Fairfield Waste Management Strategy

Fairfield Betula Limited

Doc Number:	FBL-DUN-HSE-STR-00003	Revision Date:	03/10/17
Rev No:	A3	Revision Status:	AFU
Revision Description:	Approved for Use		
Originator: **Date:** **Signature:**	Jeff Burns 03/10/17	**Checked By:** **Date:** **Signature:**	Jonathon Bird 03/10/17

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REVISION HISTORY					
A3	03/10/17	Updated to include decommissioning contractor guidance.	J Burns	J Bird	P Lee
A2	14/02/17	Updated content added to support planning stages of decommissioning operations.	J Burns	J Bird	P Lee
A1	01/06/16	Issued for Use	J Burns	J Bird	P Lee
R1	05/05/16	Issued For Comment / Review	J Burns	J Bird	P Lee
Rev.	**Date**	**Description**	**Originator**	**Checked**	**Approved**

Contents

Terms and Abbreviations

Abbreviation	Definition
ACM	Asbestos Containing Material
BEIS	Department of Business Energy and Industrial Strategy
BMRA	British Metals Recycling Association
CGBS	Concrete Gravity Base Structure
CITES	Convention on International Trade in Endangered Species
CoP	Cessation of Production
COSHH	Control of Substances Hazardous to Health
CO_2	Carbon Dioxide
CPC	Customs Procedure Code
DAD	Dunlin Alpha Decommissioning
DECC	Department of Energy and Climate Change
DFGI	Dunlin Fuel Gas Import
DGD	Dangerous Goods Declaration
DGSA	Dangerous Goods Safety Advisor
DPI	Dunlin Power Import
EAF	Electronic Arc Furnace
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EWC	European Waste Catalogue
FWMS	Fairfield Waste Management Strategy
OGA	Oil and Gas Authority

ICSG	International Copper Study Group
ISO	International Standards Organisation
ISSOW	Integrated Safe System of Work
LSA	Low Specific Activity
MER	Maximum Economic Recovery
MOC	Management of Change
MSDS	Material Safety Data Sheets
MS&H	Make Safe and Handover
NIRU	National Imports Reliefs Unit
NORM	Naturally Occurring Radioactive Material
OCR	Offshore Chemical Regulations
OPPC	Oil Pollution Prevention and Control
OSPAR	Oslo Paris Convention
P&A	Plug and Abandonment
PPC	Pollution Prevention and Control
RGR	Returned Goods Relief
RSA	Radiation Substances Act
SEPA	Scottish Environmental Protection Agency
SID	Subsea Infrastructure Decommissioning
SOP	Safe Operating Procedures
SWCN	Special Waste Consignment Note
TFSW	Transfrontier Shipment of Waste
WCN	Waste Consignment Note

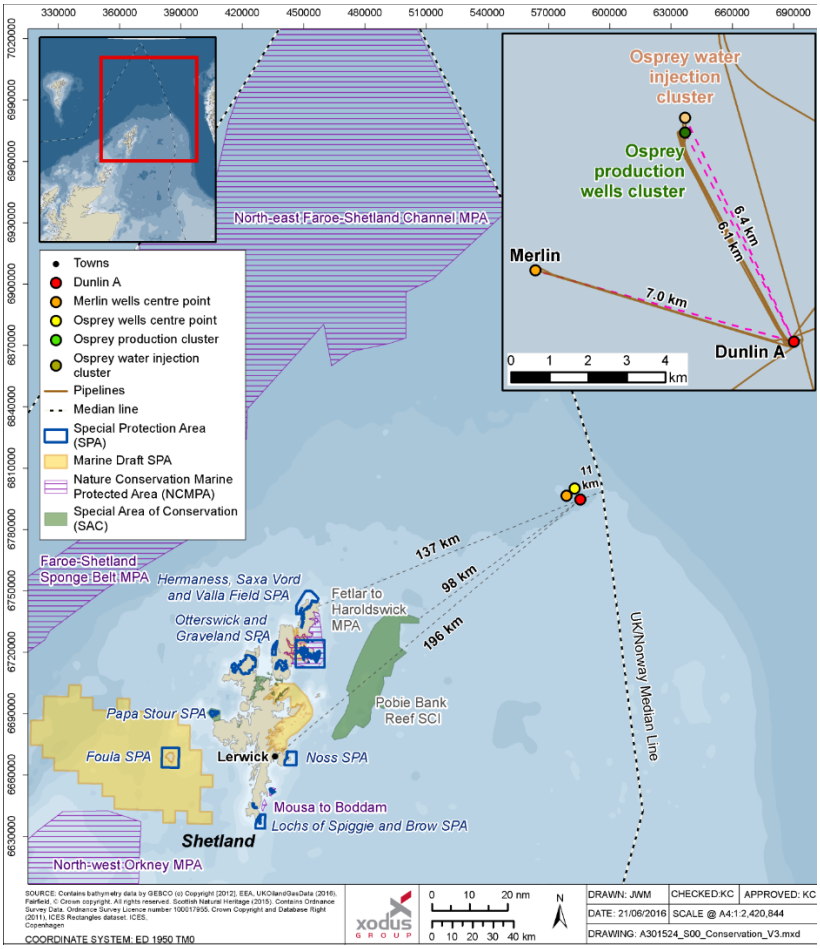
WEEE	Waste Electrical and Electronic Equipment
WM3	Guidance on the classification and assessment of waste (1st edition 2015) - Technical Guidance WM3

1. Introduction

1.1. Project Background

Fairfield Betula Limited, hereafter referred to as Fairfield, operates the Greater Dunlin Area on behalf of the Dunlin Field owners, MCX Dunlin (UK) Limited. The Greater Dunlin Area comprises of the Dunlin, Dunlin South West, Osprey and Merlin fields located in Blocks 211/23 and 211/24 of the UK Continental Shelf.

The Dunlin Alpha platform is a fixed concrete gravity based installation located in the Dunlin field, which lies within the East Shetland Basin of the Northern North Sea. It originally served as a manned production facility for the Dunlin, Dunlin South West, Osprey and Merlin fields, and stands in 151 meters of water approximately 137 km from the nearest landfall point, 196 km north east of Lerwick and 508 km north east of Aberdeen.



The Osprey subsea field is located 7km north north west of Dunlin in blocks 211/23a and 211/18a in a water depth of 159m, and consists of two subsea templates, complete with 8 production wells and 4 water injection wells respectively. Oil was produced via a subsea production manifold, and transported through two 8" production lines contained within a 38" bundle carrier pipe to Dunlin Alpha platform.

The Merlin subsea field is located 7km north-west of Dunlin Alpha platform in block 211/23a-b in a water depth of 150m. There are three production wells in a daisy-chain arrangement linked by a production pipeline to the Osprey production flowlines via a crossover manifold, situated approximately 100m from Dunlin Alpha. A single water injection well is linked to the Osprey water injection pipeline by a flexible flowline via a Y-piece connecting spool.

A 4-inch Dunlin Fuel Gas Import (DFGI) pipeline was installed in 2012, allowing natural gas to be imported from the EnQuest Thistle Alpha platform for use as fuel gas, and a 5-inch “Dunlin Power Import” (DPI) cable runs subsea from the Shell owned Brent Charlie platform and was used as a contingency source of power for the Dunlin Alpha platform.

Termination of Production from the Greater Dunlin Area was announced by Fairfield on 15th June 2015, following achievement of Maximum Economic Recovery (MER) from these oilfields. Approval for Cessation of Production (CoP) was received from the Oil & Gas Authority (OGA) on 15th January 2016, with CoP confirmed to have occurred on 15th June 2015.

International obligations on the decommissioning of offshore installations are controlled under the terms of OSPAR Decision 98/3, which prohibits the dumping and leaving wholly or partly in place of offshore installations. In the UK, the terms of the OSPAR Decision 98/3 are implemented under Section 29 (Part 4) of the Petroleum Act 1998, as amended by the Energy Act 2008. This legislation requires that owners of an offshore installation or pipeline must obtain approval of a ‘decommissioning programme’ before they can proceed with decommissioning.

The DECC Guidance Notes for Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998 details the requirements of a decommissioning programme, which must include details of how the principles of the waste hierarchy will be met and to show the extent to which the installation (or any part of it), including topsides (and the materials contained within it), will be re-used recycled or disposed of on land.

In accordance with the above guidance, decommissioning programmes should also include details of any cleaning or removal of waste materials, including cleaning methods, cleaning agents and disposal of residues. In addition, the disposal of all materials onshore must comply with the relevant health, safety, pollution prevention and waste requirements, including in particular Parts I and II of the Environmental Protection Act 1990.

1.2. Purpose of the Fairfield Waste Management Strategy (FWMS)

The purpose of the Fairfield Waste Management Strategy (FWMS) is to outline regulatory requirements regarding decommissioning waste, provide guidance on waste management options, and describe the processes required to support the preparation, removal and recovery / disposal of materials, as identified within decommissioning programme(s).

The overall objective of the FMWS is to:

- Ensure legal compliance;
- Reduce environmental impact;
- Implement waste hierarchy principle;
- Ensure the safety of people and assets;
- Reduce potential for business risks; and
- Protect reputation.

The FWMS is therefore a key document for supporting decommissioning planning and should be referenced when developing project work packs, waste management plans, and contract arrangements.

1.3. Scope of the FWMS

As Operator of the Greater Dunlin Area, including the Dunlin Alpha platform, Dunlin, Osprey and Merlin subsea fields, Fairfield have a 'Duty of Care' for the management of all materials removed under an approved decommissioning programme. The FWMS is therefore applicable to all materials listed within the Greater Dunlin Area Decommissioning Programmes, as well as waste materials generated from ongoing decommissioning operations including Make Safe and Handover (MS&H), Plug and Abandonment (P&A), and pipeline isolation activities.

Under OSPAR Decision 98/3, the competent authority (BEIS) of the relevant Contracting Party (UK) may allow installations or parts of installations to be decommissioned in-situ (remain in place). As part of the derogation process, a Comparative Assessment of selected decommissioning options will be undertaken with relevant stakeholders to identify appropriate disposal methods. Therefore, the FWMS does not currently include items under consideration for derogation. Where required, the FWMS will be updated to include these items upon completion of the comparative assessment process.

The FWMS therefore covers all materials to be removed under an approved decommissioning programmes, and will consider the full life-cycle of generated wastes including:

- Waste identification;
- Offshore treatment & storage;
- Offshore preparation / cleaning;
- Shipment of waste;
- Onshore deconstruction;
- Onshore transportation;
- Final disposal / recovery;
- Ongoing Monitoring.

A key factor in the successful execution of Dunlin Greater Area Decommissioning Programmes will be the selection of a competent decommissioning contractor and suitable decommissioning facility. Once a decommissioning contractor has been selected, waste management plans and project interface documents must be developed in order to address all Fairfield decommissioning project requirements, agree waste management objectives, and establish project assurance and reporting protocols.

