12, 2015 9:37:08 AM**Time Spent:** 00:32:16**IP Address:**

PAGE 1

Q1: Information

Sex	Male
Age	49
Home Language	Tswana
Race	Swart
Highest Education	Std 6
Marital Status	Married

Q2: In what town did you grow up in? Windsorton, Valspan**Q3: What was your parents' occupation when you were in school?** Father: diggers, plaaswerker Mother: kombuiswerk**Q4: List your 3 previous jobs, companies and time you worked there.**

1	VWH Toesighouer 5jr
2	VHW Siviele Bestuur 2IC, 4jr
3	VHW Draadspan Spanleier 8jr

Q5: Leadership Approach. Democratic: Sharing decision-making with group

PAGE 2

Q6: Please rate the productivity of your concrete teams.

(no label) 10

Q7: Are you happy with their productivity? Yes**Q8: Would you like to improve the productivity?** Yes**Q9: What keeps them from being more productive?**

Not enough equipment
 Ontydige verlof
 Spanne te klein
 Logistiek

Q10: What could you do to change the productivity?

Nothing, havent thought about it

PAGE 3

Q11: Do you feel the background of your teams influence their productivity? Yes

Q12: Do you feel the religion and culture of your teams influence their productivity? No

Q13: Do you feel the home language of your teams influence their productivity? Yes

Q14: Do you feel the race of your teams influence their productivity? No

Q15: Do you feel the age of your teams influence their productivity? Yes

PAGE 4

Q16: How do you schedule the work needed each week?

Volgens dringendheid

Q17: How is progress measured?

Moeilik om te meet

Q18: How often do you visit teams?

Elke dag by elke span
2-3 ure per dag per span
gesels oor werk en maak planne

Q19: How do you handle insubordination?

Sit saam man en praat met hom 2-3 keer
Gaan na siviele bestuurder daarna

PAGE 5

Q20: What do you feel is the influence current labour legislation has on the productivity of your teams?

Geen influence al gesien

Q21: What do you feel is the influence of labour unions on the productivity of your teams?

Geen influence al gesien

Q22: What do you feel is the level of motivation in the teams?

(no label) 7

Q23: Please list your teams from best to worst on an overall assessment.

1st L. Francis

2nd J. Pitso

#2

**COMPLETE****Collector:** Web Link 1 (Web Link)**Started:** Wednesday, August 12, 2015 3:58:38 PM**Last Modified:** Thursday, August 13, 2015 9:02:52 AM**Time Spent:** 17:04:14**IP Address:**

PAGE 1

Q1: Information

Sex	Male
Age	49
Home Language	Xhosa
Race	Black, Xhosa
Highest Education	Std 2
Marital Status	Married

Q2: In what town did you grow up in?

Valspan

Q3: What was your parents' occupation when you were in school?

Plaaswerker, Kombuiswerker

Q4: List your 3 previous jobs, companies and time you worked there.

1	VHW, Konstruksie Senior Spanleier
2	Senior Operator
3	Draadspanwerker

Q5: Leadership Approach.

Democratic: Sharing decision-making with group

PAGE 2

Q6: Please rate the productivity of your concrete teams.

(no label)	10
------------	----

Q7: Are you happy with their productivity?

Yes

Q8: Would you like to improve the productivity?

Yes

Q9: What keeps them from being more productive?

Salaries
Evaluations
Distance of work
Punctures of tyres
Machine condition

Q10: What could you do to change the productivity?

Communication improved

PAGE 3

Q11: Do you feel the background of your teams influence their productivity?	Yes
Q12: Do you feel the religion and culture of your teams influence their productivity?	No
Q13: Do you feel the home language of your teams influence their productivity?	Yes
Q14: Do you feel the race of your teams influence their productivity?	No
Q15: Do you feel the age of your teams influence their productivity?	Yes

PAGE 4

Q16: How do you schedule the work needed each week?

Volgens klagstate
Wat belangrikste eerste.

Q17: How is progress measured?

Kyk hoe ver gevorder het
Niemand skryf meer die vragte neer nie

Q18: How often do you visit teams?

Elke dag besoek elke span een keer

Q19: How do you handle insubordination?

Praat eerste met hom
Vat dan na seksiehoof toe

PAGE 5

Q20: What do you feel is the influence current labour legislation has on the productivity of your teams?

Weet nie baie van labour laws nie
Fokus nie op die wet nie
Moet wet leer ken

Q21: What do you feel is the influence of labour unions on the productivity of your teams?

Unie mense wil voormanne wees, speel nie meer net rol as vakbond
Unie werk nie meer so lekker nie

Q22: What do you feel is the level of motivation in the teams?

(no label)

8

Q23: Please list your teams from best to worst on an overall assessment.

1st	Tom
2nd	Vuma
3rd	J. Pitso
4th	L. Francis

#3

**COMPLETE****Collector:** Web Link 1 (Web Link)**Started:** Wednesday, August 19, 2015 9:01:20 AM**Last Modified:** Wednesday, August 19, 2015 9:04:06 AM**Time Spent:** 00:02:45**IP Address:**

PAGE 1

Q1: Information

Sex	Male
Age	53
Home Language	Afrikaans
Race	Kleurling
Highest Education	Std 7
Marital Status	Married

Q2: In what town did you grow up in? Jan Kempdorp, Klerksdorp**Q3: What was your parents' occupation when you were in school?** Pa Painter, Ma Kassier**Q4: List your 3 previous jobs, companies and time you worked there.**

1	Beton Spanleier
2	Messelaar
3	Bou, pleister, teel

Q5: Leadership Approach. Paternalistic: Act as a father figure

PAGE 2

Q6: Please rate the productivity of your concrete teams.

