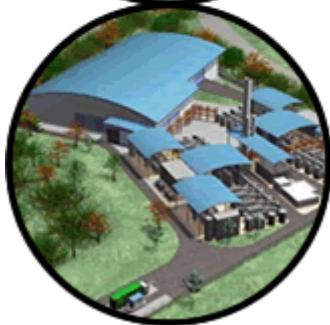


Swansea Drydocks Limited Operational Techniques



August 2011

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Swansea Drydocks Limited

Operational Techniques

Project:	Environmental Permit Application – Ship Dismantling
Site:	Swansea Dry Docks, Swansea, SA1 8RY
For:	SWANSEA DRYDOCKS LIMITED
Status:	FINAL
Date:	August 2011
Author:	Lucinda Hall, Principal Consultant
Reviewer:	Matt Travis, Director
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1.0 INTRODUCTION

1.1 Purpose of Document

This document fulfils the requirement in Parts B2 and B4 of the Environment Permit application form to provide details of the operational techniques that will be used to minimise and control emissions from the site. It provides details of the measures that Swansea Drydocks Limited (SDL) will take to control the risk of pollution to air, land and water from the proposed ship dismantling operations and describes how the facility will be operated to meet the requirements of the relevant legislation and guidance detailed in section 1.3 below.

1.2 Site Details

The site is located in the Kings Dock which forms part of Swansea Bay. The entrance of the site is located at NGR 266898 192060. The site comprises one main operational area. The area provides two dry docks and additional waste processing and storage facilities.

The Operator proposes to accept end of life vessels (ships) from the Ministry of Defence and private companies and dismantle them to allow the recovery of scrap metal and other items. SDL also intend to undertake ship repair operations on the site which are not subject to waste management controls. The waste management and associated operations proposed on the site include:

- Dismantling of vessels;
- Sorting and processing of waste;
- Storage of hazardous and non-hazardous materials; and
- Discharges to surface water.

The site will be developed in phases as the scale of operations increases. Specific detail relating to the location and infrastructure to be provided and used in phase 1 are included in Section 6 of this document.

1.3 Relevant Legislation and Guidance

The primary purpose of the facility is to recover scrap metal from end of life vessels. No more than 10 tonnes of hazardous waste and waste oils will be accepted **for disposal** per day and no more than 10 tonnes of hazardous waste subject to **R5 recovery operations** will be stored on site at any one time. No more than 50 tonnes per date of non-hazardous wastes subject to **D9 disposal** operations shall be carried out at the site. The ship dismantling operations are therefore considered to be a waste operation and not subject to the requirements of the Integrated Pollution Prevention and Control (IPPC) Directive.

As agreed with the Environment Agency during pre-application discussions, the facility will consist of:

- A waste operation (ship dismantling).

As the discharges to surface water will be associated with a waste operation, they will not constitute a standalone discharge to water regulated facility.

The proposed activities are subject to a number of pieces of national, European and International legislation and statutory and non-statutory guidance documents. Operators are required through their Environmental Permit application to demonstrate how they will comply with the relevant requirements of this legislation and guidance.

In relation to the proposed ship dismantling operations the following pieces of legislation and guidance are considered relevant:

- Waste Framework Directive;
- Waste Electrical and Electronic Equipment Directive;
- Habitats Directive;
- Environmental Permitting Regulations 2010;
- How to Comply with your Environmental Permit, Environment Agency Version 4, April 2011;
- H6 Environmental Management Systems, Environment Agency 2010;
- Overview of Ship Recycling in the UK, Guidance, Defra 2007;
- Environmental Permitting Core Guidance, Defra 2010;
- Environmental Permitting Guidance: The Waste Framework Directive, Defra 2010;
- Environmental Permitting Guidance: The WEEE Directive;
- BATRRRT;
- Guidelines on Ship Recycling, IMO, 2004;
- The Waste (England and Wales) Regulations 2011;
- Guidelines for Ballast Water Management and Developments of Ballast Water Management Plans, IMO, 2005;
- United Nations Basel Convention on the Control of Transboundary movements of Hazardous Wastes and their Disposal 2002; and
- Environment Agency Monitoring Guidance M17: Monitoring of Particulate Matter in Ambient Air Around Waste Facilities.

The following additional documents are considered relevant to the associated water discharges:

- Environmental Permitting Core Guidance, Water Discharge Activities, Environment Agency, December 2010;
- EPR7.01: How to comply with your Environmental Permit for Water Discharges and Groundwater Activity Permits;
- Water Resources Act 1991;
- Water Framework Directive; and
- The Dangerous Substances Directive.

1.4 Structure of Document

This document is broadly structured in accordance with the Environment Agency's document: How to comply with your Environmental Permit.

Details relating to the operations proposed in phase 1 of the site's development are included in Section 6.

2.0 MANAGING THE ACTIVITIES

2.1 General Management

Swansea Drydocks Limited will operate the proposed facility. The company has been set up with the support of a well established metal recycling company Dunn Brothers (1995) Ltd who will also provide expert support to the waste recycling operations.

The organisational structure of Swansea Drydocks Limited's management board is shown in Figure 2.1 below.

Figure 2.1: Management Organisational Structure



In addition to the management board, general site operatives will be employed to undertake the waste management operations. These staff will undertake a variety of roles including:

Radioactive Waste Engineer	Technical Advisor
Professional Engineers	Welders
Demolition Engineer	Mechanics
Plant Operators	Electricians
Crane Operators	Forklift Operators

Labourers	Gas Cutter Operators
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The maximum number of people on site at any one time is expected to be in the order of 90.

2.2 Management Systems

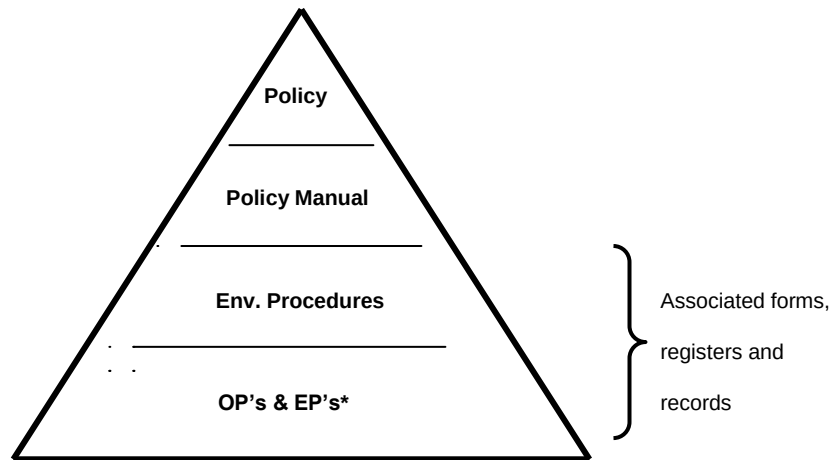
SDL will develop and implement an ISO 9001, 14001 and OHSAS 18001 Integrated Management System and the associated Quality, Environmental and H&S Procedures for the site. There is some commonality within all the Standards - Control of Documents, Control of Records, Internal Audits, Management Review, therefore one overall manual will be produced to incorporate all three standards. Furthermore, the ISO9001 and 14001 documents will be upgraded to meet the ISO/PAS 30000:2008 standards for the site. This standard has been developed specifically for ship recycling facilities and specifies requirements for a management system to enable a ship recycling facility to develop and implement procedures, policies and objectives in order to be able to undertake safe and environmentally sound ship recycling operations in accordance with national and international standards. The management system requirements take into account the relevant legal requirements, safety standards and environmental elements that the ship recycling facility needs to identify and comply with in order to carry out safe and environmentally sound ship recycling.

ISO/PAS 30000:2008 applies to the entire process: accepting a ship for recycling by the facility; assessing the hazards onboard the ship; identifying and complying with any applicable notification and import requirements for ships to be recycled; carrying out the recycling process in a safe and environmentally sound manner; conducting required training; ensuring the availability of social amenities (e.g. first aid, health checks, food and beverages); storage and processing of materials and wastes from the ship; waste stream and recycling stream management, including contractual agreements; and documentation controls for the process, including any applicable notification of the final disposal of the vessel.

All operations on the site will take place in accordance with the documented Management System (MS). SDL aims to achieve certification within 12 months of the commencement of permitted operations on the site.

As illustrated in Figure 2.2 below, the MS will have a Ship Recycling Policy which will include a commitment to continual improvement, prevention of pollution and a commitment to meet the requirements of relevant legislation and other requirements.

Figure 2.2: Structure of the MS



* Operating Procedures and Emergency Procedures

Appendix B to this report contains a copy of the contents pages for the sites proposed Integrated Management System, which lists the key procedures included within this sites management system.

Identification of Environmental Aspects

SDL will establish, implement and maintain procedures:

To identify the environmental issues associated with the facility and the likelihood of occurrence, severity of occurrence, impact upon stakeholders and whether there is any applicable legislation associated with the aspect;

To identify what hazardous materials and other hazardous items the facility is able to recycle;

To assess the ships it is planning to recycle relative to the presence of these materials in association with the acceptance and import of such ships and the ability of the facility to recycle these materials;

To prepare for and plan the recycling of ships and to have a system to enable planning and preparation to be done for each individual ship the facility intends to recycle; and

To determine those aspects that has or can have significant impact(s) on the recycling operations.

Normal, abnormal and emergency operating conditions will be included in the aspects register. Procedures to eliminate or where this is not possible, reduce the most significant aspects will be prioritised.

Identification of Legal and Other Requirements

A legal register will be developed to identify all applicable legal and other requirements associated with the operation of the facility. The legal register will detail how the legislation applies to the operations, how compliance is to be achieved and how the legislation applies to the aspects register. Other requirements include those that must be applied as required by the Environment Agency or for example, as stated in relevant codes of practice, insurance policies or planning conditions.

Regular reviews of compliance will be undertaken and the output assessed at management review meetings. Regular reviews of legislation also take place to ensure that requirements of new and forthcoming relevant legislation can be met.

Ship Recycling Objectives, Targets and Programmes

In order to achieve continual improvement, legal compliance and pollution prevention, environmental objectives and targets will be set. These are based on the identified significant environmental aspects of the activities and will be set to reduce the level of significance or eliminate the significant aspects. Progress towards meeting objectives will be assessed during project team management reviews.

Structure and Responsibilities

SDL assigns responsibility for implementing the Ship Recycling Policy and MS to the Quality Assurance Manager. The management team ensures compliance with the policy and MS at a company level. This involves handing responsibilities for delivery down through the organisation. Delegation of responsibility will be clearly defined within each employee's job description and management systems procedure.

Training, Awareness and Competence

The MS includes procedures for ensuring all employees and contractors are aware of their environmental responsibilities. SDL ensures that sufficient training is provided so that each individual is aware of their role and responsibilities under the MS. Records of the skills and training received are held for each employee.

Specialist training will be provided, for example the designated person on site to handle the assessment, removal, storage and disposal of radioactive wastes will undergo formal training by independent specialists.

Communications

All relevant information such as the Ship Recycling Policy, Objectives and Targets and Procedures and Work Instructions will be communicated to employees and contractors using the most appropriate means. Regular communication with the regulatory authorities will take place to maintain good working relationships and to monitor on-going compliance with authorisations.

Any external request for information and complaints will be acknowledged, recorded and dealt with on an individual basis as the type of information provided will depend on the content and source of the request. All communications will be reviewed at management review meetings.

Documentation and Control

Procedures will be put in place to ensure that documents and data relating to the MS are controlled to prevent the use of invalid or out of date documents/data.

Operational Control

The MS will provide robust procedures to control all operations associated with the activities undertaken. Operating procedures will be established and implemented to achieve the following:

Management Policy, objectives and targets;

Proper control of the recycling operations;

Proper planning and preparation, which will include identification of hazards and materials onboard the ship and confirmation that the facility can handle the types and volumes;

Safe and environmentally sound recycling, including procedures, equipment, organisation and resources for minimising the risks of accidents or pollution;

Controlling exposure to hazardous materials and any other recycling aspects that may cause specific health hazards;

Proper control of contractors and external organisations used for transport, recycling, re use or disposal or waste and materials; and

Compliance with legal, statutory and other regulatory requirements.

Audits and reviews will be undertaken to assess the effectiveness of each procedure. These audits will be carried out by a suitably competent person and the findings reported to senior management for consideration.

Emergency Preparedness and Response

SDL will develop an Accident Management Plan (AMP) as detailed in section 2.5. The AMP will be regularly reviewed and the emergency procedures periodically tested to ensure they remain appropriate. To minimise the risk of accidents SDL will implement a Planned Preventative Maintenance (PPM) program at the facility.

Monitoring and Measurement

As detailed in section 4 monitoring will be undertaken for key environmental indicators and in accordance with the requirements of the Environmental Permit.

Non-conformance and Corrective Action (including handling of complaints)

Assessment of compliance will take place through routine daily inspections, the review of monitoring results, internal audits of compliance with operational procedures, and a regular review of the legal register.

Where non-compliances are identified, they will be documented through the completion of a non-conformance report (NCR). The NCR will also include measures to be taken to ensure that operations return to a compliant situation as soon as possible and that the event does not re-occur.

For example, where emissions monitoring identifies that a breach of an emission limit is likely or has occurred, a NCR will be completed and immediate action taken to reduce the emission. Investigations will then be undertaken to identify the root cause of the non-conformance and actions necessary to prevent it occurring again. Responsibility for investigating and identifying corrective and preventive action will be given to a suitable qualified and experienced employee. The results of corrective and preventive action will be recorded and their effectiveness evaluated at management review meetings.

Records

Procedures will be developed to ensure that appropriate records will be maintained on the site and that such records are:

- Legible, identifiable and traceable to the project;
- Readily retrievable and stored in conditions which minimise deterioration, damage or loss;
- Made available for evaluation by the client or any regulatory body as agreed;
- Retained for a specified period prior to their disposal or otherwise (any statutory period as a minimum period); and
- Held securely.

MS Audits

An internal audit schedule will be developed to include each work area within the Facility and all procedural elements of the MS. The schedule will be a 'rolling plan' and will be developed taking the findings of previous audits, organisation changes and type and extent of significant risks associated with a particular process into account. The audits will consider compliance with relevant procedures, legislation and contract specific requirements. Audit outputs will be provided in an audit report which will be provided to all relevant managers of the areas/processes audited.

Management Review

The Management Review process will consider all elements of the MS and its ongoing effectiveness to deliver the needs of the business, and service performance.

Swansea Drydocks Limited aims to achieve ISO9001, 14001 and OHSAS 18001 certification within 12 months of the commencement of operations on the site.

This approach will ensure that the activities on site are managed and operated to minimise the risk of pollution.

2.3 Technical Competence

As detailed above, the MS will include a procedure to ensure employees or those working on behalf of Swansea Drydocks Ltd aware of their environmental responsibilities. This includes delivery of initial induction training and the provision of any additional training and/or experience relevant to the nature of their role. Personnel will be provided with clear instructions regarding their tasks and requirements.

The Manager and supervisor with the required WAMITAB Certificate of Technical Competence (COTC) level required under the Environmental Permit will be appointed as follows:

- Stacey Norman, CoTC 4TSNH, Certification Number 11482, issued on 13 May 2010.

SDL's Technically Competent Manager (TCM), Stacey Norman, has gained the WAMITAB Certificate of Technical Competence level 4 in Waste Management Operations Managing Transfer Non-Hazardous Waste (4TSNH). The WAMITAB Scheme is recognised as one of the two appropriate training and qualification schemes for ensuring employees from all parts of the industry have the necessary skills and competence to introduce and maintain more sustainable waste management practices for the benefit (and safety) of both the operatives and the general public. Once operations at Swansea Drydocks commences, Stacey will work towards obtaining the higher tier WAMITAB hazardous waste certification, and will spend no less than 30% of the sites operational hours on site. Once the new General Manager has been appointed, he will also work towards WAMITAB certification. Stacey will then act as a backup TCM.

In accordance with Environment Agency Guidance 'How to comply with your Environmental Permit' the time a TCM has to be on site each week has been calculated. Based on the Opra score for the waste operations proposed in this application, it is expected that a TCM is on site at least 30% of the site's weekly operating hours. SDL anticipates however that at least one TCM will be on site for the majority of times when the site is undertaking waste management operations.

Records of all TCM attendance, personnel training and competencies will be retained.

Records of the skills and training requirements will be maintained by use of skills and training matrices which will include the training and skills required for each role. Continued competence will be demonstrated by undertaking the 2 yearly WAMITAB competency test to secure a Certificate of Continued Competence.

2.4 Site Security

The site will be kept secure through a combination of measures. The main operational areas of the site will be provided with perimeter fencing such as 2.4m high palisade fencing or similar. The entrances to the site will be provided with security gates which will be closed when the facility is non-operational or closed. During operational hours the entrance will be strictly controlled by site personnel.

In addition the docks complex is provided with security gates and personnel at Langdon Road to the north and Fabian Way to the east. These ensure that only authorised personnel/vehicles gain entry to the docks. The Port of Swansea Police Force also undertakes regular patrols of the dock area.

2.5 Accident Management

An assessment of potential accidents and measures to reduce the risk of them occurring has been undertaken in line with Environment Agency H1 Part 1 Guidance for Environmental Risk Assessment (Annex A – Amenity and Accidents) and is included within the Environmental Risk Assessment chapter of this permit application. This initial assessment will be further developed and formalised by Swansea Dry Docks Limited through the preparation of an Accident Management Plan (AMP) which will form part of the MS.

The AMP will identify the potential hazards posed by the waste facility under both normal and abnormal operating conditions. An assessment of each hazard identified will be evaluated and the potential risk and prevention measures described. Possible accidents to be addressed are summarised below, however this is not an exhaustive list:

- Waste storage failure;
- Incoming waste or raw material handling/storage failure;
- Fire;
- Flooding;
- Vandalism;
- Vehicle Accident; and
- Residues handling/storage failure.

Operational procedures, which identify the actions to be taken to minimise the potential causes of accidents and the consequences in the event of an accident occurring, will be implemented through the MS. Such actions may include:

- Establishment and maintenance of a list of substances on site that have the potential to cause environmental impact if they escape;
- Installation of appropriate primary and secondary containment measures; and
- Use of fire breaks.

All personnel will be provided with suitable training to ensure they are familiar with the AMP its procedures and their responsibilities in the event of an incident.

The AMP will be regularly reviewed (at least every 4 years and as soon as practicable after an accident) and maintained through the lifetime of the facility to ensure it remains appropriate to the site's activities.

2.6 Decommissioning & Closure

SDL will prepare a site closure plan in line with Environment Agency Guidance to confirm how the site will be decommissioned to return it to a satisfactory state upon the cessation of activities.

The Site Closure Plan will be maintained on site and updated as circumstances change, for example, should there be any process changes or change of land use.

Records will be maintained of the location of facilities, as well as the services and sub surface structures installed during the construction and operating phases of the facility.

De-commissioning will be in compliance with procedures outlined in the Site Closure Plan. During the de-commissioning process, operational records will be reviewed and assessed against the conceptual site model documented in the permit application. If areas of deterioration during the operation of the site are identified these areas will be re-examined and the site will be returned to a satisfactory state as defined at the permit application stage.

3.0 WASTE OPERATIONS

3.1 Waste Types and Quantities

The waste facility will only accept end of life ships, vessels and parts thereof which may or may not contain liquids and/or hazardous components. These wastes are categorised as 16 01 04* and 16 01 06.

The quantity of waste accepted per year will be determined using the lightweight tonnage of each vessel. The lightweight tonnage represents the actual weight of the vessel with no fuel, passengers or cargo on board. It is anticipated that SDL will accept the equivalent of up to 150,000 lightweight tonnes in any one year.

3.2 Pre-Acceptance Activities

Collection and Review of Documentation

Prior to confirming the acceptability of a vessel for dismantling on the site, the Green Passport and associated shipboard inventory will be secured and reviewed. The Green Passport will include details relating to:

- Potentially hazardous materials in the ships structure and equipment;
- Operationally generated wastes; and
- Materials in stores.

Appendix A sets out a list of materials that should be included in the Green Passport. Where a comprehensive shipboard inventory is not available for a vessel the owner will be requested to provide the above information. This information will be validated during the initial ship survey (see below).

SDL will, where possible, secure information to confirm whether organotin compounds are present on the hull of the vessel. From 1st January 2008 EC Regulation 782/2003 requires that ships shall not bear organotin compounds which act as biocides in anti-fouling systems on their hulls or external parts or surfaces or shall bear a coating that forms a barrier to such compounds leaching from the underlying organotin anti-fouling system.

Specifically, ships of 25m or more in length but less than 400 gross tonnage must carry a Declaration on Anti-Fouling Systems signed by the owner or authorised agent. The declaration must be accompanied by appropriate documentation supporting the fact that the anti-fouling system is compliant. The declaration will be obtained for this size vessel. Where the acceptance of smaller vessels not bound by this requirement is proposed at the facility, SDL will sample the paint on the

hull to confirm whether organotin compounds are present on the hull. SDL does not intend to either apply or remove any tributyltin compound or triphenyltin compounds to be found on any vessels.

Following the International Convention on the Control of Ships' Ballast Water and Sediments, all ships should have a Ballast Management Plan on board. SDL will secure the Ballast Management Plan where one is available. Where a Ballast Management Plan is not available or does not contain sufficient information, SDL will ensure that they obtain the following information as a minimum:

- Details of the ballast water management methods adopted on board;
- Ballast tank arrangements;
- Ballast capacity plan;
- Ballast water piping and pumping details;
- Pump capabilities; and
- Location of ballast water sampling points.

Initial Ship Survey

Prior to the vessel leaving its base port Swansea Drydocks Ltd will undertake an initial survey of the vessel to identify the location, type and quantity of any hazardous substances in the vessel (as detailed in Appendix A) with the potential to provide a hazard to the workforce or the environment during the dismantling process. This survey will also clarify the accuracy of information contained within the Green Passport/information provided by the owner.

To inform the development of required management plans an assessment to identify potentially harmful aquatic organisms and non-indigenous species in marine growth, ballast water and ballast sediments will also be undertaken.

The initial ship survey will include an assessment for the presence of radioactive sources/substances such as liquid level indicators, low specific activity (LSA) scale, smoke detectors and emergency signs. Such materials will be clearly labelled and their location recorded on a vessel plan. LSA is predominantly found on off shore structures (rigs) and not ships. However, an assessment will be undertaken to establish LSA levels. No vessels will be accepted at the facility where they are contaminated with LSA scale with radioactivity of greater than 14.8 Bq/g as assessed by a surface contamination /dose rate metre or suitable alternative metre. This represents the level at which the material may be unconditionally exempted from the waste disposal provisions of the Radioactive Substances Act 1993. Should SDL intend to accept a vessel which contains any of the above sources, the appropriate exemption order/permit will be sought from the Environment Agency. For example, SDL can apply for an Exemption Order to allow the keeping and use of a maximum 500 smoke detectors on site (loose) without the need for a licence (now referred to as a Permit under the EPR 2010).

Decision to Accept Vessel & Preparation of Management Plans

The decision to accept a vessel for dismantling at the facility is made on a case-by-case basis by the General Manager who will consider whether Swansea Drydocks Ltd have the ability (available equipment and provision to manage materials or wastes) or authorisation under the Environmental Permit to dismantle the vessel.

Once a decision has been made to accept a vessel for dismantling at the facility a Ballast Water Management Plan will be developed (or the ships existing Ballast Management Plan reviewed) and a Ship Recycling Plan and Asbestos Management Plan will be prepared in accordance with IMO Guidelines.

The Ballast Management Plan will include:

- Safety procedures associated with Ballast Water management;
- A detailed description of the actions to be taken to sample, test, remove and manage any ballast water contained within the ship;
- Details of how the stability of the ship will be maintained;
- Detailed procedures for the sampling, testing, removal and disposal of ballast water sediments;
- Details of the person(s) responsible for ensuring the Ballast Management Plan is implemented; and
- Reporting procedures.

The Ship Recycling Plan will include:

- Methods and procedures for managing (including identification, sampling/analysis, abatement, removal, treatment, storage, transportation and disposal) potentially hazardous materials;
- Methods and procedures to be implemented to protect worker safety and health at the recycling facility (a Safety and Health Plan);
- Methods and procedures to be implemented to protect the environment (Environmental Compliance Plan);
- Methods, procedures and sequencing of ship recycling, including work that will be accomplished prior to, at and after the ship arrives at the recycling facility (Operational Plan).

The Asbestos Management Plan will include:

- A full health and environmental risk assessment;
- A ship specific Programme of Works;

- Details relating to the provision of information, instruction and training to those undertaking the works;
- Details relating to the control measures to be used and how they will be maintained;
- Provisions for the cleaning of protective equipment;
- Arrangements to deal with accidents, incidents and emergencies; and
- Air monitoring and health surveillance strategies.

The handling of asbestos on site will be carried out by a specialist sub-consultancy, Shield Environmental Services Ltd. As an Asbestos Management Plan will be prepared on a case by case basis specific to each vessel accepted onto site. A generic template example has been provided in Appendix C to this report, to illustrate how each plan will take form, and confirm technical content to be included.

Notifications

Unless otherwise agreed and where possible Swansea Drydocks Ltd will notify the Environment Agency at least 1 month in advance of a vessel being brought to site. This notification will be accompanied by the Ballast Management Plan, the Ship Recycling Plan and Asbestos Management Plan if required by the Environment Agency.

3.3 Waste Acceptance

No waste will enter the facility by road. Vessels will enter the site by sea and will be towed into Kings Lock and Scherzer Passage, then pulled into one of the two dry docks using hawsers (ropes) and capstans (rotating winch). Management procedures will set out the approach to securing the vessel and ensuring its on-going stability while major items are removed.

The receipt of a vessel into the dry docks will be managed by the sites' Operations Manager who will inspect the vessel for any immediate evidence of leaks which have the potential to cause pollution. In the event of such a leak being detected, pollution abatement equipment such as a pollution control barrier will be deployed to contain the leak. Spill kits will be available on site to manage any smaller localised spillages.

All vessels accepted at the facility will be towed directly into a vacant dry dock with the intention of the preliminary preparation and the final dismantling / disassembly works to be undertaken in the one location. Vessels will be regularly inspected to check for leaks and damage. These inspections will be recorded in the site diary together with a record of any remedial action undertaken.

Testing of water in the dry dock prior to release is not considered necessary as no activities will take place while the dry dock is flooded. Any sediments remaining in the base of the dry dock following dewatering will be tested to determine the most suitable disposal method including sea disposal.

If testing identifies the sediments to be unsuitable for sea disposal they will be removed off-site to a suitably authorised waste management facility.

If the removal of marine growth from the vessel is required it will be removed, handled, stored, recycled or disposed of in accordance with section 3.8.

The methodology of all works will be set out in each vessel's Ship Recycling Plan.

When undertaking pre-acceptance checks prior to the vessel arriving on site, it is often not possible to obtain representative samples of sections of the hull which are submerged under the water line. Therefore samples of this section of the hull will be taken when the ship has arrived on site, and the dock has been drained. Where vessels are subsequently found to have trace elements of Tributyltin compound or triphenyltin compounds, the Environment Agency will be notified, and a specific plan produced to handle the sections of the hull which are found to contain TBT/TPT.

3.4 Preliminary Work

Prior to the commencement of the dismantling and breaking activities, each vessel will undergo some preliminary works. These works will include:

- An extensive investigation of the vessel will be undertaken to:
 - Establish the amount and type of liquids and other pollutants onboard and confirmation of their position on the vessel. This will confirm that the inventory and detail provided at the pre-acceptance stage is correct;
 - Confirm that the drawings of the vessel accurately reflect its current configuration;
 - Identify appropriate approaches to deal with potentially polluting substances safely and without impacting on the environment; and
 - An inspection of the condition of the ships pumps and pipework to determine whether the equipment is able to be used.
- Removal of any radioactive sources or substances (if applicable). These will be removed, handled and disposed of in accordance with the Radioactive Substances Act 1993 and risk assessments and procedures that will be detailed in the Ship Recycling Plan. All works associated with identifying, handling, storage and disposal of radioactive sources or substances will be managed by the designated RSA Engineer on site, who will have undergone suitable training by an independent third party Accredited Radiation Protection Adviser (ARPA). If radioactive substances are required to be removed, all necessary exemption orders or permits will be obtained in advance. Records will be kept to ensure compliance with the regulations;
- Draining of pipework systems into their respective storage tanks (location of which are indicated on drawing number SDL8);

- Removal of accessible residual materials including:
 - Bilge and Ballast water (removed in accordance with the Ballast Management Plan).
 - Chemicals, PCB containing materials etc;
 - Oil;
 - Cargo Residue (where applicable); and
 - Sewage.
- Removal of ballast sediments and sludge in accordance with the Ballast Management Plan;
- Removal of all combustible material and making the vessel safe for 'hot work' and to ensure breathable atmosphere;
- Asbestos will be removed by a certified asbestos firm in accordance with an Asbestos Management Plan.

Where it is not possible for any of these materials to be removed from the vessel without the procedure presenting an unacceptable risk to the environment prior to dismantling or transfer of the vessel to dry dock, the location(s) of the material will be clearly marked in the vessel and on a vessel plan. Such materials will be exposed in a controlled manner to give access for the removal to take place.