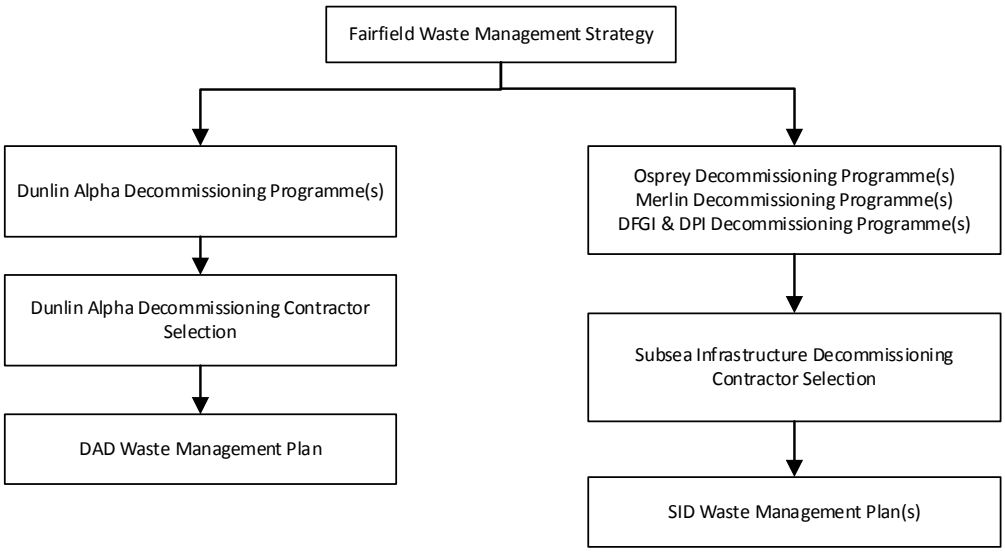


Figure 1. Waste management planning for Decommissioning Programmes

In addition to the above, Figure 2 provides an overview of various other processes in place for the management of waste throughout the decommissioning project. Further details of these processes is provided within this document.

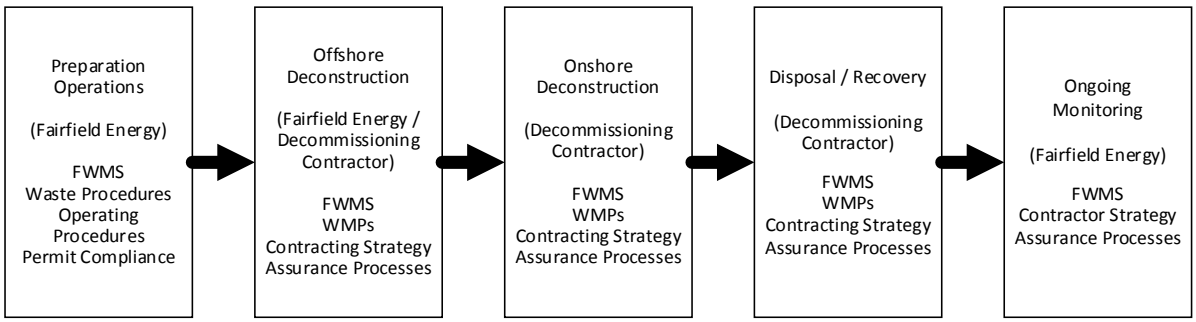


Figure 2. Processes in place for waste management during decommissioning activities.

2. Main UK Waste Regulations and 'Duty of Care'

The Scottish Environmental Protection Agency (SEPA) is the waste regulator in Scotland, responsible for administering and enforcing waste management controls, as well as providing guidance on waste classification, consignment, disposal/recovery options, and reporting. Waste regulations described in the following sections therefore outline the regulatory requirements in Scotland.

For waste regulations in England, further guidance can be found at: https://www.gov.uk/topic/environmental-management/waste

For waste regulations in Norway, further guidance can be found at: http://www.miljodirektoratet.no/en/Legislation1/Regulations/Waste-Regulations/

The current national controls on waste in Scotland originate from the *Control of Pollution Act 1974* and were tightened significantly with the introduction of the *Environmental Protection Act 1990*. Legislation originally focused on the disposal of waste, but since the introduction of the *EU Framework Directive on Waste (Directive 75/442/EEC, amended as Directive 2006/12/EC and Waste Framework Directive 2008/98/EC, as amended)* control has extended to include the storage, treatment, recycling and transport of waste.

A 'Duty of Care' was introduced under the *Environmental Protection Act 1990* and expanded by the *Controlled Waste Regulations 1992 (as amended), the Special Waste 1996 Regulations* and *Special Waste Scotland Amendment Regulations 2004*.

Under these regulations, anyone who imports, produces, carries, keeps, treats or disposes of waste is subject to a 'Duty of Care' whereby they must take all reasonable and applicable measures:

- To ensure that waste is stored and transported appropriately and securely so it does not escape;
- To ensure that waste is transported by those licensed to do so;
- To ensure that waste is transferred to people or businesses that are licensed to store, treat and/or dispose of those waste streams; and
- To complete and retain waste consignment notes (WCNs) for non-hazardous waste stream transfers (retain for WCNs for 2 years minimum).
- To complete and retain waste consignment notes for hazardous waste stream transfers (retain consignment notes for 3 years minimum)

The modern day 'Duty of Care' is a framework of waste control measures developed to ensure producers of waste legally accept responsibility for their waste streams, and manage the segregation, storage, transfer, treatment and disposal of waste streams in a legally responsible manner using appropriately licensed organisations. The purpose is to prevent waste producers from simply handing their waste over to anyone prepared to take it away without giving due consideration to its destination or whether it will be handled and disposed of appropriately. It also ensures there is a clear audit trail, documenting from where the waste is produced to its ultimate disposal route.

It is part of Fairfield's 'Duty of Care' to appoint appropriately licensed (and permitted where PPC applies) waste management companies and licensed waste carriers. Waste management companies in Scotland need to be licensed under the *Waste Management Licensing Scotland Regulations 2011 (as amended).* For certain waste management sites/practices, a permit under the *Pollution Prevention and Control (Scotland) Regulations 2012 (as amended)* will also be required.

In addition, waste carriers in Scotland need to be licensed as a waste carrier or broker under *The Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991.*

Although regulation of waste streams under the Environmental Protection Act 1990 is focused upon onshore waste management, the principles of 'Duty of Care' and appropriate segregation of waste streams must also be applied offshore.

2.1. Additional Legislation

Some additional waste regulations relevant to offshore decommissioning activities are listed below.

Waste (Scotland) Regulations 2012 - introduce a number of important new requirements including the segregation of materials such as glass, metal, plastics, paper and card for recycling. Waste contractors must provide services that enable high quality recycling.

The Waste (Meaning of Hazardous Waste and European Waste Catalogue) (Miscellaneous Amendments) (Scotland) Regulations 2015 - came into force on the 8 June 2015 and apply to Scotland only. They amend various pieces of legislation, replacing the definitions of "European Waste Catalogue" and "Waste Framework Directive" and implementing amendments to EU legislation.

Radioactive Substances Act 1993 - specify that any organisation that receives radioactive sources or radioactive waste for disposal is subject to the requirements of the Radioactive Substances Act 1993 (RSA 93). Under this Act they must have an authorisation from the appropriate regulatory body (SEPA in Scotland) for the accumulation, storage or disposal of radioactive waste or be able to demonstrate compliance with the conditions contained in specific exemption orders.

The Act also applies to offshore installations and the preparation of a decommissioning programme should identify whether the selected disposal route requires such an authorisation and that the selected facility has one. It is likely that new disposal routes will require an application for authorisation.

Waste Electrical and Electronic Equipment Regulations 2013 (as amended) - aim to combat the rapid growth of waste electronic and electrical equipment (WEEE) and its impact on the environment due to its hazardous content. Measures are established for its treatment, reuse, recovery, and recycling. From 1 January 2019, the scope of EEE covered by the Regulations changes, incorporating a wider range of products.

Waste Batteries (Scotland) Regulations 2009 - aim to protect the environment from hazardous compounds found in industrial and automotive batteries. It prohibits the disposal of untreated industrial and automotive batteries to landfill or by incineration. Operators are required to store batteries only on an impermeable surface and under weatherproof covering. From 1 January 2010 if companies buy new industrial batteries, the battery producer will take back the waste batteries.

Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (as amended 2011) (OPPC) - introduce controls on oil discharges from offshore oil and gas installations. Any material being discharged or reinjected that has been contaminated by hydrocarbons from the reservoir will require a permit. Under OPPC regulations, oil discharges refer to any intentional emission of the oil from an offshore installation into the relevant area.

The Offshore Chemicals (Amendment) Regulations 2011 (OCR) - apply the provisions of a decision made by the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention) to implement a harmonised mandatory control system for the use and discharge of chemicals by the offshore oil and gas industry. Under the regulations offshore operators must apply for permits for the use and/or discharge of chemicals in the course of all offshore oil and gas activities, including decommissioning.

A summary of relevant waste regulations, International Conventions, and European Directives is provided in Appendix A.

3. Waste Management Options

3.1. Waste Hierarchy

The UK government has reiterated its support for the Waste Hierarchy in the national waste strategies for Scotland, England and Wales. Decommissioning Programmes will therefore be required to indicate how the principles of the waste hierarchy will be met, including the extent to which the installation or any part of it, including the topsides and the materials contained within it, will be re-used, recycled or scrapped. (DECC 2011)

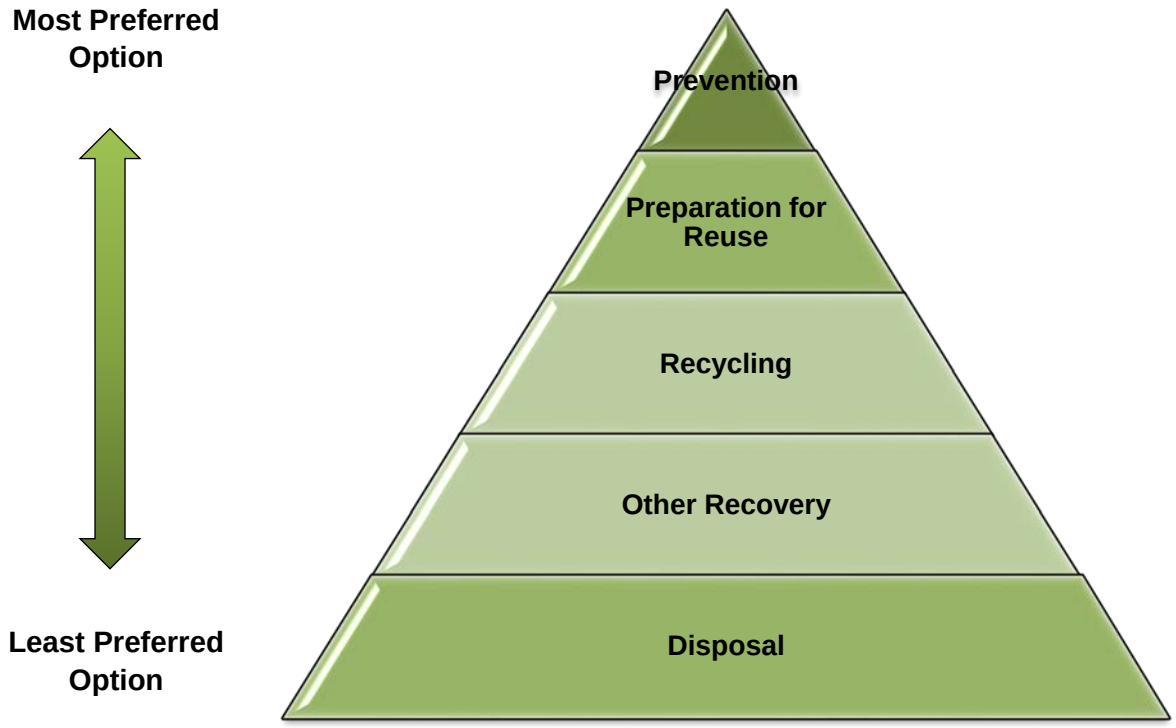


Figure 3.1 Waste Hierarchy

Prevention - Prevention refers to measures taken before a substance, material or product has become waste that reduce:

a) the quantity of waste, including through the re-use of products or the extension of the life span of products;
b) the adverse impacts of the generated waste on the environment and human health; or
c) the content of harmful substances in materials and products;

Preparation for Re-use - Reuse refers to any operation by which products or components that are not waste are used again for the same purpose for which they were conceived. Items that are reused under this definition may not be considered waste.