(no label) 9

Q7: Are you happy with their productivity? Yes**Q8: Would you like to improve the productivity?** Yes**Q9: What keeps them from being more productive?**

Wil promosie he
Geld nie altyd genoeg nie

Q10: What could you do to change the productivity?

Wil graag nog opleiding kry
Vergoed vir extra werk die leier

PAGE 3

Q11: Do you feel the background of your teams influence their productivity? Yes

Q12: Do you feel the religion and culture of your teams influence their productivity? Yes

Q13: Do you feel the home language of your teams influence their productivity? No

Q14: Do you feel the race of your teams influence their productivity? No

Q15: Do you feel the age of your teams influence their productivity? Yes

PAGE 4

Q16: How do you schedule the work needed each week?

Uit ervaring van wat moet eerste gebeur

Q17: How is progress measured?

Kyk na tyd van dag en afstande

Q18: How often do you visit teams?

Konstant by span

Q19: How do you handle insubordination?

Rapporteer aan toesighouer

PAGE 5

Q20: What do you feel is the influence current labour legislation has on the productivity of your teams?

Geen

Q21: What do you feel is the influence of labour unions on the productivity of your teams?

Negatief, kom nie beloftes na nie

Q22: What do you feel is the level of motivation in the teams?

(no label) 7

Q23: Please list your teams from best to worst on an overall assessment.

1st	D. Jacobs
2nd	Q. Mogale
3rd	J. Motlaping
4th	B. Nlindile

#4

**COMPLETE****Collector:** Web Link 1 (Web Link)**Started:** Monday, September 21, 2015 11:00:06 AM**Last Modified:** Monday, September 21, 2015 11:19:05 AM**Time Spent:** 00:18:58**IP Address:** 41.13.0.34

PAGE 1

Q1: Information

Sex	Male
Age	55
Home Language	Xhosa
Race	Xhosa
Highest Education	Std4
Marital Status	Married

Q2: In what town did you grow up in? Queenstown**Q3: What was your parents' occupation when you were in school?** Plaaswerkers**Q4: List your 3 previous jobs, companies and time you worked there.**

1	Carpenter
2	Plaaswerk

Q5: Leadership Approach.

Autocratic: Strict and make all decisions yourself ,
 Paternalistic: Act as a father figure

PAGE 2

Q6: Please rate the productivity of your concrete teams.

(no label)	9
------------	---

Q7: Are you happy with their productivity? Yes**Q8: Would you like to improve the productivity?** Yes**Q9: What keeps them from being more productive?**

Te kort aan mense, 5. Tom
 Eetgeriewe nie op site, so eet ver en beweeg dan stadig terug

Q10: What could you do to change the productivity?

Seil opgewit waar hulle kan eet
 Communication better, almal tevrede en nie kwaad

PAGE 3

Q11: Do you feel the background of your teams influence their productivity? Yes

Q12: Do you feel the religion and culture of your teams influence their productivity? Yes

Q13: Do you feel the home language of your teams influence their productivity? Yes

Q14: Do you feel the race of your teams influence their productivity? No

Q15: Do you feel the age of your teams influence their productivity? Yes

PAGE 4

Q16: How do you schedule the work needed each week?

Kyk hoe vinnig werk kan doen en hoe moet ek begin.
Uit ervaring

Q17: How is progress measured?

Kyk teen tyd waar moet weer

Q18: How often do you visit teams?

Heeltyd by span

Q19: How do you handle insubordination?

Roep hom, praat met hom.
As nie verstaan roep nog n man en 3de een.
Dan na afdelingshoof

PAGE 5

Q20: What do you feel is the influence current labour legislation has on the productivity of your teams?

Nee

Q21: What do you feel is the influence of labour unions on the productivity of your teams?

Positief. Kan help met konflik

Q22: What do you feel is the level of motivation in the teams?

(no label)

7

Q23: Please list your teams from best to worst on an overall assessment.

Respondent skipped this question

#5

**COMPLETE****Collector:** Web Link 1 (Web Link)**Started:** Monday, September 21, 2015 11:19:58 AM**Last Modified:** Monday, September 21, 2015 11:32:37 AM**Time Spent:** 00:12:39**IP Address:** 41.13.0.34

PAGE 1

Q1: Information

Sex	Male
Age	37
Home Language	Xhosa
Race	Xhosa
Highest Education	Matric
Marital Status	Getroud

Q2: In what town did you grow up in?

Pampierstad

Q3: What was your parents' occupation when you were in school?

Ma, koshuis koker, pa municipality operator

Q4: List your 3 previous jobs, companies and time you worked there.

1	Algemene beton werker
2	Bouwerk in joburg
3	Petrol joggie

Q5: Leadership Approach.

Democratic: Sharing decision-making with group

PAGE 2

Q6: Please rate the productivity of your concrete teams.

(no label)	10
------------	----

Q7: Are you happy with their productivity?

Yes

Q8: Would you like to improve the productivity?

Yes

Q9: What keeps them from being more productive?Kort mense.
Opleiding**Q10: What could you do to change the productivity?**

Beter opleiding vir my

PAGE 3

Q11: Do you feel the background of your teams influence their productivity? No

Q12: Do you feel the religion and culture of your teams influence their productivity? No

Q13: Do you feel the home language of your teams influence their productivity? No

Q14: Do you feel the race of your teams influence their productivity? No

Q15: Do you feel the age of your teams influence their productivity? Yes

PAGE 4

Q16: How do you schedule the work needed each week?

Kyk veiligheid, wat moet kyk
Ervaring

Q17: How is progress measured?

