4. MAPP & SMS ASPECTS

4.1. MAPP Aims and Principles

Stolthaven Dagenham is committed to achieving high standards of both safety and environmental performance as such will ensure that the necessary resources are made available. The Company aims to control the major accident hazards from dangerous substances handled, stored and used at the Dagenham site, to limit the potential effects to both people and to the environment from our activities. We are committed to achieving a high standard of major hazard control in proportion to the scale of the risks identified and on continual improvement in reducing the risk of major accidents. Our aim is also to comply with all the relevant legal requirements, as a minimum.

This policy is an integral part of the Stolthaven Dagenham Health, Safety and Environmental Management System (HSEMS). The implementation of the policy is aimed at minimising the risk from hazardous substances capable of causing a major accident and to promote continuous improvement of our HSEMS. We will execute this policy by:

- Implementing control measures to prevent major accidents to people and to the environment;
- Implementing mitigation measures to limit the effects of any accidents that do occur;
- Ensuring that all relevant information is supplied to our employees, contractors, neighbours, the public and enforcing authorities as appropriate: and
- Seeking relevant opportunities to improvement our HSEMS.

Our major effort will be directed to the prevention of events that trigger major accidents through effective management of all of our activities. The Stolthaven Dagenham Site recognises that its activities may give rise to major accident hazards, and therefore has an obligation to protect employees, contractors, visitors, members of the public and the natural and man-made environment.

4.2. MAPP & SMS Objectives

The company provides and maintains an Environmental, Health and Safety Management System which supports this Major Accident Prevention Policy (MAPP). The implementation of the policy is aimed at minimising the risk from hazardous substances capable of causing a major accident; specifically, the MAPP addresses the following areas:

- The roles and responsibilities of persons involved in the management of major hazards;
- Organisation and personnel;
- Hazard identification and risk assessment;
- Operation control;
- Management of change;
- Planning for foreseeable emergencies;
- Process safety improvement measures;
- Measuring performance; and
- Audit and review.

The MAPP is signed by the Global Business Director, Stolthaven Terminals, and the General Manager, Dagenham, and is subject to period review.

The MAPP was most recently updated in August 2018 and is shown at Appendix 4.1

The Safety Management System (SMS)

There is a Safety Management System established at site. Safety Health and Environment are managed through a number of Safety Policies, Safe Working Procedures and effective and proven good practices developed over many years.

The Safety Management System takes into account the strategic aims of Stolthaven Dagenham. The Company provides strategic direction through establishing policies, objectives, goals and requirements that reflect its desire to improve safety, health and environmental performance and confirm its adherence to public commitments. These goals and improvements are cascaded down through the organisation to each group and facility. These Company goals are augmented by each group and facility to reflect local issues and desired improvements.

Account will be taken of suggested improvements made by the Competent Authorities, changes to regulations and the introduction of new regulations, the latter being monitored by the Group Health and Safety Manager and the local advisors. A copy of the SQMS Management Procedures may be found in Appendix 4.2.

Stolthaven Dagenham Health and Safety Policy Statement

Health and Safety legislation places on employers a range of statutory duties, both specific and general in nature, aimed at ensuring, so far as is reasonably practicable, the health, safety and welfare of all its employees at work.

The Company has full regard for the health, safety and welfare of all its employees and others who have occasion to be on the Company's premises or who are affected by its operations.

The Company recognises its statutory responsibilities in the area of health, safety and welfare and requires the active support of all employees in achieving these minimum standards.

It is the duty of all employees; visitors and contractors to take reasonable care for the health and safety of themselves and of others who may be affected by their acts and omissions. This extends to a duty to co-operate with the Company so as to enable statutory duties or requirements placed on the Company to be performed or complied with.

All hazardous conditions that are identified will be awarded a high priority for rectification as far as is reasonably practicable. The objectives of the Company Policy are:

1. To set standards of health, safety and welfare that comply fully with the Health and Safety at Work etc. Act 1974 and all other relevant statutory provisions and approved codes of practice.
2. To develop safety awareness among all employees and responsibility for health and safety and welfare at all levels.
3. To encourage full and effective consultation on health, safety and welfare matters.
4. To provide all employees with sufficient information, instruction, training and supervision to work safely and efficiently.
5. To maintain a safe and healthy working environment for all employees.

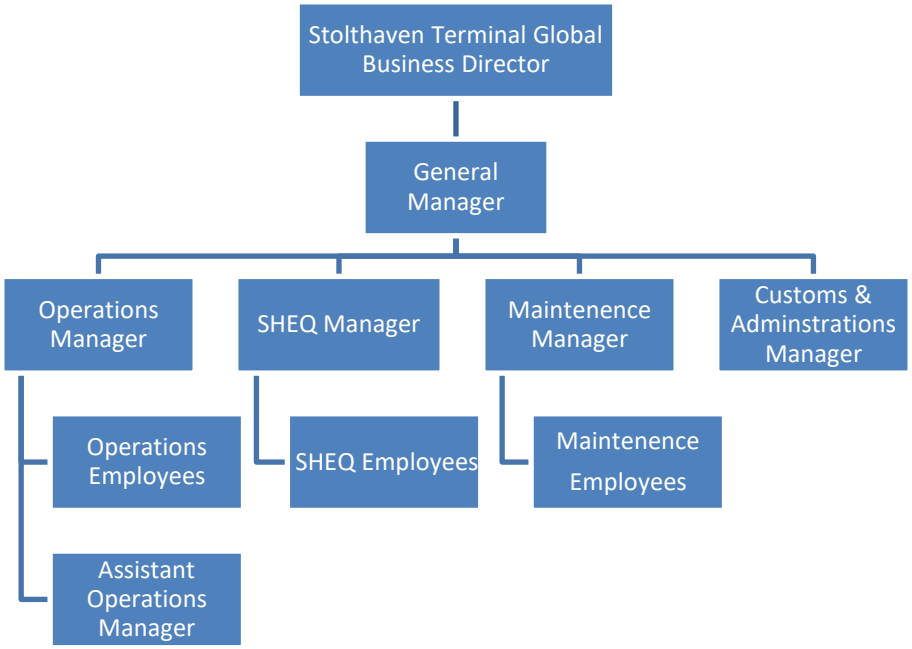
To ensure the effective implementation and subsequent monitoring of the Health and Safety Policy throughout the Company, it is necessary to define the duties and accountabilities of all persons. These are set out in Section 3 of the Health and Safety Policy document. The reviewing of this Policy will be the responsibility of the General Manager and will form part of the regular monitoring activity of Health and Safety.

4.3. Senior Level Endorsement

To demonstrate commitment, the MAPP has been signed by the Global Business Director, Stolthaven Terminals, and the Terminal Manager Dagenham who are responsible for implementation of the MAPP within the day to day operations on the site.

The following organisational chart defines the resources and allocation of roles and responsibilities of Stolthaven Dagenham personnel directly or indirectly associated with the control of major accident hazards:

Figure 4.3.1 – Stolthaven Dagenham Organisational Chart



4.4. Roles & Responsibilities

Responsibility for Health & Safety is clearly assigned within the Company's Health Safety and Environmental Policy:

General Manager

The General Manager is responsible for:

- Understanding and implementing the provisions contained within the Major Accident Prevention Policy and company Health, Safety, Environmental and Quality Policy.
- Ensuring adequate management arrangements are in place for the company to comply with the requirements of the Health and Safety legislation and to maintain and implement its Health, Safety, Environmental and Quality Policy.
- Ensuring there are sufficient resources provided to implement and maintain the sites SMS
- Ensuring their personal understanding of the Safety, Health, and Environmental (SHE) requirements relating to their area of responsibility.
- Reviewing, along with Global Business Director the Major Accident Prevention Policy and Safety Management System annually or in the event of any major changes to the business. Ensure all actions resulting from this review are carried out.
- Ensuring the Internal Emergency Plan is suitable and sufficient, and all staff are trained / aware of the requirements of relevant associated procedures.
- Liaising with relevant external stakeholders regarding the External Emergency Plan including the London Resilience etc., and ensuring all staff are aware of the procedures / plans.
- Liaising with other companies in the area regarding Major Accident Hazards.
- Liaising with The Health and Safety Executive and Environment Agency on matters concerning Major Accident Hazards.
- Making staff aware that SHE performance is a critical business success factor and will be taken into account when reviewing/assessing personal performance.
- Ensuring adequate resources are made available within the Terminal/Department to achieve the laid down annual targets and objectives to foster continual improvements.
- Ensuring that the SHE aspects are taken into account at the design stage in the development or introduction of new methods, plant, equipment, machinery, materials, buildings etc.
- Ensuring that regular inspections and audits as specified by the SHEQ Manager are undertaken.

- Convening, where necessary, a team / panel to investigate serious incidents, near misses, and significant safety observations which could have resulted in major accidents.

- Organising a system to action any recommendations made in reports issued by the SHEQ Manager, Health and Safety Executive
- Reviewing SHE performance with respect to major accident hazards including process safety performance indicators, inspection and audit findings, etc.

Safety, Health, Environmental and Quality, (SHEQ) Manager

The primary function of the SHEQ Manager is to advise the General Managers / Department Heads on all Safety, Health, Environmental and welfare matters to ensure the company's compliance with its statutory obligations and appropriate best practise. Included in the responsibilities of the SHEQ Manager is as follows:

- Entering any part of the site to inspect conditions and practices relating to Health, Safety, Environmental and Welfare. This can be done in conjunction with, or after consultation with, General Managers and/or Department Heads, except in pre-agreed or exceptional circumstances.

- Taking whatever action is considered necessary to prevent risk to employees, subcontractors, visitors, the general public or the environment. This includes the authority to stop all or part of a task where the risk is considered serious. Seeking to ensure that all aspects of the SHE Management System (work processes, standards and procedures) are implemented and maintained;
- Seeking to ensure the effective implementation of the key risk control systems - operational control, control of maintenance, management of change, and emergency procedures - for the prevention of Major Accidents on the production sites;
- Ensuring that the COMAH safety report is updated in line with the requirements of the Regulations;
- Providing support and guidance, and seeking to ensure compliance with relevant legislation, regulatory guidance and industry good practice;
- Reporting regularly on the performance of the SHE Management System to the General Manager and Management Team;
- Establishing and maintaining effective channels for communication and co-operation with employees, neighbours, emergency services, regulatory authorities and other stakeholders;
- Ensuring that an audit schedule of the SHE Management System is established and implemented;
- Ensuring that an effective incident investigation and follow-up process is in place;
- Ensuring that Emergency Response Plans have been developed and regularly tested;
- Promoting environmental awareness. Seeking to ensure that corrective action is taken in the event of plans and objectives, in improvement programs derived from the SHEQ Policy and MAPP, not being met;
- Identifying, prioritising, and scheduling areas for improvement in SHE performance and reduction in the risks of Major Accidents;

Safety Health Environment and Quality Officer

The Safety Health and Environment Quality Officer assists the SHEQ Manager in co-ordinating the site activities to ensure that they comply with legislation, regulation and company policy. In particular the SHEQ Officer will:

- Act as a guardian for the Safety Management System and the COMAH report.
- Ensure all incidents and near misses are investigated promptly, appropriate reports are produced, and any follow up actions are implemented to prevent recurrence.
- Update existing and carry out new business risk and COSHH assessments to ensure safe working practice.
- Carry out safety audits and inspections. Ensure findings are reported to the General Manager and Operational Manager and actions are carried out.
- Develop and promote a loss control culture amongst all site employees.
- Ensure major hazards related to the site are identified and evaluated in order to mitigate their effects
- Ensure that all contractors (inclusive of agency staff) employed at the terminal are suitably qualified and possess the relevant competencies to perform their tasks safely.
- Ensure that all contractors are aware of the major accident hazards related to the terminal and are suitably inducted.
- Ensure that all modifications undertaken at the terminal are controlled through the terminal's management of change procedure.
- Ensure that all training provided is suitable, relevant and evaluated to ensure its effectiveness.

Operations Manager / Assistant Operations Manager

The Operational Manager / Assistant Operations Manager are responsible and accountable to the General Manager for achieving the objectives of the Safety, Health and Environmental Policy for all activities under their control. In particular they will:

- Understand and implement the provisions contained within the Major Accident Prevention Policy and, Safety, Health Environmental and Quality Policy.
- Understand their own role(s) and responsibilities in the event of an emergency situation, which could limit/reduce the impact of such an event.
- Appreciate the responsibilities of each grade of employee under their authority.
- Ensure that all operations personnel at the terminal are suitably qualified and possess the relevant competencies to perform their tasks safely.
- Ensure that all aspects of the daily operations activities are conducted in compliance with the EH&S Policy, the Major Accident Prevention Policy and regulatory conditions and consents;
- Ensure that appropriate risk reduction measures, using the risk management hierarchy - avoid, control, prevent, mitigate - are applied to the design and operation of new or modified processes;
- Producing and maintaining documented procedures for operational control;

- Control of waste, including evaluation of the Best Practicable Environmental Option; Ensure that the methods and systems of work are appropriate and that the necessary procedures and regulations designed to achieve this are formulated, published and applied.

- Liaise with the SHEQ Manager regarding implementation of measures within the working environment to control risks to Safety, Health and Environment.

- Ensure that all staff are aware of and fulfil their Health, Safety and Environmental responsibilities.
- Identify arrange/carryout and document all appropriate training for all staff in relation to major accident hazards to include Internal and External Emergency Response Procedures.
- Ensure that accident and dangerous occurrence reporting and recording procedures are complied with, and that internal investigations are carried out where appropriate.
- Provide adequate plant, equipment, tools and protective equipment to enable work to be done safely.

- Ensure that plant, equipment, tools and buildings are maintained in a safe condition and arrange inspections to achieve this.

- Undertake inspections and audits at prescribed frequencies in accordance with the management audit system.
- Counsel and/or take disciplinary actions as appropriate with any employee failing to discharge their Health, Safety and Environmental responsibilities.
- Seek to ensure that corrective action is taken in the event of plans and objectives, in improvement programs derived from the EH&S Policy and MAPP, not being met;

Supervisor / Charge Hand

Each Supervisor is responsible to the Operations Manager for achieving the objectives of the SHEQ policy for all activities under their control. In particular they will:

- Ensure that each employee is aware of the hazards of their work, including the precautions necessary to avoid these hazards, is trained, competent, licensed/certified (where appropriate) to carry out the work and knows the Health, Safety and Environmental rules applicable.

- Ensure all work is performed in accordance with established written safe working procedures.

- Ensure that correct equipment, tools, materials and substances are available for the work, and that they are maintained in an appropriate condition: that regular inspections are carried out and recorded at the appropriate frequency.

- Ensure that the appropriate Personal Protective Equipment is provided to and is worn by all personnel at all times and that such equipment is maintained in an appropriate and operational condition.

- Maintain a high standard of housekeeping in the work area including the systematic and regular removal of waste in accordance with our duty of care obligations and waste management procedures.
- Receive reports and complaints and take appropriate action to rectify the faults.
- Investigate all accidents and dangerous occurrences promptly, take remedial action to prevent recurrences and report all incidents in accordance with established methods.
- Where appropriate incorporate Health, Safety and Environmental instructions in orders to persons and ensure they are obeyed.
- Discourage personnel from taking risks and creating hazards.
- Counsel and/or take disciplinary action as appropriate with those who fail to consider their own Health, Safety and that of others, including contractors, visitors etc. and the Environment.
- Commend staff that by their own action or initiative eliminates hazards.
- Be aware of the Internal Emergency Plan, their own role and that of the operators in the event of any emergency situation. Ensure all operators are correctly trained and competent.

