Paralinear Solutions

Team 7

Deliverable 1 - Project Proposal

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Client Information:

This deliverable represents the proposed system that Team 7 will build Gohvan Construction to stream line the business process Gohvan Construction is currently using. Deliverable 1 indicates the analyses of Gohvan Construction and the existing system that is currently in place, as well as the history and organisational structure. Thus it will include a project request, preliminary investigation, problem analysis, requirement analysis and feasibility/decision analysis.

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1. Deliverable Introduction

Deliverable 1 represents the proposed system solution that Paralinear Solutions will provide and build for Gohvan Construction to streamline the business process and project life cycles. Deliverable 1 indicates the analyses and in-depth research gone into understanding Gohvan Construction and their existing system currently in place, as well as the history and organisational structure of the company. Thus, it will include a project request, preliminary investigation, problem analysis, functional requirement analysis and feasibility/decision analysis on other existing systems that can be beneficial to implement instead of the Paralinear solutions system proposed.

Deliverable Summary

This document is the full analysis and identification of the company "Gohvan Construction" to identify the systematic and business problems faced and that Gohvan construction deals with on a daily basis and throughout their project life cycles. This deliverable will represent the proposed system that Paralinear Solutions (Team 7) will offer to build for Gohvan construction. Paralinear solutions will conduct many forms of research, analysis, and take in depth looks to the details and daily functions of the business to identify the business and system problems faced. A proposed system will then be stated and explained on how it will improve Gohvan Constructions business and project life cycle, as well as the functional aspects the new system will provide to solve the business problems identified.

The proposed system that Paralinear Solution will offer Gohvan construction will be a full business solution which offers features that improve automation within the company, Prevent Human error at all possibly project life cycle stages and through the operation of the business. Digitization of reports and documents being worked on throughout the company. Reduce expenditure as the system encourages Gohvan construction to move away from a more paper-based approach. Effective storage methods for company and employee documents. Human resource management and supplier management. All this functionality will be integrated into the proposed system thus overall improving and optimizing the company's efficiency.

2. Client Information

2.1 Introduction

This section defines the history and background of the business, Gohvan Construction. The business structure, hierarchy as well as its environment will be investigated to set the right foundation in understanding how information flows through the business. A brief introduction of the owner of the business will also be stated.

2.2 Organisation history and Background

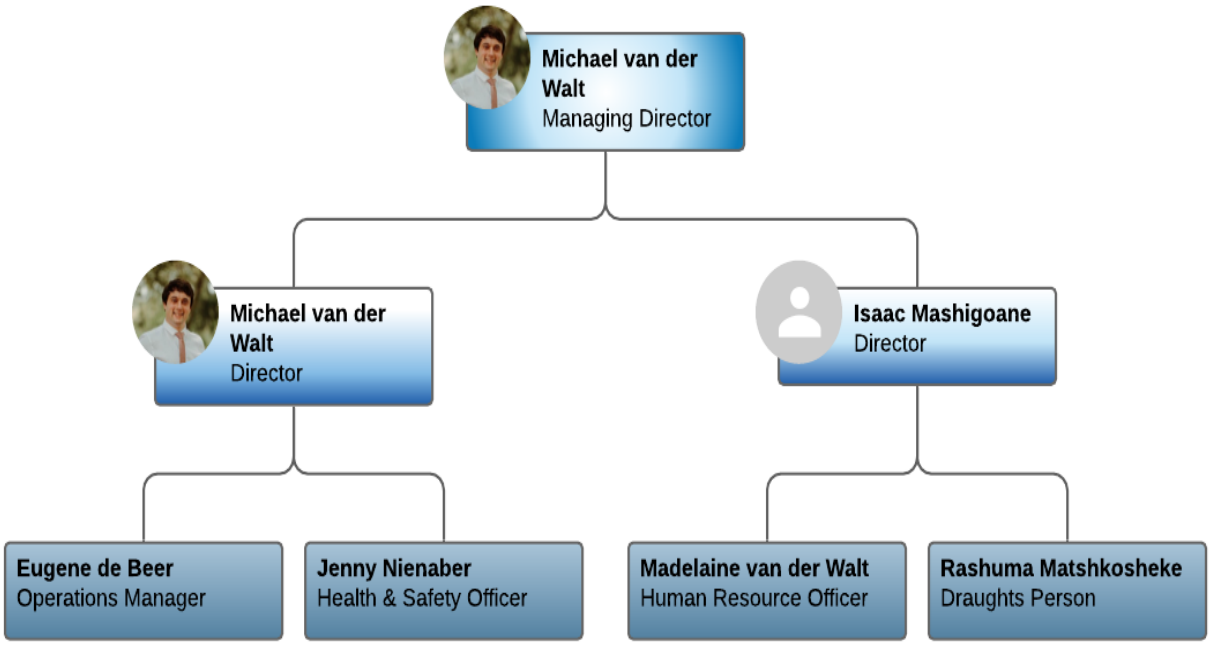
Gohvan Construction is a company that provides construction solutions to meet unique requirements of their clients. The company has been involved in the civil construction industry since 2006 and is now a leading force within the engineering and Construction industry. Against the Vodacom Safety Standards, they have notably been vetted and found to be competent by the company Assaf.

Various and extensive projects have been completed by Gohvan Construction such as various base transceivers for Vodacom, MTN and Cell C, shared sites as small Civil work projects for MTN and Cell C, turnkey solutions, road works and upgrades and more projects that live up to their reputation of note throughout the years.

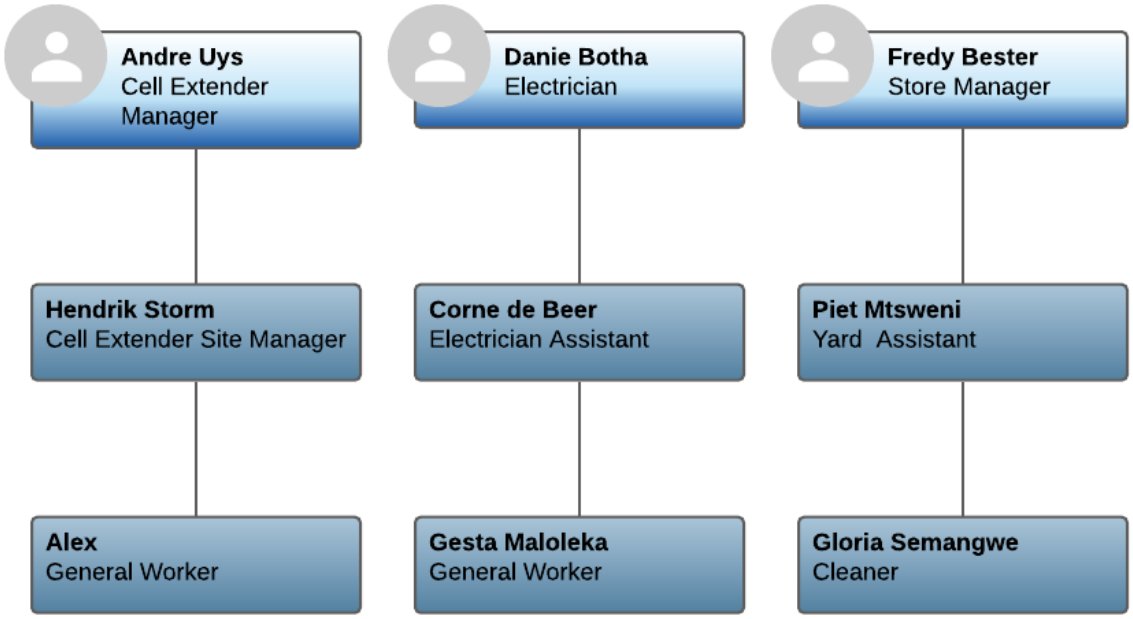
The ability to plan, document and manage these projects have set this company apart. The team members eagerly transfer skills and knowledge on a daily basis. They have taken on a holistic approach by ensuring that the outer and inner workings of the company meet high standards of quality and workmanship.

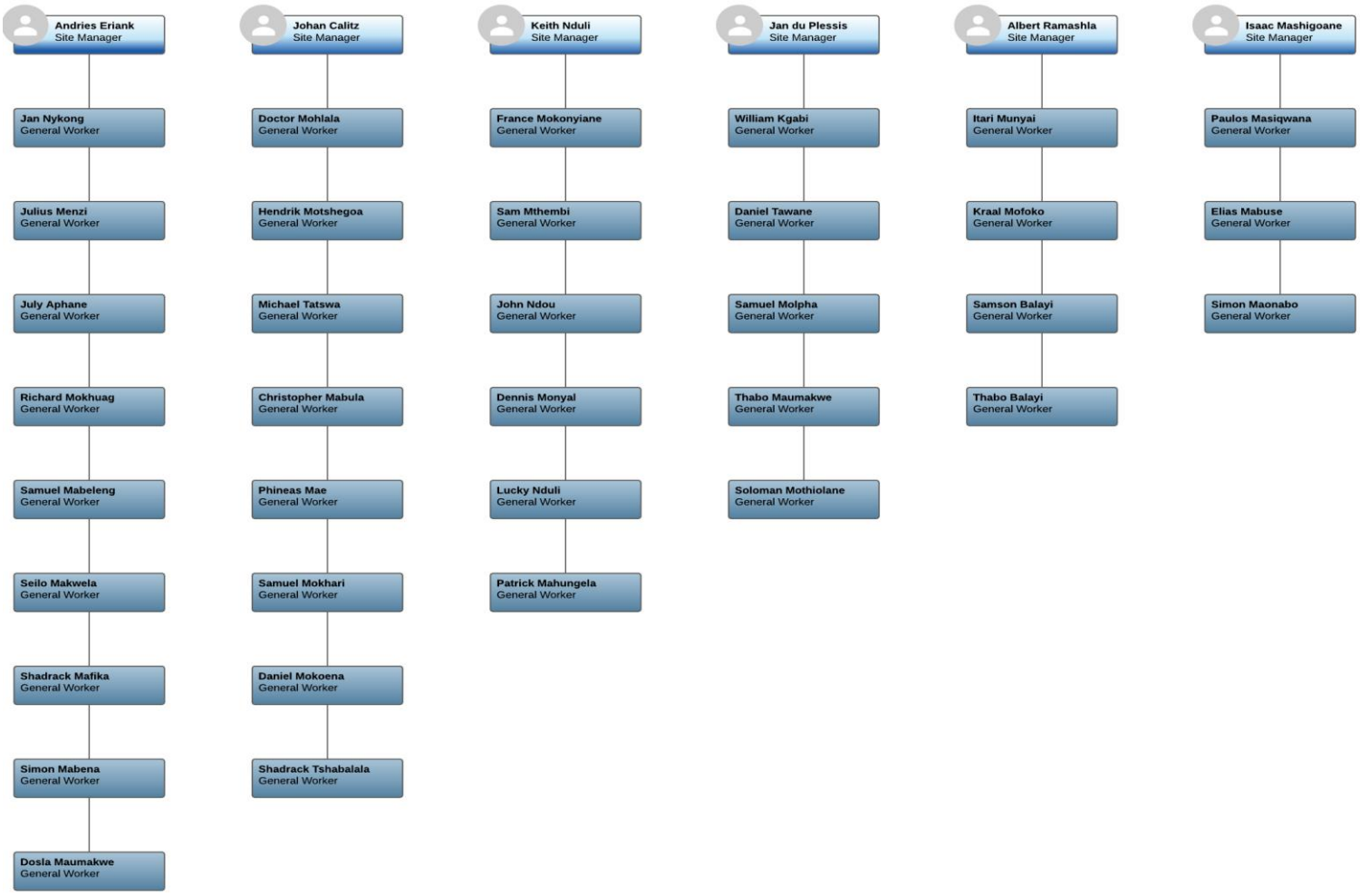
2.3 Company structure

2.3.1 Management Team Structure



2.3.2 General Team Structure





2.3.3 Area of business

Gohvan Construction's area of business is the civil construction industry. Specialising in the designing, constructing, and installing cellular towers.

2.3.4 Business environment

The current business environment is mainly paper based, and administration is handled manually. Business processes are completed by the Management Team of Gohvan Construction.

This team consist of:

- Managing Director
- Directors
- Operations Manager
- Health & Safety Officer
- Human Resource Officer
- Draughts Person

The physical construction and installation are carried out by the general teams. General teams consist of The Site Manager and the General Employees. Govhan Construction has Stakeholders essential to their completion of work. Namely the Client (Vodacom), Strategic Partners and Subcontractors. Govhan Construction currently only operates in the Northern Gauteng Area.

2.4 Contact particulars

Michael Van Der Walt is one of the Directors of Gohvan Construction and this role entails the overseeing of the Operations Manager, Health and Safety Officer, Human Resources Officer and Draughts person. Michael Graduated from the University of Pretoria, where he studied a Bachelor of Commerce in Informatics.

GOHVAN CONSTRUCTION

MICHAEL VAN DER WALT

Director

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2.5 Conclusion

Analysing Gohvan Construction's background, history, and organisational structure; Has helped clarify the purpose of the company. The organisation's hierarchy helps display how the stakeholders communicate and it shows how the information travels in the company. Understanding the client in depth has provided Paralinear Solutions an extensive overview of how the company operates.

3. Project Request

3.1 Introduction

The project request documents the original request Gohvan Construction (also known as the client) had for Paralinear Solutions' system that the client would like to be implemented in their business.

3.2 Project Request

3.2.1 Overview

The client (Gohvan Construction) originally requested a system for their overall workings of the business. This includes a system that helps operations such as starting, keeping track of progress and finalising projects for construction sites regarding the upgrading and building of telecommunication towers and satellite sites. The requested system will need to help digitise the starting and establishing of a project making it easier for a client of Gohvan Construction to start a project with them and in turn reduce the overall completion time of the project. The system will need to help administration of the staff, business records, site resources and site allocations for projects teams for potential projects. The system will need to make it easier to record progress of a construction site and recording of the site completion process. The system will also need to help effectively record and capture invoicing for the business by having the system automatically compile invoices and notify their clients of the project and payments and respective parties. The new system needs to help convert the old mainly paper-based system to a system the digitises as much as possible of the current system.

3.2.2 The establishment of a project

The establishment of a project such as the business' Technical Site Survey Reports (TSS Reports) need to be digitised to help the speed, consistency, and efficiency of the establishment of a project so that the project can be started as soon as possible for Gohvan Construction's client.

3.2.3 The quotation of a project

The quotation of a project needs to be digitised to help the speed of the quote generation and to help reduce human error. By doing this it will help employees focus on more important areas that need more focus.

3.2.4 The administration of a project

The administration of a project needs to be digitised to help keep track of health and safety documents of staff, site drawings, compliance documents for sites and fully auto generate the business As-Built document which stores all a specific projects information.

3.2.5 The construction of a project

The construction of a project needs to be digitised to fully automate procurement and logistics of resources, site allocations to site teams, construction progress reports to managers and to maintain and record site quality.

3.2.6 The invoicing of a project

The invoicing of a project needs to be digitised to fully automate and record the invoicing of clients and their payments to ensure that Gohvan Construction's client receives the correct information and pay for the work Gohvan Construction is doing.

3.3 Conclusion

After the project request from Gohvan Construction we can understand what the client would like and start thinking of possible solutions to achieve this project request.

4. Preliminary Investigation

4.1 Introduction

This section provides a detailed overview of the problem, opportunities, assumptions, directives and techniques used for elicitation. This will assist us in identifying business needs, as well as solutions that can be used in order to meet system objectives.

4.2 Problem/Vision statement

The problem of	Lack of automation
Affects	Management Employees
The impact of which is	Loss of profits Decrease in efficiency of processes
A successful solution would	Reduced paper trail Less redundancy Increase in time and profits

The problem of	Re-submission of details
Affects	Management Employees
The impact of which is	Loss of profits Decrease in efficiency of processes Low data integrity
A successful solution would	Reduced paper trail Greater efficiency Higher data integrity. Increase in time and profits

The problem of	Paper based system
Affects	Management Employees
The impact of which is	Loss of profits Increased time loss Decrease in efficiency of processes. Inadequate management of documentation
A successful solution would	Reduced paper trail Increase in time and profits. Greater effectiveness and efficiency of operations

The problem of	Minimal to no departmental integration
Affects	Management Employees
The impact of which is	Loss of time and profits Inadequate communication of problems and solutions Decrease in efficiency of processes
A successful solution would	Adequate communication of problems and solutions Increase in time and profits. Centralized system that works efficiently

4.3 Business Goals and Objectives

Gohvan Construction has requested a system for internal use by management and employees to ensure that information flows through the organisation in an effective and efficient way. The system must be implemented by October 2021 with the skills and resources of our team.

The company need a solution that will eliminate the repetitive labour-intensive value chain activities. This will allow processes to be faster and improve turnaround time.

The company requires a system that allows them to prevent user errors in order to improve data integrity. This can be done by ensuring certain details are only submitted once and saved by the system, without the need to re-submit.

The company requires an efficient and effective way of minimising expenditure. This can be done by ensuring there is no need to constantly submit data and by integrating departments to optimally use resources that will assist the business in the long run.

The company aims to optimize efficiency. This can be accomplished through providing a centralized system that works efficiently between the various applicable parties.

4.4 Problem, Opportunities and Directives

PROJECT:	**Gohvan Construction**	**PROJECT MANAGER:**	**Tshepang Mashao**
CREATED BY:	**Matthew Veltman**	**LAST UPDATED BY:**	**Matthew Veltman**
DATE CREATED:	**4/01/2021**	**DATE LAST UPDATED:**	**04/07/2021**

Brief Statement of Problem	The impact the problem is causing	Expected benefits from any potential solution	How quickly can the problem potentially be resolved	What is the underlying source of the problem?	What will it cost to solve the problem?
As built document completion.	Administration is being held back and overall completion of project is delayed.	Decrease project completion time and help ease workload of administration for projects.	7 months	System to support workforce is paper-based and problematic.	R0; business knowledge input from the client; 7 months of hard dedicated work by Paralinear solutions.
1. Progress reports of construction projects.	Managers need to waste valuable time asking site workers for regular updates and photos of progress.	Increase productivity of both site workers and managers. Also allowing a timely log of site progress.	7 months	No reminder or regulations in place for progress reports.	R0; business knowledge input from the client; 7 months of hard dedicated work by Paralinear solutions.
2. Quotes and Invoices need to be in excel format for Vodacom	Makes it harder to auto generate invoices and compile them.	Increase efficiency and speed of compilation.	7 months	Excel format currently manual.	R0; business knowledge input from the client; 7 months of hard dedicated work by Paralinear solutions.
3. Some aspects of forms are redundant / documents	Makes it longer and more difficult to fill in.	Increase efficiency and speed of the filling in of the forms / documents.	7 months	Forms / documents were last updated in 2012.	R0; business knowledge input from the client; 7 months of hard dedicated work by Paralinear solutions.

4. Site photos are difficult to upload and keep track of in the system and site file.	Potential for photos to be lost or delayed when they are supposed to be uploaded.	Increase in efficiency and makes sure no data is lost.	7 months	No specific method to upload the photos.	R0; business knowledge input from the client; 7 months of hard dedicated work by Paralinear solutions.

Brief Statements of Opportunity	Urgency	Visibility	Annual Benefits	Priority or Rank	Proposed Solution
1. Transform manual completion of As-Built document to being automatically completed.	High	High	Improve site completion time.	3	Build a more effective system that compiles all the information automatically into the as built document.
2. Transform completion of TSS report on paper to being completed on a tablet.	High	High	Improve site check time and start construction faster.	1	Build a more effective system that allows entering and submitting of site information to be faster.
3. Make automatic reminders for tasks to ensure everything is completed in a timely manner.	High	High	Improve site completion time.	4	Build a more effective system that ensures tasks are completed when needed.
4. Transform manual compilation of invoices to being automatically completed.	High	High	Improve transaction completion time	2	Build a more effective system that can compile all relevant information into the invoices.
Brief Statements of Directive	**Urgency**	**Visibility**	**Annual Benefits**	**Priority or Rank**	**Proposed Solution**
1. Before a site can be signed off the As-Built document needs to be completed.	High	High	Reduce overall completion time of site projects.	3	Transform manual completion of As-Built document to being automatically completed.
2. Once a Radio frequency report is obtained and sent an invoice to the client the client has	High	High	Ensure client pays for site construction to	1	Transform manual system to automatic with reminders for client to pay within the time period.

	within 7-10 days to pay 90% of initial claim.			ensure minimum risk on Gohvan Construction.		
3.	Once the site has been signed off the client is sent an invoice to pay the last remaining 10% of initial claim.	High	High	Ensure client pays for site construction after its completion.	2	Transform manual system to automatic with reminders for client to pay within the time period.

4.5 Preliminary assumptions and constraints

4.5.1 Assumptions

- The Director is aware of implementing a new system as he has a degree in BCom Informatics.
- The employees will be able to easily adapt to a new system.
- The business has well equipped technology to help with the implementation of the new system.
- The project manager is over-loaded with forms and documents for each site to complete in a timely manner.
- The current system is causing a large disruption with documents and tasks being completed when they need to be.
- All employees are able to use technology.
- All invoices and quotes are done in excel.
- All site initial site drawings are done on paper.
- There is extremely sensitive data on the system.
- The business is aware of Paralinear's potential and intention with the system.

4.5.2 Constraints

- The employees are going to have to learn the system.
- The system will need to be in a timely manner.
- The Paralinear team will need to learn new skills to develop the system.
- The system might slightly be different in the final completion to what was originally agreed on.

4.6 Elicitation techniques and the use of these techniques

4.6.1 Brainstorming

Brainstorming is a technique used to generate topics or ideas to help solve a problem. This helps create solutions to problems we might face as well as think of problems that we have not thought of or could possibly encounter.

4.6.2 Interviews

Interviewing is when two or more people come together to discuss certain topic/s. This process generally involves one party asking another party questions to gain knowledge on a desired topic/s. We used this technique to gain knowledge of Gohvan Construction and its inner workings and problems that needed solutions.

4.6.3 Document Analysis

Document Analysis is used to assess documents with the intention of gathering information about the business. This helps us to gain insight and knowledge of concepts and processes that the company does on a day to day or regular basis. It is limited to an as-is situation, but it acts as a means of cross-checking requirements with other sources.

4.7 Proof of Elicitation Techniques

4.7.1 Brainstorming

Preparation checklist			
No	Task	Done	Date Completed
1	Define area of interest	☒	29/03/2021
2	Define time limit	☒	29/03/2021
3	Identify participants	☒	29/03/2021
4	Identify facilitator	☒	29/03/2021
5	Invite participants	☒	29/03/2021
6	Invite facilitator	☒	29/03/2021
7	Meet with participants to explain expectations	☒	29/03/2021
8	Establish evaluation criteria	☒	29/03/2021
9	Book venue/meeting room	☒	29/03/2021

During Elicitation checklist			
No	Task	Done	
1	Share new ideas	☒	30/03/2021
2	Record all ideas	☒	30/03/2021
3	Build on ideas	☒	30/03/2021
4	Elicit as many ideas as possible	☒	30/03/2021

After Elicitation checklist			
No	Task	Done	
1	Discuss and evaluate ideas	☒	30/03/2021
2	Create list of ideas	☒	30/03/2021
3	Rate ideas	☒	30/03/2021
4	Distribute final list of ideas	☒	30/03/2021
5	Schedule follow-up if needed	☒	30/03/2021

4.7.2 Interviews

Preparation checklist			
No	Task	Done	Date completed
1	Decide which type of interview	☒	30/03/2021
2	Decide on interview goal	☒	30/03/2021
3	Create list of questions	☒	30/03/2021
4	Identify potential interviewees	☒	30/03/2021
5	Decide on location for interview	☒	30/03/2021
6	Invite interviewees	☒	30/03/2021
7	Send questions to interviewees (optional)	☐	

During Elicitation checklist			
No	Task	Done	
1	Describe purpose of interview	☒	31/03/2021
2	Confirm interviewees' roles	☒	31/03/2021
3	Address any concerns	☒	31/03/2021
4	Explain how information will be recorded and shared	☒	31/03/2021
5	Ask predefined questions	☒	31/03/2021
6	Summarize the session	☒	31/03/2021

After Elicitation checklist			
No	Task	Done	
1	Organize information	☒	31/03/2021
2	Confirm results with interviewees	☒	31/03/2021
3	Share information with stakeholders	☒	31/03/2021
4	Schedule follow-up interview if needed	☐	

4.7.3 Document Analysis

Preparation checklist		
No	Task	Done
1	Identify source documents	☐
2	Obtain documents	☐
3	Identify the details to gather	☐
4	Consult with stakeholders	☐

During Elicitation checklist		
No	Task	Done
1	Conduct detail review	☐
2	Capture notes	☐
3	Identify conflict in notes	☐
4	Identify duplicate notes	☐
5	Noting gaps	☐
6	Perform additional research if necessary	☐

After Elicitation checklist		
No	Task	Done
1	Capture findings in a document	☐
2	Share results with stakeholders	☐

4.8 Description of Elicitation Techniques

4.8.1 Brainstorming

4.8.1.1 Before Elicitation

- *Define the area of interest*
  - Discuss project management, work schedule, assigning of tasks, work ethic etc.
- *Define time limit*
  - 60 minutes
- *Identify participants*
  - Vincent Yu, Michael Vosloo, Tshepang Mashao, Amore Rossouw and Matthew Veltman
- *Identify facilitator*
  - Michael Vosloo and Vincent Yu
- *Invite participants*
  - Meetings were arranged on WhatsApp with time and location on Hatfield campus.
- *Invite facilitators*
  - Meetings were arranged on WhatsApp then google meet invites were sent out through email.
- *Meet with participants to explain expectations*
  - Not applicable ass all expectations were discussed over WhatsApp.
- *Establish evaluation criteria*
  - What will be the best way to complete this deliverable?
  - What will be the best way to ensure everything is done in a timely matter?
  - What solutions to improve the system will be the best and most achievable?
- *Book venue/meeting room*
  - No booking needed, we just gathered in the IT coffee room following covid regulations.

4.8.1.2 During Elicitation

- *Share new ideas*
  - Use a tablet to do the TSS report.
  - Create a progress meter for the progress of site builds.
- *Record all ideas*
  - Create a progress meter for the progress of site builds.

- Use a tablet to do the TSS report.
- Make the as built document fully automatic.
- All members of Paralinear need to be aware if they need help, they need to ask for it.

- *Build on ideas*
  - Use tablet also for site drawings as well as TSS report.
- *Elicit as many ideas as possible*
  - Tablet for TSS report and site drawings.
  - Progress meter for site builds.
  - As built document fully automatic.

4.8.1.3 After Elicitation

- *Discuss and evaluate ideas*
  - During the meetings all the group members participated in the brainstorming which allowed ideas to bounce off everyone. We decided to discuss what problems we wanted to solve for the business as well as how to do it. We wanted to make a space where everyone in the group felt safe to share their opinions and ideas and to ensure that members knew if they had any trouble during the project, they could ask for help.
- *Create a list of ideas*
  - Create a progress meter for the progress of site builds.
  - Use a tablet to do the TSS report.
  - Make the as built document fully automatic.
  - All members of Paralinear need to be aware if they need help, they need to ask for it.
- *Rate ideas*
  - All ideas that are raised are very valuable even if they are not used in the overall solution as the help stimulate more ideas.
- *Distribute a final list of ideas*
  - Not applicable.
- *Schedule follow-up if needed*
  - No, follow-up was created.