Kyk tyd teenoor wat gebeur

Q18: How often do you visit teams?

Altyd by span

Q19: How do you handle insubordination?

Praat met mekaar
Gaan dan na afdelingshoof

PAGE 5

Q20: What do you feel is the influence current labour legislation has on the productivity of your teams?

Niks.

Q21: What do you feel is the influence of labour unions on the productivity of your teams?

Positief. Unie behandel mense goed en besluite goed

Q22: What do you feel is the level of motivation in the teams?

(no label)

9

Q23: Please list your teams from best to worst on an overall assessment.

Respondent skipped this question

#1

**COMPLETE****Collector:** Web Link 1 (Web Link)**Started:** Monday, September 21, 2015 11:33:06 AM**Last Modified:** Monday, September 21, 2015 11:48:13 AM**Time Spent:** 00:15:07**IP Address:** 41.13.0.34

PAGE 1

Q1: Information

Sex	Male
Age	29
Home Language	Tswana
Race	Tswana
Highest Education	Matric
Marital Status	Getroud
Team Number	Vuma

Q2: In what town did you grow up in?	Jan Kemp / valspan
---	--------------------

Q3: What was your parents' occupation when you were in school?	Ma lanbouskool kok, pa plaaswerker
---	------------------------------------

Q4: List your 3 previous jobs, companies and time you worked there.

1	Rakpakker shoprite
2	Contruction paving

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?	No,
---	-----

Other (please specify)
Being overlooked, have qualification, drivers license.
Not being used. Code 10.

Q6: Are you happy with your current remuneration package?	No
--	----

Q7: Do you feel you do your best in your job and achieve the best results possible?	Yes
--	-----

Q8: What keeps you from doing better?

Salary
2ic but pay same as other workers

Q9: What motivates you to do a better job?

Money
Teamwork

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Yes. Evryday at site to see work.

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Twice a week

Q13: What changes would you make if you were in charge?

Mke sure arive at site early.
Clear what work is today

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? *Respondent skipped this question*

Q16: What should happen if a colleague acts inappropriately?

15. No
Receice verbal warning. Then written warning. Dismissal

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally sociable | Yes |
| 2. are focused on the outer world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. talk a lot & start conversations | Yes |
| 5. think first, then speak | Yes |
| 6. are quick to take action | Yes |
| 7. have many friends & many interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. pay attention to the details | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in abstract terms | Yes |
| 5. like practical things | Yes |
| 6. like to do (make) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in people & emotions | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|---|-----|
| 1. are organized and structured | Yes |
| 2. make plans in advance | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#2

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Monday, September 21, 2015 11:49:21 AM**Last Modified:** Monday, September 21, 2015 12:03:39 PM**Time Spent:** 00:14:18**IP Address:** 41.13.0.34

PAGE 1

Q1: Information

Sex	Male
Age	63
Home Language	Tswana
Race	Xhosa
Highest Education	Geen
Marital Status	Married
Team Number	Vuma

Q2: In what town did you grow up in?

Phillopolis

Q3: What was your parents' occupation when you were in school?

Huiswerke, kombuis en buite

Q4: List your 3 previous jobs, companies and time you worked there.

1	Mengerstasie
2	Dam onderhoud
3	Teerwerk

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?

Yes,

Other (please specify)
Oog wil nie met concrete werk nie**Q6: Are you happy with your current remuneration package?**

Yes

Q7: Do you feel you do your best in your job and achieve the best results possible?

Yes

Q8: What keeps you from doing better?

Niks

Q9: What motivates you to do a better job?

Geld

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Not often

Q13: What changes would you make if you were in charge?

Werk beter aangaan

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? Yes

Q16: What should happen if a colleague acts inappropriately?

15. Nog masjiene
Keer en waarsku

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time alone | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are quick to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. pay attention to the details | Yes |
| 3. focus on what is real (in the present) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 6. like to do (make) | Yes |
| 7. are accurate and observant | Yes |
| 8. prefer to do things the established way | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on logic | Yes |
| 3. are more interested in people & emotions | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|--|-----|
| 1. are organized and structured | Yes |
| 2. make plans in advance | Yes |
| 3. keep to the plan | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to finalize decisions | Yes |
-

#3

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Monday, September 21, 2015 12:04:27 PM**Last Modified:** Monday, September 21, 2015 12:26:22 PM**Time Spent:** 00:21:54**IP Address:** 41.13.0.34

PAGE 1

Q1: Information

Sex	Male
Age	29
Home Language	Tswana
Race	Tswana
Highest Education	Gr11
Marital Status	Engaged
Team Number	Tom

Q2: In what town did you grow up in?	Jankemp
---	---------

Q3: What was your parents' occupation when you were in school?	Father generak worker vhw, stay at home mom
---	---

Q4: List your 3 previous jobs, companies and time you worked there.

1	Cutting grass
2	Mechanic, silogilwe
3	General motors services

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?	No, Other (please specify) Salary too low Treatment of each other at vhw Want to do training
---	--

Q6: Are you happy with your current remuneration package?	No
--	----

Q7: Do you feel you do your best in your job and achieve the best results possible?	Yes
--	-----

Q8: What keeps you from doing better?

People are not trustworthy.

Q9: What motivates you to do a better job?

Being more happy in your job, salary.

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Teamleader yes. Supervisors not. Management not. Supervisor not honest, dont care. Dont help the people management.

Q11: Do your managers handle your culture correctly? No**Q12: How often do your managers visit you?**

Supervisors once a week
Management twice a week

Q13: What changes would you make if you were in charge?