If products become waste, then they must be *prepared for reuse* – 'checking, cleaning or repairing' operations by which products or components of products that have become waste are prepared so that they can be reused without any other pre-processing'. It should be noted that preparation for reuse is a waste management activity and waste controls apply.

Recycling - Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations;

Other Recovery - Any other operation, the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function (i.e. energy from waste, construction aggregate), or waste being prepared to fulfil that function, in the plant or in the wider economy.

Disposal - Any operation which is not recovery even where the operation has, as a secondary consequence, the reclamation of substances or energy.

The following sections outline waste management options available for the main types of material identified within Greater Dunlin Area Decommissioning Programmes, and is based on industry guidance and current best practice.

3.2. Reuse of Equipment

Full re-use of a decommissioned topsides facility is rare (limited so far to small, gas processing topside facilities from Southern North Sea platforms). The re-use of major parts of a platform (jackets and topsides) on another oil and gas project is an option but is only possible if the schedules for the decommissioning and development projects are aligned, and the risk to the development project is no greater than a new build option.

More recent projects have seen large parts of a decommissioned platform (e.g. module or helideck) reused in a different application. For example, the accommodation module from the North West Hutton platform is now an office facility at the decommissioning yard that dismantled the topsides. In addition, the re-use of components such as cranes, booms, compressors, turbines and large ball valves has become more common.

In 2015, Decom North Sea and Zero Waste Scotland held a workshop to identify and review opportunities for the re-sale and re-use of decommissioned oil and gas assets and equipment. (DECOM 2015) A number of concerns were raised in regards to the re-use of old equipment, including:

- Perceived risk that the equipment will be less reliable than a new item and that the overall cost saving from re-used equipment will be lost in reduced production efficiency or downtime and maintenance costs;
- The use of existing equipment may introduce some perceived undesirable compromises within the final design, as it is unlikely that it will be a perfect fit with the design requirements and may also cause issues with equipment layout;
- In certain areas (e.g. combustion equipment, pressure vessels etc.), the modern regulatory requirements may not be met by older equipment and this may entail significant reengineering of the equipment prior to re-use;
- Older equipment may not provide the same functionality or effectiveness as modern equivalents. This is particularly the case with electronic items such as control systems, but also applies to other items such a process equipment

However, the workshop did identify a number of key items as having potential for re-use. These included:

- Power generation equipment
- Standalone process modules - Glycol regeneration, desalination etc.

- Rotating equipment
- High value or long lead time fixed items
- Tubulars e.g. for piling

In addition, other items may also be suitable for re-use or re-sale, dependent on age, condition and specification. It was identified in the workshops that typically 10% - 15% by weight of the modules/equipment could find a potential re-use as per its intended purpose. (DECOM 2015) However, due to the age of the equipment on Dunlin Alpha, a reuse figure of 0% - 10% is more likely.

The availability of information to confirm equipment design and specifications was also seen to be a key factor in determining its suitability for any future application. Maintenance information is also required to demonstrate the current condition of the equipment and to identify any significant issues or modifications that have been completed. (DECOM 2015)

Integrity is a key issue when considering the reuse of pipelines or pipeline materials. Reuse opportunities for rigid steel pipelines recovered by the reverse reeling process are limited. No steel pipeline recovered in a single length by the reverse reeling process has been reused due to integrity issues associated with this type of recovery. In addition, subjecting a pipe to multiple cycles of plastic deformation during both the reeling and reverse reeling processes would likely compromise its integrity. Due to the nature of the reeling and unreeling process, it is unlikely that a rigid pipeline recovered using this method could be reused. (OGUKa 2013)

Where possible, Fairfield will look for opportunities to resell equipment to interested parties. However, Fairfield maintain that re-use and re-sale opportunities will best be achieved through a carefully selected decommissioning contractor with the required knowledge and experience in this area, and that the value of decommissioned materials will be best achieved through contracting arrangements.

3.3. Recycling, Recovery and Disposal

3.3.1. Metals

Structural steel and steel pipework account for the majority of materials listed within the Greater Dunlin Area Decommissioning Programmes. The recycling of both ferrous and non-ferrous metal is a well-established global industry. The British Metals Recycling Association (BMRA) states that virtually all metals can be recycled into high quality new metals. In addition, the use of scrap metal as a secondary raw material for metals manufacturing significantly reduces the use of energy and natural resources.

It is accepted that paint coatings will be processed along with the metal items they cover. Heavy metals such as lead and zinc will therefore either become incorporated into new steel products, or be recovered from slag produced during the smelting process.

In addition, galvanized steel can be easily recycled with other scrap in an electric arc furnace (EAF) steel production process. Zinc volatilises early in the process and is collected in the EAF dust that is then recycled in specialist facilities. (Galvanizers Association 2017)

Steel pipelines typically have an anti-corrosion coating and often have insulation coatings applied. Where possible these coatings will be removed and recycled, although some may be sent to landfill. The metal contained within flexible flowlines, and the wires used in armouring layers in umbilicals and power cables can also be recovered and then recycled (OGUKa 2013). According to Oil and Gas UK, decommissioning projects typically achieve recycling rates of >95%.

Non-ferrous metals include copper, aluminium, and nickel alloys. Similar to steel, established markets exist for the reuse or recycling of non-ferrous metals. All cabling on the Dunlin Alpha consists of a copper conductor with steel braided plastic sheathing. Copper can be fully recycled and reused again and again, without any loss of performance. According to the International Copper Study Group (ICSG), 41.5% of the copper used in Europe comes from recycling. (Copper Alliance 2017)

Considering the historical performance of the metals recycling industry, it is estimated that 95% - 98% of metal from the Greater Dunlin Area Decommissioning Programme will be sent for recycling, although some reuse opportunities may also exist for larger structural steel items.

3.3.2. Concrete

At the time of writing, the Dunlin Alpha Concrete Gravity Base Structure (CGBS) qualifies as a candidate for OSPAR derogation. As stated in Section 1.3, the derogation process includes a comparative assessment of options for the removal and disposal of the CGBS. If required, a strategy for the removal and disposal of all, or parts of, the CGBS will be developed and the FWMS will be updated.

With the exception of the CGBS, the majority of concrete to be removed under an approved Greater Dunlin Area Decommissioning Project consists of concrete mattresses, required for the stabilisation and protection of subsea pipelines and infrastructure.

The potential for direct reuse of concrete mattresses depends on the condition of the mattresses. If lifting loops no longer carry the appropriate certification, methods of handling recovered mattresses must be developed to safely lift and preserve the integrity of mattresses, allowing them to be redeployed.

Alternatively, significant opportunities may exist for the reuse of reclaimed concrete mattresses in developing infrastructure projects. Early discussions with local councils, civil engineering companies and construction firms will is strongly recommended.

Reclaimed mattresses may potentially be reused to create or repair sea defences. For example, the Orkney Islands council have been seeking industrial quantities of concrete or rubble to reinforce the Churchill Barrier. (Jee 2015) Mattresses may also be used to extend piers or harbour walls, and developments such as the recently approved Aberdeen Harbour Expansion Project may present a prime opportunity to reuse mattresses from North Sea Decommissioning Programmes.

There may be opportunities for reclaimed mattresses to be used for laying road and highway foundations as the typical dimensions of concrete mattresses are similar to standard road widths. Other enquiries have been made for concrete mattresses to be used as flooring for cattle sheds, temporary roads, and car parks. (Jee 2015)

The options described above for re-using concrete mattress will depend on the availability of infrastructure projects and local markets that minimise transport costs. It is therefore anticipated that up to 50% of concrete mattresses may be reclaimed for alternative use. However, a waste exemption will be required from the regulator (SEPA) before mattresses can be reused onshore. Waste exemptions may require tests to prove there is no potential contamination, depending on the re-use application and the location in which it is being re-used.

If there are no viable options for reuse, concrete mattresses can be crushed to create second class aggregate for use as sub-base material for the construction of roads or new concrete structures. It is expected that up to 50% of concrete mattresses can also be recovered as aggregate, although waste exemption from the regulator may still be required.

3.3.3. Plastics

Opportunities for reusing plastic items are determined by the quality of the plastic item and product design requirements. To date, there is limited evidence of large-scale reuse of plastic products, although opportunities may exist for the reuse of plastic packaging (i.e. IBCs and drums). As a result, recycling of plastic into new materials is more common.

Recycling of waste plastics demonstrates greater environmental benefits than incineration and landfill. Recycling consists of grinding plastics into recyclate (pellets and flakes) for manufacture into new plastic products that can be readily recycled again. The main environmental benefits of recycling plastic are associated with a reduction of manufactured virgin plastic material. (Scottish Government 2013)

Good segregation practices are therefore required to avoid contamination of plastic waste streams and produce high quality recyclate, allowing new products to be manufactured of similar characteristics and value. Where plastic waste is contaminated or of poor quality, energy can be recovered through high efficiency incineration.

Plastics recycling is a well-established industry and Fairfield are confident that through good segregation practices, at least 50% of plastic will be recycled. Plastic materials that cannot be recycled will be sent for incineration, with only minimal amounts of plastic being sent to landfill (<10%).

3.3.4. Hydrocarbons

Residual oil (reservoir oil, lube oil, diesel) remaining within process equipment, machinery and pipework will be flushed and drained as part of preparation and cleaning operations. Oily fluids will be reinjected into the reservoir under an approved OPPC permit (see Section 4.3).

Residual oil and sludge will be sent to an onshore decommissioning yard or waste management facility to be recycled or recovered as energy from waste.

NORM contaminated sludge and oily fluids will require special treatment at an appropriately licensed facility. Disposal of NORM may include incineration to reduce quantities, stabilisation, and landfill (see below).

3.3.5. Naturally Occurring Radioactive Material (NORM)

Sand and sludge found in vessels and equipment may often contain NORM contamination from uranium/thorium progeny elements. These elements occur naturally at trace levels in the reservoir, but can become concentrated in sand and sludge. There are three main disposal options for NORM generated by offshore installations: discharge to sea; reinjection into the reservoir; and/or sending to shore.