During preliminary operations, a decision will be taken on a ship by ship basis as to whether the dry dock needs to remain partially or completely flooded to aid access/operations. SDL will lose valuable time waiting for the dock to empty, before beginning any preliminary dismantling activities. SDL thus propose that while the vessel is afloat, SDL will work at unbolting soft furnishings and fittings onboard, followed by the stripping and moving to land whilst afloat. These activities will be carried out with the following additional measures to be implemented to control and contain any potential spill or pollution during this phase of operations:

- a) Materials to be removed at this stage will be restricted and only include the kinds of materials which, should they fall in the water, could not harm the environment e.g. soft furnishings and probably railing and davits i.e. all above deck/topside fittings; and
- b) Secondary containment measures such as sheeting will be erected around the vessel to prevent items falling into the flooded dock.

Only sea water that has not come into contact with liquids / solids from the dismantling process will be discharged from the docks. The re-circulation of sea water to be discharged from the dry docks will be clean uncontaminated sea water. All Ship Recycling Plans will be provided to the Environment Agency prior to the acceptance of the vessel at the site. Where vessels do not have a flat bottom, docking blocks will be placed in the dry dock to ensure stability of the ship during further dismantling operations. Once deemed suitable, the dry dock will then be completely pumped out.

All operations will take place in accordance with the Ship Recycling Plan specific to each vessel.

All materials removed from the vessel will be stored in their designated storage areas or unloaded onto the waste sorting and processing area as detailed on site layout plan drawing no SDL4_Layout.

3.5 Dismantling Work

Once all potentially hazardous materials able to be accessed have been removed, dismantling of the vessel will commence. Dismantling will take place from the top down in a controlled manner using a crane or where safe and not likely to damage the integrity of the site surfacing, structures will be allowed to fall under gravity prior to being cut up into manageable sizes. Drop zones will be kept to a minimum to ensure noise and vibration levels are appropriately controlled.

Once the upper structures have been removed to the main upper deck levels all re-usable auxiliary machinery and equipment together with soft furnishings and textiles will be removed. Dismantling will progress deck by deck. Internal bulkheads, pipe work, cabling and tanks will be removed as they become accessible.

All materials removed from the vessel will be transferred on-shore to their designated storage area of the waste sorting and processing area as detailed on site layout plan drawing ref. SDL- 4.

Large metal structures will typically be cut into sizes not exceeding 1.5 x 0.6 x 0.6m to aid transport and subsequent re-processing. Where possible, double handling will be kept to a minimum.

During final dismantling and disassembly works, the remaining structures will be dismantled and equipment such as that in the engine room will be removed.

Once the superstructure, hazardous and non hazardous waste and major components have been removed, the dock will be pumped and a secondary impermeable bund erected within the dry dock to contain any unforeseen spillage. All remaining wastes, reusable equipment such as that in the engine room and scrap will be removed and stored in their relevant storage area before being moved to the appropriate metal processor/waste disposal operator or equipment buyer. The vessel will then be completely dismantled by mechanical means and the metal recycled.

3.6 Dry Dock Inspection

Once a vessel has been completely dismantled and works in the dry dock are complete, a third party CQA engineer will inspect the floor to determine whether there has been any damage or contamination of the dock and provide a summary report of their findings. The inspection will include a full visual inspection of the dock floor area using a grid basis the details of which will be identified on a plan. The inspection will provide a description of the surface material and whether any contaminants are suspected.

Where the inspection identifies any suspected area of contamination a surface sample will be taken for testing. The inspection report will identify how the sample was taken and the parameters tested for. As a minimum this testing will include PAH, TPH, metals and PCB. An assessment of any contamination will be made by the engineer and any remedial action determined. Any remedial action will be undertaken usually by removing the contaminated material and replacing it with suitable backfill. The reinstatement and integrity of the dock floor following sampling and any remediation work will be confirmed by the engineer and any remediation and reinstatement methods and inspections recorded in the engineers report.

The CQA engineers report will be submitted to the Environment Agency.

3.7 Waste Removal, Processing & Storage

The ship is cut apart for the recovery of various materials, a large proportion of which will include different kinds of scrap metal. Steel scrap represents the largest recyclable fraction of the ship.

Unless they are able to be transferred directly to their designated waste storage areas, all wastes removed from vessels will be unloaded into the waste sorting and processing area. Designated waste processing and storage areas are shown on drawing SDL-8 Designated Storage Areas.

The key issues SDL have considered in relation to measures for waste storage on the facility include the following:

- location of storage areas;
- storage area infrastructure;
- condition of tanks, drums, vessels and other containers;
- stock control;
- segregated storage;
- site security; and
- fire risk.

Specific waste will be removed, processed and stored as follows:

3.7.1 Ferrous Metals

Scrap metal can be broadly classified as ferrous scrap (of which the largest proportion is so-called “carbon steel”, and non-ferrous scrap (which attracts a higher market value).

Removal of ferrous metals from the vessel will be undertaken using hot and cold torch-cutting techniques. There is a localised risk of fires or explosions during any ‘hot work’ activities that take place aboard the vessel during preliminary cutting up of metals. Surface coatings will be assessed

and if found to be toxic or highly flammable, cold cutting techniques will be used. Cooling water will be used to further prevent equipment and metal from overheating.

Materials will then be processed on the dockside using a combination of hot/cold cutting and hydraulic shears. Metal will be reduced in size to aid transport to a recycling facility.

All processed material will be stockpiled in designated areas prior to removal off-site.

All processing of and storage of contaminated ferrous metal will take place in an area provided with impermeable pavement and sealed drainage system. Processing and storage of clean ferrous metals may take place in areas provided with hardstanding.

3.7.2 Non-Ferrous Metals

Removal of non-ferrous metals from the vessel will be undertaken using hot and cold cutting techniques. Materials will be processed on the dockside using a combination of hot/cold cutting and hydraulic shears. As described above, the area will be confirmed as “safe for hot works” prior to any torch-cutting commencing. Metal will be reduced in size to aid transport to a recycling facility.

All processed material will be stockpiled in designated areas prior to removal off-site.

All processing and storage of contaminated non-ferrous metal will take place in an area provided with impermeable pavement and sealed drainage system. Processing and storage of clean non-ferrous metals may take place in areas provided with hardstanding.

3.7.3 Wood

Wood/timber will primarily be removed from the vessel by hand and will normally form part of the ships furniture. All wood will be placed directly into a designated storage skip prior to being removed off site for recycling.

3.7.4 Plastics

Plastic will primarily be removed from the vessel by hand and will be placed directly into a designated storage container prior to being removed for off-site recycling.

3.7.5 Cabling

The potential for PCBs to be present in the cables will be assessed using the build date of the vessel. Where the vessel was constructed in Europe prior to 1986 it will be assumed that all cabling contains PCBs unless testing is undertaken to prove otherwise. Where vessels were constructed after 1986 it will be assumed that the cables do not contain PCBs.

Cables will be removed using hydraulic shear or power saw. Where cables are considered to contain PCBs cold cutting techniques will be employed.

Where cables are reusable, they will be removed in the longest possible length and stored in a designated area prior to resale.

Where cables are suitable for recycling, they will be cut into nominal lengths and stored in a designated skip prior to removal off site.

Cables likely to contain PCBs will be reduced in size by cold cutting and stored in a designated skip prior to their disposal of site.

All processing and storage of cables will take place in areas provided with impermeable pavement and a sealed drainage system.

3.7.6 PCBs

As detailed above, any materials manufactured within Europe after 1986 will be assumed to be free from PCBs. Where materials are imported from other countries, the country's date of PCB ban will be used to assess whether materials are likely to contain PCBs. Where there is no specific date for the banning of PCBs, the materials will be tested to confirm whether they contain PCBs. This approach is in accordance with Environment Agency web based guidance on PCBs and in accordance with The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) (Amendment) Regulations 2000.

Potential materials which may contain PCBs can be both in solid and liquid forms, and be found on board a vessel are summarised in the table below:

Potential sources of PCB containing materials on board vessels	
Cable insulation	Oil, including that contained in electrical equipment and motors, anchor windlasses, hydraulic systems
Rubber and felt gaskets	Surface contamination of machinery and other solid surfaces
Thermal insulation material including fibreglass, felt, foam and cork	Oil-based paint
Transformers, capacitors (also contained in electronic equipment)	Caulking
Voltage regulators, switches, reclosers, bushings and electromagnets	Rubber isolation mounts
Adhesives and tapes	Foundations mounts
Pipe hangers	Light ballasts
Plasticizers	

PCB containing materials will only be removed following completion of a comprehensive risk assessment to define the risk and identify appropriate risk management measures. Further assessment of risk from PCBs to surface waters is included in the Environmental Risk Assessment document forming part of this application.

PCB containing equipment will either be drained in situ or removed from the vessel prior to draining. The method used will be dictated by the output of the risk assessment which will consider whether the PCB containing equipment is leaking or can be removed without damaging its integrity.

All PCB containing material will be processed and stored in areas provided with impermeable pavements and sealed drainage systems and in sealed containers provided with suitable secondary containment prior to being sent for appropriate disposal off site. The designated storage area for PCB materials will be situated indoors, the exact location of which is indicated on drawing SDL4.

3.7.7 Waste Electronic and Electrical Equipment (WEEE)

Precautions will be taken to ensure that any WEEE containing hazardous substances is removed intact and not opened up or allowed to drain. No dismantling or treatment of WEEE will take place on the site. All WEEE will be stored in designated containers and undercover in accordance with the requirements of BATRRRT guidance.

WEEE will be stored on impermeable surfaces and in appropriate containers or bays with weatherproof covering. Containers will be clearly labelled to identify their contents and will be secure so that liquids, cannot enter them. These storage bays will be located indoors, as illustrated in the site layout plan SLD-4.

3.7.8 Batteries

Small batteries will be removed by manual handling. Larger batteries will be removed by mechanical handling. Any battery found to be leaking will be enclosed within a suitable container to prevent further spillage. Any acid spillage will be neutralised immediately using an appropriate spill kit. Battery terminals will be isolated / insulated.

All lead-acid batteries will be stored in a sealed acid proof container separate from non lead acid batteries.

All non lead acid batteries eg nickel-cadmium batteries will be stored in lidded plastic drums or similar and will be kept separate from lead acid batteries.

It is not proposed to treat any batteries at the facility, only store prior to removal off site for onwards recycling.

3.7.9 CFCs and Ozone Depleting Substances

A chlorofluorocarbon (CFC) is an organic compound that contains carbon, chlorine, and fluorine, produced as a volatile derivative of methane and ethane. A common subclass is the hydrochlorofluorocarbons (HCFCs), which contain hydrogen, as well. Quantities of sources of CFC's found onboard vessels accepted onto site is anticipated to be low, and will predominantly be found in refrigeration units. Whilst most units will have already been removed prior to the vessel arriving at the docks, there is potential for some units to remain.

Refrigeration equipment (including panelling, foams, insulation and gases) will be off-loaded from the vessel and directed to a designated storage area of the site. Within 48 hours of receipt each unit will have be cleaned out to remove residual food items. Any food items will be stored in sealed containers prior to being removed off site. All refrigeration equipment will be stored to minimise damage to the units, on impermeable pavement and stacked no greater than 3.5m high (or 2 units high). No refrigerant units will be stored on the site in excess of 12 months, however it is intended that refrigeration units will be removed off site as soon as practicable.

SDL do not propose to undertake de-gassing of any refrigeration units on site.

Storing refrigeration units in excessively hot environments significantly increases the potential for CFC releases. Exposure to air temperatures of 45°C may double the quantity of CFC gas released compared to storage at 20°C. Poorly ventilated steel containers exposed to direct sun light would therefore be unsuitable for storage. SDL will thus store all units within a building away from direct sunlight (location as illustrated on drawing SDL4).

3.7.10 Halons and Air Conditioning Units

Halon is any of a class of chemical compound derived from hydrocarbons. Several forms of halocarbons used as fire-extinguishing agents or air conditioning units. Halons (air conditioning units / fire extinguishers) will be stored on impermeable surfaces and in appropriate containers or bays with weatherproof covering. Containers will be clearly labelled to identify their contents and will be secure so that liquids cannot enter them. These storage bays will be located indoors, as illustrated in the site layout plan SLD-4. SDL do not propose to treat any halons or air conditioning units at the facility. The wastes will be kept in tack as they are removed from the vessel, and stored whole, prior to removal off site.

3.7.11 Marine Growth & Invasive Plant/Animal Material

Marine growth will drop of the vessel as it dries out in the dry dock. Any growth remaining on any part of the vessel when dismantling is due to commence will be manually removed. Where marine growth remaining on vessels is giving rise to significant levels of odour, any remaining growth on the

vessel will be manually removed as soon as possible. Marine growth on the floor of the dry dock will be collected in a sealed container and stored in a designated area of the site.

Hazardous marine growth that poses a potential bio-security threat will be sent to an appropriately authorised disposal facility. Non-hazardous marine growth that does not pose a bio-security threat will be sent off site for further processing and re-use.

3.7.12 Fluorescent Tubes

Intact and damaged tubes will be removed from the vessel and transferred directly to a secure dedicated container prior to removal off site for recycling. Damaged tubes will be placed in a separate container to prevent the spread of broken glass. Containers will be stored in a designated area of the site while awaiting removal off site.

3.7.13 Residual Waste Oils and Fuels (including sludges)

Prior to cutting the ship will be cleared of all residual materials in order to ensure the ship is presented for dismantling in a clean and safe condition. Each vessel will have waste oils, fuels or sludges contained within pipework, equipment, fuel tanks or other associated infrastructure. Vessels will be drained into suitable receptacles clearly marked to show its contents. System oils (typically lubricating oils) may be found in a variety of locations within the vessel, but will predominantly be located within the ship's engine room sump tanks.

There is a localised risk of fires or explosions during any 'hot work' activities that take place aboard the vessel during preliminary cutting up within confined space areas. An area where torch-cutting will take place will undergo an assessment to confirm the area is "safe for hot works". Concentrations of flammable vapours or gases in the atmosphere are to be declared as less than 10% of the lower explosive limit prior to hot works commencing. Metal containers will be filled with water or thoroughly cleaned of flammable substances, vented and tested prior to cutting works commencing. Cooling water will be used to further prevent equipment and metal from overheating.

Transfer of residual oils and fuels using dry-transfer arrangements (pumps / pipe-work, etc) into designated storage containers will only take place in areas provided with impermeable pavement and sealed drainage system and where spill kits are available (Areas are illustrated in drawing SDL4). All residual oils and fuels will be stored in suitable containers on impermeable pavement provided with a sealed drainage system. All containers will be provided with secondary containment capable of holding >110% of the contents of the container. Where possible, residual oils and fuels will be removed off site for recovery rather than being sent for disposal.

3.7.14 Fire Protection Equipment and Pressurised Containers

All fire extinguishing equipment and pressurised containers will be inspected on removal to confirm whether they are suitable for on-going use, require refurbishment or are to be scrapped.

Containers/cylinders will be transferred to a designated storage area based on the outcome of the inspection. All containers and cylinders will be stored in an upright position prior to their removal off site.

3.7.15 Asbestos

All asbestos will be removed by suitably trained and licensed personnel and in accordance with the Asbestos Management Plan. During the initial phase of commissioning, SDL will sub-contract out all their Asbestos handling work to a third party specialist; Shield Environmental Services. Before a ship is recycled it must have a HSG 264 Refurbishment/Demolition Survey for asbestos containing materials. This is a comprehensive survey, which will be conducted by our partner Shield Environmental Services. Shield will also be responsible for asbestos removal. Shield are experts in the field of asbestos survey and removal, with certifications including Health & Safety Executive Licence to undertake work with asbestos, Certificate of Registration under the Control of Pollution (Amendment) Act 1989, BS OHSAS 18001:2007; Safe contractor Approved Accreditation; ARCA member; TICA member; ACAD member, Registered supplier on the Utilities Vendor Database; ISO 14001:2004; ISO 9001:2008.

In accordance with HSE Guidance, Asbestos: The Licensed Contractors Guide, 2006, enclosures will be provided for the removal of all asbestos containing material unless the risk assessment demonstrates that the associated risks are very low.

Each enclosure will be:

- Constructed of 1000 gauge plythene;
- Connected directly to a decontamination unit where possible;
- Placed under negative pressure;
- Have viewing panels (size at least 600mm x 300mm);
- Have sacrificial flooring; and
- An appropriate size for the number of personnel and amount of equipment using it.
- Access to the enclosure will be regulated through air locks which are under mechanical extraction ventilation.

All asbestos removed from the vessels will be doubled bagged in red polythene bags or wrapped in two polythene sheets marked in accordance with the Control of Asbestos at Work Regulations while in the enclosure area on the vessel. All bags will be sealed with cable ties and/or tape prior to being washed and bagged again using a clear bag sealed with cable ties/tape in accordance with the air/bag locking system. All bags will be checked for splits and other damage as part of the bag locking system after which they will be placed immediately into a sealed lockable container clearly

labelled to show its contents. All asbestos waste will be disposed of to a suitably authorised disposal facility.

As described in section 3.2 above, an Asbestos Management Plan will be prepared on a case by case basis specific to each vessel accepted onto site. A generic template example has been provided in Appendix C to this report, to illustrate how each plan will take form, and confirm technical content to be included.

3.7.16 Anodes

Anodes will only be removed once all marine growth has been removed from the hull of the vessel. Hot and cold cutting techniques may be used to remove the anodes. All anodes will be removed and stored in a designated part of the site prior to being sent off site for recycling.

3.7.16 In-organic Chemicals

The integrity of all containers will be checked prior to their removal from the vessel. Where containers are found to be leaking they will be bagged or placed inside another sealed container suitable for the substance being contained before being manually removed. All chemicals will be stored in a designated hazardous waste store on the site. Any potentially incompatible chemicals will be stored separately with separate secondary containment systems. All chemicals and their storage containers will be clearly labelled to show their contents. Where a chemical is unidentified, it will be kept separate from all other chemicals until testing has confirmed its identity. Depending on the type and nature of the chemicals they will be sent for re-use, recycling or disposal.

3.7.17 Medicines

Any leaking medicines will be placed in sealed bags/containers and placed in a dedicated medicines cabinet prior to being removed off site. Please refer to drawing SDL8 which confirms the location of where the dedicated store will be located. All medicines will be manually removed from the vessel and stored on the site in sealed and lockable containers prior to their to an appropriate disposal facility. As described in section 4.4 below, all containers will undergo regular inspection to ensure integrity of the containers is maintained.

3.7.18 Radioactive Wastes

Low level radioactive sources may be present on the vessel in smoke alarms and low specific activity (LSA) scale. All smoke alarms will be wrapped in plastic sheeting and placed into sealed storage drums prior to removal off site.

Where plant and equipment on a vessel contains LSA, a risk assessment will be undertaken to confirm the risk management measures required for its removal from the vessel. The risk assessment will consider the need to protect both the environment and human health. All plant and

equipment containing LSA will be dismantled at physical breaks such as flanges where possible and in accordance with the risk assessment. All LSA contaminated items will be sealed in containers prior to their removal off site to a suitable disposal facility. No de-scaling of LSA will take place on the site.

3.7.19 Ballast and Bilge Water

Bilge water is stagnant water mixed with potentially polluting liquids, which has drained to the lowest inner part of the ship's hull (i.e. the ships bilge). Quantity of bilge water increases during dismantling activities due to the accumulation of rainwater as well as cooling and containment water used during dismantling operations.

Ballast water is fresh, brackish or marine water that has intentionally been brought on board a ship in order to adjust the ship's stability and trim characteristics in accordance with various operating conditions.

All ballast and bilge water will be removed in accordance with the Ballast Management Plan that will be prepared in advance of the vessel arriving on the site as detailed in sections 3.2 and 3.4 above.

The general approach to ballast waters will be as follows:

- Ballast water that has been in closed tanks for a period of over 100 days will be considered to represent a low risk for micro-organisms/invasive species. This is due to the removal of oxygen from the water. This will be verified by use of a portable dissolved oxygen meter where appropriate.
- Each ballast tank will be representatively sampled and tested for hydrocarbons, TBT, micro-organisms and heavy metals;
- Only where analysis shows that the ballast water meets:
 - Ballast Performance Standards set by the Convention for the Control and Management of Ship Ballast Water and Sediments, 2004; and
 - Will not cause an unacceptable impact on the receiving waterbody

will it be considered suitable for discharge to the dock as clean uncontaminated surface water.

- Where ballast water is not suitable for discharge to the dock, large quantities will be pumped directly to tanker for off-site treatment and/or disposal. Small quantities will be pumped to sealed containers and stored in a designated area of the site prior to removal off site. Where ballast water is stored on site it will be provided with secondary containment capable of holding at least 110% of the containers contents.

All ballast sludges will be tested for hydrocarbons, metals and micro-organisms in order to identify a suitable waste management route. Sludges will be removed by pumping or high powered vacuum

tanker and where stored on site will be provided with secondary containment capable of holding more than 110% of the containers volume.

Any bilge water present in the vessel will only be removed once the vessel is in the dry dock. The water will either be sent directly off site by tanker or will be directed through the on-site oil interceptor and storage tank where it will be tested to confirm its suitability for discharge to the dock.

3.7.20 Foul Waste

Foul waste will be pumped into sealed storage containers or if sufficient volumes are on-board the vessel will be pumped directly to a tanker prior to being sent to an authorised treatment facility. In the event that foul waste represents a bio-security hazard it will be pumped into sealed containers and transported off-site to a suitable disposal facility.

3.7.21 Cargo Residues

Cargo residues are predominantly generated from the loading and unloading of the holds of ships carrying solid bulk cargoes (minerals, grain, salt, sugar, etc.) As the vessels intended to be accepted onto the site are predominately ex-MOD or cruise liners used for pleasure voyages, thus cargo residues is not likely to be a waste stream that will need to be dealt with in the majority of instances. However, the presence of any cargo residues in a vessel will be identified during the initial site surveys. Information secured from the initial survey and any sampling and analysis will be used to determine the best and most appropriate approach to removing, handling and storing the cargo residues and to confirm the most appropriate recycling or disposal route and site.

3.7.22 Lead (Pb)

Lead (Pb) is a toxic heavy metal and can be found in batteries, paints and in components such as motors, generators, piping, cables and others. The majority of these key sources have already been identified above. Where other components are identified to contain lead, each source will be dismantled and handled and treated as hazardous waste. Components will be stored indoors in sealed and weatherproof containers to contain risk to human health and to the environment. The storage containers will be located in area 1 as illustrated on drawing no.SDL8.

3.7.23 Mercury

Mercury is a toxic heavy metal and persistent bioaccumulative pollutant. Mercury can be found on ships in thermometers, electrical switches, light fittings, and luminescent lamps. As described above in section 3.7.12, materials containing mercury will be removed from the vessel and transferred directly to a secure dedicated container prior to removal off site for recycling. The location of where these materials will be stored is illustrated on drawing SDL8. Any materials found to contain mercury will be placed in bags to ensure that there is no risk of spillage or leaks during transfer to the

designated storage area. The bags will then be placed within the secure containers awaiting removal off site. Due to the bioaccumulative risks of this material, these wastes will be removed under strict controls to ensure that risks of the materials entering the sites drainage system is controlled. This will mitigate any risks posed to nearby sensitive receptors such as the Mussel Farm located within the Queens Dock.

3.7.24 Paints and Coatings

A variety of different paints and coating products can be found on board a vessel. The paints can primarily be split into two categories flammable/non-flammable. Used both on the exterior and the interior areas of the vessel, the characteristics of each paint or coating will require certain precautionary measures to be taken with respect to the demolition process.

The nature of paint can often present itself to be flammable and may contain toxic compounds (PCBs, heavy metals such as lead, barium, cadmium, chromium, zinc, or pesticides). An assessment of the ships Green passport inventory will be undertaken to access which paints are present on the ship. Furthermore, when hot-cutting works are required, spot sample checks will be carried out to confirm that the paint is not flammable, and does not present a high risk of localised fire.

Paints and coatings will be exported from the dismantling activity to steel reprocessing plants via steel plates. Consequently the challenges associated with emissions of polluting substances in the paints and coatings are transferred to the reprocessing facilities. The removal of paints prior to cutting during ship dismantling will not be necessary, as in the event that paint is highly flammable cold cutting techniques will be used to cut the steel plates. During the initial survey of the ship, an evaluation will be undertaken to determine the flammability and toxicity of the paint or coating.

There are three other methods commonly used to remove paints/coatings. These include chemical stripping, abrasive blasting or mechanical removal. SDL do not intend to use any of these methods as part of the ship dismantling operations on site.

As part of the ship recycling plan, a method statement will be produced to include handling and storage of any paint flakes or residues collected within the dock. Paint flakes will be scraped up and placed in a sealed storage container, prior to removal off site to an appropriate facility which is authorised to accept the material.

3.7.25 Residual Solid and Liquid Wastes collected in the DryDocks

At present the full engineering details of the dock basin, and exact location of the sumps are currently unavailable as the docks are yet to be fully drained and a comprehensive inspection undertaken. SDL took over the lease of the site on 1st April. Electricity to the site has been reinstated as of week commencing 9th May. Pumps will shortly be reinstated, at which point a full survey of each dock will be undertaken. Details of these survey's will be forwarded to the Environment Agency

for review. It is proposed that contaminated site run-off collected within the docks will be contained within the bunded area, and intermittently pumped up and directed through the site's proposed surface water drainage scheme. At such time when dismantling of a vessel is complete, the site will be cleared of all remaining liquid residues, and any solid and sludge waste remaining will be scraped up and placed in a sealed storage container, where it will undergo testing, prior to removal off site to an appropriate facility which is authorised to accept the material.

3.7.26 Tanks and Storage Vessels (including residual fuel tanks)

Each vessel accepted at the site will have a variety of different storage vessels and tanks on board. As part of the initial ship survey, each storage container/vessel and tank will be identified, and assessed to confirm if there are any residual materials contained within. If residuals are found to be present, procedures identified above in section 3.7.13 will be followed.

There is a localised risk of fires or explosions during any 'hot work' activities that take place aboard the vessel during preliminary cutting up within confined space areas. Once the tanks / storage vessels have been emptied, an assessment will be undertaken to ensure the tanks can be removed / dismantled in a clean and safe manner.

An area where hot-cutting will take place will undergo an assessment to confirm the area is "safe for hot works". Concentrations of flammable vapours or gases in the atmosphere are to be declared as less than 10% of the lower explosive limit prior to hot works commencing. To ensure maximum safety, cold-cutting techniques will be predominantly used when cutting up storage vessels/tanks. Cooling water will be used to further prevent equipment and metal from overheating.

Storage vessels/tanks will either be broken into smaller manageable sizes in-situ, or removed in whole to the base of the dock or the primary dismantling area, to be broken into smaller pieces. Dismantling will only take place within areas of the site that are serviced by impermeable surfacing and the sites fully sealed drainage system. This will ensure that any residual materials which may remain, are contained, and risks to surface waters and groundwaters are controlled. The cut up pieces will be handled and stored using techniques as described in section 3.7.1 and 3.7.2 above. In the event that the pieces are found to be heavily contaminated, they will be segregated out of the main storage areas, and stored within a designated area as illustrated on drawing no. SDL8 (storage area 8).

3.8 Waste Dispatch

All wastes will be removed from the site and transported to appropriate recycling or disposal facilities in accordance with the requirements of the Waste (England and Wales) Regulations 2011.

3.9 Summary of Specified Waste Management Operations

The table below summarised the specified waste management activities that will take place on the site:

Disposal and Recovery Operations	Description of Activity
R3 Recycling or reclamation of organic substances which are not used as solvents, including composting and other biological transformation processes	Treatment (removal) of marine growth
R4 Recycling or reclamation of metals and metal compounds	Dismantling vessels
Disposal and Recovery Operations	Description of Activity
R5 Recycling or reclamation of other inorganic materials other than metals or metal compounds	Dismantling vessels. The maximum quantity of hazardous wastes subject to R5 operations will not exceed 10 tonnes per day.
R13 Storage of waste pending recycling or reclamation	Wastes stored pending R3 and R4 operations
D15 Storage of waste pending disposal	Storage of wastes prior to disposal (including disposal as defined in Article 1 of Council Directive 75/439/EEC on the disposal of waste oils). No more than 10 tonnes of hazardous waste will be stored for disposal at any one time.

4.0 EMISSIONS ABATEMENT AND MONITORING

4.1 Point source emissions

There will be no point source emissions from the facility other than the 4 emissions to surface water from the facility detailed in Table 4.1.1 below and as shown on drawing ref. SDL-2.

Table 4.1.1: Emissions to Surface Water

Emission Point Ref and Location	Receiving Media	Content of Emission
SW1 NGR: 267033 192316	Surface water in Kings Dock	Future site drainage from northern areas of the main site and the dry docks following the implementation of Phase II of the site's proposed infrastructure improvement programme. Discharge will be via interceptor and storage tanks.
SW2 NGR: 267062 192269	Surface water in Kings Dock	Seawater entering through dry dock 1 gate
SW3 NGR: 267092 192234	Surface water in Kings Dock	Seawater entering through dry dock 2 gate
SW4 NGR: 266888 192005	Tawe Estuary	Site drainage from southern areas of the main site and dry docks via interceptor and storage tanks Uncontaminated Ballast/Bilge Water

The proposed emission limits for each discharge point are set out in Table 4.1.2 below.