Attend to people
Raise problems everyday
Happy poll

PAGE 4**Q14: Do you feel the equipment used is up to standard?** Yes**Q15: What equipment would improve your productivity?** No**Q16: What should happen if a colleague acts inappropriately?**

Team speak first to him
Talk to supervisor

PAGE 5: Personality Test**Q17: How do you get your energy?**

- | | |
|--|-----|
| 1. are generally sociable | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. use their "sixth sense" | Yes |
| 2. see the "big picture" | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in abstract terms | Yes |
| 5. like practical things | Yes |
| 6. like to do (make) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their heart | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in things & ideas | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|---|-----|
| 1. are organized and structured | Yes |
| 2. prefer to "go with the flow" | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#4

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Monday, September 21, 2015 12:32:03 PM**Last Modified:** Monday, September 21, 2015 12:50:08 PM**Time Spent:** 00:18:04**IP Address:** 41.13.0.34

PAGE 1

Q1: Information

Sex	Male
Age	63
Home Language	Xhosa
Race	Xhosa
Highest Education	Niks
Marital Status	Wewenaar
Team Number	Tom

Q2: In what town did you grow up in? Phillipstown**Q3: What was your parents' occupation when you were in school?** Pa plaaswerkers, ma plaaswerker**Q4: List your 3 previous jobs, companies and time you worked there.**

1	Carpenter
2	Carpenter
3	Concrete

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate? Yes,
Other (please specify) Niks wat pla**Q6: Are you happy with your current remuneration package?** Yes**Q7: Do you feel you do your best in your job and achieve the best results possible?** Yes**Q8: What keeps you from doing better?**

Niks

Q9: What motivates you to do a better job?

Wil weet wat gedoen moet word

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja.

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Nie baie nie

Q13: What changes would you make if you were in charge?

Niks verander nie

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? Yes

Q16: What should happen if a colleague acts inappropriately?

Concrete snyer.
Vorentoe vat, hugo

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. pay attention to the details | Yes |
| 3. focus on what is real (in the present) | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like theories | Yes |
| 6. like to do (make) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to do things the established way | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in people & emotions | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|---|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#5

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Monday, September 21, 2015 3:03:40 PM**Last Modified:** Monday, September 21, 2015 3:13:16 PM**Time Spent:** 00:09:36**IP Address:** 41.13.56.243

PAGE 1

Q1: Information

Sex	Male
Age	39
Home Language	Tswana
Race	Tswana
Highest Education	Std4
Marital Status	Single
Team Number	Vuma

Q2: In what town did you grow up in?	Postmansburg
---	--------------

Q3: What was your parents' occupation when you were in school?	Pa pipeline, huisvrou
---	-----------------------

Q4: List your 3 previous jobs, companies and time you worked there.

1	Petroljoggie
2	Meul fabriek, meul gemaal

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?	Yes,
	Other (please specify) Niks

Q6: Are you happy with your current remuneration package?	Yes
--	-----

Q7: Do you feel you do your best in your job and achieve the best results possible?	Yes
--	-----

Q8: What keeps you from doing better?

Niks

Q9: What motivates you to do a better job?

Samewerking

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja.

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Twee keer n week

Q13: What changes would you make if you were in charge?

Mooi te maak

Daar waar sleg is reg maak

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? No

Q16: What should happen if a colleague acts inappropriately?

Vorentoe gevat word, office

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on the outer world | Yes |
| 3. get energy by spending time alone | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. see the "big picture" | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in abstract terms | Yes |
| 5. like theories | Yes |
| 6. like to do (make) | Yes |
| 7. are accurate and observant | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in things & ideas | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|---|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#6

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Monday, September 21, 2015 3:13:41 PM**Last Modified:** Monday, September 21, 2015 3:24:39 PM**Time Spent:** 00:10:57**IP Address:** 41.13.56.243

PAGE 1

Q1: Information

Sex	Male
Age	32
Home Language	Tswana
Race	Tswana
Highest Education	Gr11
Marital Status	Single
Team Number	Vuma

Q2: In what town did you grow up in? Hartswater**Q3: What was your parents' occupation when you were in school?** Ma, huiswerker, keni pa nie**Q4: List your 3 previous jobs, companies and time you worked there.**

1	Stukwerk munisipaliteit
2	Rdp huisbou

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate? Yes**Q6: Are you happy with your current remuneration package?** Yes**Q7: Do you feel you do your best in your job and achieve the best results possible?** Yes**Q8: What keeps you from doing better?**

Niks

Q9: What motivates you to do a better job?

Family

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

3 keer n week

Q13: What changes would you make if you were in charge?

Samewerking

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? No

Q16: What should happen if a colleague acts inappropriately?

Praat saam met hom
Report voor

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. see the "big picture" | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 6. like to do (make) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in people & emotions | Yes |
| 4. treat people according to their situation (emphasizing compassion) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|--|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. keep to the plan | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#7

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Monday, September 21, 2015 3:25:06 PM**Last Modified:** Monday, September 21, 2015 3:45:43 PM**Time Spent:** 00:20:36**IP Address:** 41.13.56.243

PAGE 1

Q1: Information

Sex	Male
Age	32
Home Language	Afrikaans
Race	Kleurling
Highest Education	Matric
Marital Status	Married
Team Number	Tom

Q2: In what town did you grow up in?	Jankemp
---	---------

Q3: What was your parents' occupation when you were in school?	Sonder pa, ouma pensioen
---	--------------------------

Q4: List your 3 previous jobs, companies and time you worked there.

1	Electrician by van zyl contractors
2	Mpumalanga shutdown semi skilled fitter

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?	Yes,
	Other (please specify) Niks

Q6: Are you happy with your current remuneration package?	No
--	----

Q7: Do you feel you do your best in your job and achieve the best results possible?	Yes
--	-----

Q8: What keeps you from doing better?