Currently, more than half of the solid NORM waste generated by the oil and gas sector is disposed of to sea in line with domestic and international best practice. (Scottish Government 2014) Common practice is to remove bulk sand and scale, clean to remove residual oil, and macerate to reduce particle size prior to discharge (an RSA authorisation and OPPC permit are required for these operations). It may also be possible to transfer NORM contaminated equipment to another installation for treatment and disposal as long as the correct RSA Authorisation is in place.

It should be noted that there is a potential for OSPAR to revisit the practice of disposal to sea of solid NORM waste that arises from the maintenance and cleaning of offshore equipment, although this would lead to significant additional volumes of solid NORM waste requiring onshore disposal. (Scottish Government 2014)

Sand and scales that are inaccessible or cannot be disposed of to sea are transported to shore for treatment and disposal. Descaling to remove NORM scale from pipework and equipment is a mature treatment technology used in the UK. Common practice is to use high pressure water jetting to remove the scale from the surface of pipework and equipment. Another method uses 'shot blasting' to reduce the size and decontaminate metallic components. (Scottish Government 2014)

NORM waste is then sent for incineration or 'conditioned' prior to being sent for disposal at a licensed facility. Conditioning may involve the addition of non-waste materials, such as cement or grout, to facilitate the handling and safe transport of waste.

Incineration is common for the treatment of sludge and other combustible materials contaminated with NORM and can reduce the volume of NORM waste by up to 90%. (Scottish Government 2014) However, ash generated from incineration will have higher radionuclide concentrations and will require disposal in a licensed landfill.

3.3.6. Asbestos

Asbestos is a naturally occurring silicate mineral that was commonly used as a building/insulation material due to its sound absorption, and resistance to fire, heat, electrical and chemical damage. The asbestos content of a product can vary considerably (1% - 100%). For the purpose of waste management, asbestos on the platform will either be referred to as asbestos waste or asbestos containing materials (ACM).

Waste containing more than 0.1% asbestos must classed as hazardous/special waste and dealt with accordingly. All asbestos waste must be disposed of in a landfill that has a specific permit authorising it to accept asbestos.

3.3.7. Heavy Metals

The main sources of heavy metals (i.e. mercury, zinc, lead, nickel, cadmium, copper and cobalt) can be found in anodes, waste electrical and electronic equipment (WEEE), batteries, and paint coatings.

Anodes

Anodes, used for cathodic protection, are located at several locations within the Dunlin Alpha substructure, specifically: steel leg transitions, conductor guide frames, conductor sleeves, piping and steelwork within the legs, as well as the steel skirt at the base of the CGBS. Anodes are also located on various subsea manifolds and protection structures.

Inventory reports indicate that anodes are typically of either zinc or aluminium indium alloy construction (with trace quantities of copper and silicon). It is anticipated that heavy metals contained within anodes will be recovered along with the associated steelwork or subsea infrastructure, and recycled.

Batteries

The ***Waste Batteries (Scotland) Regulations 2009*** bans the landfill or incineration of industrial and automotive batteries from 1 January 2010. Business using portable batteries should check with their supplier if they are operating a take back scheme (unless they sell less than 32kg of batteries per year). From 1 January 2010 if companies buy new industrial batteries, the battery producer will take back the waste batteries.

Waste Electrical and Electronic Equipment (WEEE)

WEEE can contain hazardous components, such as heavy metals, to which specific regulations and management requirements apply. The Waste Electrical and Electronic Equipment Regulations 2013 (as amended) aims to prevent disposal of WEEE to landfill and establishes measures required for its treatment, reuse, recovery and recycling.

The reuse of WEEE is the preferred waste management option and there are established markets for the reconditioning and reuse of appliances and IT equipment, or extraction of re-usable components. The majority of IT and electrical entertainment equipment on Dunlin Alpha is located within the offices and living quarters and will be removed from the installation prior to decommissioning operations. It is anticipated that almost all of this equipment will be reused or for resale.

WEEE that is unsuitable for reuse will be sent for recycling to recover heavy metals. Recycling of the heavy metals contained in WEEE is much more energy efficient than production from new resources and retains rare, high value materials.

Once hazardous materials have been removed, the largest mass of material in WEEE is metals followed by plastics, metal-plastic mixtures and glass from screens. (Scottish Government 2013) The remaining WEEE components can be sent for incineration to recover energy.

Paint Coatings

Over the years, a wide variety of paint types have been used to protect structural items on Dunlin Alpha. Based on available information, it has been accepted that the majority of paint is likely to be lead-based.

Currently, it is not common practice to remove paint coatings from steel / metallic items prior to smelting, although some paint coating may be removed by sand-blasting or cutting when required by deconstruction activities. It is therefore assumed that the vast majority of paint coatings will be smelted when recovered steel and metallic items are sent for recycling.

As a result, lead and other heavy metals found in paint coatings may either become a component of recycled steel, or collected in slag formation to be recovered or disposed as hazardous waste.

3.3.8. Other Construction Materials

Construction materials may consist of timber, glass, rubber, ceramics and insulation materials that have been used in the construct of furniture, fixtures and fittings on the platform. It is anticipated that the majority of construction material will be of mixed waste streams that will be difficult to separate and therefore sent to landfill. However, by encouraging good segregation practices, it is anticipated that up to 15% of materials may be recycled.

3.3.9. Marine Growth

The information and guidance below has been largely taken from *The Management of Marine Growth during Decommissioning* report published by Oil and Gas UK in 2013. (OGUK 2013b)

Marine growth refers to colonies of marine organisms that adhere to the structure of submersed oil and gas structures. In the North Sea, marine growth comprises a variety of soft and hard-bodied organisms that occur naturally on hard substrata. These may include kelps and other seaweeds, anemones, hydroids, mussels, barnacles, tube worms, and soft and hard corals, such as the cold water coral *Lophelia pertusa.* (OGUK 2013b)

An assessment of the types and extent of marine growth on the Dunlin Alpha is detailed within Marine Growth Assessment Report (A-301649-S09-REPT-001). The types of marine growth observed on the Dunlin Alpha include seaweeds, mussels, soft corals, anemone and Lophelia pertusa.

Lophelia reefs are listed under the European Habitats Directive, and special measures will be required before decommissioning if *Lophelia* is observed on jackets. These include a survey as a part of the EIA and a Convention on International Trade in Endangered Species (CITES) certificate if the installation is being transferred between states.

A comparative assessment was carried out by BMT Corah in 2013 to evaluate and compare offshore and onshore options for removing marine growth on decommissioned oil and gas structures. The removal of marine growth offshore was the preferred option for reducing environmental and societal impacts, as well as minimising risks from potential issues regarding onshore disposal availability and capacity. However, removal offshore scored poorly where extensive vessel usage is required that could result in significantly increased atmospheric emissions and project costs.

Noxious odour from decomposing marine growth is recognised as an issue for onshore management. However, it has been recognised from consultation with the deconstruction yards that existing odour management measures have been largely successful. These include:

- Removing the material as quickly as practicable;
- Allowing the material to dry;
- Storage in covered skips;
- Mixing or covering the marine growth with sawdust to absorb liquids and suppress odour;
- Applying odour suppressant;
- Screening the storage area; and
- Collection and treatment of liquid effluents.

Current onshore management practices include removal at a decommissioning yard followed by landfilling, composting, or land-spreading. Marine growth attached to steel may also be allowed to dry and then sent to a recycling facility for steel smelting. The natural drying approach reduces the weight and volume of marine growth and may allow items to be sent for recycling without the necessity of marine growth removal, making odour much less of an issue.

The recommended marine growth management strategy is therefore to remove and dispose of marine growth offshore where practical. Where this not practical, marine growth should be shipped to shore for treatment and disposal / recovery at an appropriately licenced onshore facility. The main consideration that could affect onshore marine growth management is the capacity of the final recovery method (i.e. landfilling, landspreading, composting or recycling), as there is currently a lack of large scale composting facilities, and landspreading, landfilling and composting facilities are subject to strict regulation.

Marine Growth Legislation

The UK Legislation on the disposal of large quantities of marine growth at sea is currently unclear, and an MCAA Licence (*Maritime and Coastal Access Act 2009*) for the deposition of the marine growth originating from an offshore structure on the seabed may be required (OGUK 2013b). Discussion with the regulator is therefore recommended. The shipment of Lopehila pertusa to an onshore facility for disposal may also require regulatory approval (see section 7.1.2 for further information).

For onshore disposal, hazardous waste licenses and/or PPC permits must be checked to ensure they include animal bi-products for marine growth. Some waste licences and PPC permits may have conditions regarding smell and an enforcement notice could be issued that may affect the ability to transport waste to the selected deconstruction or waste management facility.

The European Commission intends to include a proposed 'phase-out of biodegradable waste going to landfill from 2020-2025', further constraints will be imposed on the already tightly controlled use of landfills, and may lead to a reduction in the number of landfills accepting marine growth waste. The future capacity of landfills to receive biodegradable waste may be affected by reduction targets imposed under the *Landfill Directive (1999/31/EC)*. (OGUK 2013b)

4. Waste Management Processes

The diagram below illustrates waste management processes and considerations necessary to support decommissioning programmes and ensure Fairfield meets its 'Duty of Care' obligations. Further information regarding these processes is provided in the following sections.