4.8.2 Interviews

4.8.2.1 Before Elicitation

- *Decide which type of interview*
  - The interview will be unstructured as we have questions for Gohvan Construction, but they will also discuss their processes and procedures.
- *Decide on interview goal*
  - Ask questions on confusing topics we have encountered while deciding on a solution for the system. We want to gain a very well-rounded understanding of the policies and procedures.
- *Create a list of questions*
  - What are the alt steps for 90% and 10% payments/invoice?
  - Does the operation manager send TSS report back?
  - Ask about draftsman drawings/ second drawings after TSS and when CAD drawing happens.
  - How does procurement / logistics work?
  - How does logistics of stock work?
  - Ask how site allocation works?
  - What entails "item-specific compliance certificates"?
  - How does signing off on a completed site work?
  - How do you want subcontractors to be contacted?
- *Decide on a location for an interview*
  - Google meets
- *Invite interviewees*
  - Interviewees were invited through email.

4.8.2.2 During Elicitation

- *Describe the purpose of the interview*
  - The purpose is to gain a greater and overall understanding of the current system to help develop a better system.
- *Confirm interviewees' roles*
  - Michael van der Walt is the Director of Gohvan Construction
- *Address any concerns*
  - Did this through the interview's questions.

- *Explain how information will be recorded and shared*
    - The overall session is screen and voice recorded as well as key points are written down for later discussion amongst Paralinear solutions.
- *Ask predefined questions*
    - Done during interview.
- *Summarize the session*
    - Session started with greetings where it later went to the questions we had for Michael and then head to a discussion about the system between Paralinear solutions and Michael from Gohvan Construction.

4.8.2.3 After Elicitation

- *Organise information*
    - Information gathered was stored on excel and videos that were uploaded to the groups google drive.
- *Confirm results with interviewees*
    - Confirmed through email.
- *Share information with stakeholders*
    - All stakeholders attended the meeting.
- *Schedule follow up interview if needed*
    - Not applicable

4.8.3 Document Analysis

4.8.3.1 Before Elicitation

We decided to schedule a meeting with the director of Gohvan Construction. The aim of the meeting was to gain insight into the processes of the organisation and that actual work that stakeholders needed to produce. We believe understanding how the company works before we recommend our solution is the best approach in being able to offer an effective and efficient solution.

Because many of the current business processes would be automated, taking time to look at what is already on paper, on a spreadsheet and how it is filled in could save us valuable time and help us to offer a valuable service. We chose Google Meet as a platform to have the meeting, for 30-45 minutes. We wanted to gather details of the TSS Report, Formal Site Drawing, Health and Safety files and the Snag List.

4.8.3.2 During Elicitation

All the reports requested were shown to us, starting with the TSS Report that is filled out on-site by the Operations Manager. It contains information specific to that project and to that site that need to be filled in. It is paper based, which can make reading difficult, it also contains notes written outside of the designated blocks which can lead to confusion. The formal site drawing is clear, easy to understand and helps us to get a better idea of the site and the required materials. The HS files that were shown are vast and compiled specifically for the client, and the snag list that was shown offers a look into the inspection of the site and notes on possible snags. Overall, the necessary information required is given but there is re-submission of details and a clear need to eliminate labour-intensive activities. Additional research in the form of interviews will be necessary.

4.8.3.3 After Elicitation

We decided that having a meeting with one of the employees (Health and Safety Officer) would be beneficial to gain better insight, as well as having a meeting with the Operations Manager to better understand how certain processes work on a day-to-day basis. We all agree that this will be an invaluable help in creating a system that solves the problems or improves on processes that they already have and not the ones that we assume they have. Problems are found under 4.1 and the actual documents under Appendix A.

4.9 Conclusion

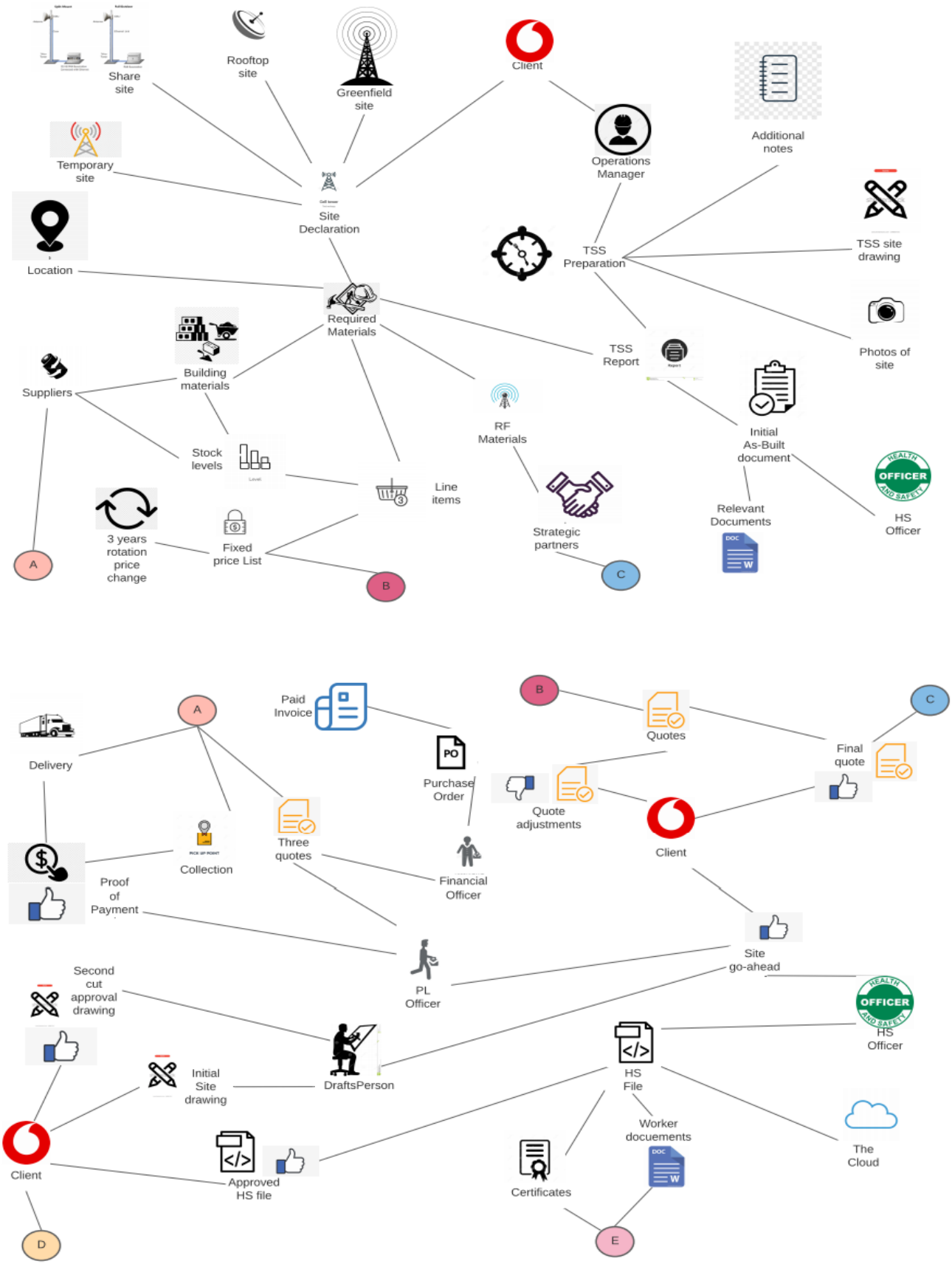
This section provided a detailed overview of the problem, opportunities, assumptions, directives, and techniques used for elicitation. This assisted us in identifying business needs, as well as solutions that can be used to meet system objectives. Through brainstorming, interviews, and analysing documents we were given insightful knowledge into the processes of the business.

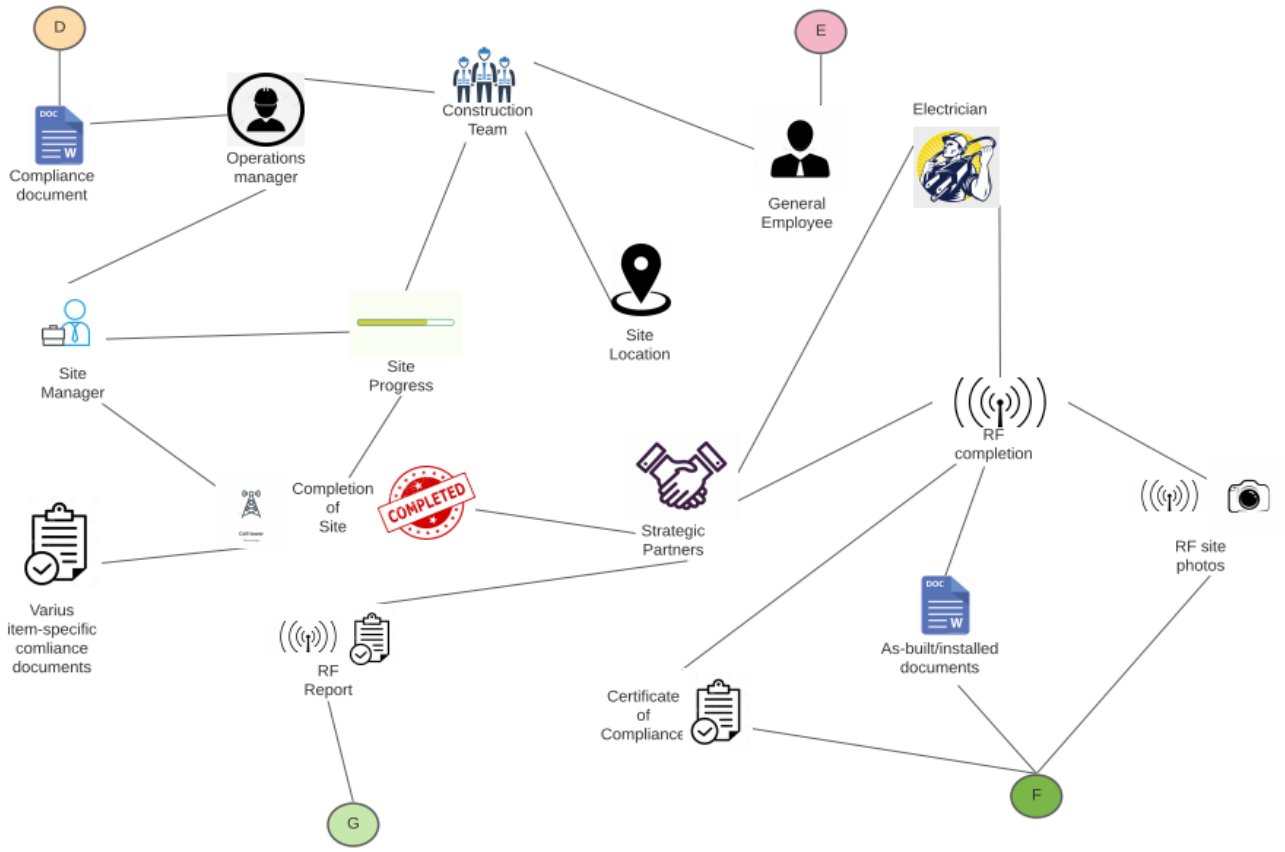
5. Problem Analysis

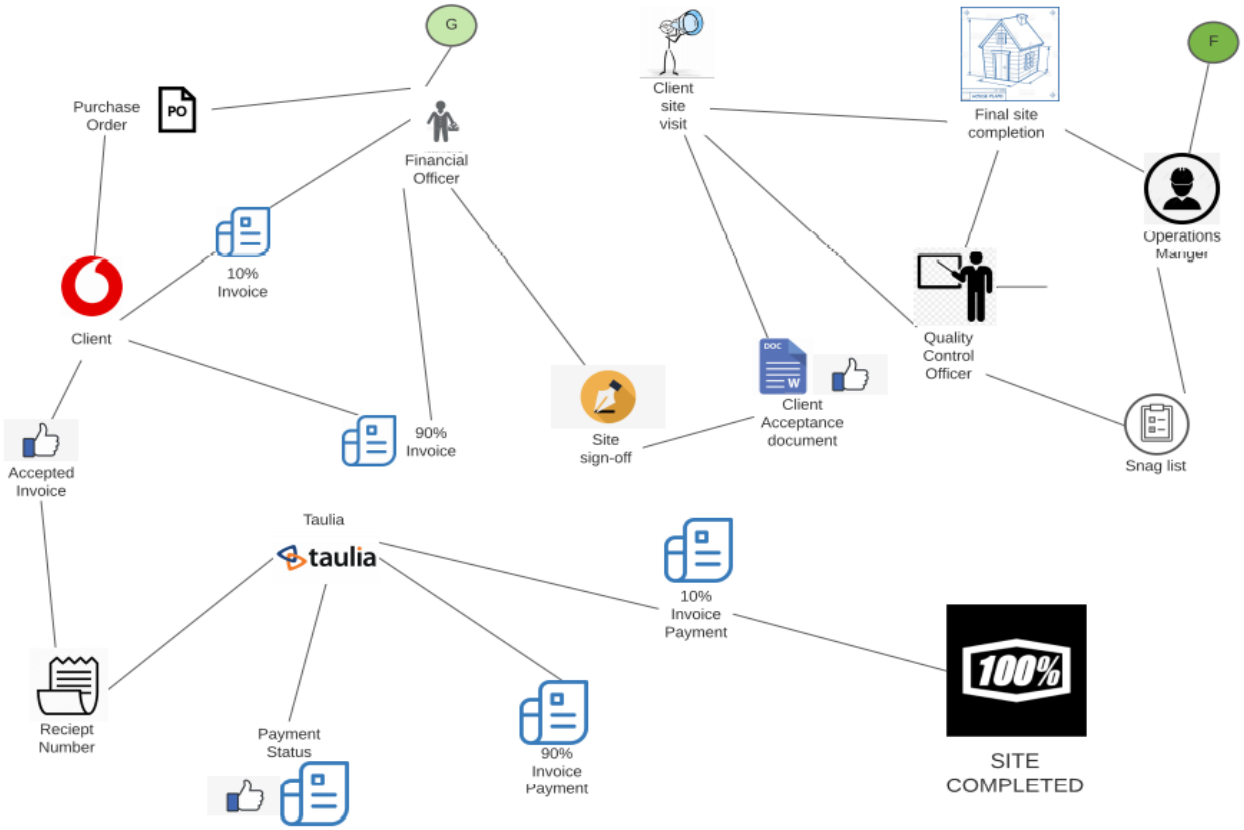
5.1 Introduction

In this problem analysis our team will look at an overview of the current system, it's activities and its current events by using a rich picture to discover the issues and failures that the current system has. This will allow us to get a better understanding of what needs to be improved. Through analysing the system requirements and the capability gaps we will be able to make adequate solutions to address the gaps in the current system and propose a new system that will meet all the system requirements.

5.2 Current System Rich Picture




D
Compliance document
Operations manager
Construction Team
E
General Employee
Electrician
Site Manager
Site Progress
Site Location
RF completion
Completion of Site
COMPLETED
Strategic Partners
RF site photos
Varius item-specific comliance documents
RF Report
As-built/installed documents
Certificate of Compliance
F
G


G
Purchase Order
PO
Financial Officer
Client site visit
Final site completion
F
Operations Manger
10% Invoice
Client
Quality Control Officer
Client Acceptance document
Site sign-off
90% Invoice
Snag list
Accepted Invoice
Taulia
taulia
10% Invoice Payment
Reciept Number
Payment Status
90% Invoice Payment
100%
SITE COMPLETED

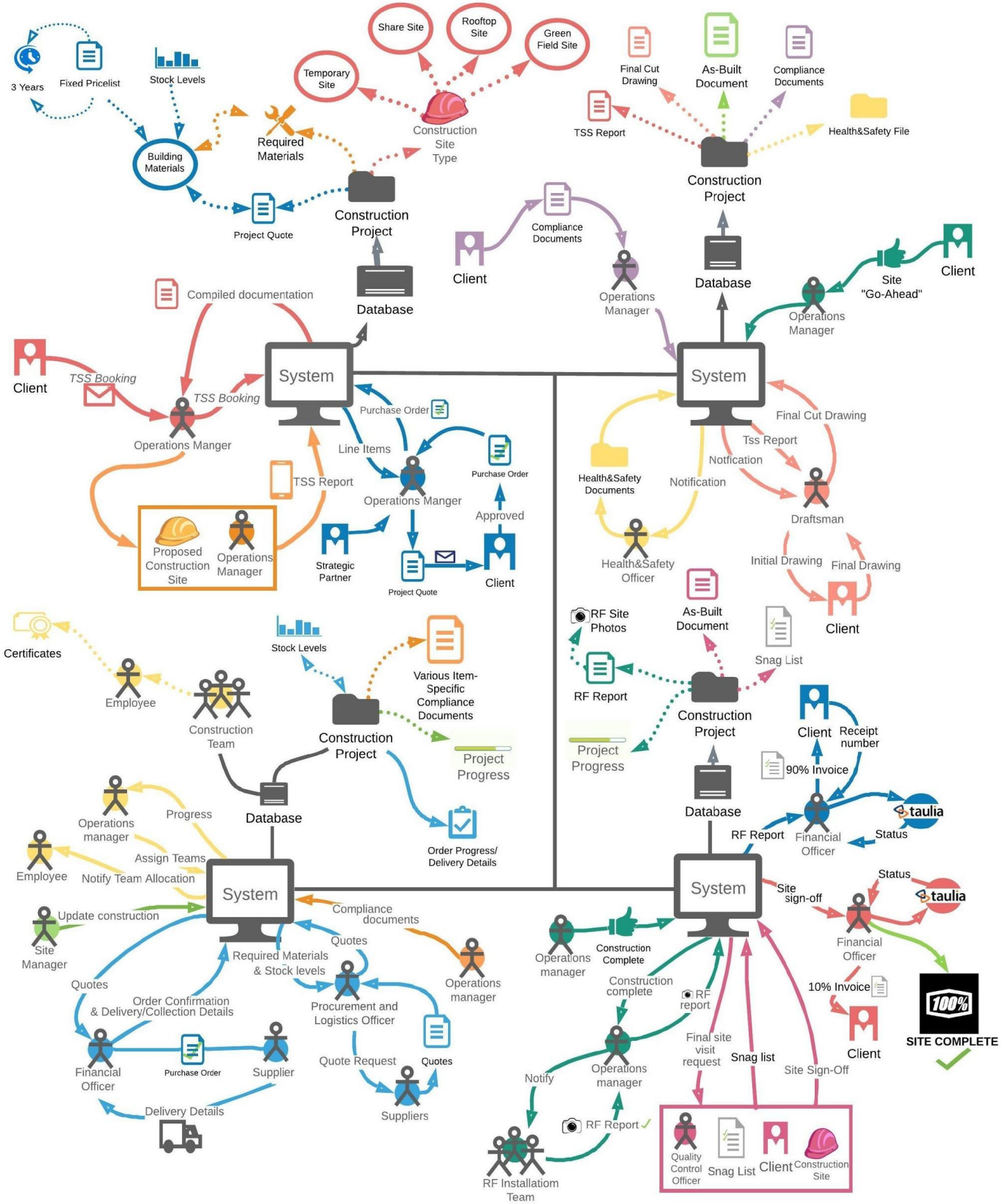
5.3 System Capabilities and GAPS

No.	Current Capabilities	Required Capabilities	Capability gaps	Recommendations
1.	Manually handling TSS bookings via email.	Making bookings TSS through a system.	There is no system in place that can store bookings and manage bookings. There is no way to know which bookings were made without asking someone.	A system with the ability to create and manage bookings when a booking request is received. Users will be able to login and create and view bookings
2.	The TSS report is filled out on paper.	Filling in a TSS report form on a tablet or smartphone.	Once a TSS report is drawn up it must be manually scanned in and mailed to all the parties involved. The form is often not filled in correctly because it is outdated.	A system which allows the user to fill in an updated TSS report form on their smart device and directly makes it available to the necessary parties and notifies them once it has been uploaded.
3.	The TSS site photos are shared via WhatsApp.	Uploading the photos directly to a system and linking it with the corresponding project.	Sending images through WhatsApp and uploading it to the correct place is time consuming and not necessary. Photos do not always end up in the right place.	A system with the capability of uploading photos directly to projects and making it possible for all necessary parties to update and access it.

4.	Quotes are managed and tracked manually.	A system that can track quotes and receive quote updates.	There is no way of tracking quotes other than logging in to One drive and searching for the right quotes.	A system that allows the user to upload/update quotes and link them to the corresponding projects.
5.	Purchase Orders are tracked and managed manually.	Upload purchase orders on a system and update the project status to “Purchase order received”.	All the purchase orders are received manually and uploaded to One drive and people are notified of this via email. There is no system to notify employees that the project quote was approved.	A system which will receive purchase orders and notify the operations manager and other necessary parties that the site construction can continue to the next step by updating the Project status to “Purchase order received.”
6.	An As-built document is compiled manually after the project is completed	A system generated As-built document.	There is no system in place for making an As-built document. The health and safety officer compiles the document after construction in a pdf editor.	A system that generates parts of the As-built document while the project is in progress.
7.	The construction project’s progress is tracked via WhatsApp.	Tracking construction progress through a system.	The current system is unreliable and unorganized. Asking for project updates is time consuming seeing as replies are not immediate.	A system which allows the user to update the progress of the site on their phones/tablets and allows the user to upload progress photos. The progress updates will be linked to the corresponding construction sites.

8.	Site Allocation is done via email or WhatsApp.	A system that shows the workload of each team to better allocate teams to construction sites.	There is no system to manage and view the workload of construction teams. The operations manager must manually check what each team is doing before assigning teams to construction sites.	A system that tracks all construction teams' site allocations with site progress, and team workloads. The system will then allow the user to assign teams to new sites and the system will notify teams accordingly and allow them to accept or reject site allocation if a reason is given.
9.	Item stock levels are tracked on an excel spreadsheet.	Tracking item stock levels through a system.	There is no system for tracking item stock levels due to the company not carrying a lot of items on hand, but the current way of tracking items is not scalable.	A system that allows the user to add/update new items and store them in a database.
10.	Employee health and safety certificates are managed manually.	A system that tracks employee certificates.	Employee certificates have expiry dates. There is no system in place to notify the human resource officer that the certificates have expired.	A system that allows the user to add/ update employees and attach their certificates to their records. The system will require the user to enter the certificate's expiry dates and will notify the human resource officer once the employees' certificates have expired.

5.4 Proposed System Rich Picture



5.5 Conclusion

Through analysing the capabilities of the current system and looking at the system as a rich picture we were able to see the gaps of the system and identify the required capabilities to address the gaps. We were able to make recommendations to meet these required capabilities and depict it in a new rich picture of the proposed system.

6. Requirement Analysis

6.1 Introduction

The requirement analysis process helps distinguish what functional and non-functional requirements the system must be able to do. Functional requirements must support the system user(s) in performing their task(s) correctly. Non-functional requirements are behavioural properties in which the system must adhere to.

6.2 Functional requirement list

1.Establishment Subsystem	
1.1	Book TSS (Technical site survey)
1.2	Create TSS
1.3	Edit TSS
1.4	Upload Rough Drawing
1.5	Create Rough Drawing digitally
1.6	Upload TSS Site Photos
1.7	Update TSS Site Photos
1.8	Send TSS Report
1.9	Receive TSS report Confirmation

2.Quotation Subsystem	
2.1	Create Quote
2.2	Update Quote
2.3	Search Quote
2.4	Generate Final Quote
2.5	Receive PO
2.6	Update PO status
2.7	Receive “Site-Go-Ahead”

3.Administration Subsystem	
3.1	Create HS File (Health and Safety)
3.2	Update HS File status
3.3	Upload HS File
3.4	Search HS File
3.5	Receive HS File Confirmation
3.6	Create Final Drawing
3.7	Accept/Reject Final Drawing
3.8	Upload Second Cut
3.9	Upload Compliance Documents
3.10	Generate As-Built Document
3.11	Update As-Built Document
3.12	Search As-Built Document

4.Construction Subsystem	
4.1	Create Team
4.2	Update Team
4.3	Search Team
4.4	Allocate Team Site
4.5	Accept/Reject Team Site Allocation
4.6	Update Team Site Allocation
4.7	Search Team Site Allocation
4.8	Assign Site Manager
4.9	Update Site Manager
4.10	Search Site Manager
4.11	Create Site Progress status
4.12	Update Site Progress status
4.13	Search Site Progress status
4.14	Site Construction Complete Notification
4.15	Installation Complete Confirmation
4.16	Request Final Site Visit
4.17	Log Snags

4.18	Update Snags
4.19	Search Snags
4.20	Request Client Site visit
4.21	Update Client Site approval
4.22	Request site sign-off
4.23	Update site sign-off
4.24	Search site sign-off

5.Invoicing Subsystem	
5.1	Receive Receipt Number
5.2	Generate Invoice
5.3	Receive Invoice Confirmation
5.4	Process Claim
5.5	Process Final Claim

6.Human Resource Subsystem	
6.1	Add employee
6.2	Update employee
6.3	Search employee
6.4	Upload Employee documents.
6.5	Update Employee Document
6.6	Search employee document

7.Supplier Order Subsystem	
7.1	Generate line-item list
7.2	Update line-item list
7.3	Receive supplier quote
7.4	Update Final supplier quote
7.5	Create PO

8.Supplier Subsystem	
8.1	Add supplier
8.2	Update supplier
8.3	Search supplier
8.4	Upload Docs

9.Inventory Management Subsystem	
9.1	Add line-item
9.2	Update line-item
9.3	Search line-item
9.4	Update Line-item quantity

10.Report Subsystem	
10.1	Generate stock level report
10.2	Generate site progress report
10.3	Generate TSS Report
10.4	Generate RF report
10.5	Generate document expiry report

11.User Management Subsystem	
11.1	Log In
11.2	Register New Account
11.3	Log out
11.4	Update Account Details
11.5	Search Account
11.6	Change Password
11.7	Forgot Password

6.3 functional requirement description and details

6.3.1 Establishment subsystem

Functional Requirement	Explanation
Requirement number:	1.1
Requirement name:	Book Technical Site Survey
Requirement short description:	This the process where a client books a Technical Site Survey (TSS)
Requirement detailed description and constraints:	The client sends an email to Gohvan Construction requesting to have a TSS on a possible location for a site and the operations manager sets a time and date with the client.
Business rules applicable to this requirement	Operations manager can only manage TSS
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	1.2
Requirement name:	Create Technical Site Survey (TSS)
Requirement short description:	This is the process where the operations manager creates the TSS.
Requirement detailed description and constraints:	This is the process where the operations manager creates the TSS on the system so that the site's information can be entered.
Business rules applicable to this requirement	Operations manager can only manage TSS
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	1.3
Requirement name:	Edit Technical Site Survey (TSS)
Requirement short description:	This is the process where the operations manager edits the TSS.
Requirement detailed description and constraints:	This is the process where the operations manager edits the TSS on the system so that the site's information can be entered and corrected if needed.
Business rules applicable to this requirement	Operations manager can only manage TSS
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	1.4
Requirement name:	Upload Rough Drawing
Requirement short description:	This the process where the operations manager uploads a rough site drawing
Requirement detailed description and constraints:	This the process where the operations manager uploads a photo/pdf onto the system of a rough drawing of the site and project.
Business rules applicable to this requirement	Operations manager can only upload a rough site drawing.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	1.5
Requirement name:	Create Rough Drawing
Requirement short description:	This the process where the operations manager creates a rough drawing of the site.
Requirement detailed description and constraints:	This the process where the operations manager creates a rough site drawing on a tablet.
Business rules applicable to this requirement	Operations manager can only create a rough site drawing.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	1.6
Requirement name:	Upload TSS site photos
Requirement short description:	This the process where the operations manager uploads photos of the site
Requirement detailed description and constraints:	This the process where the operations manager uploads photos of the site to help complete the overall TSS
Business rules applicable to this requirement	Operations managers can only upload TSS site photos.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	1.9
Requirement name:	Received TSS Report Confirmation
Requirement short description:	This is the process where the operations manager receives confirmation of the TSS report.
Requirement detailed description and constraints:	This the process where the operations manager receives confirmation of the TSS report from the client that site goes ahead can happen.
Business rules applicable to this requirement	TSS report confirmation needs to be received before site go ahead can happen.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