Word afgeskeep, word nie geasseseer

Q9: What motivates you to do a better job?

Werk met vaardige mense
Moet voldag se werk lewe, dan gaan hul af
Wil alles leer

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja, opleiding vat te lank. Afdelingshoof meer tyd maak, paar uur afvat, kom by vergelyking van werk. Meer weet deur wat gaan manne

Q11: Do your managers handle your culture correctly? No**Q12: How often do your managers visit you?**

Een keer in twee dae

Q13: What changes would you make if you were in charge?

Ongeskoolde mense oplei
Bestuur moet die mense ken, weet deur wat gaan werkers, wies beste

PAGE 4**Q14: Do you feel the equipment used is up to standard?** Yes**Q15: What equipment would improve your productivity?** No**Q16: What should happen if a colleague acts inappropriately?**

Kan eers oplos tussen spanleier
Dan toesighouer
Afdelings

PAGE 5: Personality Test**Q17: How do you get your energy?**

- | | |
|--|-----|
| 1. are generally sociable | Yes |
| 2. are focused on the outer world | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. talk a lot & start conversations | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have many friends & many interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. pay attention to the details | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 5. like theories | Yes |
| 6. like to do (make) | Yes |
| 7. are accurate and observant | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7

Q19: How do you make your decisions?

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on logic | Yes |
| 3. are more interested in things & ideas | Yes |
| 3. are more interested in people & emotions | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more poetic in describing the world | Yes |
-

PAGE 8

Q20: How much do you like to plan ahead?

- | | |
|---|-----|
| 1. are organized and structured | Yes |
| 2. make plans in advance | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#8

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Tuesday, September 22, 2015 10:17:41 AM**Last Modified:** Tuesday, September 22, 2015 10:29:47 AM**Time Spent:** 00:12:05**IP Address:** 41.13.16.14

PAGE 1

Q1: Information

Sex	Male
Age	20
Home Language	Tswana, xhosa
Race	Xhosa
Highest Education	Std7
Marital Status	Single
Team Number	Tom

Q2: In what town did you grow up in?	Jankemp
---	---------

Q3: What was your parents' occupation when you were in school?	Pa bokomo driver, ma slagpale
---	-------------------------------

Q4: List your 3 previous jobs, companies and time you worked there.	
--	--

1	Skool
---	-------

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?	Yes
---	-----

Q6: Are you happy with your current remuneration package?	Yes
--	-----

Q7: Do you feel you do your best in your job and achieve the best results possible?	Yes
--	-----

Q8: What keeps you from doing better?	
--	--

Ander goed leer wat ek nie ken nie

Q9: What motivates you to do a better job?	
---	--

Teamwork

PAGE 3

Q10: Are your managers doing a good job? Elaborate?	
--	--

Ja

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Nie so baie nie

Q13: What changes would you make if you were in charge?

Sal hoor by die mense wat soek hulle en wat nie

PAGE 4

Q14: Do you feel the equipment used is up to standard? No

Q15: What equipment would improve your productivity? Yes

Q16: What should happen if a colleague acts inappropriately?

Concrete placer.
Team praat met hom
Vorentoe gaan dan

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally sociable | Yes |
| 2. are focused on the outer world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. talk a lot & start conversations | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have many friends & many interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. pay attention to the details | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 6. like to dream (design) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7

Q19: How do you make your decisions?

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on logic | Yes |
| 3. are more interested in things & ideas | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8

Q20: How much do you like to plan ahead?

- | | |
|--|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. keep to the plan | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#9

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Tuesday, September 22, 2015 10:29:59 AM**Last Modified:** Tuesday, September 22, 2015 10:39:48 AM**Time Spent:** 00:09:48**IP Address:** 41.13.16.14

PAGE 1

Q1: Information

Sex	Male
Age	29
Home Language	Afrikaans
Race	Kleurling
Highest Education	Gr10
Marital Status	Single
Team Number	Vuma

Q2: In what town did you grow up in?	Jankemp
---	---------

Q3: What was your parents' occupation when you were in school?	Pa municipality algemene werker, outehuis ma
---	--

Q4: List your 3 previous jobs, companies and time you worked there.	
--	--

1	Eerste werk
---	-------------

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate?	Yes,
	Other (please specify) Niks pla

Q6: Are you happy with your current remuneration package?	No
--	----

Q7: Do you feel you do your best in your job and achieve the best results possible?	Yes
--	-----

Q8: What keeps you from doing better?	
--	--

Opleiding
License

Q9: What motivates you to do a better job?	
---	--

Salaris moet reg wees

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Elke dag

Q13: What changes would you make if you were in charge?

Baie masjiene koop dan werk ligter
Kommunikasie met werkers reg is

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? Yes

Q16: What should happen if a colleague acts inappropriately?

Vuma eers gesels met hom dan aankla

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. speak first, then think | Yes |
| 6. are quick to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. see the "big picture" | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 6. like to do (make) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |
-

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in things & ideas | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|---|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to find more information | Yes |
-

#10

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Tuesday, September 22, 2015 10:40:01 AM**Last Modified:** Tuesday, September 22, 2015 10:50:32 AM**Time Spent:** 00:10:30**IP Address:** 41.13.16.14

PAGE 1

Q1: Information

Sex	Male
Age	34
Home Language	Tswana
Race	Tswana
Highest Education	Std8
Marital Status	Single
Team Number	Tom

Q2: In what town did you grow up in? Herzogville**Q3: What was your parents' occupation when you were in school?** Ma domestic worker, pa government**Q4: List your 3 previous jobs, companies and time you worked there.**

1 Busdriver

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate? Yes**Q6: Are you happy with your current remuneration package?** No**Q7: Do you feel you do your best in your job and achieve the best results possible?** Yes**Q8: What keeps you from doing better?**

Niks

Q9: What motivates you to do a better job?Teamwork
Mense wat hulle job ken

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Ja, kan mense se pay regmaak. Opleiding reel

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

3keer n week

Q13: What changes would you make if you were in charge?