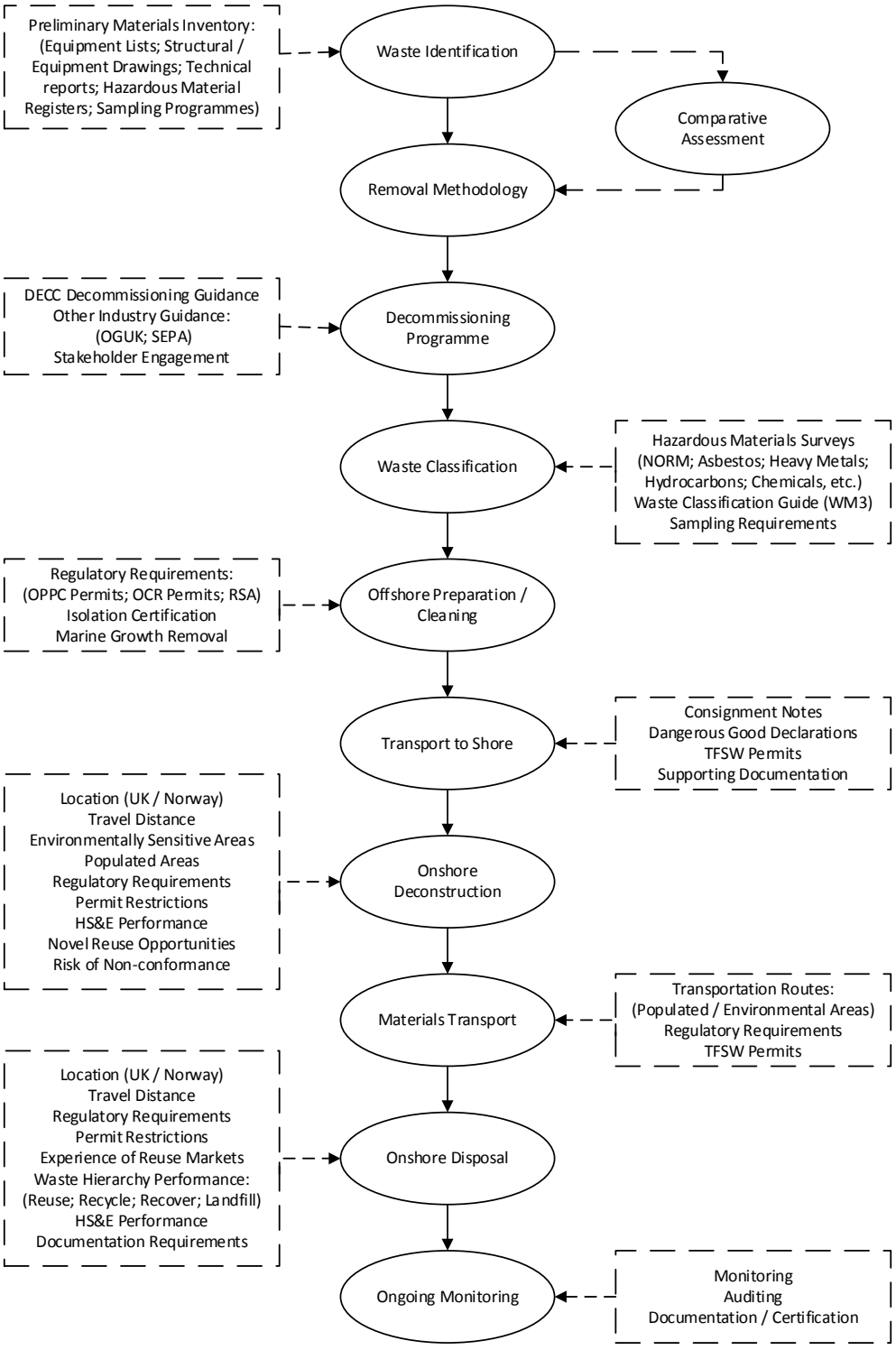


Figure 3.2. Waste management processes and considerations for decommissioning planning

5. Waste Identification

The Waste Framework Directive 2008/98/EC, as amended defines waste as any substance or object which the holder discards or intends or is required to discard. In Scotland, the Scottish Environment Protection Agency (SEPA) are responsible for administering and enforcing waste management controls and have further defined waste to include fishing vessels and offshore structures subject to decommissioning. (SEPA 2006)

5.1. Materials Inventory

In accordance with DECC Decommissioning Guidance, an inventory of materials is required to support any decommissioning programme, and should list the amount, type and relative location of all materials including hydrocarbons, sludges, heavy metals, sacrificial anodes and any radioactive material including naturally occurring radioactive material (NORM). Where exact quantities cannot be verified, estimates should be calculated. (DECC 2011)

Documentation / resources required to produce a materials inventory may include:

- Weight control report;
- Pipeline works authorisations (PWAs);
- Structural and equipment drawings;
- Manufacturer's specifications;
- Equipment lists, line lists, cable schedules;
- Hazardous material registers;
- Technical Reports;
- Maintenance Records;
- Offshore Surveys;
- Anecdotal information

Where exact figures cannot be determined, a method for estimating material quantities must be agreed, with further surveys to be undertaken where required. Detailed inventory reports will assist with project planning, selection of waste management facilities, development of waste management targets, and contract negotiations.

The identification and quantification of hazardous materials may require specific sampling requirements. These could include: asbestos; NORM; mercury; residual chemicals; and/or residual hydrocarbons. Regulatory guidance may be necessary to ensure all sampling objectives are met. Early discussion with the HSE department is recommended when planning any sampling programmes.

5.2. Waste Classification

A key issue for waste management will be the potential for large quantities of special 'hazardous' waste to be generated within relatively short time frames that could significantly impact offshore treatment, storage, transportation, onshore deconstruction, and final recovery / disposal options. Careful planning is required to prevent potential incidents that could result in delayed operations, cross-contamination, and additional costs.

Inventory documents and hazardous materials surveys should be used to identify and categorise waste streams. Additional surveys may be required to identify and quantify hazardous materials in order to determine specific requirements for sampling, labelling and storage. Existing Safe Operation Procedures for the handling of

hazardous materials (i.e. NORM, Mercury, and Asbestos) should be reviewed and updated regularly to ensure all necessary controls are in place.

Where specific sampling measures are required, the correct equipment, training and competency must be checked to ensure results are viable.

The *Waste Classification: Guidance on the classification and assessment of waste (WM3)* explains how to assess if the waste displays a hazardous property and how to classify it. WM3 was updated in 2015, in line with the updates to European legislation regarding waste classification. A copy of WM3 is available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427077/LIT_10121.pdf

All waste will fall into one of the following categories:

- Waste considered 'special' under the Special Waste Regulations based on the List of Wastes (EWC Codes).
- Waste considered 'non-special' under the Special Waste Regulations based on the List of Wastes (EWC Codes).
- Waste that needs further assessment to determine whether it is special waste or not. The assessment of special waste is based on the assessment of hazardous properties, as defined in regulator provided technical guidance note WM3 (known as mirror entry).

Contact with the nominated Waste Management Contractor or HSE Department is recommended if there is any uncertainty regarding waste classification.

6. Offshore Cleaning & Preparation for Removal

The main purpose for offshore cleaning is to reduce hazardous waste streams, make equipment and pipework safe for deconstruction, and prepare modules for removal by the selected decommissioning contractor. Cleanliness standards should be determined according to contractual arrangements with the decommissioning contractor and any relevant environmental permit conditions. Wherever possible, best practices should be applied to minimise impact to people and the environment.

For Dunlin Alpha topsides, the chosen method of removal will have a significant impact on the disposal options and processes required to manage waste. A brief summary of considerations is provided below:

- Single Lift - Options for decommissioning yard and waste management facility may be limited. However, a minimum amount of offshore cleaning and preparation would be required, and could offer the greatest opportunities for reuse.

- Reverse Installation - Could potentially offer greater options for decommissioning yard and waste management company. However, this method will require additional offshore preparation and cleaning, and therefore an increased level of waste management. May reduce opportunity for equipment reuse.

- Piece Small (offshore deconstruction) – Would potentially offer the most options for decommissioning yard and waste management company. However, extensive offshore activities would be required to deconstruct and segregate waste with significant demands on waste management processes.

Key to successfully managing waste streams generated from offshore preparation and cleaning activities will be to ensure that waste is considered at the planning stage in order to determine:

- Waste classification, segregation and storage requirements;
- Sampling and analysis requirements (i.e. NORM, Asbestos, hydrocarbons)
- Regulatory requirements;
- Training and competency requirements;
- Transportation requirements (i.e. Dangerous Goods; TFSW)
- Record keeping requirements

Project planning and use of risk assessment tools will ensure that wastes are identified and managed in a manner that protects both people and the asset, and assists with legal compliance, which are vital for protecting the reputation of Fairfield and key business partners. Resources available for project planning include:

- Materials Inventory / Hazardous Materials Surveys;
- Management of Change documents;
- Historical operation descriptions;
- Vendor work packs;
- Integrated Safe System of Work (ISSOW) to identify hazardous waste streams, including sampling and containment requirements
- COSHH assessments to consider chemical usage, storage and disposal requirements

Waste generated during cleaning and preparation operations must be managed in accordance with Waste Management Procedure (*FBL-DUN-FOP-SOP-00011*). For hazardous waste streams, existing Safe Operation Procedures (SOPs) must be regularly reviewed to ensure sampling, storage, labelling, and consignment requirements are updated and communicated.

6.1. Regulatory Permit Requirements

Specific offshore cleaning activities resulting in the use or discharge of hydrocarbons, chemicals or NORM may require regulatory approval. Early discussion with the HSE department is recommended as regulatory guidance may be necessary to assist project planning. General guidance is given below:

- OPPC Permit (Oil Discharge) - All activities with a planned discharge of oil or oily fluids (including oil contaminated sand) will require an OPPC permit that must be approved by BEIS prior to any discharge. The approval process can take up to 28 days. *FEL-COR-HSE-PRO-00009* provides further guidance on applying for an OPPC permit.

- OCR Permit (Chemical Discharge) – Activities that require the use and/or discharge of chemicals will require an OCR permit. Chemical permit applications will require an environmental risk assessment, and may also take up to 28 days for approval. *FEL-COR-HSE-PRO-00006(00007)* provides further guidance on applying for an OCR permit.

- RSA Authorisation (NORM Discharge) – Activities that require the offshore disposal of NORM must be approved on an RSA Authorisation. It is highly recommended that contact is made with the Fairfield Radiation Protection Advisor, via the HSE department, a minimum of 3 months before any operations are undertaken to ensure the correct approvals are in place.

6.2. Marine Growth Removal

Marine growth can cause significant issues for onshore waste facilities. Where practical marine growth should be removed offshore (see section 3.3.9 for further information).

6.3. Materials Tracking

The removal of all equipment and/or materials generated from cleaning and preparation activities must be tracked and recorded in order to provide the traceability required to demonstrate compliance with Fairfield's 'Duty of Care' obligations.

Where applicable, sampling results must also be kept and substances used and/or discharged under a regulatory permit may require specific tracking and reporting processes. Discussion with the HSE department will be required to ensure compliance with permit conditions.

As a minimum, waste management registers should include the following information:

- Asset details (i.e. installation; location)
- Project / activity reference (if applicable)
- Description of material (i.e. steel, plastic, etc.)
- Type of special waste (if applicable)
- Weight or volume
- Manifest and container reference
- Date of shipment
- Details of receiving facility

Further information regarding project requirements for waste tracking and reporting is provided in Section 9.

7. Transportation of Waste

All waste materials sent to shore for disposal are deemed 'controlled waste' and must be disposed of at a facility with the required waste management permit and or consent, as issued by the waste regulator (SEPA). All waste transfers from an offshore installation to the waste management facility must be accompanied by an appropriate waste consignment note (WCN) along with any additional documentation required.

In accordance with the *Environmental Protection (Duty of Care) Regulations 2014*, a non-special Waste Consignment Note (WCN) must be completed for all non-special waste transported from offshore. Under the *Special Waste Regulations 1996*, a Special Waste Consignment Note (SWCN) must be completed for all special wastes.

The International Maritime Dangerous Goods Code (IMDG) is the international guideline for the safe transportation or shipment of dangerous goods or hazardous materials by sea. The IMDG code is applicable to all ships subject to the *International Convention for the Safety of Life at Sea (SOLAS 1974*), and *International Convention for the Prevention of Pollution from Ships (MARPOL).*

The IMDG Code sets out requirements for classification, packaging, labelling and certification of dangerous goods by sea. Implementation of the IMDG is mandatory. The current edition of the IMDG Code is the 2014 Edition. The new IMDG Code (2016 Edition) will come into force on 1 January 2018, with updated requirements for classification (testing and documentation), as well as labelling and packaging.

Similar to the IMDG Code, the European Agreement concerning the *International Carriage of Dangerous Goods by Road (ADR)* set out the requirements for the classification, packaging, labelling and certification of dangerous goods.