Table 4.1.2: Proposed emission limit values

Emission Point Ref.	Parameter	Emission Limit Value	Comments
SW1	Oil and grease	No visible trace	All sources
	Flow	30litres/second	During discharge from tank – maximum flow from outlet pipe
	Polychlorinated biphenyls (sum of congeners 28, 52, 101, 118, 138, 153 and 180)	0.02ug/l	Site drainage
	Micro-organisms	< 10 viable organisms per cubic metre greater than or equal to 50 micrometres in minimum dimension; <10 viable organisms per milliliter less than 50 micrometres in minimum dimension and greater than or equal to 10 micrometres in minimum dimension; and - discharge of the indicator microbes shall not exceed the specified concentrations.: a: Toxicogenic <i>Vibrio cholerae</i> (O1 and O139) with less than 1 colony forming unit (cfu) per 100ml or less than 1 cfu per 1 gram (wet weight) zooplankton samples ; b: <i>Escherichia coli</i> less than 250 cfu per 100ml; c. Intestinal <i>Enterococci</i> less than 100 cfu per 100ml	Site drainage and Ballast/Bilge Water Micro-organism emission limits as detailed in the Ballast Performance Standards set by the Convention for the Control and Management of Ship Ballast Water and Sediments, 2004;
SW2	Oil and grease	No visible trace	Descriptive emission limits in line with benchmark emission value in Sector Guidance Note S5.06.
SW3	Oil and grease	No visible trace	Descriptive emission limits in line with benchmark emission value in Sector Guidance Note S5.06.

Emission Point Ref.	Parameter	Emission Limit Value	Comments
SW4	Oil and grease	No visible trace	All sources
	Polychlorinated biphenyls (sum of congeners 28, 52, 101, 118, 138, 153 and 180)	0.02ug/l	Site drainage
	Flow	30l/sec	Site drainage Limited by outfall pipe from storage tanks
	Micro-organisms	< 10 viable organisms per cubic metre greater than or equal to 50 micrometres in minimum dimension; <10 viable organisms per milliliter less than 50 micrometres in minimum dimension and greater than or equal to 10 micrometres in minimum dimension; and - discharge of the indicator microbes shall not exceed the specified concentrations.: a: Toxicogenic <i>Vibrio cholerae</i> (O1 and O139) with less than 1 colony forming unit (cfu) per 100ml or less than 1 cfu per 1 gram (wet weight) zooplankton samples ; b: <i>Escherichia coli</i> less than 250 cfu per 100ml; c. Intestinal <i>Enterococci</i> less than 100 cfu per 100ml	Site drainage and Ballast/Bilge Water Micro-organism emission limits as detailed in the Ballast Performance Standards set by the Convention for the Control and Management of Ship Ballast Water and Sediments, 2004;

4.2 Monitoring of point source emissions to water

Point source emissions to surface water will be subject to a programme of monitoring as detailed in table 4.2.1 below. The monitoring proposed is consistent with the requirements of Environment Agency Sector Guidance EPR7.01: How to comply with your Environmental Permit for Water Discharges and Groundwater Activity Permits.

Table 4.2.1: Monitoring Programme for surface water emissions

Emission Point	Parameter	Monitoring Plan
SW1	Flow	No flow meter will be fitted to the outlet pipe as flow will be limited by the design of the outlet pipe.
	Quality	Samples of the discharge from SW2 will be taken on a quarterly basis and subject to laboratory analysis to determine whether the ELVs are being achieved.
SW2	Flow	This discharge is a direct transfer of sea water entering through the dry dock gates back to the seaward side. No flow measurement is proposed.
	Quality	A visual inspection of any discharge will take place on a daily basis to identify whether any visible oil/grease is present.
SW3	Flow	This discharge is a direct transfer of sea water entering through the dry dock gates back to the seaward side. No flow measurement is proposed.
	Quality	A visual inspection of any discharge will take place on a daily basis to identify whether any visible oil/grease is present.
SW4	Flow	No flow meter will be fitted to the outlet pipe of the storage tanks. The flow will be limited by the design of the outlet pipe.
	Quality	Samples of the discharge from SW4 will be taken on a quarterly basis and subject to laboratory analysis to determine whether the ELVs are being achieved.

In terms of the Ballast/bilge water discharges through SW1 and SW4, as detailed in previous sections, all ballast and bilge water will be tested to confirm it is suitable to be discharged to surface water. Where sampling and testing identifies it to be suitable for discharge it will be treated as site drainage and monitoring will take place as detailed in Table 4.2.1 above.

4.3 Surface and Foul Water Drainage

The facility occupies an approximate area of 3 hectares (0.03 square kilometres). All surface water drainage of the operational site is controlled to ensure there is no flooding on site. Runoff from the dry docks and working areas will be collected and passed through a Class 1 full flow interceptor which is designed to retain silt and other solid matter. In addition to the safeguards described in this section, localised spillage control procedures would be in place as described within site operational procedures.

It is possible that during dismantling activities taking place, small spillages will arise. These will be contained locally using spill control measures including the use of adsorbents, mats and pads. Spill kits will be positioned around the dismantling facility.

In the unlikely event of a larger spill the entrance to the interceptor will be blocked off using oil adsorbent pillows, whilst the spill is controlled.

After passing through the interceptor discharges from the site are then contained within two tanks each sized to hold a 1yr storm, this water is then sampled and monitored for potential contamination. All water arising from the holding tanks will be discharged via SW4 on an outgoing tide. Water will not be discharged unless subject to analysis to confirm compliance with agreed limits. Water

samples will be taken to ensure compliance with the discharge consents, and analysed at a UKAS-accredited laboratory for the determinands listed in table 4.1.2 above.

If the analysis demonstrates that the water to be discharged would not meet the above limits, then the water will be removed off site for disposal at a licenced facility.

All discharges will pass through separators and silt traps, these will be monitored regularly and emptied as and when required with all waste arisings being disposed of through suitably licenced facilities.

Details of the drainage proposed for phase 1 is included in section 6 of this document.

The storage and processing of potentially contaminated wastes will only take place on an impermeable concrete pavement. All materials used will satisfy the relevant safety and quality standards. All areas will be surrounded by kerbing to prevent any un-controlled run-off from the site and will be laid to a fall to direct all liquids to the engineered drainage system.

Main Site Drainage

All drainage from external areas of the main site will be directed through a Class 1 full retention oil interceptor installed with an alarm system to raise awareness of any malfunction before discharging to surface waters through SW4.

All effluent monitoring identified in Table 4.2.1 above will be tested by a UKAS accredited laboratory.

Where laboratory analysis identifies the constituents of the effluent to be at levels in excess of those in table 4.1.2, SDL will take a further sample of the discharge to determine whether the monitoring result was an anomaly. In the event that the ELV is exceeded in a second sample SDL will notify the Environment Agency of the results and investigate the cause of the breach. Appropriate remedial action will be undertaken to prevent future breaches occurring.

All site surfaces, drainage systems and associated tanks will be inspected, maintained and cleaned on a regular basis. These operational controls aim to prevent contamination of site drainage and surface waters. With the high level of control of surface water discharge from the site, it is extremely unlikely that oil or other contaminants will pass through the separator and holding tanks.

Ballast/Bilge Water

As detailed in section 3.7.19 above, ballast water classified as uncontaminated will be treated as clean surface water and discharged directly to surface water via the interceptor and SW4. Where ballast/bilge water is contaminated such that it is not suitable for discharge to surface water it will be removed off site and taken to a suitable treatment facility. The capacity of the interceptor and storage tanks have been designed and sized specifically to handle the additional volumes anticipated from receiving ballast and/or bilge water.

Sampling Procedures of Holding Tanks

Samples will be taken at the point when the holding tank reaches its storage capacity. The time taken to reach this stage will be dependent on rainfall and volumes of ballast / bilge water sent through the system. Sample analysis is usually processed by the lab within 14 working days. The tank will be kept in isolation to the drainage system (using penstock valves) to prevent further ingress or run-off draining from the tank, and until such time that the analysis results have been returned and a review has been undertaken to confirm if the run-off is acceptable to be discharged or whether it requires to be sent off site via tanker. Should these valves fail, or if there is any indication that the liquid in the tank has been mixed with other run-off water, another set of samples will be taken.

Samples will be taken at the frequency of when each tank reaches full capacity. During periods of dry weather, this may become more frequent.

Details of the scale of the tanks are illustrated on the drainage design drawings referenced 8.0 002 - Drainage Plan rev B and 8.0 003 - Proposed Levels Drawing rev C. The size of each storage tank will be 150m³. The interceptor to be installed will be a Klargester Full Retention Interceptor (NSFP200). Routine site walkover inspections will include inspection of the interceptor to ensure that it is operating correctly. Maintenance of the interceptor will be in accordance with manufacture recommendations.

Foul Drainage

Having undertaken a full assessment of the existing foul drainage network at the site, SDL propose to install a new cesspit and drainage system, rather than to re-instate and repair the current network. There will thus be no discharges of sewage effluent into the adjacent harbour.

SDL have consulted with Dwr Cymru Welsh Water (DCWW) and considered alternative disposal options for treating their foul waste. Due to the location of the site, the distance to the nearest connection point to the main sewer network, the sensitivities of the water quality in the harbour, and the location of the nearby bathing water sample point, SDL have concluded that a cesspit on site, which will require routine pumping out via road tanker is the most cost effective, and environmentally sound solution at this time. Should any alternative solutions be considered in the future, SDL will consult the Environment Agency prior to their implementation.

4.4 Fugitive or Diffuse Emissions to Water

Dry Docks

It is normal to have water entering a dry dock through dock gates. To prevent potentially contaminated water from the dismantling operations in the dry docks mixing with incoming sea water a bund will be constructed across each dry dock. The proposed design of the bund will be provided

to the Environment Agency for approval together with the proposed Construction Quality Assurance procedures prior to its construction. The construction of the bunds will be in accordance with the CQA approved details and a validation document will be prepared and submitted to the Environment Agency by the CQA engineer to provide confirmation of this.

A pump will be provided in the 'clean' side of each bund to pump and discharge incoming seawater directly back into the Dock. The bunds and pumping systems will be regularly inspected and maintained to ensure that they remain fit for purpose.

Waste Storage

All potentially contaminated wastes removed from vessels or generated by site operations will be stored in suitable containers or in areas provided with an impermeable pavement and sealed drainage system. All containers and storage bays will be regularly inspected to ensure integrity is maintained. Should any defaults be detected, the containers will either be repaired or replaced.

Site Wide Provisions

As detailed in sections 4.1 and 4.2 above, the site will be engineered to provide robust containment systems to ensure that there will be no fugitive emissions to surface water sewer or groundwater. In addition to site engineering and drainage the follow will be provided in line with 'How to Comply' and the Sector Guidance Note S5.06:

- All sub surface infrastructure eg tanks and interceptors, will be provided with secondary containment systems and their integrity inspected on a regular basis;
- Interceptors will be fitted with a high level probe alarm;
- All above ground tanks will:
 - Have Impermeable bunds with a capacity greater than 110% of the largest tank;
 - Have pipework routed within bunded areas; and
 - Be subject to regular visual inspection and any contents pumped out and appropriately disposed of.

Spill kits – materials suitable for absorbing and containing minor spillage will be maintained on site.

Training will be provided to all staff relating to the use of the spill kits and the Emergency Contingency Plan and clean up procedures.

Groundwater Monitoring

Groundwater monitoring boreholes have been installed at the site to establish the baseline groundwater conditions prior to the commencement of permitted operations. Once the baseline

conditions are established, a groundwater monitoring plan will be proposed and submitted to the Environment Agency.

4.5 Fugitive emissions to air

As identified in the Environmental Risk Assessment, specific risk management measures will be implemented on the site to ensure that fugitive emissions do not cause unacceptable impacts on receptors. These measures include:

- Degassing of conditioning and refrigeration systems will be undertaken by a suitably qualified person and in accordance with the Institute of Refrigeration's Good Practice Guide;
- All site surfaces will be provided with a hard surface and will be regularly cleaned to prevent the build-up of material that could result in the generation of dust during vehicle movements;
- Material chippings or debris generated by cutting operations will be regularly cleaned;
- Tools and other machinery used on the site will be maintained in good working order;
- Asbestos removal operations will take place in accordance with an Asbestos Management Plan agreed with the Environment Agency; and
- Asbestos monitoring will be undertaken in the vicinity of the site while any asbestos removal operations are taking place.

Asbestos Monitoring

Monitoring for asbestos in air around the vicinity of the site will be carried out in accordance with Environment Agency guidance M17: Monitoring of Particulate Matter in Ambient Air Around Waste Facilities and HSE Guidance: Asbestos: The analysts guide for sampling, analysis and clearance procedures. In line with the recommendations in these documents a membrane filter sampling method and a laboratory accredited by UKAS to ISO17025 will be used.

Background measures of asbestos fibres will be determined prior to any asbestos removal operations taking place. These background levels will be compared to levels identified during asbestos removal operations to confirm whether the asbestos removal management measures are performing appropriately.

4.6 Odour

As identified in the environmental risk assessment a number of risk management measures are proposed to prevent odour causing a nuisance to receptors in the vicinity of the site.

These risk management measures include:

- Storing potentially odorous wastes in sealed containers which are regularly inspected to confirm their integrity;
- Manual removal of marine growth from the hull of vessels where it has the potential to cause an odour nuisance at receptors;
- Removal of odorous wastes from the site in a timely manner; and
- 'Good housekeeping' site practices such as regular cleaning of site surfaces and bagging of spilled materials.

All site personnel will be tasked with monitoring odour emissions. Any evidence of an activity or material causing odorous emissions will be reported to the site manager. Remedial action will be taken to stop the emission and implement appropriate measures to avoid future emissions occurring from that activity in line with MS procedures.

4.7 Noise and Vibration

As identified in the environmental risk assessment a number of risk management measures will be adopted to ensure noise levels from the facility are maintained at acceptable levels:

- All vehicles and equipment used on the site will be subject to regular maintenance to ensure they operate to design standards;
- Metal drop heights will be kept to a minimum to minimise intermittent noise; and
- Mobile plant will be silenced to current recommended standards where possible.

Trained site operatives will undertake qualitative assessment of noise and vibration levels from the site during operations to ensure that significant emissions of noise and vibration are not being carried outside of the site boundary. In line with MS procedures where significant emissions are identified the source will be investigated and appropriate remedial action initiated. Any such remedial action will be recorded.

If considered necessary, periodic quantitative noise monitoring will be undertaken to ensure that any emissions are not having an unacceptable impact on noise sensitive receptors.

4.8 Pest Control

Due to the nature of the wastes to be accepted and stored at the site vermin and pests are not considered to be a risk on the site. Site operatives will however look out for evidence of vermin and pests as part of their day to day duties. These inspections will be supplemented by regular visits by

a pest control specialist if evidence of vermin or other pests is identified on the site. In these circumstances appropriate treatment or remedial action will be undertaken in line with operational procedures to be developed as part of the MS.

4.9 Bulk Storage Facilities

Bulk storage facilities will be inspected on a weekly basis. The inspection will include as a minimum:

- Visual check on the integrity of the storage container, associated pipework and secondary containment; and
- Check on the quantity of effluent within any bunds.

Any required repairs, maintenance or removal of effluent to maintain the capacity of secondary containment measures, will be undertaken as soon as practicable. Records of such inspections and any action taken will be maintained in the site office in line with the MS.

4.10 Litter

The operations on site are unlikely to give rise to significant quantities of litter. The following mitigation measures will however be implemented to prevent the release of litter from the site:

- Wastes leaving the site will be sheeted as necessary;
- Fences are provided around the site boundary to reduce the risk of litter escaping from site;
- Daily inspections will be carried out and any litter found will be retrieved by hand and deposited within the waste storage areas; and
- Any litter will be regularly cleared from the site surfaces.

4.11 Mud and Debris

The nature of the proposed operations means that the risk of mud being generated on the site is low. The following measures will however be implemented on site to ensure that any mud generated does not cause a local nuisance:

- Wheel washing equipment will be maintained on site and vehicles will be inspected prior to leaving the site to ensure that they are clean;
- A road sweeper will be readily available to undertake frequent road cleaning during dry weather periods.

4.12 Data Collection of Baseline Site Conditions

As per best practice guidance set out within the Environment Agency's Horizontal Guidance Note H5: Site Condition Report, Swansea DryDocks Ltd will collect and record reference data throughout the lifetime of the permit in order to ensure that land and groundwater within the permitted site boundary has not deteriorated during the lifetime of operations. This on-going collection of reference data will include collection of additional soil samples. All future soil and groundwater sampling undertaken at the facility will be carried out in accordance with the appropriate British Standards. Frequency of monitoring required will be discussed and agreed in advance, with the Environment Agency's Local Area Environment Officers.

5.0 RECORDS AND REPORTING

5.1 Records

The operator will ensure the following information is recorded:

- All Method Statements, Operational Procedures and written working documents associated with the site;
- As built design for newly constructed/developed areas and any changes throughout the life of the site
- Site inspections by the operator or other body and any subsequent issues and corrective actions taken;
- Emergencies;
- Complaints and actions taken;
- Plant/equipment failure;
- A record of any rejection of waste;
- Technically competent manager – times on site;
- Any Incidents/accidents on site and actions taken;
- Security failures;
- Severe weather conditions;
- Waste accepted and dispatched from the site.
- Details of emissions reportable incidents under the permit

All records will be held in the site office and will be available on request. All records, which are required under the conditions of the Environmental Permit, shall be maintained and kept secure from loss, damage or deterioration. Any records held electronically will be backed up on a regular basis.

5.2 Reporting

As part of the sites Management System, audits will be carried out on an annual basis to check that all activities are being carried out in line with the requirements of the Environmental Permit, Management Procedures and associated legislation.

A summary record of the waste types and quantities received and removed from the site will be made at the frequencies and in a format to be agreed in writing with the Environment Agency.

6.0 SITE PHASING & DEVELOPMENT

In recognition of the findings of the site investigations and assessments relating to the current status of the site infrastructure, SDL proposes to develop and operate the site on a phased basis.

Phase 1 will commence in the eastern and southern sections of the main site and will encompass the following areas of the site:

- Dry dock 2;
- The main works building to the south of the site; and
- The external areas between these features (as shown on drawing SDL5).

The following works will be carried out prior to permitted activities taking place on this area of the site:

1. The works building has been subject to significant improvement since the pavement integrity survey contained within the SCR was completed. The concrete pavement provided in the works building will be inspected to determine its specification and will be further improved where necessary. In particular, joints will be sealed and kerbing provided to prevent any uncontrolled run-off from the building;
2. The external areas Area B and Area C shown on drawing SDL5 will be provided with an impermeable pavement and sealed drainage system;
3. An integrity assessment of dry dock 2 will be undertaken to confirm it is suitable to be used for the permitted activities; and
4. A suitable dock bund will be designed and constructed to prevent potentially contaminated run-off from the dry dock combining with clean seawater that will enter through the dock gates and which will be pumped directly back to sea.

The new concrete pavement will be laid to a fall to direct all drainage to a full retention by-pass interceptor. Surface drainage collecting in the dry dock sump will be pumped to the interceptor to be discharged in line with all other site drainage.

Ballast water will be handled in accordance with section 3.7.19.

APPENDICES

APPENDIX A

Ship Board Inventory

Ship Board Inventory – Part 1

1A. Asbestos

All asbestos containing material (ACM) or presumed asbestos containing material (PACM) shall be labelled as such.

Type of Asbestos Material eg board, pipe lagging, contained	Location	Approximate quantity/volume

1B Paints (on vessel's structure) – Additives

Additive: Lead, Tin, Cadmium, Organotins, Arsenic, Zinc, Chromium, Strontium, other	Location

1C Plastic Materials

Type	Location	Approximate quantity/volume

1D Material containing PCB's, PCT's, and PBB's at levels likely to be in excess of 50mg/kg or more

Material	Location	Approximate quantity/volume

1E Gases sealed in ship's equipment or machinery

Type	Location	Approximate quantity/volume
Refrigerants		
HALON		
CO ₂		
Acetylene		
Propane		
Butane		
Oxygen		
Other (specify)		

1F Chemicals in ships equipment or machinery

Type	Location	Approximate quantity/volume
Anti-seize compounds		
Engine Additives		
Anti-freeze fluids		
Kerosene		
White Spirit		
Boiler/water treatment		
De-ioniser regenerating		
Evaporator dosing and descaling acids		
Paint / rust stabilisers		
Solvents / thinners		
Chemical refrigerants		
Battery electrolyte		
Hotel service cleaners		
Other (specify)		

1G Other substances inherent in a ships machinery, equipment or fittings

Type	Location	Approximate quantity/volume
Lubricating oil		
Hydraulic oil		
Lead acid batteries		
Alcohol		
Methylated spirits		
Epoxy resins		
Mercury		
Radioactive materials		
Other (specify)		

PART 2: OPERATIONALLY GENERATED WASTES

2A Dry tank residues

Type of residue	Location	Approximate quantity/volume

2B Bulk (non-oily) wastes

Type	Location	Approximate quantity/volume
Ballast water		
Raw sewage		
Treated sewage		
Garbage		
Debris		
Galley wastes		
Other (specify)		

2C Oily wastes/oily residues

Type	Location	Approximate quantity/volume
Cargo residues		
Tank scale		
Bunkers fuel oil		
Bunkers diesel oil		
Bunkers gas oil		
Lubricating oil		
Grease		
Hydraulic oil		
Waste oil (sludge)		
Oily water		
Oily/contaminated sludge		
Oily/contaminated rags		
Other (specify)		

PART 3: STORES

3A Gases in store

Type	No. and size of cylinder	Location	Approximate quantity/volume
Refrigerants			
HALON			
CO ₂			
Acetylene			
Propane			
Butane			
Oxygen			
Other (specify)			

3B Chemicals in Store

Type	Location	Approximate quantity/volume
Anti-seize compounds		
Engine Additives		
Anti-freeze fluids		
Kerosene		
White Spirit		
Boiler/water treatment		
De-ioniser regenerating		
Evaporator dosing and descaling		

acids		
Paint / rust stabilisers		
Solvents / thinners		
Chemical refrigerants		
Battery electrolyte		
Hotel service cleaners		
Other (specify)		

3C Other packaged items in store

Type	Location	Approximate quantity/volume
Lubricating oil		
Hydraulic oil		
Lead acid batteries		
Medicines		
Insecticide sprays		
Alcohol		
Methylated spirits		
Epoxy resins		
Paint		
Fire fighting clothing/equipment		
Other (specify)		

APPENDIX B

Contents Pages of SDL Integrated Management System

Swansea Drydocks Limited

**Swansea Dry Docks
Swansea
SA1 8RY**

INTEGRATED MANAGEMENT SYSTEM MANUAL

**In line with the requirements of BS EN ISO 9001:2008,
ISO 14001:2004 and BS OHSAS 18001:2007.**

**INCORPORATING
Company Profile
Policy Statements
Quality / Environmental / H&S Systems
Organisation, Responsibilities and Authorities
Interaction between the Processes
Documentation
List of Procedures**

CONTENTS

- 1. Revision Status**
- 2. Company Profile / Scope**
- 3. Quality Policy Statement**
- 4. Health & Safety Policy**
- 5. Environmental Policy Statement**
- 6. Management Systems**
- 7. Organisation Chart**
- 8. Responsibilities and Authorities**
- 9. Interaction between the Processes**
- 10. Documentation**
- 11. List of Procedures**

LIST OF PROCEDURES

The documented procedures relating to the processes identified in this Manual are listed below:

Quality

QOP 4.2.3	Control of Documents
QOP 4.2.4	Control of Records
QOP 6.2.2	Training Awareness and Competence
QOP 7.5.1	Operational Control
QOP 7.5.2	Handling and Storage
QOP 8.2.2	Internal Audits
QOP 8.3	Control of Non-Conforming Product
QOP 8.5.2	Corrective Action
QOP 8.5.3	Preventive Action

Environmental

EP 01	Identification of Legal and Other Requirements
EP 02	Non Conformance, Corrective and Preventive Actions
EP 03	Environmental Aspects Procedure
EP 04	Objectives, Targets and Programmes
EP 05	Internal Environmental Audits
EP 06	Management Review
EP 07	Control of Documents
EP 08	Control of Records
EOP 01	Asbestos Monitoring Procedure
EOP 02	Noise and Vibration Procedure
EOP 03	Odour Control Procedure
EEP 01	Radioactive Waste Detection and Handling Procedure
EEP 02	Fire Procedure
EEP 03	Spillage Procedure

Health and Safety

OHSMP-01/1	Planning for Hazard Identification, Risk assessment & Risk Control
OHSMP-01/2	Legal and Other Requirements
OHSMP-01/3	Objectives
OHSMP-01/4	OH&S Management Programme
OHSMP-02/1	Resources, Roles, Responsibilities, Accountabilities, and Authority
OHSMP-02/2	Competence, training and Awareness
OHSMP-02/3	Communication, Participation and Consultation
OHSMP-02/4	Documentation
OHSMP-02/5	Control of Documents
OHSMP-02/6	Operational Control
OHSMP-02/7	Emergency Preparedness and Response
OHSMP-03/1	Performance Measurement and Response
OHSMP-03/2	Evaluation of Compliance
OHSMP-03/3	Incident Investigation, Nonconformity, Corrective Action and Preventive Action
OHSMP-03/4	Control of Records
OHSMP-03/5	Internal Audit
OHSMP-04/1	Management Review

SWANSEA DRYDOCKS LTD.

QUALITY POLICY STATEMENT

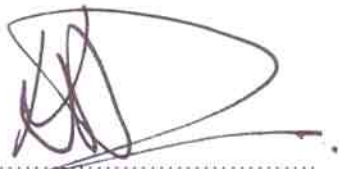
SDL recognises that its customers' requirements for the quality of its services and the punctuality of their delivery are of paramount importance. SDL's aims and objectives are to operate practices and procedures, which ensure that these requirements are achieved.

Responsibility for these practices and procedures rests with the Managing Director. The Company ensures through its Management Team that the practices and procedures, which are incorporated into the company's documentation systems and which are established and through the Quality Management System, are maintained and continually reviewed.

The Company is committed to ensuring the continual improvement of the effectiveness of the Quality Management System (which is in line with the requirements of BS EN ISO 9001:2008), the promotion of a culture of continual improvement throughout the company and endeavours to achieve total customer satisfaction through the quality of its service.

In addition, SDL recognises its obligations, legal and moral, to adopt and follow safe working practices.

Further, the Company recognises that its organisational goals and the expectations and needs of its customers may vary from time to time and will therefore review its policy on quality at regular intervals to ensure its continual suitability.

A handwritten signature in dark ink, appearing to be 'Karl Dunn', written over a horizontal dotted line.

Karl Dunn

Managing Director

Current Issue: June 2011.

SWANSEA DRYDOCKS LTD.

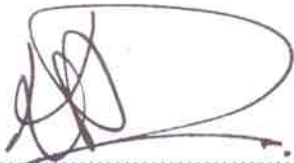
ENVIRONMENTAL POLICY STATEMENT

THE COMPANY COMMITS TO THE PREVENTION OF POLLUTION AND THE COMPLIANCE WITH ALL RELEVANT ENVIRONMENTAL LEGISLATION AND OTHER APPLICABLE REQUIREMENTS.

In particular, we will :

- Endeavour to minimise any adverse impact upon the environment resulting from our operations and activities.
- Make efficient use of energy and other resources.
- Operate in accordance with the requirements of ISO 14001:2004.
- Make a full commitment to continual improvement.
- Provide a framework for setting and reviewing environmental objectives and targets.
- Comply with any stipulated environmental requirements of our customers.
- Reduce carbon emissions in line with the CRC (Carbon Reduction Committee) Energy Efficiency Scheme.

This policy statement is published and is available to interested parties.



Karl Dunn

Managing Director

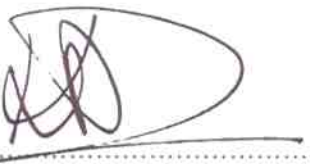
Current Issue: June 2011.

SWANSEA DRYDOCKS LTD.

HEALTH & SAFETY POLICY

General Policy Statement

- 1 THE COMPANY REGARDS THE PROMOTION OF HEALTH & SAFETY AS AN ESSENTIAL PART OF ITS RESPONSIBILITIES, AND BELIEVES THE PROMOTION OF HEALTH AND SAFETY MATTERS TO BE MUTUAL OBJECTIVES OF BOTH MANAGEMENT AND EMPLOYEES.
- 2 It is therefore this company's policy to do all that is reasonable to prevent personal injury and damage to property and to protect everyone from foreseeable work hazards including contractors and the public insofar as they come into contact with its products or services.
- 3 In particular this company has a responsibility:
 - to provide and maintain safe and healthy working conditions taking account of any statutory requirements
 - to provide relevant information, instruction, training and supervision to enable employees to perform their work safely and effectively
 - to make available all necessary safety devices and protective equipment and to supervise their use
 - to maintain constant and continuing interest in health and safety matters applicable to its activities, in particular, by consulting and involving employees wherever possible
- 4 Employees have a duty to co-operate in the operation of this policy:
 - by working safely and efficiently and adhering to company procedures
 - by using the protective equipment provided and meeting statutory obligations
 - ☒ by reporting incidents that have led or may lead to injury or damage and aiding in the investigation of accidents with a view to preventing a recurrence.



Karl Dunn

Managing Director

Current Issue: June 2011.

APPENDIX C

Generic Asbestos Management Plan



ASBESTOS POLICY AND PROCEDURES

Document Control

[illegible]

Approved By	Signed	Date
David Wilson		1 st February 2010

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1. ASBESTOS POLICY STATEMENT

All successful companies ensure that all business risks are adequately controlled which includes health and safety risks, this will ensure that we protect the well being of all our employees as well as our business and reputation within the community.