  Set a personal example with regard to all aspects of Safety, Health and Environmental protection.

Maintenance Manager

The Maintenance Manager is responsible for:

- Ensuring that all aspects of maintenance activities are conducted in compliance with the SHEQ Policy, the Major Accident Prevention Policy and regulatory conditions and consents;
- Maintenance of the sites' plant and equipment to ensure that it works safely and effectively, and that repairs, maintenance, inspection and modification of equipment conform to relevant statutory requirements and standards;
- Identification and registering of all safety & environmentally critical devices;
- The operation of a planned preventive maintenance system;
- Producing and maintaining documented procedures for maintenance.
- Ensuring all contractors (inclusive of agency staff) employed at the terminal to carry out maintenance activities are suitably qualified and possess the relevant competencies to perform their assigned tasks safely.
- Ensuring all maintenance personnel are aware of and fulfil their Health, Safety and Environmental responsibilities.

Projects & Engineering Manager

The Projects & Engineering Manager works closely with the General Manager and the site Management Team. The role also has responsibility for Engineering Standards and ensuring compliance with the relevant standards, and for:

- Identifying the Major Accident Hazards associated with new or modified plant and assessing their likelihood and severity;
- Managing the capital expenditure program, to meet customer requirements and EH&S improvement programs and continue to reduce the risks of Major Accidents;
- Providing an effective projects engineering service to the site;
- Ensuring that adequate technical support is provided for the commissioning of new or modified plants;
- Ensuring that contractors are treated equally with Company employees on matters of Health and Safety, particularly where they have a role in the management of Major Hazards, and the control of contractors on site;
- Documenting risk assessments and SHE related information to demonstrate that all plant and equipment is appropriately designed or modified, and constructed and commissioned, to manage EH&S hazards and risks.
- Providing the Maintenance Manager with the relevant information related to designed or modified plant and equipment to allow the development of a robust and specific maintenance plan.

All Employees

The Health and Safety at Work etc. Act 1974 places duties and responsibilities on employers and employees alike. In this connection the Company reminds all employees of their duties under Section 7 and 8 of this Act, to take reasonable care of their own safety and that of others who may be affected by their acts and/or omissions. To co-operate with the Company to enable it to carry out its own duties and responsibilities and not to interfere with abuse or misuse safety equipment, clothing or devices. Furthermore, the following requirements are expected of all employees:

- Carry out assigned tasks and duties in a safe manner and in accordance with instructions and company rules, regulations and codes of practice.

- If aware of any inappropriate unsafe practice or condition, which could lead to a major accident, or if in any doubt about the safety of any situation, consult their supervisor or manager.

- Obtain and use the correct tools and/or equipment for the work and not use any that are unsuitable or in an unsafe condition.

- Use the guards, safety devices, safety equipment and Personal Protective Equipment provided.

- Take reasonable care for the Health and Safety of their self and of others who may be affected by their acts or omissions. Ensure impact on the environment of the employees' activities is minimised.

- Be aware of the company procedures and their own role in the event of any emergency situation.

- Co-operate with the company or any other person so far as is necessary to enable any statutory duty or requirement to be performed or complied with.

- Not intentionally or recklessly interfere with or misuse anything provided in the interests of Safety, Health, Welfare or Environmental protection or do anything likely to endanger themselves, others or the Environment.

An example job description may be found in Appendix 4.3.

Visitors/Contractors and Members of the General Public

Responsibilities of visitors, contractors and members of the public when on Stolthaven Dagenham premises are very similar to those of employees, in so far as:

- To take reasonable care for the Health and Safety of both themselves and of any others who may be affected by their acts or omissions. Ensure impact on the environment of their activities is minimised.

- To obtain and use the correct tools/equipment/procedures for the work and not use any that are unsuitable or in an unsafe condition.

- Not to interfere with, remove or deface any equipment supplied or put in place as a safety or environmental protection measure.
- To co-operate with the company audit officers to ensure safe conditions and arrangements remain effective at all times.

4.5. Resources

Stolthaven Dagenham has a policy of resource management, the aim being to ensure that adequate resources are provided to enable objectives to be achieved, and to ensure the technical competence of company personnel. The numbers of people required to manage, operate, and maintain the site has been determined through experience and analysis, and is kept under constant review such that sufficient resource is maintained, and any shortfalls are addressed in a timely manner.

The Company structure and organisation is set out in the organisation chart in Figure 4.3.1.

On-Site Organisation Structure

Responsibility for the Terminal operation as a whole has been assigned to the General Manager, who controls:

- daily operation via the Operations Manager.
- health and safety via the SHEQ Manager and
- engineering via the Maintenance Supervisor.

The Operations Manager has been assigned with primary responsibility for the terminal operation.

The QSHE Manager has responsibilities for the Quality, Safety Health and Environmental aspects for the site.

The Maintenance Manager is responsible for management of site maintenance and engineering aspects which include the planned maintenance program.

Teams of site operatives carry out the Terminal operations. A policy of cross training and multi-skilling allows for personnel change roles to allow for absences and periods of high activity. Operators may be supported by agency labour, restricted to non-safety critical tasks.

Each team of operators is controlled by a Supervisor, a role which has been assigned to site operatives who have gained substantial operating experience with the Company and who have demonstrated their ability to take control over individuals within whilst carrying out their duties.

Supervisor are responsible for co-ordinating operating activities within their teams as well as closely monitoring the performance of those under their control. There is an on-going dialogue between Supervisor and the Operations Manager.

Details of the Site Organisational Structure may be found in Appendix 4.4

Shift Structure & Shift Roles

Day-to-day operations involve several teams of people. Prime responsibility for the operation of the site and the associated utilities lies with the Operations Team.

The terminal in manned 24/7 with manning levels as business and operations require. The minimum level for shipping operations is one supervisor, one chargehand two operators.

There are 16 Operatives with a varied degree of site experience (the average operator have worked on site for approximately 10 years. However, most of the operators have previously worked in similar roles within the process industry). The Operators work to a forward rolling 9-hour shift pattern of Earlies, (6:00 – 15:00), Lates (13:00 -22:00) and Nights (21:00 – 06:00).

There is currently ongoing discussions to include a “day shift” to the Chargehand and operator shift pattern to accommodate for the anticipated growing operational demands. There are 8no. multi-discipline maintenance personnel on site (electricians with EC&I capabilities, Mechanical Fitters, Storeman, Chargehand and Supervisor). Also, specialist contractors can be called upon to assist with relevant maintenance work, as required. The maintenance team mainly day shifts with relevant arrangements in place to cover planned out of hours / emergency works.

Qualifications, Skills and Experience

Job descriptions have been developed for each role within the organisation. These will typically outline relevant qualification requirements for the role (if any), key competencies and role duties, responsibilities and accountabilities.

Stolthaven Dagenham are continuing to develop a Competency Matrix including process safety. The key roles in the organisation have been mapped to the matrix, and gaps against the roles and role competencies are being assessed. The programme helps to identify opportunities to close gaps in the required competences, and to increase our ability to cover absences of personnel.

Following development of the Competency Matrix, job descriptions will be reviewed to ensure consistency including relevant required or desired qualifications, key competencies, and responsibilities relevant to the management of Major Accident Hazards.

Competent Deputies for Key Personnel

Members of staff are permitted to take holiday at the same time as others fulfilling the same role provided this does not endanger the safe running and control of the operation. Only one of the three Senior Managers (General Manager, Operations Manager or SHEQ Manager) is permitted to take holidays at any one time. The General Manager takes on responsibility for immediate management of the site, should the Operations Manager be absent and safety if the SHEQ manager is absent. It is noteworthy that both the SHEQ Manager and the Operations Manager have assistants that work with them on a day to day basis as such most of their role can be performed by these individuals.

Responsibility for setting in motion any on or off-site emergency response rests with the two Senior Managers and in their absence becomes the responsibility of the General Manager or Operations Supervisors. It has been agreed between these parties that one of them will always be on site. During non-operating hours, one of the Senior Managers can always be contacted on the mobile telephone number stated in the Internal Emergency Plan.

Absent Person	**Deputy**
Terminal Staff	
General Manager	Operations Manager, SHEQ Manager
Operations Manager	General Manager, Assistant Operations Manager, SHEQ Manager
SHEQ Manager	General Manager
Operations Supervisor	Remaining Supervisors

It is the Operations Manager's responsibility to co-ordinate planned absences and agrees taking of holidays amongst the Operations Team including those working on site. The same principles apply to other functions.

Managerial members of staff are able to stand in for each other for critical and immediate needs in the case of any unplanned absences. Unplanned absences of site operatives can be compensated due to the increased number of site operatives employed by the business. The Company's policy of cross training and multi-skilling allows for members of staff to be drawn in from a less utilised area to stand in for absences.

From time to time the Company requires agency labour to support the permanent workforce. Their involvement is restricted to low-risk activities such as general housekeeping duties. All personnel brought in from other sources to work on-site, will be given site induction training (including safety and emergency procedures) before commencing work. The Safety Health, Environment and Quality Officer carries out induction training.

Management and Employee Competence

This section describes how the company goes about sourcing competent staff.

Selection of Key Personnel

Recruitment of key personnel is initiated by the Department Manager and carried out against clearly defined job specifications. Recruitment can only take place with the prior consent by the General Manager.

Key personnel include any persons with managerial responsibility, who is in control of the industrial activity such as the General Manager and the Terminal Management Team,

Note: Whilst the Supervisor employed in the Terminal operation have been promoted to their position from Chargehand/Operator level, external recruitment of such personnel would follow the same principals as laid out in this section.

Vacancies are advertised internally and externally. These positions are preferably filled from internal applicants. Job advertisements contain a listing of the principal tasks and responsibilities of the job in question. These may be backed up by an internal person specification, listing the key skills/qualifications, experience and general personal attributes that a job candidate should hold.

The Company Human Resource Department, who would place advertisements, review applications, and undertake first interviews, supports the recruitment process. Potential candidates are always invited for a second interview before a job offer is made. Second interviews are carried out by the General Manager and may be attended by the Operations Manager or Account Manager.

General Managers are selected in line with the above recruitment process. General Managers are selected, when possible, from within the Company, where possible. Appointment of Directors is a matter of the Board of Directors of Stolthaven Dagenham.

Selection of Administrative Staff

Administrative staffs are selected broadly in line with the principles for recruitment of key personnel. The responsibility for recruitment of such staff rests with the General Manager and Account Manager.

Selection of Site operatives

Site operatives are recruited from external sources, such as recruitment agencies or local press advertising.

All applicants are required to provide a full written CV and will be formally interviewed by Operations Manager. The Company has a preference for employing operators that have previously worked in a similar environment and in particular have had experience in working on a chemical plant.

Newly recruited operators must undergo pre-employment medical examinations. Particular attention is paid to the detection of any medical pre-conditions considered detrimental, such as asthma. Records of the results are kept by and can be recalled for health surveillance upon request. Employment is, without exception, subject to a satisfactory pre-employment medical result.

Training

In accordance with the Major Accident Prevention Policy, this section outlines the competency assurance process and training programmes on the Stolthaven Dagenham Site. The Company recognises training as one of the most important pre-conditions for the safe running of the site activities. All personnel receive annual appraisals to review performance, and set development goals, which are progressed under the guidance of Department Managers and HR. Training schedules are reviewed annually as part of the Management Review Meeting. A copy of the training record may be found in Appendix 4.5.

Site Induction Training

Newly recruited site operatives, office staff, agency workers and contractors must receive induction training in order to make them aware of, and familiarise themselves with:

- Site rules
- Safety rules
- The MAPP and a general overview of the site hazards
- Reporting procedures
- Use of personal protective clothing & equipment
- On-site emergency procedures and first aid arrangements
- Good personal and industrial-hygiene standards
- General good housekeeping requirements
- Plant-specific training details the specific hazards of the area where the individual will be working.

Whilst office staff, agency workers and contractors are not directly involved in safety critical tasks in connection with the Terminal operation itself, they should know of the hazards and risks associated with the operation and be aware the general Health & Safety issues and basic

procedures of the plant. Hence the induction training has been standardised for all new employees, agency workers and contractors.

The importance of carrying out all work safely is stressed in the context of the site being a COMAH site and in the context of the shared responsibility that employees have for themselves, other persons and the local environment. The responsibility for the conduct of induction training has been assigned to senior management. A record giving names and signatures of those having attended induction training is kept on file.

Training of Site Operatives

New Operators are provided with an induction programme, which combines training needs identified through an analysis of the role, details provided by the employee's CV and interview, and arrangements intended to familiarise the employee with the company and its systems and procedures. It is the responsibility of the Operations Manager to ensure that off the job training is carried out. The Operations Manager and Supervisor/ undertake / coordinate training on the job. The individual's progress is reviewed over the induction period.

Where necessary, e.g. in connection with the use of new equipment, the supplier or manufacturer will be called in to provide on-the-job training in the safe use of such equipment.

Customers are also actively encouraged to participate in providing training for site personnel, to ensure they are familiar with the hazards associated with that company's products.

Refresher training is undertaken:

- When a performance gap highlights the need
- When operational changes warrant it.
- A predetermined date according to the nature of the task

The Company has in place a training matrix to provide sufficient detail in order to visualise the level of competence achieved by each individual plant operative and facilitate the planning process for training. The responsibility for this training matrix has been assigned to the Operations Manager.

First Aid and Fire Fighting Training

There are several site employees who have been formally trained as first aiders; all site employees are provided with training in the use of fire extinguishers. One Supervisor is trained as a Fire Warden.

Emergency Response Training

All personnel are provided with appropriate training in Emergency Response. The level of training is tailored to the individual's needs, and whether they have a specific role within the emergency procedures. This training can take various forms, including classroom sessions, table-top exercises, walk-throughs, and self-study courses. Whilst some of this training is related to specific roles, much is common to everyone, including:

- Awareness of COMAH Regulations and the requirements of the legislation, including the MAPP and a basic awareness of our Major Accident Hazards;
- Overview of the Emergency Plans, knowledge of the fire alarm system and how to respond to it (evacuation and roll call arrangements); and
- Recognising and reporting requirements for incidents and near misses.

There are also training programmes in place to cover such aspects as Permit to Work and Management of Change.

All site employees are provided with training in Dangerous Goods Awareness and Loss Control. There are several site employees who have been formally trained as Dangerous Goods Safety Advisors.

Contractors are also covered. Emergency arrangements are covered in the contractor induction programme.

Fork Lift Truck Operator Training

There are several site employees who have been formally trained to drive a forklift. Forklift truck driver training is provided by independent, recognised, training schools, and licences are kept up to date by refresher training.

Training of Management

Training of management in the aspects of Health & Safety is provided in-house and through external training bodies. Manager's training needs are identified and discussed as part of the Company's annual staff appraisal. The Company actively encourages its staff to go on training courses that are relevant to their work. The Company funds all such training courses, and time off work is given.

Creating General Awareness of Health & Safety Issues

This is an integral part of the Company's drive to create a Health & Safety culture throughout the Company. On-site this is achieved by means of monthly site meetings, involving all site employees, which are used as a means of communicating progress towards achievement of targets, information on key safety and environmental matters / performance, and issues relating to the control of major accident hazards.