A Dangerous Goods (DG) Declaration must be completed for the transport of any dangerous goods or hazardous materials. Personnel engaged with the transport of dangerous goods by sea or road must be trained according to their role and responsibilities. All operators must have a Dangerous Goods Safety Advisor (DGSA) who can either be a member of staff or supplied by a company providing dangerous goods safety advice.

All hazardous materials must have the correct documentations, including any required sampling or analysis reports and MSDS (where applicable). Transportation of hazardous materials must be packaged and labelled with appropriate hazard symbols, warning and safety advice. Further guidance can be found on the HSE website: http://www.hse.gov.uk/cdg/manual/regenvirnment.htm#imdg

Copies of all waste transfer documentation may be requested by the waste regulator to demonstrate 'Duty of Care'. Further information regarding project documentation requirements is provided in Section 9.

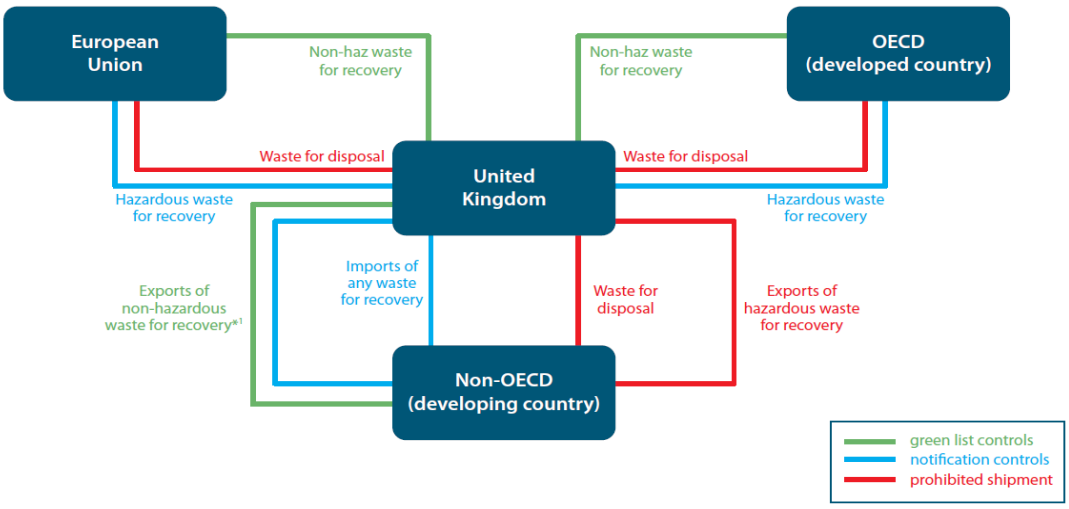
7.1. Transfrontier Shipment of Waste

The *Transfrontier Shipment of Waste Regulations 2007 (as amended)* sets out rules for shipping waste within the European Union (EU), as well as importing and exporting to and from countries outside the EU. These regulations implement two pieces of EU legislation:

- *Regulation (EC) No 1013/2006* on shipments of waste (consolidated version), as amended; and
- *Regulation (EU) No 660/2014* of 15 May 2014 regarding the strengthening of Member States' inspection systems, as amended.

The main objective of these EU and UK regulations and similar international standards (including the Basel Convention of 1989) is to prevent hazardous waste from developed countries being exported and dumped in developing countries.

The *UK Plan on Shipments of Waste* sets out UK Government Policy on exports for disposal. Export of waste from UK to other countries for waste disposal is prohibited. However, export of waste for recovery is allowable depending on the type of waste and the country being exported to. The export of waste from the UK is subject to a range of regulatory controls. In Scotland, SEPA is the regulatory body. SEPA's rough guide to import and export controls for waste is provided in figure 3.3.



European Union Countries – Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden.

Additional Organisation for Economic Co-operation and Development Countries (OECD) – Australia, Japan, Norway, Canada, Iceland, South Korea, Mexico, New Zealand, Turkey, USA.

*1 – Some exports of non-hazardous waste to non-OECD countries can be conducted under Green List controls, other must obey Notification requirements. This depends on the nature of the waste and whether the country of destination has provided a response to the OECD Decision on the control of transboundary movements of waste. If you wish to export waste to a non-OECD country (i.e. a country which is not listed above) then you should seek guidance from a member of the Producer Compliance & Waste Shipments.

Figure 3.3 SEPA Rough Guide to Import and Export of Waste

If exporting waste from Scotland, early notification to SEPA is required. Export for disposal of any waste stream is prohibited but waste can be exported for recovery. Higher level of notification controls apply to:

- Hazardous waste for recovery operations;
- Some non-hazardous waste for recovery operations to non-OECD countries.

Under these circumstances, an application for notification is required. It will take at least 1 month to obtain the necessary approval and it is strongly advised to contact SEPA early in the planning process to ensure all appropriate documentation is obtained, and obtain guidance on completing each application. Different fees are applicable for each type of application.

For further guidance see: https://www.sepa.org.uk/regulations/waste/transfrontier-shipment-of-waste/

It should be noted that for all movements to and from other EU Member States and for movements to the UK from countries outside the EU a contract must include the following responsibilities:

- The 'notifier' must take the waste back if the shipment or the recovery or disposal has not been completed as intended or if it has been effected as an illegal shipment.
- The business recovering or disposing of the waste must provide a certificate to show that they have recovered or disposed of the waste.

Green list (non-hazardous) waste can be shipped for recovery within OECD countries under a lower level of control and accompanied by certain information. The shipment of non-hazardous waste to non-OECD countries depends on which classification of waste the importing country accepts and which procedures it wants to apply. Other types of non-hazardous waste may require notification controls and others may be prohibited shipments. It is not a requirement to obtain SEPA's written permission to export waste under green list controls to OECD countries but an Annex VII form must be submitted to SEPA and must accompany the waste for export.

7.1.1. Export of NORM Waste

NORM waste is classed as radioactive waste by UK legislation and shipment to other countries is only allowed where waste management facilities in those countries meet the same standards as are required within the European Union (EU). (SEPA 2017)

The export radioactive waste is controlled by the *Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008 (TFSRW)*. However, exclusions from these controls apply to wastes that 'only contain NORM which does not arise from practices'. As a result, NORM waste shipments fall back under regular waste shipment controls.

However, shipments of NORM waste into and out of the UK must be appropriately permitted under domestic radioactive waste legislation (i.e. RSA Authorisation). In addition, competent authorities will need relevant information to be able to determine how the NORM waste falls within their regulatory framework. It is important that the methodology used to derive this information is documented and includes the appropriate level of data.

It should also be noted that the UK Low Level Waste (LLW) Policy states that *'in all cases where such processes (treatment and disposal) would add materially to the wastes needing to be disposed of in the country of destination, the presumption should be that they will be returned to the country of origin to a timescale agreed by the competent authorities in the countries of destination and origin'.* Such situations will be addressed on a case by case basis. (SEPA 2017)

7.1.2. Export of Marine Growth

The DECC Guidance Notes on the Decommissioning of Offshore Oil and Gas Installations and pipelines under the Petroleum Act 1998 state:

'*If the Lophelia pertusa is present and the installation upon which it is located is to be returned to the shore it will be necessary to discuss with DEFRA the requirements of the Convention on International Trade in Endangered Species (CITES)... if the coral, Lophelia pertusa, is present on an installation located outside of territorial waters that is being transported to the UK or elsewhere, a CITES certificate will be required from DEFRA. Corresponding arrangements exist in other states.'*

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between governments aimed at ensuring the international trade in specimens of wild animals and plants does not threaten their survival.

EU Commission Regulation 1320/2014 (on the protection of species of wild fauna and flora by regulating trade therein) came into effect on 20 December 2014, providing a complete list of species controlled by CITES under EU regulations. *Lophelia pertusa* (see section 3.3.8) is a listed species under these regulations and a CITES permit will therefore be required.

Further information can be found at: https://www.gov.uk/guidance/cites-imports-and-exports

7.2. Waste Import Customs Requirements

For decommissioning waste returning to the UK, the office of the National Import Reliefs Unit (NIRU) is responsible ensuring that the conditions of various importing requirements are met. NIRU have the authority to approve simplified importing procedures to allow Returned Goods Relief (RGR) arrangements for items re-imported to the UK under certain specific conditions.

A Returned Goods Relief (RGR) declaration will therefore be required for any goods / equipment imported to the UK as part of an Oil and Gas Decommissioning Programme, and a unique Customs Procedure Code (CPC) must be applied. Appropriate documentation will also be required to support RGR declarations.

8. Onshore Waste Management

8.1. Decommissioning Contractor(s)

A key factor in the successful execution of Dunlin Greater Area decommissioning projects will be the careful screening and selection of competent decommissioning contractors and suitable decommissioning facilities. The selected decommissioning contractor must therefore have adequate experience in the management of offshore oil and gas decommissioning projects with a proven successful track record.

The selected decommissioning contractor(s) will have responsibility for undertaking of all Engineering, Preparation, Recovery and Disposal (EPRD) operations and be directly involved in the day to day management of generated waste materials. However, 'Duty of Care' will remain with Fairfield for the final recovery or disposal of all waste materials generated from decommissioning activities. The decommissioning contractor must therefore have excellent knowledge of all applicable waste management regulations, and waste management plans must be developed describing the processes required to ensure Fairfield meets all 'Duty of Care' obligations.

Once a decommissioning contractor has been selected, waste management targets must be agreed and a process developed for tracking, reporting and review of performance. Regular performance reviews, audits and site visits of the selected waste management facility must be undertaken to ensure that waste is being managed in a manner that complies with the FWMS and protects the reputation of Fairfield and key business partners.

8.2. Waste Management Plans

Once a decommissioning contractor has been selected, waste management plans must be developed to incorporate all Fairfield decommissioning project requirements, agree waste management objectives, and establish project assurance and reporting protocols.

Separate waste management plans must be developed for both SID and DAD decommissioning projects to outline the processes and procedures necessary to ensure all project requirements and regulatory obligations are met. The specific contents of each WMP must be agreed with the selected decommissioning contractor and align with guidance and expectations of the FMWS. As a minimum, WMPs should include:

- Project description, including detailed materials inventory;
- Roles and responsibilities,
- Regulatory requirements, including permits and authorisations;
- Waste transfer and traceability;
- Management of subcontractors;
- Waste management targets;
- Reuse, recycling and disposal routes;
- Auditing and assurance processes; and
- Reporting and documentation requirements.

WMPs must be communicated to all personnel involved with the project and made available to relevant stakeholders upon request. The WMP should remain a 'live' document and be subject to regular review to ensure changes in waste legislation, project requirements, or waste management processes are captured and communicated to all relevant parties. It is recommended that the review of WMPs be a recurring requirement of project performance reviews.

8.3. Waste Management Facilities

Depending on the removal method selected, there are a number of existing decommissioning yards with the technical capability of receiving and managing the deconstruction of Dunlin Alpha and/or subsea pipelines and infrastructure, with several others with plans for development.