Successful management of H&S is an absolute priority within Shield Environmental Services and is of paramount importance if we are to build on our success within a very demanding working environment.

My responsibility is to ensure the effective implementation and maintenance of a robust Safety Management System, which includes a practicable and achievable H&S Policy which will ensure, so far as is reasonably practicable;

- Ø The prevention of ill health.
- Ø Reduction in accidents.
- Ø A safe working environment.
- Ø Continual improvement in H&S management and performance.

The Board and the Management Team are totally committed to ensure that all necessary measures shall be taken, throughout the company, to promote this objective for all employees. We shall ensure that our H&S objectives are achievable and deliverable to protect the health and welfare of all our staff and customers and as a minimum comply with our relevant Health, Safety or Environmental statutory obligations.

Responsibility for providing the appropriate safe working environment and determining the procedures necessary for the promotion of health and safety at work rests with management.

All matters concerning health and safety will be implemented after full consultation with our employees through representatives of employee safety and the H&S Committee.

This Policy will be reviewed regularly on a continual basis to meet our current legal requirements, as a minimum at least on an annual basis. Any revisions will be discussed with employees and brought to the attention of all employees.

We are totally committed to achieving the best health, safety and welfare standards possible so that a positive safety culture is embedded within the business, controlling safety risks and accidental damage can only deliver a further contribution to our profitability within a highly competitive market place.



Philip House
Managing Director
Shield Environmental Services Ltd

Date 1st February 2010

2. ROLES AND RESPONSIBILITIES

MANAGING DIRECTOR

My responsibilities are to ensure that;

- Ø This policy is developed, implemented, maintained, monitored, communicated and reviewed as necessary, at least on an annual basis.
- Ø All changes are notified to the Board and to all staff.
- Ø Suitable resources are made available to ensure that this policy is implemented without risk to health.
- Ø Appropriate levels of insurance are maintained.
- Ø All conditions of Shield Environmental Services' Asbestos Licence are adhered to at all times.
- Ø Suitable plant and equipment provided to undertake asbestos removal is fit for purpose, maintained in good condition and has all the necessary inspections, tests and certificates.
- Ø All levels of management are aware of their responsibilities and understand the requirements of this policy.
- Ø A suitable and effective training program is implemented and maintained to ensure that all levels of asbestos staff are suitably trained and competent to undertake their duties.
- Ø Objectives and targets are set, levels of achievement are measured and reported to the Board of Directors.

DIRECTORS

Directors must take the lead in matters of safety and in particular must ensure that:

- Ø They show a positive commitment to health and safety by adopting and demonstrating good safety awareness during all work under their control.
- Ø Understand the company's Asbestos Policy and understand their responsibilities to implement this policy.
- Ø All conditions of Shield Environmental Services' Asbestos Licence are complied with at all times.
- Ø Suitable supervision of asbestos projects is provided so that the requirements of this policy are implemented by all employees.
- Ø Arrangements are made so that all employees are given adequate information, instruction, training, supervision and equipment to carry out their tasks safely and without presenting risks to themselves or others.

- Ø Workplaces and work activities are subjected to a suitable Risk Assessment so that Hazards are identified and priorities are established for controlling any significant risks.
- Ø They consider Health and Safety issues as part of the selection, purchasing and implementation process for new equipment, products and work methods.
- Ø New projects, developments and installations are designed and implemented to conform to appropriate health and safety standards and any information is passed on to those who require it.
- Ø When any 'PLANNED' absence, of Asbestos Management occurs a suitable and timely handover of any Asbestos contract is undertaken.

ASBESTOS MANAGERS

Asbestos Managers in particular must ensure that;

- Ø They show a **positive commitment** to health and safety by adopting and demonstrating good safety awareness during all work under their control.
- Ø Understand the company's Asbestos Policy and understand their responsibilities to implement this policy.
- Ø All conditions of Shield Environmental Services' Asbestos Licence are complied with at all times.
- Ø Suitable supervision of asbestos projects is provided so that the requirements of this policy are implemented by all employees.
- Ø Make arrangements so that all employees are given adequate information, instruction, training, supervision and equipment to carry out their tasks safely and without presenting risks to themselves or others.
- Ø Written safe systems of work / method statements / plans of work are drawn up, explained to all staff concerned and an outline of all hazards and risks are explained.
- Ø Provide suitable control measures to control any Identified Risks as part of the above.
- Ø ALL Risk Assessments and COSHH Risk Assessments are carried out and implemented.
- Ø All plant and equipment used to remove asbestos is fit for purpose and has valid certification.
- Ø Suitable PPE / RPE is readily available and issued to all staff who require it and a record of issue and inspection is maintained.
- Ø Take responsibility for notification of Asbestos Works and production of a suitable Method Statement at the time of notification.
- Ø Management are informed of all accidents, incidents and H&S issues which they cannot resolve.

- Ø When any 'PLANNED' absences occur that a suitable and timely handover of any Asbestos contract is undertaken.

HEALTH & SAFETY MANAGER.

The Health & Safety Manager will;

- Ø Ensure that the Asbestos Policy is implemented, monitored and communicated effectively to all staff
- Ø Review this policy as required, at least on an annual basis, taking into account changes in legislation, codes of practice and industry best practice and the Board are notified of such changes.
- Ø Ensure that a suitable Risk Assessment process is implemented and all working activities are subjected to the Risk Assessment Process.
- Ø Implement and maintain a comprehensive Audit program to ensure compliance with our statutory requirements, industry best practice and Shield Environmental Services' Safety Management System.
- Ø Give guidance at appropriate levels on policies and procedures enabling the creation of safe working environments and safe systems of work.
- Ø Promote individual awareness of health, safety and environmental issues amongst all employees.
- Ø Maintain a suitable Accident / Incident reporting system to ensure that all workplace incidents are investigated and remedial action is implemented.
- Ø Provide a range of training solutions to meet identified shortfalls in the knowledge or understanding of employees at all levels, and to refresh or update that knowledge and understanding wherever appropriate.
- Ø Maintain a relevant knowledge base and skills.
- Ø Build and maintain appropriate links with external organisations within the Health, Safety and Environmental field.

ASBESTOS SUPERVISOR

All Asbestos Supervisors must ensure that;

- Ø They understand the company's Asbestos Policy and understand their responsibilities to implement this policy and lead by example.
- Ø They understand and communicate all information, including Risk Assessments, Method Statements and Plans of Work etc for each work package relating to working with asbestos, to all persons under their control and any other person who may be affected by our operations.
- Ø All conditions of Shield Environmental Services' Asbestos Licence are complied with at all times.

- Ø All plant and equipment supplied is in good condition, safe to use, fit for purpose and has valid certification.
- Ø All persons under their control are suitably trained and are competent to undertake asbestos work and operate any equipment.
- Ø Suitable PPE / RPE is readily available and issued to all staff who require it and that it is worn correctly and stored correctly when not in use.
- Ø Any operative under their control carry out 'USER' inspections of RPE, and this is recorded on the appropriate form.
- Ø They maintain a 'site diary' to Log any events / incidents.
- Ø ALL Site inspections are undertaken and Site Documentation is completed to reflect the site checks. (DCU / Site Diary / RPE / Enclosure / Equipment).
- Ø Safe access and egress to all areas of the site is maintained at all times.
- Ø Suitable signage is prominently displayed
- Ø ALL work is undertaken in accordance with the Site Method Statement, and that only 'MINOR CHANGES' are unilaterally made, 'MAJOR CHANGES' can only be made once discussed with and authorised by a Contracts Manager.
- Ø They apply the procedures for dealing with accidents, incidents and emergencies.
- Ø Working areas, transit and waste routes area clean and free of asbestos.
- Ø Waste is bagged as it is stripped, avoiding accumulation of waste material, and removal of bagged waste is removed from the enclosure on a daily basis, where practicable.
- Ø The Hygiene unit cleaned out daily.
- Ø The correct procedures are followed at the end of stripping operations to allow the certificate of reoccupation to be issued.
- Ø They are aware of what the laboratory analyst will require before clearance sampling is undertaken and the certificate of reoccupation can be issued.
- Ø Management are informed of all accidents, incidents and H&S issues which they cannot resolve
- Ø They undertake 'TOOL BOX' talks for site operatives particularly on the plan of work under their control and any other toolbox talk as required to ensure that the work is undertaken safely.

ASBESTOS OPERATIVES

All Asbestos Operatives must ensure that;

- Ø Understand the company's Asbestos Policy and understand their responsibilities

- Ø Understand and Comply with all information, including Risk Assessments, Method Statements, Plans of Work etc for each work package relating to working with asbestos as communicated by the Supervisor or any other senior Shield Environmental Staff.
- Ø Use any plant and equipment supplied for the task in hand and ensure it is kept in good condition, safe to use and fit for purpose.
- Ø Undertake 'USER' inspections of RPE, and ensure that this is recorded on the appropriate form.
- Ø Co-operate with the company on all issues regarding Health, Safety or Welfare.
- Ø Inform their Supervisor / Management of all accidents, incidents and H&S issues.

3. ASBESTOS LICENCE REQUIREMENTS

The Control of Asbestos Regulations 2006 dictates that an Asbestos Licence is required when undertaking work on Asbestos unless **ALL** of the following exemptions apply:

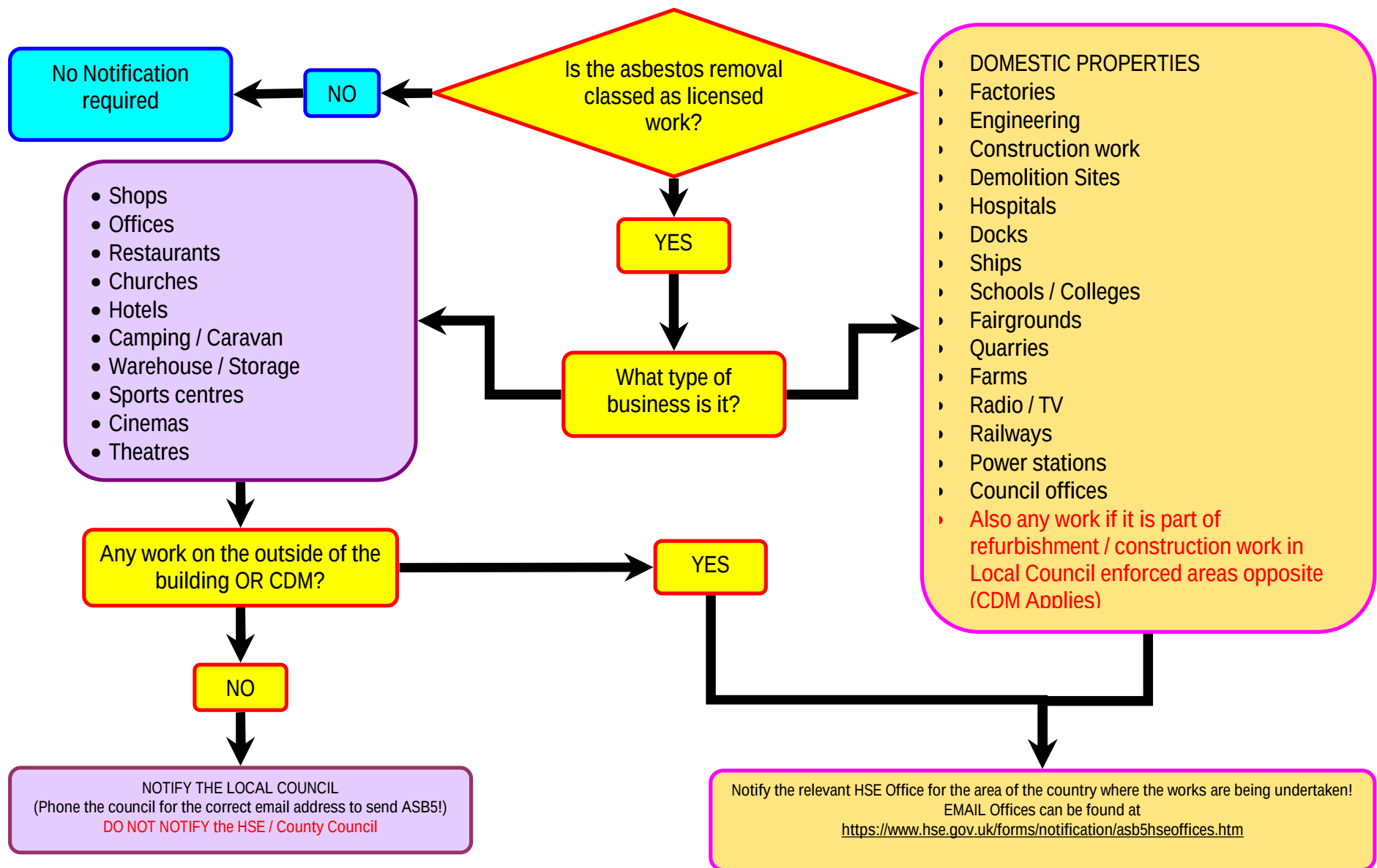
- Ø The exposure is of “sporadic and low intensity” (less than 2 hours total or 1 hour for 1 man) **and**
- Ø It is clear that the control limit (0.1 f/ml) will not be exceeded **and**
- Ø The work involves;
 - o Short, non-continuous **maintenance** activities.
 - o Removal of materials in which the asbestos fibres are firmly linked in a matrix (e.g. asbestos cement, floor tiles etc).
 - o **Encapsulation or sealing** of asbestos containing materials which are in a **good** condition.
 - o Air monitoring or collection and analysis of samples.

An Asbestos licence is granted by the Asbestos Licensing Unit (ALU) of the HSE and is valid for a maximum of 3 years and the HSE can impose conditions as they see fit. The HSE can also revoke or amend the conditions of our Asbestos Licence as the result of poor performance or enforcement action.

Shield Environmental Services has a FULL Asbestos Removal Contractor's Licence granted by the HSE, Licence Number 4840700684 which is valid until 30th September 2010.

The following HSE Conditions are part of Shield Environmental Services' Asbestos Licence and must be adhered to **WITHOUT EXCEPTION**.

- A copy of our Asbestos Licence must be displayed on all licensed asbestos removal works.
- The Enforcement Authority (HSE / LA) must be notified at least a MINIMUM of 14 days in advance on an FOD ASB5 for all work which involves an asbestos licence.
- A site specific Method Statement / Plan of Work (Asbestos Risk Assessment) must be prepared AT THE TIME OF NOTIFICATION TO THE ENFORCMENT AUTHORITY for all LICENSED asbestos work.
- The Method Statement / Plan of Works can be requested at any time by the Enforcement Authority.



4. METHOD STATEMENT AND PLANS OF WORK

Asbestos Contracts Managers are to ensure that a copy of the ASB 5 is included with all method statements issued to asbestos removal teams, and this must be available on site at ALL TIMES.

Asbestos Contracts Managers are to ensure that a SITE SPECIFIC Method Statement / Plan of Work is prepared BEFORE the Notification (ASB 5) is sent to the Enforcing Authority.

If the “start date” is delayed / “end date” is extended for any reason then the HSE / LA must be notified immediately by Fax or email and a copy retained.

The Site Specific Method Statement and / Risk Assessment must be thoroughly explained and discussed with the nominated Asbestos Site Supervisor prior to any asbestos works commencing.

The Asbestos Contracts manager must ensure that the nominated Site Supervisor understands what is required before he attends site.

If necessary the Asbestos Contracts Manger should attend the site and ‘walk through’ the work with the Asbestos Supervisor.

GUIDANCE ON CHANGES TO METHOD STATEMENTS (PLANS OF WORK)

The Site Supervisor is to ensure that the Method Statement is explained to all site staff and that it is followed at all times.

Whenever there is a requirement to change a Method Statement on site then the following guidance must be followed:

MAJOR CHANGE

In the event that a “Major Change” to the Method Statement is required then the Site Supervisor must cease all work and NOT proceed until such times as s/he has discussed the issue with the Asbestos Contracts Manager concerned and has been given authority to make those changes.

The following situations are classed as a ‘Major Change’

- Ø Site plan drawing does not actually reflect the site conditions and needs rewritten
- Ø Enclosure cannot be constructed as per the MS i.e. partition wall has been removed.
- Ø Increase / decrease in size of enclosure as the NPU calculation will need to be reassessed.
- Ø Discovering more Asbestos on site than was detailed on the MS e.g. AIB goes into a different room through the ceiling. 20m² is now 40m²
- Ø Discovering different asbestos materials from that identified e.g. Pipe Lagging discovered when removing AIB wall / ceiling.
- Ø Removal method has to change from what is detailed on the method statement e.g. injection to spray mist.

- Ø A change to position of Airlock / Baglock and NPU's which could affect air movement.
- Ø Insufficient room to position the Airlock / Baglock.
- Ø Significant changes to the Transit / Waste Route which could have an effect on other persons on site.
- Ø Being requested to complete more works by the client.
- Ø Results of personal air monitoring which reveal a high asbestos fibre count.

MINOR CHANGES

These are normally any changes which would not have an impact on the safe running of the site.

- Ø DCU / waste skip has to be located in another area.
- Ø Minor changes to Waste / Transit route which would NOT affect others on site.
- Ø Changes to site personnel.
- Ø Other minor issues which the supervisor can change, which does not have an effect on site safety.

Any changes to the Method Statement which have to be undertaken MUST be detailed in the amendments section of the Method Statement and Site Diary; this must be dated and signed by the SITE SUPERVISOR.

5. ASBESTOS REMOVAL TRAINING & CERTIFICATION

Shield Environmental Services are committed to ensuring that all our employees are adequately trained and competent to undertake any task which we require them to complete, the following minimum standards have been identified:

DIRECTORS / MANAGERS

All Directors / Managers must have the following competence based training;

- Minimum 5 years experience within the Asbestos Industry.
- 2 day Contracts Managers Training Course (UKATA Compliant) (ON Appointment).
- 1 day Contracts Managers Update annually (UKATA Compliant).
- CITB Site Managers Safety Training Scheme (SMSTS).

HEALTH AND SAFETY MANAGER

- Chartered Member of the Institute of Occupational Safety and Health (CMIOSH).
- NEBOSH Safety Management Diploma and committed to Continual Professional Development (CPD) / NVQ4 in Safety Management.
- Dangerous Good Safety Advisor (DGSA).
- Specialist Diploma in Environmental Management (SpDipEM) or equivalent (AIEMA).
- BOHS P402.

ASBESTOS SUPERVISORS

On promotion to Asbestos Supervisor, after a minimum of two years as an Asbestos Operative

- 3 Day New Asbestos Supervisor (Class 1 UKATA Compliant) course must be undertaken and passed before being promoted to site supervisor.
- Annual Asbestos Supervisor Refresher (Class 1 UKATA Compliant).
- CITB Site Supervisors Safety Training Scheme (SSSTS).
- NVQ2 in Hazardous Waste removal (Asbestos).
- PASMA training Certificate.
- CSCS Carded.
- Any other course deemed suitable at time of appointment or on an as need basis.

ASBESTOS OPERATIVE

All New Asbestos employees

- Attend and pass a 3 day New Operatives Course (Class 1 UKATA Compliant) within 1 month of joining the company, until this time they must be closely supervised by an experienced supervisor pending successful completion of their initial training.
- Annual 1 Day Asbestos Operative Refresher (Class 1 UKATA Compliant).
- NVQ2 in Hazardous Waste removal (Asbestos).
- PASMA training certificate CITB Health Safety Awareness (HSA).
- Any other course deemed suitable at time of appointment or on an as needed basis.

Validity of Training Certificates

- Ø Asbestos Training Certificates are valid for 1 year from the date of the course.
- Ø Copies of all Training Certificates must be stamped and authorised BY A MANAGER as a “true copy”.
- Ø Copies of Asbestos Training Certificates are to be kept on site at all times by all site based employees.
- Ø All Training certificates are to be retained for 5 years after their expiry date.

NO ASBESTOS EMPLOYEE IS PERMITTED TO WORK ON A LICENSED ASBESTOS PROJECT WITHOUT A VALID IN DATE UKATA CLASS 1 LICENSED ASBESTOS TRAINING CERTIFICATE.

NO EMPLOYEE IS PERMITTED TO WORK ON A NON-LICENSED ASBESTOS PROJECT WITHOUT A VALID IN DATE UKATA CLASS 2 NON-LICENSED ASBESTOS TRAINING CERTIFICATE. (Class 1 covers this requirement).

ALL TRAINING CERTIFICATES MUST BE ENTERED ON THE COMPANY IT SYSTEM (SEGURO).

6. MEDICAL SURVEILLANCE & HEALTH RECORDS

All site based Asbestos removal operatives must undergo 2 yearly medical examinations undertaken by an EMAS doctor appointed by the HSE.

Branch / Contracts Managers are to ensure that this is undertaken so that no asbestos removal Operative goes 'out of date' for their medical.

Asbestos removal staff are not permitted to undertake Licensed Asbestos Removal unless they have a Valid in date Medical Certificate from an HSE registered Employment Medical Advisory Service (EMAS) Doctor.

Medicals will be undertaken during company time at Shield Environmental Services expense.

The examination of asbestos workers consists of the clinical examination, including the lung function test. In the clinical examination, apart from a general assessment of the fitness, the doctor looks for any signs of any chest disease which might for instance make respirator wearing difficult then specifically for the faint crackling sounds which occur on breathing in, and which remain even after a cough to clear the air passages; these, if present, are due to the thickening of a scarred lung. The lung function test also helps the doctor establish that the lungs are performing well and to exclude other diseases. If containing less air, the breathing test would cause a reduction in the column of air that could be exhaled.

A 'certificate' is issued by the examining doctor to the employer, the employee will also be given, a copy of the certificate. Employees are to receive a copy of the certificate within 4 weeks of the date of examination.

The employer's copy of the medical certificate is to be retained for a period of 40 years

Health Records

A record is maintained by Shield Environmental Services which lists the type of job performed with start and end dates and the average duration of exposure in hours per week. Employees are entitled to see this record at any time (with sufficient notice) and also request a copy on leaving the company employ.

Note: This record is to be kept for a period of at least 40 years from date of last entry.

Personal Exposure Record

In addition to the Health Record, a further record is maintained where 'personal air monitoring' has taken place during stripping operations. Not every operative will be involved in this type of monitoring as the purpose is to take a representative sample whilst work is in progress, this will ensure that control measures being taken i.e. spray and penetration techniques are maintaining fibre levels to as low a level as possible and in any case below the control limit. As with the personal health record, this record is also kept for a period of 40 years from date of last entry.

7. SITE DOCUMENTATION

The following site documentation must be onsite at all times

- Ø Asbestos Policy & Procedures Manual.
- Ø Site Specific Plan of Work.
- Ø ASB 5 for the work being undertaken (if asbestos licensed work).
- Ø Copy of Shield Environmental Services' Asbestos Licence.
- Ø Valid Medical / Face Fit / Training Certificates for ALL persons on site.
- Ø Shield Environmental Services' details of Insurance.
- Ø Waste Carriers Licence.
- Ø Valid plant and maintenance records for equipment on site.
- Ø Risk Assessments & COSHH Assessments.
- Ø Last Clearance certificate for DCU.

In addition to the above documentation the Site Supervisor are to maintain a DAILY SITE DIARY and daily inspection sheets as follows;

SUPERVISORS SITE DIARY

A site diary is to be maintained on site, by the nominated supervisor, in the form of a daily log.

This must be completed for any incidence of note at the time of the incident.

This allows any verbal instructions or incidents to be recorded and serves as a record of how the work progressed and a history of what happened on site.

The following records are maintained and a certified copy held on site.

RESPIRATORS (Record of Inspections, Examination & Tests)

All employees are to inspect their RPE for suitability every time before use, and they must sign the daily RPE log to this effect, Supervisor to ensure that this is completed

All RPE issued to any Asbestos Staff is to be stored in a clean state inside the protective plastic boxes provided when not in use.

All RPE must have a suitable ID tag fixed to the RPE which identifies the owner.

Thorough examination of RPE by a competent person must be undertaken every month; these records are held in the branch office.

Completed RPE Monthly Checks must be retained on file for a period of 5 years.

NEGATIVE PRESSURE UNITS (NPU's) (Record of daily inspections)

Recorded inspection to be completed daily whilst NPU's are in use.

Copy of DOP & PAT certificates are to be kept on site for all asbestos equipment and these records have to be kept for 5 years in the branch office.

VACUUMS

Only Type 'H' vacuums to BS EN 60335 are to be used and inspected and tested in accordance with PAS 60.

The requirement for recorded inspection is weekly, but it is recommended that in addition to the weekly recorded inspection a daily inspection is also undertaken.

Copy of DOP certificates are to be kept on site for all asbestos equipment and these records have to be kept for 5 years in the branch office.

HYGIENE UNITS (DCU's) (Record of daily inspection)

Hygiene Units must be inspected daily and result of inspection recorded on site inspection log.

ENCLOSURE INTEGRITY

Smoke test (to be recorded) of the enclosure is necessary and any identified leaks must be sealed before any asbestos removal works are undertaken, this must be repeated every 7 days if enclosure is to remain in place longer than this time interval.

Inspection of the enclosure must be carried out daily as follows:

- Ø First thing in the morning prior to commencing work.
- Ø Last thing at night before leaving site.
- Ø At break times before re-entering enclosure.

OTHER AREAS REQUIRING DAILY INSPECTION

The following areas are to be inspected daily, site supervisor to ensure that these checks are recorded on the daily site log;

- Ø Surrounding exterior area of enclosure.
- Ø Asbestos waste skip area.
- Ø Transit route.
- Ø Waste route.

8. RESPIRATORY PROTECTIVE EQUIPMENT (RPE)

Suitable RPE must be worn when working with any Asbestos material and the relevant RPE must be worn in accordance with the site specific method statement.

FULL FACE POWERED RESPIRATORY PROTECTIVE EQUIPMENT (RPE)

Full face, high efficiency, power assisted respirators to EN 147 fitted with an FFP3 filter; must be worn inside any Live Asbestos Enclosure OR when the Method Statement indicates it has to be worn.

A "FACE FIT" test certificate for the type, make, model, size of respirator that is to be worn, both full-face & rubber half-mask must be on site at all times.

Repeat 'Face Fit testing'; is to be undertaken on an **annual basis** and this must be recorded on the company 'SEGURO' system.

In order for an efficient seal to be maintained wearers of respiratory equipment must be clean-shaven at all times.

DISCIPLINARY ACTION WILL BE TAKEN AGAINST ANY EMPLOYEE WHO IS NOT CLEAN SHAVEN WHEN WORKING WITH ASBESTOS.

RPE PRE-USE CHECKS

- Ø Start of the daily shift, test the flow rate. (To measure the efficiency of the filter). (To test that the battery is fully charged and not deteriorating, i.e. losing power).
- Ø Check for;
 - a. Cleanliness.
 - b. Serviceability of visor, straps, buckles.
 - c. Proper seating of all valves and motors.
 - d. No leaks or holes.

Wearers of RPE must 'NEVER' under any circumstances try to re-adjust the face-piece in the working area. (Return to DCU before removing RPE)

The face piece of the respirator must be thoroughly washed and cleaned by the user when passing through the shower.

All RPE must be stored in its individual 'RIGID' plastic box which can be capable of being easily cleaned.

HALF MASK (RUBBER)

- Ø Thorough maintenance, examinations and, should be made at least once every month and this mask must be checked and maintained every time prior to use.
- Ø The above to be recorded.

ASSIGNED PROTECTION FACTORS OF RPE

All respiratory equipment is rated with an "Assigned Protection Factor" (APF), which means that the RPE will give you 20 or 40 times protection in relation to the control limit. The assigned protection factors are as follows:

Control Limit for Asbestos is 0.1 f/ml

Rubber half mask fitted with a FFP3 filter.

APF of 20 x 0.1 = 2 f/ ml

Full Face Power Assisted fitted with an FFP3 filter

APF of 40 x 0.1 = 4 f/ ml

An APF means that this is the nominal protection the RPE will give the wearer, e.g. if the fibre level inside the enclosure is 4 f/ml then it will be 0.1 f/ml INSIDE the RPE if wearing a Full face Powered Respirator with an FFP3 filter attached.

MAINTENANCE AND INSPECTION of RPE

- Ø All RPE is to be inspected by a "Competent Person" every month using the Shield Company RPE Monthly Inspection form.
- Ø This information must be recorded and a records maintained for 5 years.
- Ø This information must also be available for inspection by the enforcing authority if required.

COMPETENCE TO INSPECT ANY RPE

Only persons who have attended a course in 'Inspection of RPE' are permitted to undertake monthly RPE Checks.

9. PERSONAL PROTECTIVE EQUIPMENT

COVERALLS

Coverall will be of the disposable type and be of a suitable standard for the work conditions and as such only fibre proof coveralls to BS EN ISO 13982 Type 5 category 3 must be used.

Working / Transit coveralls, in GOOD condition, complete with hood, elasticated cuffs and ankles (no pockets) must be worn at all times when working with any ACM.

'Transit Coveralls' must be of a different colour to 'working coveralls' and this colour must be noted on the Site Specific Method Statement.

- Ø Underwear including socks. (Disposable) are also provided.
- Ø Gloves which are worn inside a live enclosure are to be disposed off as Asbestos waste.
- Ø Disposable Towels will be provided and they must be disposed of as Asbestos waste.

All disposable type working clothing must be disposed of as asbestos waste.