6.3.2 Quotation subsystem

Functional Requirement	Explanation
Requirement number:	2.1
Requirement name:	Create Quote
Requirement short description:	The Operations Manager creates a quote from a fixed-price list.
Requirement detailed description and constraints:	The Operations Manager takes the line items from the TSS report and enters the required quantities on a fixed-price list. Calculation sheets with price calculations are submitted by strategic partners to enable centralized package pricing. Calculation sheets must be submitted by third-party companies.
Business rules applicable to this requirement	Only the Operations Manager is allowed to compile the quote
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	2.2
Requirement name:	Update Quote
Requirement short description:	The Operation Manager makes changes to the quote.
Requirement detailed description and constraints:	The Operations Manager updates the necessary details of the quote before it has been finalized. This may include calculation updates sent by strategic partners. This will invoke requirement 2.3 Search Quote. Adjustments to the quotation after the final site “go-ahead” can be made.
Business rules applicable to this requirement	Only the Operations Manager is allowed to update the quote and send it to the client for confirmation. The fixed price list cannot be changed. All adjustments to the quote will result in an additional “copy” of the documents; Package Pricing, Final Quote, Purchase Order.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	2.3
Requirement name:	Search Quote
Requirement short description:	The Operations Manager provides search criteria in order to find a quote on the system
Requirement detailed description and constraints:	The Operations Manager provides search criteria to search for a quote. The system will capture the search criteria and display the results. The Operations Manager will then select the quote he desired to search for.
Business rules applicable to this requirement	Only the Operations Manager is allowed to search for a quote.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	2.4
Requirement name:	Generate final quote
Requirement short description:	The Operations Manager finalizes the quote and sends it to the client
Requirement detailed description and constraints:	After all the applicable pricing has been finalized, the Operations Manager compiles the final quotation and submits it to the client in order for it to be approved
Business rules applicable to this requirement	Only the Operations Manager is allowed to compile the final quote and send it to the client for confirmation
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	2.5
Requirement name	Receive Purchase Order
Requirement short description:	The Operations Manager receives a purchase order from the client
Requirement detailed description and constraints:	After the submitted quotation has been approved and the required budget has been allocated, the client then sends a Purchase order to the Operations Manager.
Business rules applicable to this requirement	The quotation must be approved, and the required budget must be allocated in order for it to be considered a Purchase Order.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	2.6
Requirement name:	Update Purchase Order Status
Requirement short description:	The Operations Manager updates the status of the Purchase Order once the purchase order has been received from the client. (Another email may be sent to request confirmation that the work may commence)
Requirement detailed description and constraints:	After the purchase order is received, the Operations Manager updates the status of the purchase order on the system to “Received”.
Business rules applicable to this requirement	The purchase order must be received in order for it to be updated to “Received”. Only the Operations Manager can update this status.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	2.7
Requirement name:	Receive Site “Go-Ahead”
Requirement short description:	The client communicates confirmation to the Operations Manager that the work may commence which is then sent to the relevant parties.
Requirement detailed description and constraints:	The client sends a final “go-ahead” to the Operations Manager via email which indicates that the work may commence. This is then sent to the Procurements and Logistics Officer, the Health and Safety Officer as well as the Draftsman.
Business rules applicable to this requirement	Adjustments to the quotation can be requested which will result in a “copy” of each of the documents; Package Pricing, Final Quote, Purchase Order.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

6.3.3 Administration subsystem

Functional Requirement	Explanation
Requirement number:	3.1
Requirement name:	Create HS File
Requirement short description:	The HS Officer creates an HS File to be approved by the client
Requirement detailed description and constraints:	The HS Officer compiles various certificates and documents from the system database that is sent to the client via email for approval.
Business rules applicable to this requirement	Only the HS Officer is allowed to compile the HS File to be sent to the client.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.2
Requirement name:	Update HS file status
Requirement short description:	The HS Officer updates the HS file status to either “Complete” or “Approved”
Requirement detailed description and constraints:	Once the HS File has been completed by the HS Officer or approved by the client, the status will be updated to “Complete” or “Approved” respectively on the system. This use case invokes requirement 3.4 Search HS File.
Business rules applicable to this requirement	Only the HS Officer can update the status of the HS file.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.3
Requirement name (use case name):	Upload HS File
Requirement short description:	The HS Officer uploads the appropriate HS File.
Requirement detailed description and constraints:	The HS Officer uploads the appropriate HS file to the system in order for there to be a record of it.
Business rules applicable to this requirement	Only the HS Officer can upload the appropriate HS File.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.4
Requirement name:	Search HS File
Requirement short description:	The HS Officer will provide search criteria in order to find the appropriate HS File.
Requirement detailed description and constraints:	The HS Officer provides search criteria to find the appropriate HS file. The System retrieves a list of HS files that match the criteria entered. The System then displays these HS files.
Business rules applicable to this requirement	Only the HS Officer can search for HS Files.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.5
Requirement name:	Receive HS File Confirmation
Requirement short description:	The client approves the HS File sent by the HS Officer sent via email.
Requirement detailed description and constraints:	The client approves the HS File sent by the HS Officer who then updates the HS File status to “Approved”.
Business rules applicable to this requirement	Only the HS Officer updates the HS File status.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.6
Requirement name:	Create formal drawing
Requirement short description:	A Draftsman creates a formal drawing of the site which is then sent to the client for approval.
Requirement detailed description and constraints:	A Draftsman creates a formal drawing of the site referencing the drawings on the initial TSS Report. This drawing is then sent to the client for approval.
Business rules applicable to this requirement	The formal drawing must be sent to the client for approval once completed.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.7
Requirement name:	Accept/Reject Drawing
Requirement short description:	The Draftsman receives approval or disapproval of the formal drawing of the client.
Requirement detailed description and constraints:	The formal drawing created by the Draftsman is approved by the client. A second cut drawing will then be obtained from the client. The formal drawing can be rejected by the client. The Draftsman will then create a new formal drawing, invoking the requirement 3.6 Create formal drawing.
Business rules applicable to this requirement	A second cut drawing is only obtained if the initial drawing has been approved.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.8
Requirement name:	Upload Second Cut
Requirement short description:	The Draftsman uploads the second cut drawing to the system
Requirement detailed description and constraints:	The client sends a second cut drawing to the draftsman. This is then uploaded on the system by the draftsman.
Business rules applicable to this requirement	Only the draftsman can upload the second cut drawing
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.9
Requirement name:	Upload Compliance Documents
Requirement short description:	A Draftsman uploads compliance documents to the system
Requirement detailed description and constraints:	Compliance Documents are uploaded to the system to be sent to the client by the Draftsman. These help to solve problem and are used for future reference.
Business rules applicable to this requirement	The uploading of compliance documents is not compulsory.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	3.10
Requirement name:	Generate As-Built Document
Requirement short description:	The Operations Manager generates an as-built document that is then sent to an employee to compile the document.
Requirement detailed description and constraints:	An as-built document is generated that contains various reports and summaries pertaining to the specific site. An employee then compiles the document using PDF editing software.
Business rules applicable to this requirement	The document must be compiled using PDF editing software.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	3.11
Requirement name:	Update As-Built Document
Requirement short description:	During the site build process, the as-built document is updated by the Operations Manager.
Requirement detailed description and constraints:	The Operations Manager updates the as-built document. This invokes requirement 3.12 Search As-Built Document.
Business rules applicable to this requirement	Only the Operations Manager can update the as-built document.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	3.12
Requirement name:	Search As-Built Document
Requirement short description:	The Operations Managers uses the system to search for as-built documents.
Requirement detailed description and constraints:	The Operations Manager enters search criteria for the as-built document into the search bar. The system then displays a list of as-built documents that match the search criteria that was retrieved.
Business rules applicable to this requirement	Only the Operations Manager can search for the as-built document.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

6.3.4 Construction Subsystem

Functional Requirement	Explanation
Requirement number:	4.1
Requirement name:	Create Team
Requirement short description:	The system must allow the Operations Manager to create new teams on the system.
Requirement detailed description and constraints:	The Operations Manager must fill out a form that requires all the employee's details needed such as employee ID, Name, Surname, contact details that the operations manager wishes to be on the same team. This will then be submitted and a new team will be created in the database and system, A site manager can also be linked to the team if the Operations Manager desires, this will be an optional entry in the aforementioned form.
Business rules applicable to this requirement	Only the Operations Manager can create new teams on the system. Site Managers can suggest to the Operations Manager which employees they wish to have on a team.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.2
Requirement name:	Update Team
Requirement short description:	The system must allow the Operations Manager to update teams and members within the teams.
Requirement detailed description and constraints:	The Operations manager will make use of the "Search Team" use case to search for the specific team the Operations Manager wishes to update. The Operations Manager will then update the Team details accordingly and submit the changes to the system.
Business rules applicable to this requirement	Only the Operations Manager can update the teams on the system. The Site Manager can suggest to the Operations Manager on the desired team updates.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.3
Requirement name:	Search Team
Requirement short description:	The system must allow the user to search for a team.
Requirement detailed description and constraints:	The user must enter the details of the desired team for the search function to take place. The System then searches the database for the existing team and returns the team details once found. The search function will either require the user to search by team name, ID and Date created
Business rules applicable to this requirement	None
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.4
Requirement name:	Allocate Team Site
Requirement short description:	The system must allow the Operations Manager to assign a team to a construction site.
Requirement detailed description and constraints:	The Operations Manager will search for the team he wishes to allocate to a site. The Operations Manager will then select on the desired team and then link the team to the Construction site he desires the selected team to work at. The system will then ask for a confirmation for the allocated team and link the construction site to the Team accordingly.
Business rules applicable to this requirement	Only the operations manager can allocate a team to a site.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.5
Requirement name:	Accept/Reject Team Site Allocation
Requirement short description:	The system must allow the options for the allocated Site Manager to accept or reject the team site allocation.
Requirement detailed description and constraints:	The selected team must accept or reject the offer to link to a desired construction site as they could already be working on a construction site at the time of allocation. The Teams Site Manager will be logged onto the system to receive the notification on the allocation to the construction site and navigate to the accept or reject option to then be allocated to the aforementioned construction site.
Business rules applicable to this requirement	A team can only be assigned to one construction site Only a site manager can accept or reject a site allocation
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.6
Requirement name:	Update Team Site Allocation
Requirement short description:	The system must allow the Operations Manager to update the team allocated to a site.
Requirement detailed description and constraints:	The Operations Manager will search for the team allocated to the desired site and the option to update the allocated team to the construction site will be available only if the construction site has a linked team. The Operations Manager will then be able to update which team is linked to the construction site, invoking a repeat of use case 4.4 “Allocate Team Site”
Business rules applicable to this requirement	Only the Operations Manager can update a team site allocation.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.7
Requirement name:	Search Team Site Allocation
Requirement short description:	The system must allow the Operations Manager to search for a specific or list of Teams allocated to a site.
Requirement detailed description and constraints:	The User will enter the construction site details and name and the Construction team linked to the construction site will be displayed.
Business rules applicable to this requirement	A construction site can only have one team linked at a given time.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.8
Requirement name:	Assign Site Manager
Requirement short description:	The system must allow the Operations Manager to assign a Site Manager to a construction site.
Requirement detailed description and constraints:	The Operations Manager will search for a Site Manager and construction site within the database and locate the desired Site Manager he wishes to assign to a specific construction site. The Operations Manager will the n selected the desired construction site and allocate the Site Manger to that specific site.
Business rules applicable to this requirement	Only the Operations Manager can assign a Site Manager to a construction site.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.9
Requirement name:	Update Site Manager
Requirement short description:	The system must allow the Operations Manager to update the Site Manager of a construction site.
Requirement detailed description and constraints:	The Operations Manager will search for the desired Site Manager with use case 4.10 “Search Site Manager”. The Site Managers details will then be displayed accordingly and the option to update the allocated site and site progress status for the Site Manager will be selected by the Operations Manager to be updated and submitted to the system.
Business rules applicable to this requirement	Only the Operations Manager can update a Site Manager
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.10
Requirement name:	Search Site Manager
Requirement short description:	The system must allow the User to search for a specific or list Site Managers.
Requirement detailed description and constraints:	The user must enter the details of the desired Site Manager for the search function to take place. The System then searches the database for the existing Site Manager and returns the Site Manager details once found. The search function will either require the user to search by Site Manager Name, surname or ID.
Business rules applicable to this requirement	None
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.11
Requirement name:	Create Site progress status
Requirement short description:	The system must allow the Operations Manager or Site Manager to create an initial beginning status to a newly started construction site to indicate the progress and life cycle of the construction site.
Requirement detailed description and constraints:	The Site Manger or Operations Manager will create a site Progress status once commencement on the construction site has started. When the progress status is being created the construction site as well as the Site Manger will be linked to the Site progress status through the Update Site Manager use case 4.9 “Update Site Manager”
Business rules applicable to this requirement	Only the operations Manager and Site manager can create a site progress status. Construction on the site has the be started before site status creation can be created,
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.12
Requirement name:	Update Site Progress status
Requirement short description:	The system must allow the Site Manger to update the construction site progress throughout the life cycle of the construction project.
Requirement detailed description and constraints:	The Site Manager will search for desired site progress status the user is accordingly linked to. The system will then display the site progress status details and the user will update accordingly thus resulting in the progression status of the construction site to be advanced and submitted back into the system.
Business rules applicable to this requirement	Only the Site Manager can update the site progress of the construction site. Progression on the site must be updated regularly for interested managers and parties within the company.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.13
Requirement name:	Search Site Progress status
Requirement short description:	The system must allow the user to search the status of the desired site progress.
Requirement detailed description and constraints:	The user will enter the site construction details (Name, ID or date started) The system will search for the requested construction site and display the results accordingly. The site progress will then be displayed next to the construction site name.
Business rules applicable to this requirement	None
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	4.14
Requirement name:	Site Construction Completion Notification
Requirement short description:	The system must allow the Site Manager to generate a notification on the system to notify applicable parties that construction on the site has been completed.
Requirement detailed description and constraints:	Once the construction on the Site has been completed the Site Manager will update the site progress status accordingly indicating that the construction on the site has been completed. Once this has been updated the system will then generate the notification to the Operations Manager and applicable parties that all construction has been completed and the relevant actions will start to take place to finalize the completion of the constructed site.
Business rules applicable to this requirement	Site progress has to be fully completed. Only the Site Manager can update the completed Site progress status. The Operations Manager must be notified that the construction site is completed.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.15
Requirement name:	Installation Complete Confirmation
Requirement short description:	The system must allow the Operations Manager to confirm that the construction of the site has been completed.
Requirement detailed description and constraints:	After the Site completion notification has been sent out the Operations Manager must lo on the system and confirm that all relevant Installations on the site have been completed. The RF (Radio Frequency) report is then generated calling use case 10.4 “Generate RF report”
Business rules applicable to this requirement	The site can only be confirmed completed after the Operations Manager reviews the site and accompanied documents relating to the completion of a site. The RF report must be generated to being invoicing process.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.16
Requirement name (use case name):	Request Final Site Visit
Requirement short description:	The system must allow the Operations Manager to request the Quality control Officer to review and visit the completed construction site.
Requirement detailed description and constraints:	The Operations Manager will receive a notification that the site progress is completed. The Operations Manager will then contact the Quality Control Officer through the system via a generated automation email to ask the Quality Control Officer to visit and review the completed construction site.
Business rules applicable to this requirement	The Operations Manager must Visit the final site completion. The Site Manager can only request a final site visit once construction site is completed.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.17
Requirement name:	Log Snags
Requirement short description:	The system must allow the Quality Control to create and log down snags on the completed construction site.
Requirement detailed description and constraints:	The Quality Control Officer will log all errors in the system relating to the completed construction site (if there are any) and submit them to the Site Manager and Operations Manager to them be rectified on the construction site. The Site Manager will then Update the Site Progress status to indicate that the construction site is not complete and has snags relating to the site.
Business rules applicable to this requirement	Only the Quality control officer can list down snags on a completed construction site.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.18
Requirement name:	Update Snags
Requirement short description:	The system must allow the Quality control officer to update snags relating to the completed construction site. Snags are updated once the Site Manager or Operations Manager notifies the Quality Control officer that the snags have been rectified.
Requirement detailed description and constraints:	Once a snag has been rectified the Site Manager notifies the Operations Manager and Quality Control Officer. The Quality Control Officer will then Search for the Snag list relating to the Construction Site and update the snag list accordingly to indicate that all Snags have been rectified.
Business rules applicable to this requirement	Only the Quality control officer can update the snags relating to the construction site.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.19
Requirement name:	Search Snags
Requirement short description:	The system must allow the Quality control officer, Operations Manager and Site Manager to search for snags relating to the construction site.
Requirement detailed description and constraints:	The user will search for the snag list via the linked construction site progress status invoking use case 4.13 “Search Site Progress status”. The snag list will then be presented to the user indicating what errors there are within the construction site.
Business rules applicable to this requirement	None
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.20
Requirement name:	Request Site Sign-off
Requirement short description:	The system must allow the Operations Manager to request a final site visit from the client.
Requirement detailed description and constraints:	Once a site progress is fully completed and all snags have been rectified the Operations Manager will be notified accordingly by the system. The Operations Manager will then be notified to request a site visit from the client to finalise the construction site. The site progression status will then be updated accordingly to indicate that the site is being visited by the client. The Operations manager will request a date for the site visit from the client and update the client site visit accordingly
Business rules applicable to this requirement	The client must visit the site. The client must be accompanied by the quality Control Officer. Operations Manager must contact the client to request a site visit.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.21
Requirement name:	Update Client site approval
Requirement short description:	The system must allow the Operations Manager to update the client site approval status after approval has been given by the client that the site visit will commence.
Requirement detailed description and constraints:	The Operations Manager will update the site Progression and client site approval accordingly the indicate that the site visit will commence and be logged into the system. The system will notify the Quality Control Officer to accompany the client on the specified date received from the client in use case 4.20 “Request client site visit”. The Quality Control officer will update the Client site approval accordingly during the site visit. If any problems occur during the site visit the quality control officer will update the snag list accordingly.
Business rules applicable to this requirement	Only the Operations Manager and Quality Control Officer can update the client site approval.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.22
Requirement name:	Request Site Sign-off
Requirement short description:	The system must allow the Operations Manager to sign-off on the completed construction site for site finalization.
Requirement detailed description and constraints:	The Operations Manager and the Quality Control Officer will request that the client sign-off on the completed construction site after the client site visit has been completed. If the Client is happy with the completed construction site, the sign-off will take place and if the not the Operations Manager and Quality Control Officer will update the site sign-off status as well as the snag list linked to the construction site to then be rectified and a new client site visit will be requested. Once the sign-off has been completed the Update site sign-off will be updated accordingly.
Business rules applicable to this requirement	Client must be asked to sign off on the site to fully complete the construction site progress

Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.23
Requirement name:	Update Site Sign-off
Requirement short description:	The system must allow the Operations Manager to Update the site sign-off on the completed construction site.
Requirement detailed description and constraints:	The Operations Manager will search for the specific site sign-off and update the sign-off details accordingly relating to whether or not the client has approved the site and signed off on the site or has brought up unfound snags that need to be rectified and updated in the snag list to then repeat the process of requesting a new client site visit.
Business rules applicable to this requirement	The Operations Manager can only update the site sign-off. The Operations Manager must be aware of all client concerns on the construction site that the client has brought up to the Quality control officer.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	4.24
Requirement name	Search Site Sign-off
Requirement short description:	The system must allow the User to search for a site-sign off.
Requirement detailed description and constraints:	The user must provide the system the site sign-off name or ID the then be searched through the system and displayed accordingly.
Business rules applicable to this requirement	Only the authorized managers and employees can search for a site sign-off.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Moderate

6.3.5 Invoicing subsystem

Functional Requirement	Explanation
Requirement number:	5.1
Requirement name (use case name):	Receive Receipt Number
Requirement short description:	The system must allow the Financial Officer to receive a receipt number from the client.
Requirement detailed description and constraints:	The Client sends a receipt number in correlation to the invoice sent to the client by the Financial officer to claim for the 90% claim on the construction site after the RF report has been received and the final 10% after the site sign off has been signed and update on the system. The receipt number received from the client and is then submitted to the system for tracking and the status on the payment is updated.
Business rules applicable to this requirement	The Financial Officer must deal with all invoicing and payments between the clients. Financial Officer must receive a receipt number from the client to claim a payment. All payments to the company from the client must be done through the Taulia website.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	5.2
Requirement name:	Generate Invoice
Requirement short description:	The system must allow the Financial Officer to create an Invoice from the aforementioned claimed receipt number
Requirement detailed description and constraints:	The Financial Officer uses the received receipt number to create a correlation invoice relating to the construction site and project requested initial by the client. The invoice is then submitted to the third-party website “Taulia”. Taulia then processes the payment relating to the submitted invoice. The invoice then goes through multiple stages within Taulia, once the invoice hits a certain stage within the Taulia website the

	Financial Officer is then notified on the payment made to Gohvan Construction.
Business rules applicable to this requirement	The amount for specific invoice must be paid within 7 – 10 days. Various client parties must approve the payment before Gohvan can be paid invoice amount.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	5.3
Requirement name:	Receive Invoice Confirmation
Requirement short description:	The system must allow the Financial Officer to receive invoice confirmation of payment.
Requirement detailed description and constraints:	The Financial Officer receive the confirmation that the invoice has been paid from the Taulia app and update the system accordingly that the payment has been paid out to Govan construction and the claim use case will be updated accordingly whether it is for the initial 90% claim or the final 10% claim. if the confirmation for the final 10% claim is confirmed then the Financial Officer update the initial project as finished on the system indicating that there are no more steps required in completing the project request initially made by the customer. If the confirmation for the 90% claim is received, then the Financial Officer needs to update the system accordingly and update the system to wait for the site sign-off to be made by the customer and the site progress to be updated to then start the use case to claim for the final 10% from the client.
Business rules applicable to this requirement	The 10% claim has to be confirmed paid for the Financial Officer to declare that the initial project requested is completed. The Financial Officer is the only user on the system that can process and claim the invoices to and from the client for payments.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	5.4
Requirement name:	Process 90 % Claim
Requirement short description:	The system must allow the Financial Officer to claim the 90% payment from the client.
Requirement detailed description and constraints:	Once the Financial Officer receives the RF report from the Operations Manager and Site Manager then the process to claim the 90% claim from the client can be submitted manually. The 90% claim status will be updated accordingly to represent that the claim has been made and receipt number is being awaited.
Business rules applicable to this requirement	RF report has to be received and up to date.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	5.5
Requirement name:	Process final 10% Claim
Requirement short description:	The system must allow the Financial Officer to claim the 10% payment from the client.
Requirement detailed description and constraints:	Once the Financial Officer receives the site sign-off from the Operations Manager, Quality Control Officer and client from the site visit and the commissioning report is received. Only then can the process to claim the final 10% claim from the client can be submitted manually. The 10% claim status will be updated accordingly to represent that the claim has been made and receipt number is being waited for the final payment needed for the completion of the initial requested project from the client.
Business rules applicable to this requirement	Site sign-off must be approved before final claim. Commissioning report (As-built documents) must be submitted and created before final claim can be made to the client.
Revision date and Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

6.3.6 Human Resource subsystem

Functional Requirement	Explanation
Requirement number:	6.1
Requirement name:	Add new employee
Requirement short description:	The system must allow the user to add a new employee.
Requirement detailed description and constraints:	The user fills out a form that requires all employee details, including name, surname, cell number, ID/Passport number, tax number, home address/postal address and email address must be filled in before an employee can be added to the system.
Business rules applicable to this requirement	Only the Human resource officer can add new employees to the system.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	6.2
Requirement name :	Update Employee
Requirement short description:	The system must allow the user to update an existing employee record.
Requirement detailed description and constraints:	The user searches for the employee they want to update. Once the employee is found the user can update the employee's details. The system must allow the user to update all employee details.
Business rules applicable to this requirement	Only the Human resource officer can update the employees on the system.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	6.3
Requirement name:	Search Employee
Requirement short description:	The system must allow the user to search through the list of existing employees.
Requirement detailed description and constraints:	The Human resource manager wants to search for an employee. The user can search for an employee by name or Employee ID. All the employees' details need to be displayed when an employee is searched.
Business rules applicable to this requirement	None.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Low priority

Functional Requirement	Explanation
Requirement number:	6.4
Requirement name:	Upload employee documents
Requirement short description:	The system must allow the user to upload employee documents to the system.
Requirement detailed description and constraints:	The user can attach the employee's certifications and health and safety certificates to the employee's file.
Business rules applicable to this requirement	Only the Human resource officer can update the employees on the system.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	6.5
Requirement name:	Update employee documents
Requirement short description:	The system must allow the user to update employee documents.
Requirement detailed description and constraints:	Certain employee certificates expire and need to be tracked and updated accordingly. The user must be able to search for specific documents/certificates and replace expired certificates with new certificates
Business rules applicable to this requirement	Only the Human resource officer can update the employees on the system.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	6.6
Requirement name:	Search employee documents
Requirement short description:	The system must allow the user to search through the list of existing employee's documents.
Requirement detailed description and constraints:	The Human resource manager wants to search for an employee's existing documents. The user can search for an employee document by finding the employee and searching for the document by name or document code. The documents related to search must be displayed and the system must allow the user to access the documents.
Business rules applicable to this requirement	None
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Low Priority