Technical capability and costs will be key considerations when selecting a decommissioning yard. These issues are assessed by other processes and therefore not included within the FWMS. However, additional criteria that should be considered include:

Destination (i.e. Scotland/United Kingdom/Norway)

- Consideration of Transfrontier Shipment of Waste requirements and potential issues;
- Reputational risk of moving employment to other countries;
- Proximity Principal (Waste Framework Directive) states that waste should in general be treated and disposed of close to where it was produced;
- Will travel distance have a significant impact on energy required and emissions generated from the transport of materials to shore;
- Are there local/regional infrastructure projects that may allow significant reuse opportunities

Location

- Aspects and Impacts Register should be requested to identify specific risks associated with the location and activities;
- Are there environmentally sensitive areas nearby? The increase of emissions and/or potential incidents may have a significant negative impact on sensitive areas, and result in increased pressure from environmental groups.
- Are significantly populated areas nearby? Similar to above, increased emissions resulting from deconstruction activities (i.e. smell, noise, traffic) may result in adverse pressure from local communities.

Regulatory Requirements

- A Permits, Licences, Authorisations, Notifications and Consents (PLANC) register should be requested to ensure potential decommissioning yards have the correct regulatory approval to handle relevant decommissioning waste (i.e. NORM, marine growth, asbestos)
- Review permit conditions to identify potential restrictions or limitations that could impact removal and disposal activities.
- Assurance audits are available for subcontracting companies

Health, Safety and Environmental Performance

- Demonstration of a good HSE record, as well as a strong safety culture, is essential to ensure workers are not injured while managing wastes;
- Demonstration that contractors have internationally recognised standards in Health and Safety Management and Environmental Management (i.e. ISO:18001, ISO:45001, ISO:14001);
- Evidence of training and competencies for management of specific waste streams (i.e. NORM);
- Evidence of strong pollution control and abatement measures to demonstrate ability to prevent incidents (records of incidents and non-compliance will be required, and a site visit is recommended);
- Emergency response plan and records of exercises.

Waste Management Performance

- Experience and demonstrated knowledge of reuse/resale markets;

- What is the historical performance against waste hierarchy, including records of recycling, recovery and landfill rates?
- Knowledge of waste material 'endpoints'. What are the ongoing / final destinations of different waste streams? Subcontractors will also need to be assessed for HSE and regulatory requirements.
- Request examples of record keeping and documentation required.

Site Security

- Measures are in place to ensure materials on site are stored securely and that access to hazardous areas is adequately restricted.
- Security measures are implemented to ensure unauthorised persons are prevented from accessing the site at all times.

Additional waste management facilities may be required for managing the final recovery or disposal of specific decommissioning wastes. For some waste streams (i.e. NORM) it may be necessary to ensure additional facilities are in place to prevent supply chain issues that could interrupt removal preparation or removal operations.

Particular consideration should be given to waste management performance (waste hierarchy), and contractors should be expected to demonstrate excellent segregation practices in order to achieve greatest recycling and recovery performance. Access to local reuse/resale markets and novel opportunities for equipment reuse are also important considerations.

A detailed audit of the selected waste management facility should be completed prior to awarding a decommissioning contract, in order to provide project assurance and demonstrate due diligence. Section 10 provides further information regarding assurance audit requirements.

8.3.1. Management of Subcontractors

The majority of decommissioning waste will likely require further processing before it reaches an 'end point' (i.e. reused; recycled into new products; recovered for aggregate or energy; or landfill). The selected waste management facility must provide a list of subcontractors and/or a map of waste 'end points'. Under the *Environmental Protection Act 1990*, Fairfield will continue to have 'Duty of 'Care' for all decommissioning waste, and the selected decommissioning contractor must demonstrate that all subcontractors have the required regulatory approvals and capabilities (see Section 2). The reputation of subcontractors should also be considered.

8.3.2. Traceability of Materials

A key factor for the successful close out of decommissioning programme(s) will be the ability to provide full traceability of all materials recovered. The selected decommissioning contractor must therefore have a dedicated materials management system that records all waste transfers from generation to final recovery and/or disposal, and includes any additional processing required.

Items will also need to be inspected and weighed in order to reconcile records against the submitted decommissioning programme, and all documentation must be easily accessed if requested by the regulator.

9. Project Close-out and Documentation

Section 13.1 of the DECC Guidance Notes on the Decommissioning of Offshore Oil and Gas Installations and Pipelines under the Petroleum Act 1998 describes the following requirements for project close out reporting, in regards to waste management.

> *An explanation of any major variances from the programme including why they occurred and an indication of any permits required as a result. Where appropriate include exact quantities of recovered hydrocarbons, sludges, heavy metals, sacrificial anodes and radioactive material including LSA (Low Specific Activity) scale.*

In addition, there will be an expectation from the waste regulator (SEPA) to demonstrate 'Duty of Care' and meet obligations under relevant waste regulations.

As a result, the following documentation will be also be required as part of project close out reporting:

- All non-special waste consignment notes;
- All special waste consignment notes;
- Dangerous goods declarations;
- Supporting documentation (i.e. RRO3s);
- Any specific sampling analysis undertaken;
- Purchase certificates / receipts and company details;
- Final disposal certificates for special waste streams where relevant.

Decommissioning close out reports will also need to include details of all waste management facilities required for final disposal or recovery of waste materials. Details should include reference to any required licences, authorisations or consents required. It is recommended that waste management documentation is regularly requested as part of ongoing assurance processes.

10. Assurance and Ongoing Monitoring

In accordance with the Environmental Protection Act 1990, a 'Duty of Care' will remain with Fairfield for the final recovery or disposal of all waste materials generated from decommissioning activities. Regular monitoring of project performance and periodic auditing of waste management facilities will therefore be required to provide project assurance and respond to any stakeholder queries. The documentation required and frequency of reporting should be agreed with the chosen decommissioning contractor and detailed in waste management plans.

As a minimum, project reviews should include any HSE incidents, legal compliance issues, and performance against waste management targets. As discussed above, review of Waste Management Plans should be included as a recurring agenda item on any project review to ensure changes in waste legislation, project requirements, or waste management processes are captured and communicated to all relevant parties.

10.1.1. Waste Management Facility Assurance

A detailed audit of waste management facilities should be undertaken by an independent assurance provider to demonstrate that the selected facilities have the capability and capacity to manage the types and volumes of waste materials generated by SID and DAD decommissioning projects. Copies of such reports should be made available to regulatory bodies upon request, in order to demonstrate due diligence.

The selected assurance provider should have extensive experience in the auditing of waste management facilities (in particular facilities associated with the offshore oil and gas industry), and have detailed knowledge of hazardous waste management. The assurance provider should also demonstrate previous experience engaging with regulatory bodies (i.e. BEIS / SEPA).

Prior to the undertaking of any assurance audit, auditing protocols should be reviewed to ensure they meet the requirements of the FWMS. As a minimum, audit protocols should consider:

- Health safety and environmental performance;
- Permit & legal compliance (including specific regulatory obligations);
- Review of facility Aspects and Impacts Register (or equivalent);
- Review of incidents & noncompliance (including evidence of incident close-out and lessons learned);
- Emergency response procedures (including recent exercises);
- Specific procedures for treatment of hazardous materials (NORM; chemicals; asbestos…)
- Pollution prevention and mitigation measures for specific hazardous waste streams (for example marine growth);
- Evidence of positive safety / environmental culture;
- Assurance of third party venders required for further waste processing;
- Review of management standards (i.e. ISO:18001, ISO:45001, ISO:14001);
- Analysis reports for specific hazardous waste streams;
- Waste management performance (i.e. performance against targets);
- Waste tracking and reporting process (demonstrating full traceability);
- Materials segregation and labelling practices;
- Monitoring and measurement equipment is calibrated and maintained (for example weigh-scales, metering equipment, sampling equipment);
- Waste transportation (logistics) procedures (including notifications, signage and labelling)
- Documentation control and reporting processes;
- Documentation to support competency & training requirements (including logistics, crane operations; forklift operation, sampling and analysis, equipment maintenance...)
- 'Duty of Care' documentation requirements, including:

- Waste Consignment Notes;
- Special Waste Consignment Notes;
- Dangerous Good Declarations;
- Waste Acceptance Notes;
- Disposal certificates;
- RRO3 forms (working with radioactive materials);
- Calibration reports;
- Relevant sampling or analysis reports

11. Strategy, Planning and Goal Setting

11.1. Strategy and Planning

Environmental management of the Greater Dunlin Area decommissioning operations, including waste management will be managed in accordance with Fairfield's Environmental Management System (EMS), which is certified to the international standard ISO 14001 (2015).

To support decommissioning programmes, waste management plans must be prepared by the selected decommissioning contractor. These will be implemented, maintained and updated for both the Dunlin Alpha Decommissioning Programme(s) and Subsea Infrastructure Decommissioning Programmes, and be communicated to all relevant members of the decommissioning teams.

11.2. Goal Setting

Fairfield will set reuse and recycling goals for each decommissioning programme, drawing on information provided in Section 3 of this document, and summarised in Table 5.1 below. These figures represent a range of estimated waste management performance rates. The actual performance will dependent on location of the selected decommissioning yard, potential infrastructure projects, and resale market values.

Waste Stream	Reuse	Recycle	Recovery	Landfill
Ferrous metals	0 - 15%	95 - 98%	0%	0 - 5%
Non-ferrous metals	0%	95 - 98%	0%	0 - 5%
Concrete (mattresses)	0 - 50%	0%	0 - 50%	50 - 100%
Plastics	0%	50 - 75%	15 - 40%	10%
Residual Hydrocarbons	0%	0%	85 - 100%	0 - 15%
NORM	0%	0%	0 - 25%	75 - 100%
Asbestos	0%	0%	0%	100%
Heavy metals	0 - 5%	85 - 100%	0%	0 - 15%
Marine Growth	0%	0%	0 - 100%	0 - 100%
Other Construction Material	0%	0 - 15%	0%	85 - 100%

Table 5.1 Estimated rates of waste management performance waste

As a guide, Scotland's 'Zero Waste Strategy' currently aims to achieve an overall recycling and composting level of 70%, and 5% (maximum) landfill for the total Scottish waste risings by 2025. (Scottish Government 2010) Other decommissioning programmes and Oil and Gas UK publications also provide some insight on what may be expected. For example:

- According to Oil and Gas UK, the industry is regularly exceeding targets of 97% for reuse and recycling of all materials and components recovered from jackets and topsides.
- Hess detailed in 2014, a reuse and recycling combined percentage of 96.93% in the close out report for the Fife, Fergus, Flora and Angus (FFFA) fields decommissioning programme with a reuse rate of 48.21%. Hess anticipated in February 2013 for the Ivanhoe and Rob Roy Field that 95% of material returned to shore would be recycled.
- BP anticipated in September 2011 for the Miller Decommissioning Programme that up to 97% of the recovered material will be reused or recycled.
- CNRI anticipated in May 2014 for the Murchison Decommissioning Programme that <5% disposal rate was expected with recovery and reuse accounting for >95%.

Zero Waste Scotland can provide partially funded support to Scottish industry on waste hierarchy and circular economy implementation measures. Decommissioning energy infrastructure is a key area that Zero Waste Scotland provide support in. This has included providing synergies for oil and gas decommissioning projects (to help reduce, reuse or recycle waste). Other key circular economy programmes are supported by Scottish Enterprise.

These programmes do not replace the use and expertise of licensed waste management companies merely to compliment it. Scottish Government insight may be useful for understanding forthcoming construction projects and/or other local projects where materials could be re-used, and the latest waste technology available in Scotland.