SAFETY BOOTS

- Ø Industrial Safety Footwear, Wellington type with no laces is to be worn when removing ANY ACM.
- Ø Separate footwear for working / transiting to be provided.
- Ø Transit foot wear will be white.
- Ø Asbestos working footwear will be black/green.

HARD HATS

- Ø Suitable Head Protection (Hard Hat) is to be worn at all times in designated Hard Hat areas.

HIGH VISIBILITY CLOTHING

- Ø High Visibility clothing which complies with BS EN 471 must be worn at all times whilst on site.

EYE PROTECTION

- Ø Suitable 'eye protection' must be worn at ALL times whilst on site. (Not required when wearing Full face RPE).

HAND PROTECTION

Suitable gloves are to be worn at all times when working with ANY ACM.

10. HYGIENE UNIT (DCU)

Shield Environmental Services will provide suitable hygiene facilities (DCU) where necessary / required, in any case for ALL LICENSED ASBESTOS REMOVAL WORK.

These can be purpose built to specific laid down standards which comply with HSG 247 Asbestos; The Licensed Contractors guide Appendix 8.1: Minimum design criteria for asbestos hygiene units.

MAINTENANCE AND INSPECTION

Company DCU's must be serviceable and maintained in accordance with the following requirements;

Ø Gas Safety



Annual gas safety inspection to be undertaken by a 'GAS SAFE' registered engineer (used to be known as CORGI Registered).

Ø Electrical Safety



ONLY a registered NICEIC electrician is to be used for any electrical testing / work.

When engaging the services of an NICEIC electrician you MUST specify that the test / work are to be undertaken in accordance with;

17th Edition of IEE Wiring Regulations Section 717 "Mobile or Transportable Units"

Ø DOP Testing

The NPU within the DCU must be DOP and PAT tested every 6 monthly basis, these records have to be kept for 5 years.

Ø Document Control

'Authentic' copies of the Gas / Electrical / DOP test certificates must be kept within the DCU.

Inspection and test records are to be maintained and entered into the SEGURO IT System.

Ø Hired DCU / Modular Units

All the above certification must be requested from the hire company prior to delivery OR ensure that the certification is with the DCU when it is delivered.

ANY DCU which does not have the above 'in date' & 'valid' certification must not be used until it has been provided.

THE DCU MUST BE ON SITE AND WORKING BEFORE ANY WORK STARTS AND IT IS ALWAYS THE LAST ITEM OF EQUIPMENT TO LEAVE SITE.

The location of the Hygiene unit and the transit route will be detailed on each site specific method statement.

Alternatively where there are problems with positioning a DCU in close proximity to the work area then a modular DCU can be used.

The DCU should be attached directly to the enclosure, where this is not practicable the unit must be positioned in an area as close as possible to the enclosure.

All Hygiene units must comply with the following criteria;

Clean End

Only to be entered from exterior door (marked `CLEAN') in outdoor personal clothing or via shower compartment after showering.

Must have the following equipment fitted:

- | | |
|--|----------------------------------|
| Ø Sufficient personal security lockers for valuables or suitable accommodation for personal clothing | Ø Non return ventilator grilles. |
| Ø Fixed seating. | Ø Space heater. |
| Ø Mirror. (to assist in fitting face-piece). | Ø Self closing door. |
| | Ø Hangers, hooks |

Shower Compartment

A ratio of one shower per four people using the facility.

- | | |
|---|---------------------------------|
| Ø Centrally located between clean and dirty ends. | Ø Drained and easily cleanable. |
| Ø Separated by self closing doors. | Ø Wall Hooks. |
| Ø Soap/Shampoo/Shower Gel and a nail brush are provided and must be available in this area. | Ø Self closing doors |

Dirty End

Only to be entered from exterior door (marked `DIRTY') when returning from asbestos working area in transit overalls and respirator, or via shower compartment (wearing respirator) in order to don transit clothing.

Must have the following:

- | | |
|----------------------------------|--------------------------------|
| Ø Fixed seating. | Ø Self closing doors. |
| Ø Laundry bag holder / Waste Bag | Ø Suitable signage |
| Ø Space heater. | Ø Lockable |
| Ø Air extractor unit. | Ø Drained and easily cleanable |

Site Maintenance and Inspection of hygiene facility

- Ø Operatives carrying out cleaning of hygiene facility must not wear their own personal clothing.
- Ø Disposable Type 5 coverall and RPE, (half mask) must be worn and operatives shall take a shower after cleaning the Hygiene Unit.
- Ø The DCU must be cleaned at the end of each working day.
- Ø Record of daily inspection to be maintained.
- Ø Decontamination units are fitted with a time delay switch, which allows extractor to run for a period of at least 15 minutes at end of working day.
- Ø No materials or equipment are to be stored in the unit other than immediate requirements i.e. clean working/transit clothing and new RPE filters.

Movement of DCU

- Ø The air extract unit must be covered during travel by secure dust-tight caps inside and out.
- Ø Water system must be drained and traps in shower and washbasins emptied with residue being disposed of as asbestos waste.

Fitted Extract Unit

- Ø Copy of the current DOP test certificate and inspection sheet to be attached to hygiene unit inspection sheet.

Air Clearance (Shower Area & Dirty End)

- Ø Satisfactory air clearance must be obtained in the hygiene unit on completion of a contract. (Shower & dirty areas).
- Ø The copy of the last clearance certificate must be displayed in the unit.
- Ø It is important that the certificate is removed as soon as the unit is brought back into use for asbestos work.

Protection from frost

During cold weather the Supervisor must ensure.

- Ø All water valves are opened.
- Ø All water is drained down from ALL Pipes and the boiler / Shower head.
- Ø The filter system must be drained and contents disposed of as Asbestos Waste.

SIGNAGE FOR DCU's

The following signage should be displayed 'CLEARLY' on the DCU

CLEAN END DOOR



No Unauthorised Access



DIRTY END DOOR



No Unauthorised Access



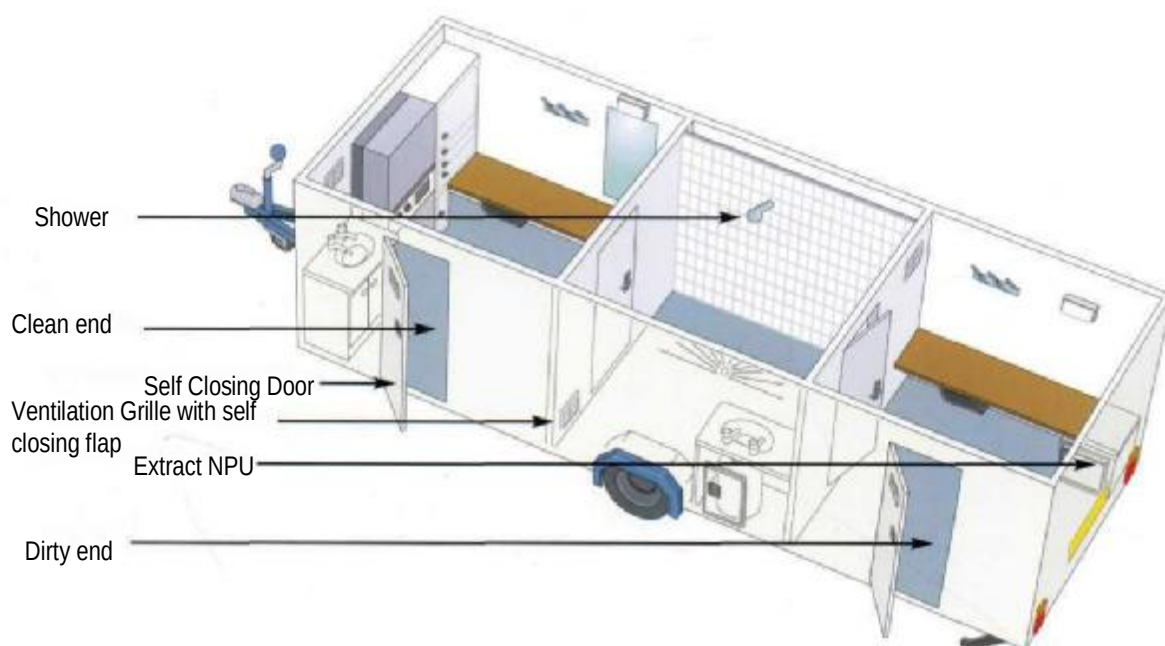
Danger Asbestos



Overalls must be worn



TYPICAL HYGIENE UNIT LAYOUT



11. ENCLOSURES

PRE-CLEANING

Before erecting any enclosures all "Horizontal" surfaces must be cleaned to remove all visible traces of dust and debris. This must be done using a ½ mask /FFP3 Filter and type 5/6 disposable coveralls.

If this dust or debris is likely to be asbestos then the pre clean must be undertaken inside a designated Respirator Zone or an enclosure.

GENERAL REQUIREMENTS FOR ENCLOSURES

- Ø Pre-clean where necessary prior to erection of enclosure.
- Ø Removal of free standing items /equipment before any removal of Asbestos.
- Ø Effectively sealed and as airtight as possible.
- Ø Sufficient / uniform Negative pressure minimum of 8 ac/h sited so as no 'dead spots' occur.
- Ø Sufficient air movement through the enclosure.
- Ø Safe access /egress for men / equipment / waste.
- Ø Robust enough for the conditions.
- Ø Identified Transit Route and Waste Route.

ERECTING ENCLOSURES

To prevent the spread of asbestos fibres during the removal process a tented enclosure maintained under negative pressure must be built using;

- | | |
|---------------------------|--|
| Ø 1000 gauge polythene. | Ø Supported by timber battens, if necessary. |
| Ø Cloth tape. | Ø Spray Tack |
| Ø Staple gun and staples. | Ø Expanding foam |

The above must be undertaken and a successful smoke test completed before any asbestos removal work is carried out, including the placing of injection needles.

- Ø When using a Scaffold Frames, the tube ends within the enclosure must be sealed, and any fittings taped over, all boarding to be fully sheeted and sealed.
- Ø Sufficient number of viewing panels (600mm X 300mm) to be placed around the working enclosure and in the dirty end of the Airlock & Baglock. It will be necessary to utilise CCTV if this cannot be achieved.
- Ø Spray adhesive & expanding foam may be required - half mask respirator that is fitted with a combined organic/gas vapour and FFP3 dust filter must be worn.

- Ø Where space permits, some form of barrier around working enclosure as an added protection against damage to polythene sheeting by third parties may be required.
- Ø Sufficient warning signs which comply with the Safety (Signs & Signals) Regulations 1996 to be placed around the enclosure to identify the 'Asbestos Zone' and 'Respirator Zone'.

TESTING EFFECTIVENESS OF THE ENCLOSURE: - VISUAL EXAMINATION & SMOKE TESTS

After the enclosure has been erected, the site supervisor, with the client, must inspect the enclosure for any leakage;

- Ø With the NPU's switched OFF the enclosure / airlock / baglock is to be filled with smoke.
- Ø Any identified breaches / leaks are to be repaired with tape or expanding foam.
- Ø This process is to be repeated until the enclosure does not have any leaks as identified by the smoke test.
- Ø The enclosure can then be signed off as ready to undertake asbestos removal.
- Ø This must be recorded in the Method Statement and Site Diary BY THE SITE SUPERVISOR & CLIENT REPRESENTATIVE IF AVAILABLE.

The Supervisor is to ensure that the enclosure is inspected at regular intervals during the contract and in particular;

- Ø Start of day's shift before commencement of work.
- Ø End of day's shift before leaving site.
- Ø At intervals during the day when returning from tea/meal breaks.
- Ø These inspections must be recorded on the daily site log by the Site Supervisor.

A 'SMOKE TEST' is to be undertaken EVERY 7 DAYS if the enclosure is to remain in situ for longer periods.

ENCLOSURE MAY NOT BE REQUIRED

There may be occasions where it is not reasonably practicable to erect an enclosure; these situations will be identified within the site specific method statement, such as;

- Ø The level of risk is low because the removal is of short duration / small scale.
- Ø The location is extremely remote where the risk to operatives or the public is low. Remoteness is not in itself a reason not to build an enclosure.
- Ø The work is at height and an enclosure is not practicable or is exposed to severe weather or a complex structure (i.e. pipework in the open and at height).
- Ø There are difficulties in obtaining an effective seal on buildings (e.g. Soffits).
- Ø Cleaning up minor / external contamination

12. AIRLOCKS & BAGLOCKS

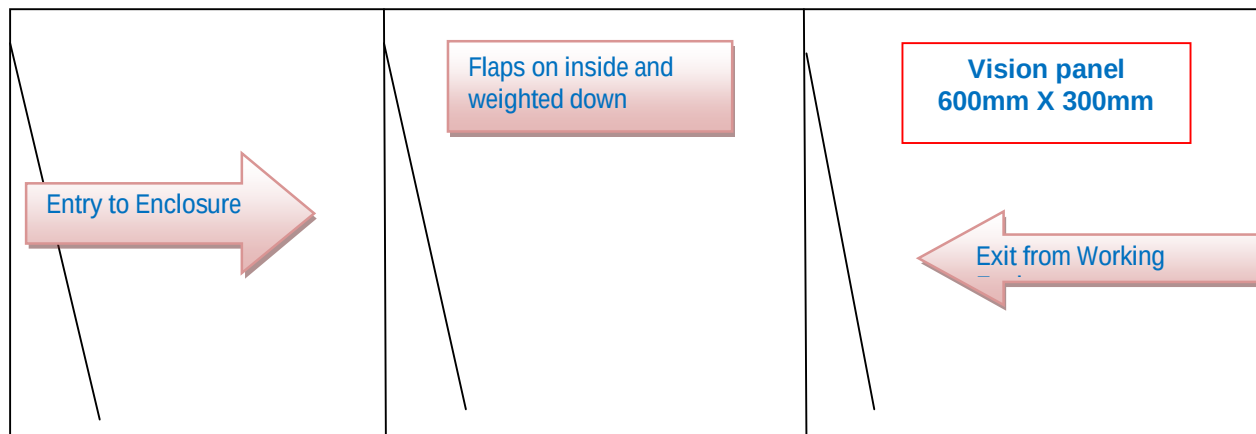
Airlocks are to be used for the **transiting** of **Men** and **Equipment ONLY**.

Baglocks are to be used for the **removal** of Asbestos **Waste ONLY**.

When the Airlock is 'IN USE' the baglock must be sealed and when the baglock is 'IN USE' then the airlock must be sealed.

GENERAL REQUIREMENTS FOR AIRLOCK & BAGLOCKS

- Ø Air locks of either the two-stage type where hygiene unit is attached directly to working enclosure or three-stage where transit procedures apply must be erected in accordance with the Site Specific Method Statement.
- Ø Airlocks / Baglocks must be of sufficient size (minimum 1 m x 1 m x 2 m sections where possible) and fit for purpose.
- Ø Smaller airlocks may be used if there are space constraints. e.g. domestic property
- Ø Flaps must be positioned inside the airlock nearest to the working enclosure.
- Ø The flaps must be weighted down.
- Ø Openings must cut in an oval shape and flaps must overlap by at least 10 cm.
- Ø Removal of asbestos waste (to lockable skip or sealed vehicle) must be through a separate bag lock (where space permits).
- Ø A vision panel at least 600mm X 300mm must be inserted into the 3rd stage of the Airlock & Baglock.



Airlock / Baglock Minimum size of each cube must be at least 1m X 1m X 2m

In areas where there are space constraints i.e. domestic property a smaller sized airlock can be used.

13. AIR MANAGEMENT & NEGATIVE PRESSURE UNITS

The strict control of Air Movement and the positioning of NPU's is CRUCIAL to the safe removal of any asbestos product, this ensures that the spread of Asbestos outside the enclosure is maintained

The Enclosure must have a minimum of eight (8) air changes per hour

Calculating the required amount of NPU's required to achieve 8 air changes per hour.

Length x Width X Height (of enclosure) + volume of the airlock (6m³) & baglock (6m³) X 8 = the minimum level of air changes required.

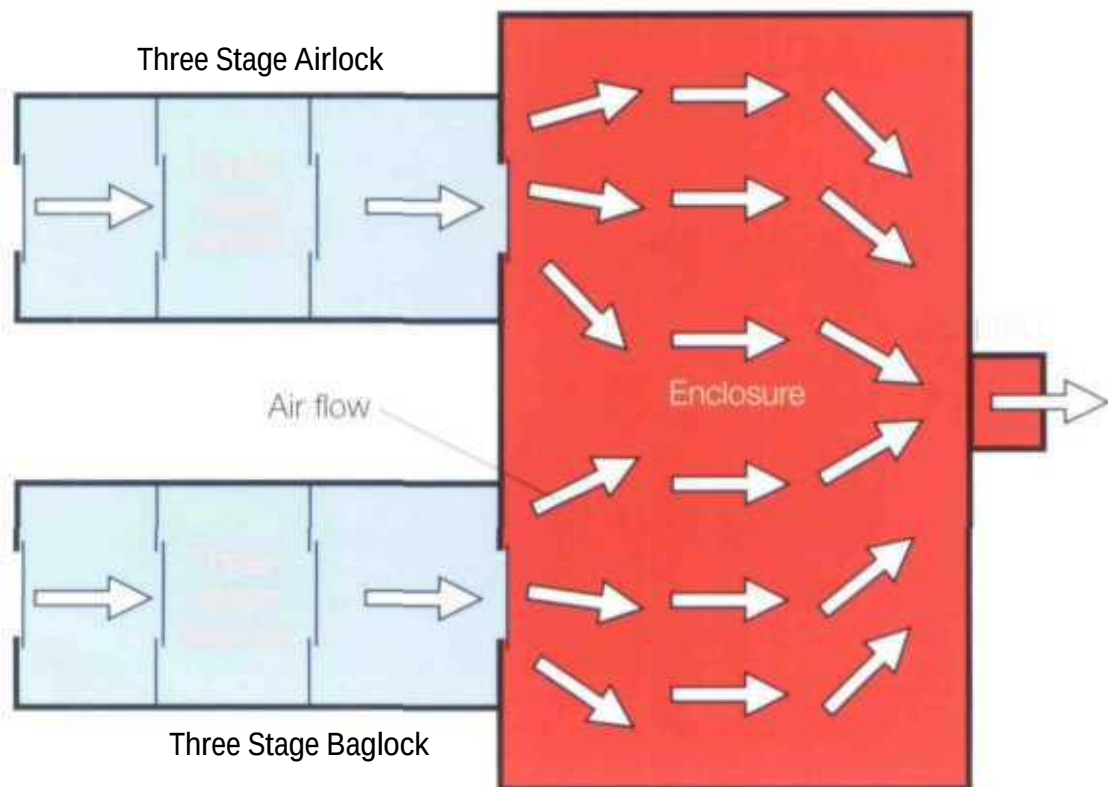
(in Meters) e.g. 5 m X 5 m x 5 m = 125 m³ & 6 m³ & 6 m³ = 137 m³ X 8 = 1096m³

(in feet) 15 ft X 15 ft X 15 ft = 3375 ft³ & 905 ft³ X 8 = 3424 cfm

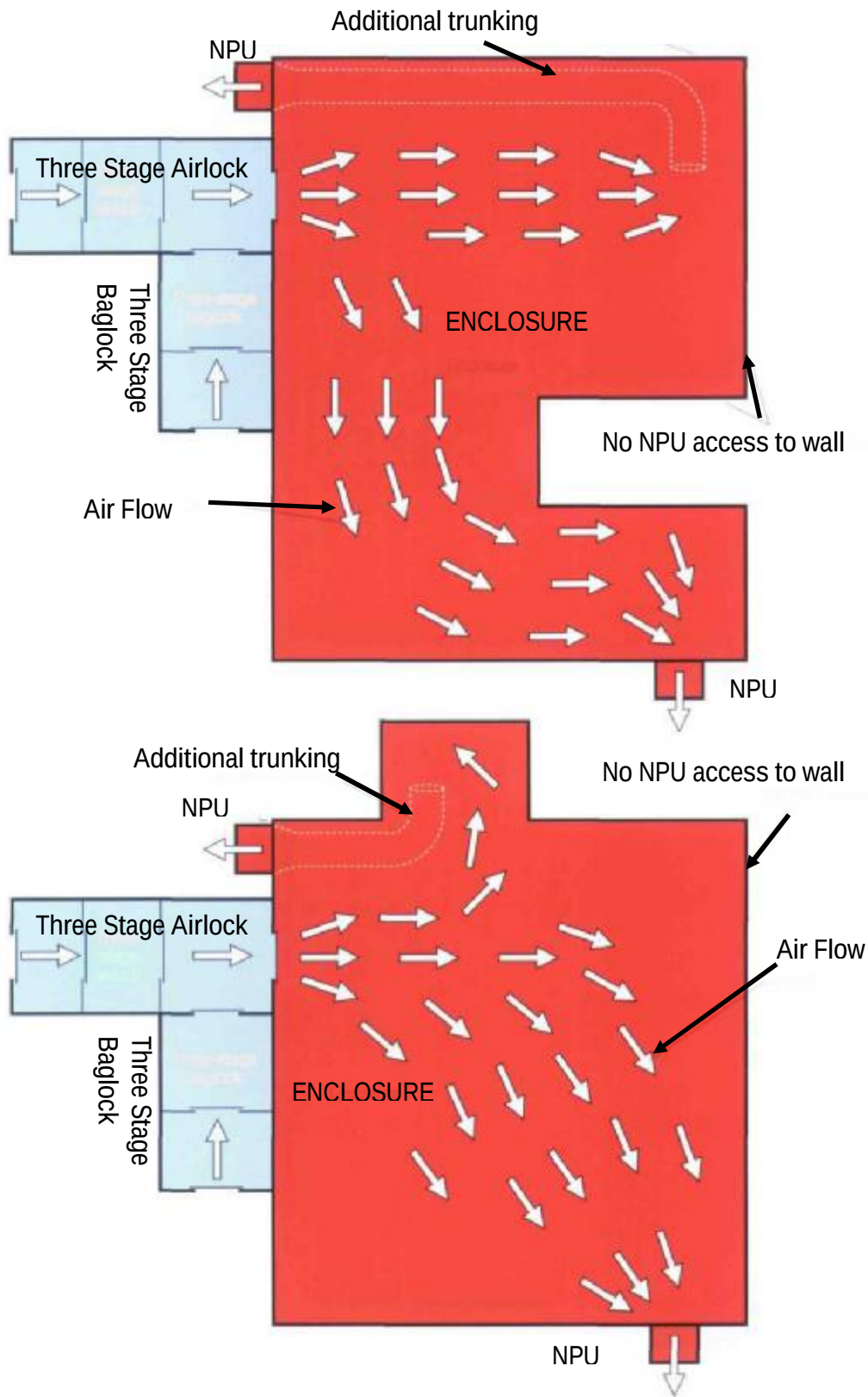
It is important that the rated value of the NPU is not used, you must ensure that the 'ACTUAL' rated value is used, e.g. 1500 cfm but pulling only 1200 cfm.

- Ø Suitable sized NPU's must be sited around the enclosure to ensure sufficient negative pressure, a minimum of 8 air changes per hour
- Ø It may be necessary to use a number of NPU's to ensure that there are no 'dead spots' however the NPU's must be sited in accordance with the site specific method statement.
- Ø There may be occasions where over extraction is required but this must not damage the integrity of the enclosure and supplementary air inlets may be required.
- Ø NPU's must be checked at least 3 times a day and this information is recorded on the site daily inspection sheet and recorded as complete on the site diary.
- Ø The principal purpose of a NPU is to create a negative pressure within the enclosure so that if there are any leaks within the enclosure then the fibres will not spread into the surrounding area.
- Ø These must be sited outside of the working enclosure where ever possible, and if they are inside then they must be 'sheeted over' to prevent any contamination, it may be necessary to utilise a 'roving head' if it is not possible to have a flow through of air within the working enclosure.
- Ø If there is a drop on the pressure gauge, this will denote a pressure build-up on the filters and they will need to be changed.
- Ø Hose-ducting to connect extractor to tent filter-box, use of the ducting will result in a decrease of the pulling power (CFM) of the unit (Amount of decrease is dependent on length of ducting used).
- Ø After ducting is disconnected, bags must be placed over duct ends and sealed then placed in an asbestos bag and sealed.
- Ø At the end of each working day the NPU's must be run for at least 60 minutes after stripping operations have ceased.

- Ø Inspected daily by nominated competent person and Supervisor to note checks on Daily Log sheet and Site Diary.
- Ø Before the analyst attends site
 - o ALL filters must be changed on ALL NPU's in use.
 - o The back of the filter housing must be vacuumed out before a new filter is inserted and in any case on the completion of the work.
- Ø DOP tested and thoroughly examined every six months, copies of DOP Certificates must be available on site at all times.
- Ø NPU's are not to be used when DOP test certificate has expired (six months).
- Ø DOP certificates must be kept for 5 years.
- Ø Inlet and exhaust ends of the extractor are to be capped before removal from site.



Ideal NPU Position which creates Good airflow



Examples of good airflow management in different shaped buildings where NPU's cannot be sited for good air management

14. TYPE "H" VACUUMS

Only Type 'H' vacuums to BS EN 60335 are to be used and are to be inspected and tested in accordance with PAS 60.

GENERAL REQUIREMENTS

- Ø The vacuum shall always be used with a cloth bag and paper disposable bag.
- Ø Under no circumstances shall the vacuum machine be used for wet pick-up.
- Ø Disposable paper bag must always be changed when inside the working enclosure.
- Ø Before removal from site the exterior of the vacuum must be cleaned, hoses bagged & hose connections capped.
- Ø Vacuums shall be inspected daily (weekly inspection – recorded).
- Ø DOP tested every 6 months.
- Ø Vacuums are not to be used when DOP test certificate has expired (six months).
- Ø DOP certificates must be kept for 5 years.

It is important that the following procedures for using type 'H' Vacuums is undertaken as you could potentially contaminate yourself, work colleagues, the DOP Contractor or your vehicle:

- Ø Any brush attachments are to be cleaned and stored in asbestos waste bags when not in use.
- Ø Dust bag are to be replaced with a new one 'INSIDE' the working enclosure when full, and disposed of as asbestos waste.

VACUUM DUST BAGS HAVE TO BE CHANGED WHEN;

- Ø It is full.
- Ø When the warning light comes on.
- Ø When damp materials are being collected it needs to be done more often.
- Ø On completion of the work.

WHEN THE WORK IS COMPLETED;

- Ø HOSE must remain attached to the Vacuum, with the end taped over,
- Ø Vacuum and hoses 'MUST' be sealed in an asbestos waste bag.
- Ø Only opened again when inside a working enclosure.
- Ø Any brush attachments are to be cleaned and stored in asbestos waste bags.

CLEANING VACUUMS BEFORE THE 6 MONTHLY DOP TEST OR REPAIR

Leaving Vacuums with bags of Asbestos waste in them for DOP testing is DANGEROUS and puts the DOP Contractor at great risk!

Vacuums must be emptied and thoroughly cleaned prior to any maintenance work or testing, this prevents the persons undertaking the test/ repair from being contaminated and a potential environmental clean of your yard / store room;

- Ø Open the Vacuum and remove dust bag and dispose of as asbestos waste.
- Ø Clean the outer case with a damp rag / tac rag or another type 'H' vacuum.
- Ø Using another type 'H' vacuum clean the internal surfaces removing all visible traces of dust.
- Ø Using a damp rag thoroughly clean all internal surfaces and allow to dry.
- Ø Insert a new dust bag.
- Ø Transport in an Asbestos waste bag.

15. ASBESTOS EXCLUSION ZONES

To ensure that we protect any other persons who may be working within close proximity of any asbestos works.

All asbestos works are to be undertaken within an "EXCLUSION ZONE" this is to consist of;

- Ø Clearly defined "Asbestos Zone"
- Ø Clearly defined "Respirator Zone"

ASBESTOS ZONE

The "Asbestos Zone" is any area where we are undertaking Asbestos Removal operations.

Physical barriers (Heras fencing, hoarding, warning tape and cones etc) are to be erected around the whole of the working area to exclude ALL Persons not involved in the Asbestos Removal Process.

All access points to the Asbestos Zone must be closed and secured OR covered with polythene and tape OR Barrier tape.

The Site Supervisor is to liaise with any other persons on site to warn them to stay out of the Exclusion Zones at all times.

The "Asbestos Zone" is to include;

- Ø DCU.
- Ø "Respirator Zone" (Enclosure).
- Ø Transit route.
- Ø Waste route.
- Ø Waste Skip.
- Ø Any other area where we are working to remove Asbestos
- Ø Equipment storage area

The following suitable signage must be placed around the "Asbestos Zone" and on all access points to clearly warn 'unauthorised persons' of the dangers involved and to keep away;



Danger Asbestos



No Unauthorised Access

RESPIRATOR ZONE

The "Respirator Zone" is an area INSIDE the "Asbestos Zone" where it is likely exposure to Asbestos dust and it is likely that the Control Limit of 0.1 f/ml will be exceeded.

ALL PERSONS WHO ARE REQUIRED TO ENTER THE "RESPIRATOR ZONE" MUST;

- Ø Hold a valid UKATA Class 1 Asbestos training certificate for licensed asbestos work.
- Ø Hold a valid UKATA Class 2 Asbestos training certificate for Non-Licensed asbestos work.
- Ø Hold a valid face fit test for the particular RPE which they are intending to wear.
- Ø Hold a valid medical certificate.
- Ø Wear suitable RPE (powered Full Face RPE or ½ mask) with FFP3 Filter attached.
- Ø Wear Suitable Type 5/6 Coveralls.
- Ø Wear suitable protective footwear.
- Ø Wear suitable PPE as required by a Risk assessment / Plan of Work.