6.3.7 Supplier Order subsystem

Functional Requirement	Explanation
Requirement number:	7.1
Requirement name:	Generate line-item list.
Requirement short description:	The system must generate a line-item list for the current project.
Requirement detailed description and constraints:	When requested the system must generate a list of all the line items that a project will require. This list will depend on what type of construction site it is and what line items the operations manager listed on the TSS report form. The user will use this list to generate quote requests that will be sent to suppliers.
Business rules applicable to this requirement	Only the operations manager must be able to request the line-item list. The line-item list must include the set items that are required for each construction site type.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	7.2
Requirement name:	Update Item List
Requirement short description:	The system must allow the user to update the line-item list.
Requirement detailed description and constraints:	The user must be able to update the line-item list to add or remove any items that are or are not needed for the specific site.
Business rules applicable to this requirement	Only the operations manager must be able to Update the line-item list.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	7.3
Requirement name (use case name):	Receive supplier quote
Requirement short description:	The system must allow the user to add the supplier quotes that are received.
Requirement detailed description and constraints:	The system must allow the user to add 3 supplier quotes per item so that the user can compare between quotes and choose the best option.
Business rules applicable to this requirement	Only the operations manager and the financial officer must be able to upload received supplier quotes. There must be at least 3 quotes for each line item (each quote can have multiple line items).
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	7.4
Requirement name:	Update final supplier quote
Requirement short description:	The system must allow the user to select a final supplier quote.
Requirement detailed description and constraints:	After the financial officer has chosen a final supplier quote out of the three received supplier quotes the system must allow the user to select the final quote. The system must then show which quotes were rejected and which quotes were accepted.
Business rules applicable to this requirement	Only the financial officer must be able to update the received supplier quotes. There must be at least 1 accepted quote for each line item (each quote can have multiple line items).
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	7.5
Requirement name:	Create Purchase Order
Requirement short description:	The system must allow the user to add a purchase order.
Requirement detailed description and constraints:	After a quote is accepted the Financial officer will create a purchase order that will be sent to the supplier. The purchase order must be added to the system and linked to the appropriate construction project.
Business rules applicable to this requirement	Only the financial officer must be able to create a purchase order.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

6.3.8 Supplier Subsystem

Functional Requirement	Explanation
Requirement number:	8.1
Requirement name:	Add Supplier
Requirement short description:	The system must allow the user to add a new supplier.
Requirement detailed description and constraints:	The user must fill out a form that requires all supplier details, including the supplier's name, supplier type, phone number, payment details, business address, and email address must be filled in before a supplier can be added to the system.
Business rules applicable to this requirement	Only the financial officer must be able to add new suppliers
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	8.2
Requirement name:	Update Supplier
Requirement short description:	The system must allow the user to update a supplier's details.
Requirement detailed description and constraints:	The user searches for the supplier they want to update. Once the supplier is found the user can update the supplier's details. The system must allow the user to update all supplier details.
Business rules applicable to this requirement	Only the financial officer must be able to add new suppliers. All supplier details must always be up to date.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	8.3
Requirement name:	Search Supplier
Requirement short description:	The system must allow the user to add a new client.
Requirement detailed description and constraints:	The Financial officer wants to search for a supplier. The user can search for a supplier searching for the supplier by name, type, or location. The suppliers related to search must be displayed.
Business rules applicable to this requirement	None.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Low Priority

Functional Requirement	Explanation
Requirement number:	8.4
Requirement name:	Upload supplier documentation
Requirement short description:	The system must allow the user to upload all relevant supplier documentation.
Requirement detailed description and constraints:	The user must be able to add the relevant supplier documentation to the system and link it to the relevant supplier
Business rules applicable to this requirement	None
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

6.3.9 Inventory Management subsystem

Functional Requirement	Explanation
Requirement number:	9.1
Requirement name:	Add line-item
Requirement short description:	The system must allow the user to new line-items.
Requirement detailed description and constraints:	The user must be able to add a new line-item to the system. The line-item details include name, type, site type and suppliers.
Business rules applicable to this requirement	Only the operations manager must be able to add new line-items.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	9.2
Requirement name:	Update line-item
Requirement short description:	The system must allow the user to update line-items.
Requirement detailed description and constraints:	The user searches for the line-item they want to update. Once the line-item is found the user can update the line-item's details. The system must allow the user to update all line-item details.
Business rules applicable to this requirement	Only the operations manager must be able to update existing line-items.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	9.3
Requirement name:	Search line-item
Requirement short description:	The system must allow the user to add a new client.
Requirement detailed description and constraints:	The user wants to search for an existing line-item. The user can search for a line-item by searching for the line-item by name, item type, site-type, or supplier. The line-items related to search must be displayed and the system must allow the user to access the documents.
Business rules applicable to this requirement	None.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	9.4
Requirement name:	Update line-item quantity
Requirement short description:	The system must allow the user to update the line-item quantity.
Requirement detailed description and constraints:	The user must be able to update the quantity of line-items needed that is determined by the size of the site and type of site.
Business rules applicable to this requirement	Only the operations manager must be able to update existing line-items quantity.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

6.3.10 Report Subsystem

Functional Requirement	Explanation
Requirement number:	10.1
Requirement name:	Generate stock level report
Requirement short description:	The system generates a report with the line items and their quantities.
Requirement detailed description and constraints:	The system will receive a request to generate the stock level report. The system will retrieve the necessary line items and their current stock levels from the database. Using this information, the system exports a document to the user.
Business rules applicable to this requirement	Only the management team will have access to generating reports.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Moderate

Functional Requirement	Explanation
Requirement number:	10.2
Requirement name:	Generate site progress report
Requirement short description:	The system generates a report with the sites and their associated progress status.
Requirement detailed description and constraints:	The system receives a request to generate site progress report. The system will retrieve the necessary Site details and their associated progress statuses. from the database. Using this information, the system exports a document to the user. The document summarises the site requirements.
Business rules applicable to this requirement	Only the management team will have access to generating reports
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	10.3
Requirement name:	Generate TSS Report
Requirement short description:	The system generates the Technical Site Survey report. This report contains all information gathered after the technical site survey is completed.
Requirement detailed description and constraints:	The system receives a request to generate Technical Site Survey report. The system will retrieve the necessary Site details, line items required, additional notes and drawings from the database. Using this information, the system exports a document to the user.
Business rules applicable to this requirement	Only the Operations Manager has access to generate an TSS Report.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	10.4
Requirement name:	Generate RF report
Requirement short description:	The system generates the RF report.
Requirement detailed description and constraints:	The system receives a request to generate an RF report. The system will retrieve the necessary Site detail and RF installation details. Using this information, the system exports a document to the user. The document allows the Financial Officer to begin the invoicing process.
Business rules applicable to this requirement	Only the Operations Manager has access to generate an RF report.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical

Functional Requirement	Explanation
Requirement number:	10.5
Requirement name:	Generate document expiry report
Requirement short description:	The system generates a report that shows the employees' documents and their associated expiry dates.
Requirement detailed description and constraints:	The system will generate a report for the Human Resources Officer in a timely manner. This report contains a list of employees with their certifications and training qualifications and their respective expiry dates. This helps the Human Resources Officer stay up to date with the required certifications and qualifications for the company's employees.
Business rules applicable to this requirement	Only the Human Resources Officer will have access to generating reports
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Moderate

6.3.11 User Management Subsystem

Functional Requirement	Explanation
Requirement number:	11.1
Requirement name:	Log in
Requirement short description:	The process of user accessing the system.
Requirement detailed description and constraints:	The user enters their details to access the system which entails entering their own personal username and password. All this needs to be entered in order for users to access the system.
Business rules applicable to this requirement	Employees need to be logged in before they can interact with the system.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Critical Priority

Functional Requirement	Explanation
Requirement number:	11.2
Requirement name:	Register New Account
Requirement short description:	The process of creating a new account for a user.
Requirement detailed description and constraints:	The user goes through a process of creating an account by which they need to create a unique username and password for their account.
Business rules applicable to this requirement	The username and password needs' to be business appropriate.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Moderate Priority

Functional Requirement	Explanation
Requirement number:	11.3
Requirement name:	Log out
Requirement short description:	The process of a user logging out of the system.
Requirement detailed description and constraints:	The process of a user logging out of the system so that the system cannot be accessed anymore unless a user logs in.
Business rules applicable to this requirement	Once a user is done working on the system, they need to log out to ensure security.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Medium Priority

Functional Requirement	Explanation
Requirement number:	11.4
Requirement name:	Update Account Details
Requirement short description:	User updates any account details that have changed or are incorrect.
Requirement detailed description and constraints:	The user can update information regarding their account details on the system for example email, name or surname, phone number etc.
Business rules applicable to this requirement	Updating only information that has changed or is incorrect does not alter correct information.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Low Priority

Functional Requirement	Explanation
Requirement number:	11.5
Requirement name:	Search Account
Requirement short description:	The process of a user searching for a specific account.
Requirement detailed description and constraints:	The process of a user searching for a Human resources and management staff searching for a specific user's account.
Business rules applicable to this requirement	Only authorised users are allowed to search for accounts.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Low Priority

Functional Requirement	Explanation
Requirement number:	11.6
Requirement name:	Change Password
Requirement short description:	The process of a user changing their password.
Requirement detailed description and constraints:	The process of a user changing their password due to them forgetting their old password. The user does need access to their system account email to change their password.
Business rules applicable to this requirement	Only the user of the account can change the password or the Human Resources manager.
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Low Priority

Functional Requirement	Explanation
Requirement number:	11.7
Requirement name:	Forgot Password
Requirement short description:	The user forgot their password.
Requirement detailed description and constraints:	Starts the process of changing the user's password that they have forgotten.
Business rules applicable to this requirement	Only the user of the account can select forgot password
Revision date and Revision number:	08/04/2021 Version 1.0
Criticality/Priority:	Moderate Priority

6.4 User acceptance criteria

The user acceptance criteria help determine the priority status of specific requirements. These statuses show how important the requirement is to the company's business processes.

Critical: This requirement is of critical importance for the competition of the necessary business processes. Without this requirement the system will not be able to perform vital business functions that support the business's objective and goals.

Moderate: This requirement has a moderate impact on the competition of the necessary business processes. Without this requirement the system the business would still be able to perform the vital business functions. However, without this requirement, there are potential issues such as extended turn-over times or discrepancies in data integrity.

Low: This requirement has a little to no impact on the competition of the necessary business processes. Without this requirement, the vital business functions will not be hindered. This requirement adds additional functionality to the system to assist achieving the business objectives.

6.5 Non-functional requirement list

Requirement	Explanation
Requirement name:	Automation
Requirement short description:	The system should eliminate repetitive labour-intensive value chain activities by automating as many processes as possible.
Requirement Type:	Non-Functional
Details and Constraints:	• The system should make use of automation to streamline Gohvan Construction's business processes. • The system should automate repetitive tasks, this will improve turnaround time.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Data integrity
Requirement short description:	The system should help reduce the user made errors in the company. By using data validation to verify the data integrity.
Requirement Type:	Non-Functional
Details and Constraints:	• Preventing user made errors will ensure the correct data and data types are stored. Reducing garbage in garbage out. • The system should limit or eliminate the amount user inputted data. • The system should have data validation and verification checks. • The system should avoid redundancy and duplication. • The data needs to be accessible to the relevant parties.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Digitisation
Requirement short description:	The system should help digitize some of the company's paper documents.
Requirement Type:	Non-Functional
Details and Constraints:	• The system should be able to implement digital based forms rather than the current legacy paper-based forms.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Expenditure minimisation
Requirement short description:	The system should help minimize expenditure, by reducing the redundant data and unnecessary tasks.
Requirement Type:	Non-Functional
Details and Constraints:	• Due to redundant submission of data and the non-integrated dynamic of departments, lots of resources are not used optimally resulting in long term profit loss. • The system should help the business improve their long-term profits.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Expenditure minimisation
Requirement short description:	The system should help minimize expenditure, by reducing the redundant data and unnecessary tasks.
Requirement Type:	Non-Functional
Details and Constraints:	• Due to redundant submission of data and the non-integrated dynamic of departments, lots of resources are not used optimally resulting in long term profit loss. • The system should help the business improve their long-term profits.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Efficiency optimisation
Requirement short description:	The system should help provide the business a central platform which assists with the flow of information between the different departments of the business.
Requirement Type:	Non-Functional
Details and Constraints:	• Integration of departments to provide a centralized system that works efficiently between the various applicable parties. • Coordinating the communication channels between the different departments ensures the completion of business functions.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Cost
Requirement short description:	The system should be an investment towards better the business. However, it should not be excessively expensive or introduce unforeseen costs in the future.
Requirement Type:	Non-Functional
Details and Constraints:	• The system should be affordable to the business. • The system should keep costs to a minimum.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Security
Requirement short description:	The system should implement security measure to protect the data and to restrict user access.
Requirement Type:	Non-Functional
Details and Constraints:	• The business handles with many documents which contains sensitive data regarding Gohvan Construction's clients, strategic partners, and employees. • Password protected accounts implement to restrict access.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

Requirement	Explanation
Requirement name:	Efficiency
Requirement short description:	The system should be responsive, with little to no delay when performing business functions.
Requirement Type:	Non-Functional
Details and Constraints:	• The system should be optimized, reducing unnecessary delays.
Revision date & Revision number:	08-04-2021 Version 1.0
Criticality/Priority:	Critical

6.6 Conclusion

After performing the requirement analysis depth. We have determined the necessary functional and non-functional requirements for Gohvan Construction. Identifying the requirements has helped provide a broad overview of the company's use cases and subsystems.

7. Feasibility/Decision Analysis

7.1 Introduction

The feasibility analysis consists of the purpose, background, scope, and structure. The feasibility analysis investigates the capabilities of the alternative candidates and the proposed system. Performing the analysis helps compare the feasibility of each candidate with regards to business needs of Gohvan Construction.

7.1.1 Purpose

The purpose of the feasibility analysis is to compare possible solutions to the business problem Gohvan Construction is experiencing. To determine the best candidate to suit the business requirement.

7.1.2 Background

The feasibility analysis is divided into 4 sections namely: operational, technical, economic and schedule feasibility. These sections are assigned a weight. These weights are based on the specific business needs that should be addressed. After a section's investigation is completed, a score is assigned to the candidates for each section. Once all sections are done, the scores are multiplied to the associated weights to get to the final score. These final scores are compared, and the best score helps determine which candidate should be selected.

7.1.3 Scope and structure

The feasibility is divided into the below structure.

- **Operational feasibility:** Investigates to what extent the candidate's system will support the business functions of Gohvan Construction.
- **Technical feasibility:** Investigates the technologies necessary to support the candidate's system.
- **Economic feasibility:** Investigates the economic impact each candidate presents if their solution is implemented. All associated costs such as cost to develop, payback period, net present value and calculations.
- **Schedule feasibility:** Investigates the time required to implement the candidate's system to a working condition. Where it is able to support the business functions Gohvan Construction.

7.2 Feasibility Analysis

Feasibility Criteria	Weight	Candidate 1: Acculynx	Candidate 2: Buildertrend	Candidate 3: Paralinear Solutions: Gohvan Construction System
Operational Feasibility **Functionality**. A description of to what degree the candidate would benefit the organization and how well the system would work. **Political**. A description of how well received this solution would be from both user management, user, and organization perspective.	**40%**	**Functionality:** Acculynx is pre-existing software, designed to support the business functions of companies in the construction industry. Acculynx is an extensive system that has the following features: ● Customer Relationship Management ● Captures photos of site ● Shareable photos with organisation ● Acculynx provides a custom database for all storage needs ● Builds estimates automatically ● Custom APIs ● Project management ● Project site/s progress ● Material Ordering	**Functionality:** Buildertrend is an existing web-based system used to store, process and optimize daily operations of construction companies. It includes the following features: ● Notifications and emails ● Import/export excel formats ● Document templates ● Custom quotations (applicable to customer needs ● Project management ● Create Gant charts ● Online/cloud storage of necessary documents ● File sharing within company and stakeholders ● Construction site progress reports	**Functionality:** This candidate's system will be a custom-made business solution. This system will be tailored to support and streamline the business functions of Gohvan Construction. The business solution will have the following features: ● Human resource management ● System notifications and automated emails ● Document management ● Invoicing support ● Project progress tracking ● Generating various reports ● Team site allocation ● Digitize legacy paper-based documents and forms. ● Quotation management ● User management ● Mobile interface. Paralinear Solutions has analysed and designed a proposed business solution for Gohvan Construction. Paying close attention, to the company's stakeholders' needs. The proposed system

		• Production and Labour management • Customer Portal for project request • Document storage and document status display • Commission calculation • Revenue calculations • Expenditure tracking • Custom payments for Invoices and Purchase Orders Acculynx is a comprehensive system that support many functions required in the construction industry. However, it includes extra functionality and features which the company will not use. **Political:** From the Managing Director's perspective. The system is too extensive. It has many features which will not be used by the	Buildertrend caters for majority of the features required by Gohvan Construction. **Political:** From the Managing Director's perspective, the missing functionality will impact business functions. From the Health and Safety Officer's perspective. The system's online storage and file management features will automate tedious repetitive document uploading and storing.	will be tailored to suit the business's functions. **Political:** From the Managing Director's perspective. The system will introduce much needed automation. Therefore, the required turnaround time for their project will be reduced. From the Operations Managers perspective. The system will be able to assist streamline his day-to-day tasks. However, he will require training to be able to utilize the system's full potential.

		business. This would be an unnecessary expenditure. From the management team's perspective. The team will resist the drastic change. **Score: 65/100**	**Score: 70/100**	**Score: 85/100**
Technical Feasibility **Technology**. An assessment of the maturity, availability (or ability to acquire), and desirability of the computer technology needed to support this candidate. **Expertise**. An assessment to the technical expertise needed to develop, operate, and maintain the	**30%**	**Technology:** Candidate 1's system can be used on existing hardware and assets in the business. As it is a pre-built system. Acculynx has a mobile app, which requires the employees to have a mobile device and access to the internet. **Expertise:** Acculynx provides online support to their customers such as: guided	**Technology:** Candidate 2's system can be used on existing hardware and assets in the business. As it is a web-based system. Buildertrend has a mobile app, where the employees and owner can use their cell phones to access the system. This is under the assumption that employees and the owner have cell phones and mobile internet access. **Expertise:**	**Technology:** Candidate 3's system can be used on existing hardware and assets in the business. As it is a web-based system. An additional Android tablet be required to implement the system. The tablet will be cost between R3000 – R5000. For this solution the organization will be using the following technologies during development: Visual studio and visual studio code, with the following components: -ASP.NET core -MySQL

candidate system.		training, live phone support and "How-To" guides and videos. Acculynx also offers in person training.: https://acculynx.com/support/ Acculynx requires a monthly subscription to make use of the system. These subscription costs are based on specific needs of the business. Potential customers need to request a consultation. However, according Shlomi Lavi on ITQlick, large companies can pay up to $1500 per month or R 21 908,78 per month. https://www.itqlick.com/acculynx/pricing	Buildertrend uses dedicated onboarding teams to guide users through the training. Buildertrend also has a dedicated support and training website, with video tutorials, to help support and train users: https://buildertrend.com/how-it-works/platform/support-training/ Buildertrend requires a monthly subscription to make use of the system. There are three options: Core, Pro and Premium. The first two months of the Core package costs $99 per month or R1443,95 per month. Then after the first two months, the cost increases to $299 per month or R4 361,03 per month (as on 2021-04-09). The first two months of the Pro package	-CSS -JavaScript -Cordova -Typescript -Ionic -Angular -Bootstrap -APIs -Tokens *Additional technologies maybe introduced during development. **Expertise:** Paralinear Solutions will provide user training through a user training manual and a training video, this organization will be available for telephonic tech support for a limited window during the implementation and testing phase of the solution.

			costs $299 per month or R 4 361,03 per month. Then after the first two months, the cost increases to $499 per month or 7 279,11 per month (as on 2021-04-09). **Score: 65/100**	**Score: 75/100**
Economic Feasibility **Cost to develop:**	**25%**	**Cost to develop:** Standard Customization Cost: $10000 or R145 997,00 (as of 2021-04-09) +Data Migration Cost: 100000 records for $10000 or R145 997,00 (as of 2021-04-09) +Training Cost: 5-7 Sessions for $2500 or R 36 499,25 (as of 2021-04-09) **=Total Development Cost: $22500 or R328 500,45 (as of 2021-04-09)**	**Cost to develop:** $299*2 (first two months) +$499*10 (the next ten months) = $498 + $4990 **= $5488 or R81680.08 (as of 2021-04-09)**	**Cost to develop:** **R0**

Payback period (discounted): **Net present value:** **Detailed calculations:**		**Payback period (discounted):** **1,37 Years** **Net present value:** **R4 361,36** **Detailed calculations:** Figure 9.1: Calculations for candidate 1 **Score: 25/100**	**Payback period (discounted):** **3,21 Years** **Net present value:** **R41 052.97** **Detailed calculations:** Figure 9.2: Calculations for candidate 2 **Score: 45/100**	**Payback period (discounted):** **0 Years** **Net present value:** **R122 733,05** **Detailed calculations:** Figure 7.3: Calculations for candidate 3 **Score: 100/100**
Schedule Feasibility An assessment of how long the solution will take to design and implement.	**5%**	Candidate 1 is a pre-existing software package designed to assist construction companies. Since the candidate's system is preset, it would take **one month** to adopt the system, and training of the employees will take **one month**. Candidate 1's system requires	Candidate 2 is a web-based system designed to assist construction companies. Since the candidate's is already developed and it is web-based. The time required to implement will only be **two weeks**. The employees' training will take **one month**. Candidate 2's system will take **one**	Candidate 3's system is a tailored business solution specifically for Gohvan Construction. Candidate 3's system will require **seven months** to be analysed, developed, implemented and employee training.

		two months to implement and train employees **Score: 80/100**	**month and two weeks** to implement. **Score: 95/100**	**Score: 60/100**
Ranking:	**100%**	**54.25/100**	**63.5/100**	**84.5/100**

Paralinear Solutions: Gohvan Construction System	Years									
				1,00		2,00		3,00		4,00
Development Cost	ZAR	-	ZAR	-	ZAR	-	ZAR	-	ZAR	-
Operation & maintenance cost 15%	ZAR	-	ZAR	(1 000,00)	ZAR	(1 150,00)	ZAR	(1 322,50)	ZAR	(1 520,88)
Discount factors 10%		1,00		0,91		0,83		0,75		0,68
Present value of annual costs	ZAR	-	ZAR	(909,09)	ZAR	(950,41)	ZAR	(993,61)	ZAR	(1 038,78)
Accumulated time-adjusted costs over lifetime	ZAR	-	ZAR	(909,09)	ZAR	(1 859,50)	ZAR	(2 853,12)	ZAR	(3 891,90)
Benefits derived from operation of new system (15% annual increase)	ZAR	-	ZAR	35 000,00	ZAR	40 250,00	ZAR	46 287,50	ZAR	53 230,63
Discount factor 10%		1,00		0,91		0,83		0,75		0,68
Present value of annual benefits	ZAR	-	ZAR	31 850,00	ZAR	23 862,50	ZAR	34 715,63	ZAR	36 196,83
Accumulative time-adjusted benefits over lifetime	ZAR	-	ZAR	31 850,00	ZAR	55 712,50	ZAR	90 428,13	ZAR	126 624,95
Accumulative lifetime-adjusted cost and benfits	ZAR	-	ZAR	30 940,91	ZAR	53 853,00	ZAR	87 575,01	ZAR	122 733,05
NPV = PV of Benefits - PV of Costs:	ZAR	122 733,05								
Payback Period:		-0,35	years							
Return on investment ROI:		31,5355427								

Figure 7.3: Calculations for candidate 3

7.3 Recommendations

Feasibility	Recommendation
Operational feasibility	Candidate 1 and 2 scored lower than candidate 3. This is because candidate 3 is a tailor-made system to support Gohvan Construction's business functions. Candidates 1 and 2 have features which will not be used by the company
Technical feasibility	All three candidates require similar technologies to be utilise the full potentials of these systems. Such as mobile devices, laptops and/or desktops and access to the internet.
Economic feasibility	Candidate 3 excelled in this section as the proposed system has the lowest cost. Candidates 1 and 2 scored poorly, because these systems require monthly subscription to access the system.
Schedule feasibility	Candidates 1 and 2 scored higher than candidate 3. This is since candidates 1 and 2 are pre-built systems. Candidate 3 needs to be designed and developed.
Candidate Recommendation:	Candidate 3 scored the best overall weight ranking with a final score of 84.5 out of 100.

7.4 Conclusion

In conclusion, after comparing the different systems, using the feasibility analysis we are able to recommend a system to Gohvan Construction. The system is recommended based on the final weighted scores in the feasibility matrix. These scores help determine whether a system fulfils required business functions. After completing the feasibility analysis. We are able to recommend Paralinear Solutions' proposed system.

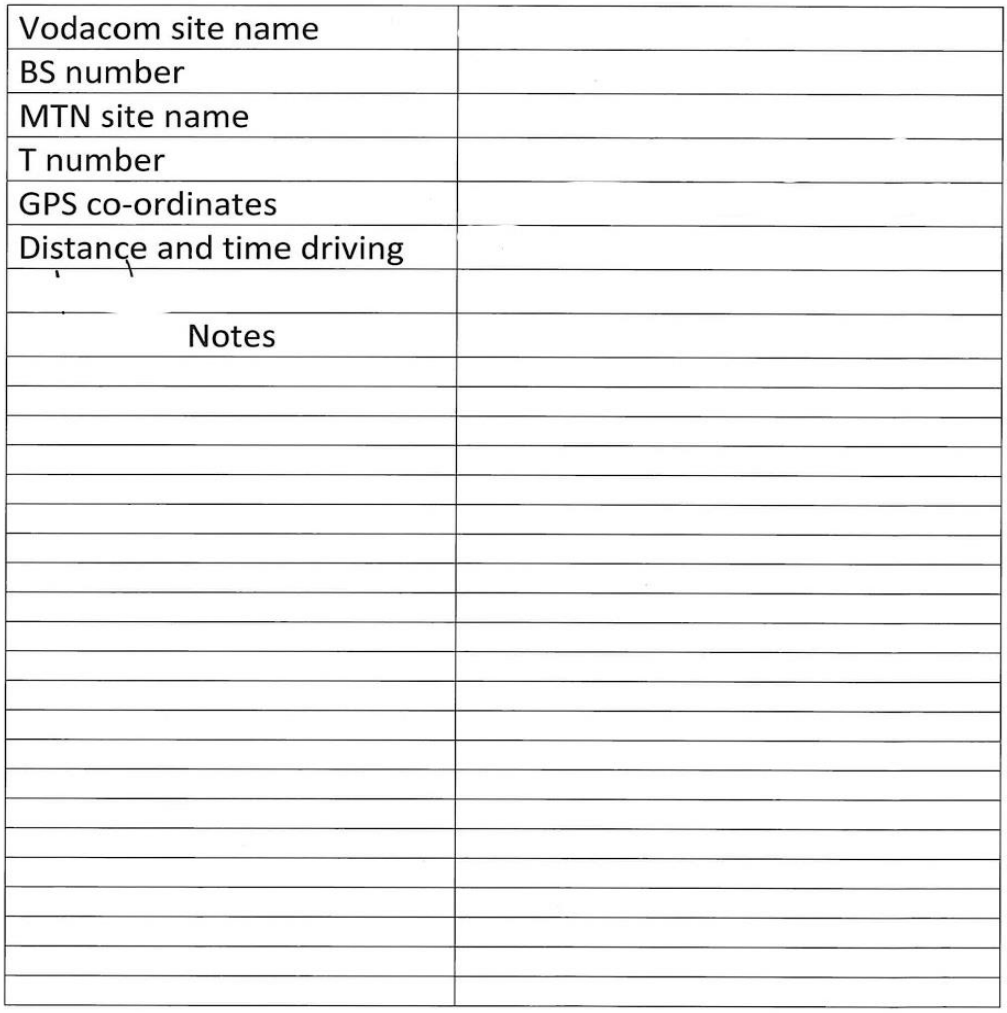
8. Appendix A: Client Documentation

8.1 Introduction

Appendix A consists of the documentation that Gohvan Construction uses in their current system. We will use this documentation to better understand what information flows in and out of the system and how certain events are documented.

