List of Annexes

ANNEX-1

An Introduction for the Participating Terminals

Research Project Title: Development of Standardised Key Performance Indicators within Dry Bulk Terminals Industry

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University : Middlesex University - July 2017

Background and Scope

Let me introduce myself. I am Han Ozturk, Director of Nectar Group, and Chair of the International Dry Bulk Terminals Group (DBTG). I am currently undertaking a DBA research degree at Middlesex University in London, and a key part of that programme of studies is a major research project.

The main objective of the project is to improve the existing Key Performance Indicators (KPI's) utilised by Dry Bulk Terminals. Efficiency parameters are the most common performance indicators currently utilised by terminals. The project will seek to incorporate effectiveness parameters into the KPIs, which mainly reflect the expectations of key clients on the performance of the terminals. Such expectations can act as an indicator of how a terminal performs in the eyes of the key clients. Therefore, a secondary objective of the project is encouragement for joint development of KPIs between terminals and key clients.

The project will also consider the influence of different cultures/management styles in identifying and implementing KPIs in participating terminals.

The project will also examine the common characteristics of the set of KPI's implemented in terminals participating in the study in order to determine the level of KPI standardisation that can be achieved across the Dry Bulk Terminals Industry.

The research approach I will be using for the project is Participatory Action Research. In accordance with this, the research will be conducted in action cycles, each of which will consist of four stages: defining of issues; planning for an intervention; carrying out the intervention; and evaluating the outcomes. I expect that there will be a minimum of two action cycles during the project.

At the commencement of the project, I will be seeking to understand the existing performance process and procedures as reflected in the KPIs used by the participating terminals together with selected representatives of each participating terminal. The intention is for representatives from each terminal to become active participants in the research project with me. Participants will be involved in internal discussions to determine changes to the existing KPIs, and/or devise new ones, as appropriate. They will also collaborate in carrying out the planned interventions within their terminal with a view to assisting with the analysis of the outcomes for the project. Any new knowledge emerging from a cycle will then be considered in the next project cycle.

Any gaps discovered between a terminal's performance KPIs and that of key clients' expectations will also provide guidance to the participating terminals in shaping day to day operational decisions as well as more long term strategic and investment decisions.

The project will also bring other empirical evidence into consideration based on other research carried out in this area.

Research Methodology and Approach

I will be working together with participating representatives for each terminal in the project. In that sense, the terminals will be actively involved in each cycle of the project. At an early stage I will therefore visit each terminal and establish a reference group of participants from staff working for the terminal operator.

Each cycle will follow a similar pattern of actions; I will be starting by defining specific areas of change within each terminal. I will be using semi structured interviews/discussions with the participating terminals at the commencement of each cycle, as these types of discussions enable a structured discussion to take place while at the same time allowing for issues to be explored between the participants. During the initial stage the discussions will explore a number of areas including:

- How does the current performance measurement system operate within the terminal, what areas are covered by the system?
- How are the existing KPI's implemented and measured?
- How is the data collected and evaluated?
- How are the outcomes utilised within the terminal and also in relation to key stakeholders/clients?

The next stage will involve the identification of key clients for each terminal, working with the terminal representatives. I will then design questionnaires/surveys in order to understand how such clients see the existing performance parameters utilised by a terminal and also what they feel is important to their business in relation to the performance of the terminal they work with. The analysis of the results from the client surveys will allow me to discuss the gaps between the existing performance KPIs and the clients' expectations therefore enabling me to plan any changes that may be appropriate to the KPIs in collaboration with the terminal representatives. Subject to the type of changes to be implemented, I will also identify any training needs within the terminals in order to ensure that the changes agreed can be implemented both easily and effectively. At this stage, I will also discuss any preparatory work required to put changes into practice and seek agreement on how the data collection and analysis will take place.

The next stage will be to carry out the planned intervention which incorporates the changes to the existing KPI system for an agreed period of time. The length of the period will depend on the nature of changes and data to be collected but I anticipate typically it will be about 3 months.

The final stage of each cycle will involve an evaluation of the outcomes of the intervention. During this stage, I will evaluate a number of areas including:

- Has the implementation of the changes worked as intended?
- To what extent desired and/or expected outcomes are achieved?
- Any areas of failure or unexpected outcomes.
- Evaluation of further changes that may be required to the system.

Throughout each cycle of the project, I will be carrying out various reporting activities as well as analysing the data and making comparisons with similar research carried out previously.

Benefits of the Research to Stakeholders

The research project will aim to provide a number of benefits to various stakeholders as outlined below.

The Participating Terminals and Wider Industry:

- The study will enable terminals to evaluate and analyse their existing performance measurement systems in terms of KPI's they have in place.
- The interaction with the key stakeholders, and outcome in terms of service level expectations and specific attributes that the key stakeholders value most will enable terminals to compare and contrast existing KPI's against the expectations of their key stakeholders.
- Development of a standardised set of KPI's that could be applicable across Dry Bulk Terminals Industry, will create an opportunity for the terminals to benchmark their performance against one another.
- Progress towards an industry benchmark will also enable terminals to showcase the standards they are working at, creating opportunities for branding under the benchmark banner.
- The gap analysis of existing KPI's versus key stakeholders' expectations will provide terminals with an opportunity to make appropriate day-to-day decisions at operational level to improve standards as well as make the right long-term strategic choices along the lines of key stakeholders' expectations.
- Establishing standardised industry KPI's leading to a benchmarking opportunity will provide an opportunity for Dry Bulk Terminals Industry to demonstrate and improve standards they have been working to and improve standing of the industry sector.

Academic Benefits:

The study aims to bring new learning into the subject area from an academic point of view as well as a different approach to researching the subject.

The study will concentrate specifically on the Dry Bulk Terminals industry sector. So far, there have been very few attempts to look at this sector, as previous research has mainly concentrated on container ports performance.

The study also singles out Dry Bulk Terminals as opposed to most of the previous research which concentrate on evaluating performance of ports and port authorities.

The study aims to bring together efficiency and effectiveness spectrums of performance evaluation for Dry Bulk Terminals. This will provide an opportunity for the analysis of traditional efficiency KPI's utilised within the ports industry, while at the same time bringing key stakeholders' service quality expectations into the equation.

Participating Terminals, Privacy and Ethical Considerations

Co-operation and collaboration by the participating terminals during the research study will form one of the essential building blocks for the project. As the researcher, I will seek to acquire relevant information in two main ways:

- semi-structured interviews with representatives from each participating terminal in order to explore specific issues and assist in planning for interventions in action cycles.
- collecting information from the participating terminals during an intervention (e.g. observation and evaluation) in order to assess its progress and outcomes.

I intend to address any ethical issues that may arise during this research in the following ways:

- I will act in complete objectivity throughout the research study and with full integrity and professionalism in his approach to all stakeholders involved.
- The relationship between the researcher and the participating terminals will be based on mutual trust and respect throughout the study.
- I will ensure the privacy and confidentiality of all information collected from the participating terminals during the research project by ensuring that such information is kept securely and not shared with any other parties.
- I will maintain the anonymity of data that may be included in the research project.
- I will ensure the anonymity of any representatives participating in the research from the participating terminals either by means of interviews or any other data or information collection purposes. I will make sure that any data included in the research as a result of such interactions will be non-attributable.
- I will seek to ensure that all participants from terminals involved in the research project are provided with information to ensure they understand the objectives of the research project and their role in participating in it so that they can make an informed decision as to whether to participate in the study or not. Participants will take part in the research study on a voluntary basis and will be free to withdraw from the process at any time.

The study is expected to take place over a period of 2-3 years from the commencement date and is likely to include 2 or 3 action research cycles.

I will be happy to provide you with details of an academic contact at Middlesex University if you have any concerns or questions about the research project.

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ANNEX 2

Terminals First Visit Interview Starter Questions

Corporate Related

- What are the corporate objectives of the terminal?
- What are the key corporate values within the terminal?
- Do engineering or economic objectives drive throughput consideration?
- How do you manage client relationships, what are the key values?
- What is the current business strategy for the next 5 years? (Clients, commodities, expansion etc)
- Who are currently the key stakeholders for the terminal and what is their role?
- Do you currently have a performance management system/KPIs within the terminal?
- How did the performance management system KPIs came to existence?
- How long has it been in existence?
- What is the current role of performance management system/KPIs within the terminal?
- Do you currently use KPIs in strategic and operational decisions? If you do in what way?
- Is there currently a link between the KPIs and the wider logistics chain/clients of the terminal or is it primarily used for internal purposes?
- What are the current drivers for use of the KPIs internal, local, regulatory, clients etc?
- Are there currently any governmental/regulatory/customs regulations forcing you to implement KPIs?
- Are there any specific issues with the implementation of current KPIs?
- Do you utilise practices such as lean process management?
- Which KPIs are monitored by and reported to the management?
- Are KPIs linked to remuneration in the organisation?
- What is the level of participation and acceptance of performance measures utilised by the workforce?
- What is the organisational structure, ownership of the terminal?

Terminal Factual Information

- What type of cargoes are handled at the terminal?
- What volume of cargoes are handled at the terminal?
- What services are provided by the terminal (discharge, transfer, stockyard, loading)?
- What equipment is used for each service delivery category (Type, capacity, number etc)?
- How many customers are being served for each commodity handled?
- What services are provided to each client?
- What size of vessels are handled for each commodity?
- How many berths are used and what commodities are handled at these berths?
- Has there been a change in trends i.e. volumes, vessel sizes etc over the last 3 years?
- What are the current restrictions, draft, channel, tide etc.at the terminal?
- Do you experience service interruptions weather, ice etc.?
- What marine services are you involved in delivering if any?

Current performance system/KPIs

- Which areas do you evaluate terminal performance currently (Operational, Health & Safety, Financial etc)?
- What mechanisms are in place for performance measurement and evaluation?
- For what specific KPIs do you currently collect and measure data?
- How are existing KPIs defined and calculated?
- How do you interpret the data related to the KPIs?
- How do you use the outcome of KPI analysis, what purpose does it currently serve?
- Who are the participants and beneficiaries of the process within the organisation currently?
- How is the outcome shared (if any) outside the organisation currently i.e. with clients etc?
- How do you measure, how well the terminal is performing with regard to specific performance KPIs?
- What benefits do you feel the current system of KPIs deliver?
- Where are the current bottlenecks in the terminal operations?
- What are the specific issues with the current KPIs?
- Are there any conflicts between KPIs utilised in different areas such as operations technical etc.?
- Do you utilise any national or industry standards in technical performance KPIs?
- Do you prioritise or rank KPIs regularly?

Key Stakeholder Engagement

- Who are the key stakeholders of the terminal and their relationship with the terminal?

Organisational Culture/decision making

- How do you make decisions on setting up and implementing KPIs within the terminal?
- How do you decide what reporting structures to be in place?
- How do employees expected to implement agreed actions (guidelines, versus flexibility)?
- How do you measure success or failure of performance systems?
- Do you have a recognition system in place for success?
- How do you deal with system failure to achieve targets?
- Who are involved in running the KPIs within the organisation?

ANNEX 3

Analysis of Themes and specific KPIs

In this annex, I analysed the main themes that emerged from the thematic coding in more detail and looked at the frequency of engagement of specific KPIs within the themes by the participating terminals. The analysis looked at the frequency of referencing in each area within each theme in order to provide a pattern for its importance in participating terminals. It also provided examples of how specific KPIs in each area are related to the specific activities undertaken by each terminal. There is further explanation as to how KPIs in each area are being used by participating terminals. This analysis provided an opportunity to understand how commonly each KPI was used among the participating terminals and how similar the measurement and reporting mechanisms were.

Treemaps (Johnson & Shneiderman, 1991) are used to summarise visually the areas included in each theme. In each treemap, the areas of the rectangles are proportional to the importance of the specific KPI coded, and the numbers in each rectangle indicate the number of times a KPI is coded.

1. Environmental

There are nine areas coded under the environmental category. Figure 1 shows these areas.

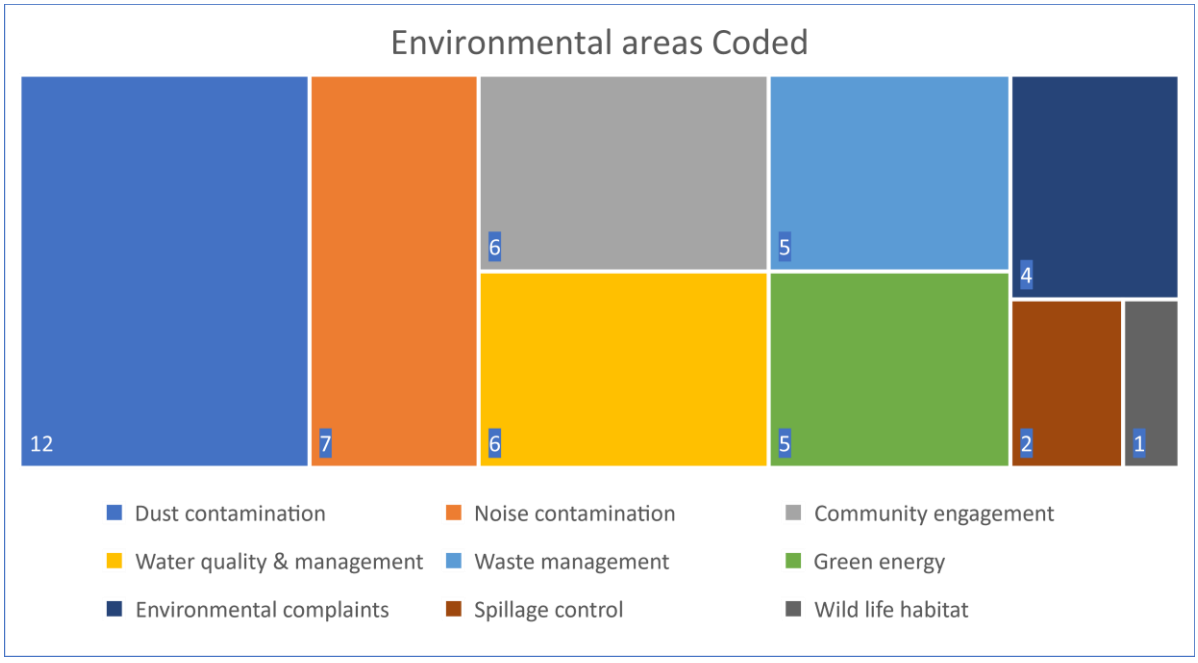

Figure 1 - Environmental areas Coded

Dust contamination is coded by the largest number of sources, noise contamination is the second largest area to be coded. Noise contamination and community engagement both coded by same number of sources. Green energy and waste management follow closely behind, coded by equal number of sources. The remaining three areas are coded by the least number of sources.

Dust contamination has by far the largest frequency of referencing by the participants which reflects the fact that all the participating terminals in the project are situated in close proximity of communities around them. Community engagement follow closely behind, and all the participating terminals have

proactive initiatives in place to engage with the communities. Noise contamination influences the surrounding area related to the size of the equipment, level of throughput and size of the facilities of a terminal. Water quality management affects all the terminals and whether they are allowed to discharge recycled water back into the sea or the channel affects the methods they need to put into place to deal with the water. Waste management and spillage control are closely monitored in all the terminals. Some terminals are more focused on green energy use than the others.

Environmental KPIs

There are five environmental categories where participating terminals utilise KPI as shown in Figure 2.

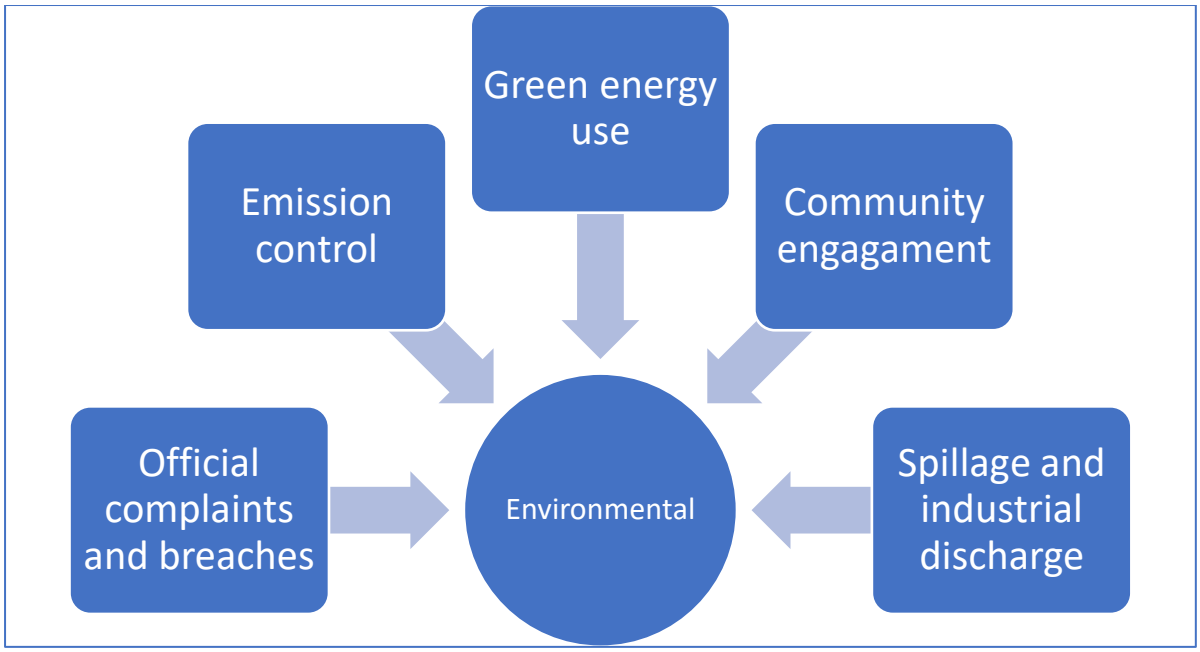

Figure 2 - Environmental KPI categories

Official complaints and breaches

All participating terminals operate within strict regulations for noise and dust pollution levels set out by the regulatory bodies. Therefore, they monitor any incidents that may lead to environmental licence breaches. They also monitor official complaints from neighbouring communities which are important stakeholders for the terminals. Some terminals are required to provide regular compliance reports to the authorities.

Emission control

Subject to type of operations they undertake and commodities they handle participating terminals monitor, dust and noise emissions from the activities they undertake and most of them also regularly test air and water quality standards. Some of the terminals have internal control limits set well below the levels allowed by the authorities. In all participating terminals cargo condition monitoring in cooperation with the clients is an important part of dust emission control. The client engagement is frequently sought where the client has control over the cargo condition prior to delivery to the terminal by setting parameters to control moisture levels within the cargo. Storm water discharge containment is an important KPI for some of the terminals. The level of sophistication in measuring emissions vary among the participating terminals affected by factors such as the size, vicinity to nearby community, throughput and geographical footprint of a terminal.

Green Energy use

In all participating terminals electricity is the main power source. Some terminals monitor their electricity consumption while others actively seek to reduce their energy use over time. The KPIs include use of efficient lighting and improving efficiency of equipment used in cargo handling within the terminals. There are supplementary benefits such as reduction in noise emissions as a result of technological and innovative measures taken to control energy use in the terminals. The terminals with bigger footprint also monitor their water consumption and conservation as a part of their green energy KPIs.

Community Engagement

All terminals have community engagement initiatives in place. Community engagement serves a number of purposes to inform, consult, educate and engage for the terminals. The terminals engage in different activities in line with their priorities and how community interests align with these. At the basic level these include measuring specific parameters such as dust and noise emissions on a regular basis recording and sharing such information with the community. Some terminals engage proactively with the community representatives engaging them in developments or improvements that may affect the community. Terminals also have educational initiatives to inform community members about the impact of their operations and the measures they have in place to minimise such impact on the community. Some of the terminals proactively engage in community improvement projects on an annual basis to improve the environment and habitat in the vicinity of their operations.

Spillage and industrial discharge

All terminals have spillage and industrial discharge KPIs in place. However, there are differences in application subject to practical and regulatory demands placed on the terminals. Some of the terminals recycle storm water therefore have KPIs to measure ambient and storm water quality. Cargo spillages are tightly controlled in all terminals especially in areas where there is high risk of water contamination. In some cases, any spillage into ambient water triggers an official reporting requirement for the terminal. Some terminals are allowed to discharge recycled water within certain parameters into the ambient water whereas others are not allowed any discharge. Where a terminal has the capability to recycle and treat water, KPIs set up to monitor the volume of recycled water over time. Some terminals also monitor the volume of waste produced by the terminal.

2. Financial

Two areas are coded in the financial category. These are shown in Figure 3.

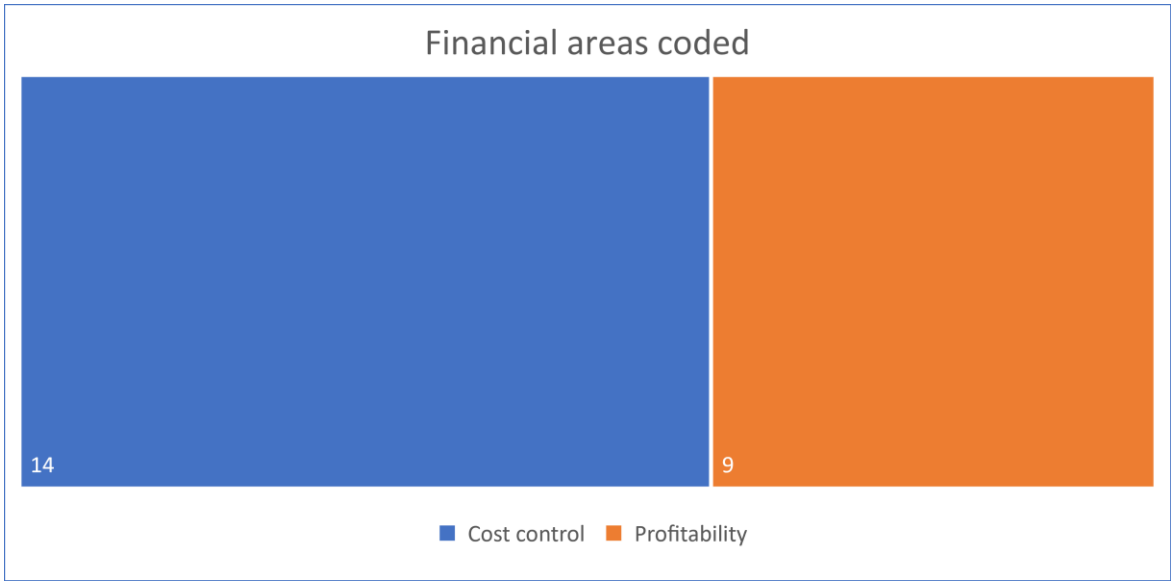

Figure 3 - Financial areas coded

Cost control is coded by the largest number of sources. Profitability is the second area coded under financial theme. There are two subcategories within financial theme each had a similar number coding associated. These are cost control and profitability. Cost control is the most important category within the financial area that the participating terminals concentrate on. The terminals use slightly differing approaches to calculating and monitoring their operational costs. Some of the terminals identify cost of each resource participating in service delivery in order to reach a unit cost for each ton of cargo handled through their facility. Budgetary controls are widely used to control costs annually. Labour cost is one of the highest contributors to the overall cost, therefore the terminals closely monitor areas such as overtime, temporary labour costs and absenteeism.

The terminals monitor various aspects of their revenue streams and profitability. Sustainable revenue stream is important for all the participating terminals.

3. Health and Safety

Six areas are coded under health and safety category. These areas are shown in Figure 4.

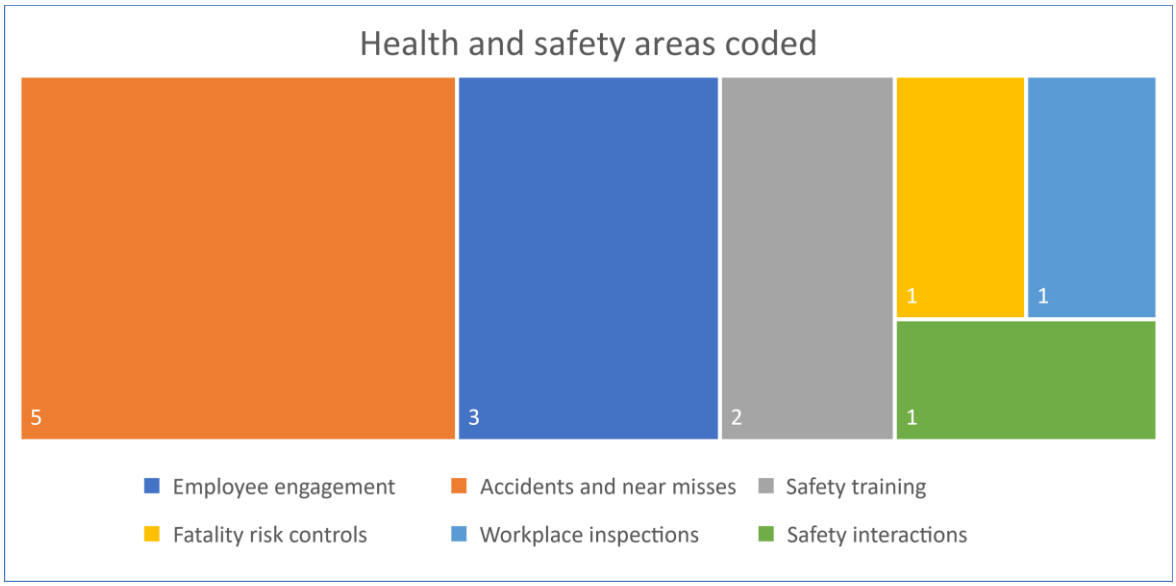

Figure 4 - Health and safety areas coded

Accidents and near misses are coded by the largest number of sources. Employee engagement follows closely behind. Safety training is the third largest area coded. Fatality risk controls, workplace inspections and safety interactions are coded by the same number of sources.

Employee engagement is the most referenced area by the participants which highlights the importance that the participating terminals place in establishing an organisation wide health and safety culture. Employees are seen as the key to success not only as individuals but also as part of a team and are encouraged to consider wellbeing and safety of their colleagues as well as their own. Accidents and near misses are the second most frequently referenced area. All participating terminals focus on this area. Safety training, interactions, risk controls and inspections referenced close to each other.

Health and Safety KPIs

There are three health and safety categories that the participating terminals utilise as shown in Figure 5.

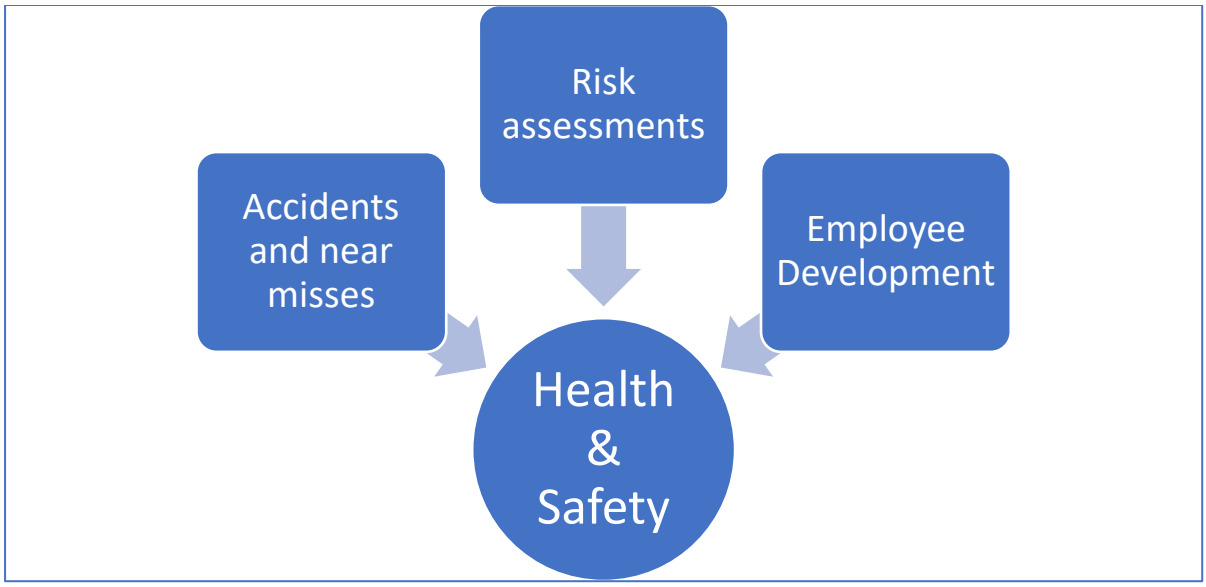

Figure 5 - Health and Safety KPI categories

Accidents and near misses

Terminals keep a detailed record of accidents and near misses that occur on site. This also includes any incidents. Specific KPIs under this category include:

- Recordable injuries
- Recordable incidents
- First aid incidents
- Lost time injuries
- Near misses and hazards
- Total recordable injury frequency rate

Some terminals also record security incidents under this category. In general terminals monitor trends in these KPIs and set targets in place to try to reduce accident and incidents rates. These targets can be driven either driven by corporate objectives or as part of continuous improvement programmes built upon previous years' experience.

Risk assessments

Terminals carry out risk assessments as a matter of routine in many areas from operations to maintenance activities. Some terminals have specific emphasis on fatality risk control under risk assessment activities within health and safety area. The terminals recognise the need for risk assessments to be relevant and practical. Some terminals experiment with use of technology to carry out risk assessments. The place and manner of how risk assessments area carried out show variances between the terminals with some terminals putting increasing emphasis to carrying out assessments on the job site and at the time of carrying out a specific task.

Employee Development

These include a number of activities. Terminals carry out regular safety interactions among employees. Some of these interactions are formal and take place on a regular basis and others are more informal and rely on employees getting more engaged with well-being of their colleagues. Terminals also carry out scheduled training activities to improve safety awareness of the employees. Workplace inspections are a regular occurrence that come under employee development category. Some terminals place and increased emphasis on employee well-being not only in their workplace but also at home therefore seek to improve life-style of employees both at work place and in their home environment in order to improve their safety and reduce illness and work place absences.

4. Human Resources

There are five areas coded under human resources as shown in Figure 6.

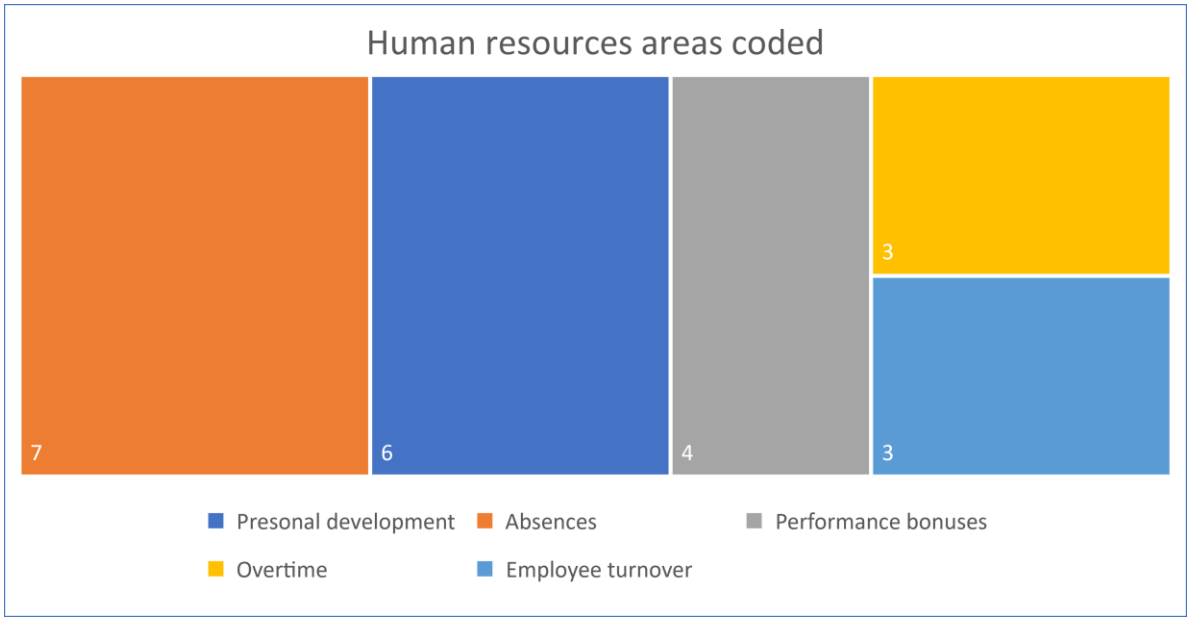

Figure 6 - Human Resources areas coded

Absenteeism is coded by the largest number of sources, closely followed by personal development. Performance bonuses, employee turnover and overtime are coded by equal number of sources.

Personal development has the highest frequency of referencing by the participants as all the participating terminals recognise the value of skills and knowledge base of the employees. Terminals have specific training programmes aimed at developing competency of employees further. Absenteeism affects the productivity as well as the cost base of the terminals, therefore the participating terminals monitor and analyse the trends and reasons behind absenteeism in their organisations. Performance bonuses are referenced the third largest category and terminals approach this in a number of ways. Most terminals consider individual as well as corporate performance in deciding performance bonuses. Overtime and employee turnover both referenced at the same level by the sources.

Human Resources KPIs

There are five human resources categories that the participating terminals utilise KPIs as shown in Figure 7.

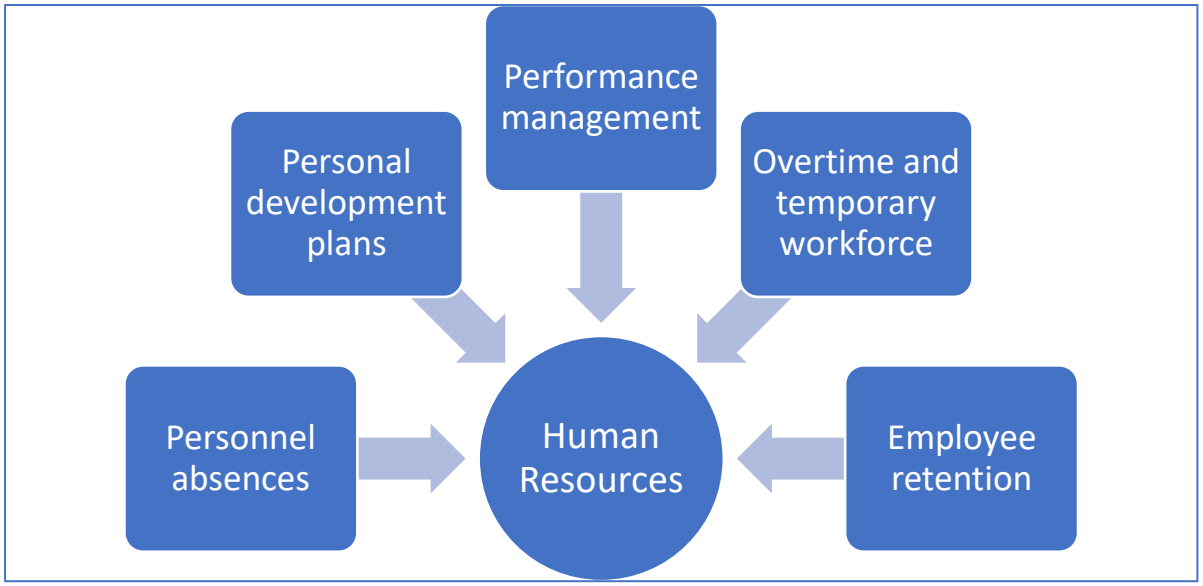

Figure 7 - Human Resources KPI categories

Personnel Absences

The participating terminals monitor absenteeism as a KPI and manage authorised and unauthorised absences within organisations. Absenteeism affects a number of other areas in terms of productivity and cost control within the terminals. High levels of absenteeism increase overtime costs and temporary employment costs particularly in the terminals working with marginal workforce. This area in also linked to the terminals' efforts to engage in employee well-being.

Personal development plans

The participating terminals recognise the need to develop employees' capabilities therefore work with different personal development approaches. In some terminals line managers are encouraged to develop a close working relationship with their employees and be aware of their developmental needs. These do not only cover professional areas, but managers are also required to have an awareness of any wellbeing issues of their colleagues within or outside the workplace. Some terminals set minimum targets for personal development interactions between managers and employees over a period of time. Training programmes and employee engagement surveys are regularly used by the participating terminals in order to develop skill base in terminals and gauge feedback of employees.

Performance management

Performance management is another area where the participating terminals place a lot of emphasis on. Behind this initiative is the desire to align personal and business objectives within the organisations. Some terminals choose to employ short-term and long-term incentive schemes for the individuals while others tend to encourage teamwork and reward team performance and achievement.

Overtime and temporary workforce

Management of overtime and use of temporary workforce within the participating terminals are considered important areas for cost control and achieving financial KPIs. The level of temporary workforce engagement within the terminals is influenced by the business model adopted by the terminal for the delivery of services. Some terminals choose to operate as one stop service delivery outlets while others engage clients or subcontract services.

Employee Retention

This is an important consideration for the participating terminals. All the participating terminals have established workforce and relatively personnel turnover. Many employees have been with the organisations for many years and they possess valuable skills and experience. Terminals recognise and appreciate this fact and encourage such continuity. A number of participating terminals pay attention to succession planning within the key areas of organisation and make a conscious effort to develop young talent within their organisation accordingly.

5. Information Systems

The use of information systems

The participating terminals use information systems to varying degrees. All the terminals realise that better use of information which includes intelligent analysis and dissemination of data can benefit them. There is a tendency towards terminals employing specialised personnel to understand and process data helped by a supporting software technology in order to both capture and also make data available to various stakeholders in a way to assist them in what they do as well as monitor KPIs as close as possible to real time applications. In some of the terminals, automation process in cargo handling and service delivery lead the use of information systems within the organisation. There is a desire towards automating manual processes and making information available through mobile platforms to stakeholders in other terminals.

Sharing of information

In general, terminals are more advanced in using and sharing information internally than utilising the same for external stakeholders. The initial drive for use of information seems to come from desire to inform employees better in relation to KPIs. Some terminals have also developed specific management information platforms to report such information at management and corporate level. Terminals use different means to arrange and make information available to stakeholders. Some of them have regular corporate or departmental newsletters which seek to inform employees most of the time with participation of employees in such publications. Others are moving towards using fixed and mobile IT platforms to inform and engage employees in various initiatives. There are different degrees of acceptance among the employees of such initiatives, some employees prefer to work with traditional methods of pen and paper and slow to react to or accept the merits of a mobile or instant information platform. This also highlights the need for managers driving such change to engage employees as

much as possible along the way to improve the rate of acceptance of using such technologies within the organisations.

6. Marketing

Two areas are coded under marketing as shown in Figure 8.

Figure 8 - Marketing areas coded

Customer satisfaction is coded by the largest number of sources. The participating terminals recognise the importance of customer satisfaction. All the terminals service multiple customers and all service existing customers as well as market their services for new customers. Service standard is the second area coded by the sources.

Customer satisfaction is by far the most referenced area by the participants which confirm the focus the participating terminals place in this area. 25% of the overall references refers to the service standard.

Marketing KPIs

There are four marketing categories that the participating terminal use KPIs as shown in Figure 9.

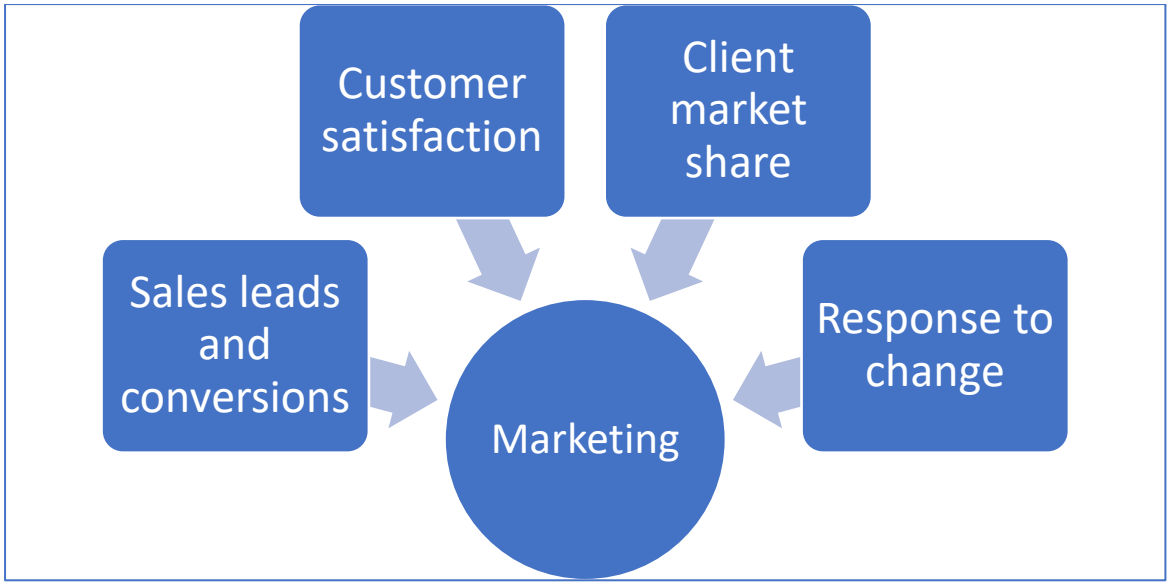

Figure 9 - Marketing KPI categories

Sales leads and conversions

Corporate objectives of the participating terminals affect the type of marketing activities they engage with. Their mission as well as the requirements of stakeholders who may hold a shareholding in the organisation influence such activities. The terminals with strong growth objectives tend to measure sales leads, offers sent out and conversion of such offers to new business. They also consider level of resources they have and investment requirement for new resources at the same time in line with level of success in marketing activities.