All internal / external training undertaken by employees is confirmed by certification for the attendee. Details of the training attended are added to the employee records and a copy of the certificate added to their training folder.

Training materials identified through Management of Change (MOC)

Once the need for training and the appropriate method to deliver it have been identified, the Change Owner is responsible for developing the training materials, as required. The content of the training materials will vary and depends upon the scope of the change and the knowledge and skill levels of the affected personnel. However, in general, most training materials will:

- Explain the scope of the change, its technical basis and the impact that the change will have on affected personnel;
- Develop the knowledge and skills of the affected personnel, so that they can safely and effectively manage the change.
- Ensure that affected personnel appropriately understand Safety, Health, Environmental, and Quality concerns; and
- Provide appropriate opportunity for affected personnel to voice their concerns, comments and questions about the change.

Verification of Training

Knowledge & skill verification is an important tool in effectively delivering training. Knowledge & skill verification can take many forms including:

- One-on-one verbal questions;
- A written “quiz” or “test”;
- A classroom test followed by review of work; and
- Observation by coach or co-worker.

Documentation of Training

Training is documented in the employees personal file.

Professional Qualifications

Several members of the Management Team, and senior staff within the main functional areas, are professionally qualified individuals who have acquired detailed technical knowledge and personnel management skills as a result of many years’ experience within industry. Some individuals also hold qualifications from professional bodies.

Informal Awareness Communications

In addition to formal training, the Management Team is also expected to keep employees informed of all activities and developments. This is done through a number of different avenues.

For example, the entire site is invited to attend a “town hall meetings”, communication presentation, display of information on noticeboards etc.

There is also elected health and safety representatives that consult with the workforce regularly to raise and discuss any SHE issues that are of concern or interest to them. The health and safety representatives meet with members of the management team periodically, as required.

Contractor Training

Stolthaven ensures only competent contractors that share a similar HSE, ethics and compliance policy are engaged. Specialist contractors are engaged to help better assess and understand major accident hazard including to recommended measures that can be implemented to ensure relevant associated risks are reduced as low as reasonably practicable.

Stolthaven management ensures adequate resources are made available to not only ensure regulatory compliance but to assure risk mitigation as identified following assessment of major accident scenarios and to foster continuous improvement of HSE management systems.

All contractors to site are fully inducted and supervised including been issued relevant information related to site hazards and risks including expected health and safety requirements to mitigate major accident hazards.

Training and Development

The site aims to ensure that all employees are in possession of the knowledge, skills and experience necessary to perform their role in accordance with the Company’s procedures, and in full compliance with the law. All such personnel, at all levels of the organisation, including

contractors where appropriate, will be made aware of their responsibilities and provided with training to meet their identified training needs."

Different methods for delivering training are used, depending upon the amount of communication that is needed to effectively deliver the training. This can be in the following forms:

Personnel with a specific role in the event of a Major Incident:

Additional training is provided for all personnel who have a specific role to play in the event of a Major Incident. The training comprises classroom presentations or walk-through exercises, where individuals are taken through the Emergency Procedures. In addition, certain key personnel attend courses specifically tailored to their roles. This includes:

Site Main Controller:

The Site Main Controller role is covered by the oOerations Manager. In his absence, the role will be undertaken by the Assistant Operations Manager, the SHEQ Manager or the Operations Supervisor (in that order). The Site Main Controllers attend in-house training which is then supplemented by participation in emergency exercises arranged with relevant external stakeholders / emergency responders.

Site Incident Controller:

In addition to the emergency response and COMAH-related training relevant operational personnel undertake, they also receive specific training in the role of Site Incident Controller. The training is a mixture of classroom training supplemented by various emergency exercises and drills. The exercises focus on the important interface between the Site Incident Controller and representatives of the site SHEQ Team.

ECC Support:

Several individuals also attend the Site Main Controller training, so that they can fulfil the various support roles associated with operation of the Emergency Control Centre. They also participate in the various emergency exercises organised each year to ensure that everyone practices their identified role.

The Emergency Control Centre (ECC) will normally be alongside the main office building by the weighbridge on Thunderer Road, unless evacuated due to an incident. In these circumstances, the ECC could be either off site, at the gatehouse or located at a location dictated by London Fire Brigade (LFB).

Shift Team:

The philosophy for emergency response is now based on the following priorities for the Site Incident Controller:

- Assess the incident, ensuring their personal safety; determine quickly whether they need or may need Emergency Services support, and evaluate the potential for the incident to escalate;
- Summon the Emergency Services, and take measures to ensure the safety of on-site personnel (sound the appropriate alarm, conduct roll call and determine the need for additional assistance (call-out of personnel to support from the Emergency Control Centre);

- Determine what actions need to be taken to shut down plant or make isolations etc., to minimise the risk of escalation;
- Ensure that we communicate both with the Emergency Services and other Agencies, and with the local community; and
- Provide technical support to the Emergency Services and other Agencies to mitigate the on-site and off-site effects of the incident.

The emergency response teams' training focuses on the above priorities, and on dynamic risk assessment. Practical training targets mitigating actions that can be taken both quickly and safely to minimise both escalation and off-site effects, such as the deployment of water curtains or foam blankets and encourages working closely with the LFB to put such measures in place quickly and effectively.

Cover for Absences of Key Personnel

Current manning levels on the site, including those in the control room, are mostly maintained depending on workload which allows us to safely run the processing units.

From an emergency perspective, each shift team provides and covers:

- Site Incident Controller;
- Roll Call Coordinator;
- Control Room Supervisor.

Each shift team member has pre-defined responsibilities within an emergency.

For management and supervisory roles, each department has varying degrees of cover for absences. Short-term absences, for holidays, training, etc. are typically covered within the function. Relevant knowledge and experience can also be provided in absence situations from other departments.

Securing of Financial Resources

Continuous improvement is a key element of the SHEQ Management System. As such, the site currently has several improvement plans all aimed at improving health safety and environment performance on-site. These plans include:

- Implementation of updated Engineering Standards;
- Capital Project;
- Management System improvement activities (e.g. from internal and external / regulatory EH&S audits);
- On-going maintenance compliance improvement activities.

These plans are regularly reviewed to ensure improvements are identified, prioritised and planned into site operations. This in turn determines the site resource requirements, in both financial and personnel terms. Where items meet specific regulatory triggers, they duly assessed and necessary plans developed for approval, from both a financial and timeliness perspective, based on the level of risk involved.

The Management Team meets monthly to monitor SHEQ performance including the status of actions and any other regulatory matters. This team uses a risk-based approach to help prioritise the workload and review resource demands versus what is available. It may, as required, look to outside consultant help for specific areas of expertise.

The General Manager as part of the Site Management Team represents the site on the Stolthaven Dagenham Board. The Board will ensure that financial resources are made available by agreeing the relevant improvement plans and including them in both the Capital Plan and Expense budget. There is also a discretionary budget for any potential actions that are identified between budgeting activities. Both the capital and expense budgets are flexible enough to adapt to priority changes throughout the course of each financial year.

4.6. Personnel Performance

The Health and Safety at Work etc. Act 1974 imposes duties and responsibilities on the General Manager (on behalf of the Stolthaven Board of Directors) as an employer to make adequate provision and resources available to secure the Health, Safety and Welfare of its employees, and others who may be affected by the Company's activities, especially contractors, visitors and the general public etc. The Board is also responsible for ensuring the Company activities minimise the impact on the Environment.

The Board and ultimately the General Manager will ensure that adequate management arrangements exist for the company to comply with the requirements of the Health and Safety legislation and to maintain and implement its Health, Safety and Environmental policy.

Job Descriptions have been prepared for each position. They are issued to the employee with the Terms and Conditions of Employment at the commencement of employment. In addition, specific responsibilities are stated in the following documents:

- Employee Health & Safety Information Handbook (provided to all employees on commencement of employment);
- Safe Working Procedures; and
- Site Emergency Procedures.

The General Manager is responsible and accountable to the Stolthaven Dagenham Board of Directors, and the Global Business Director for the operations of the site, and appraised on an annual basis to ensure performance is to the required standard for the role.

The Operations Manager is responsible and accountable to the General Manager for achieving the objectives of the Health, Safety and Environmental Policy for all activities under their control. They are also appraised annually.

The Safety Health Environment and Quality Manager assists the General Manager in co-ordinating the site activities to ensure that they comply with legislation, regulation and company policy, and the Operations Manager is responsible and accountable to the General Manager for achieving the objectives of the Health, Safety and Environmental Policy for all activities under their control. Line management carries out annual appraisals of all employees, and development goals for the coming year agreed.

Performance Review and Appraisal

Performance management starts with a shared understanding of what the company is trying to achieve. This is set out in the Stolthaven Strategy Document, which guides objectives and goals across *all levels* in the organisation. All permanent and fixed term employees working full or part time are included in the performance management process which:

- Provides clear direction towards personal and organisational goals;
- Enables everyone to achieve their potential, gain maximum job satisfaction and contribute towards the Company's success;
- Provides a platform for Managers and individuals to review aspects of job performance on a regular basis;
- Helps to identify individual training, development and career needs.

Throughout the year, individuals take part in meetings with their manager to set goals and discuss aspects of their work performance. The objective of the goal setting meeting is to provide a platform for success, and to give each employee a clear direction of their role and contribution. The purpose of the subsequent review meetings is to review the individual's progress and achievements against those goals and to discuss any future training, development and career planning relevant to the individual and to the organisation.

A final performance review meeting takes place at the end of each year. The outcome of the discussion is a documented record of progress against goals, highlighting successes, achievements and strengths, as well as identifying areas for development and improvement. Any training and development needs identified for individuals are communicated to the Training Department / HR, so that the information can be recorded in their personal file and included in the site training plan for the following year.

Once the final performance review is complete, the Manager will apply a performance rating for everyone. Any employee rated as a poor performer will be assigned a Performance Improvement Plan. The overall intent of the improvement plan is to help employees recognise opportunities for improvement and raise their overall performance level. Employees with this performance rating will receive additional support and feedback from their Manager.

At the end of the performance improvement period, if performance has improved to a satisfactory level, the employee will be removed from the Plan. However, insufficient progress at any point during the period, or failure to reach a satisfactory level of performance at the end of the period, may result in further action, up to and including separation from the company.

For all employees, the final performance review and rating forms the basis of the individual's pay award.

Incentive and Reward Schemes

With the aid of the company Recognition policy, we encourage a positive and consistent use of recognition across the business.

We use a wide range of tools and methods to incentivise, recognise and reward those people who go above and beyond in helping the company achieve its aims and goals and work in a safe and responsible way. We promote:

- Individual recognition;
- Team recognition;
- Safety recognition.

The company also has a near-miss / suggestion scheme that provides rewards for good ideas and initiatives that result in a safer and more efficient organisation and a better workplace.

A copy of the appraisal documentation may be found in Appendix 4.6

4.7. Worker Involvement

The company recognises the importance of engagement of the workforce in the promotion and achievement of good process safety management, and that this is necessarily a two-way process. There are several ways that the company aims to consult with the workforce.

The Company actively encourages all of its employees to make regular contributions towards continuous improvement of safety standards and the promotion of good safety practices. This is achieved by:

- Open recognition of individual's achievement
- A Loss Control notice board
- Safety posters in prominent positions
- A safety bonus incentive scheme

The SHEQ Team is one of the key vehicles for ensuring consultation on health safety and environmental issues across the various functions / departments. The site also has two health and safety representatives that were appointed following a formal nomination and election process by the workforce. These individuals also consult / liaise with the workforce on issues related to health safety and environment including serving as an interface between the workforce and site management.

HSE meeting are held periodically with the health and safety representative. The meetings allow for discussion of current HSE concerns or issues, and for any actions associated with addressing these concerns are recorded and subsequently tracked to completion. The active involvement of the workforce in resolution of issues and concerns is encouraged and supported, and the team recognises. The meetings are also used to present a review of current SHEQ performance. Recent unplanned events, and associated findings and lessons learning etc. This often includes incidents outside of Stolthaven Dagenham, and where appropriate, outside of our industry. The health and safety representatives are expected provide feedback from the meeting to their represented workgroup in a timely manner.

Maintaining a Safety Culture

The Company recognises that the creation of a Health & Safety culture is a long process and is expecting it to take a number of years until the culture has fully matured. However, considerable progress has already been made during recent years.

Much attention is paid to the need of employees to be aware of their own Health & Safety as well as that of others. To this end employees are actively encouraged to report any conditions, which they consider unsafe. In particular the Company believes that awareness of 'near miss' situations are an important step to the prevention of the actual incidents and accidents.

In order to enhance awareness of the need to follow safe working practices the Company operates modest safety incentive schemes, which rewards employees who avoid any form of safety incidents. Such schemes are tailored towards the particular requirements of the operation in question.

Whilst safety incentive schemes are used as a means of promoting Health & Safety initiatives in a positive way, the Company has also set strict rules and disciplinary procedures which deals

with those employees who may not adhere to safety rules and procedures. In particular the Company takes a very serious view of not reporting incidents and has more stringent sanctions in relation to instances of individuals or groups who may deliberately avoid the reporting of safety incidents or accidents.

Details of safety initiatives and issues requiring attention are recorded as part of the regular site meetings. Posters featuring safety issues are displayed in prominent positions and are changed from time to time in order to keep their message fresh.

Operations are involved in HAZID and development of safe working procedures (SWP). Safety meeting are held once every three months where any training or development is required. Two operators are part of the safety committee and will feed information on a two-way basis as well as the training program.

Upward Reporting of Information Relevant to the Control of Major Accident Hazards

Initial recording and reporting of incidents and near misses is managed via an established incident reporting chain, with communication to relevant personnel within the organisation for different categories of events. These notifications include the General Manager, Operations Manager, EH&S Manager and Customer Services Manager for more significant events. These events are then logged by the SHEQ Team, which provides a central location for further review and follow-up.

Findings and follow-up actions from investigations are recorded either in the Continuous Improvement Register is typically used for more significant events and has the functionality to record and track actions generated from the investigation. Unplanned events are reviewed including at the Management Safety Meeting. The SHEQ Manager (assisted by other Department Managers) reviews all open actions to ensure that resource is allocated to investigation and follow-up actions appropriately.

Incidents and near misses are also communicated to Board and senior management level via a monthly report. This report also covers several other aspects related to MAH management, including:

- Process Safety Performance Indicators – the status of our suite of leading and lagging indicators is reported, along with commentary regarding trends, concerns and improvement actions. This data is then reviewed in more detail at the monthly Operations Leadership meeting.
- Findings from relevant internal and external audits, including regulatory interventions
- Status of actions, particularly those associated with regulatory commitments and unplanned event follow-up.

All the above is also presented in a summary at the management Safety Meeting including being shared across the organisation via SHEQ Notice Boards strategically placed on site.

Employee involvement

Hazard Studies and Risk Assessments

Employees are actively encouraged involved in all manner of hazard studies and risk assessments, whether formal or informal. Many of these relate to MAH management, and examples include:

- HAZID and HAZOP studies, whether facilitated internally or using third party support. All such sessions will involve at least one process operator;
- LOPA studies
- Safety-Critical Task Analysis and the associated Human Reliability Assessment of those tasks.