8.2 The TSS report

After a TSS booking is received via email the physical TSS takes place on-site where the applicable parties converse to decide on the required hardware and material needed for the specific site. Afterwards the TSS report is filled out on-site by the operations manager where additional notes and drawings are made the client for approval.



Vodacom site name	
BS number	
MTN site name	
T number	
GPS co-ordinates	
Distance and time driving	
Notes	

Figure 8.1: The TSS report the Operations manager uses to assess the site.

Site Specific Civil Detail

Site name:				BS:	
Co-ordinates:		HASL:		Survey date:	
		Quote date:		Project Type	

Pre-Approval

Site Drawings Available	N/A	Yes ✓	No	BP Approval Obtained	Yes	No
LA Approval Obtained	N/A	Yes ✓	No	Conditions		
CAA	N/A	Yes ✓	No	Conditions		
EIA	N/A	Yes	No	Conditions		

Accommodation

Container	Mobile	HSSC 2door (1.42 x 1.2 x 1.3m)	ARP 1door HS (0.9 X 0.67 X 1.93)	ARP 1door Micro (1.5 x 1.34 x 2.2m)	ARP HSC (1Door Micro	Load Support	No ✓	Yes
Size:	Standard ✓	Other	Specify	1,3 x 1,5		Brick Cladding	No	Yes
Paint	No	Yes ✓	Colour:	White		Rock Finish	No	Yes
Aircon Direction:	N/A					Othe- Specify:-		

Notes:

Container Plinth/Base

Type	Concrete Blocks	Plinth ✓	20x20	Plinth Dimensions (Size)	

Site Level

Level	Flat ✓	Slope	Site Works	Cut & Fill	Fill
Create Platform	Yes ✓	No	± 200	Clear and Grub	Yes ✓

Mast Type

New	Mobile	Temp (Spine/Lattice	Mono Pole	Camo	Lattice ✓	Other
Existing:	Mono Pole	Rocla	Lattice	Stub	Tree	Sign Board	Church Steeple	Other:
Paint	Yes ✓	No	Colour:					
Mast Height:	20M	25M	30M	35M ✓	40M	45M	50M	
	Other:							
Avtion Lights	Yes ✓	No	Comment:					
Base type								

Notes:

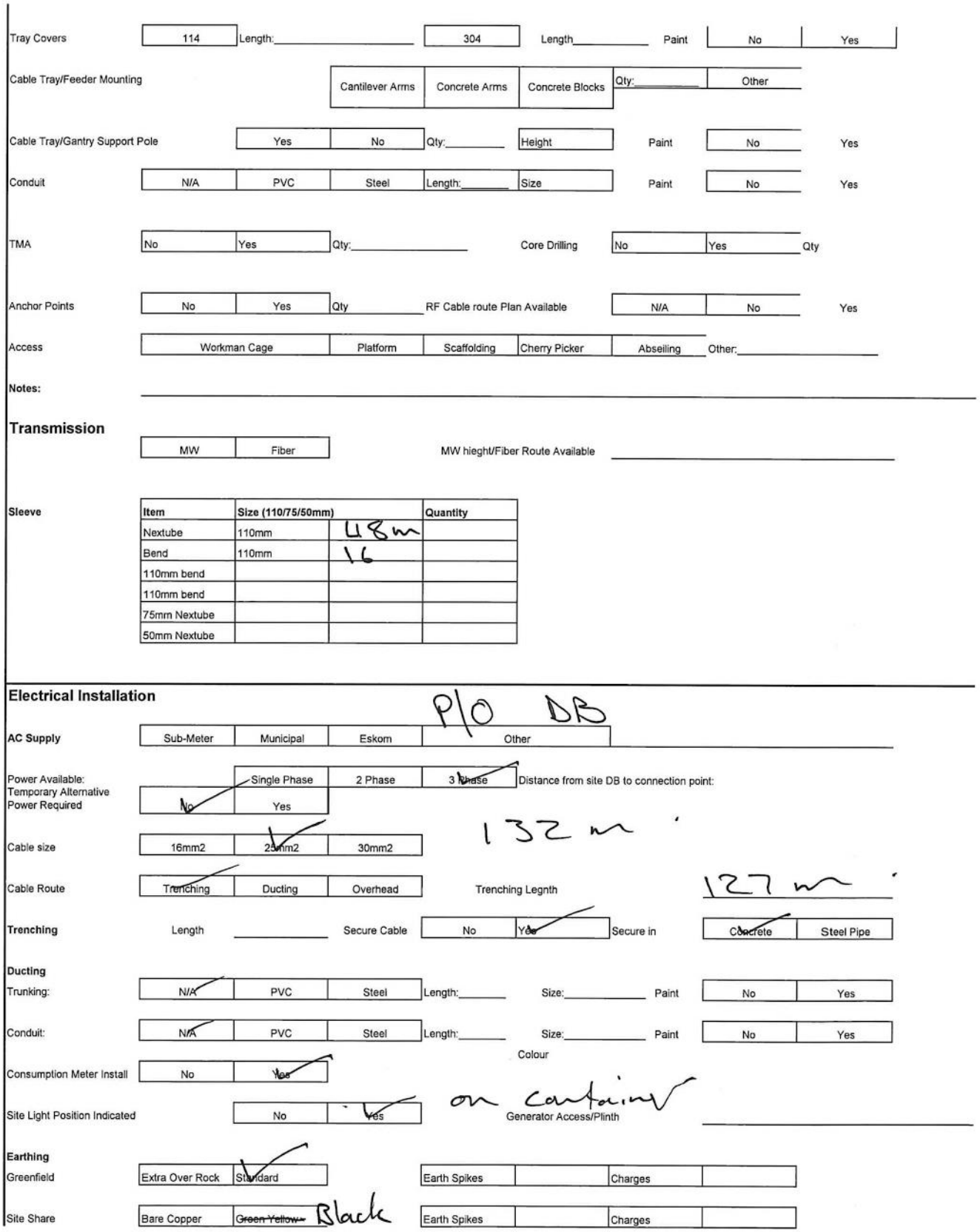
RF Installation

Antenna Mount: Tower ✓ | Wall Mount | Roof Pole | Other:

	Antennae Type	Height	Orientation	Cable size			Cable Length
A Sector				1/2"	7/8"	1 5/8"	
B Sector				1/2"	7/8"	1 5/8"	
C Sector				1/2"	7/8"	1 5/8"	

Cable Clamp Type	Single	Qty	Double	Qty:	Triple	Qty :
Cable Tray	114	Length:	304	Length	Paint: No	Yes

Figure 8.2: The TSS report the Operations manager uses to assess the site, continued.



Tray Covers | 114 | Length: | 304 | Length | Paint | No | Yes

Cable Tray/Feeder Mounting | Cantilever Arms | Concrete Arms | Concrete Blocks | Qty: | Other

Cable Tray/Gantry Support Pole | Yes | No | Qty: | Height | Paint | No | Yes

Conduit | N/A | PVC | Steel | Length: | Size | Paint | No | Yes

TMA | No | Yes | Qty: | Core Drilling | No | Yes | Qty

Anchor Points | No | Yes | Qty | RF Cable route Plan Available | N/A | No | Yes

Access | Workman Cage | Platform | Scaffolding | Cherry Picker | Abseiling | Other:

Notes:

Transmission

MW | Fiber | MW hieght/Fiber Route Available

Sleeve

Item	Size (110/75/50mm)		Quantity
Nextube	110mm	48m	
Bend	110mm	16	
110mm bend			
110mm bend			
75mm Nextube			
50mm Nextube			

Electrical Installation

AC Supply | Sub-Meter | Municipal | Eskom | P/O DB | Other

Power Available: | Single Phase | 2 Phase | 3 Phase | Distance from site DB to connection point:
Temporary Alternative Power Required | No | Yes

Cable size | 16mm2 | 25mm2 | 30mm2 | 132 m

Cable Route | Trenching | Ducting | Overhead | Trenching Legnth | 127 m

Trenching | Length | Secure Cable | No | Yes | Secure in | Concrete | Steel Pipe

Ducting

Trunking: | N/A | PVC | Steel | Length: | Size: | Paint | No | Yes

Conduit: | N/A | PVC | Steel | Length: | Size: | Paint | No | Yes

Colour

Consumption Meter Install | No | Yes

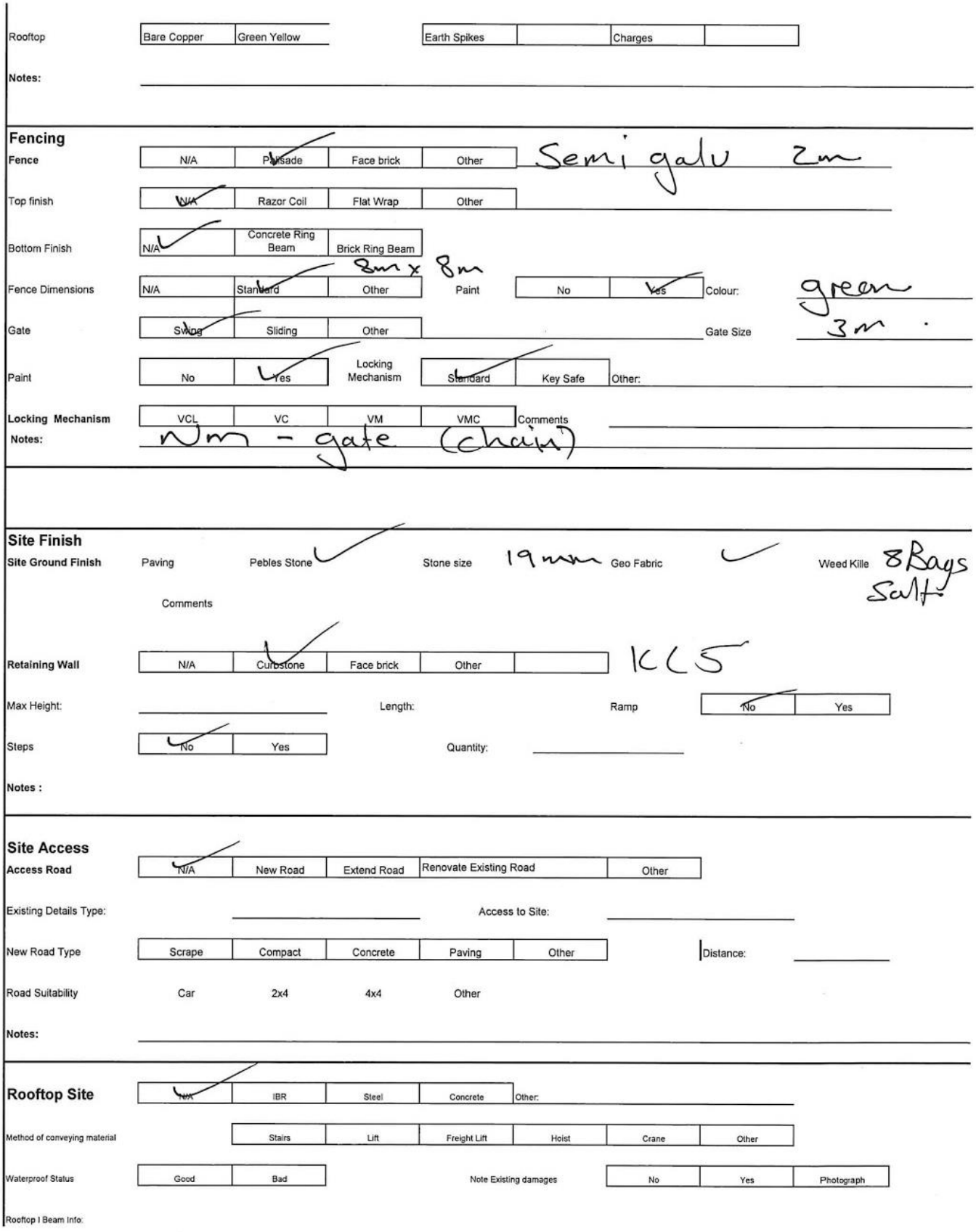
Site Light Position Indicated | No | Yes | on container | Generator Access/Plinth

Earthing

Greenfield | Extra Over Rock | Standard | Earth Spikes | | Charges |

Site Share | Bare Copper | ~~Green Yellow~~ Black | Earth Spikes | | Charges |

Figure 8.3: The TSS report the Operations manager uses to assess the site, continued.



Rooftop | Bare Copper | Green Yellow | Earth Spikes | | Charges | |

Notes:

Fencing

Fence: N/A | Palisade ✓ | Face brick | Other — Semi galv 2m

Top finish: N/A ✓ | Razor Coil | Flat Wrap | Other

Bottom Finish: N/A ✓ | Concrete Ring Beam | Brick Ring Beam

Fence Dimensions: N/A | Standard ✓ | Other 8m x 8m | Paint: No | Yes ✓ | Colour: green

Gate: Swing ✓ | Sliding | Other | Gate Size: 3m

Paint: No | Yes ✓ | Locking Mechanism: Standard ✓ | Key Safe | Other:

Locking Mechanism: VCL | VC | VM | VMC | Comments

Notes: 1m - gate (chain)

Site Finish

Site Ground Finish: Paving | Pebles Stone ✓ | Stone size 19mm | Geo Fabric ✓ | Weed Kille 8 Bags Salt

Comments

Retaining Wall: N/A | Curbstone ✓ | Face brick | Other | KCC

Max Height: | Length: | Ramp: No | Yes

Steps: No ✓ | Yes | Quantity:

Notes :

Site Access

Access Road: N/A ✓ | New Road | Extend Road | Renovate Existing Road | Other

Existing Details Type: | Access to Site:

New Road Type: Scrape | Compact | Concrete | Paving | Other | Distance:

Road Suitability: Car | 2x4 | 4x4 | Other

Notes:

Rooftop Site

N/A ✓ | IBR | Steel | Concrete | Other:

Method of conveying material: Stairs | Lift | Freight Lift | Hoist | Crane | Other

Waterproof Status: Good | Bad | Note Existing damages: No | Yes | Photograph

Rooftop I Beam Info:

Figure 8.4: The TSS report the Operations manager uses to assess the site, continued.

Notes:

Signs			Special Requirements		Measure all mast brackets, additional retaining, bric walls etc. here
HAZ 10 ID sign	✓		H+S Induction at Lions		
HAZ 29 Blue EMS	✓				
HAZ 30 Yellow EMS	✓				

Other Measure all site move, special installations extra over requirements, etc. here

Identified Risks

~~Risk~~ Delivery truck and forklifts moving arround all the time

Attendances

Name	Capacity	Organisation	Signature	Date
1	Ops	Lions Match		
2				
3	P/manager	V.C		
4				
5	Ops	Gosh		
6				
7				

Drawings

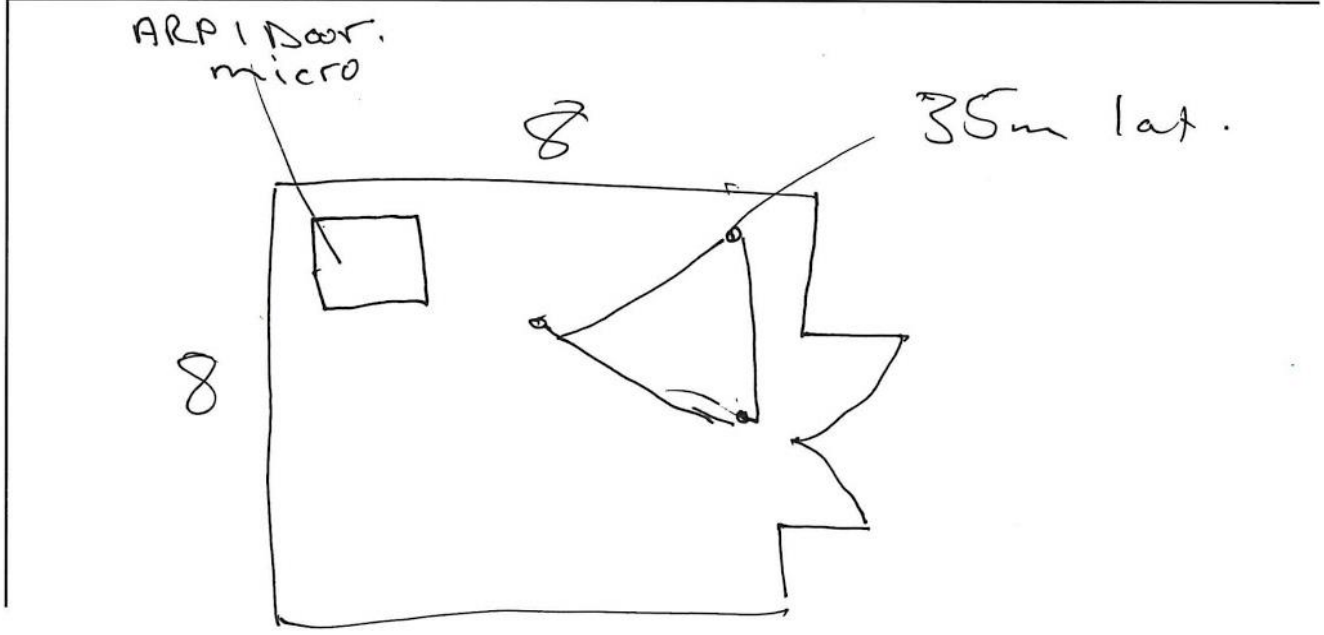


Figure 8.5: The TSS report the Operations manager uses to assess the site, continued.

8.3 The Formal Site Drawing

After receiving the Site "Go-Ahead" a Draftsman creates a formal drawing of the site referencing the drawings made on the initial TSS Report. The drawing is then sent to the client for approval.