The "Respirator Zone" will include the following areas;

- Ø The Asbestos Removal Enclosure.
- Ø All Airlocks.
- Ø All Baglocks.
- Ø An area of at least 5m from the work area where asbestos removal is being undertaken without an enclosure, e.g. Soffits.

All asbestos removal operations must be undertaken within a 'defined' Respirator Zone, this will include;

- Ø Asbestos removal operations.
- Ø Decontamination routines.
- Ø Waste Bagging & Sealing.

Suitable signage must be displayed around the "Respirator Zone" in particular;

- Ø On the door flap of ALL Airlocks & Baglocks.
- Ø On EVERY exposed side of the working enclosure.
- Ø 5 m surrounding (if possible) any asbestos removal operations when not using an enclosure.



The above signs must be displayed on;

- Ø All exposed faces of the enclosure
- Ø On the entrance to all Airlocks and Baglocks.

There may be situations where the asbestos zone & respirator zone is the same and all signage has to be used.

16. DECONTAMINATION – CHANGING & TRANSIT PROCEDURES

The following changing procedures are essential to the safe working with Asbestos and to prevent the spread of asbestos dust, under no circumstances, should they be deviated from, unless;

- Ø A suitable Risk Assessment has been completed.
- Ø The Site Specific Method Statement has been completed which details what the transit procedures will be.

Should any client or consultant request any operative to modify any part of the laid down procedure, they should politely refuse and refer the matter to their Supervisor or Contracts Manager.

EQUIPMENT REQUIRED TO DECONTAMINATE

- Ø Type “H” personal Vacuum positioned within the 3rd Stage of the Airlock
- Ø Two Buckets of Water with ‘Astrip’ solution (Ratio 1 part Astrip to 10 parts water) placed within the 3rd Stage of the Airlock
 - o One bucket with Sponge / Rag to clean RPE
 - o One bucket with Brush to Clean Footwear

OVERALLS

- Ø A Type 5/6 clean disposable working overall is put on in the clean area of the DCU.
- Ø A Type 5/6 clean disposable transit overall is put on over the working overall.

FOOTWEAR

- Ø Separate footwear is provided for working & transit.
- Ø This will consist of Industrial safety (toe cap and mid sole protection) wellingtons for working (Black / Green), and Wellingtons for transit (white).
- Ø When decontaminating working footwear in the 3rd stage of the air lock it must be ensured that all traces of asbestos are removed from the tread of the footwear using the bucket and brush provided. The bucket must have surfactant added and this is then disposed of as asbestos waste.

TOWELS

- Ø On returning via the dirty end of the DCU, operatives should thoroughly shower and sufficient time must be allowed to ensure effective decontamination.
- Ø Employees to thoroughly dry, in the clean end of the DCU using a fresh, clean towel, which can be deemed uncontaminated as it has never left the clean end;

- Ø Any towel used solely in the clean area can be deemed to be uncontaminated and washed with normal laundry.
- Ø Contaminated towels should be bagged and disposed of as asbestos waste

All operatives will adhere to normal procedure as for 3-stage i.e. boots removed in second stage of air lock, working overall removed in second stage of air lock. The reason for this is that it reduces the possibility of excessive contamination being carried into the unit.

RPE

Full face RPE will be worn when transiting between the asbestos enclosure area & hygiene unit.

The only exception to this is where, as a result of a Site Specific Risk Assessment, it has been assessed that to wear full face RPE could be dangerous to the wearer i.e. restricted vision (tripping, falling hazard). In this instance it is acceptable for a half mask fitted with FFP3 particle filter to be worn.

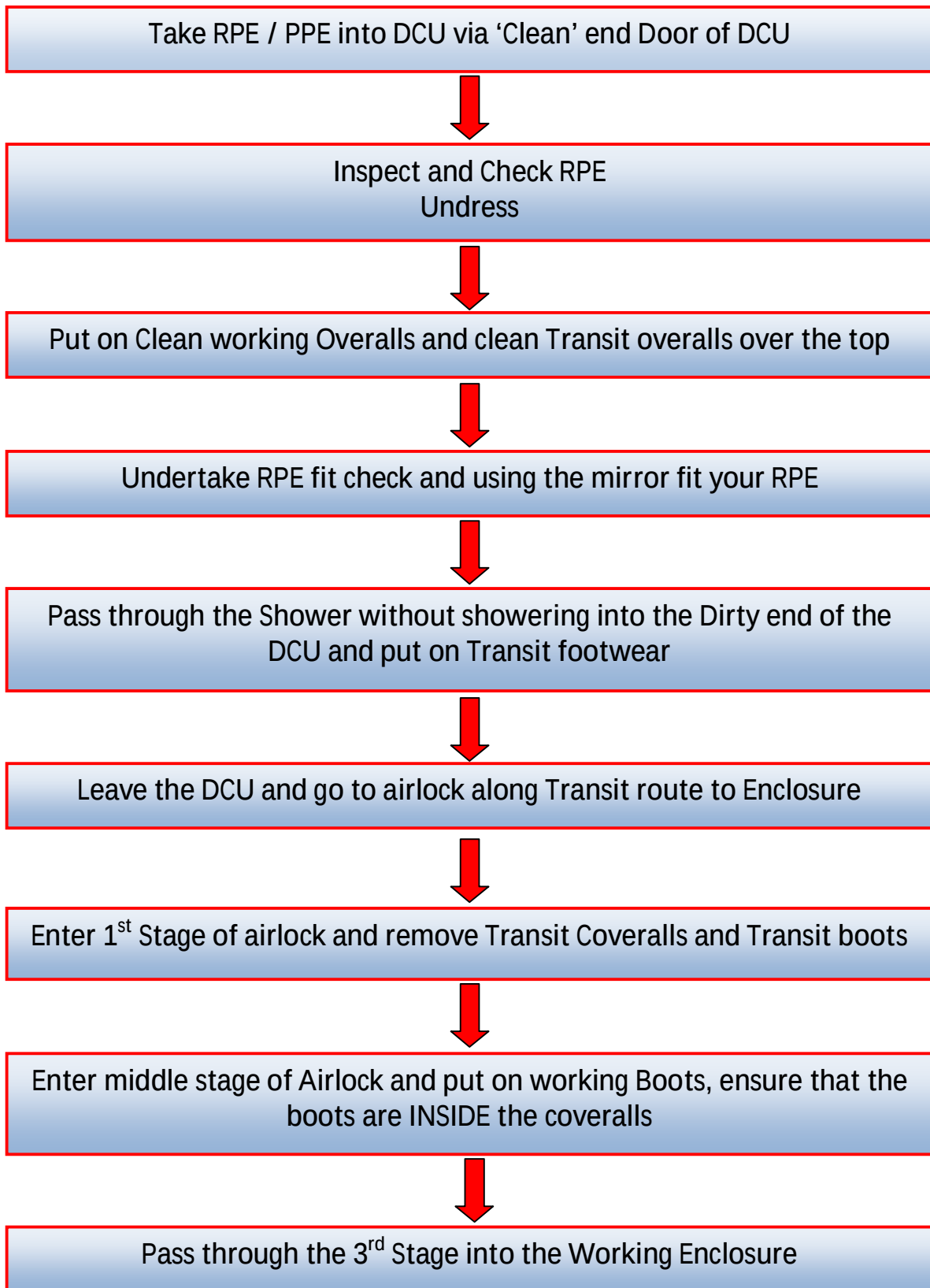
For these conditions the following decontamination must be undertaken:

- Ø Half mask to be positioned in third stage of air lock in plastic bag (transit overall section).
- Ø Thoroughly wet down face piece & hair in third stage of air lock and remove face piece.
- Ø Fit half mask.
- Ø Place full face RPE in asbestos waste bag for transit. (Avoids spreading contamination from mask).
- Ø Reverse of the above procedure for return to working area.

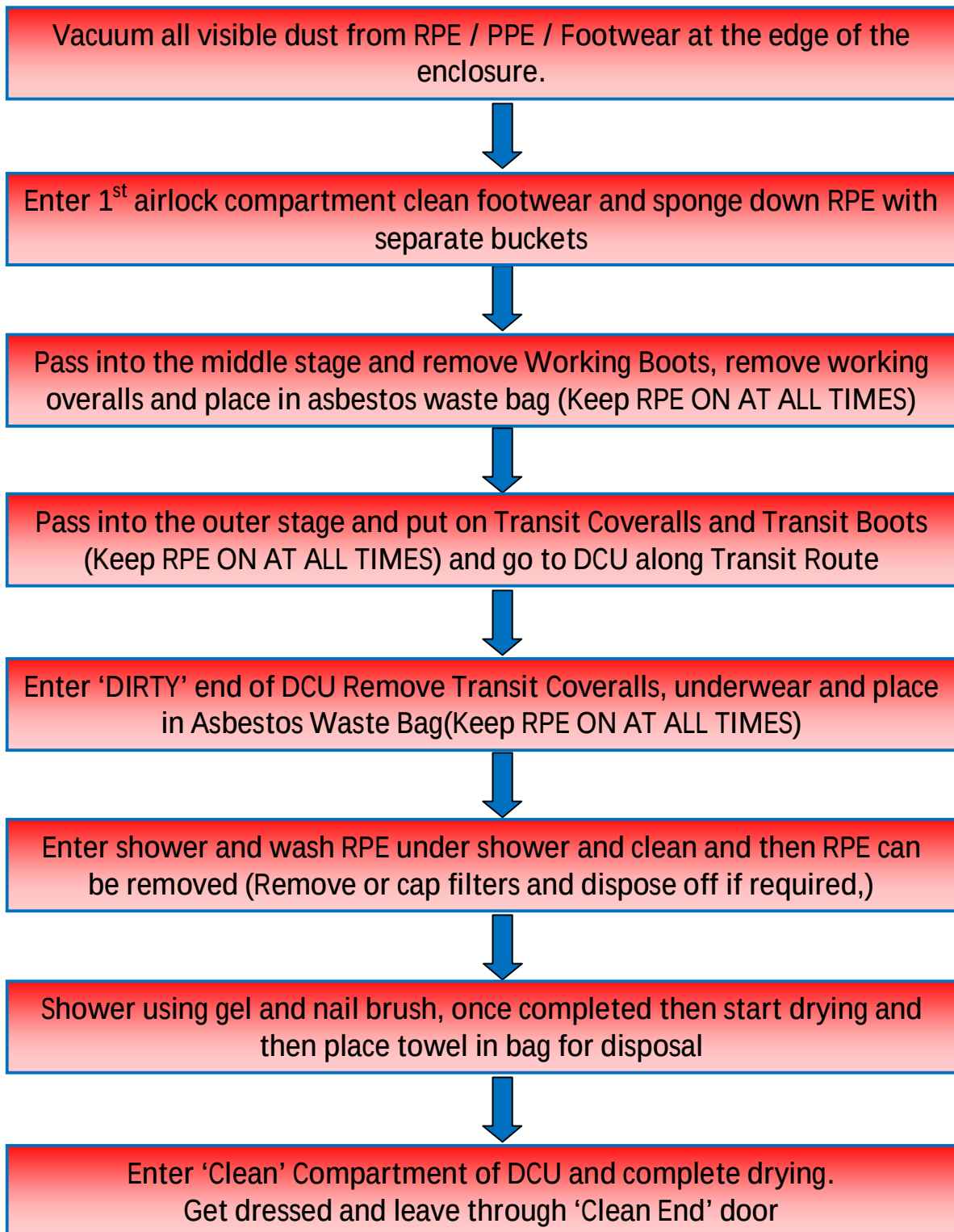
Note: This procedure should be included in the site specific Method Statement / Plan of Work if required.

TRANSITING and DECONTAMINATION PROCEDURES

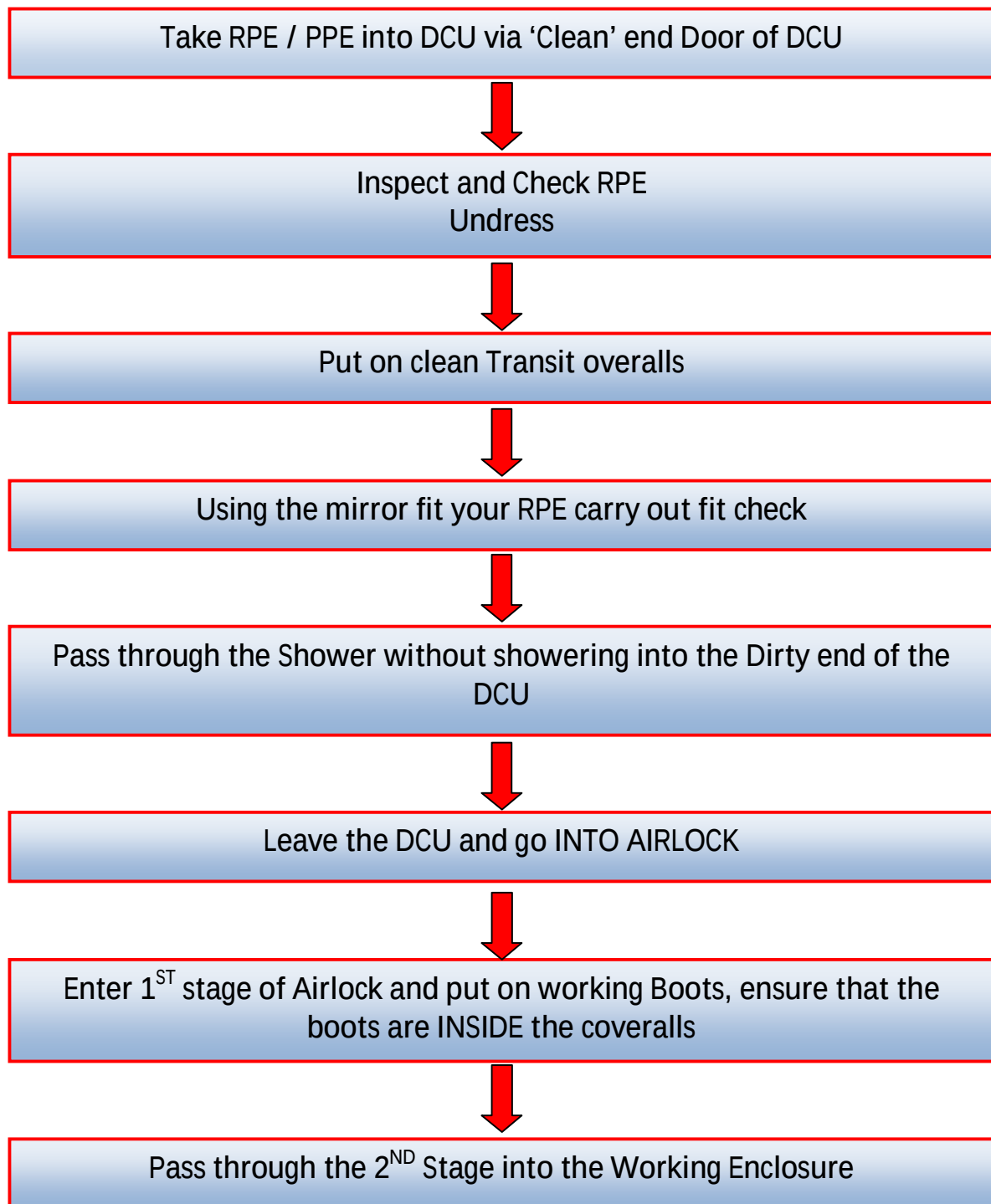
ENTERING ASBESTOS ENCLOSURE (DCU NOT ATTACHED)



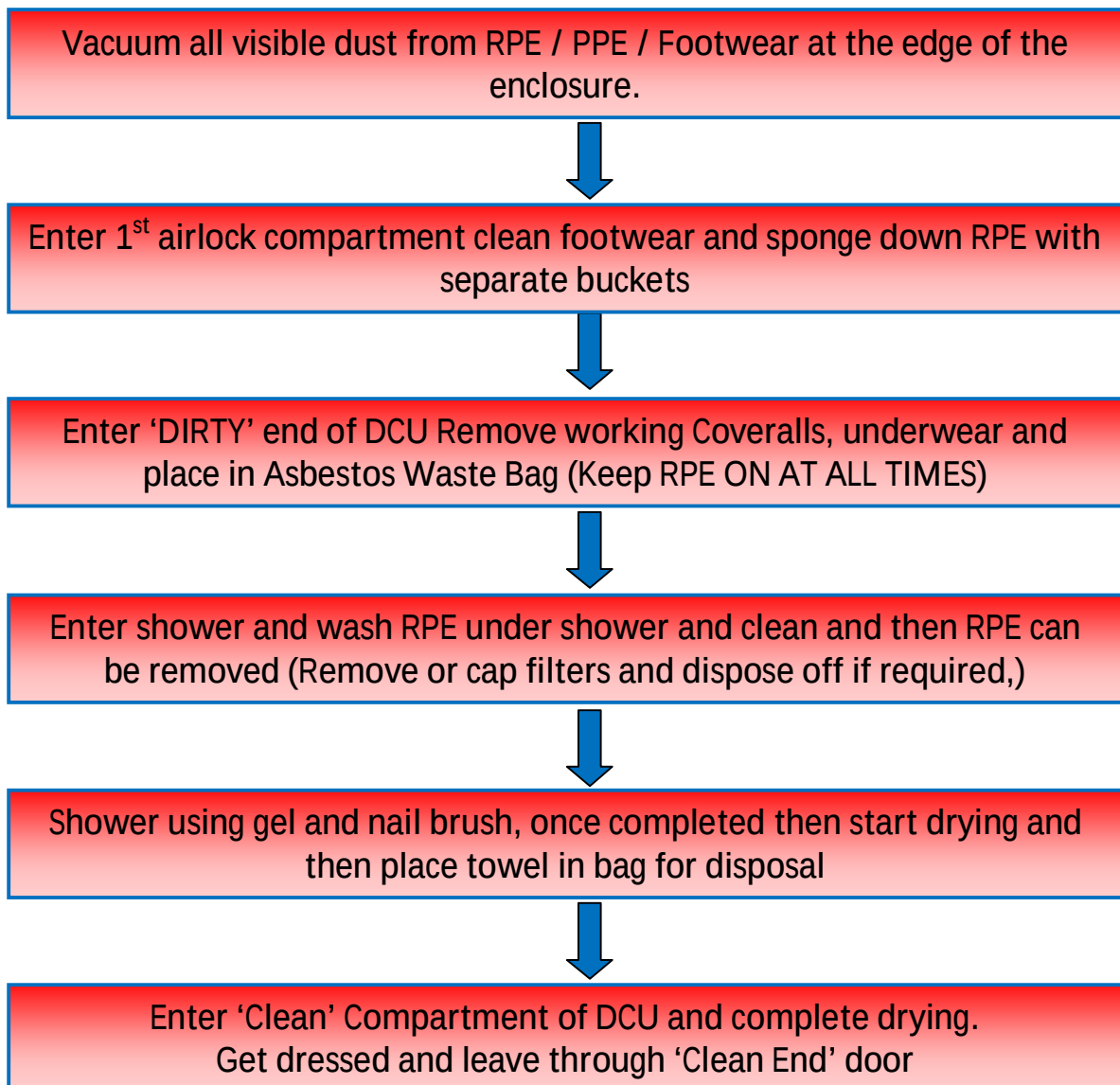
LEAVING ASBESTOS ENCLOSURE (DCU NOT ATTACHED)



ENTERING ASBESTOS ENCLOSURE WITH DCU ATTACHED TO AIRLOCK



LEAVING ASBESTOS ENCLOSURE WITH DCU ATTACHED TO AIRLOCK



17. ASBESTOS REMOVAL TECHNIQUES FOR WORKS REQUIRING A LICENCE

The selected method of removal which is planned to be used is dependent on a number of factors, however the overriding requirement is that any asbestos removal technique selected will always be undertaken in a manner so that the absolute minimum of asbestos fibres are released at the point of the asbestos stripping process.

Factors to consider when selecting a particular asbestos removal technique;

1. Type of ACM
 - a. Sprayed Coating?
 - b. Hard set lagging or sectional?
 - c. Painted or raw AIB?
2. How it was attached
 - a. Screwed / nailed or glued AIB?
 - b. Limpet applied onto bitumen?
3. Condition of the material
 - a. Damaged?
 - b. Good condition?
 - c. Raw or painted?
4. Location of ACM
 - a. Remote?
 - b. Asbestos at Height?
 - c. Ductwork?
 - d. High risk area i.e. school?
5. Any access issue
 - a. Voids?
 - b. Soffits?
 - c. Working in Confined spaces?
 - d. Working at Heights?

CONTROLLED WET STRIP (INJECTION)

Controlled wet strip is the preferred method that will ensure low asbestos fibre counts. It involves the introduction of a wetting agent (surfactant) (penetrating fluid) to absorbent asbestos material that is to be removed.

THIS IS THE METHOD OF CHOICE WHEN REMOVING SPRAYED COATING (LIMPET) OR ASBESTOS INSULATION.

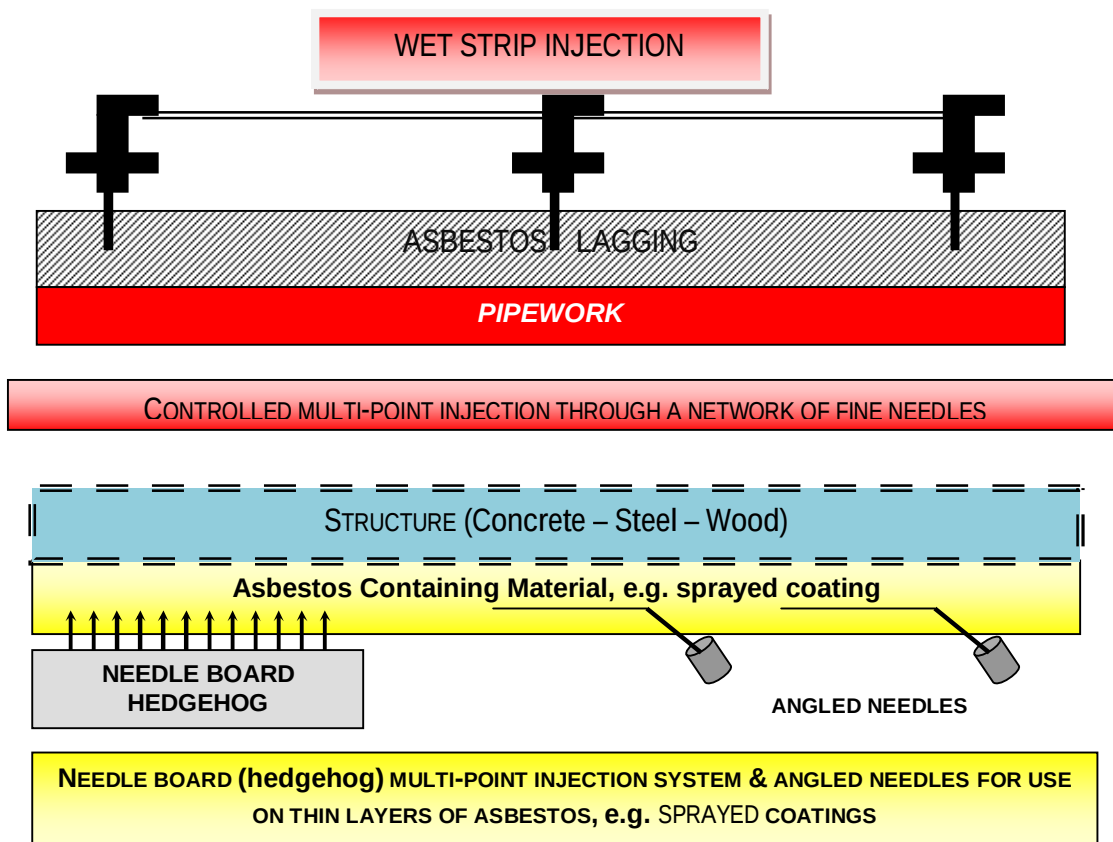
It involves the penetration and slow saturation with surfactant of the material by needle injection technique.

Care must be exercised in the amount of saturation, as an excess will create slurry on removal of the material, thereby making clean-up a much more difficult task.

General requirements for Injection

- Ø Needles should be sufficient to wet all areas of the ACM
- Ø Needles should be evenly spaced at least 10 cm apart
- Ø Needles should penetrate the full depth of the ACM
- Ø With all wet strip methods, sufficient time must be allowed for the fluid to penetrate and soak and should be through controlled capillary action under gravity and not forced delivery with the needles on full.

Note: It is crucial when using surfactant that you follow the manufacturer's instructions in respect of the ratio of water to surfactant (Normally 1:10) Excessive dilution will render the surfactant ineffective.



BASIC PRINCIPLE AND METHODOLOGY FOR INJECTION OF ACM

- Ø Enclosure to be built as per the Plan of Work BEFORE any preparatory work is undertaken which may disturb the Asbestos.
- Ø Operative placing the needles and operating the injection machine must be trained and competent to undertake the task.
- Ø Only use low pressure injection equipment less than 4 bar (50psi).
- Ø Cover the area with 1000 gauge Polythene before injection.
- Ø If possible a drip tray should be placed below the area to be injected.
- Ø Needles should be placed in a methodical manner and not too far apart (10cm).
- Ø Surfactant to be applied from the top and allowed to penetrate by gravity and NOT FORCED.

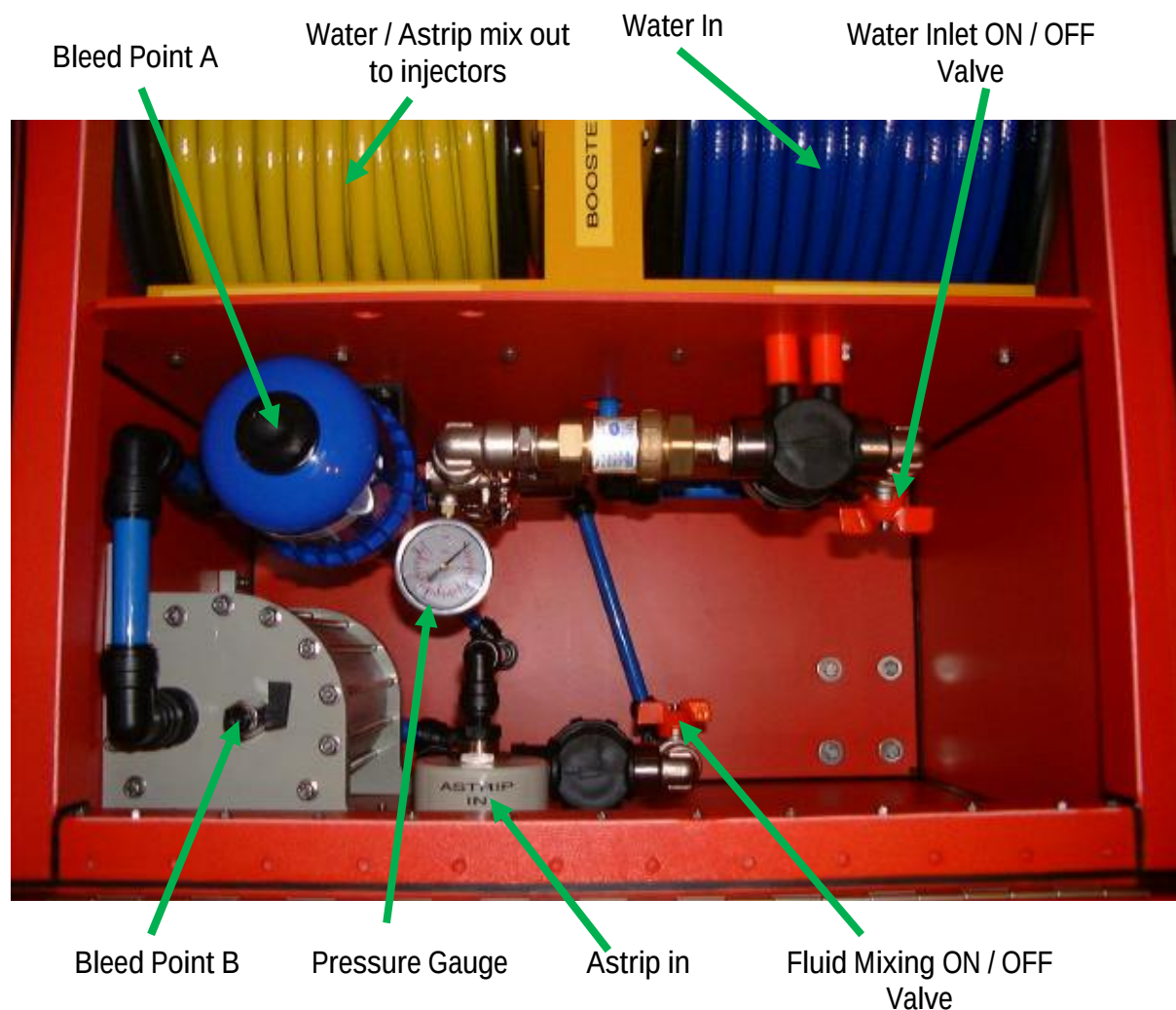
THE "RED BOX"

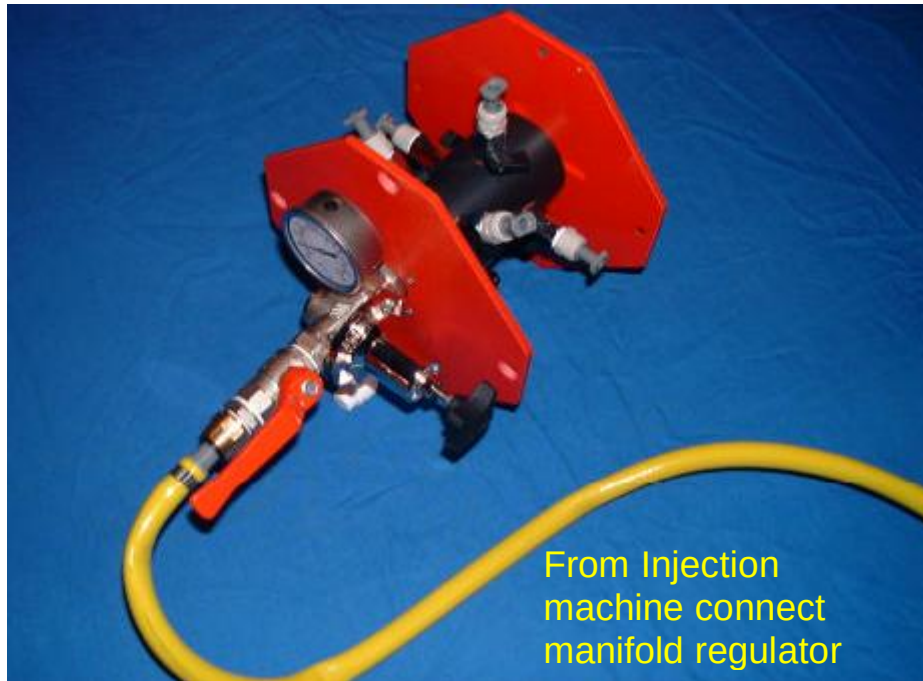
SITING and OPERATING THE INJECTION UNIT

- Ø Find a suitable frost free, level location for the unit, outside the working area.
- Ø Ensure that there is sufficient room for the unit, locating drums, etc.
- Ø At the project planning stage, ensure that a supply of clean water is readily available at a minimum pressure of 3 bar (45 psi.), but preferably 6 bar (90 psi.).
- Ø A suitable connector for the blue water supply hose should be organised at this time.
- Ø Carefully open a drum of Astrip Concentrate and place the suction hose into the liquid.
- Ø Care should be taken to ensure that the drum is replaced when the Astrip Concentrate level is down to about 2" (5 cm).
- Ø Any remaining Astrip can be poured into the next drum to be used.
- Ø Failure to do this can lead to seizure of the dosing pump and to "wetting" with pure water. Amosite (brown) and Crocidolite (blue) asbestos are hydrophobic (see Basic Principles of Wetting A.C.M's). Attempting to wet A.C.M's with water will increase the time taken for the process.
- Ø Ensure that any spillage is cleaned up immediately.
- Ø Connect the blue water inlet hose (located at the left of the main unit) to the water supply. Ensure the connection is sound with no leakage.
- Ø Locate and secure the primary liquid distribution manifold in a suitable position within the working area. Connect the yellow outlet hose to the pressure regulating end of the primary distribution manifold.
- Ø A few minutes spent planning the layout of the needles will save time and connecting tubes.
- Ø Limit the number of injector units, where possible to around 25 from each outlet of the manifold.
- Ø Ensure that all injector unit valves have the indicating arrow facing towards you and set the injector unit pointer at 45° clockwise.
- Ø Start at the farthest point from the manifold. When around 25 injector units have been put in position, use the shortest possible coloured connection tube to connect to the distribution manifold.
- Ø Remember to keep these tubes running overhead if possible.
- Ø On completion of the installation of the needles: Turn on the water supply.
- Ø Turn on the water inlet valve.
- Ø Vent air from bleed points A and B.