Customer satisfaction

Customer satisfaction is monitored by all the participating terminals. Some terminals have continuous engagement with the customers through dedicated marketing resources. Some of the terminals carry out regular customer satisfaction surveys and produce indices to monitor the trends.

Client market share

The terminals with multiuser competitive service offering monitor relative market share of their clients against the competition over time and consider ways of innovating their services to keep their market share.

Response to change

Some terminals place a high importance on ability to adopt to changing customer needs. This is particularly true where a terminal's main priority is to optimise use of capacity to provide optimum service to existing clients and they tend to measure business flexibility to change factors such as capacity or logistics arrangements to meet changing client requirements.

7. Operational

There are thirteen areas coded under operational as shown in Figure 10.

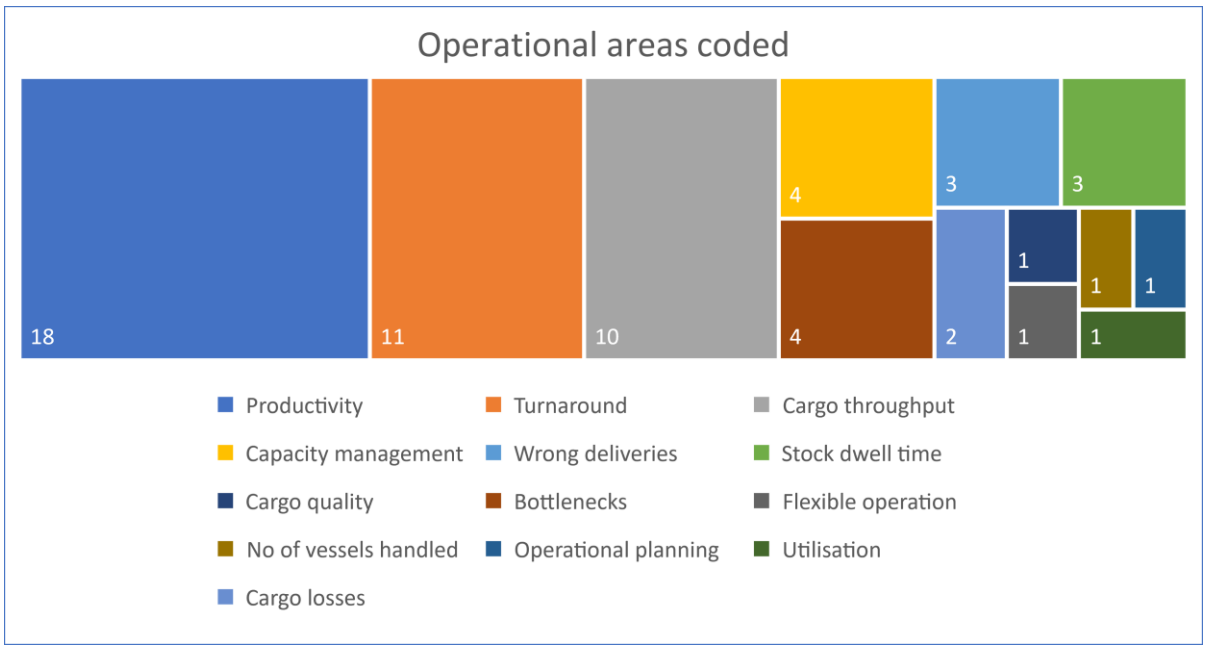

Figure 10 - Operational areas coded

Productivity is the largest area coded as it affects a number of other areas within the terminals including performance commitments to clients, berth utilisation and operational costs. Turnaround is the second largest area; this typically applies to the quayside and the ships as well as warehouse and silo operations subject to the scope of services provided by the terminals. Cargo throughput is another important area as it is the main driver for revenue across the terminals. The remainder of areas coded mainly cover cargo management and operational planning.

Productivity, turnaround and cargo throughput are the most referenced areas by the participants. They make up 67% of the total references in this area. Capacity management and stock dwell time are referenced at a lower level, followed by wrong deliveries and terminal bottlenecks.

Operational KPIs

During the interviews I identified five different categories within the operational area for existing KPIs. These are illustrated in Figure 11.

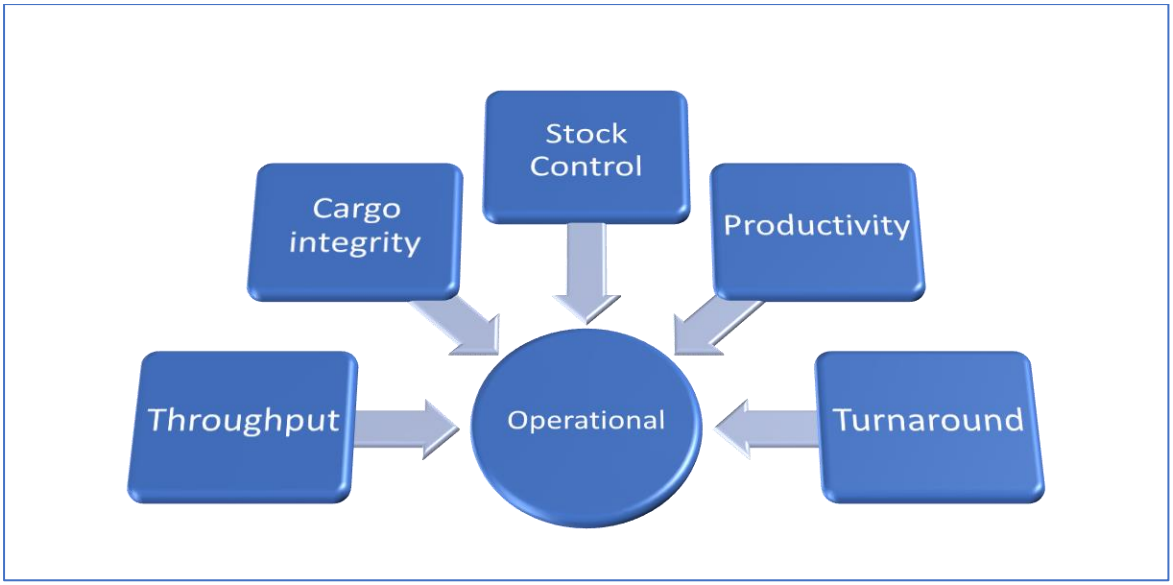

Figure 11 - Operational KPI categories

Productivity

The participating terminals measure productivity in three different ways subject to scope of services they deliver. The first covers the quayside operations involving interaction with the vessels to deliver loading or discharge operations. The second covers the intake storage and loading out operations from silos or warehouses. The third measures working hours of the employees in carrying out different activities such as operating mobile machinery on the quayside, operating ship's equipment and operating at warehouses. Table 1 shows specific productivity KPIs used and the purpose they serve.

Productivity KPI	What is measured	Purpose
Tonnes per man hour	Tonnes per man hour of operation metric tons/hr	- Measure productivity of manpower resources in delivering services - Assistance in cost calculations for capacity adjustment in the terminal
Tonnes per hour	Tonnes per hour metric tons or percentage of equipment capacity	- Measure performance of handling equipment against contractual obligations - Measure theoretical versus actual performance of handling equipment - Ensure terminal capacity commitments for quayside, stockpile or warehouse operations are fulfilled - Prevent incurring penalties such as demurrage - Measure and monitor load out rates from silos, warehouses to match client requirements

Man hours	Man hours worked	- Measured across permanent and contracted personnel to control overtime costs and improve efficiency. - Measure workforce flexibility by including stand by personnel working hours - Ability to adjust working hours when required to service changing client requirements

Table 1: Productivity KPIs

Turnaround

This is another KPI category used by the participating terminals. This is used both in the context of handling ships at the quayside and loading out operations from silos or warehouses. Table 2 outlines specific turnaround KPIs utilised by the participating terminals.

Turnaround KPI	What is measured	Purpose
Turnaround time quayside	Turnaround time of vessels from arrival to departure in days/hours	- Ensure service delivery commitment to clients - Maximise berth capacity - Ensure terminal throughput targets are achieved - Minimise penalties such as demurrage
Turnaround time storage facilities	Turnaround time for trucks/trains loading or discharging at storage facilities hours	- Maximise capacity utilisation and minimise bottlenecks in the system - Customer satisfaction
Berth utilisation	Period a berth is utilised for cargo handling with a vessel alongside, as a percentage of total berth availability	- Used in conjunction with turnaround time to predict unused berth capacity - Assist in business development
Vessel queue monitoring	Monitor no of vessels waiting for berth	- Used in conjunction with turnaround time to ensure planned and actual waiting times do not deviate from each other
Operational delays	Mainly delays outside terminal's control such as weather, vessel etc.	- To provide more realistic indication of vessel turnaround

Table 2: Turnaround KPIs

Throughput

This is a key operational KPI for all the participating terminals as illustrated in Table 3.

Throughput KPI	What is measured	Purpose
Cargo throughput through the berths	Measured in metric tons over a period of time mostly broken down to indicate different types of commodities handled	- Assist measuring compliance with growth and revenue targets for a terminal - Monitor compliance to contractual commitments - Monitor berth capacity against cargo type handled
Cargo throughput via the terminal	Inbound cargo throughput to storage facilities at a terminal, metric tons	- To monitor capacity utilisation - To minimise bottlenecks in the system

Table 3: Throughput KPIs

Cargo integrity

This is an important KPI as clients expect terminals to maintain quality and characteristics of a commodity while it is under a terminal's care prior to delivery to a client or loading on board a vessel. Terminals are concerned about different aspects of cargo integrity. Cargo loss can occur due to several factors including characteristics of a commodity, atmospheric conditions, damage caused to a cargo or errors in calculating volumes handled. Terminals take measures to ensure there is no cargo contamination occurs while they are in control of it. They also pay special attention to segregation and labelling of cargoes in store to ensure no wrong cargo delivery happens. Table 4 shows specific cargo integrity KPIs utilised by the participating terminals.

Cargo integrity KPIs	What is measured	Purpose
Cargo loss	% of cargo loss for inbound or outbound cargoes	- Ensure measures in place to minimise any cargo loss - Compliance with maximum loss limits in contracts - Identify and eliminate causes of cargo loss where possible
Cargo damage	Monitor no of incidents	- Enable investigation of cargo damage instances - Ensure these instances are minimised and internal targets are adhered to
Cargo contamination	Monitor no of incidents	- Ensure any instances are minimised in line with internal targets - To comply with client requirements

Wrong cargo delivery	Monitor no of instances	- Ensure these instances are eliminated as such mistakes could lead to significant penalties for a terminal

Table 4: Cargo integrity KPIs

Stock Control

This KPI is handled similarly among the participating terminals. Several other factors affect how a terminal treat stock management including; throughput, berth capacity, logistical arrangements for delivery or despatch of commodities, availability of storage capacity and capacity of handling equipment. Specific stock control KPIs used by the participating terminals are shown in Table 5.

Stock control KPIs	What is measured	Purpose
Volume of stock	Volume of stock in different modes of storage in metric tons usually daily	- Eliminate bottlenecks - Maximise throughput and performance - Comply with contractual obligations
Stock dwell time	No of days stock remains on site prior to despatch	- Minimise capacity constraints - Minimise bottlenecks in the system - Minimise costs and cargo quality issues

Table 5: Stock control KPIs

8. Technical

Three areas are coded under technical as shown in Figure 12.

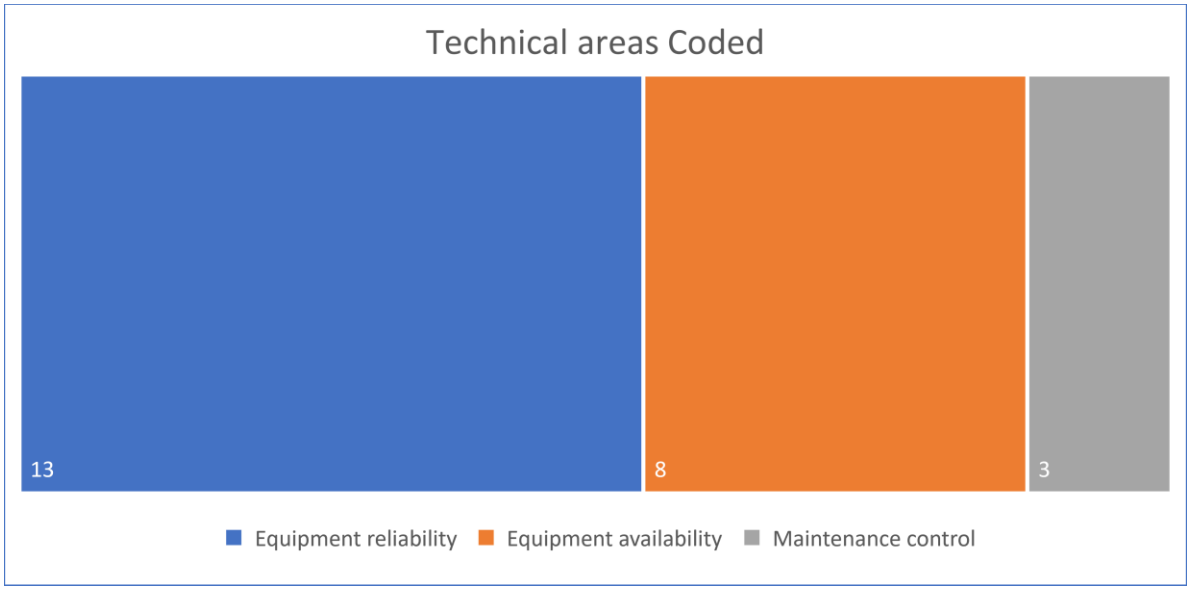

Figure 12 - Technical areas coded

Equipment reliability is the largest area coded, followed by equipment availability and maintenance control. Equipment reliability is the most frequently referenced area by the participants. This area has two sub areas that consist of preventative and breakdown maintenance. Equipment availability and maintenance control are referenced equally by the sources.

Technical KPIs

There are five categories of KPIs under the technical area as shown In Figure 13.

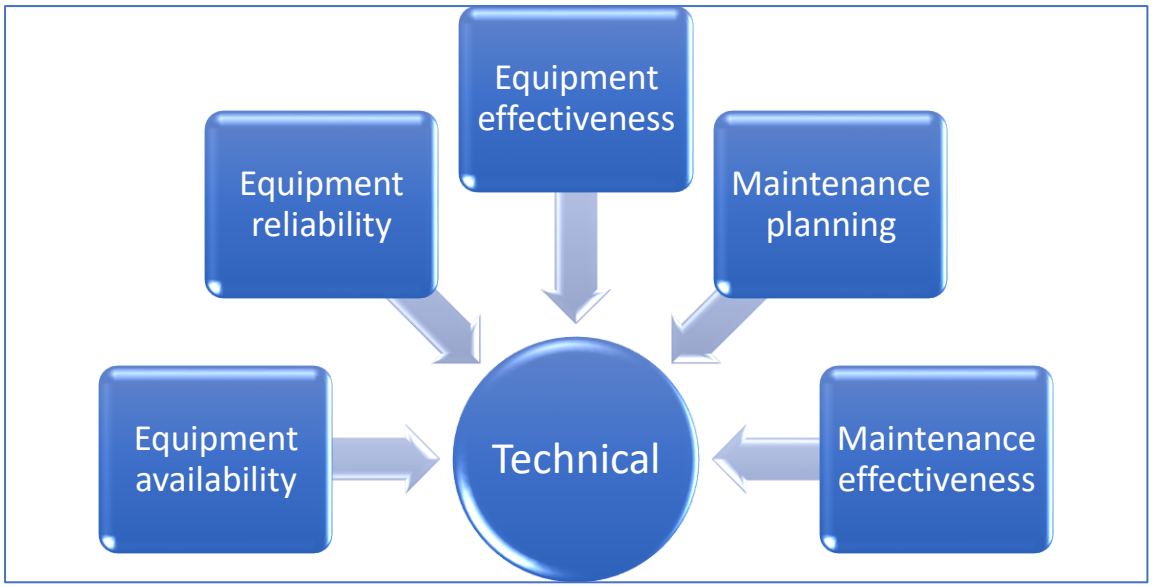

Figure 13 - Technical KPI categories

Equipment Availability

There is some overlap between equipment availability and equipment reliability KPIs. Some of the participating terminals use both and others concentrate on reliability KPIs alone. Terminals typically monitor equipment availability as the number of hours or percentage of required operational time a piece of equipment is available for use.

Equipment Reliability

The specific KPIs used by the participating terminals under equipment reliability category are shown in Table 6.

Equipment Reliability KPIs	What is measured	Purpose
Equipment breakdown	Actual duration of breakdown during an operation some terminals also include operation stopping breakdowns during maintenance period	- Improve equipment reliability - Minimise unplanned stoppages - Analyse duration of stoppages to assess overtime or extra resource allocation
Mean time between failures	Monitor mean time between failures over a week, month and a year	- Improve reliability of equipment - Fine tune maintenance practices

Mean time to repair	Repair times for categories of breakdowns are monitored	- Minimise delays

Table 6: Equipment reliability KPIs

Equipment effectiveness

This looks specifically at the gap between theoretical capacity of equipment and actual performance obtained for each operation. Actual performance is measured as a percentage of theoretical capacity. Terminals typically assign a minimum threshold as a percentage to monitor performance.

Maintenance planning

These KPIs consider two areas. The first one is the maintenance categories broadly described as planned and unplanned maintenance. Terminals typically monitor percentage of total maintenance activities carried out between planned and unplanned categories. The aim is to minimise unplanned maintenance activities which normally occur as a result of breakdown of equipment during an operation. Some terminals have a maximum percentage threshold for unplanned maintenance activities. The planned maintenance schedules are normally drawn up for the entire year and where the terminals operate as an integral part of a logistics chain, these schedules are planned in coordination with stoppages and activities of other logistics chain partners. The second one concentrates on work orders generated for maintenance activities and categorises such work orders into logical categories to ensure efficiency in planning and execution of maintenance activities thereafter.

Maintenance effectiveness

This deals with the execution of maintenance activities. Terminals mainly monitor percentage of planned and completed maintenance activities over a period. They also monitor backlog of maintenance activities against available resources and manhours. This serves couple of purposes to ensure work orders are dealt with in an efficient manner and in terminals where resources are limited extra cost of out of hours maintenance activities can be monitored and minimised.

ANNEX 4

Research Project Title – Development of Standardised Key Performance Indicators within Dry Bulk Terminals Industry

Researcher – Han Ozturk

Stakeholder Surveys

Purpose: To identify terminal performance factors which are important to the key stakeholders and determine the level of perceived performance of the terminal on the same factors by the stakeholders

Explanation of scales:

Key importance Criteria Survey:

Very important – This criterion is of critical importance for the stakeholder in terms of terminal service delivery

Important – Although not critical this criterion is important to the stakeholder in terms of terminal service delivery

Somewhat important – This criterion is important enough for the stakeholder to keep an eye on

Not important – This criterion is not important to the stakeholder for service delivery performance of the terminal

Not applicable – This criterion is not applicable or relevant to the stakeholder

Key Performance Criteria Survey:

Very Good – Stakeholder believes that for this criterion the terminal delivers a performance above and beyond expectations

Good – Stakeholder believes that for this criterion the terminal delivers a performance better than the contractual or minimum expectations

Satisfactory – Stakeholder believes that for this criterion the terminal delivers a performance in line with obligations or expectations

Unsatisfactory – Stakeholders believes that for this criterion the terminal delivers a performance below expectations or obligations

Not applicable – This criterion is not applicable to the stakeholder

Name of the Organisation	
Date:	

Which of the following categories does your organisation fall within?					
Shipper		**Ship Agent**		**Shareholder**	
Receiver		**Logistics Partner**		**Union organisation**	
Client		**Port Authority**		**Other-please specify**	
Shipowner		**Community Interest**			

Please provide a brief description of activities of your organisation below:

Please briefly describe what services you receive from the terminal or what services you provide to the terminal or the nature of your relationship with the terminal below:

Key Importance Criteria Survey

Scale

1 – Very important 2 – Important 3 – Somewhat important 4 – Not important 5 – Not applicable

Please rank below criteria in order of importance to you as per above schedule between 1 and 5.

	1	2	3	4	5
OPERATIONAL CRITERIA					
Loading/discharge performance ship to shore and vice versa					
Total ship turnaround time					
Minimising delays encountered during the discharge or loading of the cargo					
Stockpile-storage capacity offered by the terminal					
Minimising cargo damage during the operations					
Minimising cargo losses during the operations					
Preventing wrong cargo delivery to the client					
Timeliness of despatch or acceptance of cargo to/from transport to/from stockpile/warehouse					
Reliability of the equipment utilised by the terminal to provide services					
Safe access to and from the berths					
Preserving cargo quality and preventing contamination					
LOGISTICAL CRITERIA					
Timely availability of terminal resources, equipment, labour					
Physical connectivity of the terminal to rail and road network					
Capacity of the terminal to handle throughput required by the client					
Level of added value services offered by the terminal (warehousing, logistics, processing, analysis)					
Terminal's ability to develop and provide tailored services to suit client needs					
SERVICE QUALITY CRITERIA					
Willingness to offer solutions to specific problems encountered during the service delivery of the terminal					
Maintaining Quality of the cargo (and hygiene standards) handled by the terminal					
Availability and allocation of berths by the terminal					
Waiting time for ships to berth at anchorage					
Working hours of the terminal					
Flexibility of terminal to respond to changing client requirements					
Overall service quality delivered by the terminal personnel					
Communication and coordination of planned maintenance/shut down periods of the terminal to the stakeholders					
Provision of timely reports by the terminal for the services delivered					
Provision of correct format and adequate reports by the terminal					

Frequency of information update on key areas of service delivery					
Access to just in time information on key service areas by the client					
Response from terminal to unexpected client requirement changes					
Efficiency of documentary, clearance process in the terminal					
Terminal adherence to agreed load/discharge window for the cargo					
Timeliness of marine services offered (pilotage and towage)					
Reliability and consistency of service delivery by the terminal					
Level of automation in service delivery of the terminal					
Alignment of Terminal development & objectives to the client needs					
HEALTH – SAFETY & ENVIRONMENTAL CRITERIA					
Environmental compliance of terminal operations					
Control of dust and noise emissions during discharge/loading operations					
The level of green energy use and energy saving practices within the terminal					
Health and Safety track record of the terminal					
Security of terminal premises and facilities					
ECONOMIC CRITERIA					
Cost of services charged by the terminal					
Accuracy and timeliness of invoicing for service charges					
Cost of logistics services offered by the terminal					

Key Performance Criteria Survey

Scale

1 – Very good 2 – Good 3 – Satisfactory 4 – Unsatisfactory 5 – Not applicable

Please rank performance of the terminal on the key performance criteria below in accordance with the scale above

	1	2	3	4	5
OPERATIONAL CRITERIA					
Loading/discharge performance ship to shore and vice versa					
Total ship turnaround time					
Minimising delays encountered during the discharge or loading of the cargo					
Stockpile-storage capacity offered by the terminal					
Minimising cargo damage during the operations					
Minimising cargo losses during the operations					
Preventing wrong cargo delivery to the client					
Timeliness of despatch or acceptance of cargo to/from transport to/from stockpile/warehouse					
Reliability of the equipment utilised by the terminal to provide services					
Safe access to and from the berths					
Preserving cargo quality and preventing contamination					
LOGISTICAL CRITERIA					
Timely availability of terminal resources, equipment, labour					
Physical connectivity of the terminal to rail and road network					
Capacity of the terminal to handle throughput required by the client					
Level of added value services offered by the terminal (warehousing, logistics, processing, analysis)					
Terminal's ability to develop and provide tailored services to suit client needs					
SERVICE QUALITY CRITERIA					
Willingness to offer solutions to specific problems encountered during the service delivery of the terminal					
Maintaining quality of the cargo (and hygiene standards) handled by the terminal					
Availability and allocation of berths by the terminal					
Waiting time for ships to berth at anchorage					
Working hours of the terminal					
Flexibility of terminal to respond to changing client requirements					
Overall service quality delivered by the terminal personnel					
Communication and coordination of planned maintenance/shut down periods of the terminal to the stakeholders					
Provision of timely reports by the terminal for the services delivered					
Provision of correct format and adequate reports by the terminal					

Frequency of information update on key areas of service delivery					
Access to just in time information on key service areas by the client					
Response from terminal to unexpected client requirement changes					
Efficiency of documentary, clearance process in the terminal					
Terminal adherence to agreed load/discharge window for the cargo					
Timeliness of marine services offered (pilotage and towage)					
Reliability and consistency of service delivery by the terminal					
Level of automation in service delivery of the terminal					
Alignment of Terminal development & objectives to the client needs					
HEALTH – SAFETY & ENVIRONMENTAL CRITERIA					
Environmental compliance of terminal operations					
Control of dust and noise emissions during discharge/loading operations					
The level of green energy use and energy saving practices within the terminal					
Health and Safety track record of the terminal					
Security of terminal premises and facilities					
ECONOMIC CRITERIA					
Cost of services charged by the terminal					
Accuracy and timeliness of invoicing for service charges					
Cost of logistics services offered by the terminal					

Additional comments: Please add below any other performance criteria which is important to you that is not been mentioned in the survey. Please indicate the level of importance of the criteria and also how you rate the terminal performance in that criteria.

Thank you for your assistance and contribution.

Annex 5

Pattern analysis of survey results for the participating terminals.

1. Terminal A

1.1 Pattern Analysis: Operational Criteria

Terminal A received completed surveys from three clients, an agent and the port authority. Table 1 shows the pattern analysis for the operational criteria.

		CLIENTS			Agents	Port
		C1	C2	C3	A	P
	OPERATIONAL CRITERIA					
	Productivity					
1	Loading/discharge performance ship to shore and vice versa					
2	Total ship turnaround time					
3	Minimising delays encountered during the discharge or loading of the cargo					
4	Timeliness of despatch or acceptance of cargo					
5	Reliability of the equipment utilised by the terminal to provide services					
	Cargo Integrity					
1	Preserving cargo quality and preventing contamination					
2	Stockpile-storage capacity offered by the terminal					
3	Minimising cargo damage during the operations					
4	Minimising cargo losses during the operations					
5	Preventing wrong cargo delivery to the client					
	Safe Access					
1	Safe access to and from the berths					

Table 1: Pattern analysis operational criteria Terminal A

Productivity

Client 1 rated the importance of load/discharge performance as important and the terminal performance as good. Minimising delays during the operations and the reliability of equipment were rated as important and the terminal performance was satisfactory. The terminal performance was higher than the importance criteria for the timeliness of despatch of cargo showing a positive variance. Minimising delays was very important for client two and the terminal performed at a good level. There were no areas of mismatch for client 3, all areas were important, and the terminal performance was good. For agency all the criteria under the productivity area were very important, the terminal performed at good or satisfactory level except the reliability of equipment where the performance was unsatisfactory. For the port, ship turnaround and reliability of equipment were very important, and the terminal performed satisfactorily for the ship turnaround but the performance was not satisfactory for the reliability of equipment. The analysis shows three areas with negative pattern for three out of five stakeholders which are ship turnaround, minimising delays and reliability of the equipment.

Cargo integrity

Client 1 rated preserving cargo quality, minimising cargo damage and preserving cargo quality as very important and the terminal performance was satisfactory for the two areas and unsatisfactory for preventing wrong cargo delivery. Client 2 rated the criteria in this area as very important or important and the terminal performance was matched in all areas. Client 3 matched importance and performance in all areas except the wrong cargo delivery where it was very important for the client and the terminal performance was scored satisfactory. The agency rated the preserving cargo quality, minimising cargo damage and the stockpile capacity offered by the terminal as very important and the

terminal performance was good. The port rated preserving cargo quality, stockpile capacity and minimising cargo damage as very important and the performance of the terminal as good in all three areas. The analysis shows three areas with a negative pattern for three out of five stakeholders; preserving cargo quality, stockpile capacity and minimising cargo damage.

Safe Access

Client 1 and client 3 rated safe access to berths as very important and the terminal performance as good. The agency and the port rated the access as very important, but the terminal performance was satisfactory. The analysis shows a strong trend of a negative pattern for four out of five stakeholders for safe access to and from the berths.

1.2 Pattern Analysis: logistical criteria

Table 2 shows the pattern analysis for the logistical criteria for Terminal A.

		CLIENTS			Agents	Port
		C1	C2	C3	A	P
	LOGISTICAL CRITERIA					
	Resources					
1	Timely availability of terminal resources, equipment, labour					
	Connectivity					
1	Physical connectivity of the terminal to rail and road network					
	Capacity					
1	Capacity of the terminal to handle throughput required by the client					
	Added Value					
1	Level of added value services offered by the terminal (warehousing, logistics, processing, analysis)					
2	Terminal's ability to develop and provide tailored services to suit client needs					

Table 2: Pattern analysis logistical criteria Terminal A

Resources

The importance performance rating for the availability of resources by the clients are affected by what level of resources required by each client, the level of automation used in delivering those services and the extent of terminal's involvement in logistics once the cargoes are delivered to the terminal. Availability of resources was rated as important by client 1 and the terminal performance was satisfactory. Client 3 rated it as important but the terminal performance was rated as very good. The agent and the port both rated the resource availability as very important but the terminal performance as satisfactory. In general, there is a split between the clients and the other stakeholders in this area which is probably reflected by the different requirements of each stakeholder.

Connectivity

The physical connectivity of the terminal is an important area for the stakeholders. This is affected by the proximity of the clients to the terminal and the logistical arrangements required to meet the demands of each client. If a client has a facility with a direct link to the terminal most of the traditional issues related to this area become less important. In this case, there was no mismatch between the importance and the performance of the terminal for client 1, the agent and the port. Client 2 and 3 rated this area as important and the terminal performance very good.

Capacity

The capacity requirement for client 1 was important and the terminal performance was rated as satisfactory. A potential reason for this is the change in client's requirement from one year to the next subject to changes in the market conditions. Client 2 rated this area as very important and the terminal performance as very good. Client 3 rated this area as important and the terminal performance as good. The agent and the port rated this area as very important and the terminal performance as good.

Added Value

The expectation of client 1 for added value services and the level of tailored services was low, therefore it rated this area as somewhat important or not so important and the terminal's performance as good. Client 2 rated the importance of added value services as not so important and the terminal performance in this area as good, however the ability to develop tailor made services was very important and the terminal performance in this area was satisfactory. Client 3 rated this area as important or very important with the terminal performance as good. The agent and the port both rate this area as very important and the terminal performance as good.

1.3 Pattern analysis: service quality criteria

Table 3 shows the pattern analysis for the service quality criteria.

		CLIENTS			Agents	Port
		C1	C2	C3	A	P
	SERVICE QUALITY CRITERIA					
	Service reliability					
1	Maintaining Quality of the cargo (and hygiene standards) handled by the terminal					
2	Availability and allocation of berths by the terminal					
3	Waiting time for ships to berth at anchorage					
4	Working hours of the terminal					
5	Overall service quality delivered by the terminal personnel					
6	Terminal adherence to agreed load/discharge window for the cargo					
7	Timeliness of marine services offered (pilotage and towage)					
8	Reliability and consistency of service delivery by the terminal					
9	Level of automation in service delivery of the terminal					
	Flexibility					
1	Communication and coordination of planned maintenance/shut down					
2	Flexibility of terminal to respond to changing client requirements					
3	Willingness to offer solutions to specific problems during the service delivery					
4	Response from terminal to unexpected client requirement changes					
5	Alignment of Terminal development & objectives to the client needs					
	Reporting					
1	Provision of timely reports by the terminal for the services delivered					
2	Provision of correct format and adequate reports by the terminal					
3	Frequency of information update on key areas of service delivery					
4	Access to just in time information on key service areas by the client					
	Documentation					
1	Efficiency of documentary, clearance process in the terminal					

Table 3: Pattern analysis for the service quality criteria

Service reliability
Client 1 rated each criterion in this area as important with maintaining cargo quality as very important. The terminal performance for the cargo quality was rated as satisfactory and has the biggest gap between the importance and performance rating. The remaining five criteria were rated as important by client 1, terminal performance was satisfactory. Client 2 rated the availability of berths, working hours of the terminal and timeliness of the marine services as important and the terminal performance in these areas as very good. On the other hand, the waiting time at anchorage, overall service quality and reliability of service was rated as very important with the terminal performing at good level. The importance level of most of the criteria in this area was rated as important by client 3 and the performance of the terminal was rated as good except for maintaining cargo quality where the terminal performance was rated very good. For the agent most of the criteria in this area were rated as very important and the terminal performance as good except for the marine services where the performance was rated as unsatisfactory. For the port most of the criteria were rated as very important with the port performance as good, however there are two criteria where there was significant negative gap. Terminal adherence to agreed load/discharge window was rated as satisfactory and timeliness of marine services offered was rated as unsatisfactory.

Flexibility
The importance rating of client 1 and the terminal performance match each other in this area. Client 2 rated the criteria as very important and in three areas, flexibility of the terminal to respond to changing requirements, response from terminal to unexpected changes and alignment of objectives with the client the terminal performance was rated as good. For the agent and the port, the criteria in this area were rated as very important and the terminal performance as good except the response to unexpected changes which was rated at satisfactory.

Reporting and documentation
The client 1 did not rate the reporting as an important activity. Client 2 and 3 rated the criteria in this area either as somewhat important or not so important and the performance of the terminal as good. The agent rated the criteria under this area as very important and the terminal performance as satisfactory in provision of correct format and frequency of information but unsatisfactory in relation to timeliness of the reports and the access to just in time information. The port's importance performance rating in this area was also very similar to that of the agent. The split between the clients and the other stakeholders point to the different reporting requirements by different stakeholders.

The documentary and clearance process could be an important area subject to requirements of the stakeholders. Terminals often work in conjunction with the other authorities such as the customs and the port authorities to deliver services in this area. Client 1 and 3 this process was not important and for client 2 the terminal performance was better than the importance attached to this area. The agent and the port rated this area as very important but the terminal performance as satisfactory.

1.4 Pattern Analysis: health, safety and environmental criteria

Table 4 shows the pattern analysis for health, safety and environmental criteria.

		CLIENTS			Agents	Port
		C1	C2	C3	A	P
	HEALTH – SAFETY & ENVIRONMENTAL CRITERIA					
	Compliance					
1	Environmental compliance of terminal operations					
2	Security of terminal premises and facilities					
	Emission control					
1	Control of dust and noise emissions during discharge/loading operations					
	Track Record					
1	The level of green energy use and energy saving practices within the terminal					
2	Health and Safety track record of the terminal					

Table 4: Pattern analysis for health safety and environment Terminal A

Compliance

Client 1 rated the importance of the environmental compliance as very important and the terminal performance as good. The security of the facilities was important, and the terminal performance was rated as satisfactory. Client 2 rated the security of the premises as very important and the terminal performance as good. Client 3 rated the criteria as very important and important with terminal performance as good and satisfactory. The agent and the port rated this area as very important and the performance of the terminal as good. There is a consistent negative gap for the security of the terminal premises among all the stakeholders between the importance and performance rating.

Emission Control

For client 1 and 2 the importance and the terminal performance for the control of dust and noise emissions match each other as the clients rate it as very important and important and the performance being very good and good. Client 3 rated this area as important and the terminal performance as satisfactory. The agent and the port rated this area as very important and the terminal performance as good.

Track Record

The importance and performance expectations for client 1 and the port matched each other. Client 2 rated this area as very important but the terminal performance as satisfactory. There is a similar trend with client 3. The agent and the port rate it as very important and the performance of the terminal as good.

1.5 Pattern analysis: economic criteria

Table 5 shows the pattern analysis for the economic criteria.

		CLIENTS			Agents	Port
		C1	C2	C3	A	P
	ECONOMIC CRITERIA					
	Cost competitiveness					
1	Cost of services charged by the terminal					
2	Cost of logistics services offered by the terminal					
	Invoicing					
3	Accuracy and timeliness of invoicing for service charges					

Table 5: Pattern analysis for the economic criteria Terminal A

Cost competitiveness and invoicing

This is one of the most difficult areas in which to achieve a consensus between the terminal and the stakeholders. Client 1 rated this area as important and the performance of the terminal as

unsatisfactory. Client 2 rated this area as very important and terminal performance as satisfactory. Client 3 rated it as important and the terminal performance as satisfactory. The agent and the port rated this area as very important and the performance of the terminal as satisfactory.

There is a close match between the importance attached to the accuracy and timeliness of invoicing and the terminal performance for the three clients. For the port and the agent this area is rated as very important and the performance as satisfactory.

2.Terminal B

Terminal B received completed surveys from six clients, two shareholders, an agent and the port.

2.1 Pattern analysis: operational criteria

Table 6 shows the trend analysis for the operational criteria for Terminal B.

	Clients						Agent	Port	Shareholder	
	C1	C2	C3	C4	C5	C6	A	P	SH1	SH2
OPERATIONAL CRITERIA										
Productivity										
Loading/discharge performance ship to shore and vice versa										
Total ship turnaround time										
Minimising delays encountered during the discharge or loading of the cargo										
Timeliness of despatch or acceptance of cargo to/from transport to/from stockpile										
Reliability of the equipment utilised by the terminal to provide services										
Cargo integrity										
Preserving cargo quality and preventing contamination										
Stockpile-storage capacity offered by the terminal										
Minimising cargo damage during the operations										
Minimising cargo losses during the operations										
Preventing wrong cargo delivery to the client										
Safe Access										
Safe access to and from the berths										

Table 6: Pattern analysis operational criteria Terminal B

Productivity

Client 1 and 2 rated all the criteria within the productivity area as very important and the terminal performance as very good. Client 3 rated all the criteria as either very important or important and the terminal performance matched as very good or good except the loading and discharge performance and minimising delays where it was rated as very important and the terminal performance was good. For client 4 load/discharge performance, total ship turnaround and minimising delays were very important, and the terminal performance was rated as good. Client 5 rated all the criteria as very important except for the reliability of the equipment and the terminal performance was rated as very good. The reliability of the equipment was important for client 5 and the terminal performance was rated as very good. Client 6 also rated all the criteria as very important and the terminal performance was rated as very good with the exception of minimising delays where the terminal was rated as good. For the agent all the criteria were rated as either important or very important and the terminal performance matched as good or very good. The port authority rated the loading and unloading as a very important criterion but the terminal performance was rated as satisfactory. The total ship turnaround time was very important with the terminal performance as good. Shareholder 1 rated all the criteria as very important and the terminal performance was matched as very good except the timeliness of despatch or acceptance of the cargo where the terminal performed as good. Shareholder 2 rated the criteria as either important or not so important, but the terminal performance was rated as good or very good in all areas. In general, there is not a consistent positive or negative pattern in this area across the stakeholders. Minimising of delays during the loading and discharge of the cargo has a negative pattern between the importance and performance ratings by four stakeholders. The performance rating of the stakeholders for this terminal reflect the different types of commodities and handling methods employed by the clients responded to the survey.

Cargo Integrity

Client 1 rated all the criteria as very important but in three areas, minimising cargo damage and losses and preventing wrong cargo delivery the terminal performance was rated as good. For client 2 the storage capacity and minimising cargo damage were very important with the terminal performance

rated as satisfactory. For the cargo losses the terminal performance was good. For client 3 the importance and terminal performance matched each other in all areas except the prevention of wrong cargo delivery where the performance was good against the importance being very important. For client 4 prevention of wrong cargo delivery was the only criteria where there was a mismatch between importance and performance where the terminal performance was rated as good. The importance and performance rating match each other for each criterion for client 5. Client 6 rated all the criteria as very important and for most of them the terminal performance was rated as good. For the agent there is a mismatch in storage capacity offered and prevention of wrong cargo delivery where it was rated as very important and the terminal performance as good. The port rated most of the criteria as important or not so important and the performance of the terminal was largely matched. For shareholder 1 there was a mismatch for the stockpile capacity offered. It was rated as very important with the terminal performance as satisfactory. Shareholder 2 rated most of the criteria as important or not so important and the terminal performance as good or very good in all areas. There were two areas where there was a negative pattern; the stockpile capacity and the prevention of wrong cargo delivery across the stakeholders. The second one being rather important among the clients.