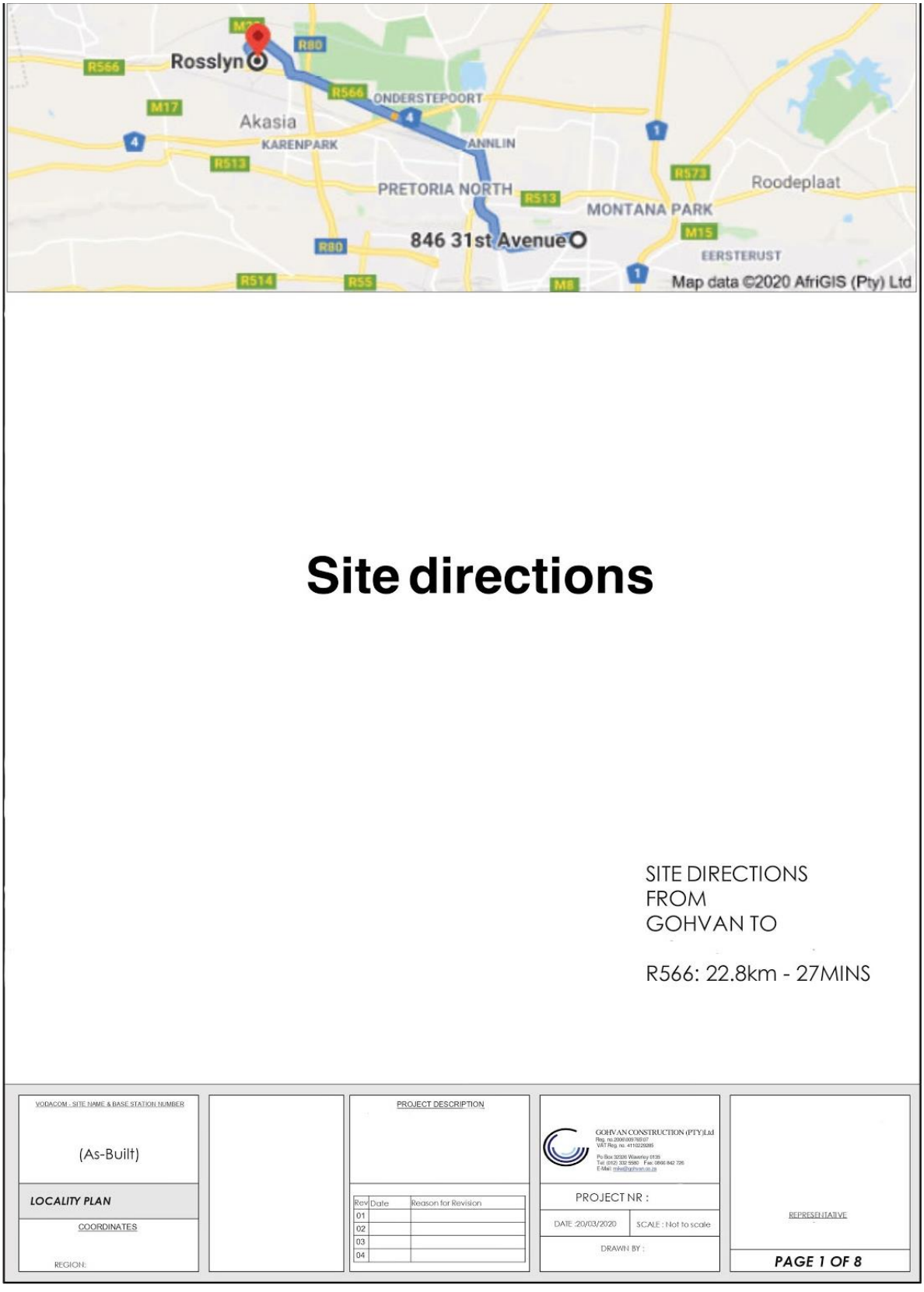


Figure 8.6: Initial site drawing that will be sent to the Client for approval

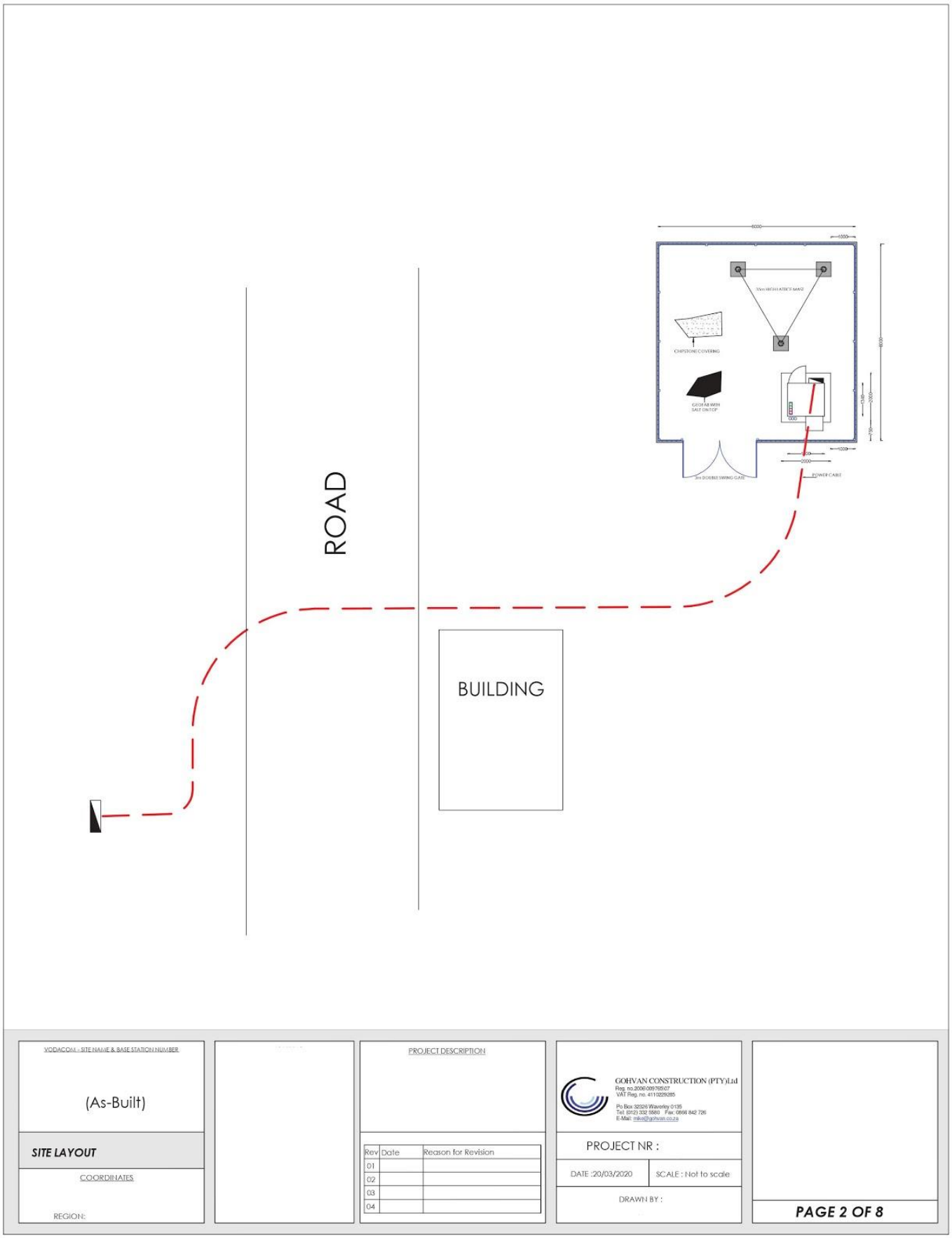


Figure 8.7: Initial site drawing that will be sent to the Client for approval

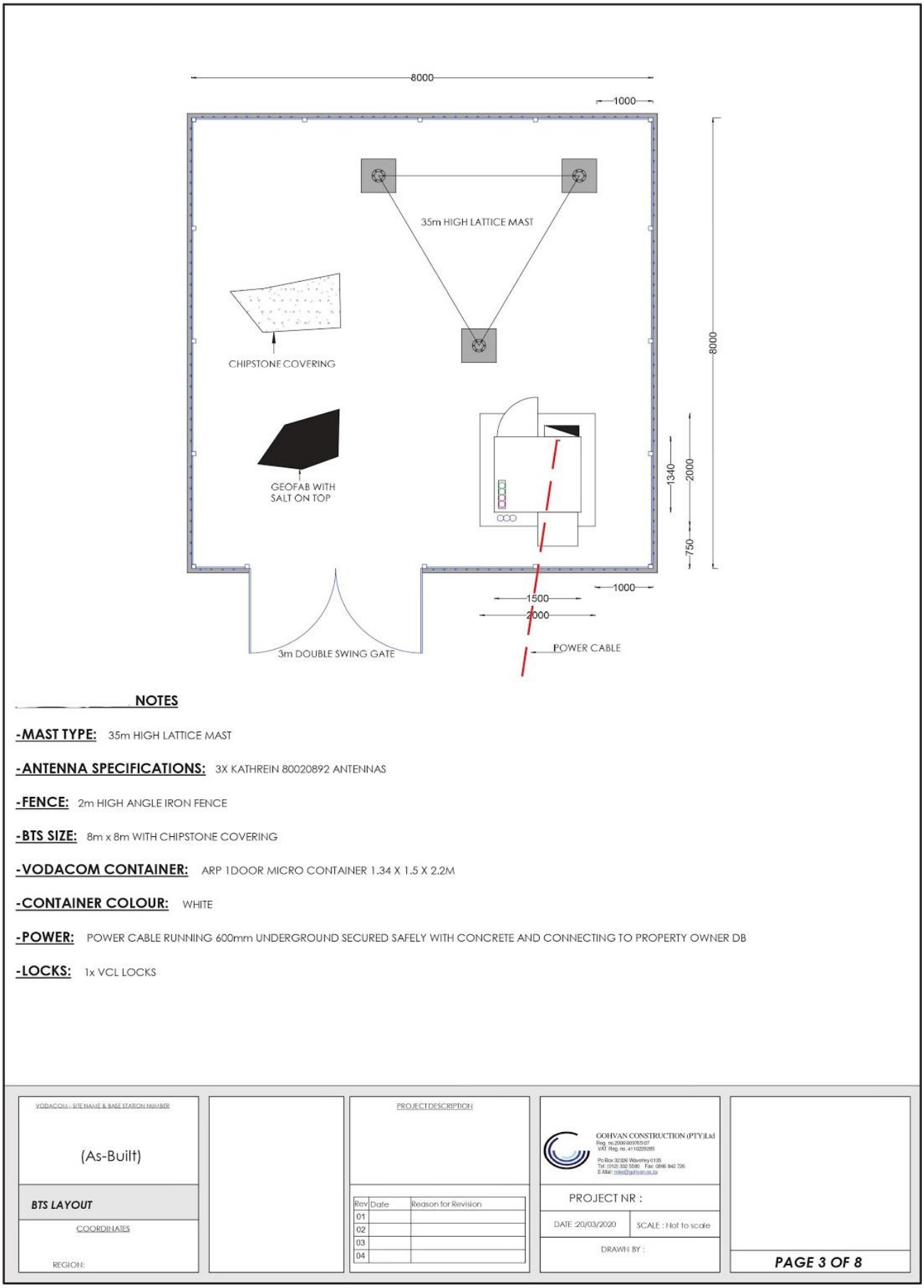


Figure 8.8: Initial site drawing that will be sent to the Client for approval

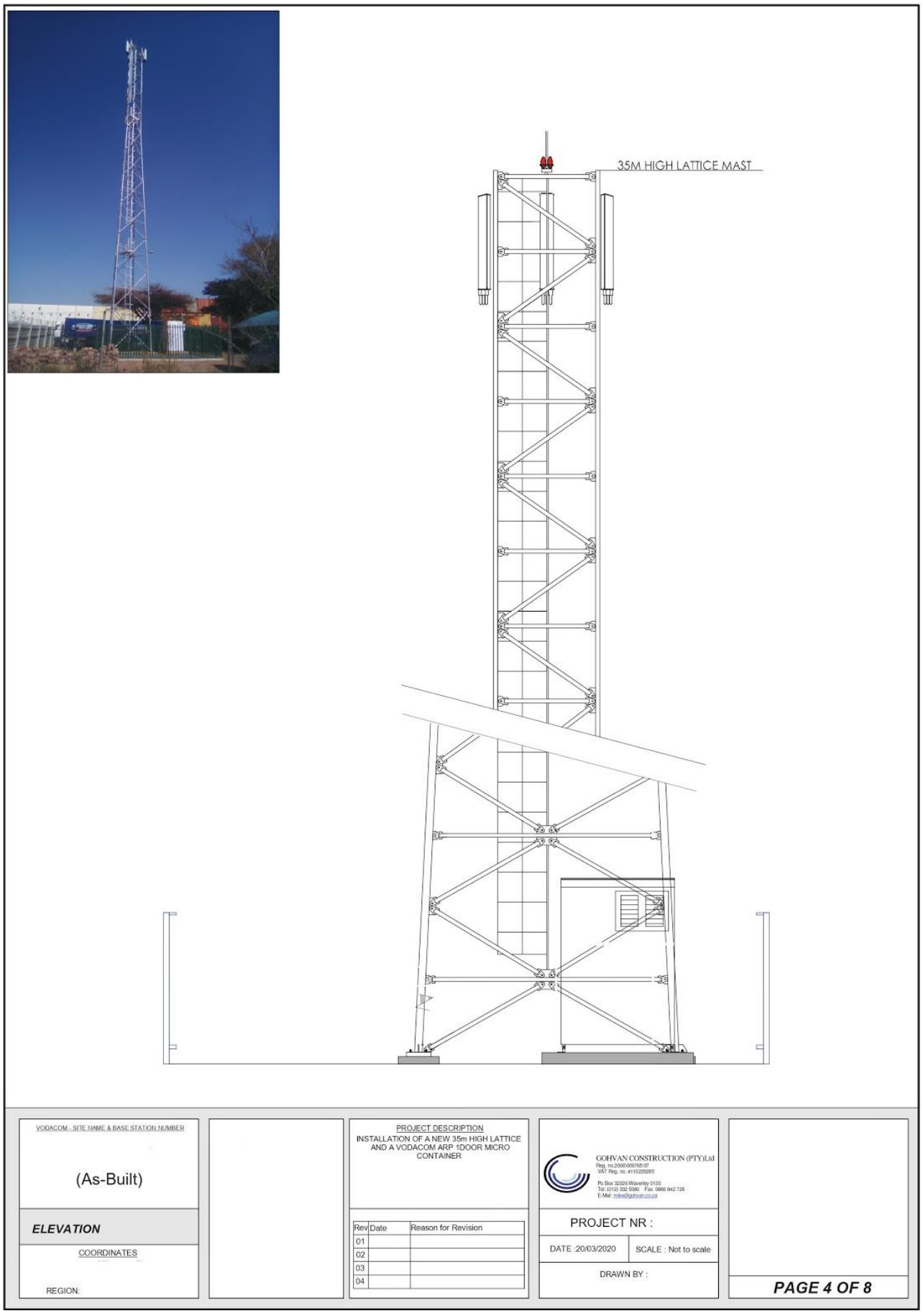


Figure 8.9: Initial site drawing that will be sent to the Client for approval

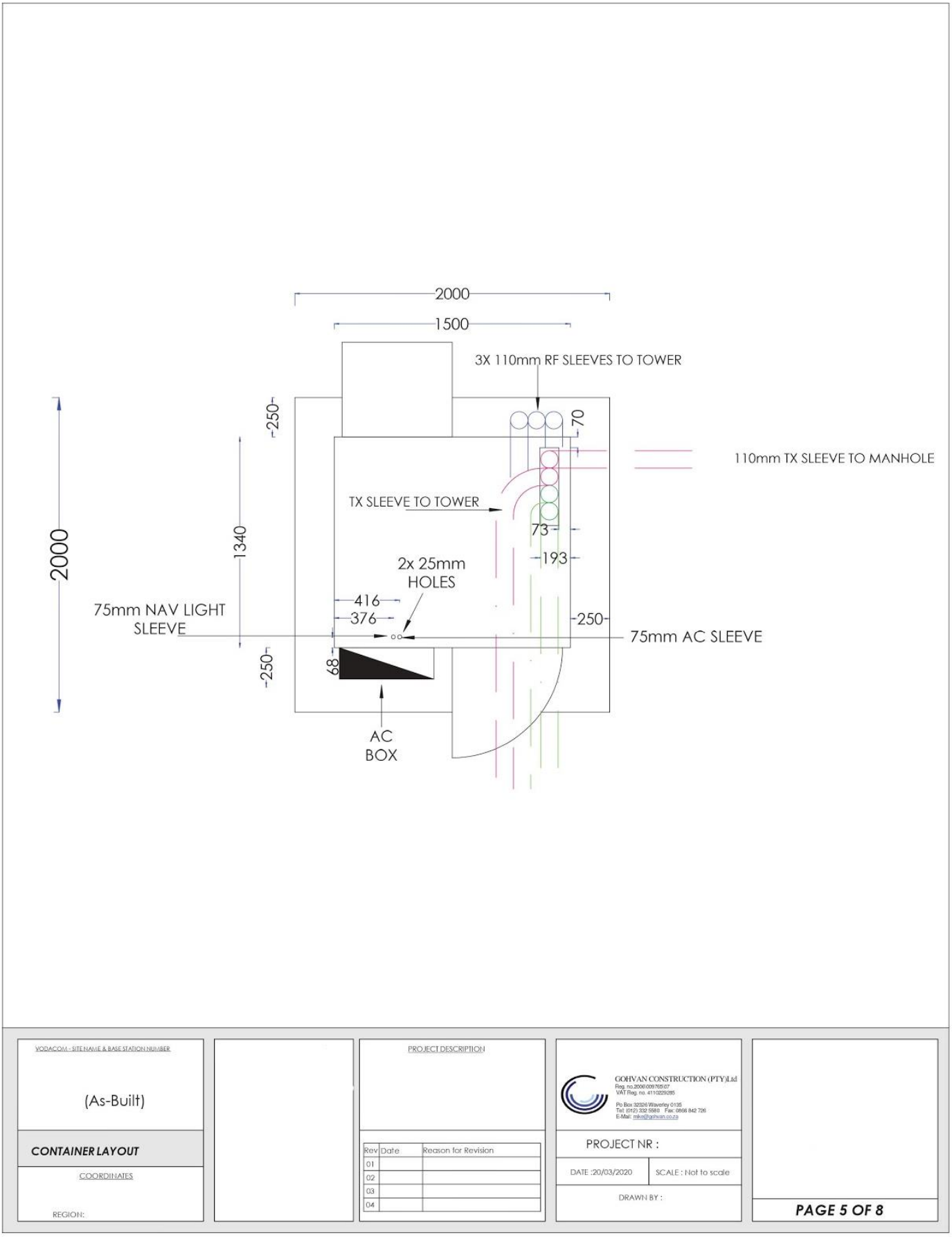


Figure 8.10: Initial site drawing that will be sent to the Client for approval

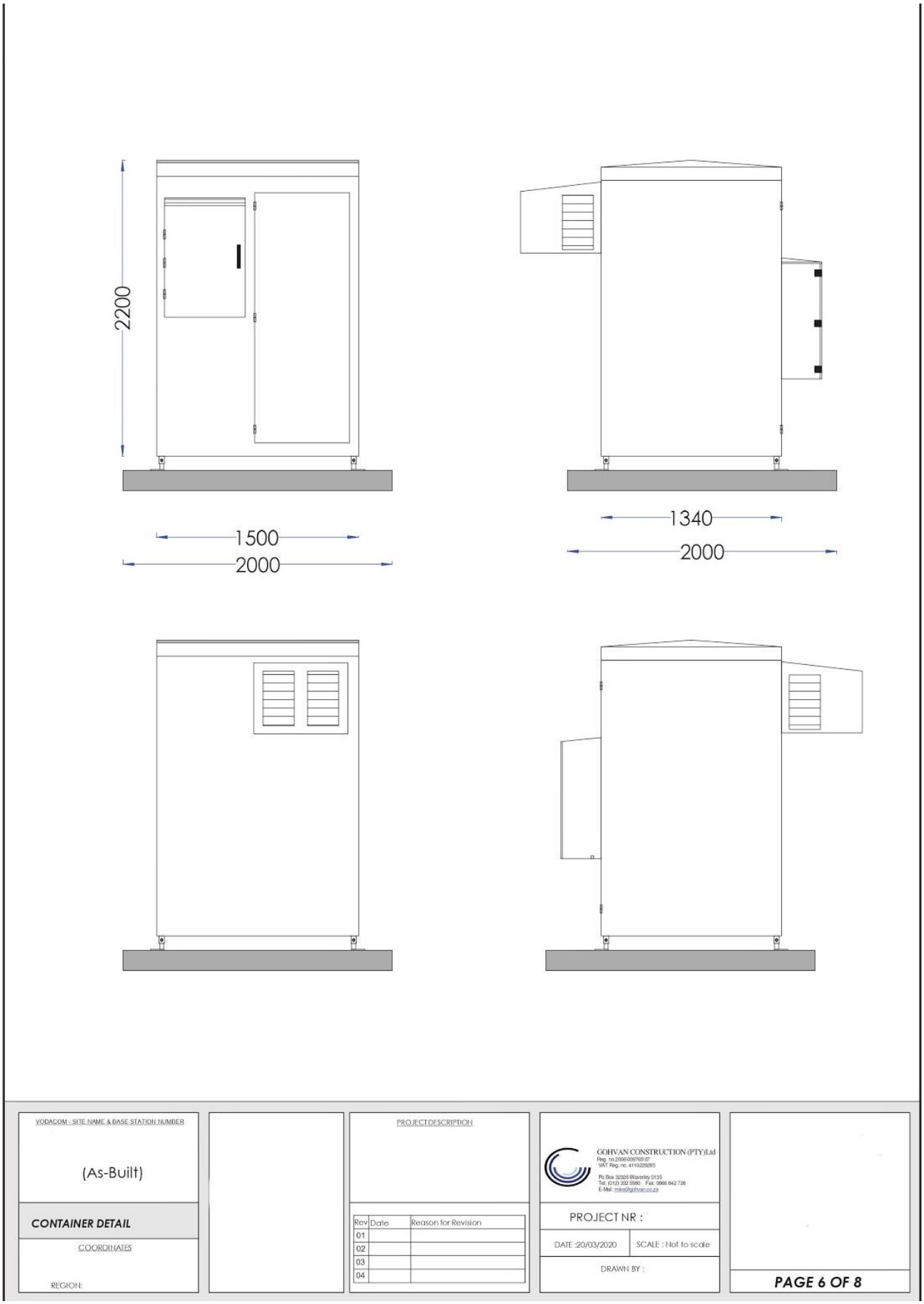


Figure 8.11: Initial site drawing that will be sent to the Client for approval

Figure 8.12: Initial site drawing that will be sent to the Client for approval

Figure 8.13: Initial site drawing that will be sent to the Client for approval

8.4 Health and Safety File

Before construction can commence, a health and safety file has to be submitted by the company's HS officer for approval by the client. The Health and safety folder is uploaded to One drive and the link is shared with the client.

Figure 8.14: Example of One Drive Health and Safety folder.

8.5 Conclusion

After looking at all the documentation that Gohvan Construction gave us we now have a better understanding of how information flows within the business and how to incorporate it into our own system.

9. Appendix B: Other Systems Investigated

9.1 Introduction

This section contains all information of the existing researched systems that could be integrated and implemented into the Gohvan Construction system. These systems were mentioned in Section 7 (Feasibility analysis), all existing systems researched can help solve the business problems identified within the daily functions of Gohvan Construction. The Literature study will specify the details on the existing systems as well as the functions offered if the systems are implemented into the business.

9.2 Literature Study

9.2.1 Acculynx

The system “Acculynx” is a pre-existing software that is designed to help businesses streamline the construction process and simplify all functionalities. Acculynx offers the operation/construction company one fully cohesive all-in-one business system. The system was designed specifically for construction project management companies. Not only does Acculynx provide functions for construction project management, Acculynx also provides customer relationship management. Acculynx was established and developed in 2008.

Features:

- Customer Relationship Management (CRM)
- Captures photos of site
- Shareable photos with organisation
- Acculynx provides a custom database for all storage needs
- Builds estimates automatically (add in custom materials and measurements as well as own pricing for profits)
- Custom APIs
- Project management
- Project site/s progress
- Material Ordering (through Acculynx, no need to deal with suppliers personally)
- Production and Labour management
- Customer Portal for project requests
- Document storage and document status display
- SmartDocs and ReportsPlus (Can create custom reports)
    - Create custom reporting templates
    - Automation of document population
    - Artificial Intelligence and smart learning for reporting
    - Legal contracts can be created
    - Can cater to all documentation needs
    - Save all reports and documentation to database
- Commission calculation
- Revenue calculations
- Expenditure tracking
- Custom payments for Invoices and Purchase Orders
- CrewApp (Mobile Field App for Android and IOS)
    - Daily schedule/assignments and logging abilities

  - Instant feedback and support for site construction
  - Instant access to needed data for details on construction site
  - History of project transactions
  - Share and store photos
  - communication
  - Capture customer and operations manager signatures
  - Site directions
- AccuPay (General accounting system software provided for online payment)
  - Notifications when customer pays
  - Custom payment requests
  - Email linking and automation
  - Automation to job payments
  - Payment request tracking
  - Notifications on behind payments

Pricing:

The company wishing to adopt Acculynx will have to communicate with directly via a Acculynx consultant to determine a custom pricing strategy depending on the company's size and annual revenue.

Website link:

https://acculynx.com/

Acculynx	Years				
		1,00	2,00	3,00	4,00
Development Cost	ZAR (328 500,45)	ZAR -	ZAR -	ZAR -	ZAR -
Operation & maintenance cost 15%		ZAR (50 275,07)	ZAR (57 816,33)	ZAR (66 488,78)	ZAR (76 462,09)
Discount factors 10%	1,00	0,91	0,83	0,75	0,68
Present value of annual costs	ZAR (328 500,45)	ZAR (45 704,61)	ZAR (47 782,09)	ZAR (49 954,00)	ZAR (52 224,64)
Accumulated time-adjusted costs over lifetime	ZAR -	ZAR (45 704,61)	ZAR (93 486,70)	ZAR (143 440,70)	ZAR (195 665,34)
Benefits derived from operation of new system (15% annual increase)	ZAR -	ZAR 60 000,00	ZAR 69 000,00	ZAR 79 350,00	ZAR 91 252,50
Discount factor 10%	1,00	0,91	0,83	0,75	0,68
Present value of annual benefits	ZAR -	ZAR 54 600,00	ZAR 23 862,50	ZAR 59 512,50	ZAR 62 051,70
Accumulative time-adjusted benefits over lifetime	ZAR -	ZAR 54 600,00	ZAR 78 462,50	ZAR 137 975,00	ZAR 200 026,70
Accumulative lifetime-adjusted cost and benfits	ZAR (328 500,45)	ZAR 8 895,39	ZAR (15 024,20)	ZAR (5 465,70)	ZAR 4 361,36
NPV = PV of Benefits - PV of Costs:	ZAR 4 361,36				
Payback Period:	1,37	years			
Return on investment ROI:	0,0222899				

Figure 9.1: Calculations for candidate 1

9.2.2 Buildertrend

Buildertrend is an existing web-based system used to store, process, and optimize daily operations and general construction site progress communication between the company and client (all applicable parties)

Features:

- Sales process between company and customer
  - Automation of notifications and emails
  - Deadlines and reminders on project quotas
  - Import/export excel formats
  - Create templates for documentation
  - Can obtain digital signals
  - Custom quotations (applicable to customer needs)
- Project management for construction projects and daily business operations
  - Daily performance monitor
  - Notifications can be automated to time
  - Create Gant charts
  - Attachable documents and photos for necessary processes within businesses
  - Task assigning
  - Custom project scheduling
  - Syncs with Google/Apple services
  - Online/cloud storage of necessary documents
  - File sharing within company and stakeholders
  - Construction site progress reports
  - Additional stakeholder additions (subcontractors/Strategic partners)
  - Employee management
- Financial assistance
  - Invoicing features relating to customer needs
  - Custom Purchase Orders
  - Payment processing
  - Payment Automation
  - Account budgeting
  - Purchase Order auditing / transaction management
  - Financial status
  - Approval of transactions made easy
  - Automated financial reports
- Customer relationship management
  - Custom leads on projects
  - Import existing excel formats for processing
  - IOS and Android App for effective communication
  - Custom emails
  - Customer communication

Pricing:

- Core system - $99 a month
  - Task Scheduling
  - Daily tasks
  - Communication in and outside of business
  - Client login
- Pro system - $299 a month
  - Task Scheduling
  - Daily tasks
  - Communication in and outside of business
  - Client login
  - Warranties on system
  - Custom surveys
  - Order changing and customizes
- Premium
  - Contact Buildertrend for custom quotation on pricing for implementing system according to business needs.

Website link:

https://buildertrend.com/

Buildertrend	Years									
			1,00		2,00		3,00		4,00	
Development Cost	ZAR	-	ZAR	-	ZAR	-	ZAR	-	ZAR	-
Operation & maintenance cost 15%	ZAR	(81 680,08)	ZAR	(1 000,00)	ZAR	(1 150,00)	ZAR	(1 322,50)	ZAR	(1 520,88)
Discount factors 10%		1,00		0,91		0,83		0,75		0,68
Present value of annual costs	ZAR	(81 680,08)	ZAR	(909,09)	ZAR	(950,41)	ZAR	(993,61)	ZAR	(1 038,78)
Accumulated time-adjusted costs over lifetime	ZAR	(81 680,08)	ZAR	(82 589,17)	ZAR	(83 539,58)	ZAR	(84 533,20)	ZAR	(85 571,98)
Benefits derived from operation of new system (15% annual increase)	ZAR	-	ZAR	35 000,00	ZAR	40 250,00	ZAR	46 287,50	ZAR	53 230,63
Discount factor 10%		1,00		0,91		0,83		0,75		0,68
Present value of annual benefits	ZAR	-	ZAR	31 850,00	ZAR	23 862,50	ZAR	34 715,63	ZAR	36 196,83
Accumulative time-adjusted benefits over lifetime	ZAR	-	ZAR	31 850,00	ZAR	55 712,50	ZAR	90 428,13	ZAR	126 624,95
Accumulative lifetime-adjusted cost and benfits	ZAR	(81 680,08)	ZAR	(50 739,17)	ZAR	(27 827,08)	ZAR	5 894,93	ZAR	41 052,97
NPV = PV of Benefits - PV of Costs:	ZAR	41 052,97								
Payback Period:		3,21	years							
Return on investment ROI:		0,4797479								

Figure 9.2: Calculations for candidate 2

9.3 Conclusion

The existing systems that have been researched by our team can be implemented and integrated into Gohvan Construction to solve the necessary business problems priorly mentioned. Although these systems do not cater to all the business problems Gohvan Construction are facing, they do provide a larger understanding of how to approach the problems and adding extra features and functionality to the business solution system our team is building for Gohvan Construction. Acculynx is a great overall system yet there are many features and functions not needed for the system at hand. Buildertrend is a considerably basic web-based system that covers a lot of the needed features but at sub-par standards therefore making them a very inefficient system to consider for implementation. The Invoicing system from both researched systems are not needed as Taulia is the main third-party software Gohvan Construction is using as required by the main client (Vodacom) for the existing and proposed system.

10.Appendix C: Complexity

10.1 Introduction

The complexity marks document indicates the level of complexity the proposed system for Gohvan construction will have and feature. All the required complexity marks listed must achieve a total score of above 150 points for a five-man team and must be maintained throughout the project lifecycle and finished product.

Topic	Level		Marks MAX	
1. Special GUI	For online applications: Responsive web design For desktop applications: Form design according to design principles (Schneiderman's golden rule on navigation applies here)		3	42
	Appropriate use of grids/tables		3	
	Appropriate use of tabs/links		3	
	Use of graphs in an appropriate business context		4	
	The storage and display of graphical information, like photos with a good business reason		3	
	Working e-mail automatically generated from the database in an appropriate business context		2	
	SMS messages automatically generated from the system in an appropriate business context		2	
	Extensive user-friendly search facility		3	
	At least one use of a tree to display data from the database		3	
	Able to dynamically modify a data tree structure and in doing so adjusting the data in the database		4	
	At least one use of a calendar view of data (not a date/time picker; not a plug-in such as Google calendar)		3	
	Uploading a file into the system with appropriate business reason		3	
	The use of audio/video in an appropriate business context		3	
	At least one use of an administrator configurable timer in an appropriate business context		3	
2. Database access	At least 30 tables used (4 member groups) or 40 tables used (5 member groups)		6	15
	Full referential integrity on all tables		6	
	At least one use of master-detail table relationships (Schneiderman's golden rule on system status applies here)		3	
3. Reports	At least 3 simple list reports in a reporting tool (no control breaks, no graphs, single table)		3	15
	At least 2 transactional report with 2 or more control breaks (with heading and calculated values/totals, multiple tables)		6	
	At least 1 report with adjustable criteria		3	
	At least 1 management report using a graph		3	

4. Flexibility	All data that can change in future should not be hard coded but maintained in a sub-module of the system (e.g., Lookup tables)		6	**12**
	Some business rules are not hard coded but maintained in a sub-module of the system.		6	
5. Error handling	**All** system-generated errors are trapped, and consistent, user-friendly error messages are displayed		6	**12**
	Appropriate data validation on **all** input fields		6	
6. Help	At least one menu item or other control that opens up a complete help document (HTML, PDF, Help-file)		3	
	Extensive context-sensitive help. E.g., calling Help on a specific screen/function will automatically open the specific help for that screen/function.		6	**15**
	Search Facility on Help		3	
	Extensive use of hints		3	
7. Security	Logon screen with user ID and password and fixed user profiles		3	**13**
	Applying two factor authentications with applicable business reason.		3	
	Encrypted passwords in database	*	1	
	Flexible user profiles (i.e., you can dynamically add user profiles that will enable/disable access to certain parts of the system)		6	
8. Audit Trail	An audit trail of all transactions in the system showing at least date, time, user, transaction type, critical data (such as amount and quantity of transaction)		6	**9**
	Able to search the audit trail on any of the following: date, user, transaction type		3	
9. Deployment	For a desktop application: Fully functional installation disks that take care of application installation requirements (install and uninstall)		3	**15**
	For an online application: Deployment of application to a publicly accessible web server		3	
	For a mobile application: Deployment to an App Market place (such as the Play Store or the AppStore)		6	
	Deployment of the database to a remote database server		3	
10. Backup and Restore	A backup and restore subsystem exist that backup/restore all data (system may exit during restore)		3	**3**
11. Import/Export Data	Able to open Word or Excel and automatically place data in it based on the parameters provided (with a good business reason)		6	
	XML or JSON: At least 1 XMLor JSON file for Importing or Exporting of data (with good business reason)		3	**9**
External INPUT device	Simple Link to an external INPUT device using plug and-play technology, such as a swipe card reader, bar code reader, etc. or a native component such as a QR reader, a GPS component, etc.		3	**18**

	Loose Link to an external INPUT device using device specific software. Data or images must seamlessly be stored in the database, but device specific software is visible to the user. (This could include a digital camera, scanner, voice recording device, thump print reader, etc.)		6	
	Tight Link to an external INPUT device using device specific software. Data or images must seamlessly be stored in the database, but device specific software is **not** visible to the user. (This could include a digital camera, scanner, voice recording device, thump print reader, etc.)		9	
External APPLICATION / Services	Integrate an existing web service into your application (with good business reason)		3	**9**
	A fully functional link to an installed external application system exists and the interface must be shown to work on the external system. Note that this excludes Microsoft Office Applications		6	
4. Multiplatform processing for an appropriate business reason	Appropriate business use of static views on an alternative platform.		3	**27**
	Appropriate use of dynamic views on an alternative platform (i.e. data is displayed from the system's database)		3	
	Appropriate use of substantial dynamic views on an alternative platform (i.e. both reading and writing data from the system's database)		9	
	Uploading a file through an alternative platform onto the system's database.		3	
	Substantial processing on a third platform (i.e. both reading and writing data from the system's database)		9	
. Programming Principles	The use of a data layer to facilitate interaction between your database and your business layer		3	**12**
	The use of an API to facilitate interaction between your business layer and your presentation layer		6	
	Comprehensive use of stored procedures and/or triggers and/or jobs.		3	
Innovative addition to the system	Any very advanced innovative addition to the system (e.g. machine learning, AI, block chain, text mining, IOT, etc.)	#	1 - 9	**9**

Maximum Complexity Marks = 222

Total Calculated Complexity Marks = *171*

11.Deliverable Conclusion

This concludes all the information on Gohvan Construction and business problems identified after all in depth analyses such as the preliminary investigation and problem analysis have taken place. The operations of the Gohvan Construction and how Paralinear solution will fix the business problems identified by offering and developing the proposed system. The proposed system will provide major benefits to the company on offer a more streamline solution to effectiveness and efficiency throughout the daily operations and project life cycle.

12.References

Acculynx, 2021. Acculynx. [Online] Available at: https://acculynx.com/ [Accessed 05 April 2021].