Operating and Emergency Systems, Procedures and Instructions

Employees are encouraged to write and review procedures, and to highlight areas for improvement as appropriate. This encourages both ownership and compliance and aims to ensure that procedures are based on how tasks are performed. Where tasks are determined to be safety-critical, those undertaking the task are involved with any Human Reliability Assessment / safety critical analysis of that task.

Emergency response exercises and scenario-based drills provide further opportunity for employees to have input to developing and improving response arrangements and actions, with resulting improvements to the Emergency Plan and/or emergency pre-plans.

The company also promotes continuous improvement by encouraging employees to come forward with good ideas. The suggestion scheme provides rewards for ideas for improvement, including those related to safety / risk reduction. A small cross-functional team reviews such ideas and drives suggestions forward as necessary.

Other examples of employees helping to set standards for MAH management include operators being involved in the human factors assessment of our control room (to be built as part of new office) and the development of the associated improvement plans, and improvements to handover and handback aspects of our Permit to Work system.

Performance Measurement - Audit and Review Activities

Employees are involved in the investigation of incidents and near misses. The degree of such involvement is dependent upon the level of the investigation (personnel involved in the unplanned event itself are automatically involved in the investigation and follow-up process). For investigations meeting one or more of our Root Cause Investigation criteria, for example, there should be representation from the workgroup involved (such as Operations) in the investigation team.

Several scheduled inspections are specifically designed to involve personnel from all levels within the company.

4.8. External Organisations

The public communications strategy is to use the COMAH as an opportunity to establish the Stolthaven Dagenham Site as an industry safety leader through a comprehensive Safety Communication Campaign. Communication will be two-way, and all audiences will be consulted and listened to. All communications will be executed professionally and in accordance with COMAH recommendations.

All visitors to the site are made aware of the potential hazards that they may encounter in the course of their visit. This may take the form of a formal induction for contractors who are likely to remain on site for an extended period.

Operators of Other Establishments

An external site plan has been written by London Resilience and agreed by all concerned parties. The external site plan is issued to all relevant parties. There are no residential properties within the PIZ; however, there are currently 35 local businesses within the Stolthaven Dagenham PIZ. These businesses within the Public Information Zone (PIZ) see Appendix 2.3 have been notified by letter of the appropriate measures to be taken in the event of a major emergency. Included in the letter was a laminated instruction to be placed on their notice board of action to be taken in case of emergency. A copy of the information pack provided may be found in Appendix 4.7.

Contractors and their employees

A short visitor and contractor induction video / presentation is shown to all visitors and contractors. This covers basic awareness of:

- Security arrangements;
- Site speed limits;
- Smoking and control of ignition sources;
- PPE;
- Vehicles;
- Fire / toxic alarms, testing and roll call arrangements;
- Reporting of incidents and near misses; and
- First aid arrangements.

Short stay visitors are chaperoned by a host at all times. Drivers and long stay visitors unfamiliar with the site and its operations are also accompanied or more familiarisation is given if they were to be left unaccompanied for any time (in the case of tanker drivers, for example, this additional familiarisation is provided by the operators). The induction process is repeated in the event that a visitor does not return to site for more than 6 months. Contractors are provided further site familiarisation as necessary, particularly with respect to the intended work area(s).

In certain instances, such as larger projects or projects where direct supervision of the work is provided by the contractor, a more in-depth classroom-based induction is given to contractors. This session runs to around two hours, and typically covers:

- Site overview;
- Security;
- Emergency procedures;
- Contractor rules;
- Permit to Work;
- Work equipment; and
- Safety Behaviour and Expectation.

The classroom session is then supplemented with a site tour:

- Access and egress;
- Fire assembly areas and toxic refuges;
- Control room;
- “No-go” areas;
- Goggles areas;
- Location of safety showers, eyewash stations and fire alarm break glass units;
- First aid facilities;
- Smoking area; and
- Permit room.

Direct supervision of contractors may be managed by a member of the Maintenance Team or the Project Team or by the contractor company, depending upon the nature and scope of the work and the contract that is in place. Where contractors are directly supervised by Stolthaven personnel (typically Maintenance Supervisors or Projects personnel), it is our personnel that then interfaces with Operations in respect of Permit to Work. In instances where contractors are to undertake specialised work, they are required to submit detailed RAMS for assessment and approval prior to work starting.

Once a project is underway, regular dialogue with the contractor(s) continues. This will include, dependent upon the scale and duration of the project, some or all the following:

- Permit-to-Work - the scope and adequacy of Risk Assessments and Method Statements are assessed and approved as part of the PTW issuing process;
- Daily inspection of the work area(s) by operations supervisors and other relevant stolthaven personnel. Aspects covered include housekeeping, contractor behaviour and compliance with site rules and expectations, and PTW compliance. These inspections directly involve the contractor(s), and findings are also fed into daily planning meetings held by Operations, and into the project-specific coordination meetings;
- Coordination meeting - weekly or daily meeting with contractor(s). In addition to reviewing progress and upcoming work, the meeting also reviews incidents, near misses and learning opportunities. Also, a review of risk mitigation arrangements.

A copy of the Permit to Work form utilised at Stolthaven Dagenham may be found in Appendix 4.8

Emergency Services

Information has been provided to the emergency services and the London Borough of Barking and Dagenham authorities to allow both internal and external plans to be developed. The London Resilience (External emergency planning) have issued the External site plan in June 2015.

A fire appliance from the fire brigade attended site in June 2005 for familiarization exercises with the fire water ring main. During this exercise an appliance was connected to the main via a hydrant in Area 6 (Nº FMH19), the furthest point from the jetty fire water pumps to test the ability of the fire water pumps to deliver an adequate supply of water to the site. During this test the ring main supplied the appliance with a pressure of ~7bar which resulted in the appliance producing two firefighting jets of 70mm hose, see Section 7 Appendix 7.8.

A full-scale exercise to test the effectiveness of the external site plan is scheduled for first quarter 2019.

Local Authorities

Local authorities have been consulted with regard to hazardous substances planning consent. Deemed Consent for the flammable products held at the terminal was granted in 1992 by the local authority. Further hazardous substances planning consent was obtained for the substances dangerous to the environment (amines and gas oil) held at the terminal in 2004.

London Borough of Barking and Dagenham authorities have been consulted with regard to the on-site plan. The London Resilience (External emergency planning) have been provided with the internal emergency plan and London Resilience issued the external site plan in June 2015.

Enforcing Authorities

The terminal is subject to regular visits by the CA to Stolthaven Dagenham with respect to its operations. CA visits occur at approximately 3-Monthly intervals.

Employee Associations & Professional Bodies

The company is a member of several professional bodies and industry associations, such as;

- the Solvents Industry Association,
- the Chemical Business Association,
- Tank Storage Association (TSA),
- Energy Institute,

4.9. Intelligence Gathering

The Company keeps itself informed about new technical knowledge relevant to the activity via its specialist suppliers, trade journals and exhibitions. Customers also provide information relating to their own products and provide refresher training for site personnel.

Stolthaven Dagenham have substantial arrangements in place to ensure that we are aware of changes in relevant applicable legislation, regulation, guidance, and new technical knowledge and developments relating to the assessment and management of Major Accident Hazards. This includes:

- Information received directly from the Health and Safety Executive and Environment Agency, and other regulatory bodies such as the Local Authority (London Resilence Emergency Planning Unit, London Fire Brigade, etc;
- Routine screening of the information provided via the HSE website or via their e-bulletins;
- Stolthaven Dagenham subscribe to several government and industry sponsored website (such as Envirowise, law-Now, NetRegs, OPSI etc.) which provides email notification of changes to UK and European legislation, regulations and guidance, and gives us access to these and other documents from a wide range of industry bodies and associations;
- The company is a member of several appropriate professional bodies and industry associations, such as the Solvents Industry Association, the Chemical Business Association, The Royal Society for the Prevention of Accidents (ROSPA), Tank Storage Association (TSA) and the Road Haulage Association. Close contact with the enforcing authorities ensures that the company is aware of relevant issues., and receives various updates from them, along with opportunities to be directly involved in working groups set up to influence implementation of new legislation or guidance;
- Subscription to e-newsletters from various relevant organisations, such as:
    - US Chemical Safety Board;
    - US Centre for Chemical Process Safety;
    - Engineering Equipment and Materials Users Association (EEMUA); and
    - FM Global.
- Attendance at the annual “TSA” conference and similar events, where new developments and technical knowledge is shared;
- Individuals are encouraged to attend relevant training courses to support their Continuing Professional Development, which includes keeping up to date with new guidance and knowledge etc. Relevant qualifications to help individuals with keeping themselves up to date (such as NEBOSH) are also fully supported by the company.

Stolthaven Dagenham maintains a register of applicable codes, standards, legislations etc. The register is reviewed periodically to ensure company compliance.

A key part of intelligence gathering from outside of the organisation with respect to major accidents and hazards, is Stolthaven’s Past Accident Review (PAR) process. The Past Accident Review was conducted as a workshop in which the eMARS database was screened for relevant substances (e.g. Diesel, Ethanol) along with relevant operations (e.g. ship, tank) or

event types (e.g. overfill). The PAR is presented within the ALARP demonstration tables within Appendix 3.8. Furthermore, Stolthaven have created a lessons' learned register which incorporates site lessons and industry associations such as the Tank Storage Association (TSA) and the Chemicals Business Association (CBA). A snapshot of this register is presented in figure 4.9 below.

Figure 4.9 – Snapshot of the lessons learnt register

Safety and Quality Management
Lesson Learned Register

Page:	1
Form:	FD110
Date:	26/07/2016
Rev. No.:	1
Appr. By:	EWO

Date	Title	Category	Equipmen	Outcome	Potential for similar incident occurring at Dagenham	Link to document	Comments
25/05/2015	Failing Tank Bottom Plate	Mechanical	Tank	Environmental Impact	High	..\102-four-blocks-ruptured-tank-bottom-2.pdf	
30/09/2015	Forklift Accident	Vehicle	Fork Lift Truck	Injury	High	..\104-Safety-Alert-2015-02-Forklift-Truck-Incident.pdf	
20/08/2015	Failure of a flexible rubber hose during the discharge of HFO from a ship	Spillage	Flexible Hose	Environmental Impact	High	..\103-TSA-Safety-Alert-Flexible-hose-failure-Aug-2015-v2.pdf	
01/07/2015	Mooring Line Failure Resulting in Serious Injury	Human Factor	Vessel	Injury	High	..\105-MAIB-Zarga.pdf	
29/03/2017	Electrical flash incident	Electrical	Electrical Panel	Other loss	Medium	..\ABP-HS-SA047 Safety Alert - Electrical Flash Incident.pdf	
01/06/2017	Overpressure of an Explosion-Proof Enclosure	Electrical	Electrical Panel	Injury	High	..\Chevron overpressure Ex enclosure.pdf	
11/05/2016	Crane Collision	Vehicle	Crane	Damage	Medium	..\Crane-Collision-3-June-2016.pdf	
27/04/2017	Contractor received an electric shock from unearthed portacabin	Electrical	Electrical Cable	Injury	Medium	..\Electrical shock porta cabin.pdf	
24/03/2017	Grinder disk failure	Mechanical	Tools	Other loss	Medium	..\Grinder disk failure.pdf	
28/03/2017	Hose failure - system design	Spillage	Flexible Hose	Contained spill	Medium	..\Lessons Learned Hose Failure and Pressure Relief rev1.docx	
24/05/2017	Hot water connection failure	Mechanical	Other	Damage	Low	..\Lessons Learned Document 7 - Hot Water Connection Failure.docx	
					Low	..\Lesson Learned - Lost Time Injury Stepping onto Granite	

4.10. Internal Communications

Communication of the MAPP and SMS

The MAPP and SMS are communicated to employees (and other interested parties) via several avenues from the company intranet, through to inductions, display on dedicated notice boards, briefing meeting etc. Documents (including SHEQ performance updates) are periodically printed and added to the safety notice board. Employees also receive information through COMAH awareness training.

The MAPP is accessible to all personnel via the Company's shared computer drive. The MAPP is reviewed and revalidated annually as part of the Management System Review.

Periodic SHEQ meetings, involving all site employees, are used as a means of communicating progress towards achievement of targets, information on key safety and environmental matters, and issues relating to the control of major accident hazards.

Employee Suggestions

The Company actively encourages all of its employees to make regular contributions towards continuous improvement of safety standards and the promotion of good safety practices. The Suggestion / Near Miss Reporting Scheme provides rewards for ideas for improvement, including those related to safety / risk reduction. The SHEQ Team reviews such ideas and drives suggestions forward as necessary.

Suggestions for improvement in terms of management and reduction of MAH risk can arise from various other activities, including:

- Safety observations conducted on, for example, road tanker loading and unloading operations;
- Emergency exercises and drills, where suggestions are often incorporated into updated response plans and operating procedures;
- Follow-up of near miss events - whilst formal investigation may not be deemed appropriate, near misses are routinely followed up to try to determine any valuable learning. Often, those involved will come up with very good ideas to improve activities, procedures, etc.;
- Risk assessments, where cross-functional participation is actively encouraged (e.g. HAZOPs, HAZIDs, HRA, etc.); and
- The bi-monthly SHEQ Management Meeting. Concerns raised by individuals spark debate and often result in very good suggestions being put forward to reduce risk.

Employees are involved in near miss reporting and these are entered into the company data base. Results of any safety audits are feedback to relevant employees through safety minutes or reports on the notice boards.

Standards, Procedures and Risk Controls

All employees receive training / induction including an awareness of Major Accident Hazards, which currently covers:

- Background and a brief outline of the COMAH Regulations;
- An outline of the MAPP;
- Some significant global Major Accident events to illustrate different types of Major Accident;
- Brief overview of our MAH scenarios

- Examples of near misses (and significant events) experienced on site;
- Some of the key risk control systems in place to minimise our MAH potential, such as Permit to Work, Management of Change, Incident Investigation, etc.; and
- How their role and assigned tasks can contribute to the management and reduction of MAH risks.

Individuals also receive training in risk control systems relevant to their role within the organisation, which will again make the link between that risk control system and MAH management.

Safety, health and environmental procedures have been developed by the Company, supported and supplemented by general health, safety and environmental rules; where appropriate the rules are supported by signs to communicate the message.

The Internal Emergency Response plan is located in the Supervisors office, containing details of emergency responsibilities and actions to be undertaken. This is available as guidance to the Supervisor in the event of an emergency occurring on site.

Hazards arising during maintenance activities are controlled via the site PTW program which is coordinated by the Maintenance Supervisor in conjunction with Operations and SHEQ Team. A plan is displayed outside the Operations Supervisors office showing all PTW locations.

General health and safety responsibilities are contained in within employee contracts of employment and communicated during initial site inductions.

Relevant Performance Monitoring

The activities of site personnel are monitored by site management and discussed with the relevant individuals. This ensures that the safety management system is meeting the aims of the policy statement.

Regular monitoring is formalised by means of weekly safety management tour(s) carried out by site management. Findings are documented, and corrective actions identified where appropriate.

Site walks are also carried out (including by operational supervisors) conducted with a view towards ensuring that the site is operated safely, housekeeping standards are maintained, and safety issues are identified promptly, triggering corrective action.

Safety audits are carried out by a group of trained auditors on an annual basis. Agreed actions are then recorded on the Continuous Improvement Register, with a full report being collated and distributed to the General Manager (and Heads of Department).