Safe Access

Safe access to and from the berths was rated as either important or very important by all the clients and the port performance equally matched it in most cases. For client 4 the performance was better than the importance and for client 6 it was slightly behind. The agent rated the performance better than the importance. The port only rated this as important and the terminal performance as satisfactory. For both shareholders the performance of the terminal was ahead of the importance rating.

2.2 Pattern analysis: logistical criteria

Table 7 shows the pattern analysis for the logistical criteria for Terminal B

		Clients						Agent	Port	Shareholder	
		C1	C2	C3	C4	C5	C6	A	P	SH1	SH2
	LOGISTICAL CRITERIA										
	Resources										
1	Timely availability of terminal resources, equipment, labour										
	Connectivity										
1	Physical connectivity of the terminal to rail and road network										
	Capacity										
1	Capacity of the terminal to handle throughput required by the client										
	Added value										
1	Level of added value services offered by the terminal (warehousing, logistics, processing)										
2	Terminal's ability to develop and provide tailored services to suit client needs										

Table 7: Pattern analysis logistical criteria Terminal B

Resources

Clients rated this criterion differently which reflects the different ways they utilise the terminal resources. Client 1 the terminal performed better than the importance rating. Client 2 rated this as very important and the terminal performance as good. Client 3 rated this as important and the terminal performance as satisfactory. The expectations of client 4 was met by the terminal performance. Client 5 did not rely on the resources therefore this was not an area of importance for that client. The terminal performance matched the importance for the client 6 closely. The agent rated

this as very important and the terminal performance as important. The terminal performance matched the expectations of the remainder of the stakeholders.

Connectivity
The only client where the terminal performance did not match the importance rating was client 2. Client 2 rated this as important and the terminal performance as satisfactory. For the remainder of the clients the performance was either as good or better than the importance criteria. The agent rated this as very important, but the terminals performance was only satisfactory. For the port and the shareholders this was an important or very important criteria and the port performed equally well or better than the importance rating.

Capacity
All the clients rated this as either important or very important. The performance of the terminal had a negative pattern for three out of six clients although the gap was not significant. The agent and shareholder 1 rated this area as very important but the performance of the terminal as only satisfactory. Overall there was a negative pattern between the importance and terminal performance across the stakeholders for this criterion.

Added Value
The assessment of the clients in this area very much depend on the type of facilities they utilise and the way that the handling of their cargo is organised by the terminal. Some clients will have higher level of dependence and expectations from the terminal while others won't. Client 1 rated the level of added value services offered as very important and the terminal performance as good. Client 2 rated the importance of the added value services as important with the terminal performance matched the expectations. For client 3 there was a negative gap both for the added value services and the terminal's ability to develop tailor-made services between the importance rating and the performance. Client 4 and 5 received a performance better than the expectations for the added value services but rated terminal's ability to develop tailor-made services negatively. Client 6 there was a negative variance in both added value and tailor-made services between the importance and the terminal performance. The agent rated the ability to deliver tailor-made services as very important with the terminal performance as good. For the port the level of added value services was rated as very important with the terminal performing at a good level. Shareholder 1 rated the terminal's ability to deliver tailor-made services as very important with the performance rates as good. Overall, there was a trend among four out of six clients rating performance for the ability to develop tailor-made service lower than the importance rating.

2.3 Pattern analysis service quality criteria

Table 8 shows the pattern analysis for the service quality criteria.

		Clients						Agent	Port	Shareholder	
		C1	C2	C3	C4	C5	C6	A	P	SH1	SH2
	SERVICE QUALITY CRITERIA										
	Service reliability										
1	Maintaining Quality of the cargo (and hygiene standards) handled by the terminal										
2	Availability and allocation of berths by the terminal										
3	Waiting time for ships to berth at anchorage										
4	Working hours of the terminal										
5	Overall service quality delivered by the terminal personnel										
6	Terminal adherence to agreed load/discharge window for the cargo										
7	Timeliness of marine services offered (pilotage and towage)										
8	Reliability and consistency of service delivery by the terminal										
9	Level of automation in service delivery of the terminal										
	Flexibility										
1	Communication and coordination of planned maintenance/shut down periods										
2	Flexibility of terminal to respond to changing client requirements										
3	Willingness to offer solutions to specific problems encountered during the service delivery										
4	Response from terminal to unexpected client requirement changes										
5	Alignment of Terminal development & objectives to the client needs										
	Reporting										
1	Provision of timely reports by the terminal for the services delivered										
2	Provision of correct format and adequate reports by the terminal										
3	Frequency of information update on key areas of service delivery										
4	Access to just in time information on key service areas by the client										
	Documentation										
5	Efficiency of documentary, clearance process in the terminal										

Table 8: Pattern analysis for service quality Terminal B

Service Reliability

Client 1 rated most of the areas as very important and the terminal performance as good in four areas related to maintaining cargo quality, availability of berths, terminal adherence to agreed load/discharge window and the reliability of service delivery. Waiting time for ships at the anchorage has the biggest gap between the importance and performance rating for client 1 where the terminal performance was rated as satisfactory. Client 2 rated the criteria in this area as very important or important, the terminal performance matched the importance and, in some areas, it was better than the importance rating. For client 3 maintaining quality of the cargo and the working hours of the terminal were very important and the terminal performance was good. The terminal performed better than the expectations for the waiting time for ships and overall service delivery for this client. In three areas, the terminal performance for client 4 had a small negative gap. These were maintaining the quality of the cargo, waiting time for the ships and timeliness of the marine services. The terminal performance in quality of service delivery and the level of automation were better than the importance rating for this client. Client 5 rated these criteria as very important or important and the terminal performance matched it or it was better. There were five areas for client 6 where there were negative variances between the importance rating and the performance of the terminal. The importance was rated as very important in these areas and the terminal performance was rated as good. The agent and the port had a similar rating in three areas, working hours, overall service quality and terminal adherence to load discharge window where they rated it as very important and the terminal performance was good. Shareholder 1 rated the criteria as very important and the terminal performance was matched. Shareholder 2 rated the criteria as important and rated the terminal performance as very good for most of the criteria. Maintaining the cargo quality criteria had a negative variance between the importance and performance rating for four out of the six clients.

Flexibility

There was a very good match between client 1's importance and terminal performance in this area. In two of the criteria, willingness to offer solutions to specific problems and communication in relation to planned maintenance periods the terminal performance was better than the importance rating of client 1. Client 2 rated two of the criteria, willingness to offer solutions and the response to unexpected client requirement changes as important but the terminal performance in these two areas was rated as satisfactory. For client 3 and 4 there was a close match between the importance rating and the terminal performance for the criteria in this area. For client 5 the terminal performance was mainly better than the expectations except the alignment of the terminal development to client's needs where the client rating for importance was very important and the terminal performance was rated as satisfactory. Client 6 rated all the criteria in this area as very important and the terminal performance as good for all of them therefore there is a gap across the board between the client's importance rating and the performance of the terminal. The agent rated most of the criteria in this area as very important and the terminal performance as good except the willingness to offer solutions to problems where the terminal performance was rated as satisfactory. For the remaining stakeholders there was not a significant gap between the importance and the terminal performance in this area except shareholder 2 where the terminal performance was better than the importance rating in most areas. There was no specific pattern across the stakeholders in any of the criteria in this area, except the willingness to offer solutions to specific problems encountered during the service delivery where there was a consistent negative gap between the importance and performance rating.

Reporting and documentation

Clients 1, 3 and 4 rated the importance of the criteria in this area as very important or important and the terminal performance matched the expectations. For client 2 there was a small gap between the importance and performance for the provision of timely and correct format reports. Client 5 rated the importance of the criteria in this area as important and most of the performance rating for the terminal was very good. Therefore, the performance was ahead of the importance criteria rating. For client 6, most of the performance rating was good where the importance was very important except access to just in time information where the two matched each other. There was no significant mismatch between the importance rating and the terminal performance for the remainder of the stakeholders. For shareholder 2 the importance rating was either important or not so important where the terminal performance was rated well ahead as very good.

2.4 Pattern analysis: health, safety and environment criteria

Table 9 shows the pattern analysis for health, safety and environmental criteria.

		Clients						Agent	Port	Shareholder	
		C1	C2	C3	C4	C5	C6	A	P	SH1	SH2
	HEALTH – SAFETY & ENVIRONMENTAL CRITERIA										
	Compliance										
1	Environmental compliance of terminal operations										
2	Security of terminal premises and facilities										
	Emission control										
1	Control of dust and noise emissions during discharge/loading operations										
2	The level of green energy use and energy saving practices within the terminal										
	Track Record										
1	Health and Safety track record of the terminal										

Table 9: Stakeholder pattern for health, safety and environment Terminal B

Compliance
Client 1 rated the environmental compliance as important and the terminal performance as very good ahead of the expectations. Client 2 rated the same area as very important and the terminal performance matched the expectation. Client 3 rated the two criteria in this area as important and the terminal performance as very good. For the remainder of the stakeholders the terminal performance was either at par or ahead of the importance rating apart from client 6 where the security of the terminal premises was rated as very important and the terminal performance as good. The overall pattern in this area is a positive variance between the importance rating and the terminal performance.

Emission Control
Most of the stakeholders rated the control of dust and noise emissions as very important and the terminal performance matched the expectations. The level of green energy use has mainly been rated as important and the terminal performance was mostly ahead of the expectations. Therefore, there was a positive variance between the importance rating and the performance.

Track Record
The first three clients rated the importance of the health and safety track record of the terminal as important and the terminal performance as very good. The last three clients rated the importance as very important and apart from client 6 who rated the terminal performance as very good. The remaining stakeholders rated this criterion as either important or very important with the terminal performance either matching or exceeding the expectations. Therefore, there was a positive variance between the importance rating and the terminal performance in this area.

2.5 Pattern analysis: economic criteria

Table 10 shows the pattern analysis for the economic criteria.

		Clients						Agent	Port	Shareholder	
		C1	C2	C3	C4	C5	C6	A	P	SH1	SH2
	ECONOMIC CRITERIA										
	Cost competitiveness										
1	Cost of services charged by the terminal										
2	Cost of logistics services offered by the terminal										
	Invoicing										
3	Accuracy and timeliness of invoicing for service charges										

Table 10: Pattern analysis for the economic criteria Terminal B

Cost competitiveness and invoicing
For the first two clients cost of services charged by the terminal met the expectations. Client 3 rated this as very important and the terminal performance as unsatisfactory. Client 6 also rated this criterion as very important and the terminal performance as satisfactory. There was a small gap between the importance rating and the terminal performance for the cost of logistics services for clients 2, 3 and 5. Client 6 rated this area as very important and the terminal performance as satisfactory.

3.Terminal C

The terminal C received completed surveys from five clients, four logistics partners and the port authority.

3.1 Pattern analysis: operational criteria

Table 11 shows the pattern analysis for the operational criteria.

		CLIENT- SHIPPER					Logistics partner				Port
		C1	C2	C3	C4	C5	LP1	LP2	LP3	LP4	P
	OPERATIONAL CRITERIA										
	Productivity										
1	Loading/discharge performance ship to shore and vice versa										
2	Total ship turnaround time										
3	Minimising delays encountered during the discharge or loading of the cargo										
4	Timeliness of despatch or acceptance of cargo to/from transport to/from stockpile/warehouse										
5	Reliability of the equipment utilised by the terminal to provide services										
	Cargo integrity										
1	Preserving cargo quality and preventing contamination										
2	Stockpile-storage capacity offered by the terminal										
3	Minimising cargo damage during the operations										
4	Minimising cargo losses during the operations										
5	Preventing wrong cargo delivery to the client										
	Safe Access										
1	Safe access to and from the berths										

Table 11: Pattern analysis for the operational criteria Terminal C

Productivity

Client 1 rated the criteria for loading and discharge productivity as very important and the terminal performance was rated as good. The reliability of the equipment during the operations was important and the terminal performance was rated as satisfactory. Client 2 rated the total ship turnaround and the reliability of the equipment during the operations as very important and the terminal performance was good for the ship turnaround and satisfactory for the reliability of the equipment. Client 3 rated all the criteria in this area as very important and the terminal performance as good for all of them. Client 4 rated all the criteria as very important and the terminal performance was very good except the timeliness of the despatch or acceptance of the cargo which was rated as good. Client 5 rated the load and discharge productivity as not so important and the terminal performance as satisfactory. The rest of the criteria was rated as important and the terminal performance as satisfactory. Logistics partner 1 rated all the criteria as very important and the terminal performance was matched or better for the timeliness of despatch and acceptance of the cargo. Logistics partner 2 rated the criteria as important, the terminal performance for ship turnaround time was satisfactory and the reliability of the equipment was rated as very good. Logistics partner 3 rated the criteria as either important or not so important and the terminal performance matched the importance except it was rated as good for delays during the operations. Logistics partner 4 rated the criteria as important except the reliability of the equipment, which was rated not so important, the terminal performance was equal or better in all areas. The port rated the criteria as very important and the terminal performance was rated as good except the minimising of delays during the operation which was rated as satisfactory. Overall there was a negative gap across the clients for the reliability of the equipment utilised by the terminal.

Cargo integrity

Client 1 rated preserving cargo quality and minimising cargo losses as very important and the terminal performance as good. Client 2 rated all the criteria as very important except the stockpile capacity offered by the terminal and the terminal performance was rated as good. Client 3 rated all the criteria as very important and the terminal performance as good, however the storage capacity offered by the

terminal was rated as satisfactory. Client 4 rated all the criteria as very important; the terminal performance was rated as good for the storage capacity offered and for minimising cargo damage and losses. For client 5 stockpile capacity offered and minimising cargo losses were rated as very important and the terminal performance was rated as satisfactory. For logistics partner 1 the stockpile capacity offered, and minimising cargo losses were very important with the terminal performance rated as good. Minimising cargo damage was rated as important with the terminal performance as very good. Logistics partner 3 rated the criteria as important or not so important and the terminal performance was matched or better than the importance rating. The terminal performance as rated as better than the importance rating for logistics partner 4 in most of the criteria except the stockpile capacity offered which was rated as very important which the terminal performance being good. In general, the stockpile capacity offered by the terminal and minimising cargo losses had a negative gap across the six of the stakeholders between the importance and performance rating. Minimising cargo losses had a negative performance gap across all the clients between the importance and performance rating. The terminal performance was also rated below the expectations for minimising the cargo damage by four out of five clients.

Safe Access

Safe access to berths was rated as important or very important by all the clients and the terminal performance was rated as good or very good except the client 5 who rated the performance as satisfactory. For the logistics partners this was less of an important criterion and the terminal performance was above expectations. The port authority rated is as very important and the terminal performance was only satisfactory.

3.2 Pattern analysis: logistical criteria

Table 12 shows the pattern analysis for the logistical criteria.

		CLIENT- SHIPPER					Logistics partner				Port
		C1	C2	C3	C4	C5	LP1	LP2	LP3	LP4	P
	LOGISTICAL CRITERIA										
	Resources										
1	Timely availability of terminal resources, equipment, labour										
	Connectivity										
1	Physical connectivity of the terminal to rail and road network										
	Capacity										
1	Capacity of the terminal to handle throughput required by the client										
	Added value										
1	Level of added value services offered by the terminal (warehousing, logistics, processing, analysis)										
2	Terminal's ability to develop and provide tailored services to suit client needs										

Table 12: Pattern analysis for the logistical criteria

Resources

Clients 1 and 3 rated this criterion as very important and the terminal performance as good. Client 2 rating was important and the terminal performance as satisfactory. For the logistics partners this criterion was important or very important and the terminal performance matched the importance rating except for logistics partner 2 who rated the terminal performance as good. There was a negative gap in this area for three out of five clients between the importance and performance rating.

Connectivity

For clients 2 and 3 the physical connectivity was very important, and the terminal performance was rated as good. The other clients rated it as important or very important and the terminal performance was in line with the importance rating. Logistics partner2 rated this as very important with the terminal performance as good. For the rest of the logistics partners the terminal performance was in line or

better than the importance rating. For the port the importance rating was not so important, but the terminal performance was rated as very good.

Capacity

Client 1 rated the capacity of the terminal to handle the throughput as very important and the terminal performance as good. Clients 2 and 4 rated the importance as very important and the terminal was rated as very good. Client 3 rated the importance as very important but the terminal performance as satisfactory. Logistics partner 2 rated this as very important and the terminal performance as good. For logistics partner 3 this was not so important, but the terminal performance was good. The rating of the logistics partners in this area reflected the role and the capacity they are involved in the logistics chain in relation to the terminal.

Added value

For the clients the importance rating and the terminal performance in this area was either matched or very close to each other. For most of the logistics partners the terminal performance matched the importance rating or better. The port rated the level of added value services offered as not so important but the terminal performance as satisfactory. It rated the terminal's ability to provide tailor-made services as very important and the terminal performance as good.

3.3 Pattern analysis: service quality area

Table 13 shows the pattern analysis for the service quality.

		CLIENT- SHIPPER					Logistics partner				Port
		C1	C2	C3	C4	C5	LP1	LP2	LP3	LP4	P
	Service reliability										
1	Maintaining Quality of the cargo (and hygiene standards) handled by the terminal										
2	Availability and allocation of berths by the terminal										
3	Waiting time for ships to berth at anchorage										
4	Working hours of the terminal										
5	Overall service quality delivered by the terminal personnel										
6	Terminal adherence to agreed load/discharge window for the cargo										
7	Timeliness of marine services offered (pilotage and towage)										
8	Reliability and consistency of service delivery by the terminal										
9	Level of automation in service delivery of the terminal										
	Flexibility										
1	Communication and coordination of planned maintenance/shut down periods of the terminal										
2	Flexibility of terminal to respond to changing client requirements										
3	Willingness to offer solutions to specific problems encountered during the service delivery										
4	Response from terminal to unexpected client requirement changes										
5	Alignment of Terminal development & objectives to the client needs										
	Reporting										
1	Provision of timely reports by the terminal for the services delivered										
2	Provision of correct format and adequate reports by the terminal										
3	Frequency of information update on key areas of service delivery										
4	Access to just in time information on key service areas by the client										
	Documentation										
5	Efficiency of documentary, clearance process in the terminal										

Table 13: Pattern analysis for the service quality Terminal C

Service reliability

Client 1 rated the waiting time for ships at the anchorage as very important and the terminal performance as good. The timeliness of marine services was rated as good and the terminal performance as satisfactory. Overall service quality was important, and the terminal performance as rated as very good. Reliability of service delivery and the level of automation was rated as not so important, but the terminal performance was good. Client 2 rated all the criteria except the

maintaining quality of the cargo as important and the terminal performance as good. For the cargo quality the importance rating was very important, and the terminal performance was good. Client 3 rated the maintaining cargo quality as very important and the terminal performance as good. The availability and allocation of berths was very important, and the terminal performance was rated as satisfactory. The working hours of the terminal was good against the importance rating of very important. Client 4 rated most of the criteria as very important and the terminal performance as good, but the timeliness of marine services offered was rated a satisfactory. Client 5 rated the maintaining cargo quality as very important and the terminal performance as good. The reliability and consistency of the service was rated as important with the terminal performance as satisfactory. The logistics partners importance ratings of the criteria overall were important or not so important and the terminal performance was in line or better for most of the criteria. The port rated the availability of berths and waiting time at anchorage as very important, but the terminal performance was satisfactory. The reliability and consistency of the services offered by the terminal was also rated as very important with the terminal performance as satisfactory. There is a negative pattern for maintaining the cargo quality between the importance and performance rating for four out of five clients.

Flexibility

Client 1 rated the criteria in this area as important with the terminal performance above the expectations. For client 2 response from the terminal to unexpected client requirement changes was rated as very important but the terminal performance was satisfactory. The alignment of terminal objectives to client needs was rated as important and the terminal performance was satisfactory. Client 3 rated the communication of shut down periods and the willingness to offer solutions to problems as very important and the terminal performance was rated as good. Client 4 rated the criteria as very important or important and the terminal performance was a level below the expectations in all areas. For client 5, willingness to offer solutions, communication of shut down periods and response to unexpected client requirements showed a gap between the importance rating and the terminal performance. Logistics partner 1 rated the communication of the shutdown periods as very important with the terminal performance being rated as good. Logistical partner 3 rated most of the criteria as not so important with the terminal performance as good. Logistics partner 4 rated the response from terminal to unexpected client requirement changes and flexibility of the terminal to changing client requirements as very important with the terminal performance as good. The port importance rating was ahead of the terminal performance rating in all areas. The willingness to offer solutions to problems encountered during the service delivery was rated as very important and the terminal performance as unsatisfactory. The related criteria in terms of flexibility of the terminal to respond to changing client requirements and response to unexpected client requirement changes were also rated as satisfactory. In general, the communication and coordination of shut down periods had a negative pattern for six out of ten stakeholders between the importance and performance rating. Response from the terminal to unexpected client requirement changes had a negative pattern across five stakeholders.

Reporting and documentation

For client 1 and 2 the importance rating of the criteria and the terminal performance matched each other in all areas. Client 3 rated the efficiency of documentary clearance as very important with the terminal performance as good. Client 4 rated the importance of all the criteria a level higher than the performance rating of the terminal. However, the frequency of information update on key areas of service delivery was rated as very important with the terminal performance rated as satisfactory. Client 5 rated importance of all the criteria one level higher than the performance rating of the terminal with the exception of access to just in time information which was rated as very important and the terminal performance was rated as satisfactory. The efficiency of documentary clearance had the same rating for the importance and performance. Logistics partner 1 rated the provision of correct

format reports and access to just in time information as very important with the terminal performance as good. Frequency of information updates was rated as important with the terminal performance as very good. Logistics partner 2 rated the importance and performance criteria equally except access to just in time information where the terminal performance was ahead of the importance rating. Logistics partner 3 rated most of the criteria as not so important and the terminal performance as good. For logistics partner 4 the terminal performance was in line or better than the importance criteria rating for most of the criteria. There was a significant gap between the importance rating of the port and the terminal performance for all the criteria. For most of the criteria the importance rating was very important with the terminal performance rated as satisfactory and for access to just in time information the terminal performance was rated as unsatisfactory.

3.4 Pattern analysis: health, safety and environment criteria

Table 14 shows the pattern analysis for health, safety and environment.

		CLIENT- SHIPPER					Logistics partner				Port
		C1	C2	C3	C4	C5	LP1	LP2	LP3	LP4	P
	HEALTH – SAFETY & ENVIRONMENTAL CRITERIA										
	Compliance										
1	Environmental compliance of terminal operations										
2	Security of terminal premises and facilities										
	Emission Control										
1	Control of dust and noise emissions during discharge/loading operations										
2	The level of green energy use and energy saving practices within the terminal										
	Track record										
1	Health and Safety track record of the terminal										

Table 14: Pattern analysis for health, safety and environment Terminal C

Compliance

Client 1 rated compliance criteria as important and the terminal performance as satisfactory. Client 2, 3 and 5 rated the criteria as important with the terminal performance as good. Client 4 rated the criteria as very important with the terminal performance as very good. Logistical partner 2 rated the environmental compliance as very important and the terminal performance as good. Logistical partner 3 rated the criteria as not so important and the terminal performance as good. Logistical partner 4 rated the both criteria as very important with the terminal performance as good. The port rated the criteria as important with the terminal performance ahead as very good for the security of premises.

Emission control

Client 1 rated the dust and noise control as very important and the terminal performance as satisfactory. Client 2 rated the dust and noise control as important and the terminal performance as satisfactory. Client 3 rated the level of green energy use and energy saving practices as important with the terminal performance as satisfactory. For client 4 and 5 the dust and noise control performance were rated as good. For the logistics partners the importance rating of the criteria and the terminal performance matched each other in most of the areas. The port rated the green energy use and energy saving practices performance of the terminal ahead of the importance rating.

Track record

Client 1 rated the criteria as important and the terminal performance as satisfactory. For the rest of the clients the performance rating was good. The logistics partners rated this criterion as important or very important with the terminal performance as good. The port rated this criterion as important with the terminal performance as very good.

3.5 Pattern analysis: economic criteria

Table 15 shows the pattern analysis for the economic criteria.

		CLIENT- SHIPPER					Logistics partner				Port
		C1	C2	C3	C4	C5	LP1	LP2	LP3	LP4	P
	ECONOMIC CRITERIA										
	Cost competitiveness										
1	Cost of services charged by the terminal										
2	Cost of logistics services offered by the terminal										
	Invoicing										
3	Accuracy and timeliness of invoicing for service charges										

Table 15: Pattern analysis for the economic criteria

Cost competitiveness and invoicing

There is a positive gap for client 1 between the importance rating and the terminal performance in this area. The performance is rated as good in for all the criteria. Client 2 rated the importance of the cost of services charged as very important and the terminal performance as satisfactory. Client 3 rated the performance as good for all the criteria. Client 4 rated the criteria as very important and the terminal performance as good. Logistics partner 1 rated cost of services charged as important with the terminal performance as satisfactory. Logistics partner 4 rated the importance as not so important and the performance of the terminal was rated as good.

4. Terminal D

Terminal D received three completed survey from three different stakeholders; client, logistics partner and the port authority.

4.1 Pattern analysis: operational criteria

Table 16 shows the pattern analysis for the operational criteria.

	Client	Logistics	Port
	DBCOM	SSDC	AFAB
OPERATIONAL CRITERIA			
Productivity			
Loading/discharge performance ship to shore and vice versa			
Total ship turnaround time			
Minimising delays encountered during the discharge or loading of the cargo			
Timeliness of despatch or acceptance of cargo to/from transport to/from stockpile/warehouse			
Reliability of the equipment utilised by the terminal to provide services			
Cargo Integrity			
Preserving cargo quality and preventing contamination			
Stockpile-storage capacity offered by the terminal			
Minimising cargo damage during the operations			
Minimising cargo losses during the operations			
Preventing wrong cargo delivery to the client			
Safe Access			
Safe access to and from the berths			

Table 16: Pattern for the operational criteria Terminal D

Productivity

The client rated minimising delays during the discharge operation as very important and the terminal performance as very good. The reliability of the equipment and the timeliness of despatch of cargo were also rated as very important and the terminal performance was good. For the logistics partner loading and discharge productivity was very important and the terminal performance was good. The ship turnaround was important, and the terminal was rated as satisfactory. The reliability of the equipment used by the terminal was very important and the terminal performance was satisfactory. For the port authority the importance rating and the performance rating for the criteria were matched. There is a negative gap between the importance and performance rating for the reliability of the equipment criterion for two out of three stakeholders.

Cargo Integrity

Both the client and the logistics partner rated all the criteria as very important and the terminal performance was rated as good. The stockpile capacity offered, and prevention of wrong cargo delivery were not relevant for the client. For the port authority the stockpile capacity and prevention of wrong cargo delivery were rated as important and the terminal performance was very good.

Safe Access

For the client and the logistics partner safe access to and from the berths was very important and the terminal performance was good. The port rated it as very important and the terminal performance as very good.

4.2 Pattern analysis: logistical criteria

Table 17 shows the trend analysis for the logistical criteria.

		Client	Logistics	Port
		DBCOM	SSDC	AFAB
	LOGISTICAL CRITERIA			
	Resources			
1	Timely availability of terminal resources, equipment, labour			
	Connectivity			
1	Physical connectivity of the terminal to rail and road network			
	Capacity			
1	Capacity of the terminal to handle throughput required by the client			
	Added Value			
1	Level of added value services offered by the terminal (warehousing, logistics, processing, analysis)			
2	Terminal's ability to develop and provide tailored services to suit client needs			

Table 17: Pattern analysis for the logistical criteria Terminal D

Resources

The client and the logistics provider both rated the timely availability of terminal resources as very important and the performance of the terminal as satisfactory. There is a significant negative gap in this area between the importance and performance rating for the terminal. There was no mismatch between the port's importance and performance ratings in this area.

Connectivity

The client rated the physical connectivity of the terminal as very important but the terminal performance as satisfactory. The main connectivity of the terminal is through the arterial roads that connect the terminal to the regional road network, therefore this is a difficult area to address for the terminal. The logistics partner rated this criterion as very important and the terminal performance as good.

Capacity

The client rated this as very important and the terminal performance as satisfactory. The logistics partner rated this criterion as not so important and the terminal performance as good. The port authority rated the importance as very important and the terminal performance as good. Each stakeholder has a slightly different importance rating and the performance expectation in this area.

Added value

The client rated the criteria in this area as important and the terminal performance as satisfactory. For the logistics partner the level of added value services was not so important and the terminal's ability to provide tailor-made services was important with the terminal performance rated as satisfactory and good for each.

4.3 Pattern analysis: service quality criteria

Table 18 shows the pattern analysis for the service quality area.

		Client	Logistics	Port
		DBCOM	SSDC	AFAB
	SERVICE QUALITY CRITERIA			
	Service Reliability			
1	Maintaining Quality of the cargo (and hygiene standards) handled by the terminal			
2	Availability and allocation of berths by the terminal			
3	Waiting time for ships to berth at anchorage			
4	Working hours of the terminal			
5	Overall service quality delivered by the terminal personnel			
6	Terminal adherence to agreed load/discharge window for the cargo			
7	Timeliness of marine services offered (pilotage and towage)			
8	Reliability and consistency of service delivery by the terminal			
9	Level of automation in service delivery of the terminal			
	Flexibility			
1	Communication and coordination of planned maintenance/shut down periods of the terminal to the stakeholders			
2	Flexibility of terminal to respond to changing client requirements			
3	Willingness to offer solutions to specific problems encountered during the service delivery of the terminal			
4	Response from terminal to unexpected client requirement changes			
5	Alignment of Terminal development & objectives to the client needs			
	Reporting			
1	Provision of timely reports by the terminal for the services delivered			
2	Provision of correct format and adequate reports by the terminal			
3	Frequency of information update on key areas of service delivery			
4	Access to just in time information on key service areas by the client			
	Documentation			
5	Efficiency of documentary, clearance process in the terminal			

Table 18: Pattern analysis for the service quality Terminal D

Service Reliability

The client rated all the criteria as very important and the terminal performance as good. The logistics partner rated the maintaining of the cargo quality, overall service quality and the working hours of the terminal as very important and the terminal performance as good. The other criteria were rated as important and the terminal performance as good. The timeliness of marine services was rated as very important and the terminal performance as satisfactory. The port rated the availability and allocation of berths as very important and the terminal performance as good. Terminal adherence to agreed load discharge windows was rated as important with the terminal performance as very good.

Flexibility

The client rated willingness of the terminal to offer solutions to problems, response from the terminal to unexpected client requirement changes and alignment of terminal objectives to client needs as very important but the terminal performance as satisfactory. For the logistics provider all the criteria were rated as very important with the terminal performance rated as good. The port rated all the criteria as very important and the terminal performance was matched as very good.

Reporting and documentation

The client rated the provision of timely and correct format reports as very important and the terminal performance as good. The frequency of information updates on key areas and access to just in time information were also rated as very important but the terminal performance was rated as satisfactory. The logistics partner rated the provision of timely and correct format reports as very important and the terminal performance as good. The rest of the criteria were rated as important with the terminal

performance as good. The port rated the terminal performance higher than the importance rating for the provision of timely reports. Access to just in time information was rated as very important with the terminal performance as good.

4.4 Pattern analysis: health, safety and environmental criteria

Table 19 shows the pattern analysis for health, safety and environmental criteria.

		Client	Logistics	Port
		DBCOM	SSDC	AFAB
	HEALTH – SAFETY & ENVIRONMENTAL CRITERIA			
	Compliance			
1	Environmental compliance of terminal operations			
2	Security of terminal premises and facilities			
	Emission Control			
1	Control of dust and noise emissions during discharge/loading operations			
2	The level of green energy use and energy saving practices within the terminal			
	Track Record			
1	Health and Safety track record of the terminal			

Table 19: Pattern analysis for health, safety and environment Terminal D

Compliance

The client rated the criteria in this area as very important and the performance of the terminal as satisfactory. The logistical partner rated the criteria as very important and the performance of the terminal as good. The port rated the terminal security as very good and the environmental compliance as good. There is a significant negative gap between the client's importance and performance rating in this area.

Emission control

The client rated the control of dust and noise and green energy use as very important and the terminal performance as satisfactory. The logistics partner and the port authority both rated the performance of the terminal in this area as good.

Track Record

The client rated the health and safety track record of the terminal as very important and the terminal performance as satisfactory. The port authority rated it as very important and the terminal performance as very good.

4.5 Pattern analysis: economic criteria

Table 20 shows the pattern analysis for the economic criteria.

		Client	Logistics	Port
		DBCOM	SSDC	AFAB
	ECONOMIC CRITERIA			
	Cost competitiveness			
1	Cost of services charged by the terminal			
2	Cost of logistics services offered by the terminal			
	Invoicing			
3	Accuracy and timeliness of invoicing for service charges			

Table 20: Pattern analysis for the economic criteria Terminal D

Cost competitiveness and invoicing

The client rated the cost of services charged by the terminal as very important and the terminal performance as good. For the other criteria the client rated the importance as important and the terminal performance as good. The port rated all the criteria as very important and the terminal performance as very good. The logistics partner rated the criteria as important and the terminal performance as good.

5. Terminal E

Terminal E received a completed survey from a client.

5.1 Pattern analysis: operational criteria

Table 21 shows the pattern analysis for the operational criteria.

		Client
		C1
	OPERATIONAL CRITERIA	
	Productivity	
1	Loading/discharge performance ship to shore and vice versa	
2	Total ship turnaround time	
3	Minimising delays encountered during the discharge or loading of the cargo	
4	Reliability of the equipment utilised by the terminal to provide services	
5	Timeliness of despatch or acceptance of cargo to/from transport to/from stockpile/warehouse	
	Cargo integrity	
1	Stockpile-storage capacity offered by the terminal	
2	Minimising cargo damage during the operations	
3	Minimising cargo losses during the operations	
4	Preventing wrong cargo delivery to the client	
5	Preserving cargo quality and preventing contamination	
	Safe Access	
1	Safe access to and from the berths	

Table 21: Pattern analysis for the operational criteria Terminal E

Productivity

The client rated the loading and discharge productivity as important and the terminal performance as good. The remaining criteria were all rated as very important and the terminal performance rated as very good.

Cargo integrity

The client rated the stockpile capacity offered and preserving the cargo quality as very important and the terminal performance as very good. Minimising cargo losses was rated as important and the terminal performance as good. The client rated minimising the cargo damage as not so important and the terminal performance as satisfactory. The terminal performance was rated ahead of the importance rating as very good for preventing wrong cargo delivery to the client.

Safe Access

The safe access to and from the berths was rated as important by the client and the terminal performance was good.

5.2 Pattern analysis: logistical criteria

Table 22 shows the pattern analysis for the logistical criteria.

		Client
		C1
	LOGISTICAL CRITERIA	
	Resources	
1	Timely availability of terminal resources, equipment, labour	
	Connectivity	
1	Physical connectivity of the terminal to rail and road network	
	Capacity	
1	Capacity of the terminal to handle throughput required by the client	
	Added value	
1	Level of added value services offered by the terminal (warehousing, logistics, processing, analysis)	
2	Terminal's ability to develop and provide tailored services to suit client needs	

Table 22: Pattern analysis for the logistical area Terminal E

Resources

Timely availability of resources was rated as important by the client and the terminal performance was rated as good.

Connectivity

Physical connectivity of the terminal to rail or road network was rated as not so important by the client and the terminal performance was rated as satisfactory. The client has premises close to the terminal in this instance therefore the physical connection is not a significant factor.

Capacity

The capacity of the terminal to handle the throughput required by the client was rated as very important and the terminal performance was rated as very good.

Added value

The client rated the level of added value services offered by the terminal as important and the terminal performance as good. The terminal's ability to develop tailor-made services was rated as very important and the terminal performance was rated as very good.

5.3 Pattern analysis: service quality criteria

Table 23 shows the pattern analysis for the service quality area.

		Client
		C1
	SERVICE QUALITY CRITERIA	
	Service reliability	
1	Maintaining Quality of the cargo (and hygiene standards) handled by the terminal	
2	Availability and allocation of berths by the terminal	
3	Waiting time for ships to berth at anchorage	
4	Working hours of the terminal	
5	Overall service quality delivered by the terminal personnel	
6	Terminal adherence to agreed load/discharge window for the cargo	
7	Timeliness of marine services offered (pilotage and towage)	
8	Reliability and consistency of service delivery by the terminal	
9	Level of automation in service delivery of the terminal	
	Flexibility	
1	Flexibility of terminal to respond to changing client requirements	
2	Communication and coordination of planned maintenance/shut down periods of the terminal to the stakeholders	
3	Willingness to offer solutions to specific problems encountered during the service delivery of the terminal	
4	Response from terminal to unexpected client requirement changes	
5	Alignment of Terminal development & objectives to the client needs	
	Reporting	
1	Provision of timely reports by the terminal for the services delivered	
2	Provision of correct format and adequate reports by the terminal	
3	Frequency of information update on key areas of service delivery	
4	Access to just in time information on key service areas by the client	
	Documentation	
5	Efficiency of documentary, clearance process in the terminal	

Table 23: Pattern analysis for the service quality criteria

Service reliability

The client rated the maintaining quality of the cargo, waiting time for the ships at the anchorage and reliability and consistency of service delivery as very important and the terminal performance as very good. The remaining criteria in this section were rated as important with the terminal performance as good.

Flexibility

The client rated the communication and coordination of planned maintenance and shut down periods and response from the terminal to unexpected client requirement changes as very important and the terminal performance as very good. The remaining criteria in this area were rated as important and the terminal performance was rated as good.

Reporting and documentation

The client rated all the criteria in this area except the access to just in time information as important and the terminal performance was rated as good. The access to just in time information was rated as not so important and the terminal performance as satisfactory.

5.4 Pattern analysis: health, safety and environment criteria

Table 24 shows the pattern analysis for health, safety and environment.

		Client
		C1
	HEALTH – SAFETY & ENVIRONMENTAL CRITERIA	
	Compliance	
1	Environmental compliance of terminal operations	
2	Security of terminal premises and facilities	
	Emission control	
1	Control of dust and noise emissions during discharge/loading operations	
2	The level of green energy use and energy saving practices within the terminal	
	Track record	
1	Health and Safety track record of the terminal	

Table 24: Pattern analysis for health, safety and environment Terminal E

Compliance

The environmental compliance and the security of the terminal premises were rated as very important and the terminal performance as very good by the client.

Emission control

The control of dust and noise emissions was rated as very important by the client and the terminal performance was rated as very good. The green energy use and the energy saving practices was rated as not so important and the terminal performance was rate as satisfactory.

Track record

The client rated the health and safety track record of the terminal as very important and the terminal performance as very good.

5.5 Pattern analysis: economic criteria

Table 25 shows the pattern analysis for the economic criteria.

		Client
		C1
	ECONOMIC CRITERIA	
	Cost competitiveness	
1	Cost of services charged by the terminal	
2	Cost of logistics services offered by the terminal	
	Invoicing	
3	Accuracy and timeliness of invoicing for service charges	

Table 25: Pattern analysis for the economic criteria Terminal E

Cost competitiveness and invoicing

The client rated the importance of the cost of services charged by the terminal as important and the terminal performance was rated as good. The terminal is doing very well in matching client's expectations in this area. The importance and performance were also matched for the accuracy and timeliness of invoicing by the terminal.

Annex 6

Stakeholder mapping analysis of survey results for the participating terminals.

1. Terminal A

1.1 Stakeholder mapping: Operational Criteria

Productivity

The stakeholder mapping for productivity is shown in Figure 1.