- Ø *Please note bleed point B is self venting. Operators should be aware diluted fluid may escape from vent. This is normal and no action should be taken. Do not tighten the black cap on the vent as this will prevent self bleeding.
- Ø Turn on the mixed fluid valve turn on the on/off valve on the fluid distribution manifold.
- Ø Adjust the pressure regulating valve to show 3 bar on the pressure gauge.
- Ø After 15 minutes, turn the injector unit pointer valves clockwise.
- Ø As wetting commences adjust the pointer clockwise to give a liquid flow rate which is absorbable by the A.C.M. without wastage.
- Ø Ensure that the liquid is not leaking from around the inserted needles. If it is leaking, turn the pointer anti-clockwise.
- Ø Adjust the pressure on the primary liquid manifold to 3 bar.
- Ø Periodically check the condition of the A.C.M. by pressing the surface with a finger or thumb.
- Ø The ACM should feel soft when sufficient fluid has been absorbed.

LAYOUT OF RED BOX INJECTION MACHINE





Manifold

SHUTTING DOWN THE INJECTION SYSTEM

- Ø Each line can be shut off independently, enabling the needles to be repositioned. To take out one or more lines, close the valve(s) at the manifold. Allow a few minutes for fluid pressure in the line to dissipate. Remove the plug from the end of the line. Remove the extension tube from the manifold outlet.
- Ø Insert the plug into the manifold. It is useful to have a container available into which any fluid left in the line can be drained.
- Ø Disconnect the extension tube from the first set of injector units. Coil the tube and push the plain end into the straight connector.
- Ø Repeat this operation for each set of needles, turning the control valve to the "off" position.
- Ø If the injector units are not required again, rinse them in clean diluted Astrip and then rinse in clean water. Allow to dry before returning to their storage container.
- Ø As the needles are removed, check the pressure at the manifold, always maintaining 3 bar pressure.
- Ø When it is necessary to shut off the whole system, shut off isolator valve before all of the injector units have been shut off. This is to allow all liquid pressure to dissipate.
- Ø Insert a cap onto the end of the yellow hose when it has been disconnected from the liquid distribution manifold.
- Ø Discipline should be exercised to ensure that all injector units and tubes are removed from the working area when they are no longer required. This also applies to the liquid distribution manifold and yellow feed hose, unless this is required to supply the pipe cleaning tool and hand sprays (which can be used to wash off surfaces when the bulk of the A.C.M's have been removed).

CONTROLLED WETTING & MIST SPRAY

Only wets the outer surface and is **not suitable** for thick pipe insulation or sprayed coatings

This method may be used for material such as:

- Ø Preformed asbestos lagging sections on pipework, which are difficult to inject, these are normally held in place by tape or lacing wire, and if in reasonable condition can be removed and placed immediately into waste bag using a spray mist as the section is being removed.
- Ø Used for materials such as Asbestos Insulating Board (AIB) in spraying the surface of unpainted board.
- Ø Removal of asbestos cement / gaskets and floor tiles
- Ø Removal and clearing of Asbestos Debris.

HAND HELD SPRAYING

Can be done in two ways

- Ø For relatively small volumes of work asbestos operatives can use suitable 'hand held airless sprayers' using a mixture of water and surfactant (ratio 10:1)
- Ø Using a low pressure spraying machine below 50 psi (3.4 bar) (GRECO)

The object of undertaking controlled spraying during stripping is to;

- Ø Thoroughly wet the ACM.
- Ø Keep to a minimum the amount of fibre released by not disturbing the ACM.
- Ø Keep any run off to a minimum.

When removing any ACM using this method it has to be undertaken in conjunction with shadow-vac. A Type 'H' Vacuum which complies with PAS 60 must be used when undertaking Vacuum trace or shadow vacuuming.

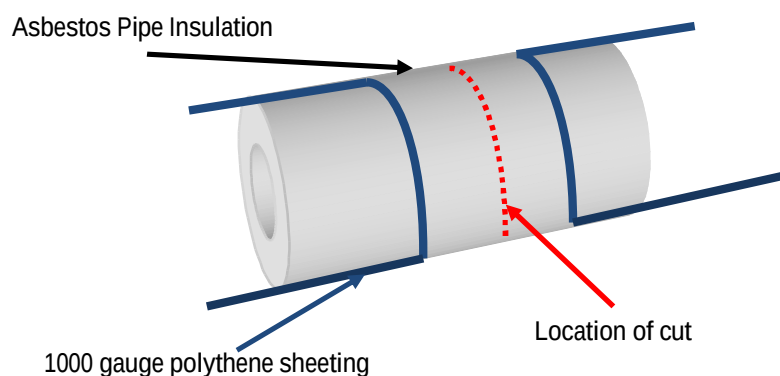
ISSUES WITH CONTROLLED WETTING WHEN REMOVING ACM'S

- Ø **WATER ON ITS OWN IS NOT ADEQUATE TO WET ASBESTOS FIBRES! A SURFACTANT MUST BE USED (ASTRIP in a RATIO of 1:10).**
- Ø If electrical equipment / circuits are present extreme care must be taken to isolate.
- Ø In hot environments steam can be generated which can result in an increase in the risk of heat stress.
- Ø Too much 'run off' can increase the risk of slips, trips and falling.
- Ø May encounter 'Dry Spots' when removing.

WRAP & CUT

Used where redundant pipe work or lagging is to be removed, the following procedure should be adopted;

- Ø Set up area in accordance with the Site Specific Plan of Work
- Ø Lagging / area is to be securely sealed and wrapped in 1000 gauge polythene.
 - o May require flame retardant polythene if using grinding wheels or flame cutting equipment.
- Ø The area around any cut must be injected, to prevent the release of asbestos fibres (ensure you have a Vibration Risk Assessment if using cutting tools)
 - o Tape around the area to be cut.
 - o Use injection equipment.
- Ø Cuts must be at;
 - o Natural breaks in the pipe run, flanges / pipe hangers.
 - o Long pipe runs – must be cut into manageable lengths.
- Ø Pipe / area with the asbestos lagging is removed as whole as possible.
- Ø Immediately place in a UN approved asbestos waste bag.



ENCAPSULATION

Normally used for small areas that have been damaged which, if left, could create a health hazard. It can also be used for sealing surfaces where the material is in a reasonably sound condition and is situated in remote areas where the chance of damage occurring is slight.

Normally undertaken using Idenden ET 150 encapsulation paint, this must be applied in two coats.

WET BLASTING (Quill Falcon)

Can be used where it is not practicable to clean an area by hand, can only be used after a suitable Risk Assessment has identified that the control limit will not be exceeded.

Sprayed Coating removal using wet blasting (Limpet)

Limpet will have to be removed using the Injection system and hand tools i.e. hand scrapers before using the wet blasting equipment to remove any residual sprayed coating.

Operating a Quill Falcon

This equipment is only to be;

- Ø Used in accordance with the manufacturer's instructions.
- Ø Used by operatives who have undergone suitable training and are competent to operate a wet blasting machine.
- Ø Permitted to undertake this task.

Suitable PPE must be worn at all times when operating a wet blast machine;

- Ø Hard hat with a Visor attached as it can damage Full Face RPE.
- Ø Wet weather coverall.
- Ø Waterproof gloves.

ASBESTOS STRIPPING SITUATIONS TO AVOID

UNCONTROLLED DRY STRIPPING.

The removal of ACM's in a 'DRY STATE' without any control measures results in extremely high levels of asbestos fibres being released and **MUST BE AVOIDED AT ALL COSTS and is UNACCEPTABLE.**

WORK IN HOT ENVIRONMENTS

When asbestos lagging is removed from pipes / boilers etc then the temperature within an enclosure can increase dramatically, this can increase the heat and relative humidity and increase the risk from heat stress on operatives inside the enclosure which could result in;

- | | |
|--------------------|----------|
| Ø Heat stroke. | Ø Burns |
| Ø Heat exhaustion. | Ø Scalds |
| Ø Heat stress | |

THE HSE HAVE ISSUED GUIDANCE WHEREBY THE 'CLIENT' MUST TAKE ALL REASONABLE STEPS TO ENSURE ANY ASBESTOS WORKS IN A HOT ENVIRONMENT SHOULD BE AVOIDED WITH REGARD TO ADEQUATE AND SUITABLE PLANNING.

Work must be planned and arranged with the client at an early stage so that hot work is avoided, where this cannot be achieved, a suitable and sufficient Risk Assessment must be undertaken, agreed and implemented BEFORE any work commences.

The Risk Assessment must take account of;

- Ø Suitable background WBGT readings.
- Ø Ongoing WBGT index readings.
- Ø Suitability of operatives – Fit enough to undertake the task – no health problems.
- Ø Time limit and duration of work inside an enclosure.
- Ø Agreed rest / work breaks.
- Ø Suitable and sufficient supply of 'chilled water'.
- Ø Equipment required.
- Ø Any air cooling equipment required.
- Ø Suitability of PPE.

ASBESTOS REMOVAL WHICH DOES NOT REQUIRE A LICENCE

The following Asbestos Materials in which the asbestos fibres are firmly linked in a matrix can be removed under NON-Licensed conditions:

- | | |
|---|------------------|
| Ø Asbestos cement. | Ø Gaskets. |
| Ø Textured decorative coatings and paints which contain asbestos. | Ø Washers. |
| Ø Bitumen. | Ø Rope. |
| Ø Plastic. | Ø String. |
| Ø Resin or rubber. | Ø Paper linings. |
| Ø Vinyl floor tiles. | |
| Ø Electric cables. | |
| Ø Roofing felt. | |
| Ø Cardboards. | |
| Ø Felt. | |
| Ø Textiles. | |
- o When Asbestos paper is firmly attached / part of a board then this must be treated as AIB and as such is an Asbestos Licensed Product
 - o When it is required to scrape or excessive ripping / tear the asbestos paper then this must be treated as an Asbestos Licensed Product

The following RPE & PPE must be worn at all times;

- Ø Respiratory Protective Equipment (RPE) must always be worn, ½ mask with FFP3 filters.
- Ø Coveralls type 5/6 must be worn.
- Ø Safety Glasses.
- Ø Safety Boots.
- Ø Gloves.

REMOVAL OF ASBESTOS CEMENT & ROOFING SHEETS

- Ø All areas where work with AC is taking place MUST be segregated and demarcated with suitable warning signs and barriers to exclude persons not involved in the work. (Asbestos Zone).
- Ø All fixtures and fittings should be removed from the area. Fixed equipment or furniture should be covered with impervious sheeting.
- Ø Where practicable the AC should be removed prior to demolition. The risks from working at height should also be taken into consideration.

The following general procedures should be applied where the AC is in good condition and a safe system of work and access can be provided to control the risk of injury from falls.

- Ø Clear all the areas below the roof sheeting of all items of plant, equipment etc.
- Ø Work from under the roof to remove the sheets using access equipment such as mobile elevating work platforms (MEWPS) with two operatives on the platform.
- Ø Cut roof sheet fixing bolts or hooks from securing point by mechanical means such as bolt croppers.
- Ø Slide one sheet at a time from its location and place into the MEWP platform.
- Ø Transfer sheets to ground and place into an adjacent waste skip.

If an asbestos cement sheet breaks during removal

- Ø Spray all the debris area with a fine water spray.
- Ø Pick up the debris and place into asbestos waste bags if small fragments, if large sections double wrap and then place directly into skip.

The following general procedures should be applied where sheets are disintegrating or the risk of falls is too great.

- Ø Clear all the areas below the roof sheeting of all items of plant, equipment and other fixtures and fittings.

- Ø Barrier off the whole work area and place warning notices.
- Ø Check all areas of the building and seal up all unnecessary access points.
- Ø Keep the roof work areas wet with fine controlled water sprays.
- Ø Then in a pre-planned sequence using mechanical plant, gently push the sheets inwards in a controlled manner.
- Ø Place the large sections directly into the skips and small pieces of debris into asbestos waste bags.

General Safety Precautions:

- Ø During removal all AC sheeting should be kept damp by controlled water sprays.
- Ø Debris should be routinely cleared as demolition progresses where safe to do so.
- Ø Select methods which avoid breaking the sheets. AC roof sheets are normally fixed in one of two ways, the sheets are either screwed through from the top into the purlins, or the sheets are hooked onto the roof frame.
- Ø In the case where the sheets are screwed to the purlins bolt croppers should be used to crop the screw from the top side of the roof sheet.
- Ø Where the sheets are hooked from below, hook should be cut using bolt croppers or flame cutting.
- Ø Avoid the use of power tools or the use of dry abrasive processes.
- Ø Keep the AC wet when working on it.
- Ø Where possible, lower the AC on to a clean hard surface.
- Ø Do not dry sweep AC debris.
- Ø All waste is to be placed in 'UN' approved asbestos waste bags and sealed and secured so as to prevent the spread of asbestos dust.

REMOVAL OF TEXTURED COATING (ARTEX)

- Ø Textured coatings on board – the most effective method is to remove the board complete.
- Ø Removal of asbestos containing textured coating on concrete, brick, or block. Use of abrasive methods should be used with caution and only after adequate risk assessments have been carried out.
- Ø Chemical treatments such as Extex are very effective non toxic products and these are to be used.

The immediate area must be cordoned off to prevent access to unauthorised person and suitable warning signs are to be displayed at the entrance points to the asbestos zone.

The following RPE & PPE must be worn at all times;

- Ø Respiratory Protective Equipment (RPE) must always be worn, ½ mask with FFP3 filters.

- Ø Coveralls type 5/6 must be worn
- Ø Safety Glasses
- Ø Safety Boots
- Ø Gloves

General requirements

- Ø Where work is being carried out in areas where water, fire or other damage has occurred pre cleaning of the area will be required
- Ø Due to difficulty in carrying out adequate dust suppression during removal of Textured Coating a full polythene enclosures must be provided under negative pressure in order to prevent the spread of dust.
- Ø The work area must be segregated using the existing room or a purpose built enclosure
- Ø A Hygiene Unit must be provided to ensure that operatives adequately decontaminate themselves.

Access requirements

- Ø Access to the enclosure must be through a three stage airlock, where possible.
- Ø The airlock must be at least 1m x 1m x 2m, however a smaller airlock may be used where space constraints exist i.e. Domestic property

Final clearance visual inspection

- Ø The area should be thoroughly cleaned and a visual inspection carried out before it is returned to the occupier
- Ø An independent Clearance air monitoring is not necessary and a Shield Environmental Services certificate of reoccupation must be produced, a statement signed by the supervisor completing the visual inspection must be provided.
- Ø All waste is to placed in 'UN' approved asbestos waste bags and sealed and secured so as to prevent the spread of asbestos dust.

REMOVAL OF ASBESTOS CONTAINING VINYL FLOOR TILES

The following RPE & PPE must be worn at all times;

- Ø Respiratory Protective Equipment (RPE) must always be worn, ½ mask with FFP3 filters.
- Ø Coveralls type 5/6 must be worn
- Ø Safety Glasses
- Ø Safety Boots
- Ø Gloves

The immediate area must be cordoned off to prevent access to unauthorised persons and suitable warning signs are to be displayed at the entrance points to the asbestos zone.

- Ø The doors to the area must be covered with 1000 gauge polythene and 'double flapped'.
- Ø All fixtures and fittings should be removed from the area.
- Ø Fixed equipment or furniture should be covered with impervious sheeting.
- Ø Remove the tiles carefully using hand held scrapers or shovels.
- Ø When a hand held 110v vinyl floor tile breaker is to be used then a Vibration Risk Assessment must be completed.
- Ø All waste is to be placed in 'UN' approved asbestos waste bags and sealed and secured so as to prevent the spread of asbestos dust.
- Ø After the tiles have been removed the floor area is to be cleaned using a type 'H' vacuum and tac-rags.
- Ø On completion of removal of all floor tiles a dilute solution of PVA is to be applied to the floor area.

REMOVAL OF ASBESTOS CONTAINING GASKETS (CAF / Rope / String)

The following RPE & PPE must be worn at all times;

- Ø Respiratory Protective Equipment (RPE) must always be worn, ½ mask with FFP3 filters.
- Ø Coveralls type 5/6 must be worn
- Ø Safety Glasses
- Ø Safety Boots
- Ø Gloves
- Ø The immediate area must be cordoned off to prevent access to unauthorised persons and suitable warning signs are to be displayed at the entrance points to the asbestos zone.
- Ø 1000 gauge polythene sheeting is to be laid on the floor to cover the surrounding area
- Ø The gasket is to be sprayed with a solution of ASTRIP (ratio 1:10).
- Ø Carefully peel away the gasket whilst 'shadow vacuuming with a type 'H' Vacuum.
- Ø The area is then to be cleaned with wire brushes, hand held scrapers and tac rags.
- Ø All waste is to be placed in 'UN' approved asbestos waste bags and sealed and secured so as to prevent the spread of asbestos dust.
- Ø The area is then to be visually checked for any dust / debris and cleaned as necessary with a type 'H' vacuum.

ENCAPSULATION OF ASBESTOS MATERIALS

Encapsulation of Sprayed Coating or Pipe / Boiler lagging which is in GOOD condition may be undertaken without notification to the Enforcing Authorities as UNLICENSED WORK.

Encapsulation of Sprayed Coating or Pipe / Boiler lagging which is in POOR condition will be required to be notified to the Enforcing Authorities as LICENSED ASBESTOS WORK.

The following RPE & PPE must be worn at all times;

- Ø Respiratory Protective Equipment (RPE) must always be worn, minimum ½ masks with FFP3 filter attached.
- Ø Coveralls type 5/6 must be worn.
- Ø Safety Glasses.
- Ø Safety Boots.
- Ø Gloves.

ENCAPSULATION PROCEDURE

- Ø All asbestos materials insulation must be sprayed with a dilute solution of PVA before encapsulation
- Ø The area to be encapsulated is then to be wrapped / covered with a layer of Calico (wetted)
- Ø Apply a coating of Idenden ET150 Encapsulation paint applied by brush and then allowed to dry. It may also be applied by an airless sprayer.
- Ø A 2nd coat of ET150 must then be applied and allowed to dry.
- Ø Once completely dried clearly visible 'Asbestos Warning' labels must be affixed at least every 2 m.
- Ø The area around the encapsulation works must then be thoroughly cleaned using type 'H' Vacuums and tack-rags.
- Ø Where there are areas which may be subsequently accidentally damaged then a protective layer may be applied i.e. Aluminium Stucco, plywood sheeting & 'No Nails' etc.

18. WASTE REMOVAL

WHEN ANY ASBESTOS MATERIAL is too large for the asbestos waste bags, the asbestos material must be double wrapped in polythene and sealed, a red asbestos bag being placed internally to identify 'asbestos waste'. It is not acceptable for the material to be broken up to fit into the bag as this creates unacceptably high fibre levels.

Any asbestos which has been removed from its original place of use, irrespective of the condition of the material, is defined as Asbestos Waste', this includes debris, dust and associated rubble, and must be disposed of as Hazardous Waste.

ASBESTOS WASTE ALSO INCLUDES;

- Ø Disposable PPE.
- Ø Disposable RPE filters.
- Ø Waste Rags, Cloths and towels used for cleaning.
- Ø Enclosure building materials and any items that have been inside the working enclosure which cannot or will not be effectively decontaminated.
- Ø Waste water from buckets (dispose of through DCU filter unit / bag water).

All waste must be disposed of in accordance with the Hazardous Waste (England) Regulations 2005 consignment note system and The Waste (Duty of Care) Regulations.

WASTE CONTAINERS (UN PACKAGING)

All Asbestos waste must be disposed of using "Approved UN Waste Packaging" which has been subjected to rigorous testing to withstand handling and transport by road so that they comply with The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007 (CDG) and The Control of Asbestos Regulations 2006.

Bag Markings -  5H4/Y25/S/GB/1234

Only approved "UN 5H4 packaging" (Asbestos Waste Bags) or 1000 gauge polythene is to be used to wrap / dispose of Asbestos Waste.

- Ø Y25 - means the bag has been tested to withstand a weight of 25 kg and can only carry up to 25 kg, Y18 can carry up to 18 kg.
- Ø S – Designed to take Solids.
- Ø GB – Made in GB.
- Ø 1234 – Manufacturers serial number.

BAGGING FIBROUS ASBESTOS WASTE

ALL fibrous asbestos waste without exception must be placed in UN Approved **red** bags and then in a UN Approved clear bag or double wrapped in polythene.

BONDED ASBESTOS WASTE

All Bonded Asbestos waste (cement / floor tiles / artex) should be placed in a UN Approved clear bag and then inside another UN Approved clear bag.

When bagging any asbestos waste it should not be 'broken' to fit into the bag and must be double wrapped in 1000 gauge Polythene.

USING ASBESTOS WASTE SKIPS / VEHICLES

When large amounts of asbestos cement sheeting are to be removed using a skip / lorry it must be 'LINED' with polythene and then cover over & seal with tape for transit, if the intact AC sheets are not wrapped individually.

Any waste skip which is used must be of the 'enclosed' type which is clearly marked with asbestos warning signs and be capable of being locked and secured.

Any broken pieces of Asbestos / debris / coveralls should be double bagged as normal.

REMOVING AND BAGGING / SEALING ASBESTOS WASTE;

- Ø Ensure sufficient UN Approved waste bags / polythene is available before commencing the work.
- Ø Ensure that the waste has been dampened down or is wet.
- Ø Use waste bags directly beneath the work area.
- Ø Place the waste carefully into a red waste bag and seal with strong tape.
- Ø Bags should not be over filled.
- Ø Wipe the bag down and place in the inner stage of the bag lock.
- Ø Pass the red bag to the middle section of the baglock and place in a clear asbestos waste bag and clean and seal in the same manner.
- Ø The double bagged waste should then be placed in the outer stage of the baglock.
- Ø The waste can now be removed, along the waste route, to a sealed skip / van.
- Ø Once outside the enclosure the waste should either be secured but must never be left unattended.
- Ø Waste must not be allowed to accumulate and should be removed on a daily basis.

TRANSFER OF WASTE TO SEALED SKIP / VEHICLE

The skip / vehicle should be as close as possible to the working area.

The operative transferring the waste must wear

- Ø Type 5 fibre proof coveralls.
- Ø ½ mask with FFP3 Filter attached.
- Ø Suitable safety footwear.
- Ø Gloves.

VEHICLE REQUIREMENTS WHEN MOVING ASBESTOS WASTE BY COMPANY VEHICLE:

- Ø Asbestos waste **MUST NOT BE CARRIED** in any vehicle which does not have a sealed bulkhead between the driving compartment and the load compartment.
- Ø All compartments in the vehicle must be suitably sealed with mastic. This must be checked as part of the weekly van audit and renewed when necessary.
- Ø Asbestos Waste must be stored in the designated waste compartment on the vehicle.
- Ø Waste must NOT be stored with any other equipment.
- Ø Waste bags must be protected from puncture when in transit
- Ø The waste compartment must be thoroughly cleaned out after transporting asbestos waste.
- Ø Air monitoring is to be undertaken in the van compartments in accordance with the Company Audit Policy. (At least once a quarter).

HANDLING ASBESTOS WASTE

- Ø ALL asbestos waste must be stored in a secure location, such as;
 - o Waste compartment within a secure locked Van.
 - o Skip with a lock or robust padlock.
 - o Secure locked room on site until ready for collection.
- Ø No Asbestos Waste is to be left on site / unattended unless it is secure
- Ø ALL Waste skips must be suitable for purpose / clean & clearly marked with asbestos labels.

DO NOT UNDER ANY CIRCUMSTANCES LEAVE ANY ASBESTOS WASTE UNATTENDED WHICH IS NOT IN A SECURE LOCATION.