The site maintains a set of key process safety indicators that monitor performance around carefully considered areas (taking a risk-based approach). There is an emphasis on leading indicators including the determination of relevant threshold that ensure the site management receive early warning of things going wrong and are able to react proactively.

Learning Lessons

We strive to learn useful lessons from relevant (positive or negative) events taking place within or outside our organisation. This is captured in a dedicated Lessons Learned Register.

The level of rigour applied to investigation of an incident, near misses or safety observations is guided by the severity (either actual or potential) of the incident. Corrective / preventive actions are identified where appropriate to target the determined root / contributory causes, and learning is shared. The applicability of any learning to other functions, other activities and the other site, is always considered. Sharing of learning from incidents and near misses may be via one or more of the following:

- Presentation and review at the bi-monthly SHEQ Management Team meeting and subsequent cascade feedback by the meeting attendees to their respective workgroups;
- Via the bi-monthly safety talk – where all site personnel are welcome to attend;
- As part of specific training sessions, such as Major Accident Hazard Awareness; and
- General e-mail communications to appropriate audiences.

A further review of our incidents and near miss events is undertaken as part of the annual Management System Review, to try to identify any trends or commonalities in terms of incident type, cause(s), risk control system and/or management system failure.

Stolthaven Dagenham actively strives to learn from incidents and near misses external to the organisation. Sources of this potential learning are quite extensive, and include:

- The Health and Safety Executive (particularly via its website and e-bulletins), but also via our Regulatory Inspector;
- Local industry bodies such as the Tanker Storage Association SHE Managers, where key industry players share their events, and where the Competent Authority also share learning from incidents, court cases, etc.;
- The IChemE Loss Prevention Bulletin;
- European Process Safety Centre;
- US Chemical Safety Board (CSB) - incidents covered by their videos have been included at numerous training sessions over recent years;
- The Institution of Occupational Safety and Health (IOSH).

In all cases, the key to learning is to understand the applicability of any incident or near miss to our company. Sharing of this learning may simply be communication, but more often involves discussion and review to determine relevance in terms of our equipment, our risk control systems and our procedures and practices.

Safety Information Dissemination

On-site this is achieved by means of periodic site health and safety meetings, involving all site employees chaired by either the General Manager or the SHEQ Manager. The meetings are also used as a means of communicating progress towards achievement of the objectives of the Major Accident Prevention Policy and information on key safety and environmental matters relating to the control of major accident hazards. Information from the workforce is communicated to the management. If action is required on an issue, the action is assigned to the responsible person with a timescale for completion. The meetings are documented and distributed to all Stolthaven Dagenham personnel thus providing a written record.

Bi-monthly management meetings incorporating COMAH issues, take place. Minutes are taken and distributed to the management team. Attendees receive minutes and these minutes are stored on public computer drives (accessible to all site personnel) and also communicated to site personnel via their elected health and safety representatives. Posters featuring safety issues are displayed in prominent positions and are changed from time to time in order to keep their message fresh.

4.11. Priorities for Improvement

The company's Major Accident Prevention Policy confirms the company's commitment to achieving high standards of safety and environmental performance, and to striving for continual improvement in its control of major accident hazards at the site.

Identification of Improvements

Areas for improvement are identified by various means:

- Regulatory intervention plans identify potential or actual deficiencies and improvement opportunities that the Competent Authority have ascertained from inspection visits and/or review of the COMAH safety report;
- Review of the Safety Report identifies improvement opportunities from HAZID review, ALARP review;
- Various risk assessments undertaken, such as HAZOPs, LOPAs, HRAs, Occupied Buildings Risk Assessments, etc.;
- Ongoing identification of process and plant improvements;
- Investigation of incidents and near misses; and
- Suggestions put forward from personnel.

Prioritisation and Scheduling of Improvements Identified

Improvements identified as outlined above must be reasonably well-defined in terms of both risk reduction benefit and cost to allow any meaningful assessment of priority. There will be those where cost is low and benefit offered is obvious, which will be implemented, and at the other end of the spectrum will be improvement ideas where the cost of implementation is high and benefit is low, which will not be progressed. Inevitably, however, there are improvement opportunities where that distinction is not obvious. In these instances, it will be usual to more accurately define the scope of the improvement project and its associated costs. Numerous factors will influence the decision if and/or when to progress such improvements, including:

- The risk reduction benefit relative to that for other identified improvement opportunities;
- The availability of internal and/or external resource to progress the improvement work; and
- Availability of the plant or equipment to allow improvement work to be undertaken (including consideration of business opportunities and commitments).

Cost-benefit analysis is an available tool to assist with this decision-making process.

The prioritisation and scheduling process is driven through various forums, including:

- Site Management Team - this meets on a bi-monthly basis to also review progress of actions associated with Regulatory commitments and MAH risk reduction measures arising from activities such as HAZOPs and LOPAs, etc.;
- SHEQ Team – this team meets weekly, and their remit includes monitoring of our PSPIs and other key performance indicators. Again, workload management to maintain progress of improvement work is considered; and

The output from these forums ultimately feeds into the Management System Review. The process is necessarily flexible to a degree to ensure that the dynamic nature of the business is included. However, the coordinated approach described works well to optimise the progression of MAH risk reduction measures across the organisation.

Scheduling

Maintenance Strategy and Policy

The basic maintenance philosophy is that equipment will be maintained fit for purpose and effective availability will be maximised. Items of plant equipment and control systems are assessed to identify those whose failure would cause an unacceptable risk to the environment, health or safety; this assessment is undertaken both at the design stage and at subsequent periodic reviews taking into consideration results of risk assessments, industry best practice, UK regulations and guidance (such as PSSR, LOLER, PUWER, ATEX) etc. Method Statements support the procedures for individual tasks.

Both routine and planned maintenance are managed through the Computerised maintenance Management System (CMMS) known as Express Maintenance. Plant and equipment whose failure may result in a Major Accident, along with those designed, installed and operated with the intent of preventing, controlling or mitigating such events, whether the risk is safety or environment related, are designated as ***critical*****.** All critical items are identified as such on the CMMS and have routine inspection, maintenance and testing schedules allocated. Scope is influenced by the application of a Risk Based Inspection (RBI) assessment with consideration of original equipment manufacturers' guidance, industry standards and best practice guidance, and historical performance. Maintenance results are reviewed by competent personnel and maintenance strategy is adjusted if appropriate. All non-critical elements are subject to the same considerations, but maintenance strategy may be less stringent.

Organisation

The day-to-day responsibility for maintenance on the site lies with the Maintenance Manager.

Any "out of hours" problems are covered by calling out members of the maintenance team taking into consideration a rotational arrangement / basis. Supervision is also available on a 24-hour basis.

Maintenance also has access to very experienced and qualified staff in the Projects Department, including a Projects and Engineering Manager, Project Supervisors and access to specialist roles through a network of engineering companies.

Workload and Resource Management

The highly variable workload inherent to a contract manufacturing business has previously been described in this Report.

The Company has developed systems to safely manage this workload in the Maintenance function:

- Assessment of resource is a key part of the scheduling of all maintenance activities. The Engineering Request process provides notice of upcoming scheduled work and both scheduled and emergent work is discussed by the Maintenance and Operations management teams at dedicated meetings;
- Training has been given to enable a degree of cross trade multi-skilling;
- All process teams are trained in minor maintenance activities. The principle is that minor maintenance is performed by the person, either process or maintenance, best placed to carry out the work according to workload;

- Contract personnel are resourced to supplement the maintenance pool during shutdown periods and holidays. Induction and relevant training is given to these short to medium term contractors;
- The Projects & Engineering Manager is responsible for Project Engineering, and is able to identify and allocate resource from the projects team or contractors to assist the maintenance function if required;
- All the supervisory type roles are sufficiently flexible that they can deputise for holidays and sickness.

Work Request Documentation System

Apart from urgent breakdown work, maintenance activities are pre-planned on schedules generated by the Maintenance Team, considering risk, standards, guidance, manufacturer recommendations and historical performance. Tasks are identified from the CMMS and consist of planned, preventative maintenance (e.g., routine inspections and testing) and breakdown / repair work. Non-routine work requests can be generated for consideration by all Company personnel. Services necessitating significant plant interruption, such as invasive inspections of major process units, are communicated to all stakeholders with as much notice as possible, such that appropriate arrangements and preparations can be made to minimise disruption and ensure work is carried out on schedule.

Planned Preventative Maintenance

This has the aim, by means of regular inspection, maintenance and testing, of maximising availability and minimising risk of system or equipment breakdown or malfunction which may result in an unplanned plant shutdown, the production of off-specification material, or an unsafe situation.

It is the responsibility of the maintenance team members to evaluate and review service, inspection, testing and corrective maintenance data, and modify the maintenance programme for any system or piece of equipment. Technical support can be sought from other on-site engineers and external specialists.

The maintenance programme for any process system or piece of equipment is determined by consideration of a number of criteria:

- Safety and environmental criticality;
- Regulatory or legislative requirements;
- Condition;
- Location and conditions of use;
- Manufacturer’s recommendations; and
- Maintenance history.

Site maintenance essentially falls into two categories:

Planned Maintenance (PM)

This includes fixed-time preventive maintenance and condition-based maintenance. Examples of inspections covered by the PM system are:

- Rotating equipment daily inspections;
- Weekly documented checks to fire pumps and ancillary equipment;

- Planned services to specific equipment, (e.g., diesel driven fire pump);
- Alarm & trip testing;
- Replacement of agitator bottom bearings, on a timed basis, to prevent damage escalation; and
- Vibration monitoring of rotating equipment by external contractors.

Corrective Maintenance

Corrective maintenance covers items of plant and equipment which require attention outside the planned maintenance programme. Requirements for corrective maintenance could result from numerous sources, including operators' daily checks around the plant, and routine internal or external inspections or testing. Any fault or defect found with a piece of equipment will result in the generation of an Engineering Work Request. If an unsafe condition exists, immediate attention will be required to correct the fault and / or mitigate the consequence. Work that is not categorised as safety-related can be prioritised and carried out when plant time or resource allows. In this instance, 'safety-related' includes those conditions where a threat to the environment exists.

Leading and lagging PSPIs and KPIs are developed and utilised to monitor the ongoing efficacy of management and control systems. Data is gathered and reviewed by the Maintenance Manager monthly and communicated to relevant personnel.

Performance is monitored proactively by the implementation of a system of safety audits and inspections; and reactively through the accident and near miss reporting and investigation system; this covers personal injury, property and environmental incidents.

Site walks are conducted with a view towards ensuring that the site is operated safely, housekeeping standards are maintained, and safety issues are identified promptly, triggering corrective action. The General Manager is responsible for instigating disciplinary action on personnel who fail to adhere to the Company's Safety Policy, operating procedures and statutory duties.

The HAZID studies conducted as part of the terminals COMAH submission specifically addressed the hazards that might create a Major Accident, the process and results are described in detail in Section 3 of this Report.

We will gather information on accidents and incidents, both within our own company and from other organisations within our sector. We will utilise this information for the improvement of our management systems and arrangements for risk control. Lessons learned from incidents will be discussed at all levels during the site meetings attended by all staff to ensure effective implementation of corrective measures.

Scheduling

The scheduling of improvements is dependent upon the urgency to put the improvement in place, based upon an assessment of the risk and the potential consequence. Other factors include resource availability, both human and financial. Improvements are scheduled for implementation as soon as practicable.

With respect to the Control of Major Accident and Hazards, the above is primarily achieved through the use of the COMAH improvement plan which is presented in Section 8 of the COMAH Safety Report.

4.12. Procedures

Key Risk-Control Systems

Effective Risk Control Systems are essential to ensure that the risks involved in operating the establishment are properly controlled. This section of the report will show that the company has adopted and implemented procedures and instructions for safe operation, including maintenance, of plant, processes, and equipment and temporary stoppages.

HSE's book "Successful Health and Safety Management" (HSG 65) explains the concept of risk control systems. These are important management systems aimed at the control of particular categories of risk.

The COMAH Regulations specifically requires our SMS to address three important sets of risk control systems (the key risk control systems) namely:

- Operational Control
- Management of Change
- Planning for Emergencies

The recent construction activity at site to install the new area 1, fire systems, drainage and loading operations has led to the review and creation of new procedures relevant to the changes. Examples include new procedures on fire system operation, line pigging, safety critical task analysis, loading and unloading operations.

The Permit to Work system is a key control system on site. An example of a blank permit-to-work form, and a completed permit, are shown at Appendix 4.8.

Construction and Commissioning of Plant, Processes, Equipment and Facilities

The workflow process for the management of capital projects can be summarily grouped into four stages:

  - Project Identification Stage;
  - Project Definition Stage;
  - Project Design and Construction Stage; and
  - Project Start-up and Closure Stage

- Overall early project planning is complete - the key project scope is developed during the Project Identification Stage to establish the foundation and viability of the project;
- Start-up needs (including relevant statutory requirements), and long delivery equipment requirements are identified early and used as a basis for early planning;
- An overall project schedule evolves from the early planning activities. The schedule spans the total project, beginning in the Project Identification Stage and continuing through construction and start-up;
- Sub-dividing the project into logical segments (if required) is evaluated to reduce the total project cycle-time and to deliver productive portions of the facility at different times to match business needs;
- At the end of the Project Definition Stage, a cost estimate will be obtained using quantity-based techniques. This Project Definition Cost Estimate will normally be used for the final authorisation;

- Process and Design Engineering activities during the Project Design and Construction Stage are highly integrated;
- There is a conscious effort to ensure relevant lessons are actively identified and learned – at the Project Start-up, Project Execution and Closure Stage;

4.12.1.1. Project Management Stage Description

Reviews are built into all stages of the process to ensure that independent assessment of the work occurs, compliance with standards is achieved, risks are mitigated and that any issues are resolved or residual challenges well documented.

Project Identification Stage: The purpose of the project identification stage is to describe the project and develop early plans for implementation that satisfy or support a specific business opportunity.

Project Definition Stage: The purpose of the project definition stage is to provide enough clarity on the scope and feasibility of the project and its execution so that the project can be authorised, and the project design and construction stage can proceed without major changes. Plans for the management and control of the project are drawn up during this stage.

Project Design and Construction Stage: The purpose of the project design and construction stage is to deliver a facility that is consistent with the project definition documents and physically and procedurally ready for start-up activities. A hazard and operability (HAZOP) study as required by Stolthaven policy is conducted during this stage. Equipment and material suppliers are normally selected during this stage (according to Stolthaven Procurement Policy). The services of independent competent contractors could be enlisted to review designs and perform inspections during equipment construction. The equipment manufacturer / representative may be employed to ensure that the installation is in accordance with the specification requirements and that all necessary quality assurance activities are carried out, for example weld inspection and non-destructive testing.

Project Start-Up and Closure Stage: The purpose of the project start-up and closure stage is to deliver a facility with a demonstrated operating performance, to bring all documentation to closure and to capture the technical learning value from the project experience. Commissioning procedures are prepared to meet this aim, with the commissioning team (either internal or external to Stolthaven) ensuring that the facility performs as required. Documentation items cover issues such as the production of operating and maintenance instructions. Operators are trained during this stage. When all relevant issues are completed, the project is officially signed over to operations.

Functional Input and Evaluation: Projects adhere to a functional input and evaluation (review) process to ensure that they incorporate the appropriate technology and meet Stolthaven requirements and statutory regulations. The process requires timely input and continuous involvement of such functions as Safety, Process Safety, Environmental, Operations and Maintenance who actively participate in the definition and development of the project.