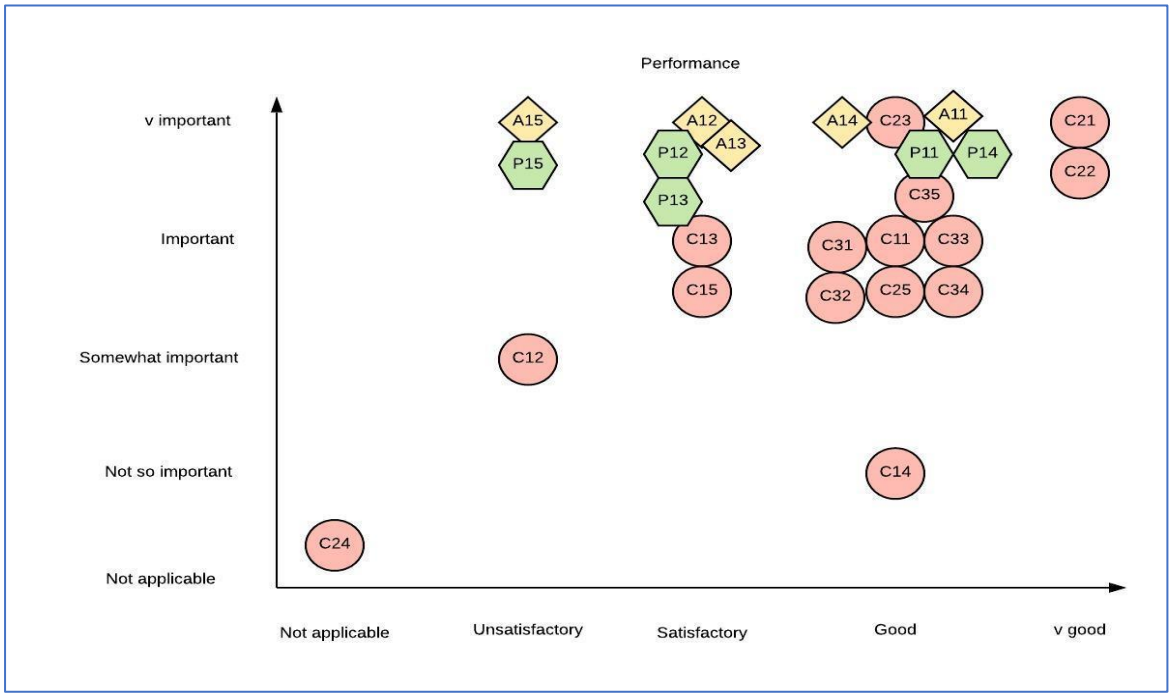

Figure 1 - Stakeholder mapping for productivity Terminal A

Client 1, port and the agent rated minimising delays during the loading and discharge operations as important or very important, but the terminal performance was rated as satisfactory. The agent and the port rated the ship turnaround time as very important with the terminal performance as satisfactory. Client 1 rated the reliability of equipment as important with the port performance as satisfactory. For above areas the terminal needs to ensure that the performance does not fall further behind.

The agent and the port rated the reliability of the equipment as very important, but the terminal performance was rated as unsatisfactory. This is a focus point for the terminal to turnaround the performance.

Cargo Integrity

The stakeholder mapping for cargo integrity is shown in Figure 2.

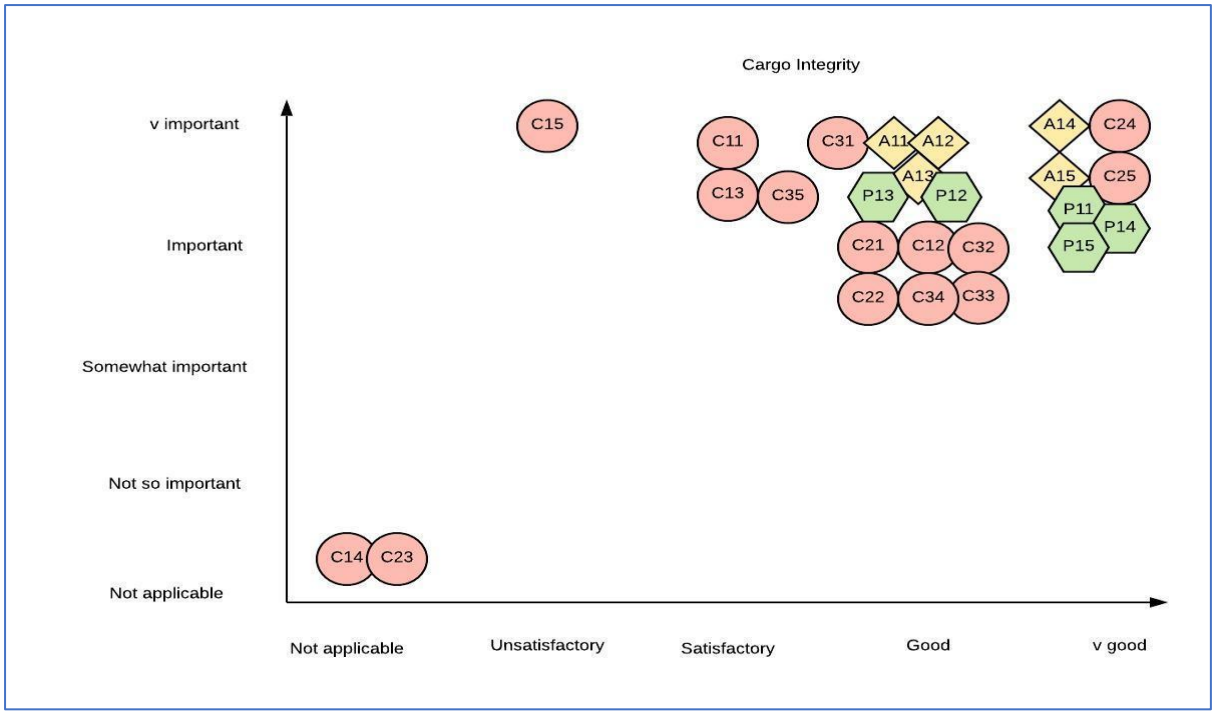

Figure 2 - Stakeholder mapping for cargo integrity Terminal A

Client 1 placed a high importance on preserving cargo quality and preventing cargo damage and the terminal performance was rated satisfactory. Client 3 rated the prevention of wrong cargo delivery as very important and the terminal performance as satisfactory. Terminal needs to ensure that the performance do not deteriorate in this area.

Client 1 rated the prevention of wrong cargo delivery as very important but the terminal performance as unsatisfactory. This is an area of focus for the terminal to understand the factors behind it and improve the performance.

Safe access

The stakeholder mapping for safe access is shown in Figure 3.

Figure 3 - Stakeholder mapping for safe access Terminal A

The agent and the port rated the safe access to and from the berths as very important with the terminal performance as satisfactory. Terminal performance is good for the rest of the stakeholders, terminal needs to ensure that the performance does not fall back for these two stakeholders.

1.2 Stakeholder Mapping: logistical criteria

Resources

The stakeholder mapping for resources for Terminal as is shown in Figure 4.

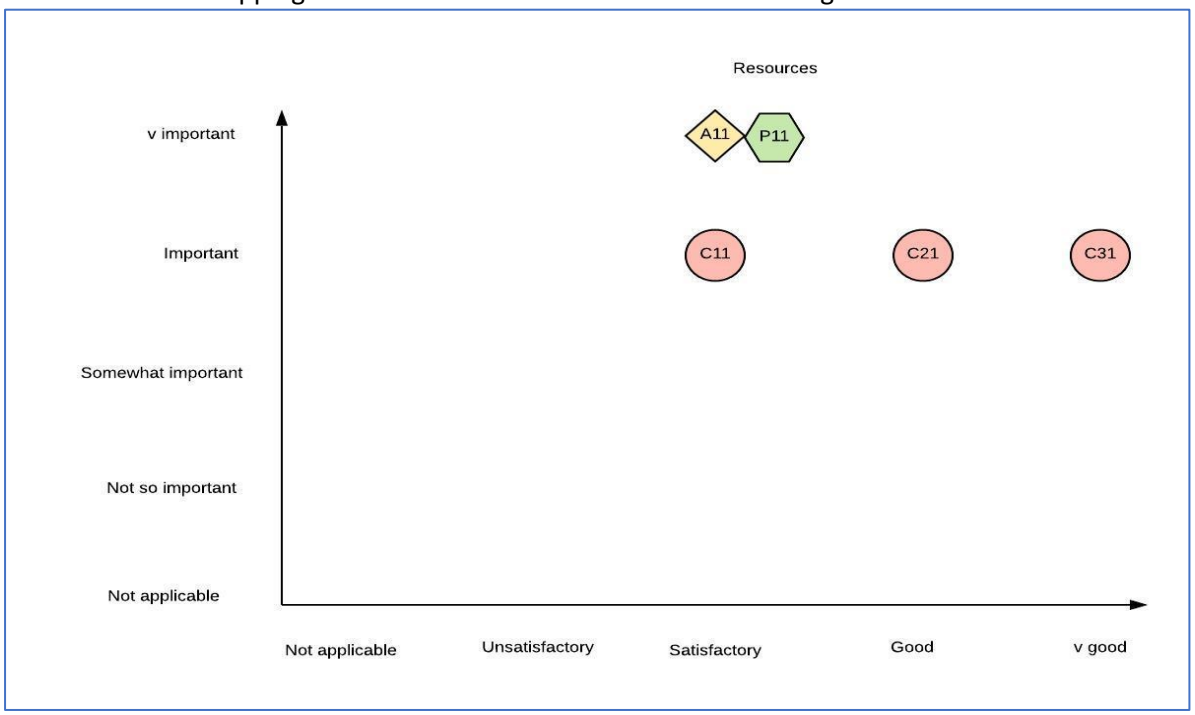

Figure 4 - Stakeholder mapping for resources Terminal A

The agent and the port rated the timely availability of resources as very important and the terminal performance as satisfactory. Client 1 rated this area as important and the terminal performance as satisfactory. The terminal needs to ensure that the performance does not deteriorate for these stakeholders.

Connectivity

Figure 5 shows the stakeholder mapping for connectivity.

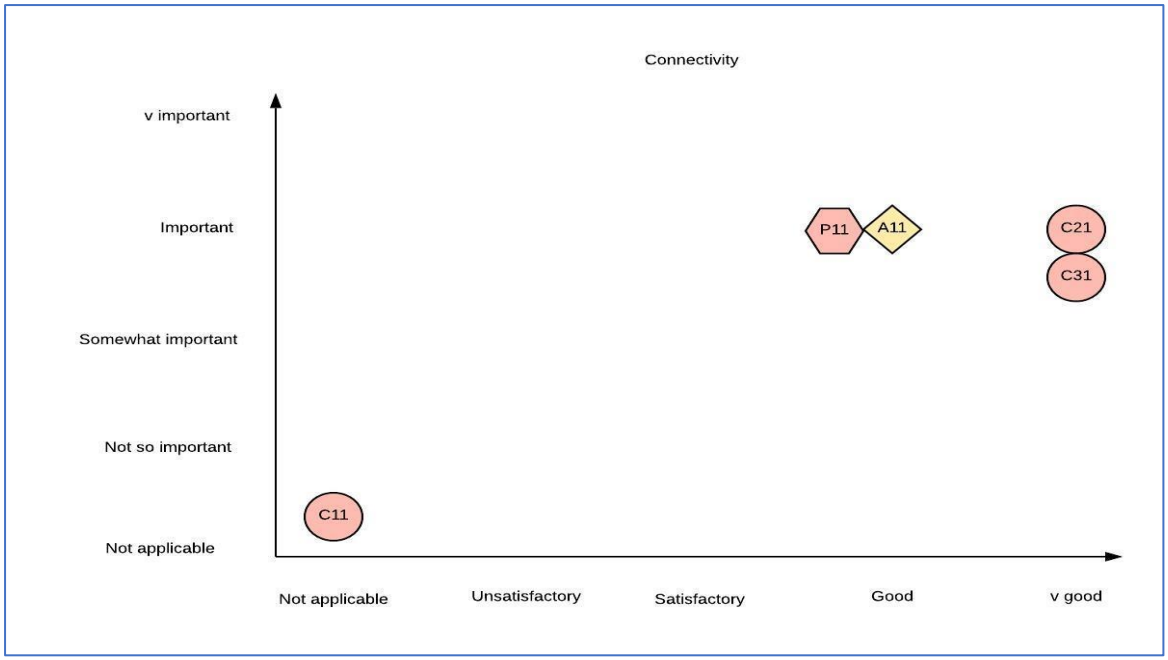

Figure 5: Stakeholder mapping for connectivity Terminal A

The importance rating of this area by all the stakeholders except client 1 is important and the terminal performance is either good or very good. Client 1 rated the importance of the connectivity as not important. This is probably because of the direct physical link that exists between the port facilities and the client. This shows that the terminal has a strong advantage in this area to meet expectations of different stakeholders.

Capacity

Figure 6 shows the stakeholder mapping for the capacity.

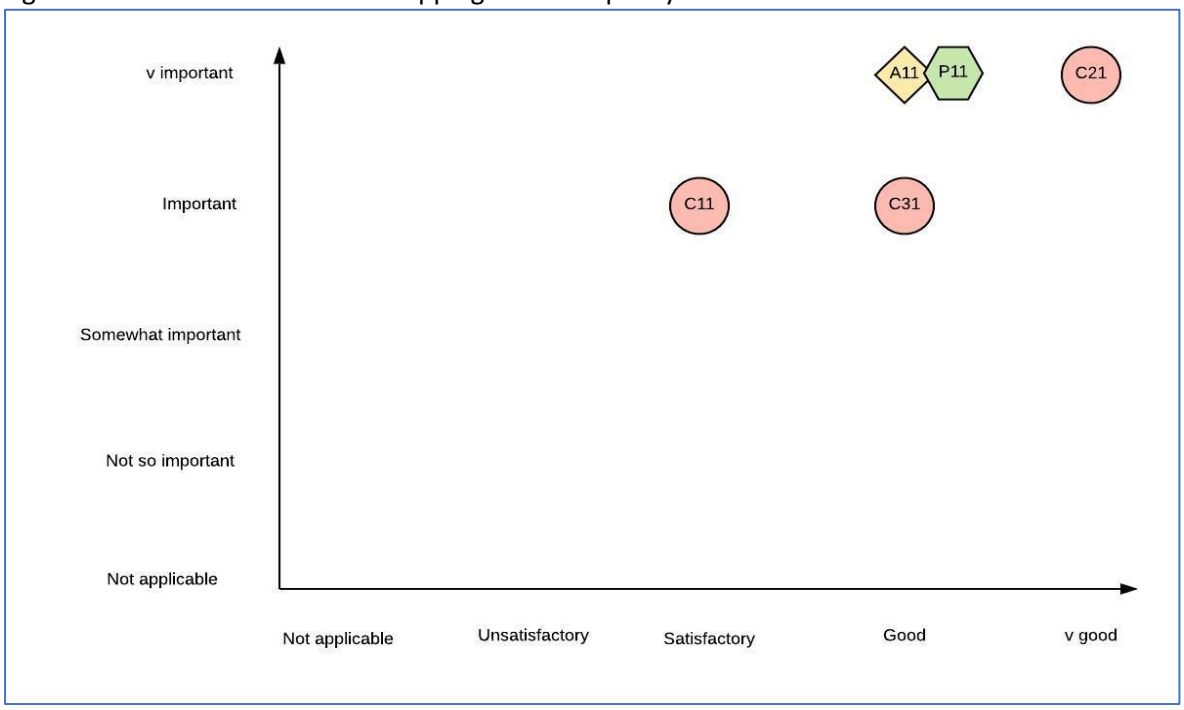

Figure 6:Stakeholder mapping for capacity Terminal A

The terminal meets the expectations of client 2 and 3 in this area. A close coordination is required with client 1 to ensure that the changing requirements of this client can be met consistently going forward. It is important to maintain the level of performance with the agent as the agent acts as a catalyst in providing business to the terminal and represents interests of important stakeholders.

Added value

Figure 7 shows the stakeholder mapping for added value.

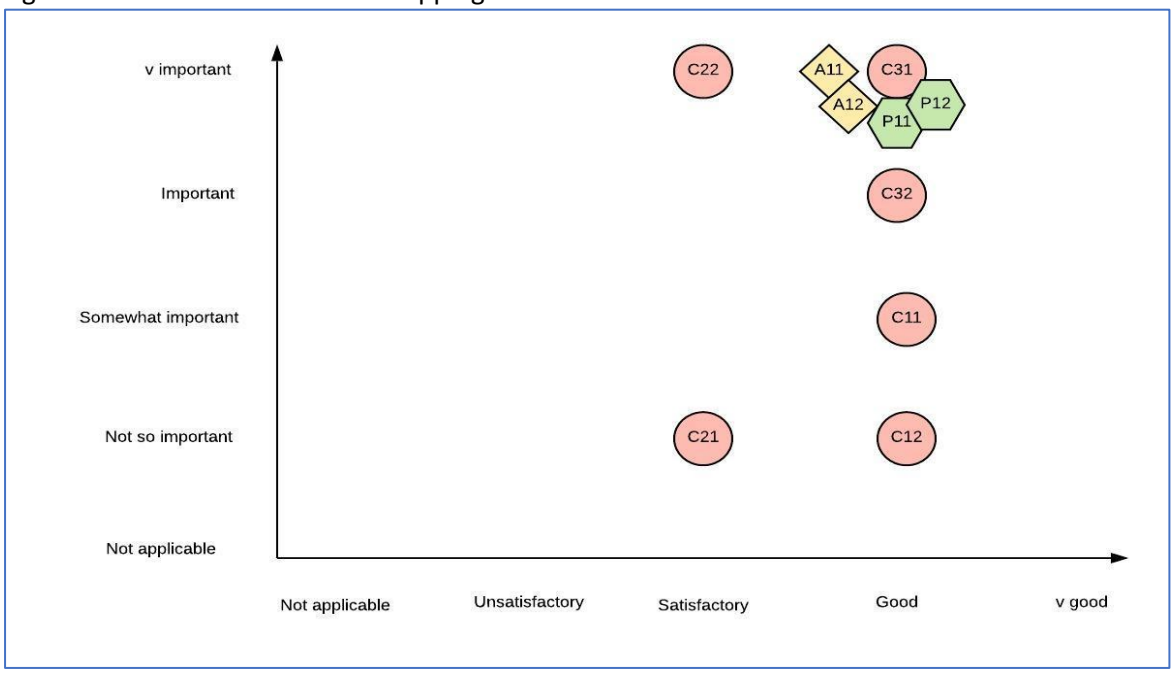

Figure 7: Stakeholder mapping for added value Terminal A

The terminal is delivering above expectations for client 1 in this area; however, this is a reflection of the lower importance rating by the client. Although the terminal meets the expectations of client 2, there is an opportunity to examine the possibility of improving the tailormade service provision for this client. The terminal needs to maintain the performance level for the remaining stakeholders.

1.3 Stakeholder mapping: service quality criteria

Service reliability

Figure 8 shows the stakeholder mapping for the service reliability.

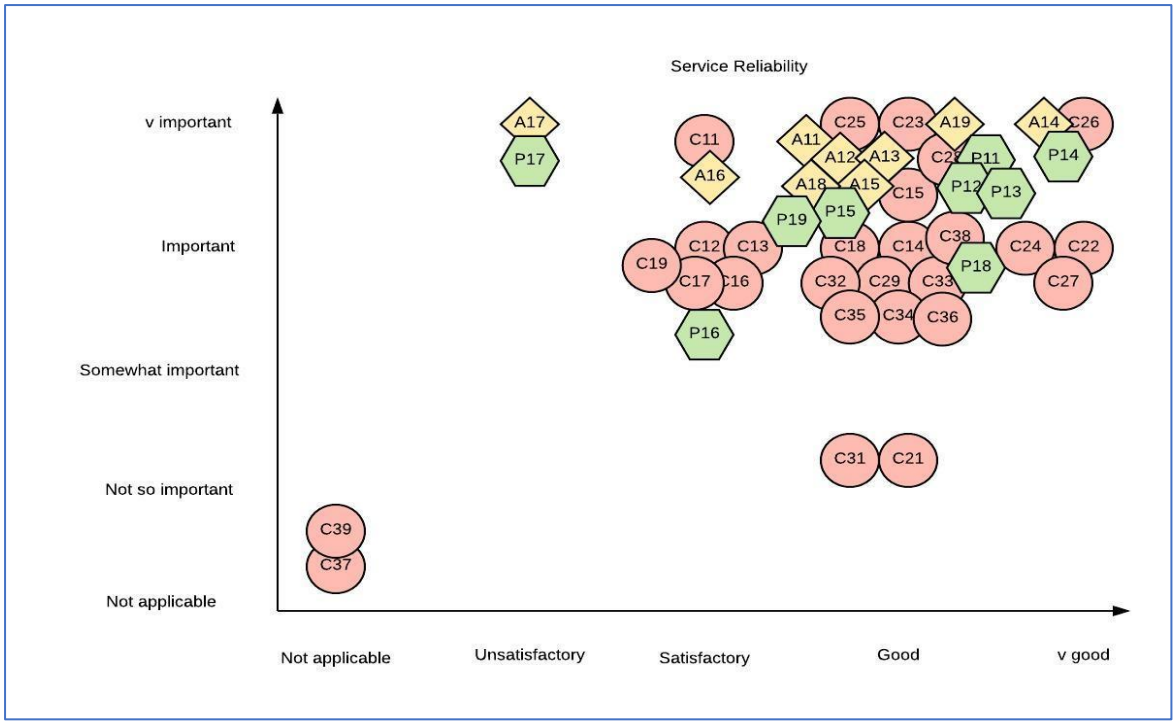

Figure 8- Stakeholder mapping for service reliability Terminal A

Client 1 rated the maintaining cargo quality as very important with the terminal performance as satisfactory. The availability of berths, waiting time for ships at the anchorage, terminal adherence to the load discharge plan, timeliness of marine services and the level of automation were rated as important by client 1 and the terminal performance was satisfactory. The port rated the adherence to the agreed load/discharge window as important and the terminal performance as satisfactory. The agent rated the same criterion as very important and the terminal performance as satisfactory. The terminal needs to ensure that the performance is maintained or improved in above areas.

For the port and the agent timeliness of the marine services offered was very important and the terminal performance was unsatisfactory. The terminal needs to understand the reasons and work to improve the performance rating in this area.

Flexibility

Figure 9 shows the stakeholder mapping for flexibility.

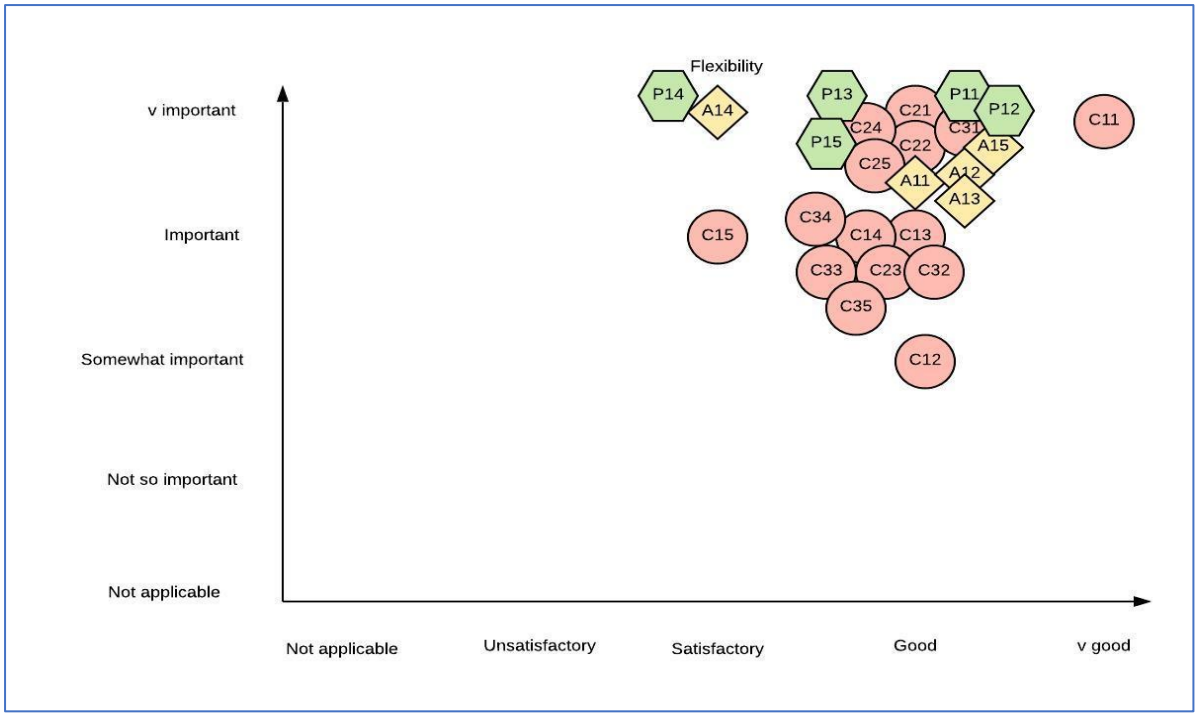

Figure 9: Stakeholder mapping for flexibility Terminal A

Client 1 rated the alignment of terminal objectives to client needs as important and the terminal performance was satisfactory. The port and the agent rated the response from the terminal to unexpected client requirement changes as very important and the performance as satisfactory.

The terminal performance is good for all the other stakeholders in this area with minimum mismatch between the importance and performance criteria. This is a strength that the terminal needs to maintain going forward.

Reporting and documentation

Figure 10 shows the stakeholder mapping for reporting and documentation.

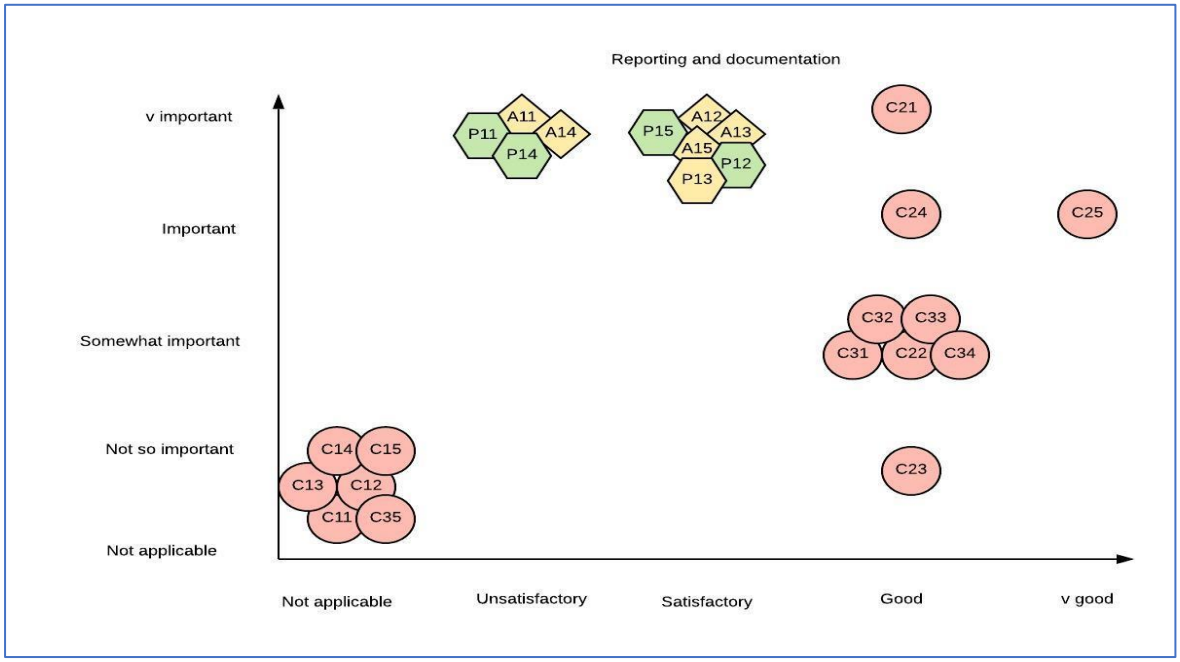

Figure 10- Stakeholder mapping for reporting and documentation

There is a clear distinction between the clients and other stakeholders in their expectations of reporting and documentation and the importance they attach to this area. The port and the agent are the two stakeholders that placed a consistently high importance to this area. The terminal performance was rated as unsatisfactory for the provision of timely reports and access to just in time information by these two stakeholders. The terminal needs to ensure that the performance in these areas is improved.

1.4 Stakeholder mapping: health, safety and environment criteria

Compliance

Figure 11 shows the stakeholder mapping for compliance.

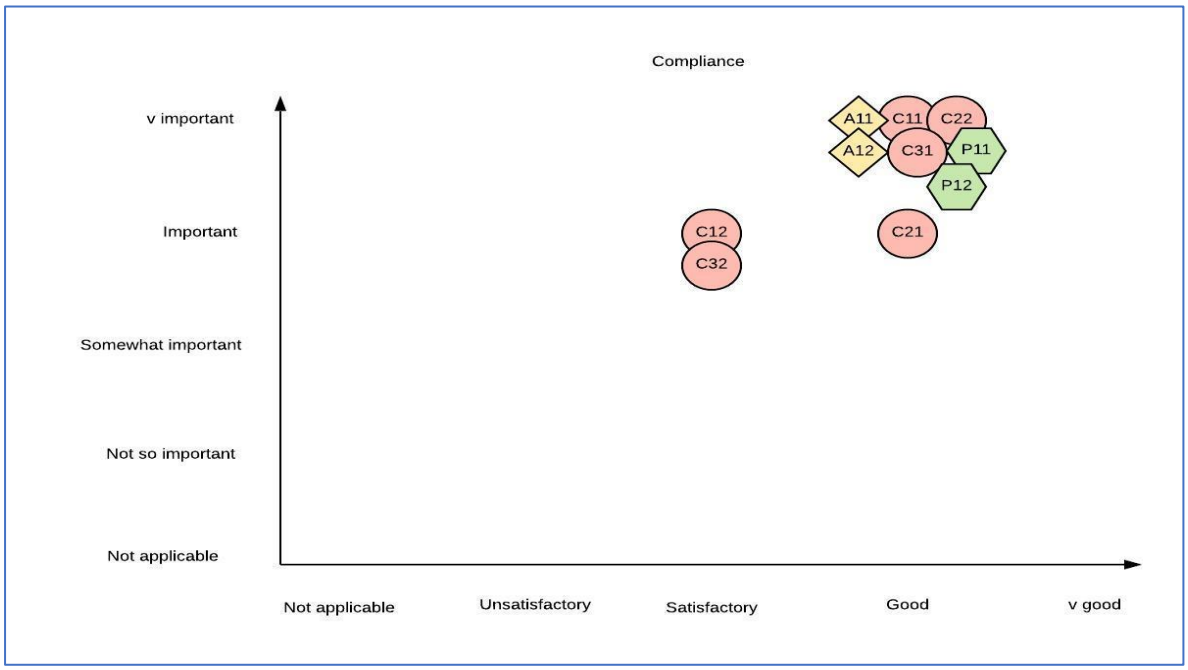

Figure 11- Stakeholder mapping for health, safety and environment Terminal A

Clients 1 and 3 rated the security of terminal premises and facilities as important and the terminal performance as satisfactory. The terminal needs to ensure that the performance is maintained in this area.

Emission control

Figure 12 shows the stakeholder mapping for emission control.

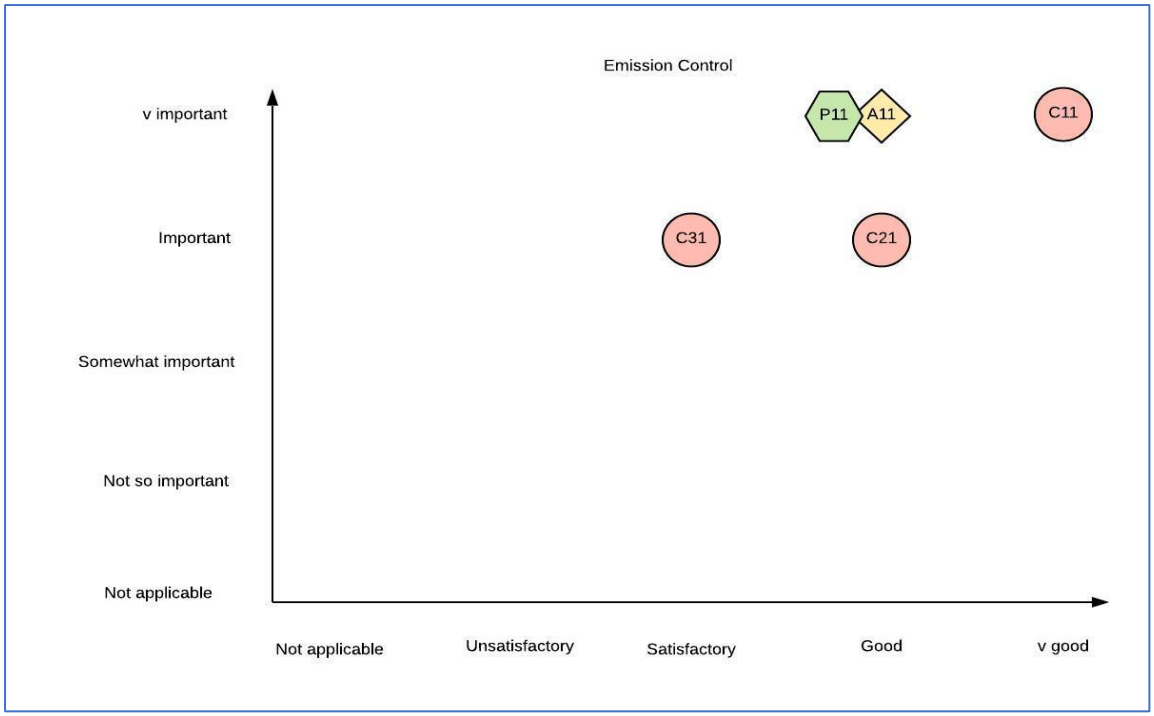

Figure 12- Stakeholder mapping for emission control Terminal A

Client 3 rated the dust and noise emission control as important and the terminal performance was satisfactory. The performance was good or better for the remaining stakeholders.

Track Record

Figure 13 shows the stakeholder mapping for the track record.

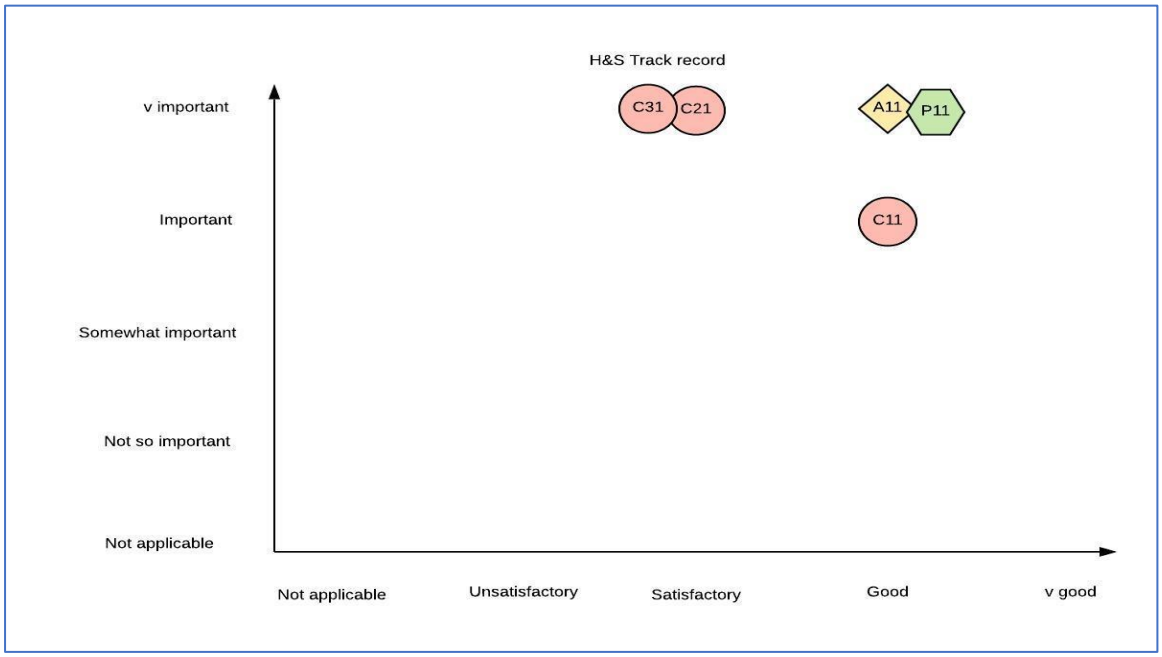

Figure 13: Stakeholder mapping for the track record Terminal A

Clients 2 and 3 rated the level of green energy use as very important and the terminal performance as satisfactory. The terminal needs to engage with above clients to understand the motivation and the requirements in this area.

1.5 Stakeholder mapping: economic criteria

Cost competitiveness and invoicing

Figure 14 shows the stakeholder mapping for cost competitiveness and invoicing

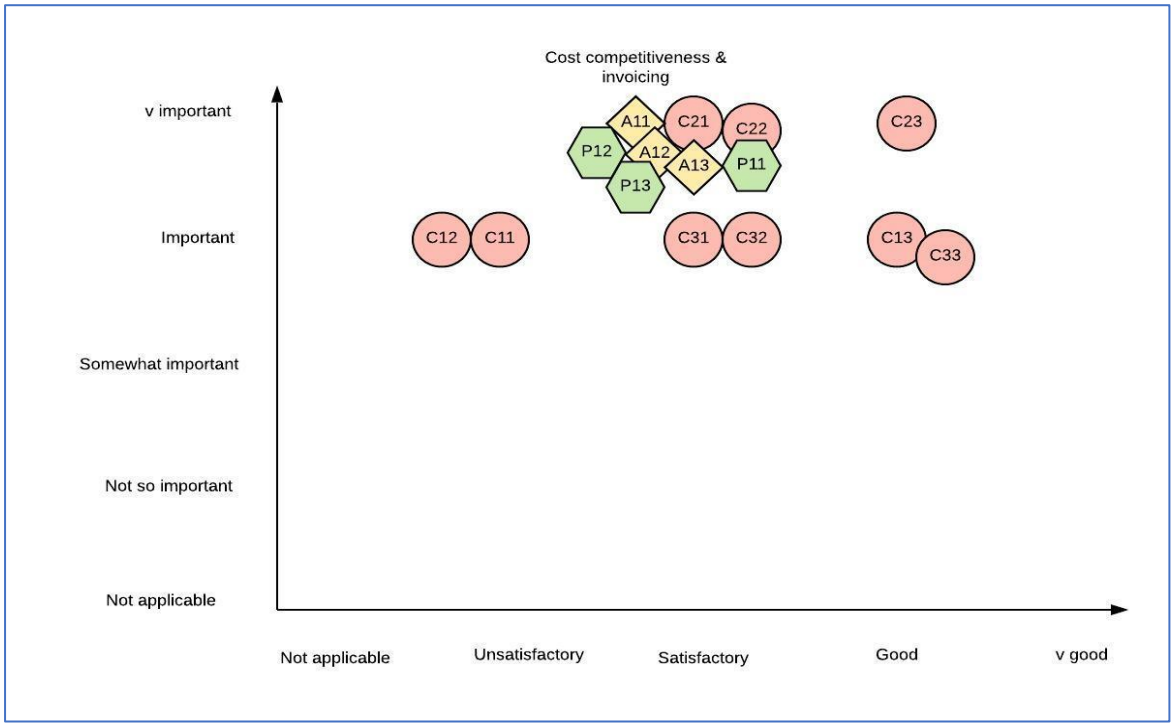

Figure 14 - Stakeholder mapping for cost competitiveness and invoicing Terminal A

All stakeholders rated this area as either important or very important and the terminal performance for most of the stakeholders satisfactory or good. Client 1 rated the cost of services and the cost of logistics services as important and the terminal performance was unsatisfactory. The terminal needs to engage with the client to manage expectations in relation to the performance in this area.

2. Terminal B

Terminal B received completed surveys from six clients, two shareholders, an agent and the port.

2.1 Stakeholder mapping: operational criteria

Productivity

Figure 15 shows the stakeholder mapping for productivity.