Nuwe masjiene koop. Operator training

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? No

Q16: What should happen if a colleague acts inappropriately?

Eerste teamleader met hom praat, dan vorentoe gaan

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on their inner world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are slow to take action | Yes |
| 7. have many friends & many interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. pay attention to the details | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 6. like to do (make) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in things & ideas | Yes |
| 4. treat people according to their situation (emphasizing compassion) | Yes |
| 5. are more poetic in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|---|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. are able to change and adapt quickly | Yes |
| 4. like to be in control of their life | Yes |
| 5. want to finalize decisions | Yes |
-

#11

**COMPLETE****Collector:** Web Link 2 (Web Link)**Started:** Tuesday, September 22, 2015 10:50:44 AM**Last Modified:** Tuesday, September 22, 2015 10:59:46 AM**Time Spent:** 00:09:01**IP Address:** 41.13.16.14

PAGE 1

Q1: Information

Sex	Male
Age	31
Home Language	Xhosa
Race	Xhosa
Highest Education	Gr10
Marital Status	Single
Team Number	Vuma

Q2: In what town did you grow up in? Pampierstad**Q3: What was your parents' occupation when you were in school?** Father, vhw cleaner, mother domestic worker**Q4: List your 3 previous jobs, companies and time you worked there.**

1 Marketing

PAGE 2

Q5: Are you happy with your current job and work environment? Elaborate? Yes,
Other (please specify) Nothing**Q6: Are you happy with your current remuneration package?** No**Q7: Do you feel you do your best in your job and achieve the best results possible?** Yes**Q8: What keeps you from doing better?**

Want to do boilermaker, steelwork

Q9: What motivates you to do a better job?

Have a lot of effort to give

PAGE 3

Q10: Are your managers doing a good job? Elaborate?

Yes, more respect for people

Q11: Do your managers handle your culture correctly? Yes

Q12: How often do your managers visit you?

Several times a month

Q13: What changes would you make if you were in charge?

Too hard

PAGE 4

Q14: Do you feel the equipment used is up to standard? Yes

Q15: What equipment would improve your productivity? No

Q16: What should happen if a colleague acts inappropriately?

Warned, disciplinary

PAGE 5: Personality Test

Q17: How do you get your energy?

- | | |
|--|-----|
| 1. are generally quiet | Yes |
| 2. are focused on the outer world | Yes |
| 3. get energy by spending time with others | Yes |
| 4. mostly listen & wait for others to talk first | Yes |
| 5. think first, then speak | Yes |
| 6. are quick to take action | Yes |
| 7. have a few deep friendships & refined interests | Yes |

PAGE 6

Q18: How do you see the world & gather information?

- | | |
|--|-----|
| 1. have finely-tuned five senses | Yes |
| 2. see the "big picture" | Yes |
| 3. focus on what is possible (in the future) | Yes |
| 4. think in concrete terms | Yes |
| 5. like practical things | Yes |
| 6. like to dream (design) | Yes |
| 7. are creative and imaginative | Yes |
| 8. prefer to try out new ideas | Yes |

PAGE 7**Q19: How do you make your decisions?**

- | | |
|---|-----|
| 1. mostly use their head | Yes |
| 2. make decisions based on their values | Yes |
| 3. are more interested in things & ideas | Yes |
| 4. treat everybody the same(emphasizing fairness) | Yes |
| 5. are more scientific in describing the world | Yes |
-

PAGE 8**Q20: How much do you like to plan ahead?**

- | | |
|-----------------------------------|-----|
| 1. are casual and relaxed | Yes |
| 2. make plans in advance | Yes |
| 3. keep to the plan | Yes |
| 4. like to simply let life happen | Yes |
| 5. want to find more information | Yes |
-

VAALHARTS WATER



Management Plan to Improve the Productivity of the Labour Workforce

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INTRODUCTION

This management plan was set up to improve the productivity of Vaalharts Waters' concrete teams by solving problems detected and changing procedures and attitudes. The proposed solutions were developed with specifically the Vaalharts Water environment in mind and address the issues in a realistic manner.

For background on how the problems were identified the document "A management plan to improve the productivity of the labour workforce: Vaalharts Water User Association as case study" can be referred to.

SCOPE

This management plan focuses on three types of remedies wherein the different problems with their solutions were divided namely:

- Repair

Policies, action plans and processes to solve the problems exist but needed to be repaired as they are not used or affectively used currently.

- Improve

Policies, action plans and processes are used but it needed to be improved.

- Design

New policies, action plans and processes needed to be designed to solve problems.

After the solutions were stated an action implementation plan will be presented. The review of the management plan with VHW management can be found in Appendix 3.

PROBLEMS AND PROPOSED SOLUTIONS

In order to develop solutions that will result in improved productivity the current work environment needs to be changed into an environment striving towards greatness. In order to do so focus needs to be put on creating a partnership between management and the workforce.

Each individual needs to know what is expected of him, where his tasks fits into the larger picture and have a good idea of how he can further his own wellbeing by furthering the company.

Structure is needed with organised accessible planning and monitoring systems in place to track manage and predict production goals. In order for a system like this to be managed correctly leadership needs to be effective and the focus has to be on the reduction of waste and improved methods.