12. References

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Appendix A – List of Waste Regulations

International Conventions, Guidelines, Codes and Standard Requirements

Legislation	Summary	Regulator	Requirement
OSPAR Decision 98/3 Disposal of Disused Offshore Installations	Since 1998 the dumping, and leaving wholly or partly in place, of disused offshore installations is prohibited within the OSPAR maritime area. However, following assessment, the competent authority of the relevant Contracting Party (i.e. BEIS in the UK) may give permission to leave installations or parts of installations in place in the case of: o steel installations weighing more than ten thousand tonnes in air; o gravity based concrete installations; o floating concrete installations; any concrete anchor-base which results, or is likely to result, in interference with other legitimate uses of the sea.	OSPAR Contracting Parties	OSPAR Derogation Approval
1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972	The 1996 Protocol represents a major change of approach to the question of how to regulate the use of the sea as a depository for waste materials in that, in essence, dumping is prohibited, except for materials on an approved list. This contrasts with the 1972 convention which permitted dumping of wastes to sea, except for those materials on a banned list.	International	TBC
Basel Convention 1989	International agreement which creates obligations for the states that have ratified it. The primary aim of the treaty is to control the movement of hazardous waste between nations and specifically to prevent transfer of hazardous waste from developed to less developed countries.	International	TFSW
European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) latest amendment 2015 (implementing UN agreement)	ADR sets out the requirements for the classification, packaging, labelling and certification of dangerous goods. It also includes specific vehicle and tank requirements and other operational requirements.	EU Commission	DGD

MARPOL 73/78	MARPOL 73/78 is the International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. ("MARPOL" is short for marine pollution and 73/78 short for the years 1973 and 1978.) MARPOL 73/78 is one of the most important international marine environmental conventions. Annex III of MARPOL 73/78 (as amended) details discharge criteria & measures imposed for control of pollution. Substances are categorised by codes for transportation in accordance with International Maritime Dangerous Goods Code (IMDG) code. Annex IV of MARPOL 73/78 (as amended) prohibits discharge of sewage into the sea, except when the ship has approved sewage treatment facilities or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than 3 nm from the nearest land. There is a requirement for the installation to have a Sewage Pollution Prevention Certificate which shall not exceed 5 years. Annex V of MARPOL 73/78 (as amended) requires that each installation is to establish a garbage (waste) management plan and maintain a garbage record book. It also details what conditions food waste can be disposed of to sea (i.e. using maceration), and prohibits non-food waste disposal to sea.	Maritime and Coastguard Agency (MCA)	Waste Management Plans
International Maritime Dangerous Goods (IMDG) Code (latest edition 2014)	Sets out requirements for classification, packaging, labelling and certification of dangerous goods by sea.	International	DGD
Convention for the Safety of Life at Sea (Solas)	The SOLAS convention is by far the most important of all conventions covering the safety of ships covering all aspects related to safe shipping.	International	N/a
International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code	The purpose of the Code is to provide an international standard for the safe management and operation of ships and for pollution prevention. The Code is expressed in broad terms so that it can have a widespread application.	International	N/a

EU Regulations, Directives, and Decisions

Legislation	Summary	Regulator	Requirement
EU Framework Directive 2008/98/EC on Waste (as amended)	Provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU, including waste hierarchy.	EU Commission	N/a
Decision 2000/532/EC establishing a list of wastes	This Decision establishes the classification system for wastes, including a distinction between hazardous and non-hazardous wastes. It is closely linked to the list of the main characteristics which render waste hazardous contained in Annex III to the Waste Framework Directive above.	EU Commission	N/a
Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste.	This Regulation specifies under which conditions waste can be shipped between countries.	EU Commission	N/a

UK Regulations (Scotland)

Legislation	Summary	Regulator	Requirement
Control of Pollution Act 1974	Establishes a legal requirement for any company transporting waste to be registered with the relevant authorities.	SEPA/EA	TBA
Environmental Protection Act 1990	Sets out a regime for regulating and licensing the acceptable disposal of controlled waste on land. Introduces a 'Duty of Care' for all controlled wastes. Anyone who imports, produces, carries, keeps, treats or disposes of waste is subject to a 'duty of care' whereby they must take all reasonable and applicable measures: • To ensure that waste is stored and transported appropriately and securely so it does not escape; • To ensure that waste is transported by those licensed to do so; • To ensure that waste is transferred to people or businesses that are licensed to store, treat and/or dispose of those waste streams; and • To complete and retain waste transfer notes (WTNs) for non-hazardous waste stream transfers (retain for WTNs for 2 years minimum). • To complete and retain waste consignment notes for hazardous waste stream transfers (retain consignment notes for 3 years minimum)	SEPA/EA	WCN

Control of Pollution (Amendment) Act 1989	Requires carriers of controlled waste to register with the Environment Agency or SEPA and outlines the penalties (including seizure and disposal) for vehicles shown to have been used for illegal waste disposal.	SEPA	Registration of controlled waste carriers
Control of Waste Regulations 1992 (as amended)	These regulations define "Controlled Waste" for the purposes of EPA 90 and entered into force on which came into force on 1 June 1992. Three categories of controlled waste are defined, i.e. household, industrial and commercial.	SEPA/EA	TBA
Special Waste 1996 Regulations	The purpose of the legislation is to control the movements of the most hazardous types of waste. The law refers in particular to a list of waste materials that are listed in the schedule of the act, and also it refers to controlled wastes which are prescribed medicinal products.	SEPA/EA	Special Consignment Note
Special Waste Amendment (Scotland) Regulations 2004	Transposes the requirements of the Hazardous Waste Directive and provides a full definition of special waste. These regulations make provisions for the handling of special waste and introduce consignment note, segregation, packaging and labelling requirements.	SEPA	SWCN
Waste Management Licensing (Scotland) Regulations 2011 (as amended)	Establishes the requirement for waste management facilities to be licensed.	SEPA	Waste licence
Pollution Prevention and Control (Scotland) Regulations 2012 (as amended)	Establishes the requirement for waste management facilities (under certain criteria) to hold a PPC Permit	SEPA	PPC Permit
Environmental Protection (Duty of Care) (Scotland) Regulations 2014	Requires a transfer note to be signed by the transferor and transferee of waste, specifies information to be included and requires copies to be kept for two years. Includes the use of SIC codes. Enables the use of electronic waste transfer notes. Revokes Environmental Protection (Duty of Care) Regulations 1991.	SEPA	Waste Carriers Licence

Radioactive Substances Act 1993	Any organisation who receives radioactive sources or radioactive waste for disposal is subject to the requirements of the Radioactive Substances Act 1993 (RSA 93). Under this Act they must have an authorisation from the appropriate regulatory body (SEPA in Scotland) for the accumulation, storage or disposal of radioactive waste or be able to demonstrate compliance with the conditions contained in specific exemption orders. The Act also applies to offshore installations and the preparation of a decommissioning programme should identify whether the selected disposal route requires such an authorisation and that the selected facility has one. It is likely that new disposal routes will require an application for authorisation.	SEPA	RSA Authorisation
Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005 (as amended 2011)	OPPC regulations introduce controls on oil discharges from offshore oil and gas installations. Any material being discharged or reinjected that has been contaminated by hydrocarbons from the reservoir will require a permit.	BEIS	OPPC Oil Discharge Permit
The Offshore Chemicals (Amendment) Regulations 2011	These regulations apply the provisions of a decision made by the OSPAR Convention to implement a harmonised mandatory control system for the use and discharge of chemicals by the offshore oil and gas industry. Under the regulations offshore operators must apply for permits for the use and/or discharge of chemicals in the course of all offshore oil and gas activities, including decommissioning.	BEIS	OCR Chemical Discharge Permit
Marine and Coastal Access Act (MCAA) 2009 and The Marine (Scotland) Act 2010	Certain activities require a marine licence before they can be carried out in Scotland's seas. Licensable activities may include, but are not limited to: • The deposit of substances or objects into the sea or onto the sea bed; • The removal of substances or objects from the sea bed; • Construction, alteration and improvement works; • Dredging; • The deposit or use of explosives.	Marine Scotland	Marine Licence
Merchant Shipping (Dangerous Goods and Marine Pollutant) Regulations 1997	Apply the IMDG code (Dangerous Goods by Sea).	TBC	DGD

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (as amended)	Apply the ADR UN agreement (Dangerous Goods by Road Requirements) in Great Britain, applying to England, Wales and Scotland only. (See entry above)	TBC	DGD
Dangerous Goods in Harbour Areas Regulations 2016 (DGHAR)	The carriage, loading, unloading and storage of all classes of dangerous substances in port areas are controlled under the Dangerous Substances in Harbour Areas Regulations 2016 (as amended).	TBC	TBC
The Waste (Meaning of Hazardous Waste and European Waste Catalogue) (Miscellaneous Amendments) (Scotland) Regulations 2015	These Regulations came into force on the 8 June 2015 and apply to Scotland only. They amend various pieces of legislation, replacing the definitions of "European Waste Catalogue" and "Waste Framework Directive" and implementing amendments to EU legislation.	SEPA	N/a
Waste Electrical and Electronic Equipment Regulations 2013 (as amended)	Aim to combat the rapid growth of waste electronic and electrical equipment (WEEE) and its impact on the environment due to its hazardous content. Measures are established for its treatment, reuse, recovery, and recycling. From 1 January 2019, the scope of EEE covered by the Regulations changes, incorporating a wider range of products.	SEPA/EA	N/a
Waste Batteries (Scotland) Regulations 2009	The regulations prohibit the disposal of untreated industrial and automotive batteries to landfill or by incineration. From 1 January 2010 if companies buy new industrial batteries, the battery producer will take back the waste batteries.	SEPA	N/a
The Animal By-Products (Scotland) Regulations 2003	Sets criteria for the disposal of animal by-products.	SEPA	TBC
The Animal By-Products (Enforcement) Regulations (Scotland) 2013	Details the enforcement authorities, processes and procedures under the Animal By-Products Regulations	SEPA	TBC
The Animal By-Products (Miscellaneous Amendments) Regulations (Scotland) 2015	Amends the 2013 regulations and prevents fish waste from being sent to landfill in remote areas.	SEPA	

Waste (Scotland) Regulations 2012	The regulations establish requirements including the segregation of materials such as glass, metal, plastics, paper and card for recycling. It also introduces the requirement for food businesses to present food waste for collection and a ban on sending segregated materials for incineration or to landfill. Waste contractors must provide services that enable high quality recycling.	SEPA	TBC
The Waste Information (Scotland) Regulations 2010	Requires businesses to provide waste data returns to the Scottish Environment Protection Agency upon request.	SEPA	N/a
The Air Weapons and Licensing (Scotland) Act 2015,	Establishes a licensing regime and requires that all metal dealers and itinerant metal dealers have a licence. Establishes rules for the trade of scrap metal.	Local Council	Metal Dealers Licence
End of Waste Regulations (No333/2011) for scrap metals: The requirements for scrap metal to cease to be waste	Outlines requirements for determining when scrap iron, steel and aluminium cease to be waste and can then be handled without waste management controls./	SEPA	TBA