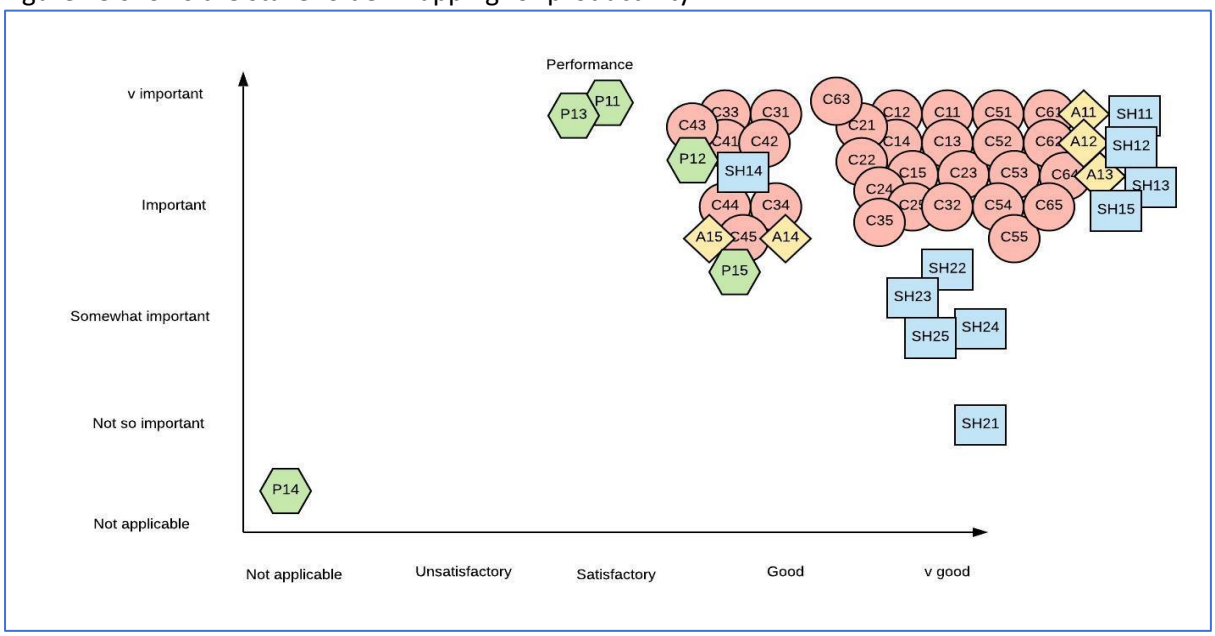

Figure 15- Stakeholder mapping for productivity Terminal B

The analysis shows a strong trend among the stakeholders who rated the performance as either important or very important and the terminal who matched the performance expectations well. The port is the only stakeholder where there was a bigger gap between the importance and the expectations. This was concentrated on two areas related to the loading and discharge productivity and minimising delays during the operations. The terminal should explore these with the port with a view to improving the performance rating.

Cargo Integrity

Figure 16 shows the stakeholder mapping for the cargo integrity.

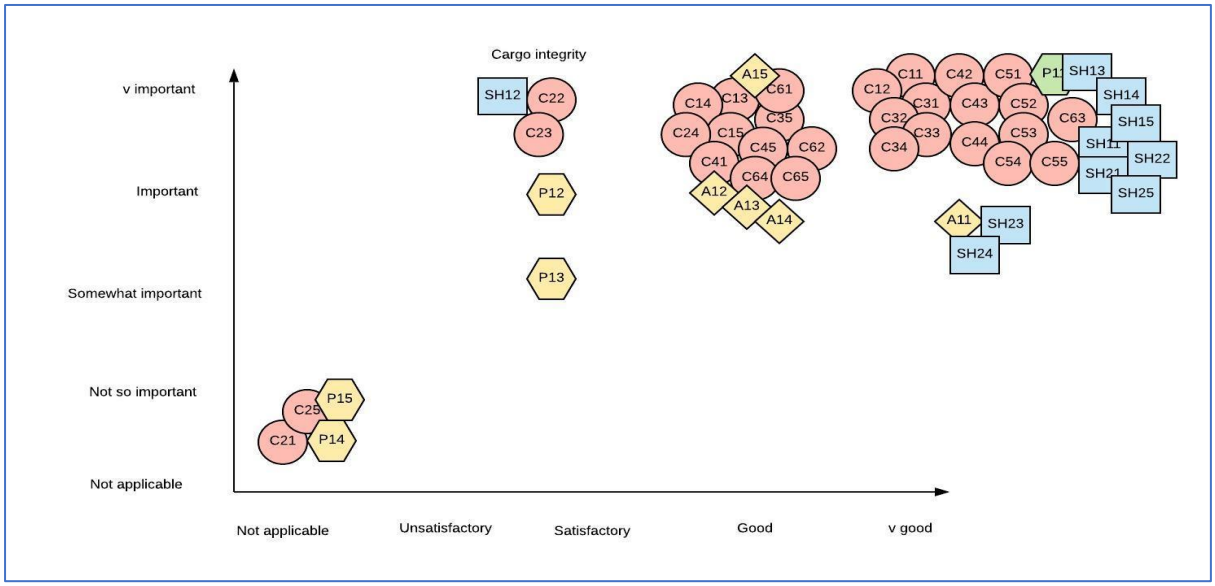

Figure 16- Stakeholder mapping for cargo integrity Terminal B

Client 2 rated the stockpile capacity and minimising cargo damage as very important and the terminal performance as satisfactory. Shareholder 2 rated the stockpile capacity offered as very important and the terminal performance as satisfactory. The port rated the same criterion as important and the terminal performance satisfactory. The port rated the minimising cargo damage during the operations as important and the terminal performance as satisfactory. The terminal should engage with above stakeholders with a view to maintaining and improving the performance in these areas.

Safe Access

Figure 17 shows the stakeholder mapping for safe access.

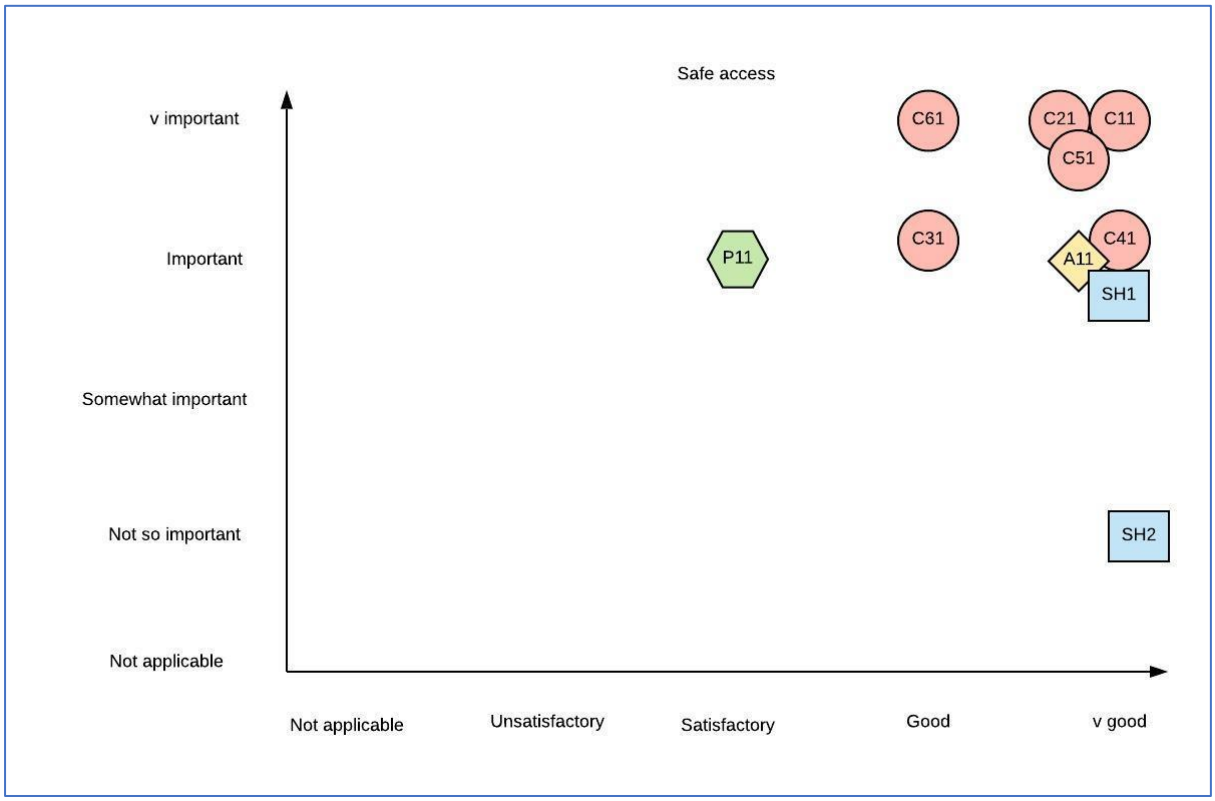

Figure 17- Stakeholder mapping for safe access Terminal B

The terminal met all the clients' performance expectations in this area as well as the other stakeholders except for the port. The port rated safe access as important and the terminal performance as satisfactory, the interpretation of this depends on the split of responsibilities between the terminal and the port for providing safe access to and from the berths. This is an area that the terminal needs to discuss with the port.

2.2 Stakeholder mapping logistical area

Resources

Figure 18 shows the stakeholder mapping for the resources.

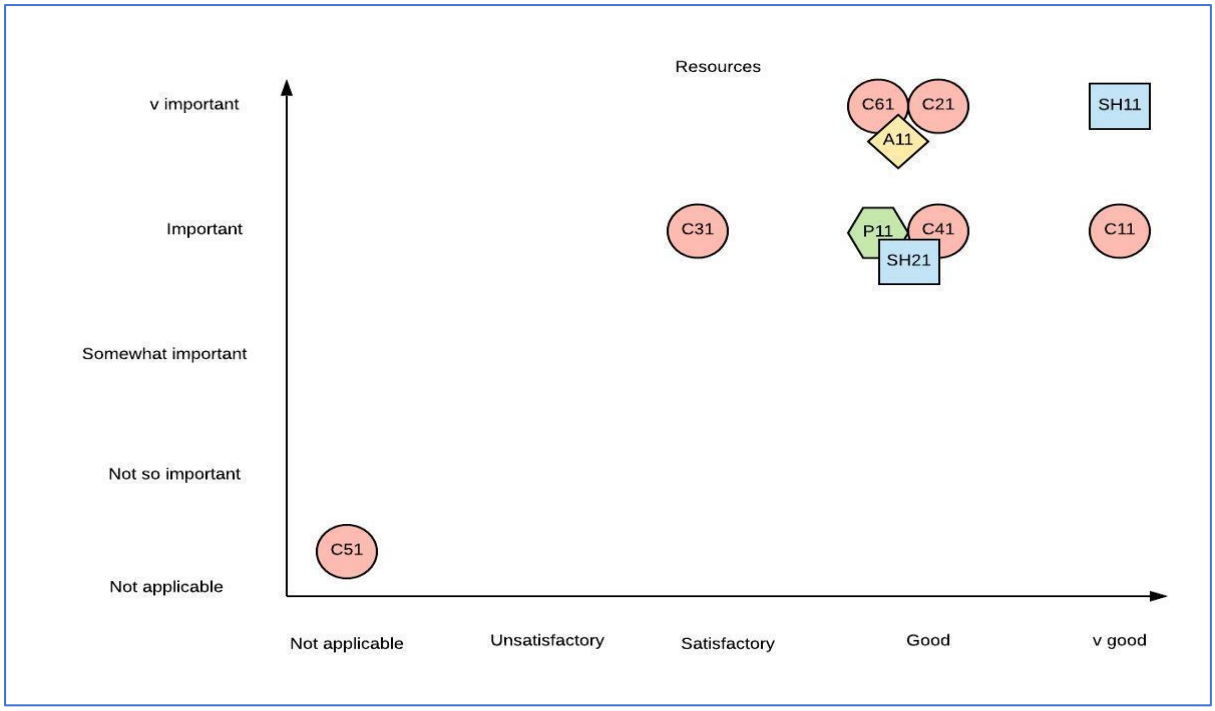

Figure 18- Stakeholder mapping for resources Terminal B

Most of the stakeholders rate this criterion as important or very important and the terminal performance is at a good or very good level. The client 3 rated this as important and the terminal performance as satisfactory. The terminal needs to explore the performance rating further with client 3.

Connectivity

Figure 19 shows the stakeholder mapping for connectivity.

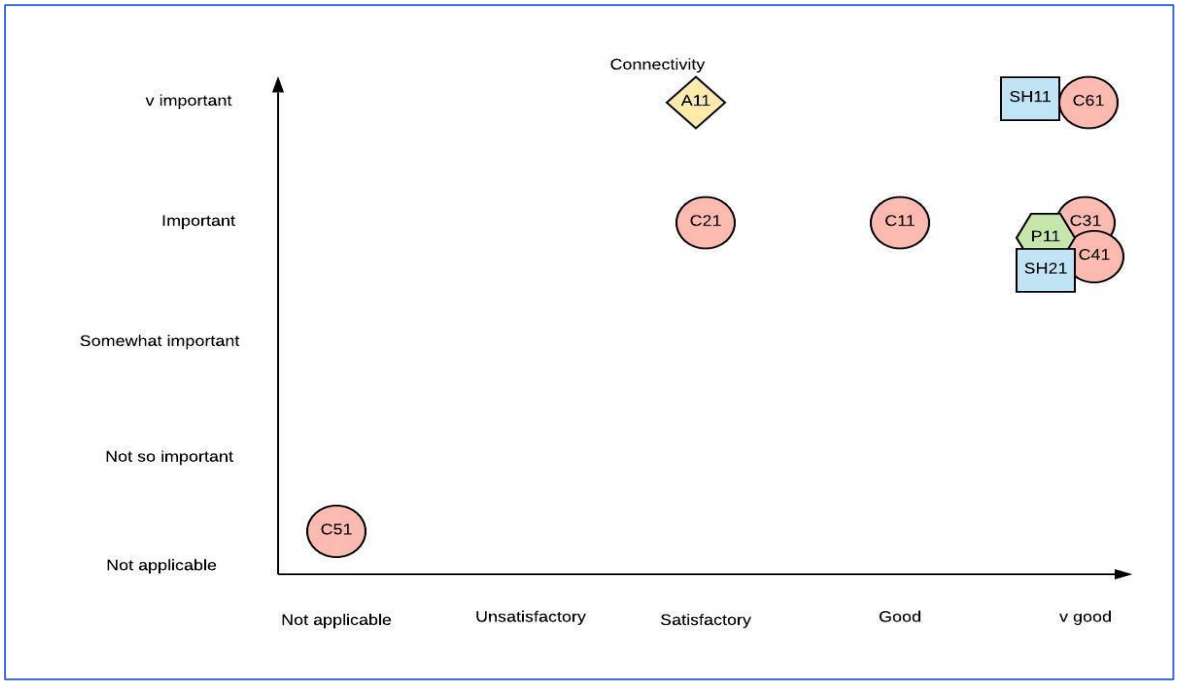

Figure 19- Stakeholder mapping for connectivity Terminal B

The physical connectivity of the terminal was rated as very important or important by all the stakeholders and the terminal performance was very good or good. Client 2 rated it as important, but the terminal performance is satisfactory, this could be due to the logistical arrangements and handling arrangements that applied to that particular client. The agent rated this as very important and the performance as satisfactory. The interaction with the agent and client 2 is the focus point for the terminal in this area.

Capacity

Figure 20 shows the stakeholder mapping for the capacity.

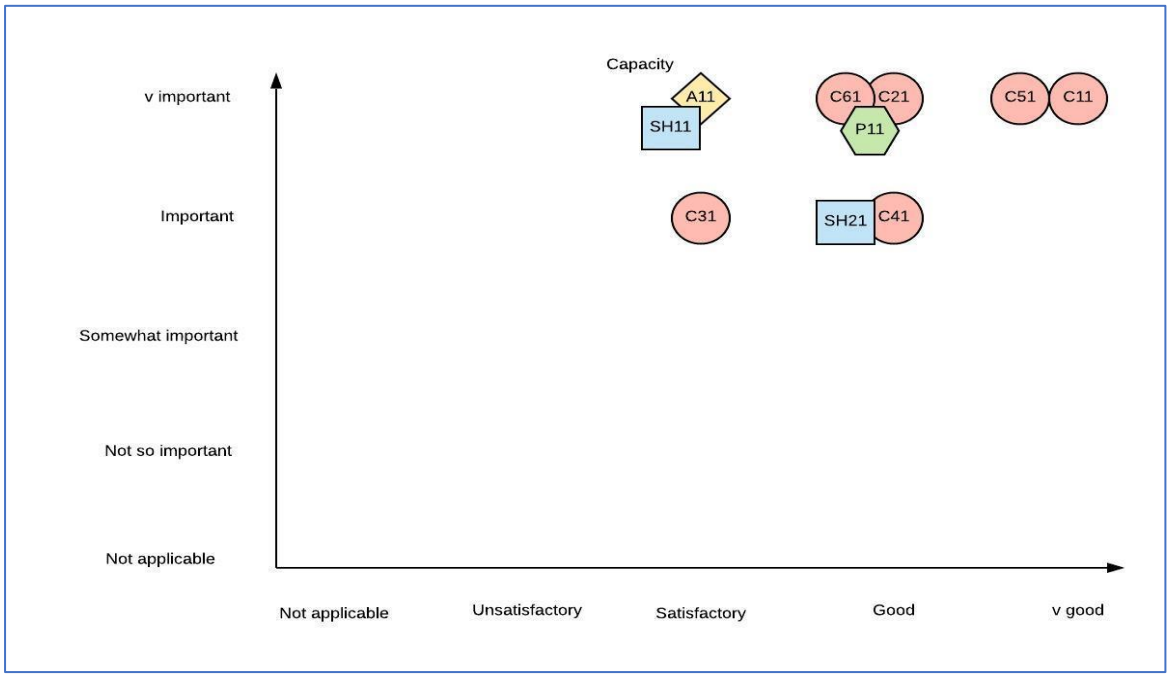

Figure 20: Stakeholder mapping for capacity Terminal B

Client 3 rated the capacity of the terminal to handle throughput as important and the terminal performance as satisfactory. Both the agent and the port authority rated this as very important and the terminal performance as satisfactory. The terminal should ensure that the performance for these stakeholders do not deteriorate further.

Added Value

Figure 21 shows the stakeholder mapping for added value.

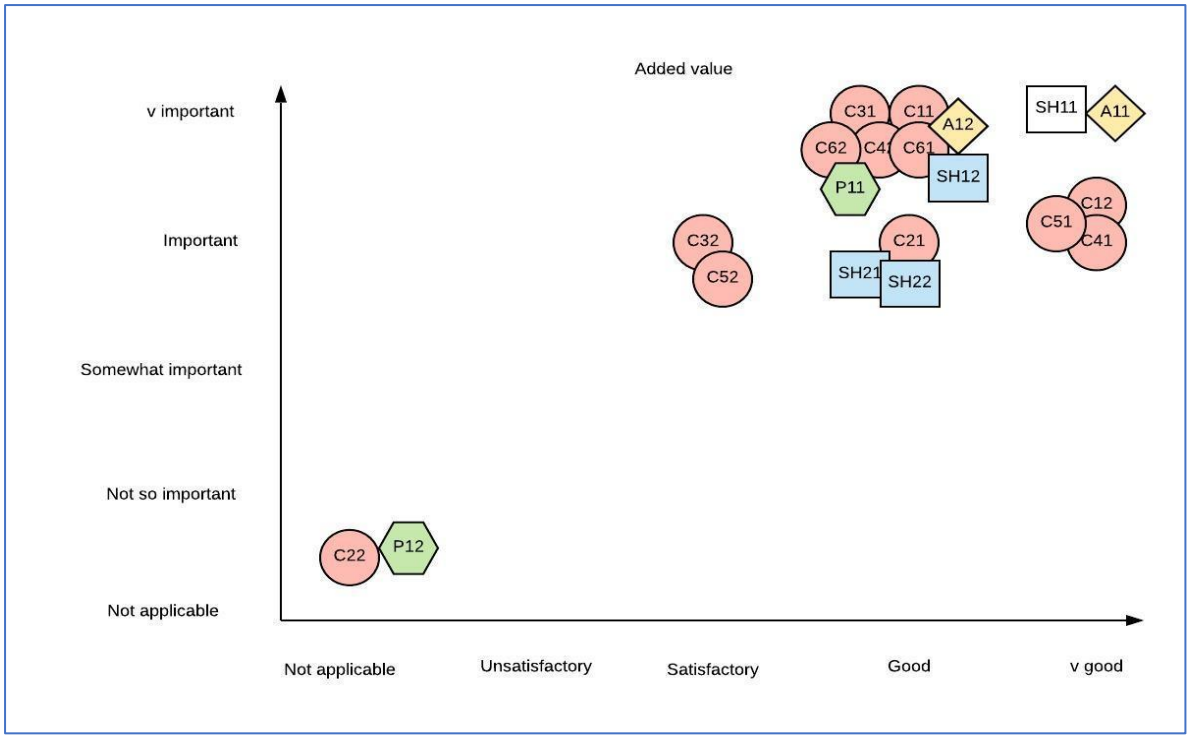

Figure 21- Stakeholder mapping for added value Terminal B

Clients 1 and 2 rated the terminal's ability to develop and deliver tailored services as important and the terminal performance was satisfactory. The terminal needs to ensure that the performance in this area does not deteriorate further for above clients.

2.3 Stakeholder mapping: service quality criteria

Service reliability

Figure 22 shows the stakeholder mapping for the service reliability.

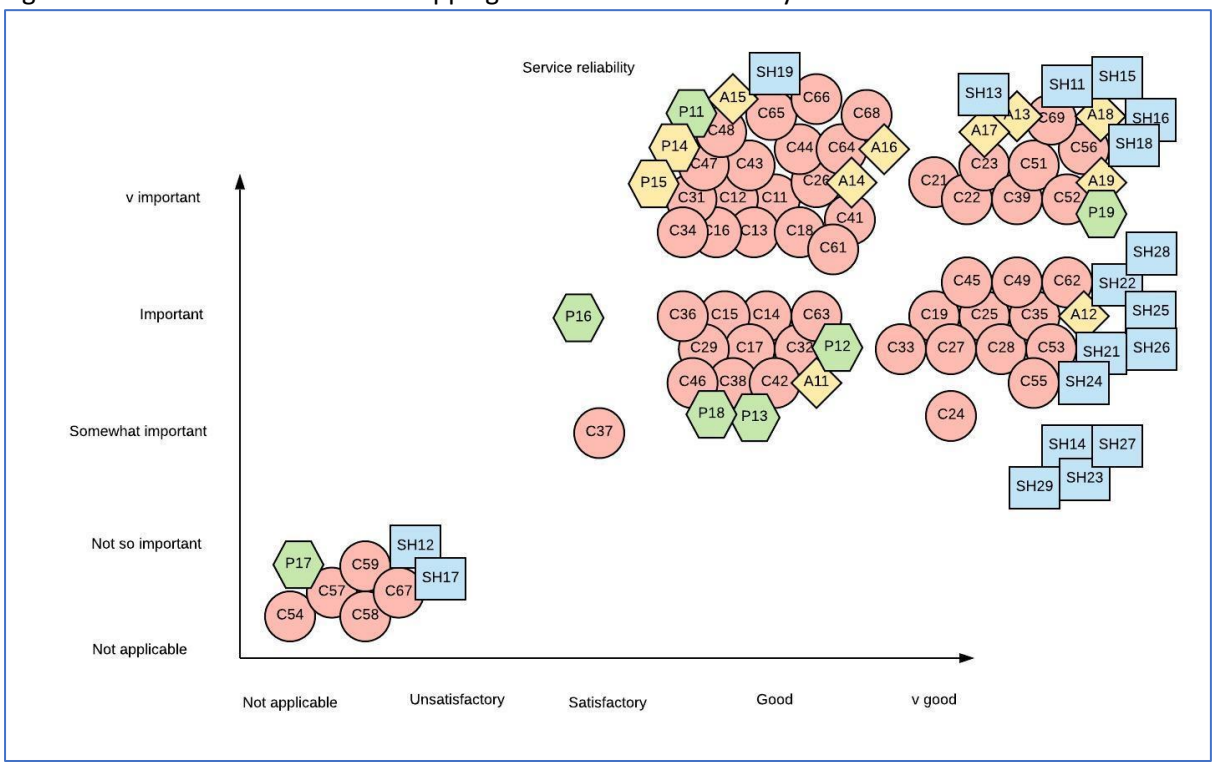

Figure 22- Stakeholder mapping for service reliability Terminal B

The terminal performance in this area is either good or very good for the stakeholders. The port rated the terminal's adherence to agreed load/discharge window as important and the terminal performance as satisfactory. This is the only area where the terminal needs to engage with the port.

Flexibility

Figure 23 shows the stakeholder mapping for flexibility.

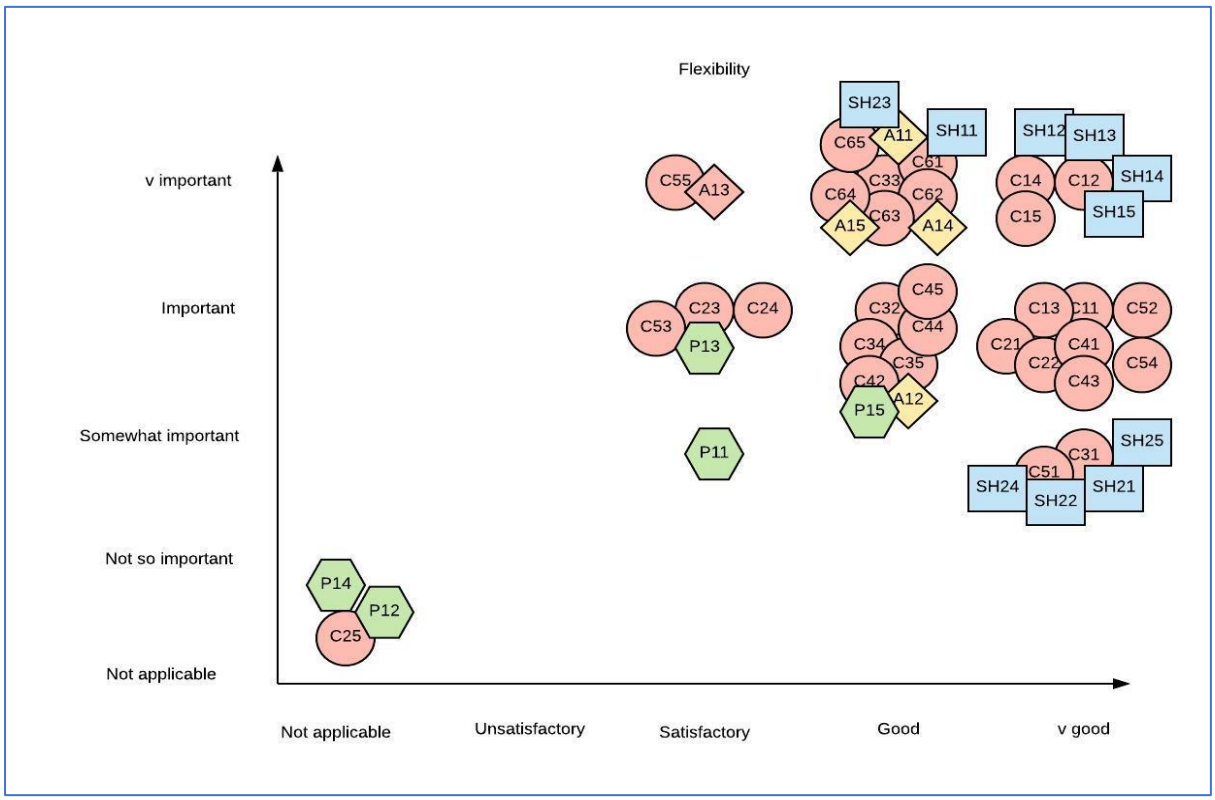

Figure 23- Stakeholder mapping for flexibility Terminal B

The willingness to offer solutions to specific problems encountered during the service delivery of the terminal was rated as important by clients 2, 5 and the port, it was rated very important by the agent, the terminal performance was rate as satisfactory. There is a common thread among the stakeholders above in relation to terminal performance which the terminal needs to investigate further. Client 5 rated the alignment of terminal development and objectives to the client needs as very important and the terminal performance as satisfactory. Client 2 rated the response from the terminal to unexpected client requirement changes as important and the terminal performance was rated as satisfactory. The port needs to engage with the clients to ensure that the performance does not deteriorate further.

Reporting and documentation

Figure 24 shows the stakeholder mapping for reporting and documentation.

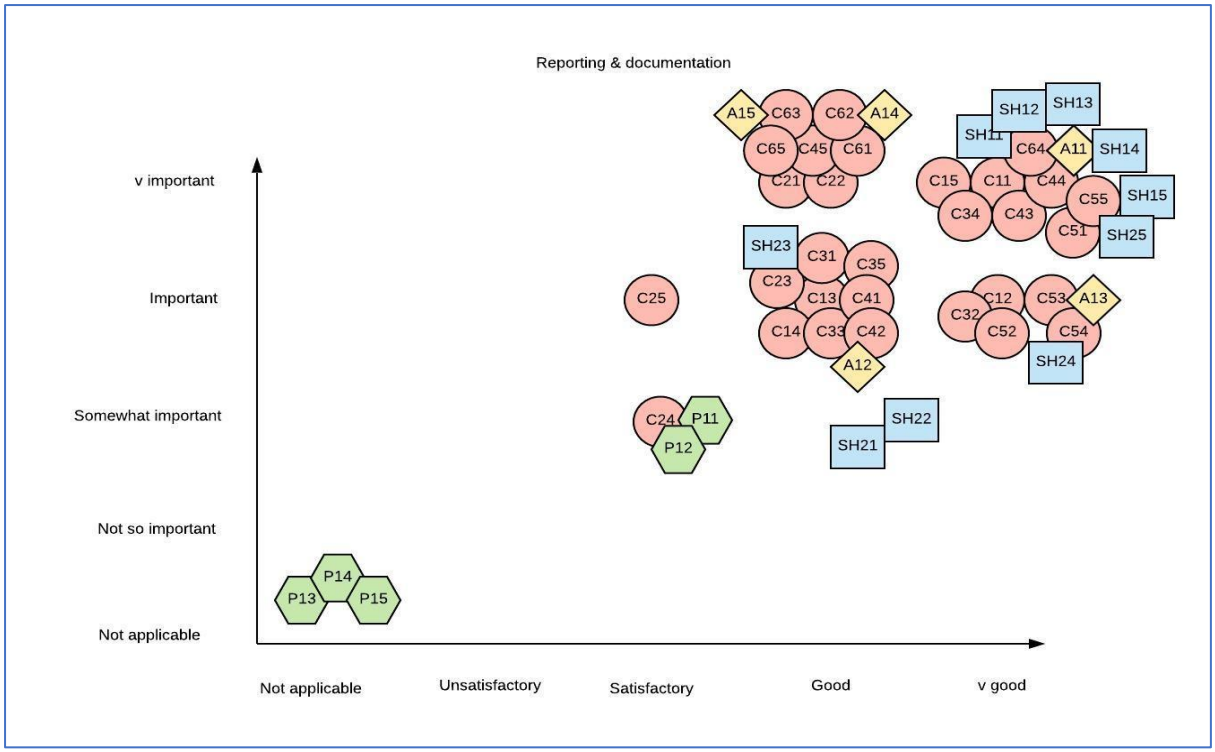

Figure 24- Stakeholder mapping for reporting and documentation Terminal B

The terminal performance either matched the importance rating of the stakeholders or was rated as good or better in this area. Client 2 rated the efficiency of documentary, clearance process as important and the terminal performance was satisfactory.

2.4 Stakeholder mapping: health, safety and environment area

Compliance

Figure 25 shows the stakeholder mapping for compliance.

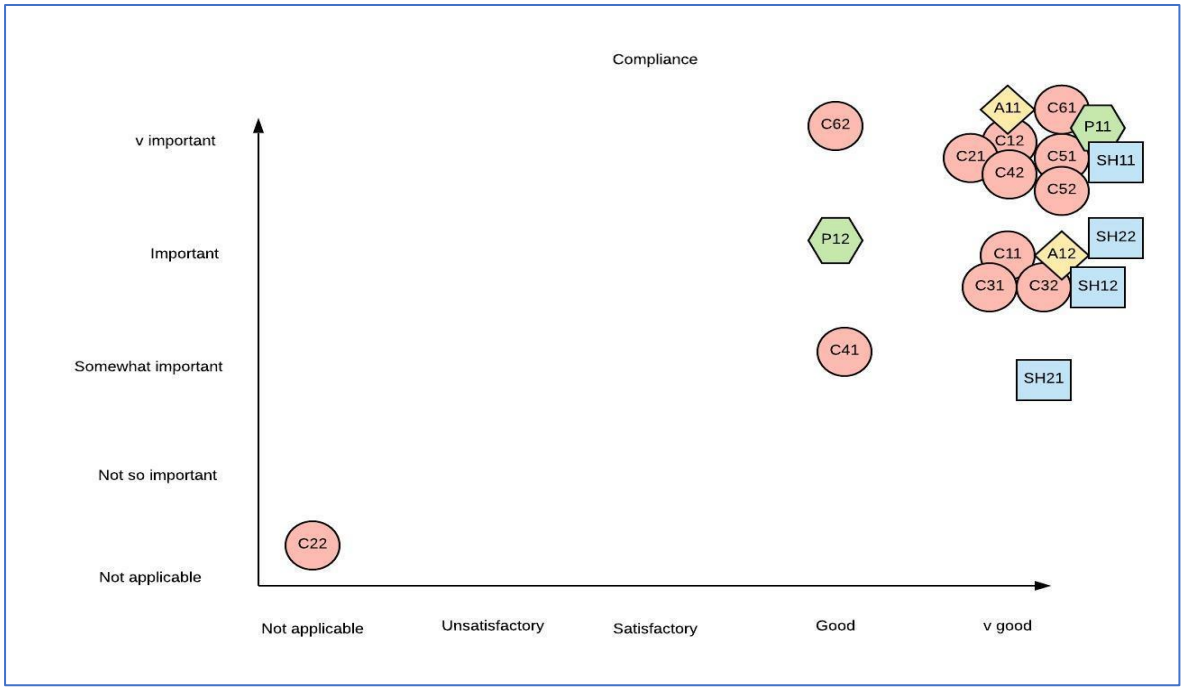

Figure 25- Stakeholder mapping for compliance Terminal B

The terminal had a very good performance rating from all the stakeholders for environmental compliance and security of terminal premises and facilities.

Emission control

Figure 26 shows the stakeholder mapping for the emission control.

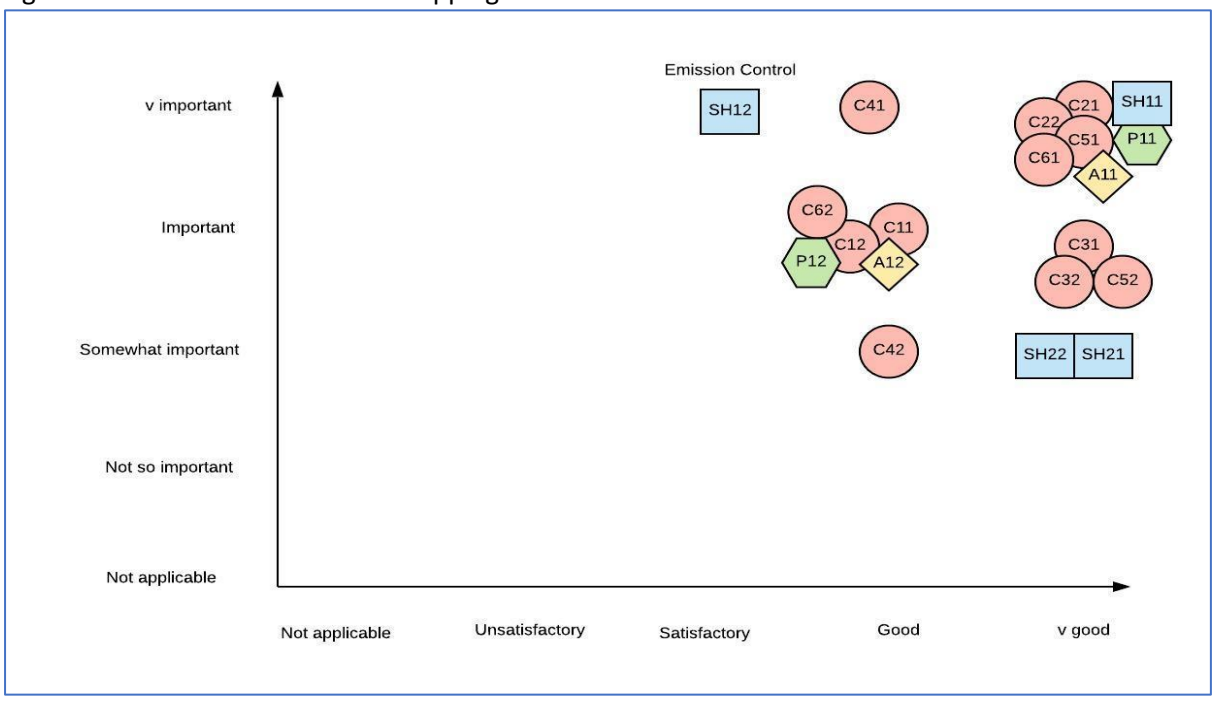

Figure 26- Stakeholder mapping for emission control Terminal B

The stakeholder expectations and the terminal performance in this area matched each other very well. The only exception is the shareholder 1 where the importance rating for the level of green energy use and energy saving practices was very important and the terminal performance was rated as satisfactory. The terminal should engage with this shareholder in order to understand the expectations and work to improve the performance in this area.

Track Record

Figure 27 shows the stakeholder mapping for the track record.

Figure 27- Stakeholder mapping for the truck record Terminal B

The health and safety track record of the terminal matched or exceeded the stakeholder expectations across the board with good or very good performance rating.

2.5 Stakeholder mapping: economic criteria

Figure 28 shows the stakeholder mapping for the economic criteria.

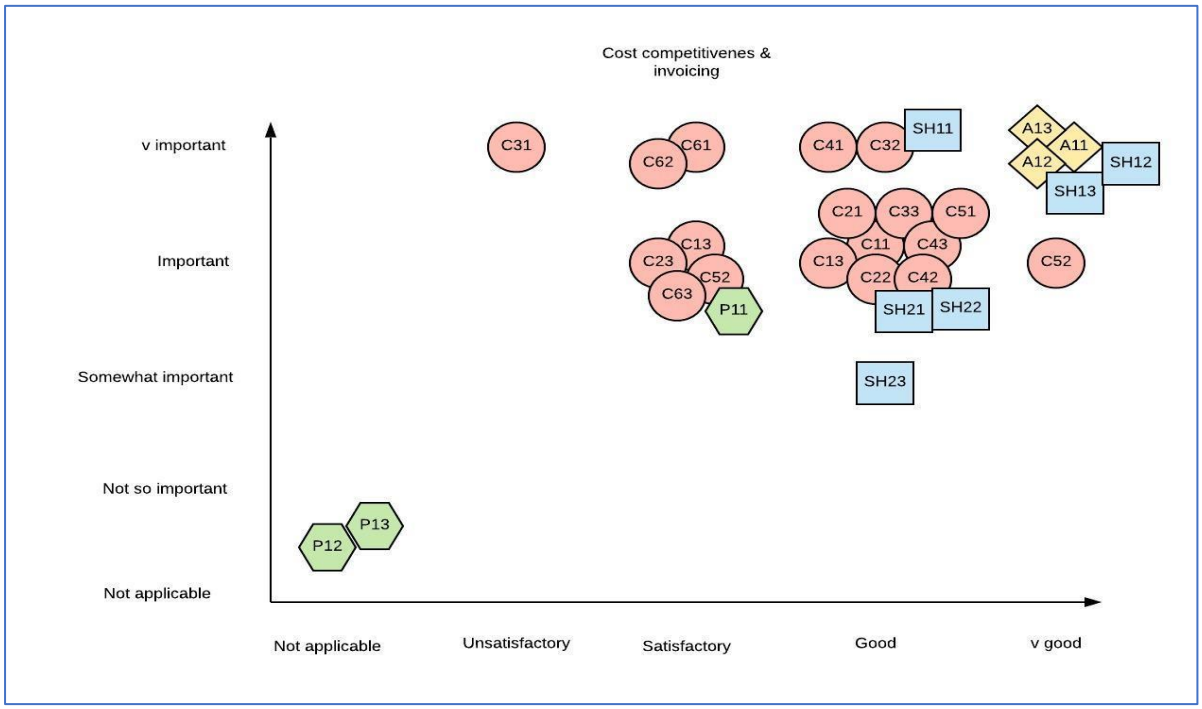

Figure 28- Shareholder mapping economic criteria Terminal B

Clients 1,2 and 6 rated the timeliness and accuracy of invoicing for service charges as important and the terminal performance as satisfactory. Clients 5 and 6 rated the importance of cost of logistics

services offered by the terminal as important and the terminal performance as satisfactory. Client 6 and the port rated the cost of services charged by the terminal as important and the performance as satisfactory.