Project Manager Responsibilities: The control of engineering and project work is ultimately the responsibility of the project manager. For example, the project manager is responsible for ensuring that appropriate functional input and review of the project occurs. This overall responsibility continues through all four stages of the project thus covering all areas, including construction and commissioning.

A Major Project is a construction project usually falling under the *Construction Design and Management Regulations* (CDM), or a plant shutdown, or as determined by the Maintenance Manager, Projects & Engineering Manager or SHEQ Manager. The site maintains specific procedures that ensure the competent authority is informed and risks are adequately assessed and designed out where possible. Also, that relevant documentation is developed / maintained.

The typical types of hazard within projects, large and small, that may influence construction safety and are considered during the design are:

- Need for demolition of existing equipment;
- Size / weight of equipment;
- Materials of construction;
- Source of equipment (local / imported);
- Access routes to and within the site;
- Schedule for delivery / construction;
- Cranes available;
- Soil-bearing ability for heavy cranes / trucks;
- Method to be used for heavy lifts;
- Interactions with existing plant / tie-ins;
- Construction site location in relation to existing hazards such as overhead services, buried services, etc.

To minimise risk, safe systems of work are in place to prevent unsafe conditions. The safe systems applying to construction include:

- Site induction and specific plant inductions;
- Permits-to-work;
- Risk Assessment and Method Statement (RAMS);
- Restricted access to enclosed or partially enclosed environments;
- Searches for underground services before excavations are permitted;
- Wearing specific protective equipment in certain areas;
- Standby personnel for specific activities - hot work, confined space entry, scaffolding;
- Restriction on the use of electrical equipment in operational areas;
- Limitations on the use of ladders;
- Auditing and inspection
- Site supervision
- Engineering standards.

Quality Assurance

The quality of the plant and the associated utilities has a direct influence on the reliability and safety of plant and operations. A quality assurance system is the means of achieving these objectives and, most importantly, getting it right first time and ensuring ‘fitness for purpose’.

The effect of these checks is to ensure that:

- The manufacture and construction of the plant employs appropriate materials and construction methods to minimise the occurrence of defects or damage which might affect plant integrity;
- The construction process does not compromise the design intent;

- The construction work is carried out by suitable personnel, in accordance with appropriate procedures;
- There are arrangements for controlling and recording changes to the original design made during construction. Any deviations from the original that may affect safety are identified, and the effect on safety demonstrated to be acceptable;
- Details are documented where significant non-conformities in manufacture are identified, or where substantial remedial work is carried out;
- The construction of the plant, including deviations from the original design, is documented to give an assurance of conformity.

Table 4.12.1 summarises the main quality assurance checks and balances that are utilised, depending on project size and complexity, during the design and commissioning phases.

Table 4.12.1: Quality Assurance in Design & Commissioning

Stage	Checks and Balances to Assure Quality
Supplier Selection	• ISO 9000 accreditation or approved quality control system; • Pre-qualification and appraisal; • Auditing of critical suppliers; • Health, safety and environmental performance; • Past performance on site / lessons learned.
Design	• Legislation; • British Standards; • Industry Standards (ISO/ANSI/ASME); • Regulatory bodies; • Industry Codes of Practice; • User Requirement Specifications; • Engineering specifications; • Company and department standards.
Major Equipment, Piping, Electrical and Instrumentation Construction / Fabrication	• Inspection hold points and acceptance criteria; • Trained, skilled and accredited personnel; • Third Party inspection and verification; • Technical queries; • Management of Change.
Major Equipment, Piping, Electrical and Instrumentation Delivery / Pre-Use Checks	• Certificates of Conformity; • Material certificates; • Pressure test certificates; • Hazardous area certification; • Installation, operation and maintenance manuals; • Visual inspection / checks; • Factory Acceptance Testing.
Installation	• Quality plans and RAMS; • Trained, skilled and accredited personnel; • Site supervision liaison.
Commissioning	• Checklists; • Procedures; • Testing; • Training; • Auditing; • Performance checks.
Documentation (to allow for future maintenance and replacement)	• Design basis; • General arrangement drawings; • Detailed drawings; • Equipment delivery / pre-use checks documentation; • Installation and commissioning documentation.

New plants and modifications to existing plants are subject to two stages of commissioning:

Pre-Commissioning

Pre-commissioning is undertaken after mechanical completion to prepare the plant for the receipt of products, and to allow for the introduction of utilities.

Approved procedures and resources are applied to this stage, including the prudent application of a permit-to-work system to ensure that work is done without risk to personnel, the plant or the environment. Where any final modifications have been identified by the commissioning team and carried out by construction after appropriate review using the Management of Change procedure, such modifications are recorded in the final 'as built' documentation.

The pre-commissioning activity releases the plant for commissioning by section or area in accordance with the previously agreed commissioning plan. In most cases, this involves the use of water as the test fluid.

Commissioning

This involves assuring that all systems and components of the new or modified equipment / plant are designed, installed, tested, operated, and maintained according to Stolthaven operational requirements. A commissioning process may be applied not only to new projects but also to existing units and systems subject to expansion, refurbishment or revamping.

The commissioning process comprises the integrated application of a set of engineering techniques and procedures to check, inspect and test every operational component of the project, from individual functions, such as instruments and equipment, up to complex amalgamations such as modules, subsystems and systems.

At this stage, standard operating instructions and Permit to Work systems are followed and supervised by relevant site personnel.

Selection and Management of Contractors

The selection, evaluation and management process adopted for contractors is dependent upon several factors, including:

- The nature and duration of the work to be undertaken; and
- The level of supervision provided by Stolthaven Dagenham

Careful consideration is needed when selecting external personnel (contractors) to carry out activities at the Dagenham Terminal. They are unlikely to be as familiar with the plant, equipment, systems or industry as Stolthaven Dagenham employees. Although contractors can provide excellent support in company endeavours to promote a safe working environment, choosing the wrong one can have significant impact on health, safety & the environment, so the selection process is not be taken lightly; this is of importance when Critical equipment and services, such as Safety Instrumented Systems, high hazard processing equipment and MAH mitigation systems, are involved.

Although occasionally the options available regarding selection of contractors for specific tasks may be limited, perhaps restricted to an OEM, designated, or sole service provider, Stolthaven Dagenham will endeavour to select companies that demonstrate - in addition to the fundamental requirements of technical expertise, solvency, and a knowledgeable, trained & competent workforce - a commitment to safety, environmental protection, quality control and customer service. The selection process involves a review of the Company profile including

details of scope of services provided, past work, workforce structure, expertise and competencies, safety record, policy statements, quality procedures and references. A face-to-face meeting with Company representatives may be conducted to gauge validity of claimed merits. For maintenance-related contractors, for example, this process is conducted by one or more of the Maintenance Manager, Engineers, and Maintenance Supervisors with assistance, when appropriate, from the Purchasing Manager and SHEQ Department; the final approval for contractor selection in association with maintenance activities lies with the Maintenance Manager.

For major contracts, the selection and evaluation process is more rigorous. The tendering process for a significant project or major contract will typically include the preparation and issue of an information pack for the prospective providers to use as the basis for their tender. An example of this, a Pre-Construction Information Pack for the major demolition works carried out at the Dagenham Terminal, is provided as Appendix 4.9 a - g. This defines the scope of the works to be undertaken, the hazards involved and risk management expectations, requirements around method statements and risk assessments, auditing and inspection, including any statutory or regulatory requirements, such as those defined in the CDM Regulations.

As part of the tendering process, Stolthaven Dagenham uses a Contractor questionnaire which focuses on the following criteria:

- Each company's financial stability;
- Each company's in-house capability to support the project as a single source provider acting as Principal Contractor for the works with limited interface management and sub-contractor management;
- Each company's competence and experience with a proven track record to carry out works similar to the defined contract or project scope within an environment similar to the Stolthaven Dagenham Terminal;
- Each company's Environment, Safety and Health Policies and performance;
- Each company's safety management systems (examples provided) used to demonstrate the level of understanding required to manage and assist the safe execution of the defined works (reviewing, planning, documentation, and RAMS etc.); and
- Each company's Regulatory enforcement / prosecution record.

An example of a completed questionnaire for Area 2 construction undertaken in 2018 is provided as Appendix 4.10.

For each potential provider, the completed questionnaire, along with documentation requested from each provider to support their responses, form the basis for the selection process.

Contractor induction and supervision

A short visitor and contractor induction presentation is given to all visitors and contractors. This covers basic awareness of:

- Security arrangements;
- Site speed limits;
- Smoking and control of ignition sources;
- Personal Protective Equipment;
- Vehicles;

- Fire / toxic alarms, testing and roll call arrangements;
- Reporting of incidents and near misses; and
- First aid arrangements.

Visitors and drivers unfamiliar with the site and its operations is either accompanied or given more familiarisation if they were to be left unaccompanied for any time. (In the case of tanker drivers, for example, this additional familiarisation is provided by the loading operator.).

In certain instances, such as larger projects or projects where direct supervision of the work is provided by the contractor, we can deliver a more in-depth classroom-based induction. This session runs to around two hours, and typically covers:

- Site overview;
- Security;
- Emergency procedures;
- Contractor rules;
- Permit to Work;
- Work equipment; and
- Behaviours.

The classroom session is then supplemented with a site tour:

- Access and egress;
- Fire assembly areas and toxic refuges;
- Control room;
- Goggles areas;
- Location of safety showers, eyewash stations and fire alarm break glass units;
- First aid facilities;
- Mess room and smoking area; and
- Permit room.

Direct supervision of contractors may be managed by Stolthaven Dagenham personnel or by the contractor company, depending upon the nature and scope of the work and the contract that is in place. Where contractors are directly supervised by Stolthaven Dagenham personnel (typically Maintenance Supervisors or Engineers), it is our personnel that then interfaces with Operations in respect of Permit to Work. In instances where contractors are to undertake specialised work, they are required to submit detailed RAMS for assessment and approval prior to work starting.

Performance review

Auditing or observation by Stolthaven Dagenham personnel of on-the-job performance is utilised to verify competence of new contractors when working on “critical” tasks, or tasks with increased hazard potential.

Decommissioning of Plant, Processes, Equipment and Facilities

The decommissioning of redundant plant and equipment is authorised under the Management of Change procedure.

The relevant equipment is isolated from live plant and utilities, if appropriate, and then decontaminated either in-situ or, after removal, in a decontamination area. The procedures and

methods for assessing and controlling the risks associated with decommissioning are identical to those outlined for the construction and commissioning of plant and equipment.

When the equipment is verified as decontaminated by Operations, it is either stored on-site for future use if serviceable or disposed of via a used process equipment vendor or an authorised scrap merchant.

Small scale demolition of equipment will typically be managed in-house using either our own labour resource or that of 3rd party suppliers. For larger-scale demolition work, such as that undertaken for Area 1, this is likely to be outsourced to a third-party specialist demolition contractor.

Operational Control

In accordance with the Major Accident Prevention Policy, this section demonstrates safe operation of plant, processes, equipment and temporary stoppages. There is a comprehensive set of procedures detailing the required test schedules for all equipment, particularly safety critical equipment and control systems. These are detailed in the company planned preventative maintenance scheme. This programme is designed to reduce the risk of system failure due to mechanical breakdown.

Operation

The Terminal operation is currently operated on shifts from Monday to Friday, with an option for weekend work as and when required, (Overtime reserve). It is noteworthy that there is an Operations Supervisor on site 24/7. The despatch operation is currently operated on a shift from, Monday to Friday, with an option for weekend work as and when required, (Overtime reserve). Each team consists of a Supervisor/Team Leader and required number of operatives. It is usual for personnel to arrive fifteen minutes earlier than start time to facilitate hand-over. Additionally, the Supervisor/Team Leaders and a member of the senior management conduct a formal meeting (not documented) at shift change.

Operation of plant and processes

Procedures have been developed to cover virtually every task and are reviewed on a regular basis. These are split into different categories

- Standard procedures may be either routine (these typically include the basic procedures for running pieces of equipment on the plant, i.e., the sort of activities that occur very frequently); or non-routine (these typically are procedures that occur very infrequently, such as the cleaning of a piece of equipment);
- Critical (these are deemed critical because the consequences of not following the procedure are significant (i.e. could led to a Major Accident).
- Emergency (clearly these are the procedures to be followed in the event of an emergency).

A personnel knowledge and understanding of operating procedures and overall plant operation is tested and assured using a variety of methods including observational and coaching techniques during which the individual demonstrates his level of understanding on a documented list of items and activities.

Any deviations in operational control are reported and recorded through the incident reporting systems on site. The significance of the event determines the level of investigation that is carried out.

Significant near misses are also recorded in this way. The shift team on site has the responsibility to make the situation safe, and to report the occurrence. A call-out arrangement is maintained to provide technical and engineering support if required. Members of the shift team also carry out the initial phase of the investigation into the event, recording appropriate data to allow further investigation by members of the day team - for example Supervisors, along with input from the SHEQ Department.

Standing instructions require that, in certain instances (for instance an injury requiring medical attention or a significant spill), the Site Management Team are informed immediately. In such cases, support personnel may attend site to assist with the investigation. In either instance, if the trigger criteria are met a formal investigation will be carried out with the aim of identifying the Root Cause (including any other factor that might contributed to allowing the incident to occur). The findings of this investigation is shared within and outside Stolthaven, as necessary, and key learning derived from the incident is communicated site wide.

In cases where the deviation from normal operation requires additional activities to take place, for instance if an operator must carry out a non-routine task, a Pre-Task Analysis (PTA) may be carried out. The PTA is essentially a risk assessment that the operator completes, prior to beginning his task, which identifies the hazards inherent in the activity and prompts for the measures required to control those hazards. The approach used on-site aligns closely with regulatory guidance on risk assessment and considers the surroundings and the immediate environment as well as the particular skills and knowledge of the involved individual.

Maintenance

Maintenance is carried out under the guidance of the Maintenance Manager. According to the nature of the work to be carried out this is performed by site personnel, or contractors. Further details of Safe work during maintenance conditions is provided within Section 5.2.4 (Technical Aspects) of the COMAH Safety Report.

Safe Operation under Maintenance Conditions

Ownership of Plant

The principle at Stolthaven Dagenham is that the Operations team own the plant, not the Engineering / Maintenance function. Operations do not, therefore, ‘hand over’ the plant to Engineering / Maintenance (except where the works is set to take place over a protracted period and the plant or system is completely isolated from other operations) as part of the Permit to Work process but retain ownership and responsibility throughout.

Safe Methods of Working for Maintenance

Scheduled tasks are generated via the CMMS (Express Maintenance). This document then feeds into the Permit to Work system. Where a risk assessment is available for the work to be done, this is also an input to the permitting process. This may be in the form of a Pre-Task Analysis or, particularly in the case of work being carried out by contractors, a Risk Assessment / Method Statement (RAMS). Review of this documentation by relevant stakeholders allows all

parties to understand the scope of the work and the hazards (and their associated risks) that are or may be present.

Permit to Work

Our Permit to Work system is a key risk control system and is used to formally record the process that we follow to control work which is identified as potentially hazardous. They serve to ensure that the work is properly authorised, clarify the nature and extent of the work, to enable an assessment of associated risks and to specify which precautions must be taken and which activities are prohibited.