All the stakeholders need to be on the same page with the same end goals. In order to optimise the processes constant review, analysis and change is needed. Recognition and reward has to be effectively used to motivate in the right way and drive results.

Listed below are the solutions to the identified factors of the productivity problem. Solutions were grouped where they could solve more than one problem.

- Repair

Problem	Solution
1. Too many personal issues are handled within work hours.	* As Vaalharts Water's work hours are 07:00 – 16:00 no personal activities should be allowed unless a real emergency. * Employees should use their annual leave.
2. Ill-discipline is not dealt with strictly enough.	As Vaalharts Water uses the disciplinary code of SEESA, all managers, supervisors and team leaders should receive training on the code as well as the VHW conditions of service. * All incidents need to be reported along with the actions taken.
3. Supervisors are not on site enough, resulting in a lack of efficiency.	Supervisors should not be permitted to be at the depot during the day unless for a specific reason, forcing them to spend the entire day with their teams, planning their day to get to each team.
4. The team members are mostly unhappy with their remuneration	* Salaries at different companies need to be researched and shown to the VHW

Problem	Solution
packages.	<p>staff, showing them how they compare money wise to employees at other leading companies.</p> <p>* Employees who receive a promotion needs to receive it in front of the other with reasons given, thus inspiring other to also achieve such feats.</p>
5. Team members are not clearly informed of their duty for the day.	<p>Here scorecards need to be implemented. A meeting should be held each Monday with the supervisor, his teams and management if possible. In the meeting the projects for the week is discussed, and progress targets are set for each day (half day if needed) and indicated on poster scorecards. Then each morning the progress is reviewed and filled in. This will also help with evaluating teams on the amount and quality of work done.</p>
6. Scheduling of work ahead is not well planned or communicated.	
7. Staff do not receive enough relevant communication.	
8. Policies are not always in place and the people are not always informed well.	<p>* The conditions of employment document needs to be augmented with new policies.</p> <p>* The document needs to be discussed with all employees.</p> <p>* Each supervisor needs a copy.</p> <p>* New employees need induction.</p> <p>Urgently</p>

- Improve

Problem	Solution
9. The level of motivation is perceived as low.	<p>* Implement weekly incentives for a team that reaches all their targets or surpasses their targets.</p> <p>* Some of the above mentioned changes</p>

Problem	Solution
	<p>will already change motivation.</p> <ul style="list-style-type: none"> * Make sure people are utilised correctly. <p>There may be people more suited for other jobs in the company that could also benefit the company.</p>
<p>10. The merit bonus system is flawed and qualification for incentives is not clearly set.</p>	<ul style="list-style-type: none"> * Couple the amount of work and targets reached directly to merit bonuses. * Be stricter on what automatically disqualifies someone from a merit bonus. * Expand the criteria so the questions are less general. * More frequent reviews.
<p>11. The intrinsically motivation levels under the team members are very low.</p>	<p>With the introduction of incentives coupled with ensuring the right person is doing the right job, the intrinsic motivation levels will increase.</p>
<p>12. BEE regulations make it hard to appoint worthy candidates.</p>	<p>Be clear on what the BEE targets are for the company and make it well known. Then appoint the best person for the job as far as possible. If the company is deemed well on BEE statistics, continue with appointment on merit.</p>
<p>13. The unions stand in the way of proper discipline.</p>	<p>Ensure that everyone is clear on what the responsibility of the unions are and how much power they have. Do not budge on keeping them within their limits.</p>
<p>14. Due to the large area of the water scheme the logistics of the teams, machines and concrete trucks is not operated efficiently.</p>	<ul style="list-style-type: none"> * With the proposed planning of work on a Monday the schedule needs to be communicated to the fleet department so planning for the week can be done. * Bunch more work together in one area and move on from there. * Force supervisors to fill in the planned movement of machines into a shared file on the computer network so all relevant

Problem	Solution
	parties know where a machine is operating and where to find it.

- Design

Problem	Solution
15. Workers are not using the work hours as they are supposed to and no one is regulating it.	<ul style="list-style-type: none"> * Change the morning breakfast time so there isn't a delay in starting on site. * Cheap cameras sending a photo every now and then situated in the team truck could help monitoring of operations. * A clocking system and job costing system would benefit the company greatly as hours on and off the job can be tracked.
16. Workers are forgetful, maybe on purpose, thus too much driving is done to retrieve forgotten items.	<ul style="list-style-type: none"> * For each specific type of job an itinerary card needs to be set up so the team leader knows exactly what equipment and material he will need. * Preparation for the morning's work needs to be done the previous afternoon. * Any team truck that drives to and from site more than once needs to be penalised.
17. Only one mixing station is servicing the 150km long water scheme.	<ul style="list-style-type: none"> * Consider purchasing a mobile mixing station in the near future. * Set up a small mixing station at the Jan Kempdorp depot and in Barkley West with a traveling staff.
18. No productivity training has been given to any employee and no management training has been given to team leaders and supervisors. Especially the supervisors who are under the	<ul style="list-style-type: none"> * Arrange management training for all leaders of Vaalharts Water as well as productivity training. * Tutor the employees to understand and chase productivity.

Problem	Solution
impression that their teams are perfectly productive needs the training.	
19. Background checks are not performed on new employees and no experience is required to become a team member.	Shortlisted candidates need to be subjected to criminal record checks and their references needs to be followed up.
20. New team members are not put through personality tests in order to determine their suitability to a specific team.	Personality tests need to be performed during the interview phase especially if for a team position.
21. Compaction tests are not done, resulting in early breaks in new construction.	Compaction tests need to be performed on the soil in order to ensure the earth beneath is stable. More quality tests on concrete loads are also needed.