The biggest performance gap in this area is with client 3 who rated the cost of services charged as very important and the terminal performance as unsatisfactory. The terminal needs to engage with this client to ensure that the performance in this area is improved.

3. Terminal C

The terminal C received completed surveys from five clients, four logistics partners and the port authority.

3.1 Stakeholder mapping: operational criteria

Productivity

The stakeholder mapping for productivity is shown on figure 29.

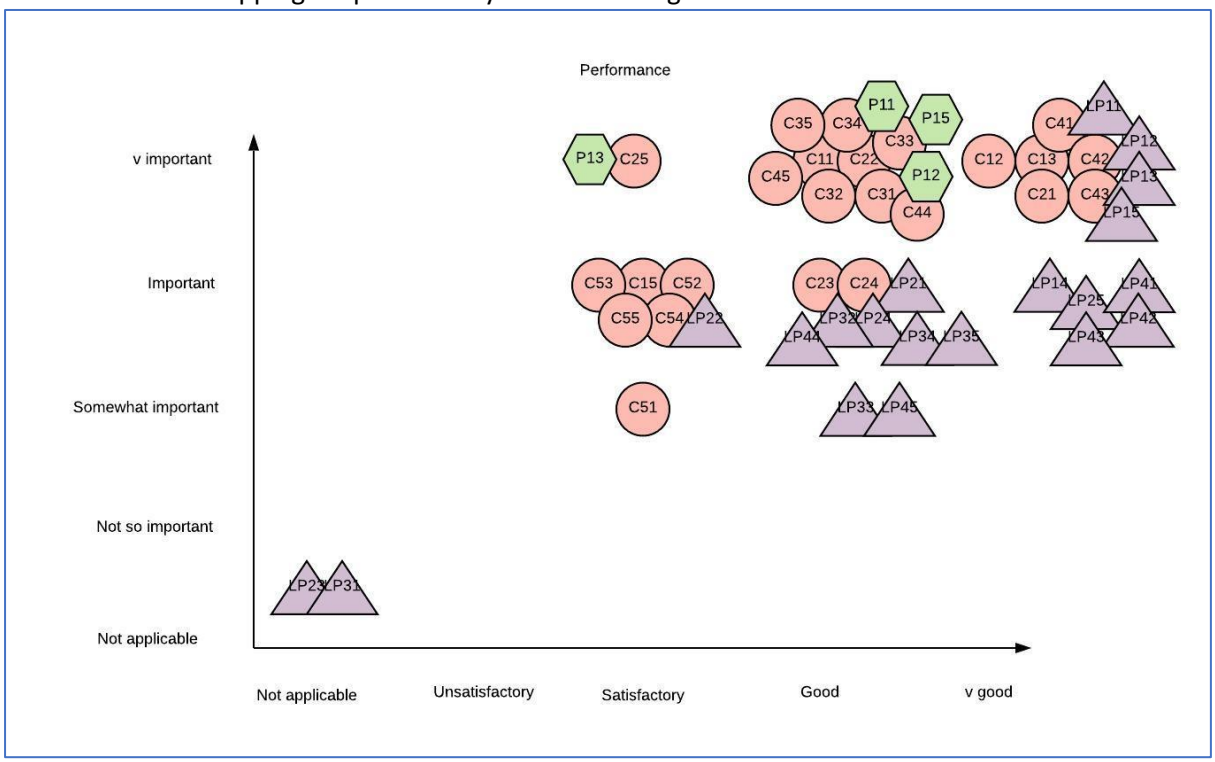

Figure 29- Stakeholder mapping for productivity Terminal C

The port rated minimising delays during the load and discharge operations as very important and the terminal performance as satisfactory. Client 2 rates the reliability of the equipment as very important and the terminal performance as satisfactory. Clients 1 and 5 rated the reliability of equipment as important and the terminal performance as satisfactory. For client 5 apart from the load discharge productivity the remaining criteria in this area were all important and the terminal performance was rated satisfactory. Logistic partner 2 rated the total ship turnaround time as important and the terminal performance as satisfactory. There are some consistent patterns in minimising delays and equipment reliability which the terminal needs to pay attention to.

Cargo Integrity

Figure 30 shows the stakeholder mapping for the cargo integrity.

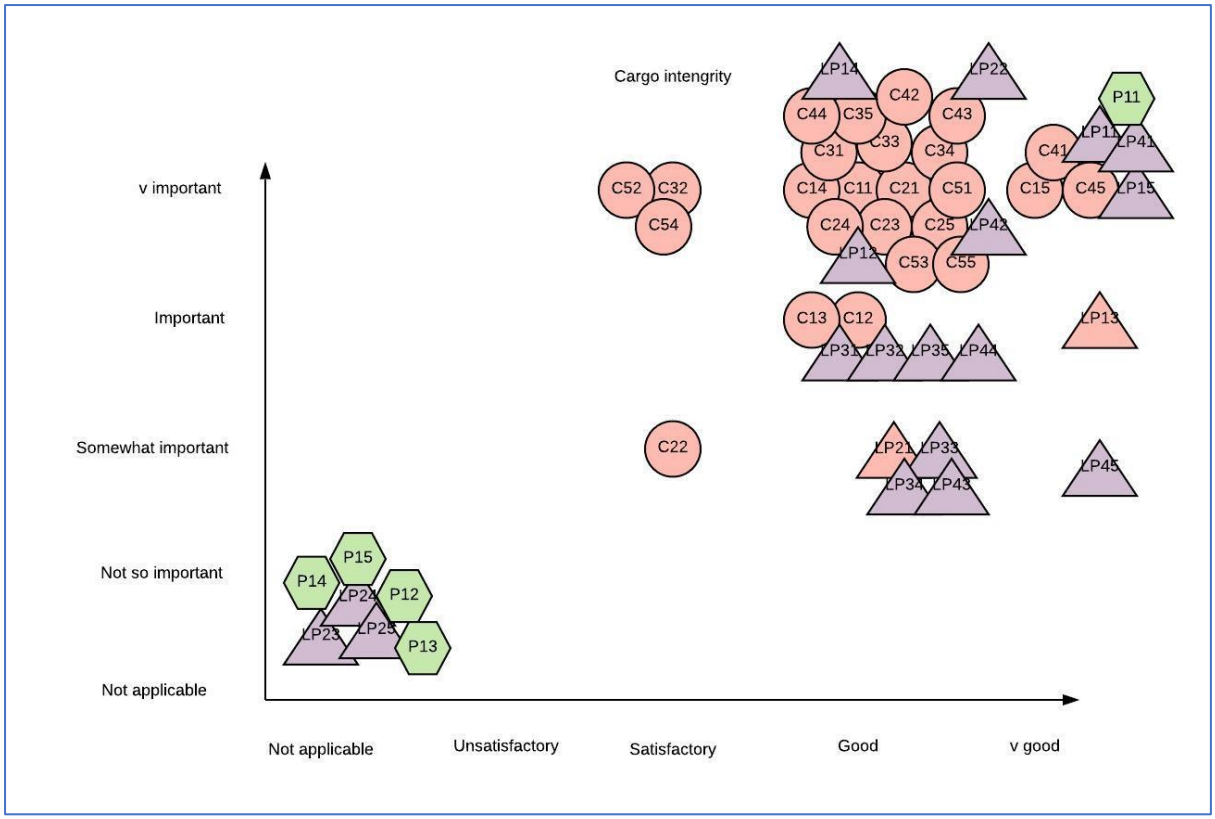

Figure 30- Stakeholder mapping for the cargo integrity Terminal C

Clients 5 and 2 rated the stockpile capacity offered by the terminal as very important and the terminal performance as satisfactory. Client 5 rated the minimising cargo losses during the operation as very important and the terminal performance was satisfactory. The terminal needs to engage with these stakeholders with a view to improving the performance rating in these areas.

Safe Access

Figure 31 shows the stakeholder mapping for safe access.

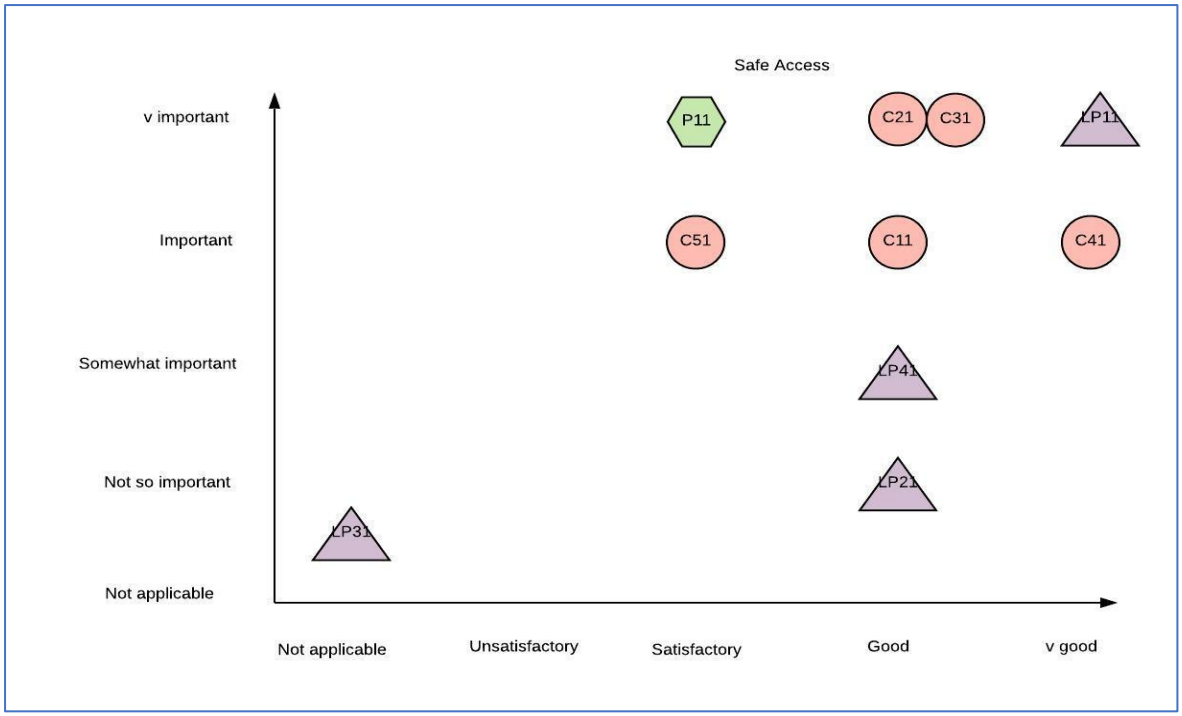

Figure 31- Stakeholder mapping for safe access Terminal C

The port rated the safe access to and from berths as very important and the terminal performance was satisfactory. Client 5 rated the same criterion as important and the terminal performance as satisfactory. The focus for the terminal is to engage with these stakeholders in order to understand the reasons behind their performance rating.

3.2 Stakeholder mapping: logistical criteria

Resources

Figure 32 shows the stakeholder mapping for the resources.

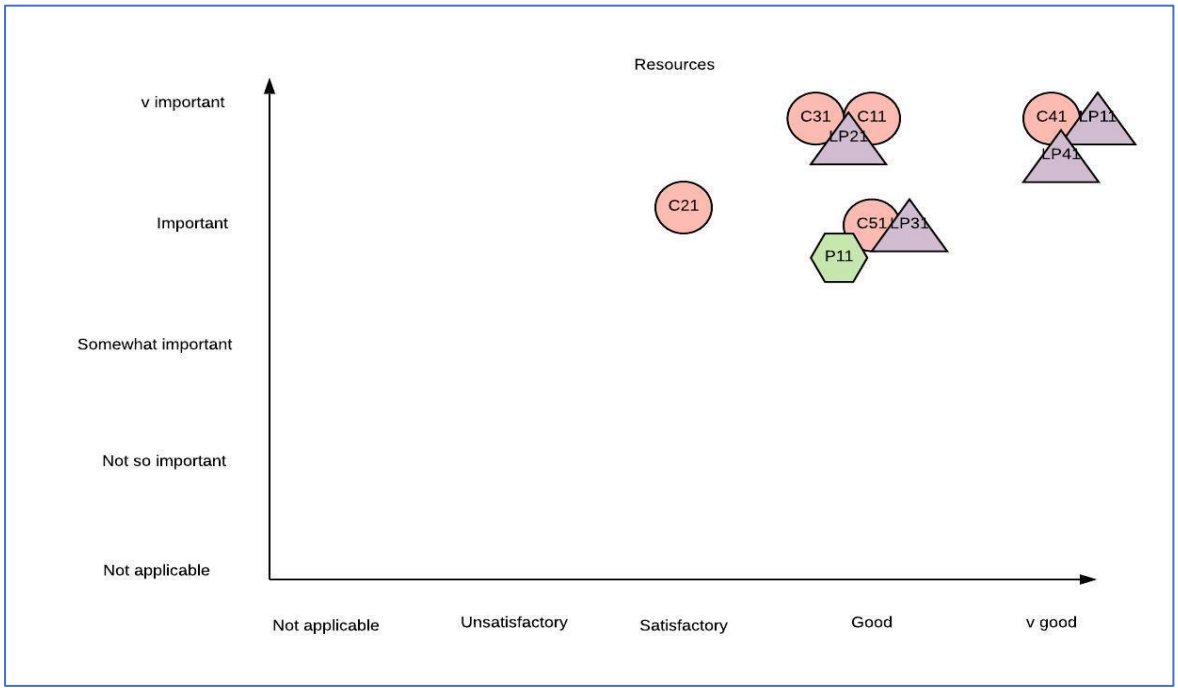

Figure 32- Stakeholder mapping for resources Terminal C

Client 2 rated timely availability of terminal resources as important and the terminals performance as satisfactory. Otherwise the terminal performance was good or very good for the remaining stakeholders.

Connectivity

Figure 33 shows the stakeholder mapping for connectivity.

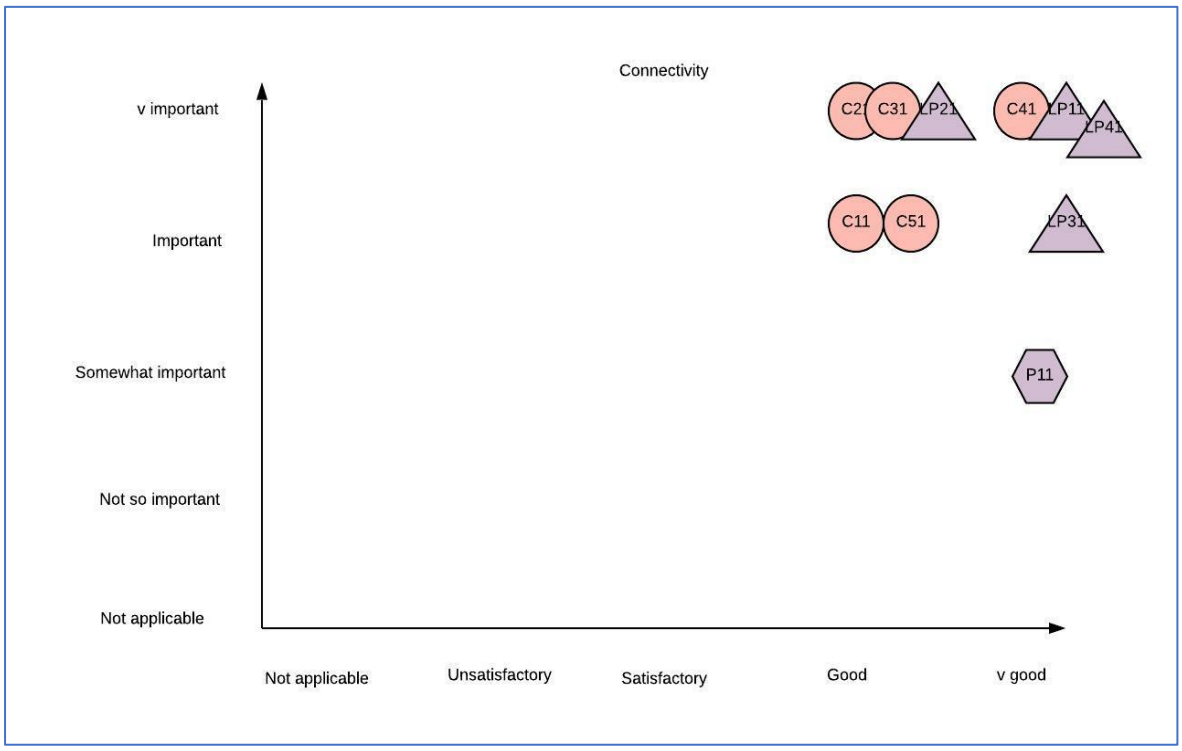

Figure 33- Stakeholder mapping for connectivity Terminal C

The terminal's connectivity was rated as good or very good across the board among the stakeholders.

Capacity

Figure 34 shows the stakeholder mapping for the capacity.

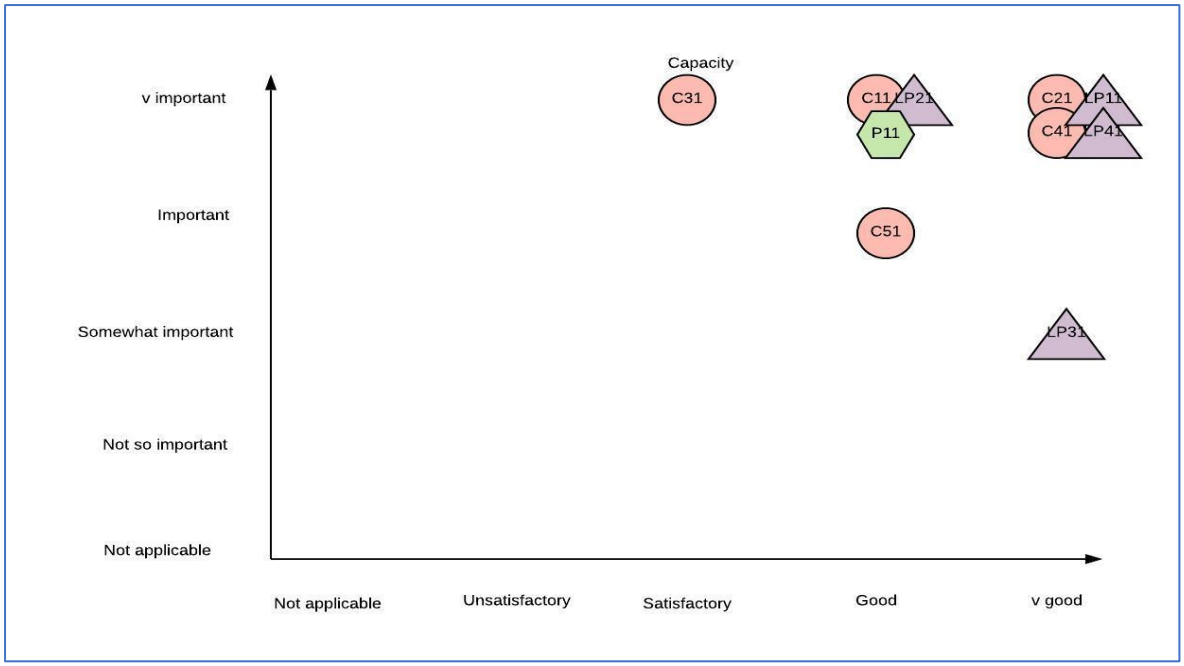

Figure 34- Stakeholder mapping for capacity Terminal C

Client 3 rated the terminal's capacity to handle the throughput required by the client as very important and the terminal performance was satisfactory. The terminal needs to engage with the client to improve the performance rating in this area.

Added Value

Figure 35 shows the stakeholder mapping for the added value.

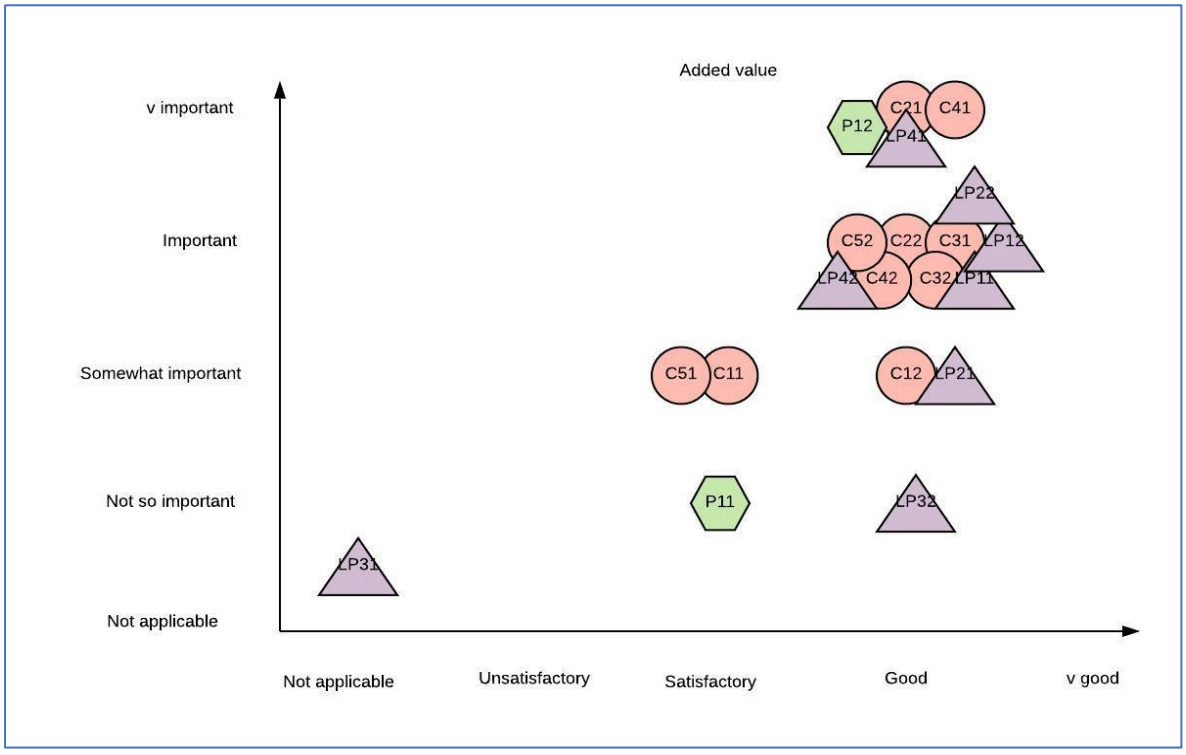

Figure 35- Stakeholder mapping for the added value Terminal C

For most of the stakeholders the terminal performance in this area is good or very good. For clients 5 and 1 the important is somewhat important and the terminal performance is satisfactory therefore the expectations and the performance is matched in this area.

3.3 Stakeholder mapping: service quality criteria

Service reliability

Figure 36 shows the stakeholder mapping for the service reliability.

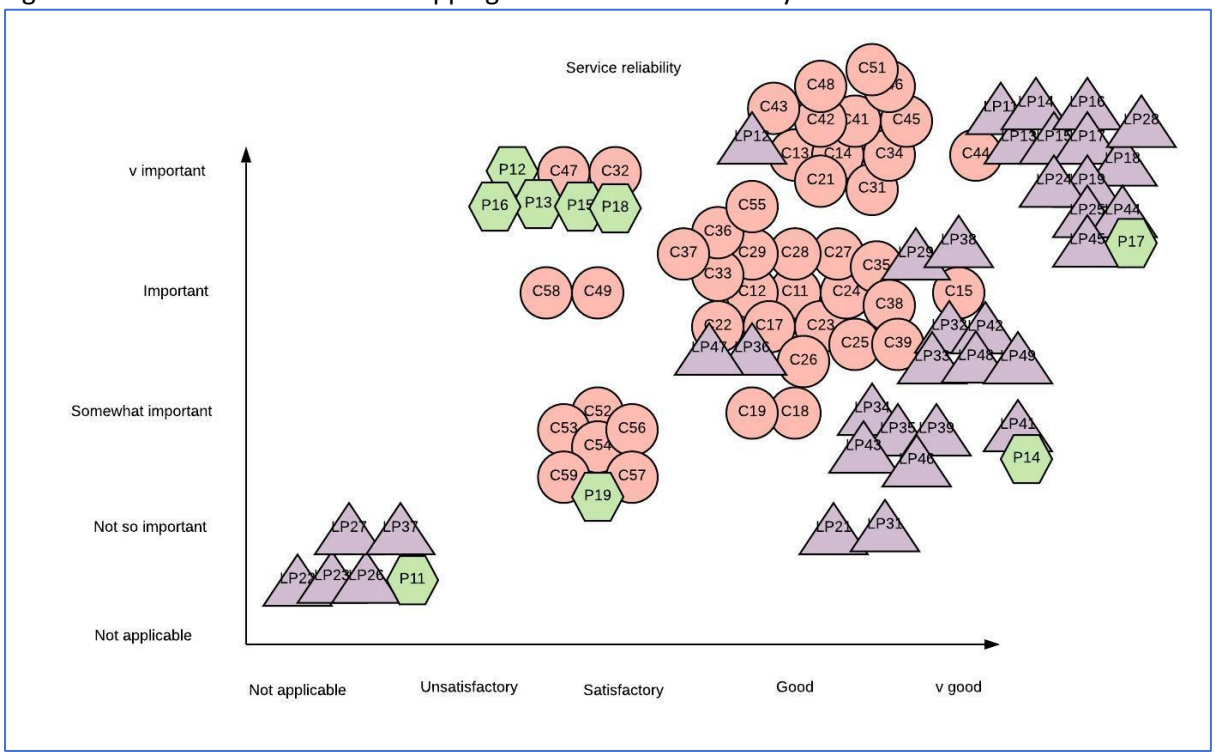

Figure 36- Stakeholder mapping for the service reliability Terminal C

The port rated 5 out of 9 criteria in this area as very important and the terminal performance as satisfactory. There is a significant gap between their expectations and the rating of the terminal performance which the terminal needs to address. Client 4 rated the timeliness of the marine services as very important and the terminal performance as satisfactory. Client 3 rated the availability and allocation of berths as very important and the terminal performance was satisfactory. Client 4 rated the level of automation as important and the terminal performance as satisfactory. Client 5 rated the reliability and consistency of services provided as important and the terminal performance as satisfactory. The terminal needs to address these specific areas with the clients in order to improve the performance rating.

Flexibility

Figure 37 shows the stakeholder mapping for flexibility.

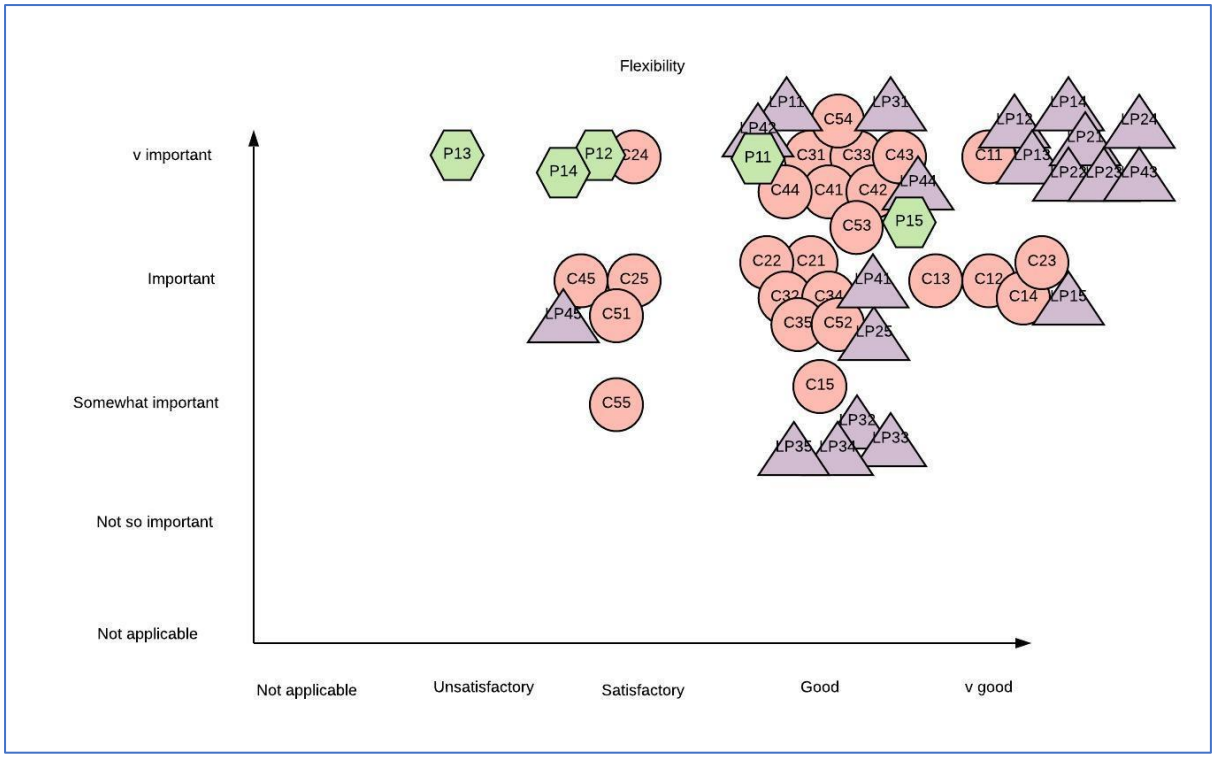

Figure 37- Stakeholder mapping for flexibility Terminal C

The port rated the willingness to offer solutions to problems encountered during the service delivery as very important and the terminal performance as unsatisfactory. There is a major gap between the expectations and the performance for this criterion which the terminal needs to address with the port. The port and client 2 rated the response from terminal to unexpected client requirement changes as very important and the terminal performance was satisfactory. The port rated the availability and allocation of berths as very important and the terminal performance as satisfactory. Client 5 rated the communication and coordination of planned maintenance and shut downs as important and the terminal performance as satisfactory. Clients 4,5 and the port rated the alignment of terminal development and objectives to client needs as important and the terminal performance as satisfactory. There is a pattern for this criterion which the terminal needs to address with the stakeholders.

Reporting and documentation

Figure 38 shows the stakeholder mapping for reporting and documentation.

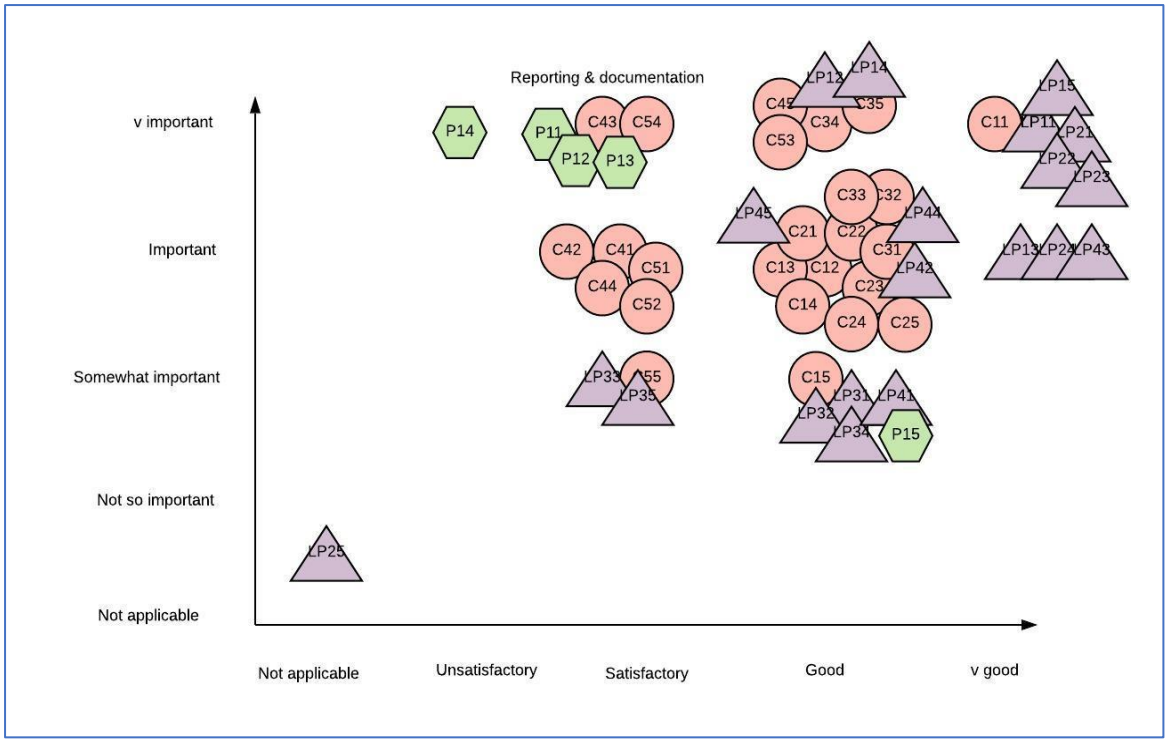

Figure 38- Stakeholder mapping for reporting and documentation Terminal C

The port is a stakeholder which stands out in this area where it rated 4 out of 5 criteria as important and the terminal performance as satisfactory except access to just in time information where the port performance was unsatisfactory. The terminal needs to address the performance rating with the port in order to improve. Clients 4 and 5 rated the provision of timely and correct format reports as important and the terminal performance was satisfactory. Client 4 rated the access to just in time information as important and the terminal performance as satisfactory. Client 5 rated the access to just in time information as very important and the terminal performance as satisfactory. Client 4 rated the frequency of information updates as very important and the terminal performance as satisfactory. There is a pattern of consistent gap in this area which the terminal needs to address.

3.4 Stakeholder mapping: health, safety and environment criteria

Compliance

Figure 39 shows the stakeholder mapping for compliance.

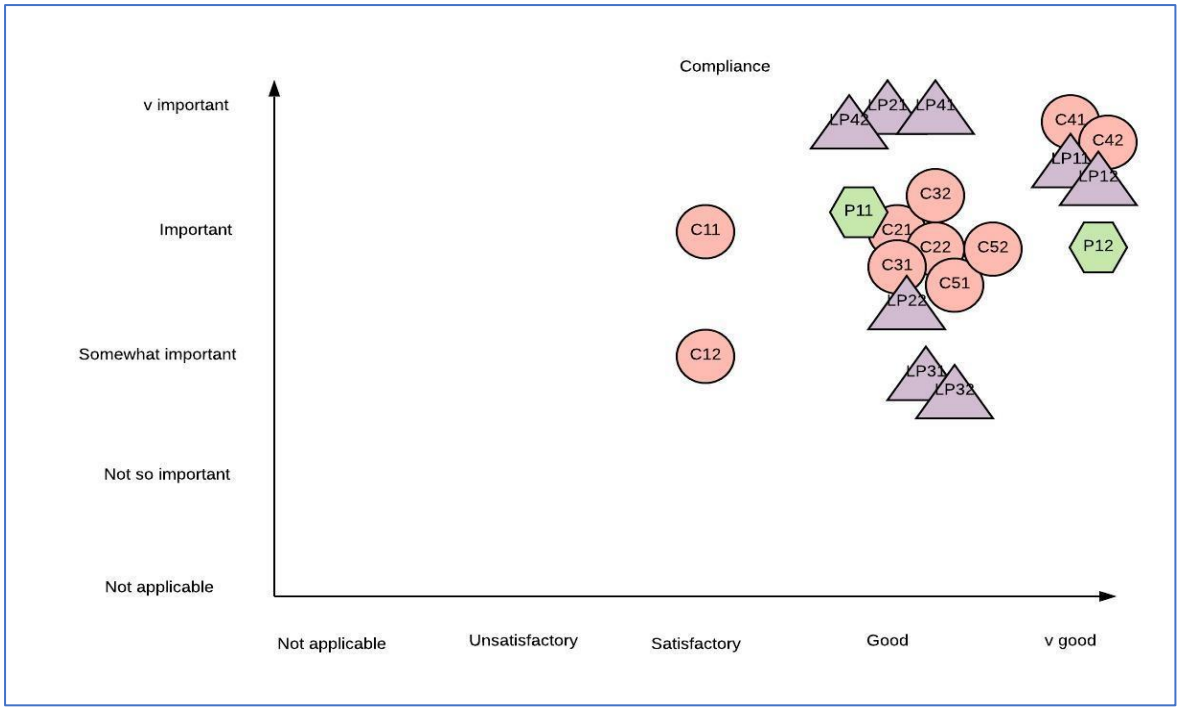

Figure 39- Stakeholder mapping for compliance Terminal C

Client 1 rated the environmental compliance of the terminal as important and the performance satisfactory. The terminal performance was good or better for the rest of the stakeholders.

Emission control

Figure 40 shows the stakeholder mapping for the emission control.

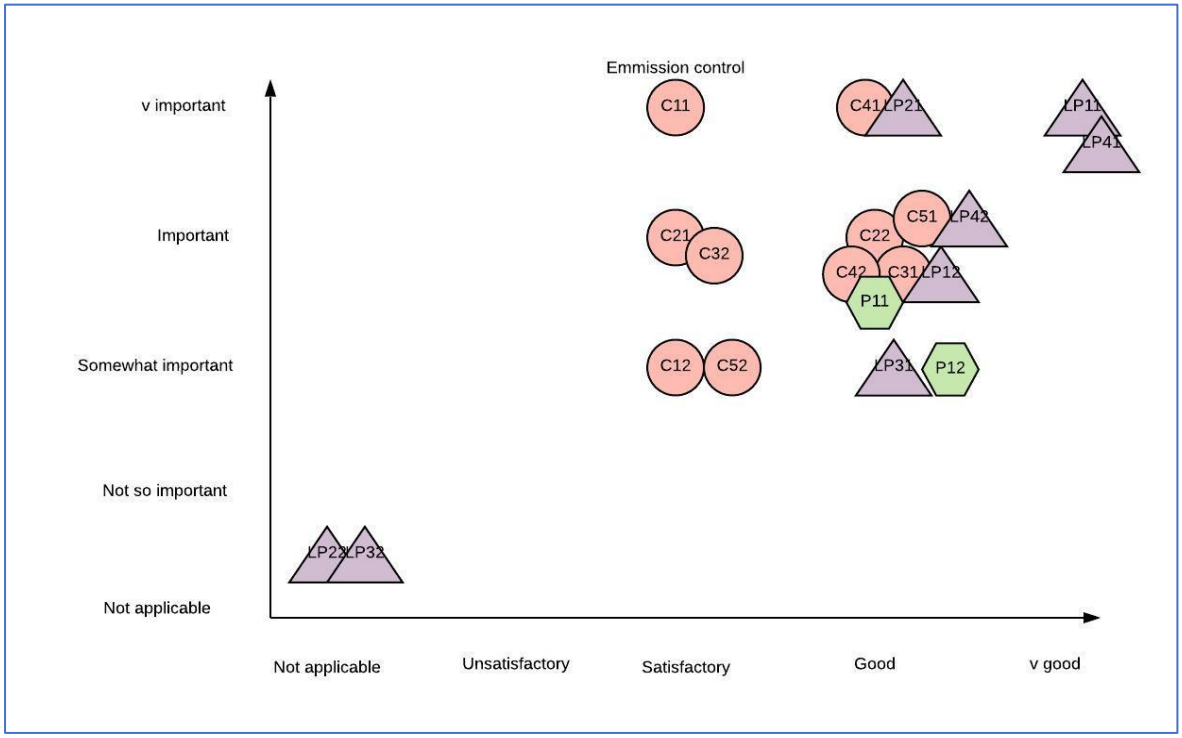

Figure 40- Stakeholder mapping for emission control Terminal C

Client 1 rated the control of dust and noise emissions as very important and the terminal performance as satisfactory. Client 2 rated the same criterion as important and the terminal performance as satisfactory. Client 3 rated the level of green energy use as important and the terminals performance as satisfactory. The terminal needs to communicate with the clients to improve performance in these areas.

Track Record

Figure 41 shows the stakeholder mapping for the track record.