Stolthaven operates several Standards relating to the control of hazards during work; these all require some form of certification and fall under the generic heading of Permit to Work. In addition to the Permit to Work Standard itself, Stolthaven currently have the following types of work permit:

- General Permit
- Working at Height Permit;
- Hot Work Permit;
- Confined Space Permit;
- Excavation Permit
- Asbestos Permit

Activities not requiring a Permit to Work

Stolthaven Dagenham uses the guidance provided in HSG250 with respect to when Permit to Work should be applied:

- Non-production work (maintenance, repair, inspection, testing, alteration, construction, dismantling, adaptation, modification, cleaning, etc.) in production areas;
- Non-routine activities;
- Jobs where two or more individuals or groups need to co-ordinate activities to complete the job safely; and
- Jobs where there is a transfer of work and responsibilities from one group to another.

In each instance, the guidance above is used when assessing the risks associated with the area AND the activities to be undertaken. It may then be necessary in some situations to issue a Permit to Work. Pre-Task Analysis cards are completed where appropriate to assess risks specific to the activities being undertaken. To provide further guidance, a list of jobs not requiring a Permit to Work is also maintained. Examples of jobs on this list are:

- Operational activities undertaken by employees, where the personnel undertaking them are trained and validated accordingly or are working under supervision. This includes intrusive tasks such as sampling, flexible hose connection / disconnection etc. In all cases, the individual involved is responsible for ensuring that the correct PPE is worn and other control measures are properly maintained as necessary;
- Fabrication, repairs, etc. whilst within the confines of the Maintenance Workshop or other designated safe area, including offices. All such areas must lie outside of any defined Hazardous Area;
- Computer installation or repair, or other work on copy machines, printers, etc., where this does not include any potential for exposure to electricity;

- Routine deliveries / collections by vendors (such as water supplies, office supplies, work-wear, laboratory gases). All such personnel must have been inducted. Vehicle access must be limited to non-Hazardous Areas, and any reversing of such vehicles must be supervised;
- Janitorial tasks undertaken by our contracted cleaning company.

Permit to Work Process

The process for planning & preparing, issuing, managing and closeout of Permits to Work can be summarised as follows:

Planning

Operation / Maintenance meetings (and Engineering Request) form the basis for short-term planning and coordination of maintenance and operational activities, and the associated Permit to Work requirements. This covers both scheduled and breakdown maintenance work, as well as any project work that is being progressed in operational areas. These meetings between Maintenance, Operations management and SHEQ personnel are used to discuss and plan upcoming work, priorities, plant availability and potential impact upon process activities.

Safe methods of working

Job methods for scheduled tasks are generated via Express Maintenance. This document then feeds into the Permit to Work system to enable a PTW to be issued. Where a risk assessment is available for the work to be done, this is also an input to the permitting process. This may be in the form of a Pre-Task Analysis or, particularly in the case of work being carried out by contractors, a Risk Assessment / Method Statement (RAMS). Review of this documentation by the Permit Issuer and Permit Acceptor allows both parties to understand the scope of the work and the hazards that are or may be present.

Contractors

Where appropriate, contractors are employed on-site. For work of a significant value, pre-qualification of prospective tenders is undertaken to ensure that the companies in question are commercially and technically viable. This can be ascertained from previous works of a similar nature, contact with other Business Units, use of First Point Assessment, and by auditing of the contractor's organisation.

Contractors are selected on the basis of a supplier assessment according to the requirements of the Company's Total Quality Management System. Once contractors have been assessed as acceptable, they are registered on a list of approved suppliers and are given a rating. As far as possible only those contractors included on the Company's list of approved suppliers for Quality Assurance purposes are used. Any variations from this rule are only used as a necessity and an application is made to the Group Quality Manager to authorise the usage of such contractors. The assessment of suitable suppliers includes an assessment of their suitability from the point of view of Health & Safety.

Contractors involved in critical work such as new construction, plant installation, maintenance and repair, are assessed prior to commencement of the work. This extends to any sub-contractors of main contractors. The presence of contractors on site is registered by requiring them to sign in to a booking system housed in the main office on site. In this way a check on who is on site can be made in an emergency.

- All contractors will undergo site induction training prior to commencement of work,
- All contractors are required to carry a copy of the site rules and regulations whilst on-site.
- All contractors are required to wear high visibility jackets, hard hats and safety glasses whilst on site.

Senior Management is responsible for ensuring safe working practices of contractors whilst working on site and ensuring that such work does not impinge on the safety of the Terminal operation. The Operations Manager is responsible for monitoring contractor work whilst in progress and will do this in respect of any future modifications or additions to the plant.

Prior to carrying out maintenance work on filling machines or pumps, the complete system is shut down and cleaned out where necessary. There are limited numbers of personnel who carry out this maintenance. Any major work would be carried out at night or on Saturdays. If work is ongoing, the affected area will be closed off and secured.

Contractors are not permitted to undertake any hot work or other potentially dangerous work without the use of a work permit.

Plant Commissioning

Commissioning of various sections of the terminal operation is co-ordinated by the Company's consulting engineer and appointed contractor. Further details relating to plant commissioning may be found in Section 5.2.2.2.

Establishment of Operating Procedures

Operating procedures are established on local level. Writing of operating procedures, referred to by the Company as 'Local Training Modules' are normally originated by those who are familiar with the operation in question, and finally approved by the General Manager.

The Company is subject to regular customer quality and safety audits, and an independent quality assessment by BVQI. In addition to such external auditing, the Company follows its own internal auditing scheme, the results of these audits lead to update and improvement of Local Training Modules as deemed necessary and determined by review and analysis of such audit results.

Communication of Operating Procedures

Procedures and Local Training Modules are documented. A full set of copies is held by the Site Quality Co-ordinator and issued to key personnel, as well as made available to the points of operation. Amendments to operating procedures are brought to the attention of those affected through briefing meetings, followed by re-issue of the amended procedures. Major changes are reinforced through re-training on the job.

Senior Management has been assigned with responsibility for ensuring that all operating activities are sufficiently covered by operation procedures and reviewed from time to time as well as amended in line with any changes. Senior Management is also responsible for ensuring that operating procedures are clearly understood and followed accordingly.

Supervision of Operating Activities

Supervision of operating activities is carried out from the following levels:

1. Supervisor/Team Leaders are assigned responsibility for the safe conduct of work carried out by in their teams.

2. The Operations Manager monitors operating activities, making regular inspections in the course of the day and maintaining a close dialogue with Supervisor/Team Leaders and site operatives. He also closely observes individual's performance and behaviour, with a view towards controlling the human factor of the operation and identifying any critical conditions, through the use of Safe Behaviour Audit forms.

3. The Terminal Quality Safety Health & Environment Manager makes random inspections of plant and equipment as well as operating activities, with the assistance of site operatives. Documented findings of such inspections are fed back to the Operations Management and responsibility for corrective action is assigned as appropriate. The Terminal Quality Safety Health & Environment Manager will also carry out random audits of human behaviour.

4. The General Manager, with the assistance of the Terminal Quality Safety Health & Environment Manager, conducts a documented safety audit on an annual basis, the findings of which are fed back to the Operations Manager for corrective action as appropriate.

Maintenance

All engineering work or plant maintenance is subject to the use of a work permit. This ensures a method of safe working, particularly in relation to high-risk activities. All maintenance on critical parts is carried out under the supervision of the Operations Manager and documented records of such work are kept.

A planned preventative maintenance scheme, in line with manufacturer's recommendations, and according to the appropriate British Standards, is in use for all safety critical equipment and control systems, to reduce the risk of system failure. This scheme is under the supervision of the Operations Manager, who uses work permits as a means of ensuring safe working especially in relation to high-risk activities. Any modifications to the plant are subject to an engineering review, and changes to personnel and procedures are addressed through the on-going, and comprehensive, training program.

Records are maintained within the Plant Master database.

Inspection & Maintenance

Inspection & maintenance is mainly carried out by the same third party contractors, all of whom have become familiarised with the plant over a period of time, under the guidance and supervision of the Operations Manager.

Planned Preventative Maintenance

A planned preventative maintenance scheme, in line with manufacturer's recommendations and according to the appropriate British Standards, is in use for all safety critical equipment and control systems, to reduce the risk of system failure. This scheme is under the supervision of the Maintenance Manager, who uses work permits as a means of ensuring safe working

especially in relation to high-risk activities. Any modifications to the plant are subject to an engineering review, and changes to personnel and procedures are addressed through the on-going, and comprehensive, training program.

- The appropriate supplier regularly services forklift trucks. Forklift truck lifting mechanisms are subject to statutory inspection carried out by a Stolthaven Dagenham appointed supplier.
- Pressure vessels such as air compressors are subject to statutory independent inspection by a Stolthaven Dagenham appointed supplier on an annual basis.

There is some maintenance on the site, which has been identified as safety critical. These things require extra inspection and monitoring as they could directly impact on the control of major accident hazards. This is covered under the maintenance programme, with records being maintained within the Express Maintenance database.

4.13. Management of Change

Stolthaven Dagenham believe that the management of change is an essential factor in the prevention of major accidents. Any modifications or additions to the plant are subject to a formal documented Change Control Request, and Pre and Post Engineering Review attended by all relevant personnel, including senior management, production management and contract engineers. The aim of the review is focused on safety and prevention of major accident hazards and has sections under the following headings:

- Safety and Fire Protection
- Materials Handling and Storage
- Potential Chemical Hazards
- Potential Mechanical Hazards
- Potential Electrical Hazards
- Potential Pressure Hazards
- Training Requirements for Personnel

Personnel are addressed through the implementation of a comprehensive training programme. Changes to procedures are addressed through use of an on-site change control procedure.

Further details regarding the Management of Change System may be found in Section 5.2.5.

The site operates a Management of Change process, which was most recently reviewed in September 2017. The general Management of Change documentation is shown at Appendix 5.1. Changes to the chemicals stored on site utilises a FD24 form, the process flow for this is detailed in Appendix 4.11 while the general process flow for change management is given in Appendix 4.12. The site retains a log of changes in excel formal which records the change dates, details, change initiator, and completion dates. Appendix 4.13 contains this register, while Appendices 4.14 and 4.15 provide an example change for equipment and organisational changes respectively.

Personnel Changes

Human resources are considered vital to the safe running of the operation. On this basis all key personnel are highly trained in their own field and are able to effectively cover all critical tasks of other members of the management team in the control of major accident hazards (see Competent Deputies for Key Personnel 4.5.2). This ensures cover for holiday and sickness or in the event of a member of the management team leaving the company. This however would only be a short-term solution until a replacement was found (see Selection of Key Personnel 4.9.1.1).

4.14. Active Monitoring - Leading Performance Indicators

Active Monitoring

Performance is monitored proactively by the implementation of a system of safety audits inspections and measurement of key performance indicators. The site has developed a set of Process Safety Performance Indicators (PSPI's) to assist in the monitoring process.

Stolthaven have worked with other storage terminals and trade associations on the creation of PSPI's which are specific to the industry hazards and risks. The work conducted also sought guidance from HSG 254 during this development and utilised a team-based approach (General Manager, Maintenance Manager and Safety Team) to look at the key risk control systems on site for on-going monitoring.

Early versions of this work created nine indicators, although these were not separated into leading and lagging at that stage. The indicators selected were;

- High level probe activations (fuel trucks)
- Completion of bund inspections
- Road Tanker Wagon overloads (not losses of containment – filling above desired amount)
- Earthing system checks
- Tank inspection completion status
- Pipeline inspections completion status
- Completion of training matrix
- Compliance with open end policies
- Unboxed tanks

Site selected the above indicators predominantly on the basis of known problems on site from previous incidents / near misses, and then used the metrics to drive improvements. These indicators were selected in 2013 and monitored for approximately 2 years and based on the improvements made a number of metrics were removed.

The sites current list of Leading PSPI's are now as follows.

- High Level Probe Activations
- Compliance with Bund Inspections
- Number of Tank Inspections Overdue
- Number of Category P1 repairs following inspection
- Number of failed hosed (following hydrostatic testing)

PSPI's are reported monthly to the site management, site personnel and Global Business Director.

4.15. Reactive Monitoring - Lagging Performance Indicators

Reactive Monitoring

All incidents, accidents or near misses are documented, classified, costed and recorded on a database. Following investigation to establish the basic cause by the safety committee, appropriate preventative action is taken to prevent recurrence. This information is reported to the group SHE manager to allow lessons learned to be circulated amongst different divisions; it is also discussed at team briefs to allow effective implementation of any corrective measures.

The Terminal Safety Health Environment & Quality Manager monitors safety performance of the site, compiling regular safety statistics and identifying trends. Safety statistics provide the basis for annual safety targets, which are set for each Terminal. The targets are set with the aim of encouraging continuous improvement.

The Company places great emphasis on close monitoring of operating activities and analysis of the same, resulting in on-going improvement initiatives, based on participation of all those involved in the process under review.

The activities of site personnel are monitored through the use of Safe Behaviour forms, which are completed by site management and discussed with the relevant individuals. This ensures that the safety management system is meeting the aims of the policy statement. Regular monitoring is formalised by means of weekly plant walks carried out by Management or the General Manager as well as the Group Safety Manager who carries out at least four unannounced plant walks per year. Findings are documented and corrective actions identified where appropriate. It is the Terminal Management's responsibility to assign individuals with responsibility for corrective action.

Lagging PSPI's + Personal Safety Indicators

Following on from the active monitoring (Section 4.14), the site has created a series of lagging indicators which includes process safety and personal safety metrics. These are as follows;

Personal safety:

- Number of accidents
- Number of accidents requiring first aid
- Number of LTI's
- Number of RIDDORs
- Number of safety System of Work Failures
- Number of Safety Observations / Improvement

Process Safety:

- Number of unsafe process safety conditions
- Number of losses of primary containment >25L
- Number of leaks / spills to the environment
- Activation of critical process trips

Reporting of these metrics is as described in Section 4.14

4.16. Investigation and Response

Active monitoring via auditing of the SMS identifies failings within the system. An investigation into the underlying cause results from the non-conformance. Corrective actions are then proposed with a timescale for completion. Review of completed actions and current status of outstanding actions takes place via a tracking mechanism, the Continuous Improvement Register.

All accidents causing personal injury or dangerous occurrence (including environmental implications) are investigated, reported to site Management and Root Causes identified considering Human Factors and mechanical or equipment failings. Contributing conditions to the accident / incident are assessed to find the Root cause. Actions are agreed to prevent a reoccurrence and tracked via the Continuous Improvement Register.

When incidents occur that have safety implications, they are recorded on incident report forms and investigated by the SHEQ team and other relevant parties. The Stolthaven Dagenham SHEQ Manager has been trained in Accident and Incident Investigation Procedures and Techniques.

It is the Company's Policy for all incidents, which have safety implications to be both reported and investigation commenced as soon as possible, preferably within 24 hours of occurrence of the incident. To facilitate reporting, all site operatives have access to incident report forms.

All Incidents, whether related to health, safety or environmental must be reported in writing in support of subsequent verbal reporting of an incident to the Operations Manager or Terminal SHEQ Manager. All safety incidents must also be reported to the Global Business Director. Non-reporting of an incident may result in disciplinary action against the individual failing to report an incident.

The Company recognises that, preventive measures requiring engineering changes may take longer to implement than those needing procedural change. Staff will be made aware of temporary measures that have been implemented but if operations are considered unsafe, the activity in question will not recommence until appropriate changes have been made.