WASTE BAGGING AND REMOVAL PROCESS

Ensure you have sufficient APPROVED 'UN' Asbestos Waste bags for the amount of waste you are removing



Carefully place asbestos waste into a RED asbestos waste bag.
DO NOT OVEFILL OR DAMAGE THE BAG



Using a type 'H' vac remove all the air from the bag, 'Swan Neck' and seal with cloth tape



At the entrance to the enclosure / baglock wipe and clean the bag down and place in a 'CLEAR' waste bag in the middle section of the BAGLOCK



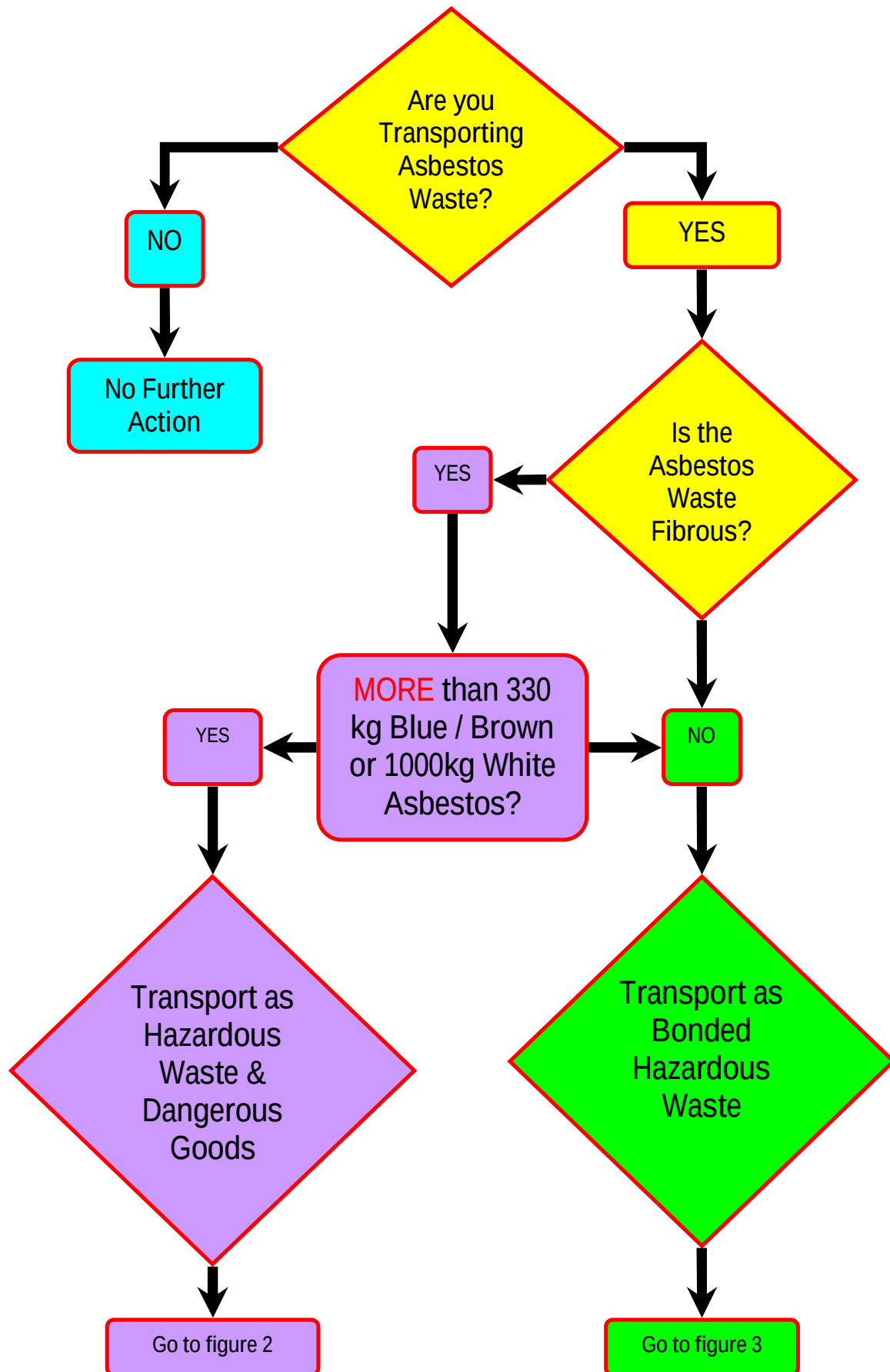
Using a type 'H' vac remove all the air from the 'CLEAR' bag, 'Swan Neck' and seal with cloth tape

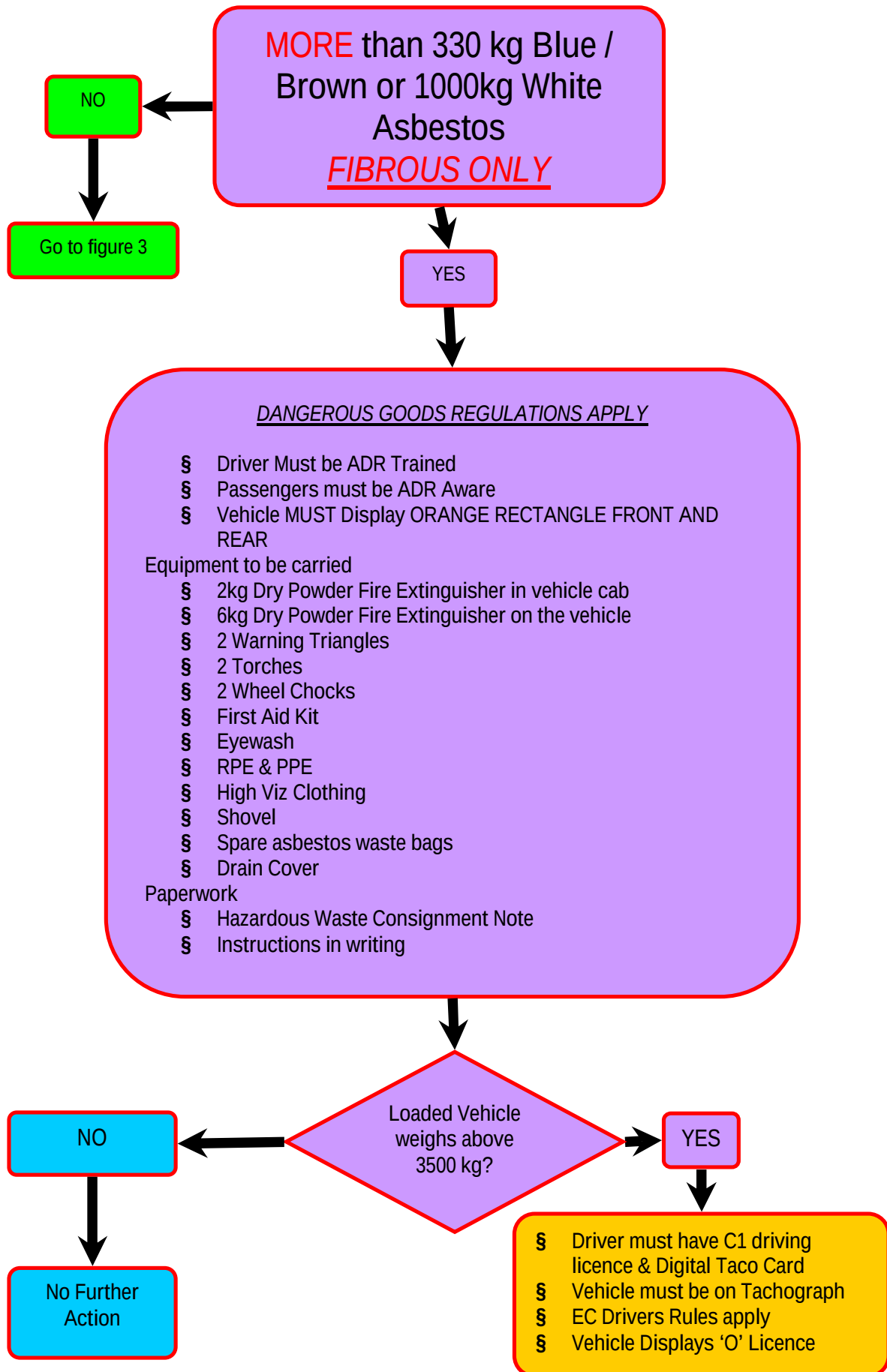


Outside man wearing half mask / coveralls / safety goggles remove the 'double bagged' waste along the designated waste route to the Waste Skip / Vehicle



Carefully place the waste into the Waste skip / Vehicle





§ Bonded Asbestos Waste
(Cement, Artex, Floor Tiles, Gaskets, Plastics etc)
OR
§ **Less** than 330 kg Blue / Brown or 1000kg White
Asbestos Fibrous Asbestos Waste

YES

Driver & Passenger must be
ADR Awareness Trained

Equipment to be carried

- § 2kg Dry Powder Fire in Cab
- § RPE & PPE
- § High Viz Clothing

Paperwork

- § Hazardous Waste
Consignment Note for
load

Loaded Vehicle
weighs above
3500kg?

NO

No Further
Action

YES

- § Driver must have C1 driving licence
& Digital Taco card
- § Vehicle must be on Tachograph
- § EC Drivers Rules apply
- § Vehicle Displays 'O' Licence

19. CLEANING ENCLOSURES IN PREPARATION FOR 4 STAGE CLEARANCE

On completion of the removal of ALL ASBESTOS, any removal equipment within the scope of works must be cleaned of all Asbestos dust / debris.

NO DRY BRUSHING IS ALLOWED AT ANY TIME as this potentially could create fibres levels above the Control Limit and as such **IS PROHIBITED!**

ALL NPU's must be cleaned and have new filters inserted.

All Vacuums are to be emptied and clean bags inserted.

Site Supervisor is to undertake a visual inspection of ALL work areas to ensure that all visible traces of dust debris have been removed.

Once the supervisor is satisfied that the area is free from any visible asbestos debris or dust then arrangements should be undertaken to carry out the 4 stage clearance.

ROLE OF THE ANALYST in Asbestos Removal

The Asbestos Site supervisor must be in attendance throughout the 4 stage clearance procedure accompanied by the analyst.

Upon completion of the asbestos removal operations, the premises must be assessed to determine whether they are thoroughly clean and fit to be returned to normal occupation.

CLEARANCE CERTIFICATION – COMPETENT PERSON:

The person carrying out the clearance must be independent and UKAS accredited to ISO 17020 and ISO 17025. This is undertaken in accordance with the following HSE Guidance

Asbestos: The analyst' guide for sampling, analysis and clearance procedures. HSG248 HSE BOOKS ISBN 0717628752

Site clearance certification should be carried out when all work has been completed and should comprise of four successive stages details of which are as follows:

Note: Sealants e.g. PVA's ARE NOT to be used on any surfaces including enclosure sheeting and area should be completely dry.

FOUR STAGE SITE CLEARANCE (LICENSED ASBESTOS REMOVAL)

Stage One: Preliminary check of site paperwork, site conditions and job completeness.

Stage Two: A thorough visual inspection inside the enclosure / work area.

Stage Three: Clearance air monitoring.

Stage Four: Final assessment post enclosure / work area dismantling.

The analyst will complete all stages one to four.

Stage One: Preliminary check.

The work area, enclosure, hygiene facilities, and controls (extractor, vacuums etc) should be intact, operable and clean, with all asbestos material included in the scope of work and non essential contaminated equipment removed. The site area must be clean and free from any signs of asbestos waste.

Areas to be inspected should include:

- Ø The work area. (Initially visual through viewing panels / CCTV).
- Ø Surrounding area.
- Ø Hygiene Unit.
- Ø Transit route (where applicable).
- Ø Waste route together with the area around the waste disposal storage.

All of the above must be free of asbestos containing waste and debris of any kind, the result of the pre-inspection should be recorded. To establish the scope of clearance, the plan of work (method statement) should be referred to and the extent of the clearance being sought agreed and recorded. A note should be made of any remaining asbestos which was outside the scope of work.

Stage Two: Thorough Visual Inspection.

Carried out to make sure that all visible traces of asbestos and other dust and debris have been removed, as far as is reasonably practicable both inside the enclosure including airlocks.

- Ø This will be undertaken using a torch and a NEW 'PLASTIC' brush.
- Ø ALL NPU's to be cleaned and clean filters fitted
- Ø Type 'H' vacuums to be emptied and a clean bag inserted

Stage Three: Clearance Air Monitoring

- Ø Involves the introduction of air monitoring pumps to assess the levels of airborne fibres within the working enclosure. Carried out by the appointed analyst.

The air clearance criteria, less than 0.01 f/ml must be achieved before proceeding to Stage 4.

Stage Four: Final Assessment Post Enclosure/Work Area Dismantling

After the enclosure or work area has passed the visual inspection and air clearance monitoring the enclosure can be dismantled.

A type 'H' vacuum and suitable PPE/RPE should be readily available during dismantling as a precaution in order to enable any small amounts of debris to be cleaned up, which may have lodged

behind the fabric of the enclosure or within the folds of the polythene sheeting or on the floor underneath.

Once the enclosure has been dismantled, the analyst should visually inspect the area again to ensure that all debris has been removed.

Where there is evidence of dust or debris being released during dismantling of the enclosure which cannot be easily removed by vacuum, the area shall be re-enclosed, re-cleaned, the visual inspection repeated and further air testing carried out.

CLEARANCE CERTIFICATION (CERTIFICATE OF REOCCUPATION)

Once all four stages are completed satisfactorily a certificate of reoccupation shall be issued indicating the area is fit for normal occupation. The level for clearance is less than 0.01 f/ml.

The certificate will include details of site address, dates of work, brief description of work and the name of the contractor. Details of clearance action that was undertaken at each stage and the specific area and items checked.

A copy of the clearance certificate must be given to the client and a copy retained within the site file.

Finally air clearance shall be obtained for the shower and dirty areas of the hygiene unit.

A copy of DCU clearance certificate must be displayed in the DCU.

ANALYST – PERSONAL DECONTAMINATION

In order to avoid any controversy between Shield Environmental Services' site operatives and the analyst in respect of the analyst's personal decontamination procedures, the following is the recommendation as laid down in

Asbestos: The analyst' guide for sampling, analysis and clearance procedures. HSG248 HSE BOOKS ISBN 0717628752 para 9.3

"Analysts should always undertake decontamination. The type of decontamination will depend on the activity undertaken and the potential or extent of contamination that occurs during the activity. The required decontamination level should be considered as part of the risk assessment for the work. In many cases, it will be sufficient for the analyst carrying out routine site work (e.g. certificate of reoccupation and building surveys) to undertake the 'preliminary' decontamination procedure. However, if analysts are entering enclosures when asbestos removal work is taking place e.g. as part of SLH duties, or in the professional opinion of the analyst, there is potential for contamination to occur, (e.g. crawling through undercrofts to inspect, survey or collect sampling pumps) the analyst should undergo full decontamination (preliminary and final decontamination) on exit from the enclosure.

The analyst should therefore dress appropriately for this type of decontamination. In addition there may be circumstances where full decontamination was not planned but becomes necessary."

Asbestos Removal Operatives must adopt full changing and transit procedures until final air clearance is obtained from the analyst concerned.

AIR MONITORING

The purpose of air monitoring is to ensure that airborne levels of asbestos do not exceed the permitted limits and other specific parameters laid down in the Regulations.

CONTROL LIMIT

Control Limit for ALL FORMS of Asbestos are:

- Ø For all Asbestos Containing materials 0.1 f/ml calculated in relation to a 4-hour reference period.
- Ø A Short Term Exposure Limit (STEL) of 0.6 f/ml for any 10 minutes

If any control limit is likely to be exceeded when undertaking asbestos removal work then this work will NOT be of “sporadic and low intensity” and as such it automatically becomes licensed removal work.

The control limits do not represent safe levels. They represent the upper limits of permitted exposure determined by air sampling and that every effort has been made to reduce the levels to as low as is reasonably practicable.

Personal Sampling inside Working Enclosure.

This is used to:

- Ø Monitor the method of work i.e. control measures, ensuring that fibre levels are within acceptable parameters.
- Ø To support current and future Risk Assessments
- Ø Create a database for work of a similar nature.
- Ø Ensure that Assigned Protection Factor of the respirator being used is not being exceeded.
- Ø For medical surveillance records, which are kept for 40 years

This needs only to be undertaken on a single person within the enclosure.

Static Sampling

- Ø Background sampling to establish fibre concentrations before any activity which may lead to airborne asbestos contamination.
- Ø Leakage testing to ensure that the steps taken to prevent the enclosure leaking are and remain effective and it is not releasing airborne respirable fibres.
- Ø Reassurance sampling, which may be conducted in certain circumstances to confirm that the residual asbestos fibre concentrations are <0.01 f/ml.

20. EMERGENCY PROCEDURES

The following procedures are to be put in place should an accident, incident or emergency occur which could people at risk because of the presence of asbestos or otherwise.

Such events may include;

- Ø An employee collapsing or suffering a serious injury within an active stripping enclosure.
- Ø An uncontrolled release of asbestos e.g. damage to the enclosure.
- Ø Spillage from asbestos waste bags when removing waste.
- Ø Fire within or outside the enclosure.

ALL site based employees are to make themselves aware of these requirements.

The nominated Site Supervisor is to take charge in the event of a site emergency

IN THE EVENT OF PERSONAL INJURY OR COLLAPSE

In the event of an accident requiring an injured person to be removed from the area, the following procedures apply:

The victim comes first. The risk to his health is immediate and obvious. Other considerations are secondary.

- Ø Call a first aider and send someone to call the emergency services.
- Ø As far as practicable, operatives should vacuum clean the victim and themselves and the immediate vicinity, using a type 'H' vacuum.
- Ø Respirators and boots should be sponged clean.
- Ø If breathing has ceased, respirators will have to be removed in order to apply mouth to mouth resuscitation.
- Ø If the victim can be moved, remove him from the working area. If necessary, slit & reseal the enclosure.
- Ø Once outside the enclosure cut off contaminated clothing and bag as waste. This will enable the victim to be wrapped in a blanket and transported by ambulance without contaminating the ambulance.
- Ø Direct and assist the emergency services so as to ensure the quickest possible attention to the victim.
- Ø When the victim is in competent hands, completely decontaminate all equipment and personnel.

All supervisors are issued with a company mobile phone in case of emergency; the emergency services should be contacted by dialling 999

The branch/office should then be notified of the details of the incident (if unable to contact your office then Bristol Branch should be notified on 0117 960 6366) and you must include the following information: -

- Ø Name of employee or employees injured (in case family need to be contacted).
- Ø Location (as per method statement if not sure).
- Ø Details of injury.
- Ø Where casualty is being taken.
- Ø Names of any other casualties not in our employment.

Ensure the full site address is given to the relevant emergency service; this is to be found on the front cover of the Site Specific Method Statement

FIRE

All site staff must make themselves aware of / be instructed to use the following:

- Ø The alarm signals for evacuation.
- Ø How to operate the alarm system.
- Ø How to operate the fire extinguishers.
- Ø The most direct exit routes in the event of an emergency.
- Ø The circumstances in which the site water supply may be used to fight fire.

In the event of a fire the procedure will be:

- Ø Raise the alarm.
- Ø If the fire is in the enclosure, or the enclosure is penetrated, switch off all negative pressure equipment.
- Ø Attempt to put out the fire if possible without personal risk.
- Ø Evacuate the area, cutting the enclosure if necessary.
- Ø Assemble at a designated assembly point.

Site management/supervisor will be instructed to contact the emergency services immediately upon hearing the alarm.

When first attending a site the above information is often displayed in the reception area and is usually freely available. Should this not be the case, ask at reception for the Fire Alarm action plan and details of Muster Points.

It is important and good practice (where possible) to sign in and out when you arrive and leave site.

Lives could be put at risk trying to save individuals believed to be on site that may have left.

If possible request that the fire alarm be tested when inside the enclosure to ensure that it can be clearly heard.

UNCONTROLLED RELEASE OF ASBESTOS & PENETRATION OF THE ENCLOSURE

Ensure that any people in the vicinity who are not wearing PPE / RPE are instructed to leave THE AREA IMMEDIATELY

If a "LIVE" asbestos working enclosure is penetrated:

Ø STOP WORK IMMEDIATELY!!

- Ø Ensure that all connected negative pressure units are operating at full capacity.
- Ø Gently spray a curtain of water on surfaces in the immediate vicinity of the penetration.
- Ø Where possible maintain this water curtain until the penetration is sealed.
- Ø Place plastic sheeting over the penetration and temporarily secure it.
- Ø After 15 minutes shut off negative pressure units and carry out a smoke test, sealing where necessary.
- Ø Vacuum clean all surfaces in the vicinity of the penetration. Where practicable spray a solution of PVA.
- Ø Carry out air sampling and cleaning until a clearance certificate can be issued.

UNAUTHORISED ENTRY TO A LIVE ENCLOSURE

In the event of unauthorised entry the trespasser must be dressed in overalls over all other clothing and taken to the hygiene facility. At the start of the personal decontamination procedure all clothing must be removed and disposed of as contaminated waste.

ACTION IN THE EVENT OF SPILLAGE OF ASBESTOS WASTE

- Ø Clear the area of all personnel except those dealing with the spillage.
- Ø Erect barriers to prevent personnel approaching the spillage.
- Ø If outdoors, cover with suitable sheeting, e.g. polythene sheet, heavy paper, cardboard, and weight the edges to prevent fibres being blown about by the wind.
- Ø Using a fine water spray allow a curtain of water to fall on the spilled material until it is thoroughly dampened.
- Ø DO NOT AIM SPRAY DIRECTLY AT THE MATERIAL.

- Ø Using a shovel and scraper, not a broom, place the bulk of the material into a new asbestos waste bag, when this is half full, seal it and "double-bag" it in the usual way. Dispose of any covering material as contaminated waste.
- Ø Clean up the immediate area using an approved filtered vacuum cleaner.
- Ø Having air samples taken to ensure that the area is fit for reoccupying, continue cleaning until it is.
- Ø Remove barriers.
- Ø INFORM Your Contracts manager if you cannot deal with the situation.

ACCIDENT REPORTING

It is essential that where any person has been injured or where damage to property or equipment or the environment has occurred, it must be reported and investigated thoroughly, this will enable you in conjunction with the company to prevent it happening again.

WHAT TO REPORT

ANY Personal Accident to any person including members of the public, Near Miss, Dangerous Occurrence or Environmental Incident.

HOW TO REPORT AN ACCIDENT

1. All incidents and near misses must be reported using the company Incident Form, copies must be sent to the H&S Manager **IMMEDIATELY**.
2. Details of any injury to any person must be made in the Branch Accident Books. The completed accident book entry must be removed and kept in the employees Personnel File

ACCIDENT INVESTIGATION

Any accident which requires any person (i.e. employee, other contractor or member of the public) to seek medical advice / First Aid and does not return to work immediately (Minor Injury) or is off work as a result of ANY Incident will be investigated by the H&S Manager.

"MINOR INJURY"

This where an employee has been injured and has returned to work immediately. E.g. minor cut or slip etc. There is no requirement to report this to the HSE unless it becomes an 'over 3 day' injury.

"OVER 3 DAY" RIDDOR

If an employee is 'OFF' work for 3 days or more this must be notified to the HSE within 10 days of the accident occurring, This will be undertaken by the H&S Manager after a full investigation in partnership with the Branch / Contracts Manager has been completed. A report will be submitted to the Management Board for review and action.

Over 3 day does not include the day of the accident but does include weekends

e.g. employee suffers accident on the Wednesday and does not return to work until the following Monday then this classed as 'Over 3 Days'.

“MAJOR INJURY / DEATH”

If any person suffers any of the following;

- Ø Death of anyone as a result of Shield Environmental work activities
- Ø Injury to a member of the public who is taken to hospital
- Ø Fracture other than to fingers, thumbs or toes;
- Ø Amputation;
- Ø Dislocation of the shoulder, hip, knee or spine;
- Ø Loss of sight (temporary or permanent);
- Ø Chemical or hot metal burn to the eye or any penetrating injury to the eye;
- Ø Injury resulting from an electric shock or electrical burn leading to
- Ø Unconsciousness or requiring resuscitation or admittance to hospital for more than 24 hours;
- Ø Any other injury: leading to hypothermia, heat-induced illness or unconsciousness; or requiring resuscitation; or requiring admittance to hospital for more than 24 hours
- Ø Unconsciousness caused by asphyxia or exposure to a harmful substance or biological agent;
- Ø Acute illness requiring medical treatment, or loss of consciousness arising from absorption of any substance by inhalation, ingestion or through the skin;
- Ø Acute illness requiring medical treatment where there is reason to believe that this resulted from exposure to a biological agent or its toxins or infected material.

Immediately telephone

1. Managing Director
2. Health & Safety Manager
3. Relevant Shield Environmental Services Director

“DANGEROUS OCCURRENCE”

- Ø Collapse, overturning or failure of load-bearing parts of lifts and lifting equipment;
- Ø Explosion, collapse or bursting of any closed vessel or associated pipework;

- Ø Failure of any freight container in any of its load-bearing parts;
- Ø Plant or equipment coming into contact with overhead power lines;
- Ø Electrical short circuit or overload causing fire or explosion;
- Ø Any unintentional explosion, misfire, failure of demolition to cause the intended collapse, projection of material beyond a site boundary, injury caused by an explosion;
- Ø Accidental release of a biological agent likely to cause severe human illness;
- Ø Failure of industrial radiography or irradiation equipment to de-energise or return to its safe position after the intended exposure period;
- Ø Malfunction of breathing apparatus while in use or during testing immediately before use;
- Ø Failure or endangering of diving equipment, the trapping of a diver, an explosion near a diver, or an uncontrolled ascent;
- Ø Collapse or partial collapse of a scaffold over five metres high, or erected near water where there could be a risk of drowning after a fall;
- Ø Unintended collision of a train with any vehicle;
- Ø Dangerous occurrence at a well (other than a water well);
- Ø Dangerous occurrence at a pipeline;
- Ø Failure of any load-bearing fairground equipment, or derailment or unintended collision of cars or trains;
- Ø Road tanker carrying a dangerous substance overturns, suffers serious damage, catches fire or the substance is released;
- Ø A dangerous substance being conveyed by road is involved in a fire or released;
- Ø Unintended collapse of: any building or structure under construction, alteration or demolition where over five tonnes of material falls; a wall or floor in a place of work; any false-work;
- Ø Explosion or fire causing suspension of normal work for over 24 hours.

Immediately telephone

1. Managing Director
2. Health & Safety Manager
3. Relevant Shield Environmental Services Director

21. REQUIREMENTS FOR DRIVERS AND VEHICLE

The following must be adhered to when driving any company vehicle:

Lorries

All Lorries must be included on Shield Environmental Services' 'Operators Licence' and must not travel on the Public Highway until this has been issued.

Where the maximum weight of the vehicle exceeds 3.5 tonnes, the driver transporting the waste is required to have undertaken and passed Dangerous Goods Vocational Training Certificate (ADR) and the Passenger must have undergone Dangerous Goods Awareness Training.

The above ADR training is valid for 5 years from the date of issue.

(This does not apply to the carriage of 'BONDED ASBESTOS')

Documentation

The following documentation must be carried when transporting asbestos waste

- Ø Drivers Driving Licence.
- Ø Drivers ADR Driving Certificate.
- Ø Tachograph cards or Digital Tachograph Card.
- Ø Copy of 'O' Licence displayed in the cab alongside the vehicle tax disc.
- Ø Emergency 'Instructions in writing' in the vehicle cab.
- Ø Hazardous Waste Disposal certificates.

Equipment

The following vehicle equipment must be carried at all times on the vehicle.

- | | |
|---|--|
| Ø 2kg Dry Powder (in the cab) and a 6kg Dry Powder fire extinguisher on the vehicle | Ø A Torch for the driver and any passenger |
| Ø FIRMLY ATTACHED Orange rectangular panels on the back / front of the vehicle | Ø 2 Warning Triangles |
| Ø Hi Viz clothing (two sets) | Ø 2 Wheel Chocks |
| Ø Disposable RPE and disposable coveralls (two sets) | Ø Eye wash bottle |
| | Ø Drain covers |
| | Ø Plastic Shovel |

Company Vans

Where the vehicles gross maximum weight is less than 3.5 tonnes (LARGE VAN) and less than 1000kg of chrysotile or 330kg of amphiboles are carried then the Dangerous Goods requirements DO NOT APPLY and the orange panels are not required to be displayed.

A 2kg Dry Powder Fire extinguisher must be carried in the cab.

Overweight Vans

The maximum weight which our larger vans are allowed to carry is **UP TO 3.5 Tonne**, this includes the weight of the;

- Ø Vehicle **AND**
- Ø Driver and any passengers **AND**
- Ø Equipment and goods carried **AND**
- Ø Any Asbestos Waste carried on board.

**It is the drivers responsibility to ensure that his vehicle is NOT
OVERWEIGHT**

+++++ DO NOT OVERLOAD YOUR VEHICLE +++++

Towing DCU's

Any driver who passed their CAR Driving Test AFTER 1st Jan 1997 is not legally entitled to drive a company vehicle whilst towing a DCU, unless, they have successfully completed the appropriate DVLA examination for this.

IT IS NOT PERMITTED to tow a DCU outside a 50km radius (30 Miles) of the branch office, or from where it is collected from, unless the vehicle has a Tachograph fitted and the driver is in possession of a valid digital tachograph card.

22. SCAFFOLDS FOR LICENSED ASEBSTOS REMOVAL

A Licensed Asbestos Scaffold company who hold a valid 'Ancillary' License issued by the HSE ALU must be used where it is "foreseeable that the scaffolding activity is likely to disturb asbestos" such as;

- Ø The erection / altering / maintenance or dismantling of a scaffold which forms the key part of the frame work or the overall support from which an enclosure will be built for licensable asbestos work
- Ø Or where it is likely that asbestos could be disturbed by the scaffolding activity.

Examples of when a Licensed Scaffold **IS REQUIRED**

- Ø Scaffold is used to support the enclosure.
- Ø Scaffold is required as part of an environmental clean.
- Ø Scaffolding 'inside' a 'Live' enclosure.
- Ø Erecting a scaffold in an area which is complex and disturbing the Asbestos is likely.

Examples of when an Asbestos Scaffolds is **NOT REQUIRED**

- Ø Where the scaffold is only used for access e.g. building an enclosure on the scaffold but the scaffold does not form part of the enclosure support.
- Ø Used for access to AIB Ceiling tiles

General Requirements for scaffolds

- Ø On completion of erection of the scaffold the scaffold company must issue a 'hand-over certificate'.
- Ø All scaffolds shall be inspected prior to operatives using the scaffold. A register must be maintained of the inspection, which must be carried out by a competent person every 7 day, it should contain the following: -
 - Ø Name & address of person on whose behalf the inspection was carried out.
 - Ø Location of the scaffold.
 - Ø Date of Inspection.
 - Ø Name and signature of person making report.
 - Ø Result of inspection. (e.g. 'Good Order').
- Ø When a 'competent person is not available on site, arrangements will be made with the scaffolding company to carry out the inspection on our behalf, the inspection register to be completed and retained in the site office.

- Ø In addition to the Register there will normally be a 'SCAFTAG' affixed to the scaffold at its access point, this will also be 'inspection date' signed. (A 'SCAFTAG' is not a substitute for the "Register Inspection Report")
- Ø A copy of the 'Scaffold' register must be available on site at all times.
- Ø NO Shield Environmental Personnel are permitted to change or alter ANY Fixed scaffolding.