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itqlick, 2021. itqlick. [Online] Available at: https://www.itqlick.com/acculynx/pricing [Accessed 05 April 2021].

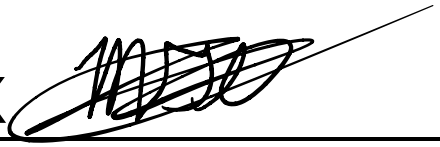
13.Sign-off by client

X

Michael Van Der Walt
Director

By signing this document, the client verifies that the deliverable 1 and content provided within are acceptable and up to standard in relation to the business problem and correct business solution has been proposed.

14.Sign-off by Team

X 

Matthew Veltman
u19050608

X

Michael Vosloo
u19031174

X

Tshepang Mashao
u19293675

X

Vincent Yu
u15195059

X

Amore Rossouw
u19052864

By signing this document, the Team Paralinear Solutions acknowledges the document as a whole and signs off that all work presented is their own.

15. PROJECT MANAGEMENT

15.1 MEETING MINUTES: 18 March 2021

Project Name:	INF 370 *Deliverable 0 and Deliverable 1*		
Date of Meeting*:* (MM/DD/YYYY)	18/03/2021	Location:	Google Meet
Minutes Prepared By:	Amore Rossouw	Charge time to:	

1. Purpose of Meeting
Discuss what requirements and expectations the client/business has for the system and to get a better understanding of how the business wants to integrate and use the system to solve their business problems. Discuss how we plan to do deliverable 0.

2. Attendance at Meeting (*add rows as necessary)*			
Name	*Department. /*Division	E-mail	Phone
Michael Vosloo	-	u19031174@tuks.co.za	082 387 0072
Matthew Veltman	-	u19050608@tuks.co.za	081 341 1664
Vincent Yu	-	u15195059@tuks.co.za	084 073 7834
Amore Rossouw	-	u19052864@tuks.co.za	073 567 3529
Tshepang Mashao		u19293675@tuks.co.za	074 447 0511
Michael van der Walt (Managing Director)	Gohvan Construction	michael@gohvan.co.za	-

3. Meeting Agenda
Discuss and delegate tasks for deliverable 0. Discuss a team name. Identify business problems and discuss how to possibly solve it. Go through the complexity mark sheet and determine what we can incorporate in our system to solve the business problems.

4. Meeting Notes, Decisions, Issues, Progress made (list details responsibilities and tasks)
We established a few business problems and how we could possibly solve them as well as discussed how the complexity marks would come into play. We now have a rough idea of the system requirements and business rules. We arranged a follow up meeting with the client to discuss and get a better understanding of how the business operates at the moment and how the system can improve that. After the meeting with the client, we discussed the following: Matthew suggested a team name: Linear systems. Tasks were identified and assigned for deliverable 0. Amore suggested that we should start setting up Asana. Vincent volunteered to set up Asana. We discussed what type of system we would make.

5. Action Items (*add rows as necessary)*		
Action	Assigned to	Due Date
Project Admin (ASANA)	Vincent Yu	19/03/2021
Client Information, Short Description of business problem, Signed client Agreement.	Michael Vosloo	24/03/2021
Short Description of business problem	Amore Rossouw	24/03/2021
Team Photo, Sign Course of agreement, Team Name suggestion	ALL	24/03/2021

6. Next Meeting					
Date: (MM/DD/YYYY)	24/03/2021	Time:	09:00-14:00	Location:	Google Meet
Agenda:	Have a meeting with Mr. van der Walt (client) to discuss the process of planning and setting up their cell phone towers.				

15.2 MEETING MINUTES: 24 March 2021

Project Name:	INF 370 Deliverable *1*		
Date of Meeting*:* (MM/DD/YYYY)	24/03/2021	Location:	Google Meet
Minutes Prepared By:	Amore Rossouw	Charge time to:	

1. Purpose of Meeting
Have a meeting with Michael van der Walt (The client) to discuss Site completion process (The process of planning and setting up a cell phone tower) in great detail and get a better understanding of the inner workings of the business.

2. Attendance at Meeting (*add rows as necessary)*			
Name	*Department. /*Division	E-mail	Phone
Michael Vosloo	-	u19031174@tuks.co.za	082 387 0072
Matthew Veltman	-	u19050608@tuks.co.za	081 341 1664
Vincent Yu	-	u15195059@tuks.co.za	084 073 7834
Amore Rossouw	-	u19052864@tuks.co.za	073 567 3529
Tshepang Mashao		u19293675@tuks.co.za	074 447 0511
Michael van der Walt (Managing Director)	Gohvan Construction	michael@gohvan.co.za	-

3. Meeting Agenda
Go through the Site completion process (The process of planning and setting up a cell phone tower) with Michael van der Walt and ask questions if necessary. Have a group meeting afterwards to discuss how we can incorporate the current Site completion process into our system.

4. Meeting Notes, Decisions, Issues, Progress made (list details responsibilities and tasks)
Michael made a presentation to explain the 5-step Site completion process to us. He explained to us how each of the steps in the process works as well as showed us how the current documentation looks and what the roles of some the employees are. After the meeting with Mr. van der Walt we discussed the following: We decided on a team name: Paralinear. We went through the steps of the Site completion process and discussed how we could automate those steps. We then identified possible subsystems, use cases and actors. Michael Vosloo wrote down questions that we would like to ask Mr. van der Walt in our next meeting. We decided to meet up in person next week to start on Del 1. We discussed our progress with Del 0.

5. Action Items (*add rows as necessary*)		
Action	Assigned to	Due Date
Team Photo, Sign Course of agreement, Team Name suggestion	ALL	25/03/2021

6. Next Meeting					
Date: (MM/DD/YYYY)	30/03/2021	Time:	9:00-12:00	Location:	Google Meet
Agenda:	We need to further analyse the site completion process and identify more possible subsystems, use cases and actors.				

15.3 MEETING MINUTES: 30 March 2021

Project Name:	INF 370 Deliverable 1		
Date of Meeting: (MM/DD/YYYY)	30 March 30, 2021	Location:	Hatfield Campus
Minutes Prepared By:	Vincent Yu	Charge time to:	

1. Purpose of Meeting
The purpose of this meeting is to be acquianted with our team members again. After being separated for a year. It would be nice to meet and work in person on Hatfield campus. Discuss project management, work schedule, assigning of tasks, work ethic etc.

2. Attendance at Meeting (add rows as necessary)			
Name	Department. /Division	E-mail	Phone
Michael Vosloo	-	u19031174@tuks.co.za	082 387 0072
Matthew Veltman	-	u19050608@tuks.co.za	081 341 1664
Vincent Yu	-	u15195059@tuks.co.za	084 073 7834
Amore Rossouw	-	u19052864@tuks.co.za	073 567 3529
Tshepang Mashao	-	u19293675@tuks.co.za	074 447 0511

3. Meeting Agenda
To work as a team in person on campus. To discuss project management and assignment tasks. To set dedicated work sessions for collaboration. To discuss general guidelines regarding work ethic and accountibility.

4. Meeting Notes, Decisions, Issues
Dedicated work sessions in person will be vital for completing this deliverable and the entire project. ASANA setup and all tasks assigned. Summary to be submitted to client after every meeting with them. Do weekly status updates. No Judgement! Doing this helps everyone get a general idea of the project progression. If workload is overwhelming, ask for assitance. Up to date backup of the project and all documents. Do not neglect other modules. Take breaks.

5. Action Items (add rows as necessary)		
Action	Assigned to	Due Date
1.1 Cover Page	Michael Vosloo & Vincent Yu	02/04/2021
2 Client information Intro	Tshepang Mashao & Matthew Veltman	02/04/2021
2.1 Organization's History	Tshepang Mashao & Amore Rossouw	02/04/2021
2.2 Organizational Structure	Vincent Yu & Michael Vosloo	02/04/2021
2.3 Contact Person's Particulars	Michael Vosloo & Vincent Yu	02/04/2021
2 Client information Conclusion	Vincent Yu & Amore Rossouw	02/04/2021
3 Project Request Intro	Matthew Veltman & Michael Vosloo	02/04/2021
3.1 Project Request	Matthew Veltman & Michael Vosloo	02/04/2021
3 Project Request Conclusion	Tshepang Mashao & Michael Vosloo	02/04/2021
4 Preliminary Investigation Intro	Tshepang Mashao & Amore Rossouw	02/04/2021
4.1 Problem/Vision Statement	Matthew Veltman, Tshepang Mashao & Amore Rossouw	02/04/2021
4.2 List Business Goals & Objectives (SMART)	Matthew Veltman, Tshepang Mashao & Amore Rossouw	02/04/2021
4.3 List Problems, Opportunities & Directives	Matthew Veltman, Tshepang Mashao & Amore Rossouw	02/04/2021
4.4 List Preliminary Assumptions & Constraints	Matthew Veltman, Tshepang Mashao & Amore Rossouw	02/04/2021

6. Next Meeting					
Date: (MM/DD/YYYY)	31 March 2021	Time:	10:30	Location:	Google Meet
Agenda:	Meeting with Michael van der Walt (The client) to discuss the business processes in depth. The business rules will be defined by how the business performs its functions.				

15.4 MEETING MINUTES: 31 March 2021

Project Name:	INF 370 Deliverable 1		
Date of Meeting: (MM/DD/YYYY)	31/03/2021	Location:	Google Meet
Minutes Prepared By:	Michael Vosloo	Charge time to:	

1. Purpose of Meeting
The purpose of this meeting is to ask questions about confusion of the existing system the group had. Discuss the functions of the business and get more insight on to four types of sites that Gohvan construction does for their cell phone towers. Speak to the health and safety Officer that sets up the "As-Built Document" once a site is completely built and approved.

2. Attendance at Meeting			
Name	Department. /Division	E-mail	Phone
Michael Vosloo	-	u19031174@tuks.co.za	082 387 0072
Matthew Veltman	-	u19050608@tuks.co.za	081 341 1664
Vincent Yu	-	u15195059@tuks.co.za	084 073 7834
Amore Rossouw	-	u19052864@tuks.co.za	073 567 3529
Michael van der Walt (Managing Director)	Gohvan Construction	michael@gohvan.co.za	-
Jenny Nienaber (health and safety Officer)	Gohvan Construction	jenny@gohvan.co.za	-

3. Meeting Agenda
Discuss questions on system Discuss how each site operates and is constructed Speak to Jenny Nienaber (health and Safety Officer) Discuss Inventory and procurement Discuss how inventory is tracked Discuss “as-Built” document

4. Meeting Notes, Decisions, Issues, Progress made (list details responsibilities and tasks)
We made conclusions on questions we had previously drawn up from previous meetings discussion on the systems. We understand how to inventory system works and what is stored and what is not stored on the premises of Gohvan Construction. The “as-built” document was fully explained to us and what is entailed within the document and when it is drawn up by the health and safety officer to then be documented for future audits. Michael Van Der Walt explained how each type of site functions and it’s built up and what each site entails and all the necessary materials that are required for the specific site’s constructions.

5. Action Items		
Action	Assigned to	Due Date
Project Admin (ASANA)	Vincent Yu	31/03/2021
Meeting Minutes	Michael Vosloo	31/03/2021
Rich Picture draft	Amore Rossouw	07/04/2021

6. Next Meeting					
Date: (MM/DD/YYYY)	06/04/2021	Time:	09:00-11:00	Location:	Google Meet
Agenda:	Have a meeting with Mr. van der Walt (client) to further discuss the business processes and functions to fully understand the business, as well as get insight on what the client would like for improvements into the system.				

15.5 MEETING MINUTES: 2 April 2021

Project Name:	INF 370 Deliverable 1		
Date of Meeting: (MM/DD/YYYY)	02/04/2021	Location:	Hatfield Campus
Minutes Prepared By:	Matthew Veltman	Charge time to:	

1. Purpose of Meeting
To get together and discuss the rich pictures and functional and non-functional requirements for the system and decide on the complexity model tasks.

2. Attendance at Meeting (add rows as necessary)			
Name	Department. /Division	E-mail	Phone
Michael Vosloo	-	u19031174@tuks.co.za	082 387 0072
Matthew Veltman	-	u19050608@tuks.co.za	081 341 1664
Vincent Yu	-	u15195059@tuks.co.za	084 073 7834
Amore Rossouw	-	u19052864@tuks.co.za	073 567 3529
Tshepang Mashao	-	u19293675@tuks.co.za	074 447 0511

3. Meeting Agenda
Go through the relevant elements for the rich pictures and decide and discuss all the functional requirements for the system, to ensure everyone understands and agrees on the system.

4. Meeting Notes, Decisions, Issues, Progress made (list details responsibilities and tasks)
We completed rough rich pictures on the system and compiled a list for the functional requirements. Went through a recording of last google meet session with our client to discuss elicitation techniques. An issue we encountered was finding a gate to access campus as today was a public holiday.

5. Action Items (add rows as necessary)		
Action	Assigned to	Due Date
Rich picture (proposed)	Amore	07/04/2021

Rich picture (current)	Michael	07/04/2021
Meeting minutes	Matthew	02/04/2021
Functional requirements	Vincent	07/04/2021
Elicitation techniques	Matthew	06/04/2021
Elicitation techniques	Tshepang	06/04/2021

6. Next Meeting					
Date: (MM/DD/YYYY)	06/04/2021	Time:	9:00-13:00	Location:	Hatfield Campus
Agenda:	We need to further analyse functional requirements and elicitation techniques				

15.6 MEETING MINUTES: 6 April 2021

Project Name:	INF 370 Deliverable 1		
Date of Meeting: (MM/DD/YYYY)	06/04/2021	Location:	Google Meet
Minutes Prepared By:	Tshepang Mashao	Charge time to:	

1. Purpose of Meeting
To discuss critical and precise questions that would clear misunderstandings found in the previous meeting

2. Attendance at Meeting (*add rows as necessary)*			
Name	*Department. /*Division	E-mail	Phone
Michael Vosloo	-	u19031174@tuks.co.za	082 387 0072
Matthew Veltman	-	u19050608@tuks.co.za	081 341 1664
Vincent Yu	-	u15195059@tuks.co.za	084 073 7834
Amore Rossouw	-	u19052864@tuks.co.za	073 567 3529
Tshepang Mashao	-	u19293675@tuks.co.za	074 447 0511

3. Meeting Agenda
To discuss critical and precise questions with our contact person that would clear misunderstandings found in the previous meeting and further analyse functional requirements and elicitation techniques.

4. Meeting Notes, Decisions, Issues, Progress made (list details responsibilities and tasks)
We learned of a few details that would have an impact on the system, such as business rules that cannot change (The 90 percent, 10 percent rule), no use cases that involve deleting or removing. We also learned of problems that could be solved by the quotation compilation automatically made after the TSS report is complete and understanding that not all documents relating to the RF report need to be included.

5. Action Items (*add rows as necessary)*		
Action	Assigned to	Due Date
Rich picture (proposed)	Amore	07/04/2021
Rich picture (current)	Michael	07/04/2021
Meeting minutes	Tshepang	06/04/2021
Functional requirements	Everyone	09/04/2021
Elicitation techniques	Matthew	06/04/2021
Elicitation techniques	Tshepang	06/04/2021

6. Next Meeting					
Date: (MM/DD/YYYY)	09/04/2021	Time:	9:00-13:00	Location:	Hatfield Campus
Agenda:	We need to further analyse functional requirements, elicitation techniques and talk about any information gaps we might have.				

15.7 Asana List

INF 370 Deliverable 1

Printed from Asana

Project Proposal

☑ Michael: ~~1.1 Cover Page~~	due Mar 30, 2021
☑ Vincent Yu : ~~1.1 Cover Page Review~~	due Mar 30, 2021
☑ Tshepang Mashao: ~~2 Client information Intro~~	due Mar 30, 2021
☑ Matthew Veltman: ~~2 Client information Intro Review~~	due Mar 30, 2021
☑ Tshepang Mashao: ~~2.1 Organization's History~~	due Mar 30, 2021
☑ Amore: ~~2.1 Organization's History Review~~	due Mar 30, 2021
☑ Vincent Yu : ~~2.2 Organizational Structure~~	due Mar 30, 2021
☑ Michael: ~~2.2 Organizational Structure Review~~	due Mar 30, 2021
☑ Michael: ~~2.3 Contact Person's Particulars~~	due Mar 30, 2021
☑ Vincent Yu : ~~2.3 Contact Person's Particulars Review~~	due Mar 30, 2021
☑ Vincent Yu : ~~2 Client information Conclusion~~	due Mar 30, 2021
☑ Amore: ~~2 Client information Conclusion Review~~	due Mar 30, 2021
☑ Matthew Veltman: ~~3 Project Request Intro~~	due Mar 31, 2021
☑ Michael: ~~3 Project Request Intro Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~3.1 Project Request~~	due Mar 31, 2021
☑ Michael: ~~3.1 Project Request Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~3 Project Request Conclusion~~	due Mar 31, 2021
☑ Michael: ~~3 Project Request Conclusion Review~~	due Mar 31, 2021
☑ Tshepang Mashao: ~~4 Preliminary Investigation Intro~~	due Mar 31, 2021
☑ Amore: ~~4 Preliminary Investigation Intro Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~4.1 Problem/Vision Statement~~	due Mar 31, 2021
☑ Tshepang Mashao: ~~4.1 Problem/Vision Statement~~	due Mar 31, 2021
☑ Amore: ~~4.1 Problem/Vision Statement Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~4.2 List Business Goals & Objectives (SMART)~~	due Mar 31, 2021
☑ Tshepang Mashao: ~~4.2 List Business Goals & Objectives (SMART)~~	due Mar 31, 2021
☑ Amore: ~~4.2 List Business Goals & Objectives (SMART) Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~4.3 List Problems, Opportunities & Directives~~	due Mar 31, 2021
☑ Tshepang Mashao: ~~4.3 List Problems, Opportunities & Directives~~	due Mar 31, 2021
☑ Amore: ~~4.3 List Problems, Opportunities & Directives Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~4.4 List Preliminary Assumptions & Constraints~~	due Mar 31, 2021
☑ Tshepang Mashao: ~~4.4 List Preliminary Assumptions & Constraints~~	due Mar 31, 2021
☑ Amore: ~~4.4 List Preliminary Assumptions & Constraints Review~~	due Mar 31, 2021
☑ Matthew Veltman: ~~4.5 List Elicitation Technique(s)~~	due Apr 6, 2021
☑ Tshepang Mashao: ~~4.5 List Elicitation Technique(s)~~	due Apr 6, 2021

- ☑ Amore: ~~4.5 List Elicitation Technique(s) Review~~ due Apr 6, 2021
- ☑ Matthew Veltman: ~~4.6 Motivation for Elicitation Technique(s)~~ due Apr 6, 2021
- ☑ Tshepang Mashao: ~~4.6 Motivation for Elicitation Technique(s)~~ due Apr 6, 2021
- ☑ Amore: ~~4.6 Motivation for Elicitation Technique(s) Review~~ due Apr 6, 2021
- ☑ Matthew Veltman: ~~4.7 Proof of Tasks Performed Before, During & After Elicitation Technique (Template 3)~~ due Apr 6, 2021
- ☑ Tshepang Mashao: ~~4.7 Proof of Tasks Performed Before, During & After Elicitation Technique (Template 3)~~ due Apr 6, 2021
- ☑ Michael: ~~4.7 Proof of Tasks Performed Before, During & After Elicitation Technique (Template 3) Review~~ due Apr 6, 2021
- ☑ Matthew Veltman: ~~4.8 Proof Summary of Elicitation Technique Sent to Client~~ due Apr 6, 2021
- ☑ Tshepang Mashao: ~~4.8 Proof Summary of Elicitation Technique Sent to Client~~ due Apr 6, 2021
- ☑ Michael: ~~4.8 Proof Summary of Elicitation Technique Sent to Client Review~~ due Apr 6, 2021
- ☑ Tshepang Mashao: ~~4 Preliminary Investigation Conclusion~~ due Apr 6, 2021
- ☑ Amore: ~~4 Preliminary Investigation Conclusion review~~ due Apr 6, 2021
- ☑ Amore: ~~5 Problem Analysis Intro~~ due Apr 7, 2021
- ☑ Vincent Yu : ~~5 Problem Analysis Intro Review~~ due Apr 7, 2021
- ☑ Michael: ~~5.1 Overview of Current System (Rich Picture)~~ due Apr 7, 2021
- ☑ Vincent Yu : ~~5.1 Overview of Current System (Rich Picture) Review~~ due Apr 7, 2021
- ☑ Tshepang Mashao: ~~5.1 Overview of Current System (Rich Picture) Review~~ due Apr 7, 2021
- ☑ Amore: ~~5.2 Analysis of Current System (Capabilities, Gaps, Recommendations)~~ due Apr 7, 2021
- ☑ Vincent Yu : ~~5.2 Analysis of Current System (Capabilities, Gaps, Recommendations) Review~~ due Apr 7, 2021
- ☑ Amore: ~~5.3 Rich Picture of New Proposed System~~ due Apr 7, 2021
- ☑ Vincent Yu : ~~5.3 Rich Picture of New Proposed System Review~~ due Apr 7, 2021
- ☑ Amore: ~~5 Problem Analysis Conclusion~~ due Apr 7, 2021
- ☑ Vincent Yu : ~~5 Problem Analysis Conclusion Review~~ due Apr 7, 2021
- ☑ Vincent Yu : ~~6 Requirements Analysis Intro~~ due Apr 8, 2021
- ☑ Matthew Veltman: ~~6 Requirements Analysis Intro Review~~ due Apr 8, 2021
- ☑ Vincent Yu : ~~6.1 Functional Requirements List~~ due Apr 8, 2021
- ☑ Amore: ~~6.1 Functional Requirements List Review~~ due Apr 8, 2021
- ☑ Matthew Veltman: ~~6.2 Table Functional Requirements (Template 4 - Descriptions & Details)~~ due Apr 8, 2021
- ☑ Vincent Yu : ~~6.2 Table Functional Requirements (Template 4 - Descriptions & Details)~~ due Apr 8, 2021
- ☑ Amore: ~~6.2 Table Functional Requirements (Template 4 - Descriptions & Details)~~ due Apr 8, 2021
- ☑ Michael: ~~6.2 Table Functional Requirements (Template 4 - Descriptions & Details)~~ due Apr 8, 2021
- ☑ Tshepang Mashao: ~~6.2 Table Functional Requirements (Template 4 - Descriptions & Details)~~ due Apr 8, 2021
- ☑ Vincent Yu : ~~6.3 User Acceptance Criteria (Criticality / Priority per Requirement)~~ due Apr 8, 2021
- ☑ Michael: ~~6.3 User Acceptance Criteria (Criticality / Priority per Requirement) Review~~ due Apr 8, 2021
- ☑ Vincent Yu : ~~6.4 Non-Functional Requirements List (PIECES Framework)~~ due Apr 8, 2021
- ☑ Tshepang Mashao: ~~6.4 Non-Functional Requirements List (PIECES Framework) Review~~ due Apr 8, 2021

- ☑ **Vincent Yu :** ~~6 Requirements Analysis Conclusion~~ due Apr 9, 2021
- ☑ **Matthew Veltman:** ~~6 Requirements Analysis Conclusion Review~~ due Apr 9, 2021
- ☑ **Vincent Yu :** ~~7.1 Feasibility/Decision Analysis Introduction (Purpose, Background, Scope and Structure)~~ due Apr 9, 2021
- ☑ **Michael:** ~~7.1 Feasibility/Decision Analysis Introduction (Purpose, Background, Scope and Structure) Review~~ due Apr 9, 2021
- ☑ **Vincent Yu :** ~~7.2 Feasibility Analysis (Template 5 - Feasibility Matrix >3 Alternatives)~~ due Apr 9, 2021
- ☑ **Michael:** ~~7.2 Feasibility Analysis (Template 5 - Feasibility Matrix >3 Alternatives) Review~~ due Apr 9, 2021
- ☑ **Michael:** ~~7.2.1 Details of Alternatives~~ due Apr 9, 2021
- ☑ **Matthew Veltman:** ~~7.2.1 Details of Alternatives Review~~ due Apr 9, 2021
- ☑ **Vincent Yu :** ~~7.2.2 Make Recommendations~~ due Apr 9, 2021
- ☑ **Michael:** ~~7.2.2 Make Recommendations~~ due Apr 9, 2021
- ☑ **Tshepang Mashao:** ~~7.2.2 Make Recommendations Review~~ due Apr 9, 2021
- ☑ **Vincent Yu :** ~~7 Feasibility/Decision Analysis Conclusion~~ due Apr 9, 2021
- ☑ **Matthew Veltman:** ~~7 Feasibility/Decision Analysis Conclusion Review~~ due Apr 9, 2021
- ☑ **Amore:** ~~8 Appendix A: Client Documentation Intro~~ due Apr 9, 2021
- ☑ **Vincent Yu :** ~~8 Appendix A: Client Documentation Intro Review~~ due Apr 10, 2021
- ☑ **Amore:** ~~8.1 Appendix A: Client Documentation (15 - 50 Pages)~~ due Apr 10, 2021
- ☑ **Michael:** ~~8.1 Appendix A: Client Documentation (15 - 50 Pages) review~~ due Apr 10, 2021
- ☑ **Amore:** ~~8 Appendix A: Client Documentation Conclusion~~ due Apr 10, 2021
- ☑ **Vincent Yu :** ~~8 Appendix A: Client Documentation Conclusion Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~9 Appendix B: Other Systems Investigated Intro~~ due Apr 10, 2021
- ☑ **Vincent Yu :** ~~9 Appendix B: Other Systems Investigated Intro Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~9.1 Appendix B: Other Systems Investigated (Research Systems with Similar Functionality)~~ due Apr 10, 2021
- ☑ **Vincent Yu :** ~~9.1 Appendix B: Other Systems Investigated (Research Systems with Similar Functionality) Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~9 Appendix B: Other Systems Investigated Conclusion~~ due Apr 10, 2021
- ☑ **Vincent Yu :** ~~9 Appendix B: Other Systems Investigated Conclusion Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~10 Appendix C: Complexity Intro~~ due Apr 10, 2021
- ☑ **Amore:** ~~10 Appendix C: Complexity Intro Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~10.1 Appendix C: Complexity Model (Clearly Marked & Total Calculated)~~ due Apr 10, 2021
- ☑ **Amore:** ~~10.1 Appendix C: Complexity Model (Clearly Marked & Total Calculated) Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~10 Appendix C: Complexity Conclusion~~ due Apr 10, 2021
- ☑ **Amore:** ~~10 Appendix C: Complexity Conclusion Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~11 Sign-off by Client Intro~~ due Apr 10, 2021
- ☑ **Matthew Veltman:** ~~11 Sign-off by Client Intro Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~11.1 Sign-off by Client~~ due Apr 10, 2021
- ☑ **Tshepang Mashao:** ~~11.1 Sign-off by Client Review~~ due Apr 10, 2021
- ☑ **Michael:** ~~11 Sign-off by Client Conclusion~~ due Apr 10, 2021