Quarterly safety committee meetings are held, and investigations and actions are discussed as part of the agenda. The Stolthaven Dagenham SHEQ Manager may personally review incidents dependant on the result of the investigation (immediate corrective actions would be closely monitored).

All actions are logged on the safety minutes.

4.17. Audit

An independent internal is conducted every three years, led by a trained Stolt Auditor, all aspects of the terminal are assessed including the MAPP and SMS. A report is produced, and any actions tracked at corporate level.

Internal audit forms an essential part of the QMS especially as it forms part of the key processes to check compliance is at a satisfactory level and to identify opportunities to improve. The areas for the audit process to review include (and this is not exhaustive):

- Documentation and records
- Procedures
- Laboratory methods and testing
- Sufficient resources available (material, human, Information Technology etc.)
- Data Integrity
- Process Monitoring
- Systematic and planned control and measurements
- Personnel Competency responsibilities and training
- Conformance with preventative and corrective actions

The SHEQ Manager will ensure that audits are carried out, checking that relevant standards, codes, written and operational procedures are being adhered to. A representative part of the system (taking a risk-based approach – incident trends, previous audit feedback, recommendations from interested parties, significant changes to operations etc.) will be scheduled by the SHEQ Manager for audit. If the audit reveals a non-conformance, the auditor will report it on a non-conformance form (FD14).

Audits will be carried out by competent personnel / auditor as appointed by the SHEQ Manager.

Audit planning is important for setting out the number and scope of audits that can meaningfully be conducted over the course of a year. Annual audit shall be developed through a process that identifies and prioritizes potential audit topics and areas to be audited. An area can be a department or function. For example, the entire Operations Department can be audited; or the function of transferring product from ship to shore including associated documentation etc.

When choosing the areas to audit (or in preparing the annual audit plan), selections will not only focus on where the risk is high in terms of outcome, but also consider the degree of confidence in control measures. For example, if an inherent risk such as product contamination is very high, but there are good controls such as procedures, controlled environments in place together with an appropriate testing regime, then the residual risk may be low and not therefore worthy of examination at high a frequency. Thus, it is possible to increase the time interval between such audits without compromising the quality of work undertaken within these areas. Alternatively, other areas of functions might require an elevated frequency of auditing include those where controls are weak or there have been a history of non-conformity and past errors.

Information about process weaknesses can be obtained from an historical examination of past audits. This may include identifying (the list is not exhaustive):

- A department that has a poor history in terms of compliance and the associated number of recorded non-conformances
- A department that has been slow to respond to audit action items
- A department that has not responded effectively to audit action items

Each element of the audit universe requires risks assessment (– this exercise does not need to be documented) as facilitated by the SHEQ Manager. On completion of the risk assessment, decisions can be taken on the risk factors that may influence the priority to be given to each element of the audit universe (sometimes called “audit areas”). Not every part of an audit universe needs to be examined during the course of the year (as noted above).

Once developed, the annual plan becomes an important document. The plan should be reviewed by site management.

The Terminal maintains an accreditation to the ISO 9001 Standard, an annual surveillance audit is carried out as part of a three cycle when a full audit of the QMS system is required by the standard. Parts of the SMS are considered under the standard.

Informal audits are also conducted as Safety Tours which are conducted with a view towards ensuring that the plant is operated safely, housekeeping standards are maintained, and safety issues are identified promptly, triggering corrective action. The SHEQ Manager is responsible for producing a schedule for all senior managers to follow ensuring that all parts of the site are covered. Managers are responsibly for following up on actions from the tour.

The following Table 4.17.1 demonstrates how Stolthaven Dagenham Safety Management System ensures compliance with the Major Accident Prevention Policy.

Table 4.17.1: Compliance with MAPP and SMS Objectives

MAPP Commitment Statement	Means To Achieve	Auditable Area
▪ The roles & responsibilities of personnel involved in the management of Major Accident Hazards. ▪ The roles identified for the efficient control of emergencies ▪ The competence of employees to work with major hazards is ensured by the implementation of an induction-training program. ▪ All training needs will be defined and appropriate training provided, involving employees and contractors.	▪ Development of job descriptions to include roles and responsibilities for major accident hazards. ▪ Training / awareness of events on site leading to major accident hazards. ▪ Training / awareness of arrangements on site to prevent / control and mitigate against major accident hazards. ▪ Competency Management Assurance System ▪ Emergency Response Plans / Procedures defining roles and responsibilities of personnel at all levels within organisation. ▪ Emergency Response training for personnel at all levels within organisation.	▪ Job descriptions ▪ SHEQ Responsibilities document ▪ Emergency Response Plans ▪ Achievement of Training / Development programme ▪ Emergency response training (drills, exercises and tabletops) ▪ Contractor Competency Assurance Systems ▪ Verification of site training in Major Accident Hazard control & prevention methods and scenarios
▪ Major hazards arising from normal and abnormal operation will be systematically identified and assessments made of their likelihood and severity	▪ HAZOPs and HAZIDs of new plant and modified existing plant ▪ Risk Assessment Procedure ▪ Quantitative Risk Assessment	▪ Compliance with design standards and procedures for hazard identification and risk assessment ▪ Risk assessment and Quantified RA process ▪ Contractor selection/ control procedures ▪ HAZOP Process
▪ We will gather information on accidents and incidents, we utilise this information to achieve continual improvement. ▪ Lessons learnt will be discussed at all levels of the company to ensure effective control measurement	▪ Investors in People objectives and targets set annually and reviewed at regular periods	▪ Monitoring departmental progress against objectives and targets ▪ Management review minutes ▪ Monthly site meeting minutes

MAPP Commitment Statement	Means To Achieve	Auditable Area
▪ Stolthaven Dagenham Site will implement instructions and procedures for safe operation, including maintenance, of plant, processes, equipment and temporary stoppages. ▪ All engineering work or plant maintenance is subject to the use of a work permit.	▪ There are procedures detailing the required test schedules for all equipment, particularly safety critical equipment and control systems	▪ Auditing of Processes ▪ Auditing of the Permit to Work system
▪ Any planning modifications to, or the design of new installations, processes or storage facilities or additions to the plant are subject to a Change Control Request Review and when appropriate a pre and post-engineering review	▪ Adherence to Management of Change Procedures for organisational change and modifications ▪ Training of personnel in management of change procedures ▪ Establishment of and adherence to design and construction standards ▪ Compliance with legislative requirements e.g. COMAH notification – IPC authorisation ▪ Awareness / training of designers standards and procedures for design and modifications ▪ HAZOP action close-out ▪ Appropriate work carried out under Permit to work scheme	▪ Achievement of Training / Development programme ▪ Management of Change Processes for Modification ▪ Change Control Review document ▪ Pre and Post Engineering Review Documents ▪ Documented HAZOP Review ▪ Work Permits

MAPP Commitment Statement	Means To Achieve	Auditable Area
▪ An on-site emergency plan for identifying foreseeable emergencies by systematic analysis, and prepare, test and review emergency plans to respond to such emergencies has been prepared and is regularly reviewed	▪ Site emergency plans upkeep and testing ▪ Training of emergency response personnel including Site Incident Controllers, incident Officers and site personnel ▪ Maintaining suitability or emergency response procedures ▪ Establishment and maintenance of procedures for interfacing with other sites, local community, regulatory authorities, employees and other BU's ▪ Issuing of pagers to Site Main Controllers and periodic testing ▪ Maintenance of alarms and communications to enable rapid notification to personnel ▪ Assembly point separation from hazard source ▪ Establishment and maintenance of arrangements with emergency services. ▪ Bunding and drainage on site to capture spillages ▪ Maintenance of multiple escape routes on site to enable safe evacuation of personnel ▪ Maintenance of portable fire fighting equipment	▪ Site emergency plans ▪ Emergency response training ▪ Records of alarm tests ▪ Site induction process ▪ Bund/ Drain maintenance programme ▪ Emergency services links/ support ▪ Documented emergency plan exercises

MAPP Commitment Statement	Means To Achieve	Auditable Area
▪ Performance is monitored proactively by the implementation of a system of safety audits and inspections; and reactively through the accident and near miss reporting and investigation system	▪ Internal and external QA audits ▪ Annual review of COSHH assessments ▪ Air / LEV / Scrubber Monitoring ▪ Off site water analysis ▪ Internal Audit MAPP and SMS annually ▪ Monthly Site meetings ▪ Annual Management review meeting with senior management ▪ Regular safety inspections/audits ▪ Weekly Safety Committee ▪ Accident/incident/near miss reporting procedures ▪ Site emergency plan review ▪ Inspection / testing routines	▪ Procedural compliance ▪ Site walkabout confirming clearance of access roads ▪ Adherence to programme of site inspections, audits etc. ▪ Documented Monthly safety meetings and weekly safety committee meetings ▪ Documented safe behaviour audits carried out several times/week ▪ Documented emergency exercises
▪ Procedures will be implemented to ensure that corrective actions are taken in the event of non-compliance with the objectives set by the MAPP	▪ Any non-conformances raised by internal audits form the MAPP or SMS will be reviewed during the Management Review meeting ▪ Corrective actions will be decided during this meeting and agreed and signed by the company Director present. ▪ Actions will be completed and reviewed	▪ Audit of MAPP and SMS ▪ Non conformance documentation ▪ Minutes from Management Review Meeting

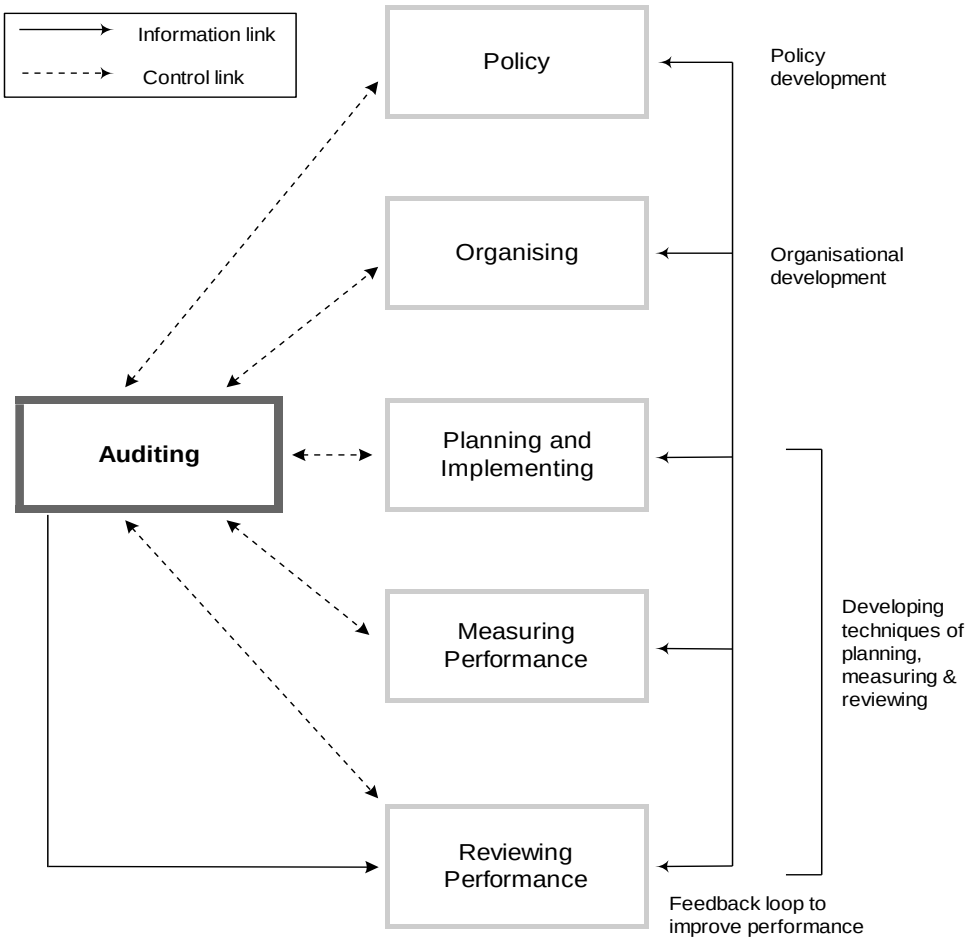
The Safety Management System and Major Accident Prevention Policy will be internally audited annually independent of the element being audited

In the event of failure to meet the objectives of the Major Accident Prevention Policy or non-conformances found in either the Major Accident Prevention Policy or the Safety Management System the following procedure will be followed:

- The General Manager will perform an investigation to find the root cause of the non-compliance.
- The General Manager will determine corrective actions necessary, these actions will be put into a plan which will include necessary resources, including human, training, changes to plant or maintenance schedule and the costing to implement these actions.
- This plan will be sent to the Global Business Director for approval.

Senior management including the Global Business Director will review the performance and suitability of the MAPP and the SMS. Any reissued documents will be sent to the competent authorities (HSE and EA) for assessment prior to being implemented.

4.17.1. Process Followed by Stolthaven Dagenham in the auditing of the SMS & MAPP



The internal auditing process is as follows;

- Initiate the Audit.
- Make the process owner aware that the audit is planned, and they are available.
- Review any Documents.
- Procedures, standards etc.
- Develop an Audit Plan.
- From the review of documents prepare questions.
- Review previous audit findings if relevant.
- Conduct opening meeting.
- Reiterate audit scope, what has been reviewed already.
- Carry out the Audit.
- Ask questions
- Collect evidence and record your findings.
- Generate Findings.
- Prepare audit conclusions.
- Present findings allow clarification if something has been misunderstood.
- Send draft report to SHEQ Manager
- Use FD62-2 to report findings
- Finalise report and actions.
- Follow up on actions.

A copy of the internal audit plan is provided in Appendix 4.16, while a blank record sheet is provided as Appendix 4.17.

4.18. Review

The Major Accident Prevention Policy will be reviewed annually during the Management Review Meeting. During this meeting the MAPP will be systematically assessed for performance against objectives and the Safety Management System will be reviewed for effectiveness and suitability based on the results of the audit programme.

Senior Management and Operational Management will attend the meeting. All changes will be agreed and authorised by Senior Management. The review will be documented and form part of the audit of the Safety Management System.

The General Manager reports all incidents, accidents or near misses that have taken place together with details of the investigations and analysis of the causes, on a quarterly basis, to the President of Stolthaven. The sites incident recording system (online based reporting) automatically emails designated senior people based on the severity of the incident.

Any lost time accidents or incidents that could result in a major accident are investigated and reported to the Board of Directors for review.

Safety Committee meetings are held quarterly on site to review all incidents, accidents and near misses. These meetings involve the General Manager, the Terminal Safety Health Environment & Quality Manager and the workforce representatives. Analysis of the occurrence is carried out and changes to procedures on the basis of lessons learnt are decided. The minutes of these meetings are put on display for all staff. The investigation reports are sent to the General Manager and Group SHEQ for review/comments. In addition to the safety meeting, Stolthaven hold a monthly safety management meeting which is attended by the site management team.

Senior management review the performance and suitability of the MAPP and the SMS. The result of that meeting is reported to the Business Director for approval of the MAPP prior to re-issue.

4.19. Documenting the Review

Minutes of all meetings are held as hard copies and electronically and are retained by the SHEQ Manager. Relevant Safety committee minutes are displayed on site notice boards, along with performance indicators. The board review is documented and hardcopies of the minutes of the meeting are distributed to relevant senior managers.

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