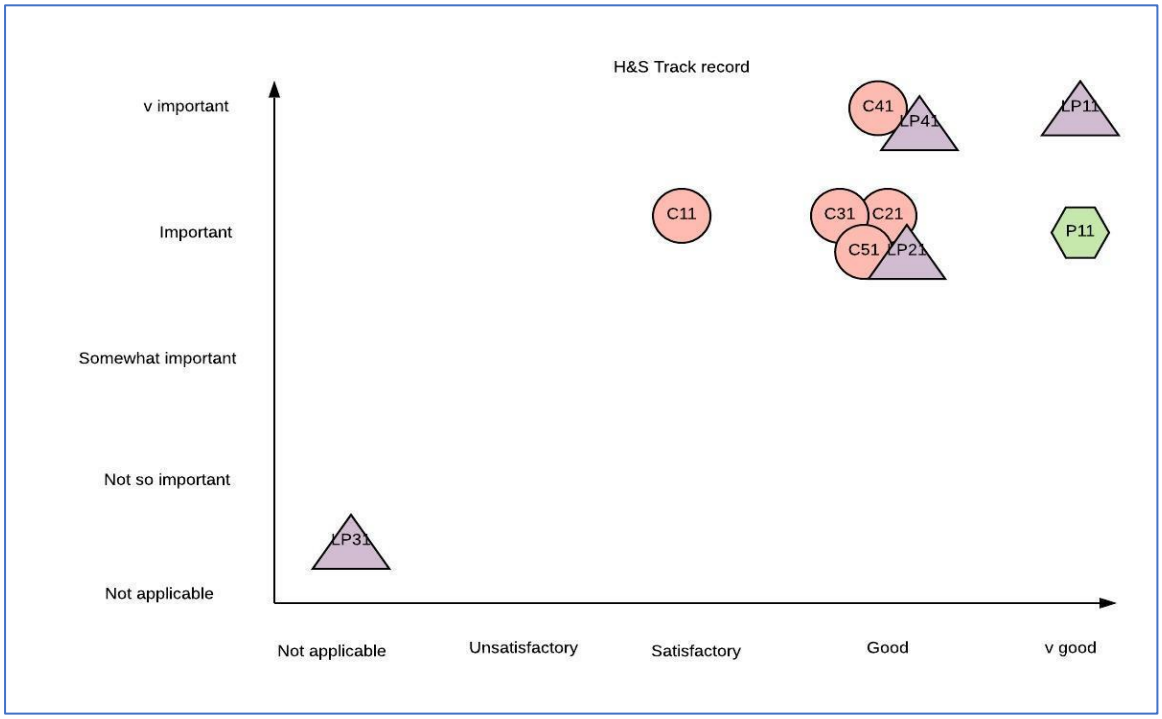

Figure 41- Stakeholder mapping for the track record Terminal C

Client 1 rated the health and safety track record as important and the terminal performance as satisfactory. For the remainder of the stakeholders the terminal performance was either good or very good.

3.5 Stakeholder mapping: economic criteria

Cost competitiveness and invoicing

Figure 42 shows the stakeholder mapping for cost competitiveness and invoicing.

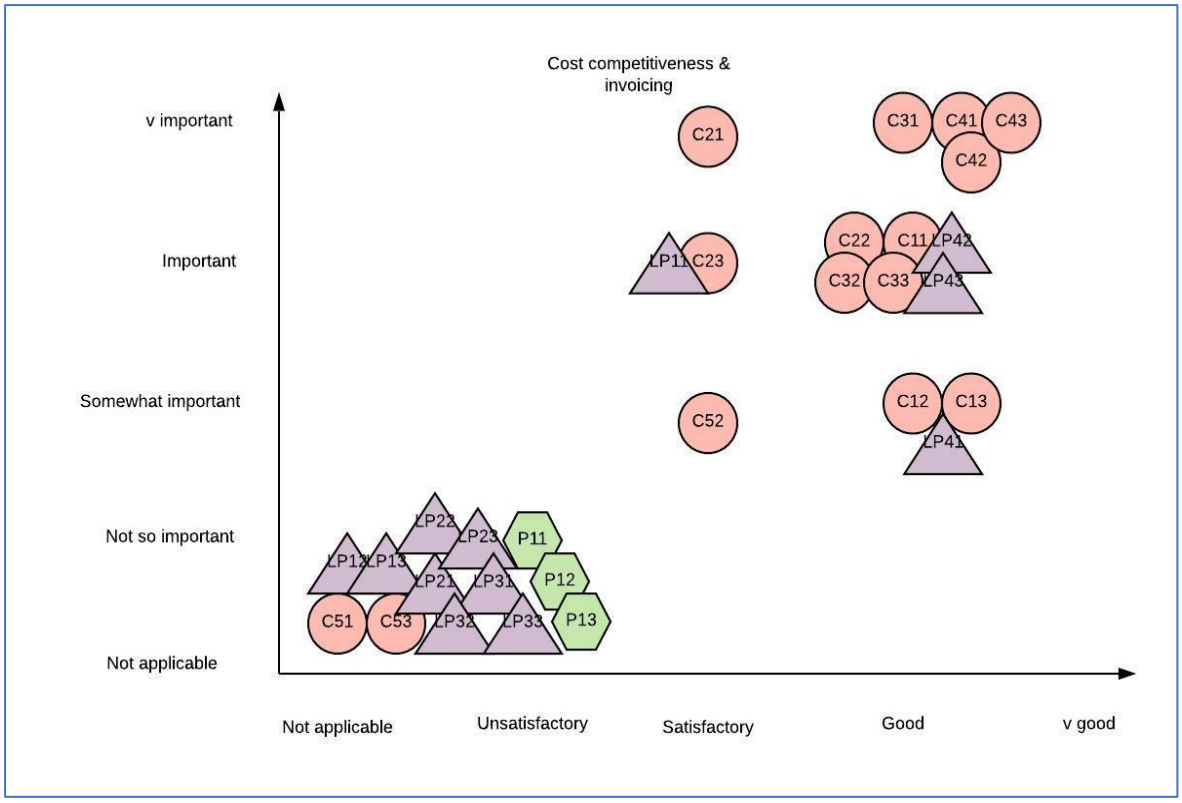

Figure 42- Stakeholder mapping for cost competitiveness and invoicing

The terminal has a good balance in this area with most of the stakeholders. Client two rated the cost of services charged as very important and the terminal performance as satisfactory. This is the only client with a significant gap between the expectations and performance in this area.

4. Terminal D

Terminal D received three completed survey from three different stakeholders; client, logistics partner and the port authority.

4.1 Stakeholder mapping: operational criteria

Productivity

Stakeholder mapping for the productivity is shown in Figure 43.

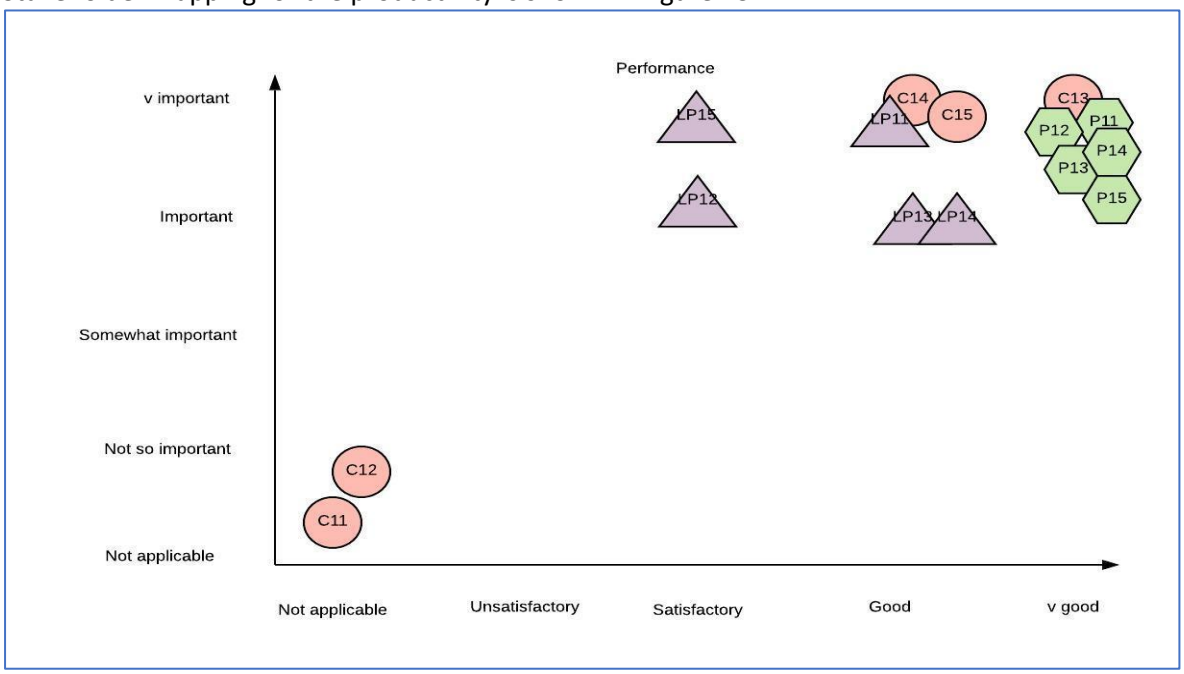

Figure 43- Stakeholder mapping for productivity Terminal D

The logistic partner rated the ship turnaround time as important and the terminal performance as satisfactory. The logistic partner rated the reliability of the equipment as very important and the terminal performance as satisfactory. The terminal needs to liaise with the logistic partner in these areas to improve the performance rating.

Cargo integrity

Figure 44 shows the stakeholder mapping for cargo integrity.

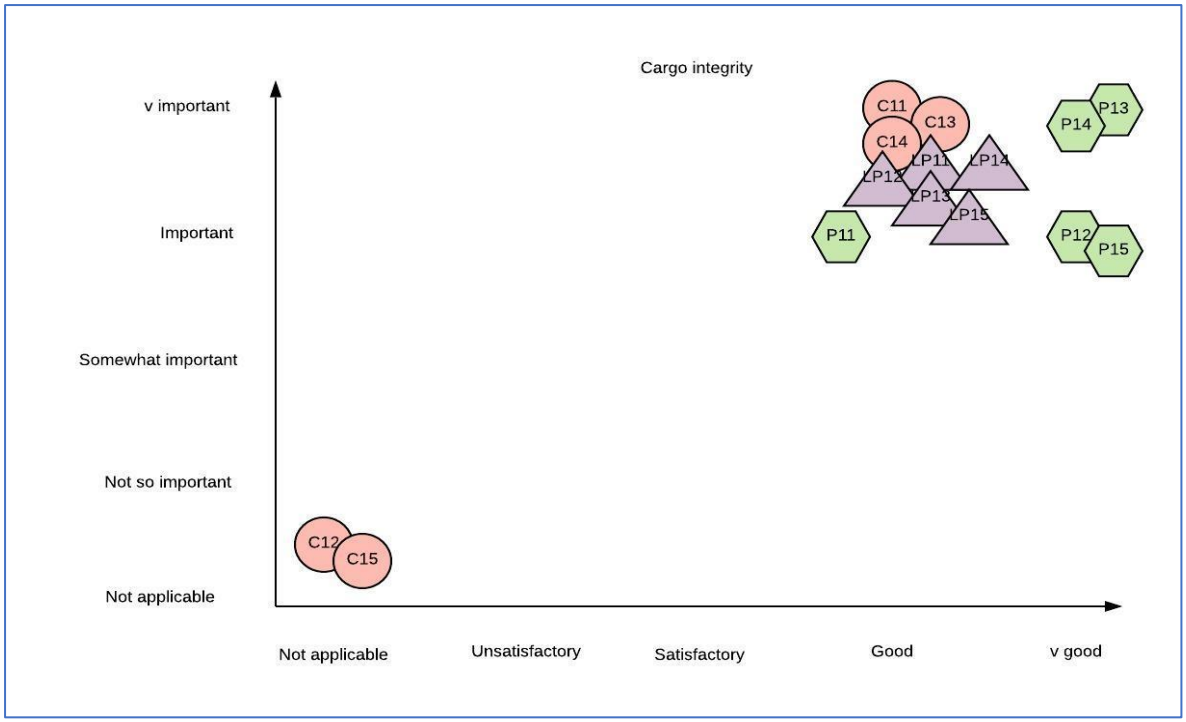

Figure 44- Stakeholder mapping for cargo integrity Terminal D

The stakeholder importance rating and the terminal performance closely follow each other in this area and the terminal performance is rated good or very good.

Safe Access

Figure 45 shows the stakeholder mapping for safe access.

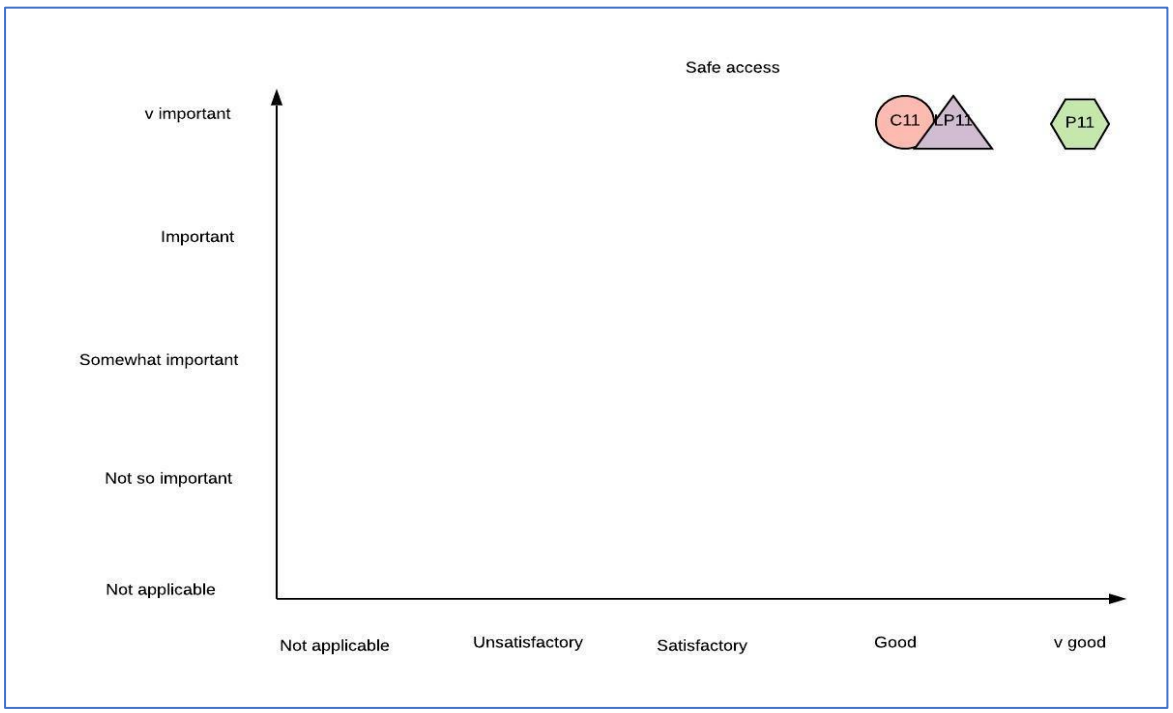

Figure 45- Stakeholder mapping for safe access Terminal D

The stakeholder importance rating and the terminal performance closely match each other in this area. The terminal has a deep-water berth with easy and safe access. Terminal needs to ensure that the performance is maintained in this area.

4.2 Stakeholder mapping: logistical criteria

Resources

Figure 46 shows the stakeholder mapping for the resources.

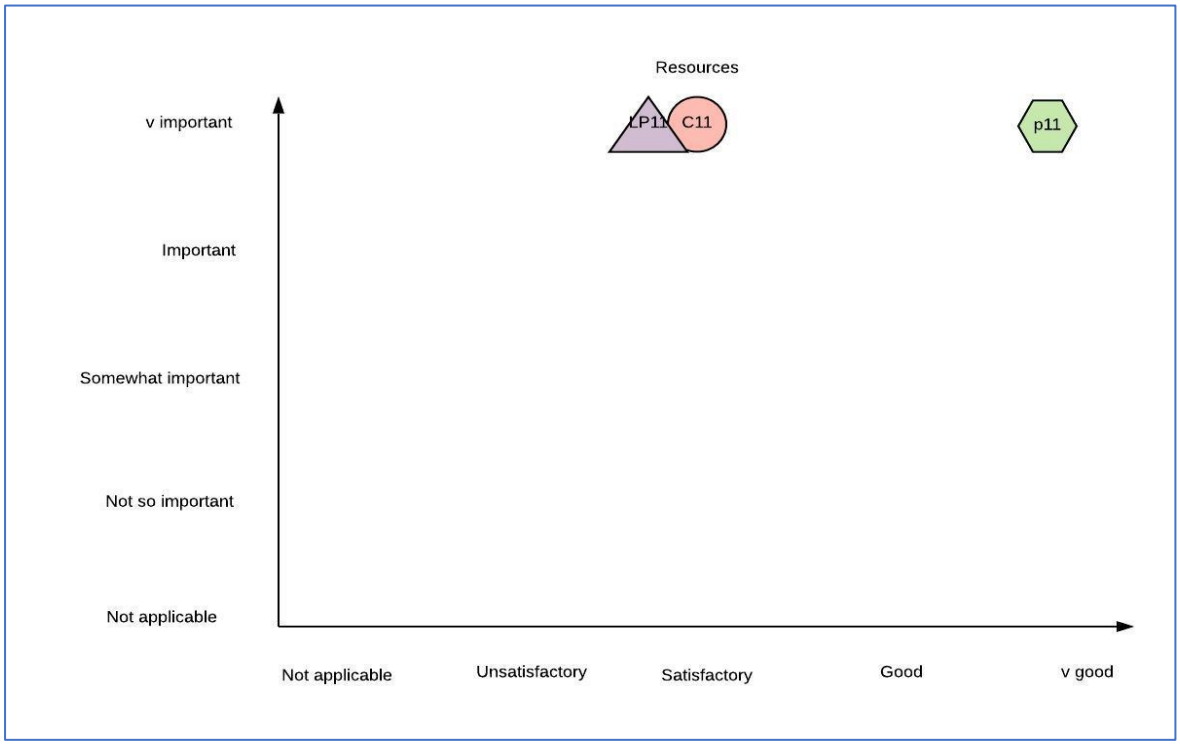

Figure 46- Stakeholder mapping for the resources Terminal D

Both the client and the logistics partner rated the timely availability of terminal resources as very important and the terminal performance was satisfactory. There is a consistent negative pattern here, the terminal needs to address with the stakeholders to improve the performance.

Connectivity

Figure 47 shows the stakeholder mapping for connectivity.

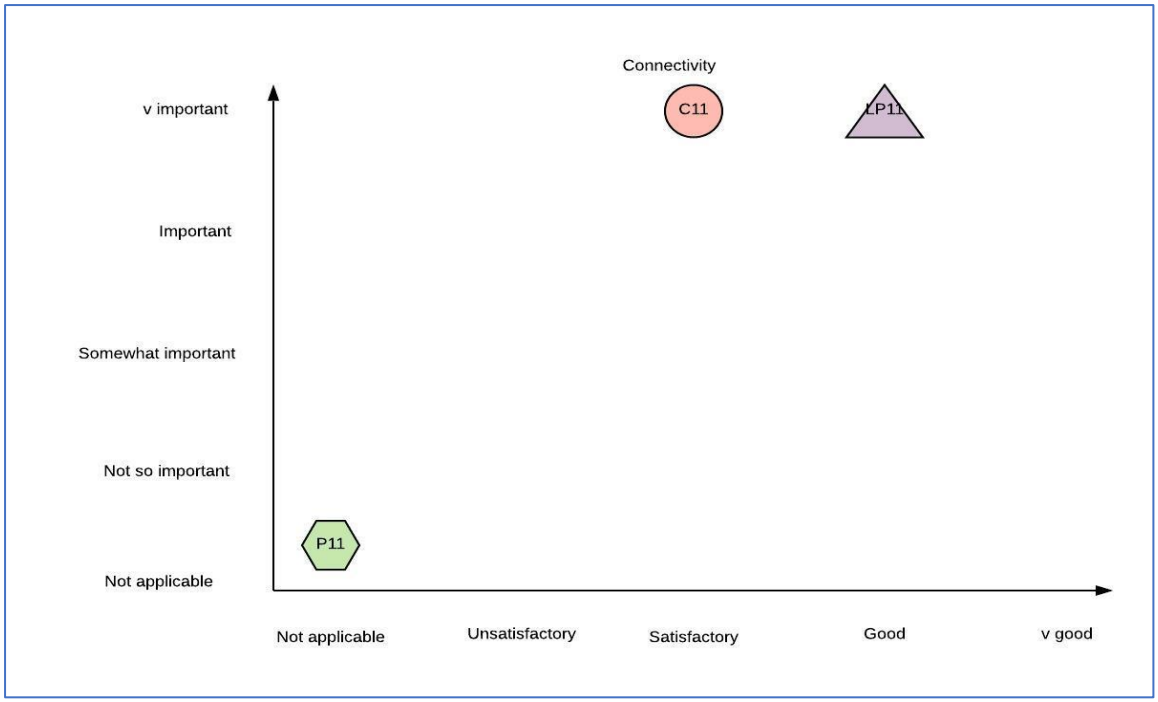

Figure 47- Stakeholder mapping for connectivity Terminal D

The client rated the physical connectivity of the terminal to road network as very important and the terminal performance was satisfactory. The terminal needs to communicate with the client in order to address the issue in this area.

Capacity

Figure 48 shows the stakeholder mapping for the capacity.

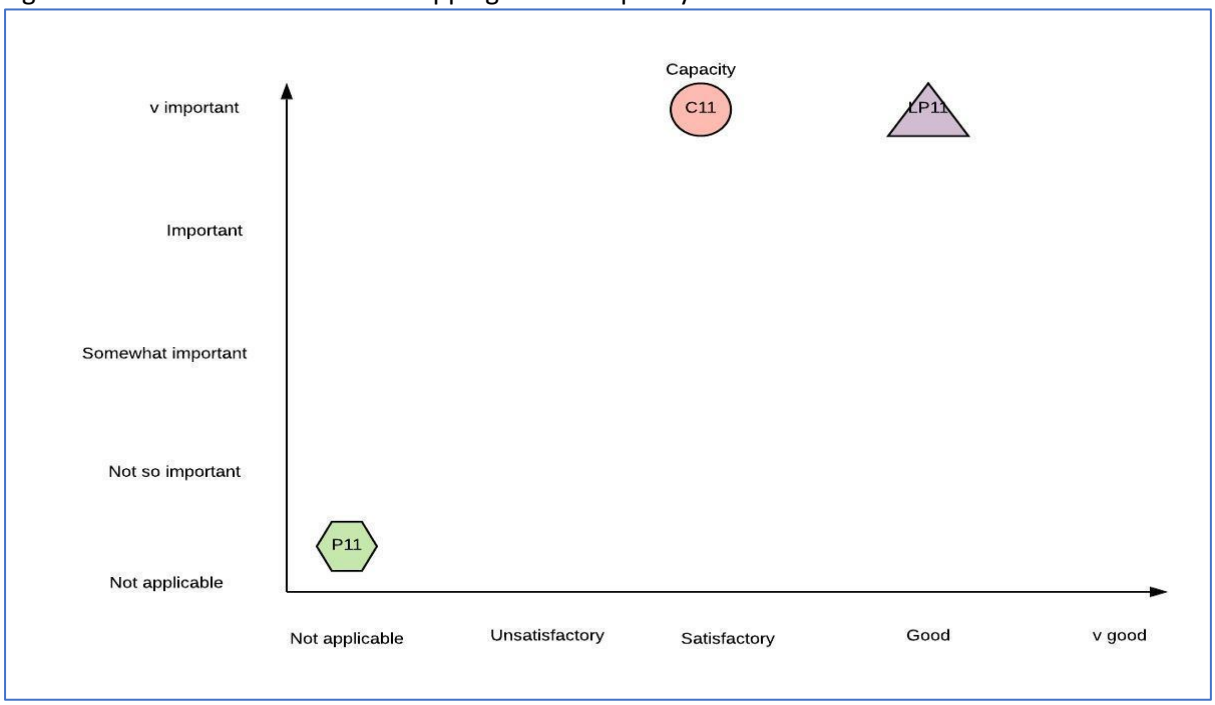

Figure 48- Stakeholder mapping capacity Terminal D

The client rated the capacity of the terminal to handle the throughput required by the terminal as very important and the terminal performance as satisfactory. This is an important area that the terminal needs to engage with the client to improve the performance rating.

Added value

Figure 49 shows the stakeholder mapping for the added value.

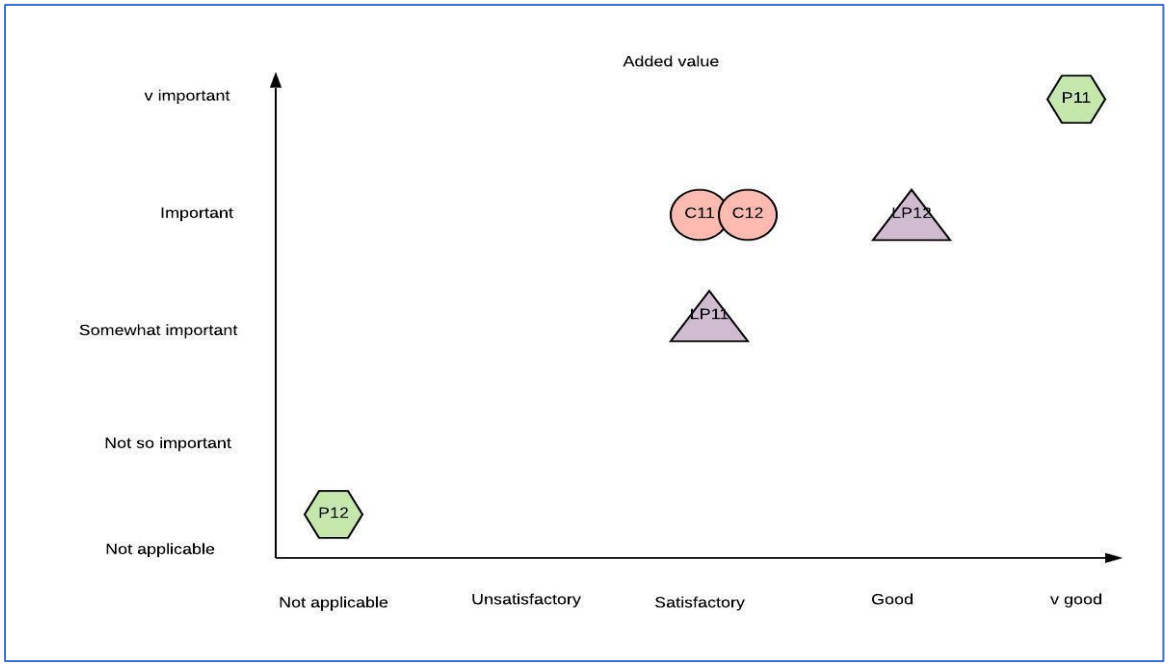

Figure 49- Stakeholder mapping for added value Terminal D

The client rated the level of added value services offered by the terminal and terminal's ability to develop tailored services to suit client's needs as important and the terminal's performance was satisfactory. The terminal needs to engage with the client to address these areas.

4.3 Stakeholder mapping: service quality criteria

Service reliability

Figure 50 shows the stakeholder mapping for the service reliability.

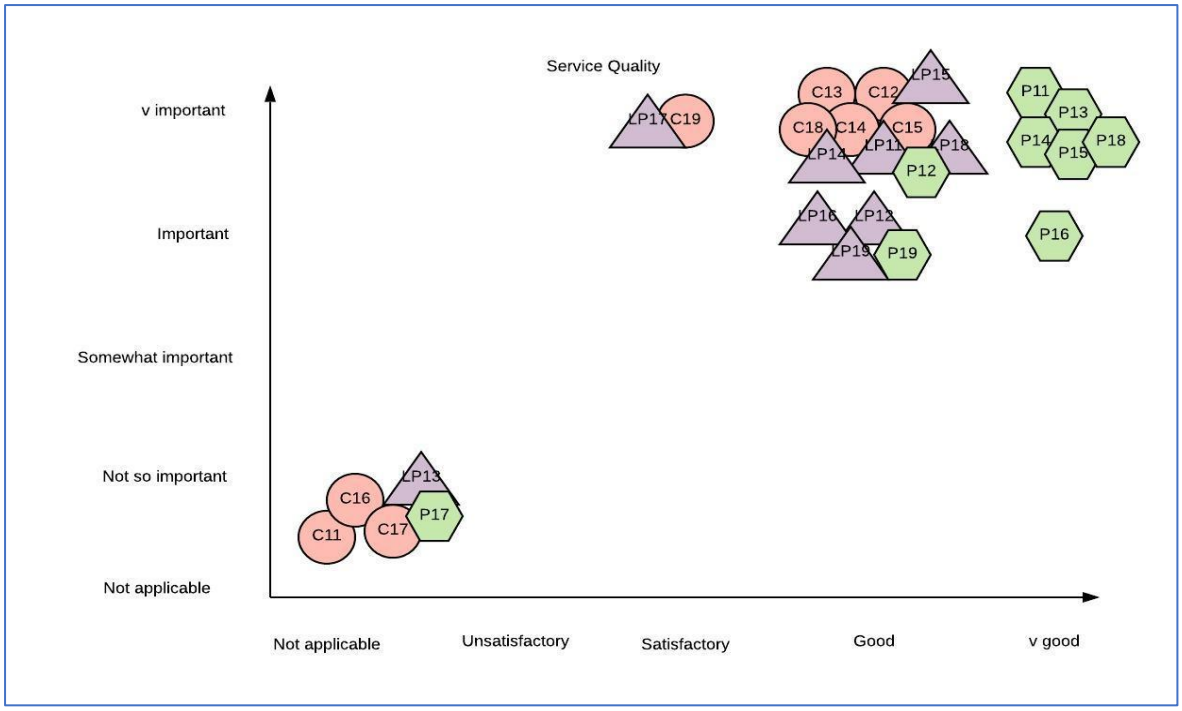

Figure 50- Stakeholder mapping for service reliability Terminal D

The logistics partner rated the timeliness of marine services offered as very important and the terminal performance as satisfactory. The client rated the level of automation as very important and the terminal performance was satisfactory. The terminal needs to discuss above with these stakeholders in order to improve the performance rating.

Flexibility

Figure 51 shows the stakeholder mapping for flexibility.

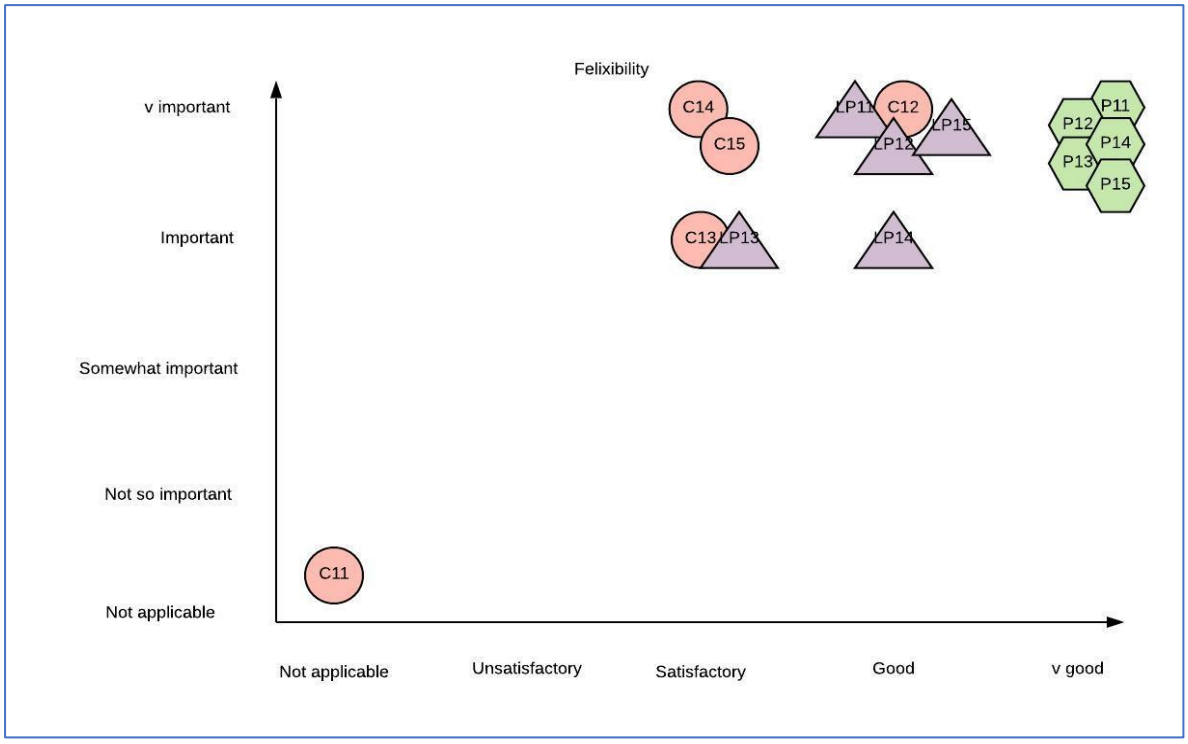

Figure 51- Stakeholder mapping for flexibility Terminal D

The client rated the response from the terminal to unexpected client requirements and alignment of terminal development and objectives to the client needs as very important and the terminal performance as satisfactory. The client also rated the willingness to offer solutions to specific problems encountered during the service delivery as important and the terminal performance as satisfactory. There is a common pattern around these areas that the terminal needs to address with the client. The logistics partner rated the willingness to offer solutions to specific problems encountered during the service delivery as important and the terminal performance as satisfactory.

Reporting and documentation

Figure 52 shows the stakeholder mapping for reporting and documentation.

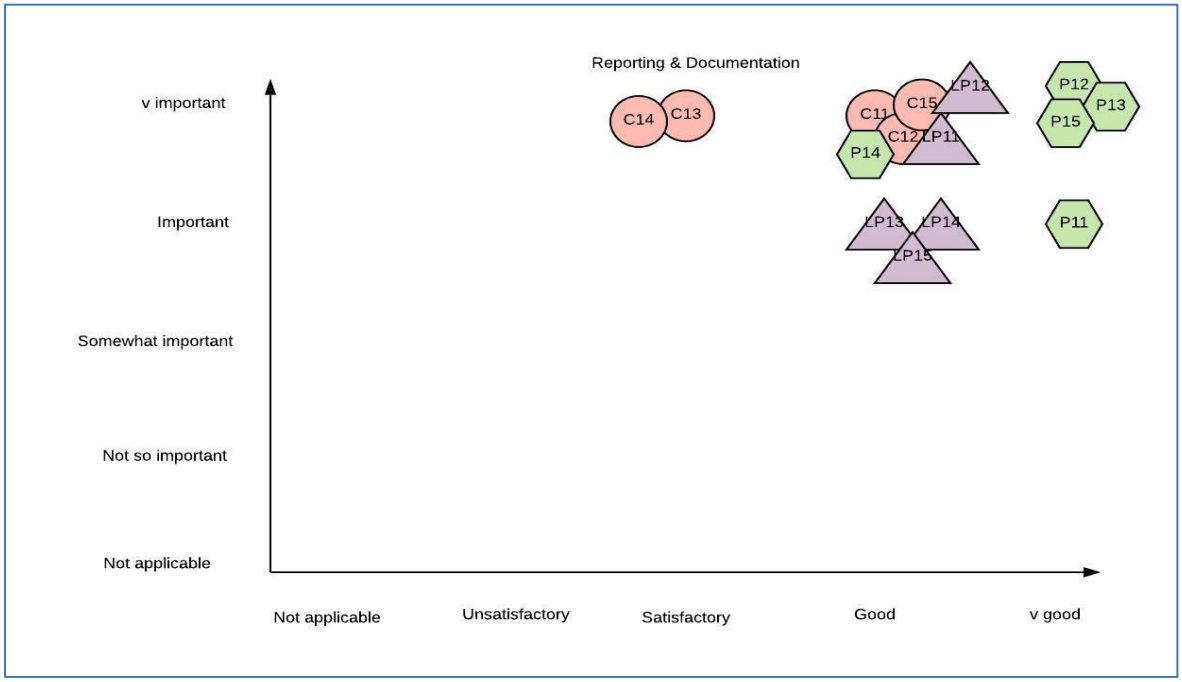

Figure 52- Stakeholder mapping for reporting and documentation Terminal D

The client rated the frequency of information updates and access to just in time information as very important and the terminal performance as satisfactory. There probably is a misalignment in expectations between the terminal and the client in this area. The remaining stakeholders rated the terminal performance in this area as good or very good. The focus for the terminal is to engage with the client to align the expectations of both parties in service delivery in this area.

4.4 Stakeholder mapping: health, safety and environment criteria

Compliance

Figure 53 shows the stakeholder mapping for compliance.

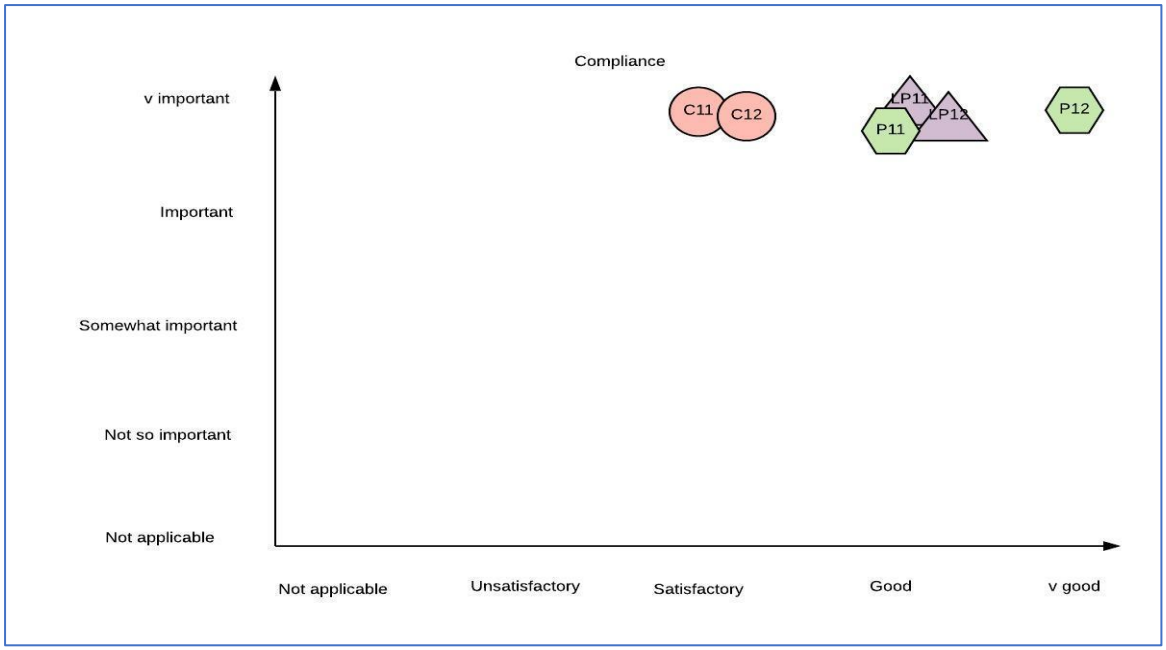

Figure 53- Stakeholder mapping for compliance Terminal D

The client is the only stakeholder that rated the terminal performance for environmental compliance and health and safety track record as satisfactory while rating both as very important. The terminal needs to address the gap in this area with the client.

Emission Control

Figure 54 shows the stakeholder mapping for the emission control.

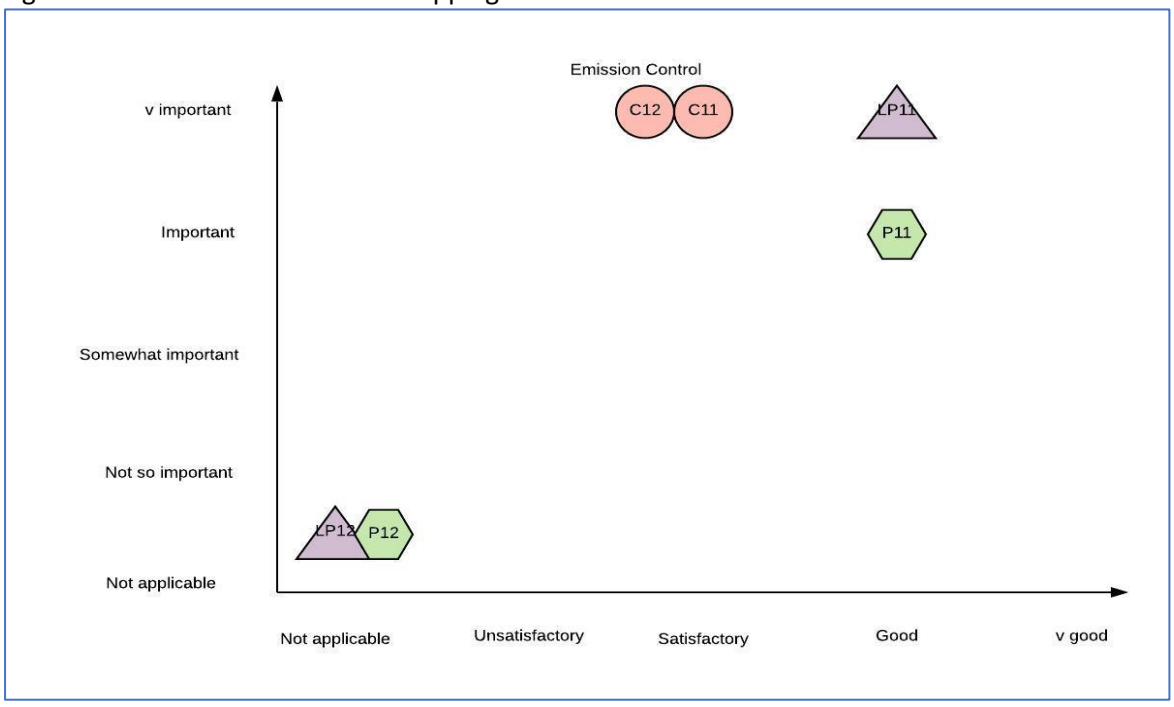

Figure 54- Stakeholder mapping for the emission control Terminal D

The client rated the terminal performance both for green energy use and energy saving practices and for the dust and noise control as satisfactory. The client rated the importance for both criteria as

very important therefore the terminal needs to address the gap to ensure that the performance can be improved in this area.