- ☑ Amore: ~~11 Sign-off by Client Conclusion Review~~ due Apr 10, 2021
- ☑ Matthew Veltman: ~~12 Completeness Check~~ due Apr 11, 2021
- ☑ Tshepang Mashao: ~~12 Completeness Check~~ due Apr 11, 2021
- ☑ Amore: ~~12 Completeness Check~~ due Apr 11, 2021
- ☑ Michael: ~~12 Completeness Check~~ due Apr 11, 2021
- ☑ Vincent Yu : ~~12 Completeness Check~~ due Apr 11, 2021
- ☑ Michael: ~~13 Sign-off by Team introduction~~ due Apr 10, 2021
- ☑ Tshepang Mashao: ~~13 Sign-off by Team~~ due Apr 10, 2021
- ☑ Michael: ~~13 Sign-off by Team Conclusion~~ due Apr 10, 2021
- ☑ Matthew Veltman: ~~DEL 2 Planning~~ due Apr 10, 2021

Meeting Minutes

- ☑ Vincent Yu : ~~Meeting Minutes 30-03-2021~~ due Mar 31, 2021
- ☑ Michael: ~~Meeting Minutes 31-03-2021~~ due Apr 1, 2021
- ☑ Matthew Veltman: ~~Meeting Minutes 02-04-2021~~ due Apr 2, 2021
- ☑ Tshepang Mashao: ~~Meeting Minutes 06-04-2021~~ due Apr 6, 2021

Document Layout & Formatting

- ☑ Matthew Veltman: ~~1.1 Headers and Footers on All Pages~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~1.2 Page numbers, date, project name, document identification (e.g. 'Project Proposal'), etc.~~ due Apr 12, 2021
  Headers and footers contain at least page numbers, date, project name, document identification (e.g. 'Project Proposal'), etc.
- ☑ Matthew Veltman: ~~1.3 Clear distinction between headers and footers and the rest of the page.~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~2.1 Table of Contents Completeness~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~2.2 Page numbers correctly~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~2.3 Items are numbered and refers correctly to sections, sub-sections, paragraphs, etc. in the document~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~3.1 Document properly divided into sections, sub-sections, paragraphs, etc.~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~3.2 The sections, sub-sections, paragraphs, etc. into which the document is divided are properly numbered.~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~3.3 Document contains a cover page~~ due Apr 12, 2021
  with at least the following information: name of project, name of project leader, names and student numbers of team members, identification of document (e.g. 'Project Proposal')
- ☑ Matthew Veltman: ~~3.4 Document contains an introduction which explains at least the following:~~ due Apr 12, 2021
  Background to the document, purpose of this document, quick overview/summary of document
- ☑ Matthew Veltman: ~~3.5 General grammar, spelling, etc.~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~3.6 All appendices are properly identified and referenced~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~3.7 Drawings and diagrams are neat~~ due Apr 12, 2021

- ☑ Matthew Veltman: ~~3.8 All drawings and diagrams are properly identified and named e.g. 'Figure 1, Client organization structure.'~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~4.1 Consistent use of font type and size~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~4.2 File is properly identified on the front and side with the correct information~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~4.3 File is neat on the outside~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~5.1 Cover page to describe the purpose of the deliverable~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~5.2 Introduction and conclusion to each section of the document~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~5.3 Deliverable conclusion to explain all the elements and the contribution of each section in the deliverable~~ due Apr 12, 2021
- ☑ Michael: ~~Starting format of Del 1 (skeleton format)~~ due Apr 12, 2021

Project Management

- ☑ Tshepang Mashao: ~~1.1 A Work Breakdown Structure (WBS) for the entire project: Should include:~~ due Apr 12, 2021
  - Overall plan (all deliverable deadlines included)
- ☑ Tshepang Mashao: ~~1.1.1 Detailed Plan for Deliverable 1~~ due Apr 12, 2021
- ☑ Matthew Veltman: ~~1.1.2 Detailed Plan for Deliverable 2 (use the document "Deliverable 2 - Planning Doc.pdf" on clickUP)~~ due Apr 12, 2021
- ☑ Tshepang Mashao: ~~1.2 All tasks in WBS are assigned to (a) group member(s)~~ due Apr 12, 2021
- ☑ Tshepang Mashao: ~~1.3 All work done per task is uploaded by all team members~~ due Apr 12, 2021
- ☑ Tshepang Mashao: ~~1.4 Meeting minutes are done and distributed to all team members (Template 6: Meeting Minutes.doc)~~ due Apr 12, 2021
- ☑ Tshepang Mashao: ~~1.5 Problems/issues ingroup, as well as proposed resolutions clearly indicated in meeting minutes~~ due Apr 12, 2021

Presentation Requirements

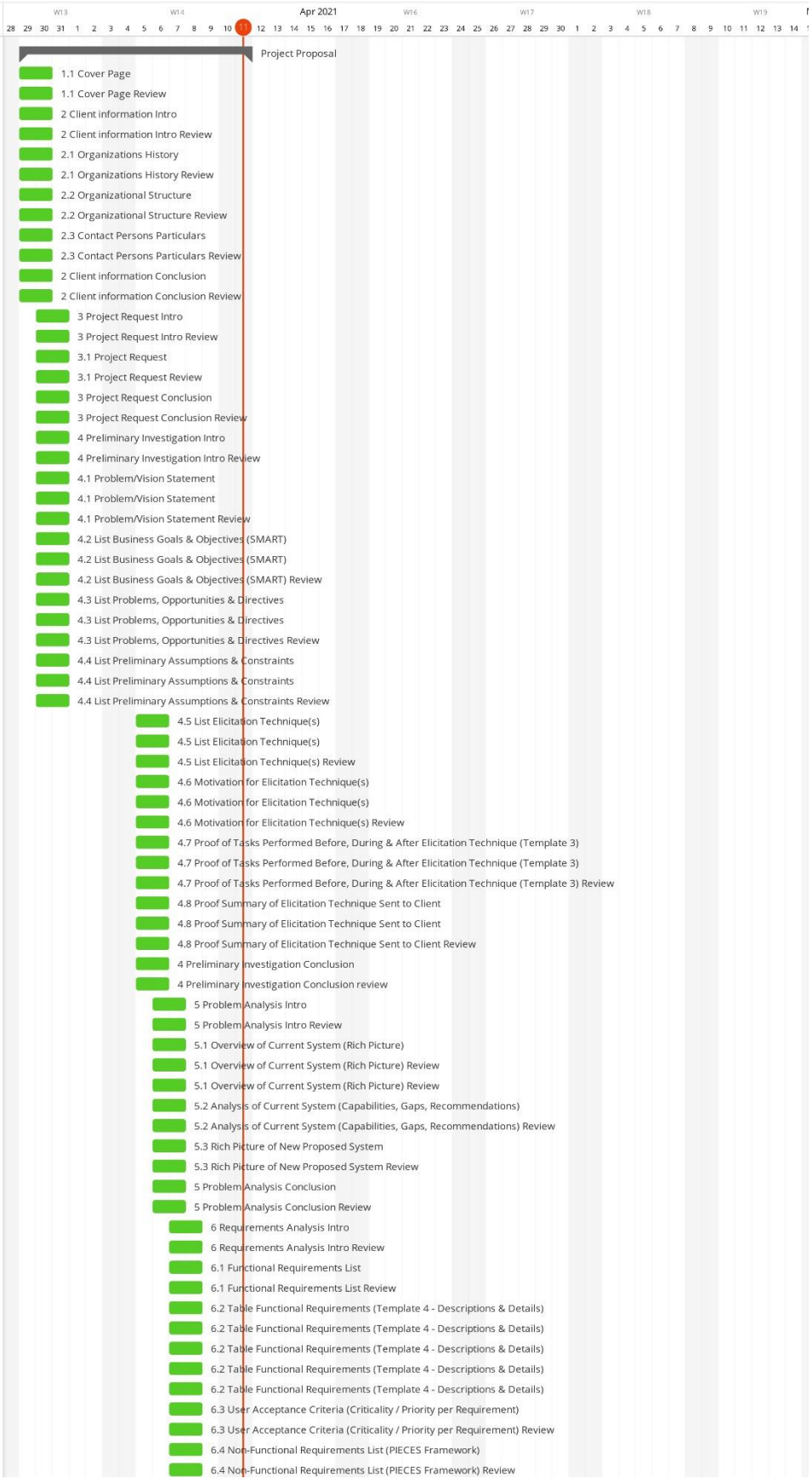
- ☑ Michael: ~~1 Professionalism of the presentation~~ due Apr 9, 2021
- ☑ Michael: ~~1.1The proper use of multimedia~~ due Apr 9, 2021
- ☑ Michael: ~~1.2 The professional appearance of the team~~ due Apr 9, 2021
- ☑ Michael: ~~1.3 Punctuality and keeping to time limits~~ due Apr 9, 2021
- ☑ Michael: ~~1.4 Every team member plays an appropriate role in the presentation~~ due Apr 9, 2021
- ☑ Michael: ~~1.5 In case of problems a backup plan is in place~~ due Apr 9, 2021
- ☑ Michael: ~~1.6 Appropriate use of humor, audience is involved in presentation, not boring, etc.~~ due Apr 9, 2021
- ☑ Michael: ~~2 Argumentation~~ due Apr 9, 2021
- ☑ Michael: ~~2.1 The convincing power of the presentation (does it convince the audience to accept the deliverable?)~~ due Apr 9, 2021
- ☑ Michael: ~~2.2 Relevant and to the point presentation~~ due Apr 9, 2021
- ☑ Michael: ~~2.3 The structure of the presentation, the logical flow of the presentation~~ due Apr 9, 2021
- ☑ Michael: ~~2.4 Team members can answer questions convincingly~~ due Apr 9, 2021
- ☑ Michael: ~~2.5 Presentation complements documentation~~ due Apr 9, 2021

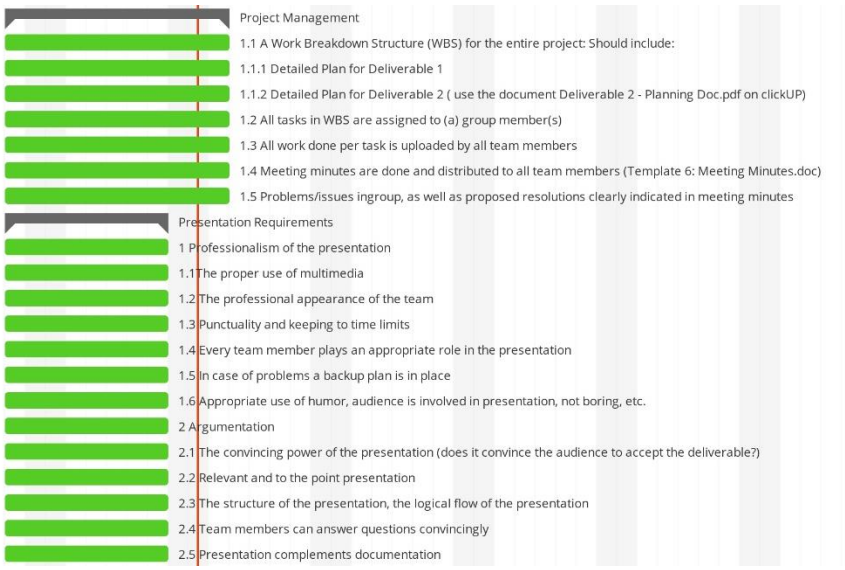
15.8 Asana Gant Chart

INF 370 Deliverable 1

Read-only view, generated on 11 Apr 2021

	ACTIVITIES	ASSIGNEE	EH	START	DUE	%
	Project Proposal		-	29/Mar	11/Apr	100%
1	1.1 Cover Page	Michael	-	29/Mar	30/Mar	100%
2	1.1 Cover Page Review	Vincent Yu	-	29/Mar	30/Mar	100%
3	2 Client information Intro	Tshepang Mash...	-	29/Mar	30/Mar	100%
4	2 Client information Intro Re...	Matthew Veltman	-	29/Mar	30/Mar	100%
5	2.1 Organizations History	Tshepang Mash...	-	29/Mar	30/Mar	100%
6	2.1 Organizations History R...	Amore	-	29/Mar	30/Mar	100%
7	2.2 Organizational Structure	Vincent Yu	-	29/Mar	30/Mar	100%
8	2.2 Organizational Structur...	Michael	-	29/Mar	30/Mar	100%
9	2.3 Contact Persons Particul...	Michael	-	29/Mar	30/Mar	100%
10	2.3 Contact Persons Particul...	Vincent Yu	-	29/Mar	30/Mar	100%
11	2 Client information Conclu...	Vincent Yu	-	29/Mar	30/Mar	100%
12	2 Client information Conclu...	Amore	-	29/Mar	30/Mar	100%
13	3 Project Request Intro	Matthew Veltman	-	30/Mar	31/Mar	100%
14	3 Project Request Intro Revi...	Michael	-	30/Mar	31/Mar	100%
15	3.1 Project Request	Matthew Veltman	-	30/Mar	31/Mar	100%
16	3.1 Project Request Review	Michael	-	30/Mar	31/Mar	100%
17	3 Project Request Conclusion	Matthew Veltman	-	30/Mar	31/Mar	100%
18	3 Project Request Conclusio...	Michael	-	30/Mar	31/Mar	100%
19	4 Preliminary Investigation I...	Tshepang Mash...	-	30/Mar	31/Mar	100%
20	4 Preliminary Investigation I...	Amore	-	30/Mar	31/Mar	100%
21	4.1 Problem/Vision Statement	Matthew Veltman	-	30/Mar	31/Mar	100%
22	4.1 Problem/Vision Statement	Tshepang Mash...	-	30/Mar	31/Mar	100%
23	4.1 Problem/Vision Stateme...	Amore	-	30/Mar	31/Mar	100%
24	4.2 List Business Goals & O...	Matthew Veltman	-	30/Mar	31/Mar	100%
25	4.2 List Business Goals & O...	Tshepang Mash...	-	30/Mar	31/Mar	100%
26	4.2 List Business Goals & O...	Amore	-	30/Mar	31/Mar	100%
27	4.3 List Problems, Opportun...	Matthew Veltman	-	30/Mar	31/Mar	100%
28	4.3 List Problems, Opportun...	Tshepang Mash...	-	30/Mar	31/Mar	100%
29	4.3 List Problems, Opportun...	Amore	-	30/Mar	31/Mar	100%
30	4.4 List Preliminary Assump...	Matthew Veltman	-	30/Mar	31/Mar	100%
31	4.4 List Preliminary Assump...	Tshepang Mash...	-	30/Mar	31/Mar	100%
32	4.4 List Preliminary Assump...	Amore	-	30/Mar	31/Mar	100%
33	4.5 List Elicitation Techniqu...	Matthew Veltman	-	05/Apr	06/Apr	100%
34	4.5 List Elicitation Techniqu...	Tshepang Mash...	-	05/Apr	06/Apr	100%
35	4.5 List Elicitation Techniqu...	Amore	-	05/Apr	06/Apr	100%
36	4.6 Motivation for Elicitation...	Matthew Veltman	-	05/Apr	06/Apr	100%
37	4.6 Motivation for Elicitation...	Tshepang Mash...	-	05/Apr	06/Apr	100%
38	4.6 Motivation for Elicitation...	Amore	-	05/Apr	06/Apr	100%
39	4.7 Proof of Tasks Performe...	Matthew Veltman	-	05/Apr	06/Apr	100%
40	4.7 Proof of Tasks Performe...	Tshepang Mash...	-	05/Apr	06/Apr	100%
41	4.7 Proof of Tasks Performe...	Michael	-	05/Apr	06/Apr	100%
42	4.8 Proof Summary of Elicit...	Matthew Veltman	-	05/Apr	06/Apr	100%
43	4.8 Proof Summary of Elicit...	Tshepang Mash...	-	05/Apr	06/Apr	100%
44	4.8 Proof Summary of Elicit...	Michael	-	05/Apr	06/Apr	100%
45	4 Preliminary Investigation ...	Tshepang Mash...	-	05/Apr	06/Apr	100%
46	4 Preliminary Investigation ...	Amore	-	05/Apr	06/Apr	100%
47	5 Problem Analysis Intro	Amore	-	06/Apr	07/Apr	100%
48	5 Problem Analysis Intro Re...	Vincent Yu	-	06/Apr	07/Apr	100%
49	5.1 Overview of Current Sys...	Michael	-	06/Apr	07/Apr	100%
50	5.1 Overview of Current Sys...	Vincent Yu	-	06/Apr	07/Apr	100%
51	5.1 Overview of Current Sys...	Tshepang Mash...	-	06/Apr	07/Apr	100%
52	5.2 Analysis of Current Syst...	Amore	-	06/Apr	07/Apr	100%
53	5.2 Analysis of Current Syst...	Vincent Yu	-	06/Apr	07/Apr	100%
54	5.3 Rich Picture of New Prop...	Amore	-	06/Apr	07/Apr	100%
55	5.3 Rich Picture of New Prop...	Vincent Yu	-	06/Apr	07/Apr	100%
56	5 Problem Analysis Conclusi...	Amore	-	06/Apr	07/Apr	100%
57	5 Problem Analysis Conclusi...	Vincent Yu	-	06/Apr	07/Apr	100%
58	6 Requirements Analysis Int...	Vincent Yu	-	07/Apr	08/Apr	100%
59	6 Requirements Analysis Int...	Matthew Veltman	-	07/Apr	08/Apr	100%
60	6.1 Functional Requirement...	Vincent Yu	-	07/Apr	08/Apr	100%
61	6.1 Functional Requirement...	Amore	-	07/Apr	08/Apr	100%
62	6.2 Table Functional Requir...	Matthew Veltman	-	07/Apr	08/Apr	100%
63	6.2 Table Functional Requir...	Vincent Yu	-	07/Apr	08/Apr	100%
64	6.2 Table Functional Requir...	Amore	-	07/Apr	08/Apr	100%
65	6.2 Table Functional Requir...	Michael	-	07/Apr	08/Apr	100%
66	6.2 Table Functional Requir...	Tshepang Mash...	-	07/Apr	08/Apr	100%
67	6.3 User Acceptance Criteri...	Vincent Yu	-	07/Apr	08/Apr	100%
68	6.3 User Acceptance Criteri...	Michael	-	07/Apr	08/Apr	100%
69	6.4 Non-Functional Require...	Vincent Yu	-	07/Apr	08/Apr	100%
70	6.4 Non-Functional Require...	Tshepang Mash...	-	07/Apr	08/Apr	100%



69	6.4 Non-Functional Require...	Vincent Yu	-	07/Apr	08/Apr	100%
70	6.4 Non-Functional Require...	Tshepang Mash...	-	07/Apr	08/Apr	100%
71	6 Requirements Analysis Co...	Vincent Yu	-	08/Apr	09/Apr	100%
72	6 Requirements Analysis Co...	Matthew Veltman	-	08/Apr	09/Apr	100%
73	7.1 Feasibility/Decision Anal...	Vincent Yu	-	08/Apr	09/Apr	100%
74	7.1 Feasibility/Decision Anal...	Michael	-	08/Apr	09/Apr	100%
75	7.2 Feasibility Analysis (Tem...	Vincent Yu	-	08/Apr	09/Apr	100%
76	7.2 Feasibility Analysis (Tem...	Michael	-	08/Apr	09/Apr	100%
77	7.2.1 Details of Alternatives	Michael	-	08/Apr	09/Apr	100%
78	7.2.1 Details of Alternatives ...	Matthew Veltman	-	08/Apr	09/Apr	100%
79	7.2.2 Make Recommendatio...	Vincent Yu	-	08/Apr	09/Apr	100%
80	7.2.2 Make Recommendatio...	Tshepang Mash...	-	08/Apr	09/Apr	100%
81	7 Feasibility/Decision Analy...	Vincent Yu	-	08/Apr	09/Apr	100%
82	7 Feasibility/Decision Analy...	Matthew Veltman	-	08/Apr	09/Apr	100%
83	7.2.2 Make Recommendatio...	Michael	-	09/Apr	09/Apr	100%
84	8 Appendix A: Client Docum...	Amore	-	09/Apr	09/Apr	100%
85	8 Appendix A: Client Docum...	Vincent Yu	-	10/Apr	10/Apr	100%
86	8.1 Appendix A: Client Docu...	Amore	-	10/Apr	10/Apr	100%
87	8.1 Appendix A: Client Docu...	Michael	-	10/Apr	10/Apr	100%
88	8 Appendix A: Client Docum...	Amore	-	10/Apr	10/Apr	100%
89	8 Appendix A: Client Docum...	Vincent Yu	-	10/Apr	10/Apr	100%
90	9 Appendix B: Other System...	Michael	-	10/Apr	10/Apr	100%
91	9 Appendix B: Other System...	Vincent Yu	-	10/Apr	10/Apr	100%
92	9.1 Appendix B: Other Syste...	Michael	-	10/Apr	10/Apr	100%
93	9.1 Appendix B: Other Syste...	Vincent Yu	-	10/Apr	10/Apr	100%
94	9 Appendix B: Other System...	Michael	-	10/Apr	10/Apr	100%
95	9 Appendix B: Other System...	Vincent Yu	-	10/Apr	10/Apr	100%
96	10 Appendix C: Complexity I...	Michael	-	10/Apr	10/Apr	100%
97	10 Appendix C: Complexity I...	Amore	-	10/Apr	10/Apr	100%
98	10.1 Appendix C: Complexit...	Michael	-	10/Apr	10/Apr	100%
99	10.1 Appendix C: Complexit...	Amore	-	10/Apr	10/Apr	100%
100	10 Appendix C: Complexity ...	Michael	-	10/Apr	10/Apr	100%
101	10 Appendix C: Complexity ...	Amore	-	10/Apr	10/Apr	100%
102	11 Sign-off by Client Intro	Michael	-	10/Apr	10/Apr	100%
103	11 Sign-off by Client Intro R...	Matthew Veltman	-	10/Apr	10/Apr	100%
104	11.1 Sign-off by Client	Michael	-	10/Apr	10/Apr	100%
105	11.1 Sign-off by Client Review	Tshepang Mash...	-	10/Apr	10/Apr	100%
106	11 Sign-off by Client Conclu...	Michael	-	10/Apr	10/Apr	100%
107	11 Sign-off by Client Conclu...	Amore	-	10/Apr	10/Apr	100%
108	13 Sign-off by Team introdu...	Michael	-	10/Apr	10/Apr	100%
109	13 Sign-off by Team	Tshepang Mash...	-	10/Apr	10/Apr	100%
110	13 Sign-off by Team Conclu...	Michael	-	10/Apr	10/Apr	100%
111	DEL 2 Planning	Matthew Veltman	-	10/Apr	10/Apr	100%
112	12 Completeness Check	Matthew Veltman	-	11/Apr	11/Apr	100%
113	12 Completeness Check	Tshepang Mash...	-	11/Apr	11/Apr	100%
114	12 Completeness Check	Amore	-	11/Apr	11/Apr	100%
115	12 Completeness Check	Michael	-	11/Apr	11/Apr	100%
116	12 Completeness Check	Vincent Yu	-	11/Apr	11/Apr	100%
	Meeting Minutes		-	31/Mar	06/Apr	100%
118	Meeting Minutes 30-03-2021	Vincent Yu	-	31/Mar	31/Mar	100%
119	Meeting Minutes 31-03-2021	Michael	-	01/Apr	01/Apr	100%
120	Meeting Minutes 02-04-2021	Matthew Veltman	-	02/Apr	02/Apr	100%
121	Meeting Minutes 06-04-2021	Tshepang Mash...	-	06/Apr	06/Apr	100%
	Document Layout & Formatting		-	30/Mar	12/Apr	100%
123	Starting format of Del 1 (sk...	Michael	-	30/Mar	12/Apr	100%
124	1.1 Headers and Footers on...	Matthew Veltman	-	02/Apr	12/Apr	100%
125	1.2 Page numbers, date, pr...	Matthew Veltman	-	02/Apr	12/Apr	100%
126	1.3 Clear distinction betwee...	Matthew Veltman	-	02/Apr	12/Apr	100%
127	2.1 Table of Contents Comp...	Matthew Veltman	-	02/Apr	12/Apr	100%
128	2.2 Page numbers correctly	Matthew Veltman	-	02/Apr	12/Apr	100%
129	2.3 Items are numbered an...	Matthew Veltman	-	02/Apr	12/Apr	100%
130	3.1 Document properly divi...	Matthew Veltman	-	02/Apr	12/Apr	100%
131	3.2 The sections, sub-sectio...	Matthew Veltman	-	02/Apr	12/Apr	100%
132	3.3 Document contains a co...	Matthew Veltman	-	02/Apr	12/Apr	100%
133	3.4 Document contains an i...	Matthew Veltman	-	02/Apr	12/Apr	100%
134	3.5 General grammar, spelli...	Matthew Veltman	-	02/Apr	12/Apr	100%
135	3.6 All appendices are prop...	Matthew Veltman	-	02/Apr	12/Apr	100%
136	3.7 Drawings and diagrams ...	Matthew Veltman	-	02/Apr	12/Apr	100%
137	3.8 All drawings and diagra...	Matthew Veltman	-	02/Apr	12/Apr	100%
138	4.1 Consistent use of font ty...	Matthew Veltman	-	02/Apr	12/Apr	100%
139	4.2 File is properly identified...	Matthew Veltman	-	02/Apr	12/Apr	100%
140	4.3 File is neat on the outside	Matthew Veltman	-	02/Apr	12/Apr	100%
141	5.1 Cover page to describe t...	Matthew Veltman	-	02/Apr	12/Apr	100%
142	5.2 Introduction and conclus...	Matthew Veltman	-	02/Apr	12/Apr	100%
143	5.3 Deliverable conclusion t...	Matthew Veltman	-	02/Apr	12/Apr	100%

	Project Management		-	02/Apr	12/Apr	100%
145	1.1 A Work Breakdown Stru...	Tshepang Mash...	-	02/Apr	12/Apr	100%
146	1.1.1 Detailed Plan for Deliv...	Tshepang Mash...	-	02/Apr	12/Apr	100%
147	1.1.2 Detailed Plan for Deliv...	Matthew Veltman	-	02/Apr	12/Apr	100%
148	1.2 All tasks in WBS are assi...	Tshepang Mash...	-	02/Apr	12/Apr	100%
149	1.3 All work done per task is...	Tshepang Mash...	-	02/Apr	12/Apr	100%
150	1.4 Meeting minutes are do...	Tshepang Mash...	-	02/Apr	12/Apr	100%
151	1.5 Problems/issues ingrou...	Tshepang Mash...	-	02/Apr	12/Apr	100%
	Presentation Requirements		-	02/Apr	09/Apr	100%
153	1 Professionalism of the pre...	Michael	-	02/Apr	09/Apr	100%
154	1.1The proper use of multi...	Michael	-	02/Apr	09/Apr	100%
155	1.2 The professional appear...	Michael	-	02/Apr	09/Apr	100%
156	1.3 Punctuality and keeping ...	Michael	-	02/Apr	09/Apr	100%
157	1.4 Every team member pla...	Michael	-	02/Apr	09/Apr	100%
158	1.5 In case of problems a ba...	Michael	-	02/Apr	09/Apr	100%
159	1.6 Appropriate use of hum...	Michael	-	02/Apr	09/Apr	100%
160	2 Argumentation	Michael	-	02/Apr	09/Apr	100%
161	2.1 The convincing power of...	Michael	-	02/Apr	09/Apr	100%
162	2.2 Relevant and to the poin...	Michael	-	02/Apr	09/Apr	100%
163	2.3 The structure of the pre...	Michael	-	02/Apr	09/Apr	100%
164	2.4 Team members can ans...	Michael	-	02/Apr	09/Apr	100%
165	2.5 Presentation compleme...	Michael	-	02/Apr	09/Apr	100%