ACTION PLAN, TIME LINE & BUDGET

Action	Time Required	Responsibility	Budget
1. Discuss personal issue regulations in a meeting and implement	1 day	H van Wyk K Potgieter	R0.00
2. A workshop on the code and conditions of service need to be held.	1 day	H van Wyk K Potgieter	One days loss of production
3. Discuss supervision in a meeting and implement	1 day	H van Wyk K Potgieter	R0.00
4. Benchmark salaries and give feedback. Future promotions need to be public.	1 week	H van Wyk K Potgieter K Harbron	Hours of allocated person spent on activity needs to be put into a value. Est. R2000
5. Scorecard training and implementation.	3 days	N van Eeden H van Wyk	Three days loss of production from two managers and all leaders.
6. Scheduling of work ahead is not well planned or communicated.			
7. Staff do not receive enough relevant communication.			
8. Augment conditions of employment document and hold a workshop with all employees. Print copies for all supervisors.	2 weeks	K Potgieter H van Wyk N van Eeden K Harbron	Hours of allocated person spent on activity needs to be put into a value. Est. R5 000
9. Design weekly incentive arrangement that will fit VHW. Invite all people who are unhappy in their current job and	2 weeks	K Potgieter H van Wyk N van Eeden	Incentive value to be discussed and agreed upon.

Action	Time Required	Responsibility	Budget
review their skillsets.			Interviews hours to be calculated into a value. Est. R100 000
10. Set up new regulations and criteria for merit bonus system.	1 week	K Potgieter H van Wyk N van Eeden K Harbron	Hours of allocated person spent on activity needs to be put into a value. Est. R10 000
11. Increase of intrinsic motivation	As other activities are implemented.	Automatic	R0.00
12. Find out where VHW lacks in BEE requirements and where we comply. Make the status known.	1 week	K Potgieter H van Wyk N van Eeden	Hours of allocated person spent on activity needs to be put into a value. Est. R5 000
13. Find out what is the exact rights of unions in the workplace and bar any further involvement.	1 week	K Potgieter	Hours of allocated person spent on activity needs to be put into a value. Est. R5 000
14. Hold workshop on organisation changes. Purchase a computer for civil department and implement.	1 week	H van Wyk N van Eeden	Est. R50 000
15. Change breakfast time. Purchase cameras, implement	2 weeks	K Potgieter H van Wyk	R100 000

Action	Time Required	Responsibility	Budget
clocking system and job costing.		N van Eeden	
16. Hold workshop on new expectations of preparation and penalties.	1 day	K Potgieter H van Wyk N van Eeden	Workshop hours to be calculated into a value.
17. Investigate possibility of a mobile mixing station, otherwise small fixed mixing stations.	1 month	K Potgieter H van Wyk	Est. R700 000
18. Hold productivity and management training for all leaders.	1 week	H van Wyk N van Eeden	Est. R75 000
19. Perform background checks on all new appointments before they are appointed.	Time will depend on when people are appointed.	H van Wyk	Hours of allocated person spent on activity needs to be put into a value.
20. Perform personality tests on all new appointments before they are appointed.	Time will depend on when people are appointed.	H van Wyk N van Eeden	Hours of allocated person spent on activity needs to be put into a value.
21. Perform compaction tests on all back fill.	30 minutes more per job.	H van Wyk	Compaction testers for each team needs to be purchased. Est. R70 000
Totals	17 weeks		Est.R1.1mil & production losses

TRAINING

Specific research and training will have to be done by the responsible parties as listed above. Here is a breakdown of all training and research requirements:

- Specific disciplinary code training at SEESA
- Research on salary comparisons at other companies.
- Scorecard practices training.
- Proper incentive practices training.
- BEE requirement training.
- Union regulations training.
- With the camera implementation some training will be required.
- With a new mixing station training will be involved.
- Productivity and Management training.
- With the procurement of compaction equipment training will be required.

REVIEW AND MODIFICATIONS

When implementing this management plan challenges and forced changes to the plan will occur, it is important that when authorising changes that the same result be achievable.

A change journal needs to be kept along with the implementation records in order to keep track not only of changes but the reasons for the changes as well.

CONCLUSION

Realistic and executable solutions were detailed and all the problems were addressed. Though not all of the changes will happen without some negative feedback, if implemented this plan will change the work environment at VHW to a more positive and results driven environment.

It will be crucial to have the whole leadership structure of Vaalharts Water buy into this plan. Positive attitudes will go a long way in creating the productive workforce we want.

APPENDIX 3: REVIEW OF THE MANAGEMENT PLAN WITH VHW MANAGEMENT

1	2	3	4
Will not work	Will maybe not work	Will maybe work	Will definitely work

Action	Probability of Success	Reason for low Score
1	4	
2	4	
3	4	All parties will have to buy in.
4	4 3	Might result in unhappiness among other staff. Money value doesn't have to be known.
5	4	
6	3	Problem will remain with unexpected maintenance.
7	4	
8	4	
9	3	The planning of the incentives should be flawless, and with union involvement.
10	4	
11	3	This will be difficult to change.
12	4	
13	4	
14	4	
15	3	Close monitoring will receive negative feedback.
16	4	
17	3	Is implementable, but money can be a problem.
18	4	
19	4	
20	3	Something to investigate
21	4	

* This is all relevant solutions to increase productivity. There can be problems with budget and some of the suggestions can be time consuming. Vaalharts Water will definitely implement the plan with changes and exceptions in order to make it fit.

H. VAN Wyk (Civil/Technical Manager)

H. van Wyk

17.11.2015