Track Record
Figure 55 shows the stakeholder mapping for the track record.

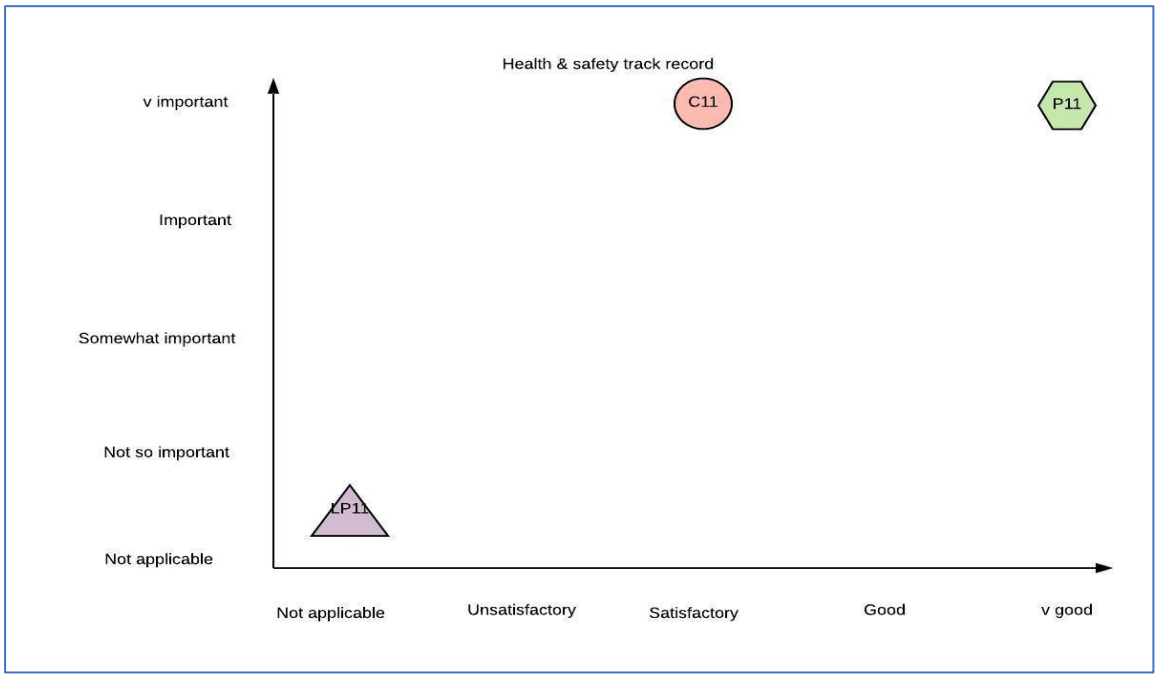

Figure 55- Stakeholder mapping for the track record Terminal D

The client rated this area as very important and the terminal performance as satisfactory. The terminal needs to address the concerns with the client to improve the performance rating in this area.

4.5 Stakeholder mapping: economic criteria

Cost competitiveness and invoicing
Figure 56 shows the stakeholder mapping for the cost competitiveness and invoicing.

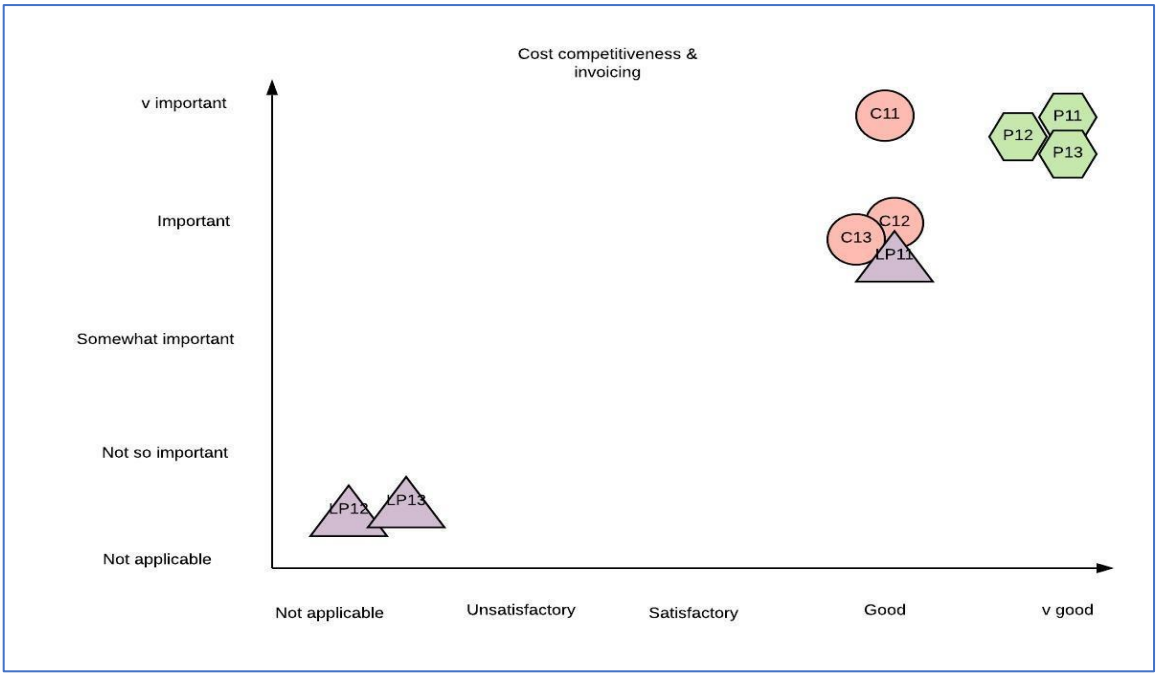

Figure 56- Stakeholder mapping for the cost competitiveness and invoicing Terminal D

The terminal matches the expectations of the stakeholders closely with the performance rating as good or very good in this area.

5. Terminal E

Terminal E received a completed survey from a client.

5.1 Stakeholder mapping: operational criteria

Productivity

The stakeholder mapping for productivity is shown on figure 57.

Figure 57- Stakeholder mapping for productivity Terminal E

The client is placed in the maintaining the current performance category. The terminal performance matches the importance criteria in all areas.

Cargo integrity

Figure 58 shows the stakeholder mapping for the cargo integrity.

Figure 58- Stakeholder mapping for the cargo integrity Terminal E

The terminal performance was rated as good or very good in this area by the client.

Safe Access

Figure 59 shows the stakeholder mapping for the safe access.

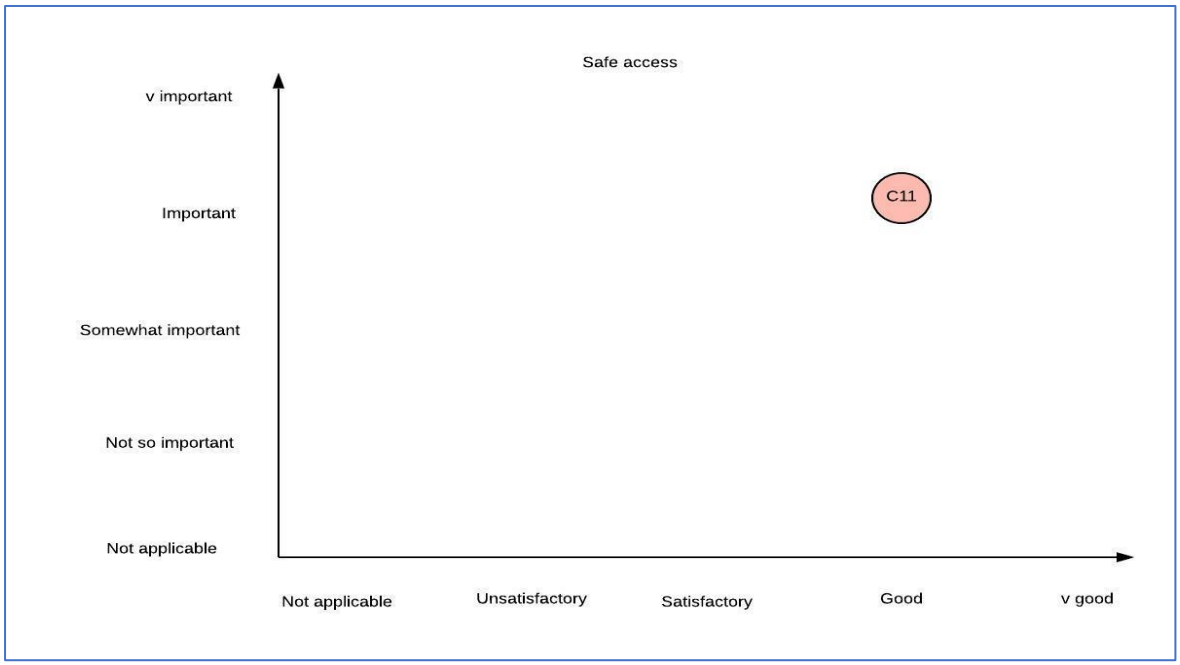

Figure 59- Stakeholder mapping for safe access Terminal E

This terminal operates through a single berth and the client rated the safe access to and from the berth as important and the terminal performance as good.

5.2 Stakeholder mapping: logistical area

Resources

Figure 60 shows the stakeholder mapping for the resources.

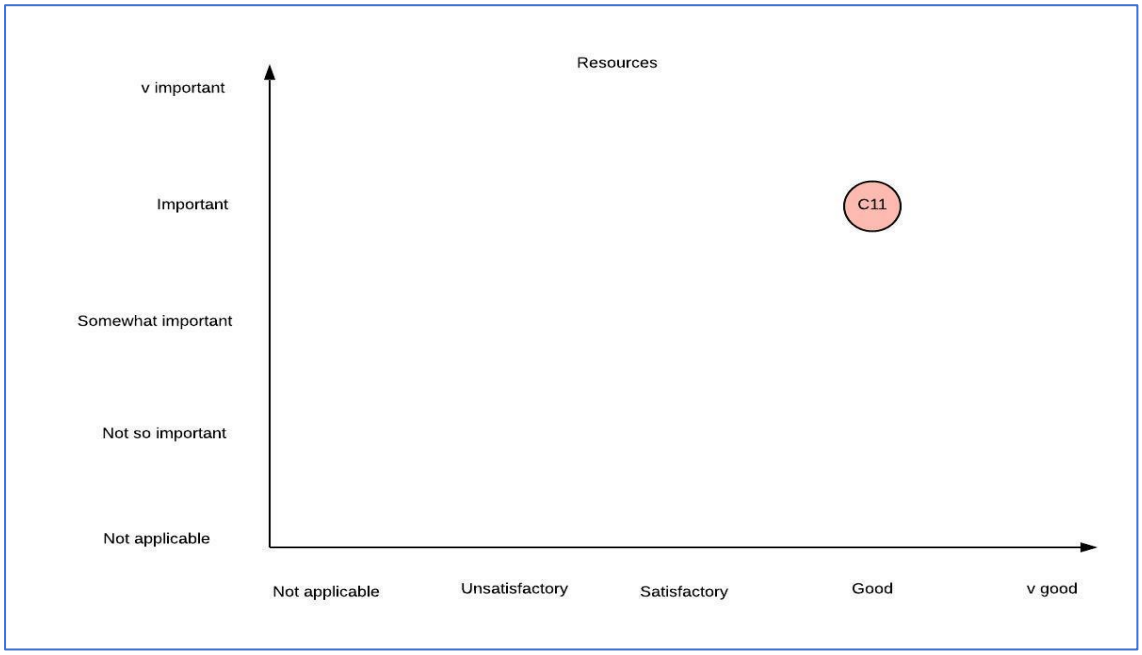

Figure 60- Stakeholder mapping for the connectivity

The terminal performance is good in this area and matches the importance rating of the client.

Connectivity

Figure 61 shows the stakeholder mapping for the connectivity.

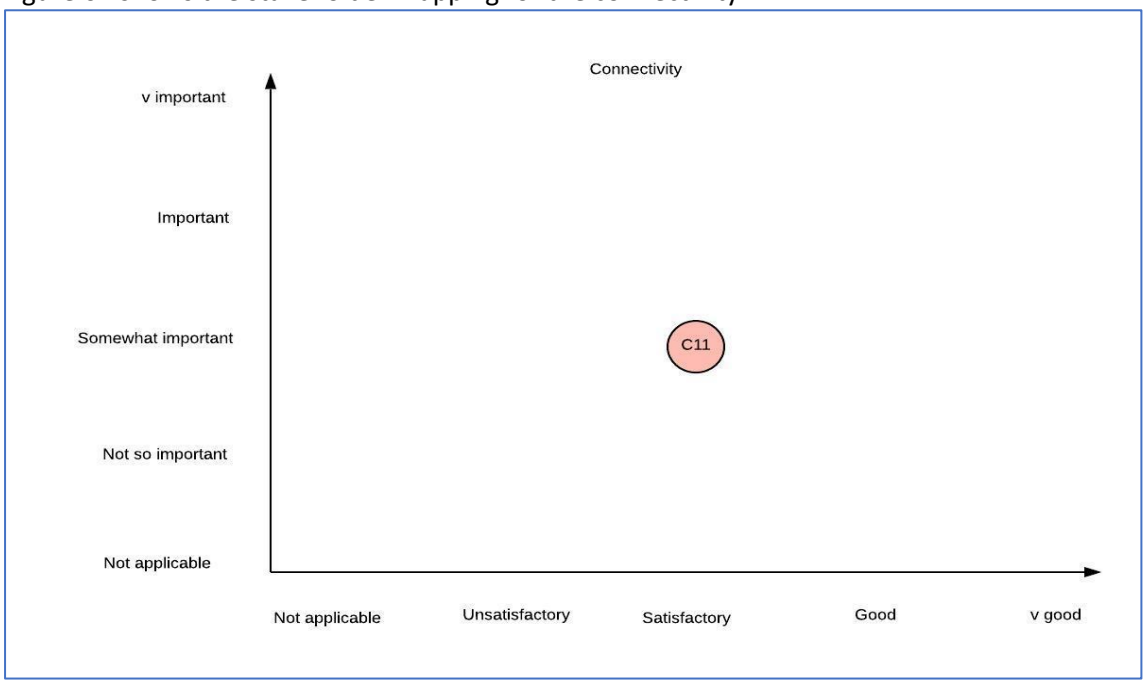

Figure 61- Stakeholder mapping for the connectivity Terminal E

The client rated the importance of connectivity to rail and road network as somewhat important and the performance of the terminal was satisfactory.

Capacity
Figure 62 shows the stakeholder mapping for the capacity.

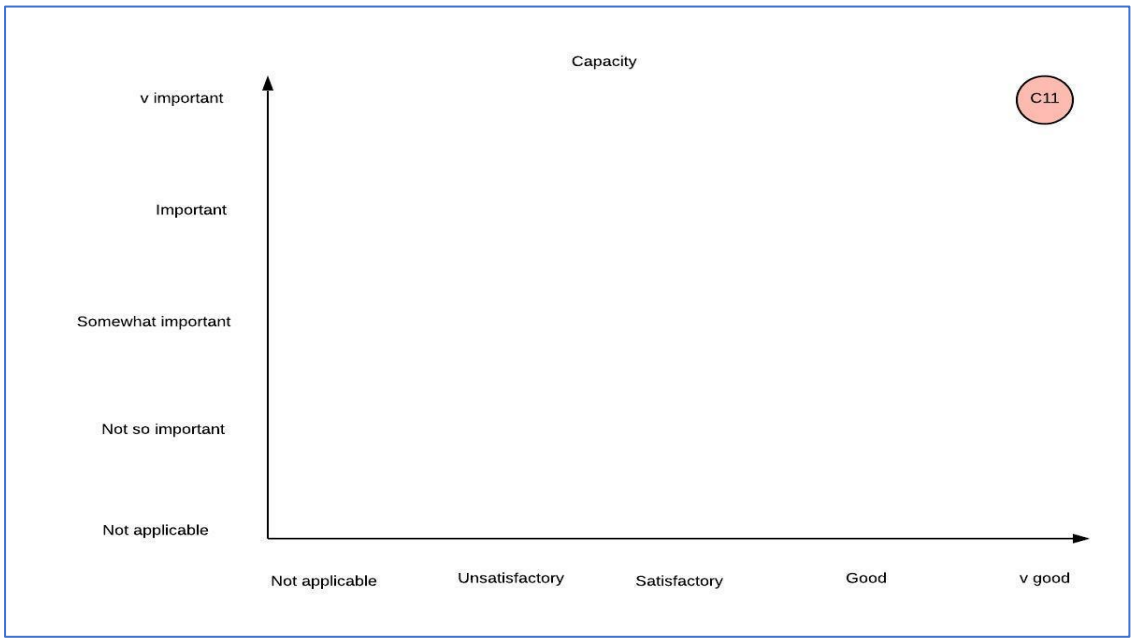

Figure 62- Stakeholder mapping for capacity Terminal E

The capacity of the terminal to handle the throughput matches the importance criteria for the client perfectly.

Added value
Figure 63 shows the stakeholder mapping for the added value.

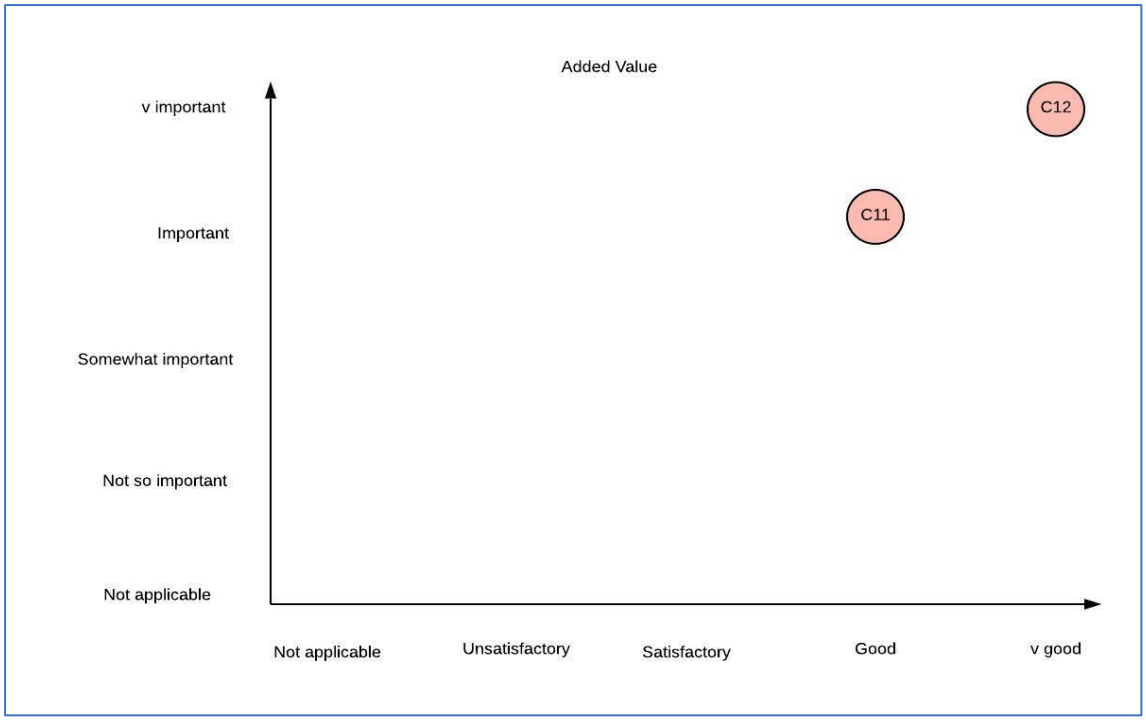

Figure 63- Stakeholder mapping for the added value Terminal E

The balance of terminal's ability to provide tailor-made services and the level of added value services provide by the terminal seem to strike a good balance with the importance rating of the client in these areas.

5.3 Stakeholder mapping: service quality criteria

Service reliability

Figure 64 shows the stakeholder mapping for the service reliability.

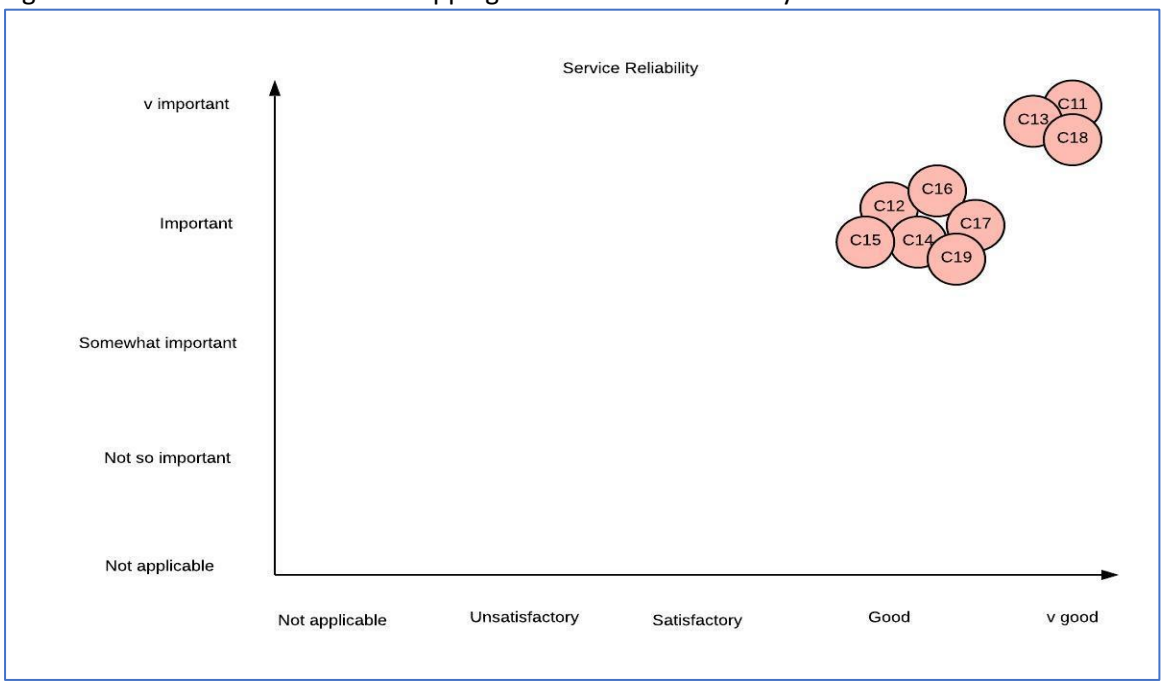

Figure 64- Stakeholder mapping for the service reliability Terminal E

There is a consistent match between the importance rating of the criteria in this area and the terminal performance. The terminal performance was rated as good or very good.

Flexibility

Figure 65 shows the stakeholder mapping for the flexibility.

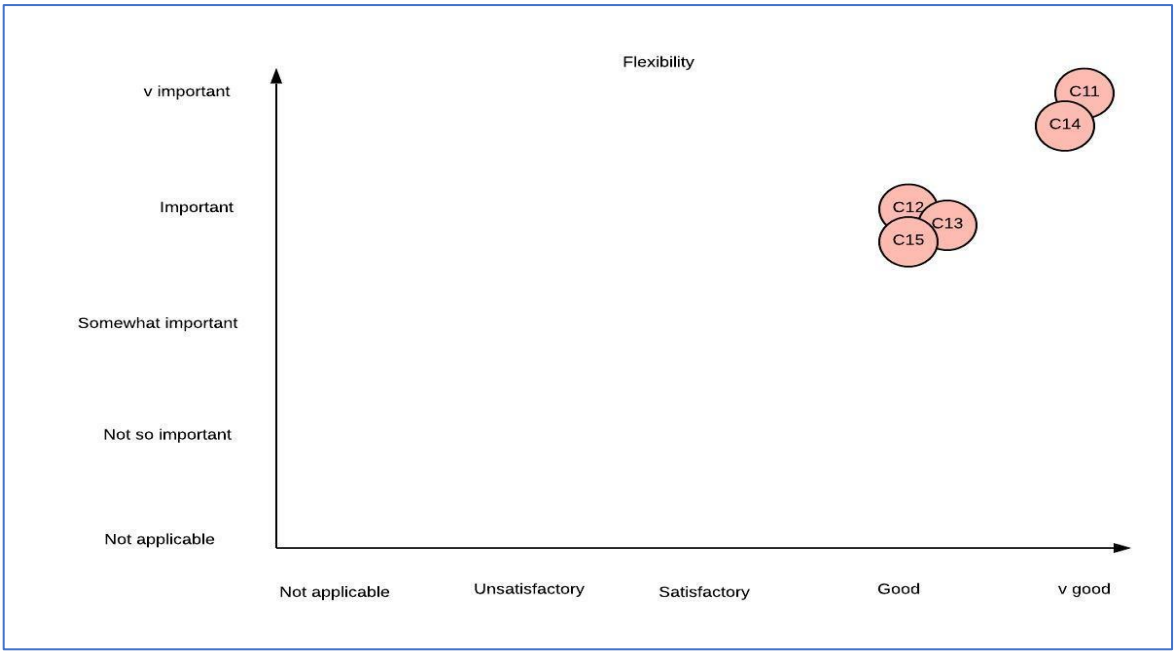

Figure 65- Stakeholder mapping for the flexibility Terminal E

In this area the criteria are rated as very important or important by the client and the terminal performance was rated as very good or good to match the importance rating.

Reporting and documentation

Figure 66 shows the stakeholder mapping for the reporting and documentation.

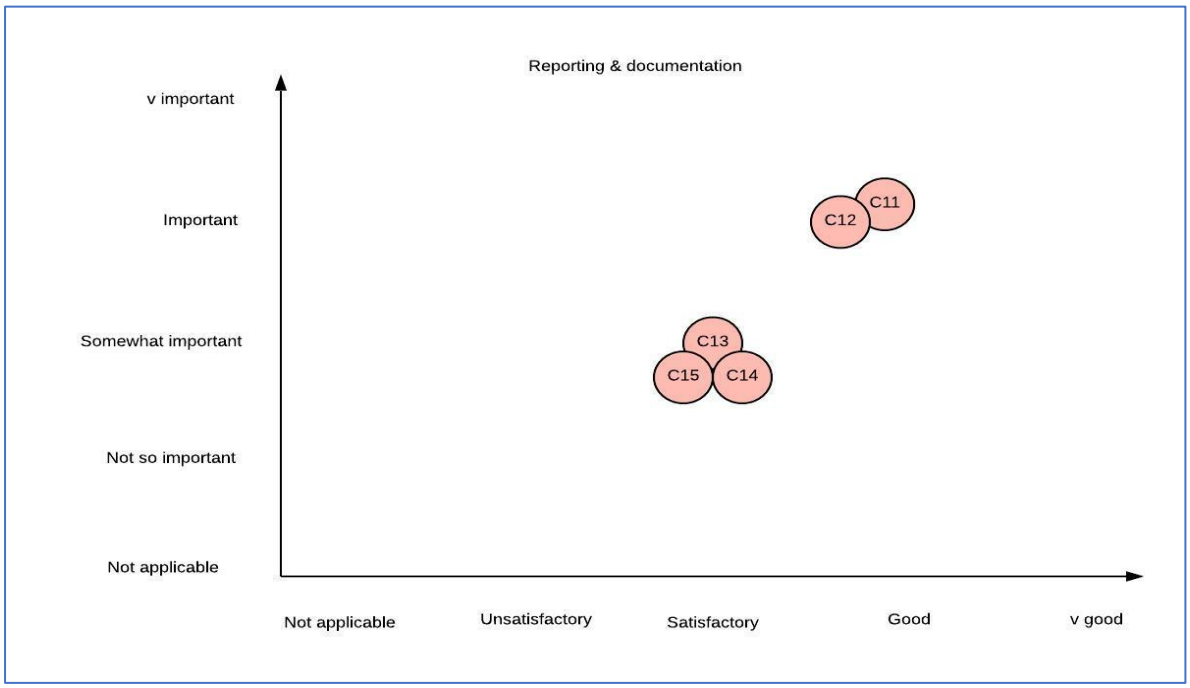

Figure 66- Stakeholder mapping for the reporting and documentation Terminal E

The client importance rating of the criteria in this area and the terminal performance match each other. The areas where the terminal performance was rated satisfactory the client expectations were also rated as somewhat important.

5.4 Stakeholder mapping: health, safety and environment criteria

Compliance

Figure 67 shows the stakeholder mapping for the compliance.

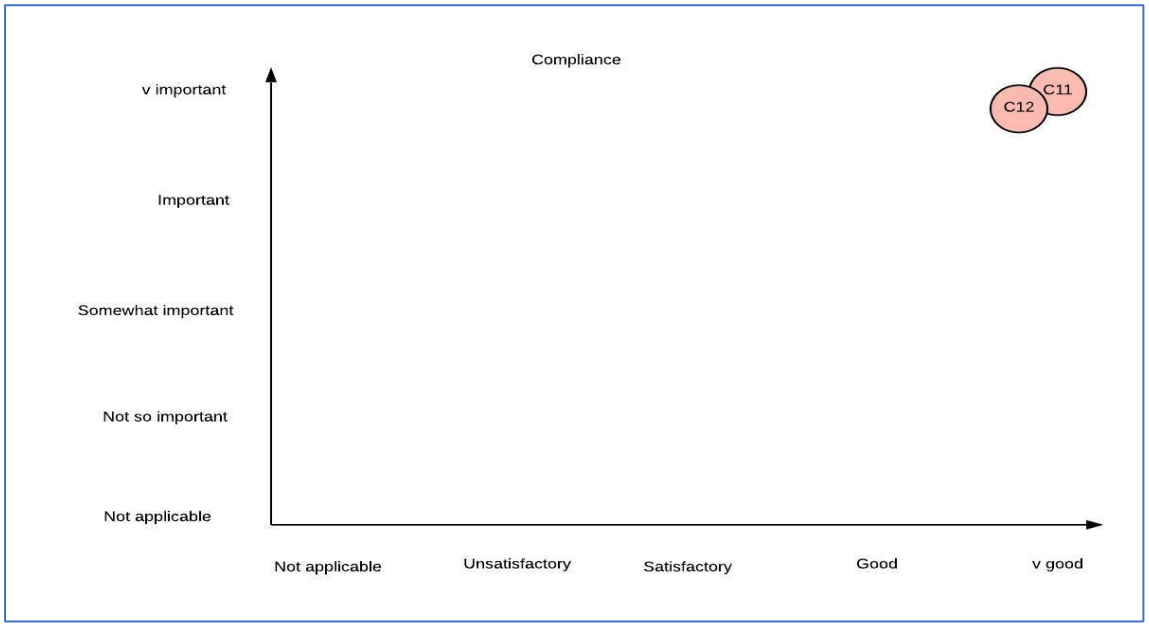

Figure 67- Stakeholder mapping for the compliance Terminal E

The client importance rating and the terminal performance match each other in this area very important and very good.

Emission Control

Figure 68 shows the stakeholder mapping for the emission control.

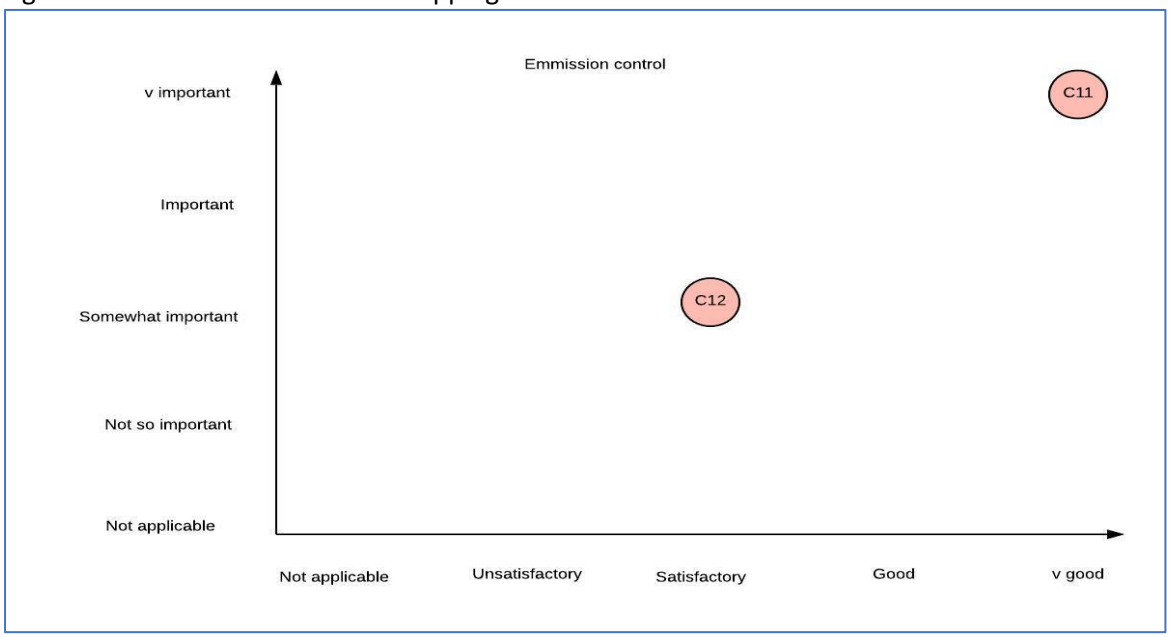

Figure 68- Stakeholder mapping for the emission control Terminal E

The client importance rating and the terminal performance match each other in this area.

Track record

Figure 69 shows the stakeholder mapping for the track record.

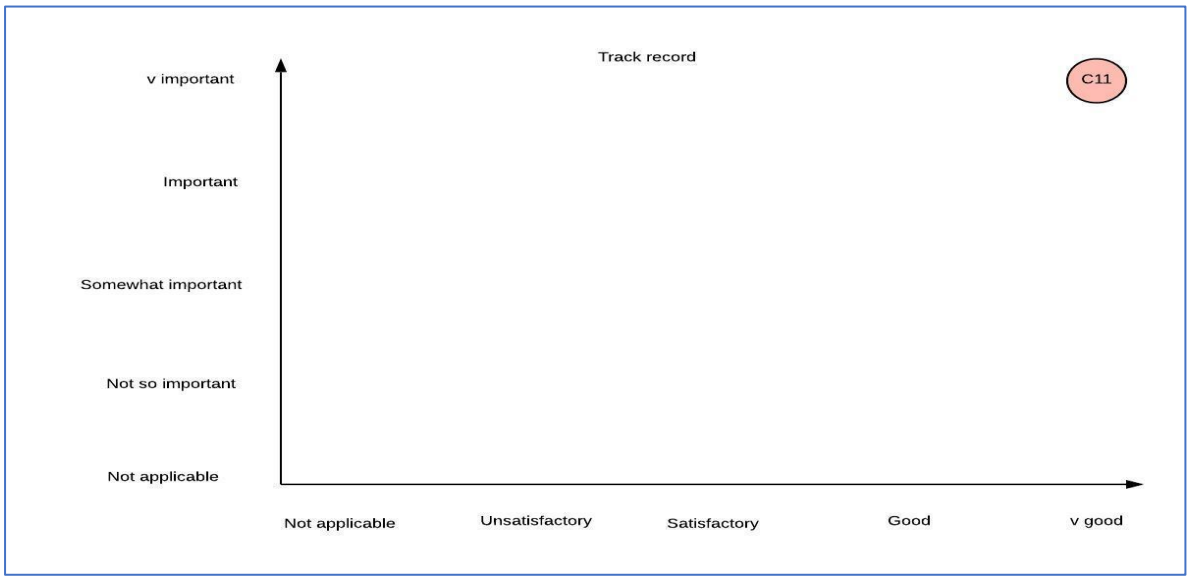

Figure 69- Stakeholder mapping for the track record Terminal E

This is rated as very important by the client and the terminal performance as very good. The client is placed in the maintaining the current performance quadrant.

5.5 Stakeholder mapping: economic criteria

Cost competitiveness and invoicing

Figure 70 shows the stakeholder mapping cost competitiveness and invoicing.

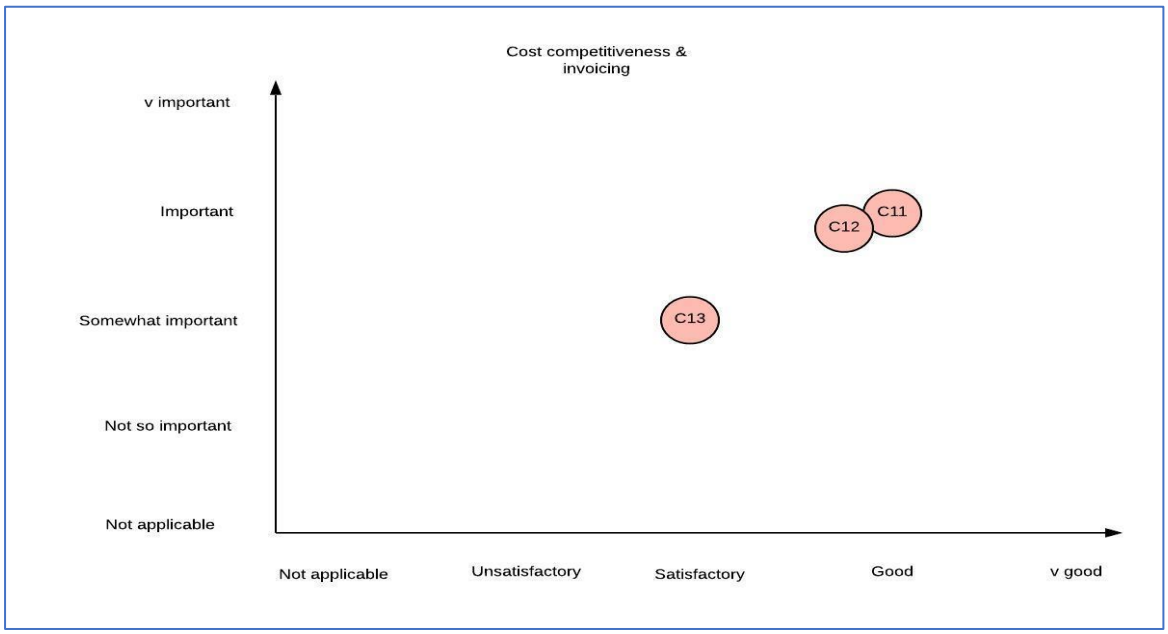

Figure 70- Stakeholder mapping cost competitiveness and invoicing Terminal E

This is the only terminal where the importance rating and performance rating match each other in this area. Therefore, the terminal is doing very well in anticipating and pricing the services at the right level for the client.

CONSENT FORM

Research Title: Development of Standardised Key Performance Indicators within Dry Bulk Terminals Industry

Researcher: Han Ozturk

Institution: Middlesex University

This consent form aims to ensure that you understand the purpose of above research project, that you are aware of your rights as a participant and confirm that you are happy to take part in the study.

Please Tick as appropriate	YES	NO
1. I have read the leaflet describing the Research Project		
2. I have received sufficient information about the study for me to decide whether to take part.		
3. I understand that I am free to refuse to take part if I wish.		
4. I understand that I may withdraw from the study at any time without having to provide a reason.		
5. I can ask more information about the study from researcher.		
6. I understand that all information arising from the research will be treated as confidential.		
7. I know that anonymity of individual participants including myself will be assured and respected.		
8. I confirm that quotations from the interview can be used in the final research report and other publications anonymously.		
9. I agree to take part in the Research Study		

Signature:	Date:

Name and Surname of Participant: